2 Sheets—Sheet 1.

P. WELLS.

Piston Water-Meter.

No. 205,933. Patented July 9, 1878.

Fig. 1.

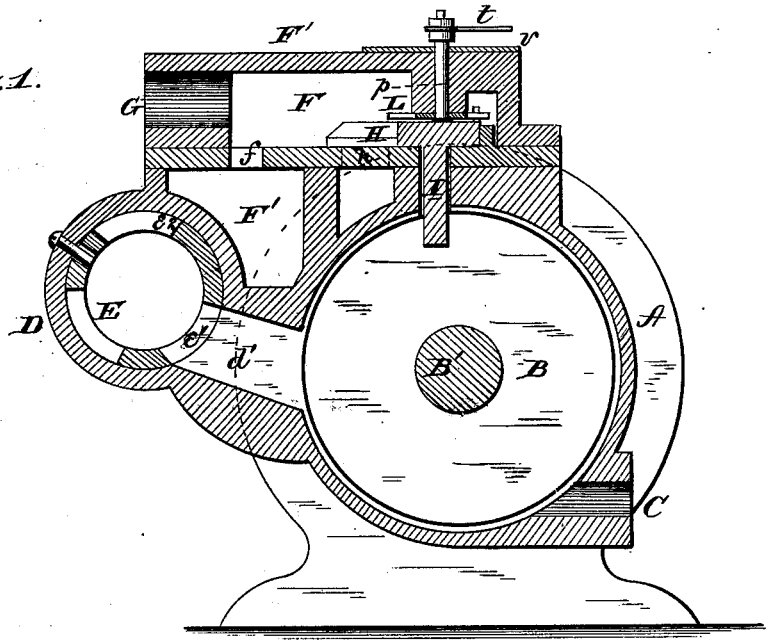
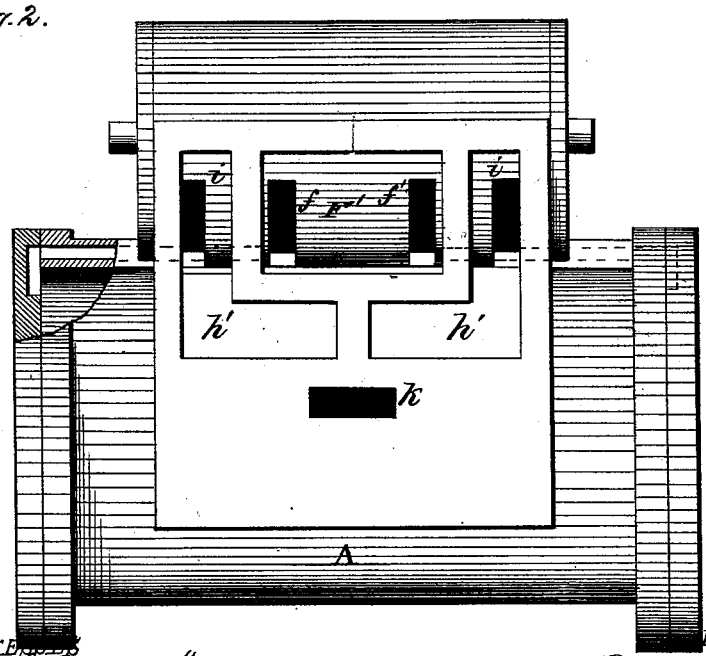


Fig. 2.



WITNESSES:

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By

INVENTOR

Parker Wells

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2 Sheets—Sheet 2.

P. WELLS.
Piston Water-Meter.

No. 205,933. **Patented July 9, 1878.**

Fig. 3.

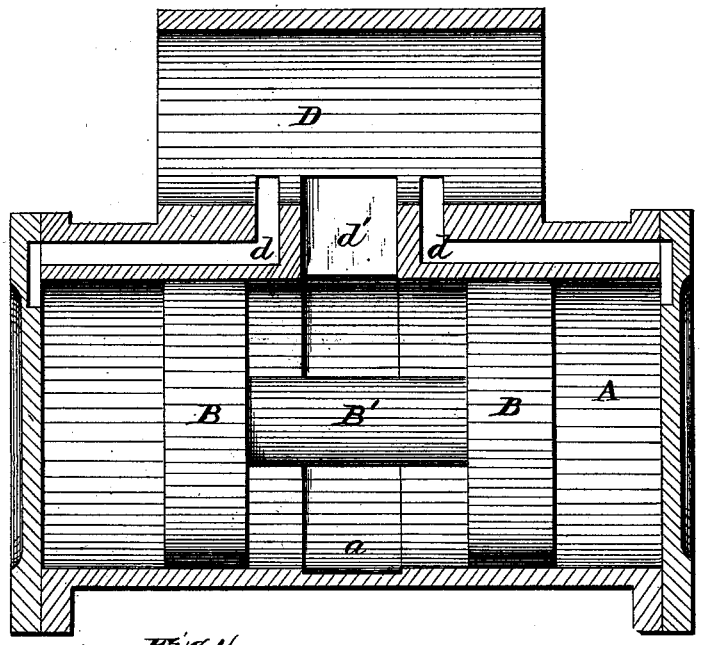


Fig. 4.

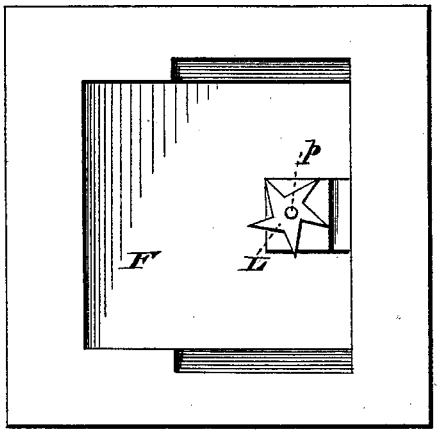


Fig. 7.

