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JULIUS JONSON.

Improvement in Valve Attachment for Liquid Meters.

No. 119,364. Patented Sep. 26, 1871.

Fig. 1

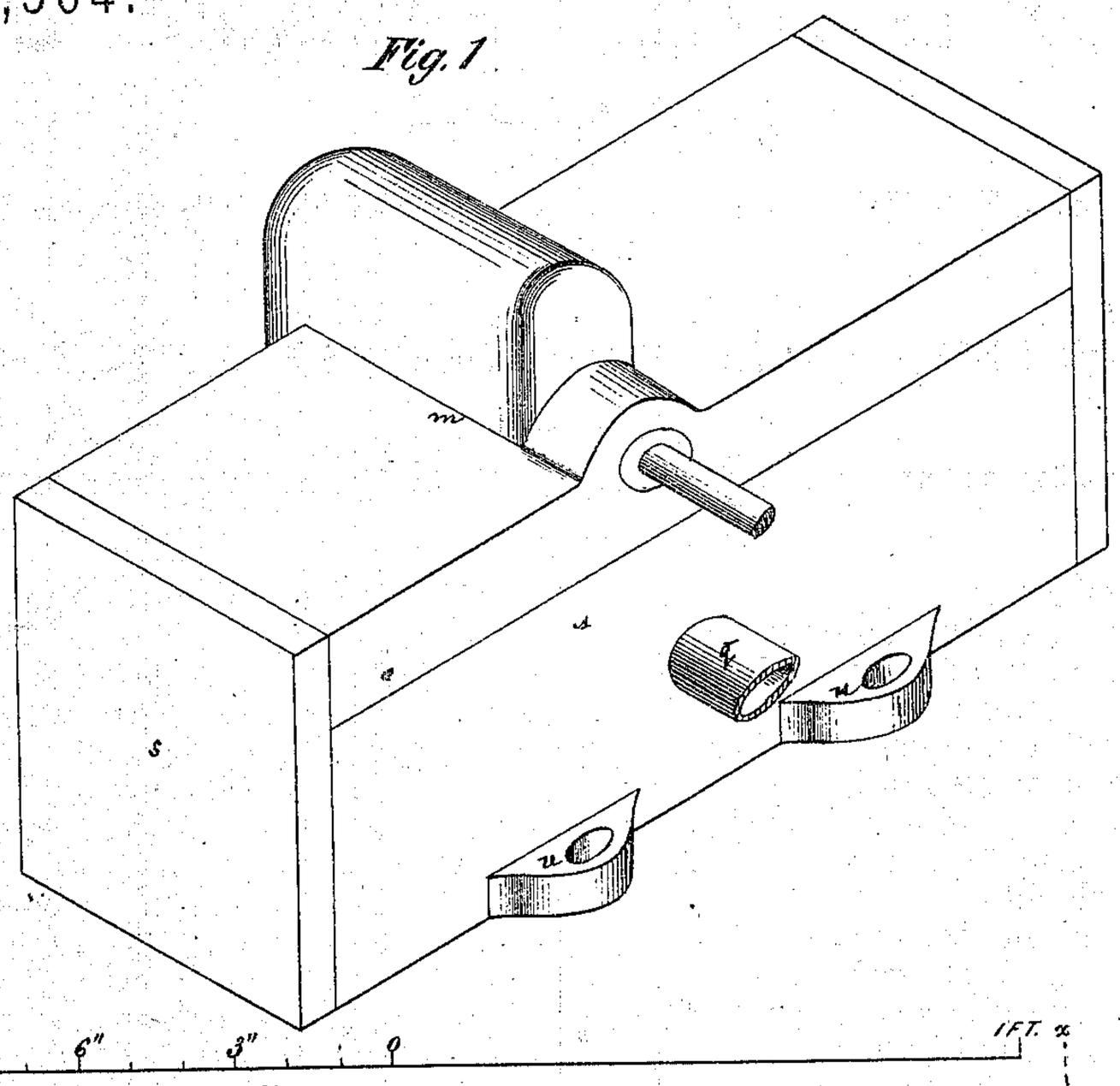
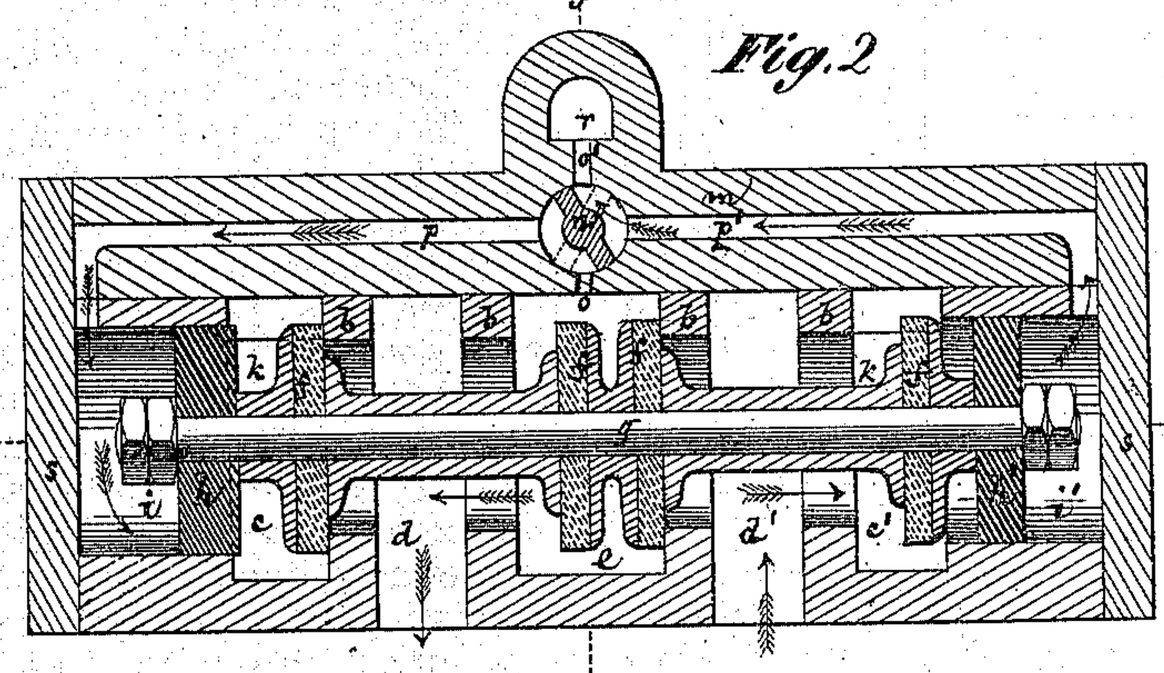


