2 Sheets—Sheet 1.

G. B. MASSEY.

LIQUID METER.

No. 108,804. Patented Nov. 1, 1870.

Fig. 1

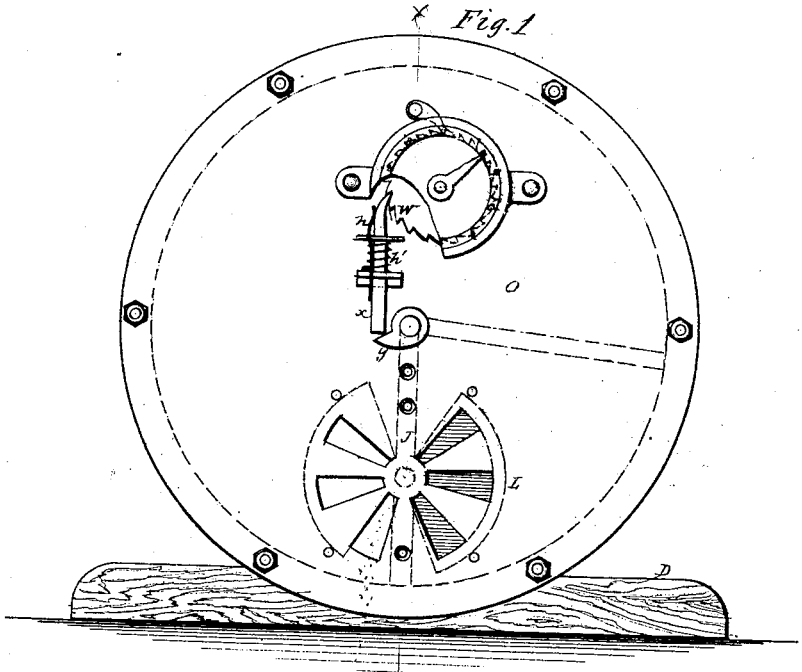
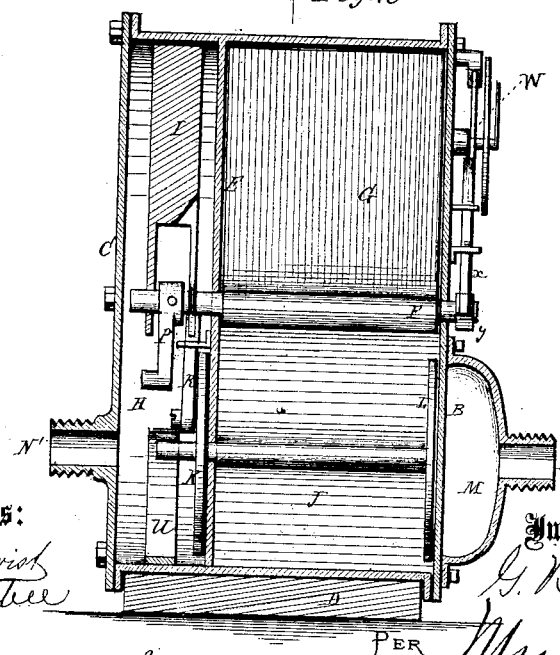


Fig. 2



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2 Sheets—Sheet 2.

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Fig. 3

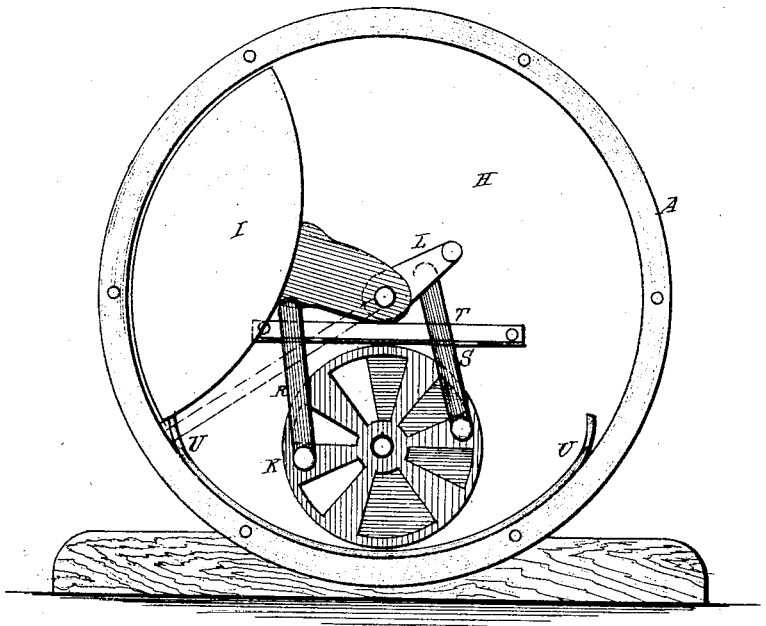
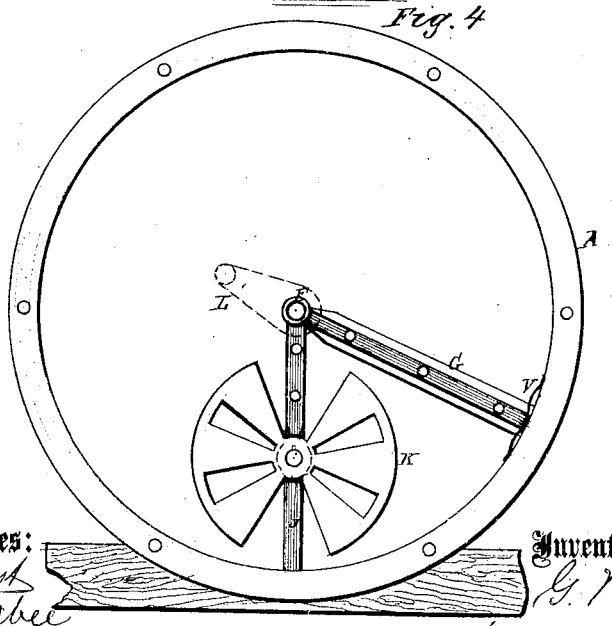


Fig. 4



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UNITED STATES PATENT OFFICE.

