G. F. Blake,

Piston Meter,

No. 47,893. Patented May 23, 1865.

Fig. 1.

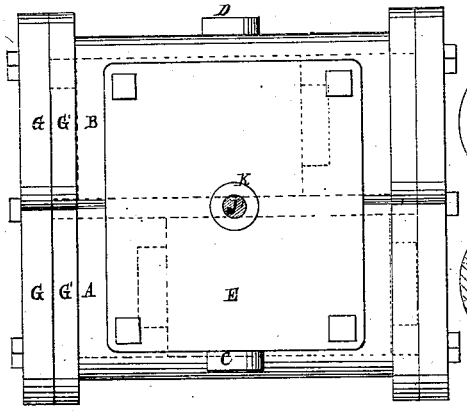


Fig. 9

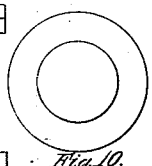


Fig. 10.

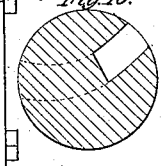


Fig. 2.

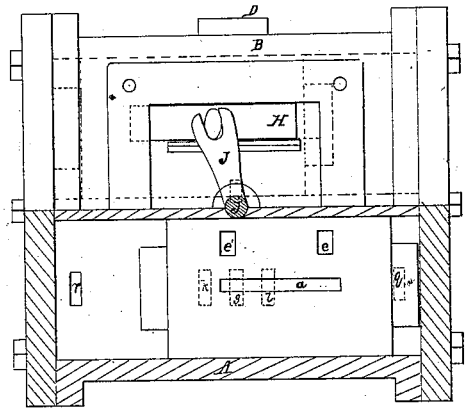


Fig. 3.

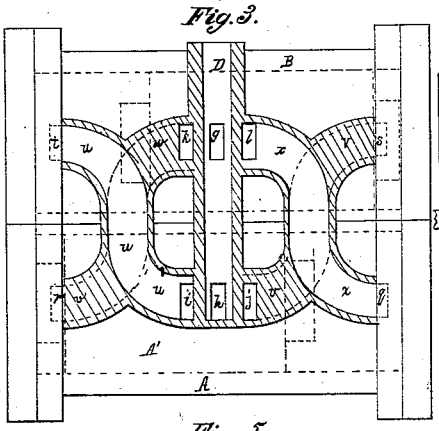


Fig. 4.

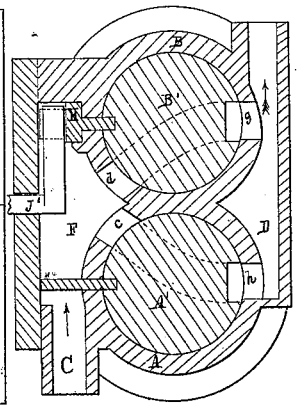


Fig. 7.

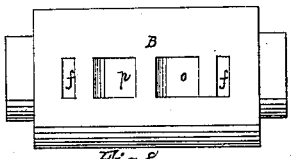


Fig. 8.

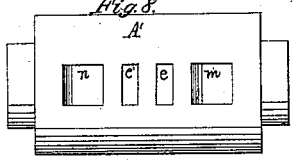


Fig. 5.

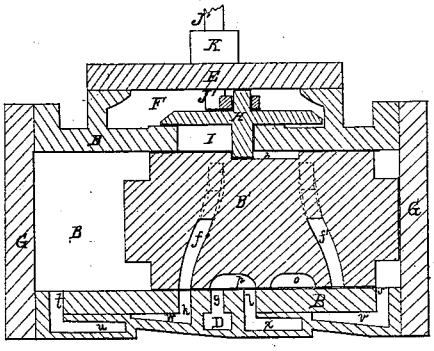
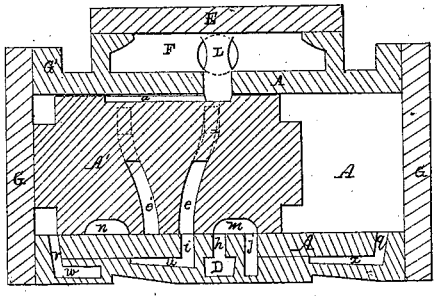


Fig. 6.



Witnesses.
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B. Franklin Brown

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by his Attorney
Chas. F. Sansbury

UNITED STATES PATENT OFFICE.

GEORGE F. BLAKE, OF MEDFORD, ASSIGNOR TO HIMSELF, PETER HUBBELL, AND JOB A. TURNER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN WATER-METERS.

Specification forming part of Letters Patent No. **47,893**, dated May 23, 1865.