Fig. 3

Fig. 2



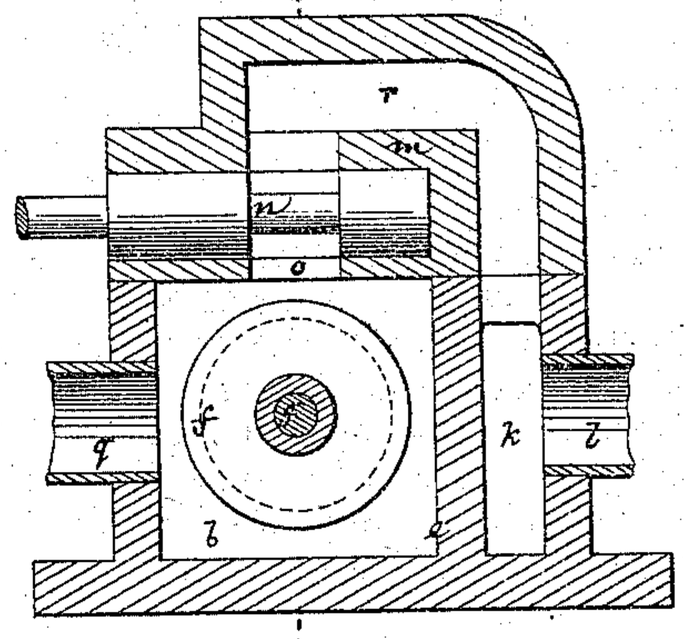


Fig. 4

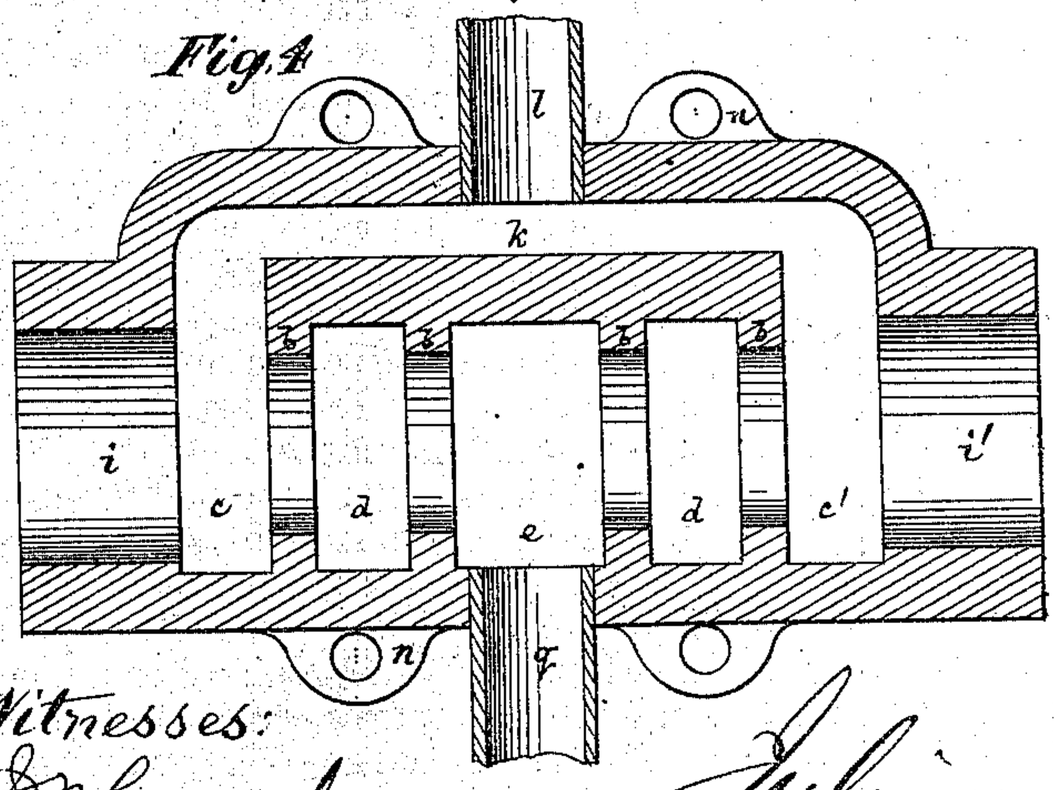
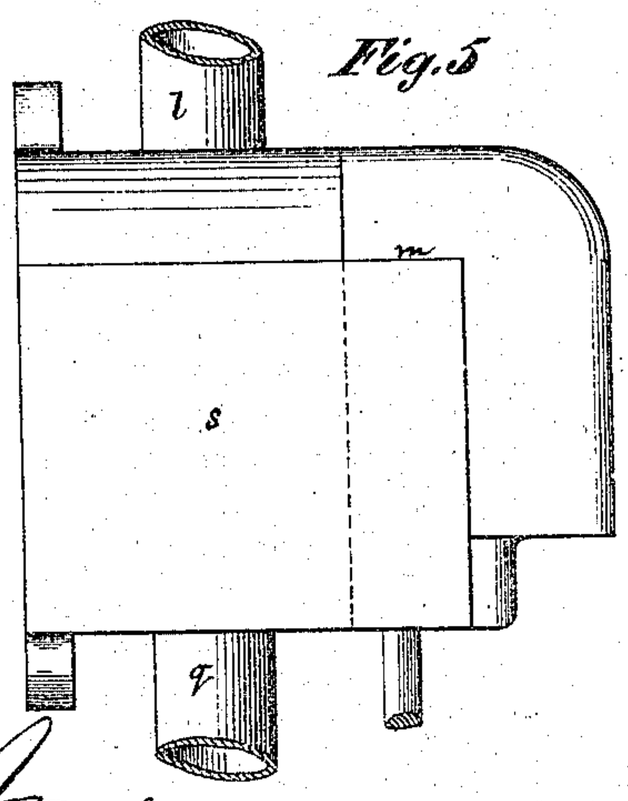


Fig. 5



Witnesses:
D. M. Coombs
R. H. Rabeau

Julius Jonson
per Brown Coombs & Co. Attorneys

UNITED STATES PATENT OFFICE.

JULIUS JONSON, OF NEW YORK, N. Y., ASSIGNOR TO JOSEPH G. HARRISON, OF SAME PLACE.

IMPROVEMENT IN VALVE ARRANGEMENTS FOR LIQUID-METERS.

Specification forming part of Letters Patent No. 119,364, dated September 26, 1871.