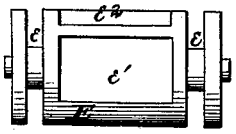


Fig. 5.

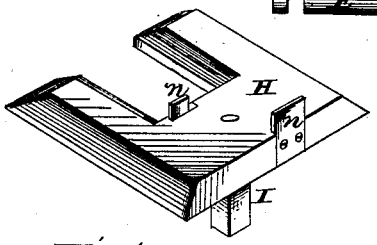
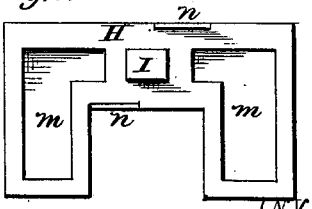


Fig. 6.



WITNESSES
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UNITED STATES PATENT OFFICE.

PARKER WELLS, OF LYNN, MASSACHUSETTS.

IMPROVEMENT IN PISTON WATER-METERS.

Specification forming part of Letters Patent No. **205,933**, dated July 9, 1878; application filed March 30, 1878.

To all whom it may concern:

Be it known that I, PARKER WELLS, of Lynn, in the county of Essex, and in the State of Massachusetts, have invented certain new and useful Improvements in Water-Meters; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the construction and arrangement of a water-meter, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, in which—

Figure 1 is a transverse vertical section of my water-meter. Fig. 2 is a plan view of the case and cylindrical valve-chest. Fig. 3 is a horizontal section of the meter. Fig. 4 is a bottom view of the top chest-cover. Figs. 5 and 6 show the upper sliding valve. Fig. 7 shows the cylindrical valve.

A represents the main cylinder, with double piston B B, connected by a central stem, B′. In the center of the cylinder A is an interior circumferential groove or recess, *a*, and at the bottom is the outlet C.

D is a cylindrical valve-chest formed on the outside of the cylinder A, and communicating with the center thereof, by a port, *d′*, and by ports and passages *d d*, with the ends of the cylinder. Within the cylindrical chest D is placed the cylinder-valve E, which is made hollow, as shown, and provided near each end with a circumferential groove, *e*, and with a port, e^1, to coincide with the port *d′* and one of the ports *d*. On the opposite side of the valve is another opening, e^2, simply to balance the valve by diminishing the pressure of the water inside thereof.

G is the water-inlet leading into a chest, F, and from this chest the water passes through an opening, *f*, into a chamber, F′, and from thence through either one of two ports, *f′ f′*, into the cylindrical chest D, said ports corresponding with the ports *d d*. In the bottom of the chest F are two ports, *h h*, leading into passages *h′ h′*, which communicate through ports *i i* with the interior of the chest D at or near the ends. The ports *h h* are alternately opened and closed by a sliding valve, H, provided with a stem or arm, I, extending downward through a slot, *k*, into the main cylinder A, between the two pistons B B, so as to be operated by them.

The water, being admitted into the chest F and chamber F′, passes through one of the ports *f′* beyond the end of the valve E, into the chest D, and through the corresponding port *d*, into one end of the cylinder A, thereby forcing the pistons B B toward the opposite end. Just before the stroke of the pistons is completed they move the valve H, so as to admit the water through the ports *h h′ i* into the groove *e* at the opposite end of the valve D, which throws said valve over, so as to shut off the water from the port *f′*, through which it was entering, and causing it to enter through the other port *f′*, and thence to the other end of the cylinder A, to reverse the motion of the pistons. The water that had entered behind the pistons is exhausted through the valve E into the passage *a*, and out at the outlet C. The water behind the valve D is exhausted through passages *m* in the bottom of the valve H, and through the slot *k* into the cylinder.

The different parts are so arranged that the valves H and E will be moved and reverse the current of water just before the pistons B complete their stroke, and thus admit water in front of them, to form a water-stop, which will prevent the pistons striking the heads of the cylinder, and thus preventing any jar or concussion. The valve H is, on the upper side, provided with two projecting lugs or counters, *n n*, to operate a star-wheel, L, attached to the lower end of a shaft, *p*, which passes through the top F′ of the chest. This star-wheel must have an odd number of arms or prongs to be properly turned by said counters. On the upper end of the shaft *p* is an index-hand, *t*, working over a dial, *v*, to show the number of movements of the pistons B. This index is to be connected with a series of other indexes and dials, the same as in any ordinary meters.

It will be noticed that for each stroke of the valve H one of the counters *n* operates the

wheel L, and stops at such a point as to lock the wheel and its shaft in place, so that the same cannot be turned backward.

If desired, the star-wheel may be operated directly from the pistons instead of through the intervention of the valve.

I am aware that it is not new to operate the register directly from the sliding valve, and I do not claim such, broadly, as my invention. But in such case as known to me the index-shaft had to be raised bodily through the stuffing-box by the lug operating on a ratchet-wheel, and the only way to return the shaft and wheel to their position was by gravity, and as it passed through a packed box this would often fail to work, and hence stop the entire registering mechanism. These difficulties are entirely overcome by my invention, as the shaft has not to move lengthwise at all.

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

1. The combination, with the cylinder A, and double or connected pistons B B, of the cylindrical chest D, with ports *d d* and *d′*, *f′ f′*, and *i i*, and the cylindrical valve E, with grooves *e e* and ports e^1 e^2, all substantially as and for the purposes herein set forth.

2. The combination, with the cylinder A with pistons B, and cylindrical chest D with valve E, of the chest F F′ with ports *h h′*, and valve H, having stem I, operated by the pistons B, for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 27th day of March, 1878.

PARKER WELLS.

Witnesses:
FRANK GALT,
J. M. MASON.