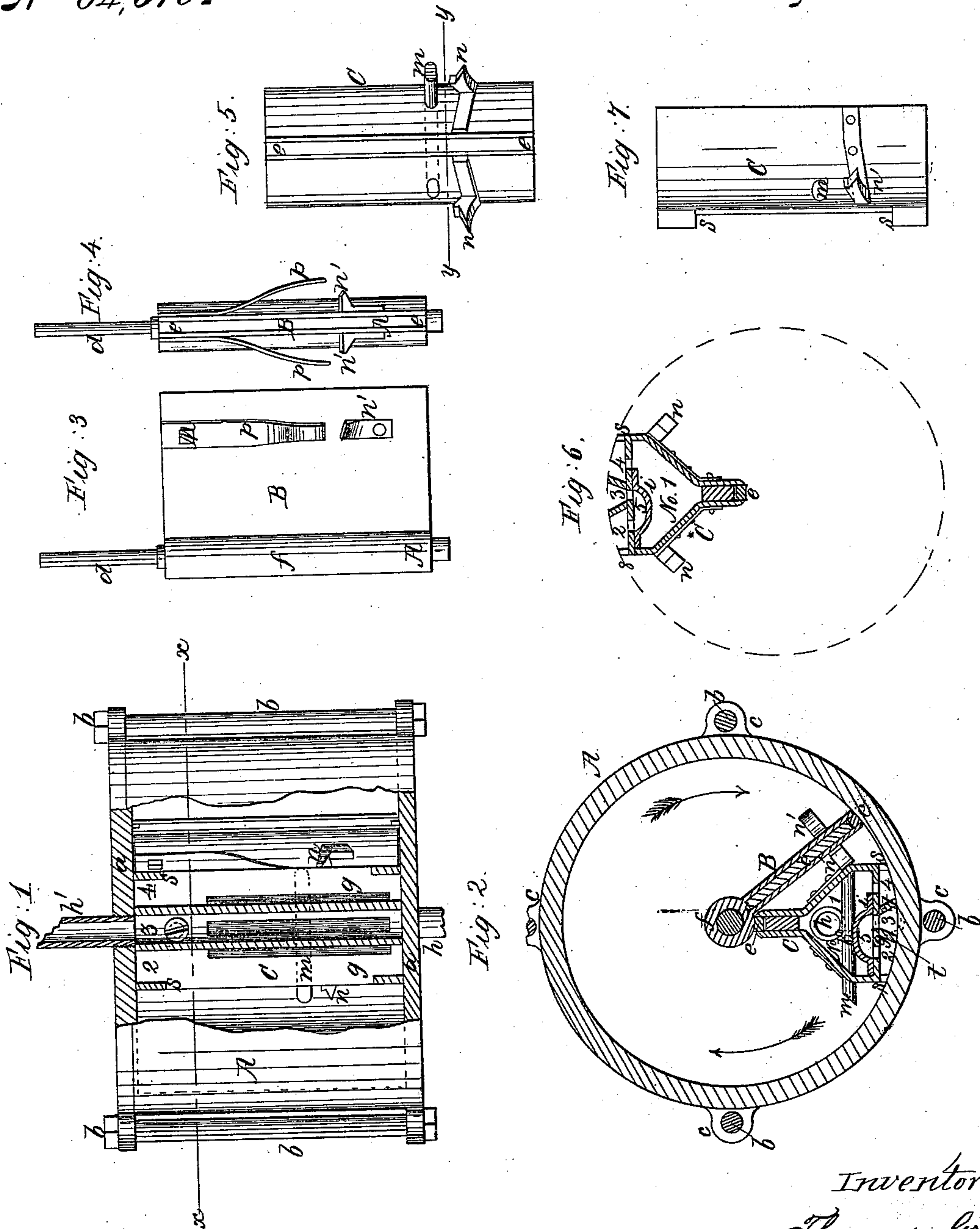


*T. Green,*

*Oscillating Meter,*

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*N<sup>o</sup> 64,310.*



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# United States Patent Office

THOMAS GREEN, OF BROOKLYN, NEW YORK.

Letters Patent No. 64,310, dated April 30, 1867

## IMPROVEMENT IN WATER-METERS.

The Schedule referred to in these Letters Patent and making part of the same.

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, THOMAS GREEN, of Brooklyn, in the county of Kings, State of New York, have invented a new and improved 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 a part of this specification, in which—

Figure 1 is a side view of a meter, with a part of the casing removed to show the internal parts.

Figure 2 is a transverse section taken in the plane of the line  $x x$ , fig. 1, and looking downward.

Figure 3 is a side view of the water-gate of flap B detached.

Figure 4 is an end view of the same.

Figure 5 is an external view of the valve apparatus, detached.

Figure 6 is a transverse section of the same, taken in the plane of the line  $y y$ , fig. 5, and looking downward.

Figure 7 is a side view of the valve-box C detached.

Similar letters of reference indicate like parts.

The object of this invention is to furnish a cheap, durable, and reliable meter to be attached to service pipes in cities, for registering accurately the passage and consumption of water. A device of this kind is much needed to regulate the consumption of water supplied by public water-works, especially in large cities, where the reckless waste and improper use of water often occasion great public inconvenience. By means of the exact and reliable meter herein described, the quantity of water consumed by any establishment will be registered, so that waste or excessive use may be known and prevented.