GIDEON B. MASSEY, OF NEW YORK, N. Y., ASSIGNOR TO MASSEY WATER AND LIQUID METER COMPANY, OF SAME PLACE.

IMPROVEMENT IN LIQUID-METERS.

Specification forming part of Letters Patent No. **108,804**, dated November 1, 1870.

To all whom it may concern:

Be it known that I, GIDEON B. MASSEY, of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Water-Meter; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification.

The object of this invention is to provide efficient means for measuring water, so that the quantity discharged from a service or other pipe may be accurately ascertained and registered; and it consists in operating, in a cylindrical chamber, by the pressure of the water, a radial arm or wing, and in opening and closing induction and discharge valve ports by means of a falling weight, which is raised by the arm or wing, and in the mode of actuating the register, as will be hereinafter more fully described.

In the accompanying drawing, Figure 1, Plate 1, represents a front view with the valve-port cover off. Fig. 2, Plate 1, is a vertical section of Fig. 1 on the line *x x*. Fig. 3, Plate 2, is a view of the meter from the back side with the side plate off, showing the movable weight and the manner in which it operates upon the valves. Fig. 4, Plate 2, is a view of the front with the front plate off, showing the radial wing, the vertical fixed radial plate, and the front valve-port.

Similar letters of reference indicate corresponding parts.

A is the casing, which is a longitudinal section of a hollow cylinder, with a covering-plate at each end. B is the front plate, and C is the back plate. The case A rests in a horizontal position on the bed-piece D. E is a vertical fixed partition, which fills the interior of the cylinder. F is the arbor of the radial and oscillating wing. One end of this arbor is supported by the partition E, the other end by the front covering-plate, B. G is the radial and oscillating wing attached to the arbor F.

By the partition E the casing A is divided into two compartments or chambers, O and H.

The principal compartment O is the water-chamber, in which the wing G is made to operate. The other compartment, H, is the water-induction chamber, where the weight I operates.

J is a vertical fixed partition-plate, which extends from the central arbor, F, to the casing, and forms an abutment, which, with the oscillating arm G, divides the water-chamber into two compartments, which are filled and discharged alternately as the valves are opened and closed. K and L represent the valves. A front view of K is seen in Fig. 4. Both are attached to a spindle, which passes through or is supported by the vertical plate J. One-half of the port-openings of each valve is on each side of the plate J, and each valve is so arranged that these ports are opened and closed alternately. K is the valve in the induction-chamber H, and L is the valve over the eduction-ports in the covering-plate B. M is the eduction-chamber, and to N the discharge-pipe is attached.

The water enters the chamber H through the pipe M′ under pressure, and passes through the valve K and the ports in the partition E, on one side of the partition-plate J, and forces the wing G upward and around the center of the casing, carrying with it a crank, P, which is fast to the arbor F, which, in its rotating motion, comes in contact with and lifts the weight I and carries it up past the center, where the weight, which turns loosely on the arbor F, is thus carried past the center of its gravity, it drops, and its descending force changes the position of the valves, opening a port on one side of the plate J and closing a port on the other side for each valve every time the weight thus falls.

R and S are bars, attached by pivots to the valve in the chamber H. These bars are supported and guided in recesses in the stationary bar T, which is fast to the partition E. U is a curved plate attached to the casing A, which acts as a stop to limit the descent of the weight, as seen in Fig. 3. As the weight drops it strikes the ends of one or the other of the bars R S, and forces it down sufficiently to change the valve before it strikes the stop U.

By thus opening and closing a valve-port in each compartment of the water-chamber every time the weight is caused to fall, the water is received and discharged into and from those

compartments alternately, and the operation is continued as long as the pressure and flow of the water is sufficient to operate the wing G.

V represents spring-packing on the outer end of the wing G.

It will be seen that by the action of the weight the valves are changed simultaneously.

At the front or eduction side the port of the full chamber is opened and the other port is closed, and at the other or induction side the operation is reversed.

Each discharge is registered by means of the ordinary multiplying mechanism usually employed for the purpose, which is actuated by the ratchet and pawl seen in Fig. 1.

W is the ratchet-wheel, and X is a spring-pawl, confined by clips on the front of the meter. Y is a cam on the projecting end of the central arbor, F. At every discharge of water or strike of the wing G the cam raises the pawl, which moves the ratchet one tooth. The pawl is held up to its work by the spring Z, and its back movement is produced by the recoil of the spring Z′.

The discharge-pipe is attached at N, provided with a stop-cock, so that the water acts and registers only when the cock is open and water is discharged.

These meters may be made of any size or capacity, so as to measure a greater or lesser quantity, thus adapting them to all situations where water-meters can be used.

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

1. The valves K and L, weight I, and wing G, combined, arranged, and operating substantially as and for the purposes described.

2. The water-chamber O, divided into two compartments by means of a fixed partition-plate, J, and an oscillating wing, G, by which the water is received and discharged alternately therefrom, substantially as described.

3. The cam Y, pawl X, and ratchet U, by means of which motion is imparted to the registering mechanism, all arranged substantially as described.

GIDEON B. MASSEY.

Witnesses:

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