To all whom it may concern:

Be it known that I, JULIUS JONSON, of the city, county, and State of New York, have invented a new and useful Improvement in Valve Arrangements for Liquid-Meters; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, and in which—

Figure 1 is a view in isometrical perspective of the exterior of my improved valve arrangement; Fig. 2, a longitudinal section taken as indicated by the line *x x* in Fig. 3, which is a transverse section through the line *y y*. Fig. 4 is a horizontal section of the lower valve-box or case, and Fig. 5 an outside end view.

Similar letters of reference indicate corresponding parts throughout the several figures of the drawing.

This invention consists in a combination of a main valve or a series of valves in one, thrown by direct action of the liquid through the agency of a small valve having a positive motion, when the whole is constructed and arranged substantially as hereinafter described, and whereby a quick and most efficient action is obtained for the meter and a durable and easy action secured for the valves.

Referring to the accompanying drawing, A represents a chest or case divided by four partitions, *b*, into five separate compartments marked, respectively, *c c'*, *d d'*, and *e*. These compartments are connected with each other by means of openings in the partitions, that are faced off so as to form seats for valves *f*, which serve to open and close said openings. These valves are clamped between collars upon a rod, *g*, which connects two oppositely-arranged pistons, *h h'*, fitted to work in cylinders *i i'* at the ends of the chest. The two outside compartments *c c* are connected by a passage, *k*, with which the discharge-pipe *l* communicates. The case A is closed in part by a cover, *m*, which carries a small valve, *n*, that is oscillated to control ports or passages *o o'* and *p p'*, whereby it is made to act as a four-way cock. One, *o*, of these ports communicates with the central compartment *e* with which the inlet-pipe *q* connects. Another, *o'*, of said ports connects with an outlet-port, *r*, that communicates with the outlet-passage *k*, and the other two ports or passages *p p'* connect with the cylinders *i i'* at the back of the pistons. The ends of the case A are closed by covers *s s*. The compartments *d* gh the case. Instead of four valves, *f*, as shown, three will suffice by making the central one of the thickness of the two middle ones and of their intervening washer or collars. Said valves and the pistons *h h'* are so adjusted and fitted that, as the pistons are reciprocated, the valves open and close alternate openings in the partitions *b*. From this description and by reference to the drawing it will be seen that, by reversing the pressure of the liquid on the backs of the pistons *h h*, that is between them and the covers *s s*, which is effected by changing the position of the valve *n* relatively to the ports *o o'*, the valves *f* are shifted and made to open alternate openings in the partitions *b*, which previously were closed, and to close other of alternate partition openings that previously were open. This valve arrangement is equally applicable to piston and diaphragm-meters, but for convenience of description it may be assumed here to be applied to a piston water-meter. It is secured to or over the cylinder of the meter by means of bolts passing through lugs *u u*, and so that the compartments *d d'* connect, respectively, with opposite ends of the meter-cylinder. Supposing the position of the valves to be as represented in Fig. 2, water is admitted through the pipe *q* into the central compartment *e*, from thence by an opening in one of the partitions into the compartment *d*, which conducts it to one end of the meter-cylinder, all as indicated by arrows. The water also passes through the port *o* in the cover on the one side of the valve *n*, and through the passage *p*, and acting upon the back of the piston *h* shifts the valves *f* to the position shown in Fig. 2, causing said valves or certain of them to close the openings in the partitions *b b*. The water passing into the meter-cylinder through *d* operates upon the meter-piston and forces out the water on the opposite side of said piston previously received from the compartment *d*, and causes it to be expelled into said compartment, from thence through the opening in the one partition *b* into the compartment *c'*, and out by the passage *k* to the discharge-pipe *l*. Immediately, however, before the meter-piston completes its stroke it is caused to shift, by means of suitable mechanism, the small valve *n* to the position shown for it by dotted lines in Fig. 2. This reverses

the pressure on the pistons *h h'*, and causes the valves *f* to be shifted in a reverse direction, so as to change the action of the meter-piston, as required. The water used for shifting the main valve or valves *f* is delivered by the port *r* into the passage *k*, and from thence to the discharge-pipe *l*.

What is here claimed, and desired to be secured by Letters Patent, is—

The within-described valve arrangement for liquid-meters, composed of a series of valves, *f*, controlling a series of compartments, *c c'*, *d d'*, and *e*, and operated by pistons *h h'* by the direct action of the liquid, in combination with the valve *n*, having a positive motion, and ports or passages *o o'*, *p p'*, *r k*, and inlet and outlet-pipes *q l*, substantially as specified.

Witnesses: JULIUS JONSON.

JOHN W. COOMBS,

R. E. RABEAU. (39)