To all whom it may concern:

Be it known that I, GEORGE F. BLAKE, of the city of Boston, in the State of Massachusetts, have invented a new and useful Improvement in Water-Meters; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of the meter. Fig. 2 is a top view with the top plate removed and one cylinder in section. Fig. 3 is a horizontal section through the water-ways below the cylinders. Fig. 4 is a transverse vertical central section through the cylinders and plungers. Fig. 5 is a longitudinal vertical central section through cylinder B and plunger B′. Fig. 6 is a similar section through cylinder A and plunger A′. Fig. 7 is a bottom view of plunger B′. Fig. 8 is a similar view of plunger A′. Fig. 9 is an end view of a plunger; and Fig. 10 is a transverse section of a plunger, showing the water-way through it.

The same part is marked by the same letter wherever it occurs.

The nature of my invention consists in so constructing a double-cylinder reciprocating water-meter that the pistons or plungers shall perform the function of valves, and the plunger of each cylinder control the supply and exhaust of the opposite cylinder, thus greatly simplifying the construction of this class of meters by doing away with a number of parts, and those the most liable to get out of order.

To enable others skilled in the art to make and use my improved meter, I will proceed to describe its construction and operation, referring to the accompanying drawings and the letters of reference marked thereon.

The meter is made of metal, and consists of two parallel cylinders, A B, united together and surmounted by a water-chamber, F, into which the inlet-pipe C opens. An outlet pipe, D, leads off the water that has passed the meter. The water-chamber F is covered by a top, E, bolted to it, and the cylinders have flanges, G′, to which their heads G are bolted.

In cylinder A reciprocates the plunger A′, and in cylinder B reciprocates the plunger B′. These cylinders replace the valves used in ordinary meters, and perform the function of controlling the supply and exhaust, and of operating the registering mechanism. The plunger A′ is kept from turning in its cylinder by means of a plug, L, Fig. 6, which projects down into a groove, *a*, in the upper side of said plunger. A similar groove, *b*, in plunger B′, receives the lower end of slide H, which projects down into it through a slot, I, in the upper side of cylinder B. (See Fig. 5.) This arrangement prevents plunger B′ from turning in its cylinder. By the reciprocation of this plunger the slide H is caused to reciprocate in the slot I. An upward projection of slide H is received by a fork in the end of an arm, J, projecting from an upright shaft, J′, which passes up through collar K in the top of the water-chamber and is connected with any suitable registering mechanism.

From the water-chamber F there are two ports, *c d*, leading, respectively, into the cylinders A and B.

The form of the plungers is clearly shown in the drawings, in side and end view, and in ongitudinal and transverse section. Plungerl A′ has two water-ways, *e e′*, passing through it, communicating alternately by their upper openings with the port *c*, and by their lower openings with ports *i* and *j*. It has also two valve-cups, *m n*, which alternately connect the ports *i* and *j* with the exhaust-port *h*. Plunger B′ has two water-ways, *f f′*, passing through it, communicating alternately by their upper openings with port *d*, and by their lower openings with ports *k* and *l*, in cylinder B. It has also two valve-cups, *o* and *p*, which alternately connect the ports *k* and *l* with the exhaust-port *g*. The exhaust-ports *g* and *h* lead directly into the exit-way D.

In the bottom of cylinder A are the five ports *h, i, j, q*, and *r*, and in the bottom of cylinder B are the five ports *g k l s t*. The port *i* communicates by water-way *u* with the port *t* at the left-hand end of cylinder B. The port *j* communicates by water-way *v* with port *s* at the right-hand end of cylinder B. The port *k* communicates by water-way *w* with port *r* at the left-hand end of cylinder A, and port *l* communicates by water-way *x* with port *q* at the right-hand end of cylinder A.

The operation is as follows: The plunger A′, being in the position represented in Fig. 6, water enters from the water-chamber F, through port *c* and water-way *e*, passes through

port *i* and water-way *u* to port *t* at the left-hand end of cylinder B, and drives the plunger B′ to the right-hand end of cylinder B, the water in front of it escaping through port *s*, water-way *v*, port *j*, cup *m*, port *h*, and exit-way D. When plunger B′ arrives at the position at the right of the cylinder indicated in dotted lines in Fig. 3, water enters through port *d*, way *f*, port *k*, way *w*, and port *r*, and drives the plunger A′ to the right-hand end of cylinder A, the water in front of the plunger escaping through port *q*, way *x*, port *l*, cup *p*, port *g*, and exit-way D.

The plunger B′, as it reciprocates, operates the registering mechanism, which may be of any usual or desirable kind.

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

1. So constructing the plungers or pistons of water-meters that they shall perform the function of valves, and thus do away with the necessity for independent valves and their connections, substantially as specified.

2. In combination with the foregoing, making the plunger of each cylinder control the supply and exhaust of its twin or opposite cylinder, in the manner described.

3. Passing the supply-water through the body of the plungers by means of water-ways, arranged and operating substantially in the manner and for the purpose set forth.

The above specification signed and witnessed this 9th day of January, A. D. 1865.

GEORGE F. BLAKE.

Witnesses:

CHAS. F. STANSBURY,

B. FRANK PALMER.