The water-meter consists of a cast-iron cylinder, within which is an arrangement of valves and water-passages so contrived that the water flowing through them shall act upon a registering apparatus similar to that of a gas-meter.

A is a metal cylinder, of any suitable material and dimensions, fitted at each end with water-tight heads  $a a$ , which are secured by binding-screw belts  $b b$ , running through flanges  $c c$  on each cover. A shaft or spindle,  $d$ , runs through the centre of the cylinder lengthwise, one end of which is stepped in one head of the cylinder, while the other end passes through the opposite head, to be connected with a registering apparatus. A metal water-gate or swinging flap, B, is made fast to the spindle  $d$ , around which it forms a hub,  $f$ . The gate B is rectangular, and fits the heads and inside periphery of the cylinder; it is made water-tight, with thin slips of India rubber or other elastic packing, under metal bars or plates  $e e$ , fitted in recesses in the edges of the gate, in the ordinary manner of fitting steam packing. Within the cylinder is a triangular-shaped valve-box, C, made of thin brass, or other metal plates, which lies lengthwise of the cylinder, and is fitted water-tight to the inside of the heads and side. One corner of the valve-box fits against the hub  $f$ , with a water-tight packing of rubber, under a plate,  $e$ , the same as the water-gate B. The valve-box is divided longitudinally by a cross-plate,  $g$ , and two lateral plates  $t t$ , forming one principal receiving-chamber No. 1, and three smaller chambers, Nos. 2, 3, 4. An induction pipe,  $h$ , leads into the chamber No. 1, and an eduction pipe,  $h'$ , from the chamber No. 3. In the partition plate are three longitudinal slots or water-passages opening into the chambers 2, 3, 4, over which is fitted a sliding-valve plate,  $i$ , within the chamber No. 1. The slide-valve  $i$  is so constructed as to form a chamber No. 5 behind the water-passages or slots in the plate  $g$ , enclosing them at both ends, but when moved to one side or the other of the valve-box C, it leaves one of the outside water-passages open. The slide-valve is attached by a pin,  $k$ , in the back of the plate to a slide-rod,  $m$ , which runs crosswise through the valve-box C, and works the slide-valve as it moves back and forth when the water operates. The rod  $m$  projects through the box C as far as is required to move the valve. On each side of the valve-box C, just below the slide-rod  $m$ , is placed a bevel projection,  $n$ , and on each side of the water-gate B is also placed a bevel projection,  $n'$ , which meets the projection  $n$ , when the water-gate is operated, and prevents the gate from coming close against the valve-box C. On each side of the water-gate B is a flat spring,  $p$ , the lower end of which is free, and stands out a little way from the point of the projection  $n'$ . The chambers 2 and 4 open into the cylinder through passages  $s s$ , in the sides of the valve-box C, between it and the periphery of the cylinder.

The operation of the meter is as follows: The water enters by the induction pipe  $h$ , into the chamber No. 1,



and passes through one or the other of the outside slots or water-passages in the partition *g*, through one or the other chambers Nos. 2 or 3, and out of that into the cylinder through one or the other side passages *s*. When the slide-valve *g* is so placed on one side, for example, that the water can pass from the chamber No. 1 into the chamber No. 2, it will then pass out through the passage *s*, on the same side into the cylinder, and by pressing up against the gate *B*, will force it around until the projections *n n'* come in contact, and the spring *p* bears against the slide-rod *m*, and pushes it through the opposite side of the valve-box *C*, thus moving the slide-valve *i* over to close the passage leading into the chamber 2, and opening the passage which leads into the chamber 4, as seen in fig. 2.

During this operation the water in front of the gate *B* is forced through the opposite side passage *s* into the chamber 4, and the passage or slot in the partition *g*, leading from that chamber being then closed by the slide-valve *i*, so that the water cannot enter into it, it has to pass into the chamber 5 within the slide-valve, and thence through the middle passage or slot into the middle chamber 3, and thence into the eduction pipe *h'*. But when the water-gate *B* has reached its limit, as described, and as shown in fig. 2, and the slide-rod *m* has moved the slide-valve *i* over to the opposite side of the box *C*, and closed the passage leading from chamber 1 into chamber 2, and opened the passage leading from chamber 1 into chamber 4, the action of the water-gate is then reversed and it swings around to the opposite side of the valve-box *C* again, by the pressure of the water behind from the induction pipe, while the water in front passes as before described out into the eduction pipe. The starting of the water-gate *B*, when the reverse movement takes place, is helped by the recoil of the spring *p*, which has been pressed upon the slide-rod *m* beyond its normal position.

Thus with every movement of the water-gate *B*, back and forth, a certain quantity of water passes out of the cylinder into the eduction pipe in the manner described, and as the spindle *d* moves correspondently with the gate *B*, the number of its reciprocating movements is recorded by a register-dial or apparatus to be connected with it to indicate the quantity of water that passes through the meter.

Having described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. I claim a water-meter, constructed substantially as and for the purposes herein specified.
2. I claim the water-gate *B*, the valve-box *C*, and the slide-rod *m*, in combination with the cylinder *A*, constructed and operating substantially in the manner and for the purposes herein described.

THOMAS GREEN.

Witnesses:

JAS. A. SERVICE,  
O. D. MUNN.