De W. C. TAYLOR.

Water-Meter.

No. 168,854. Patented Oct. 19, 1875.

Fig: 1

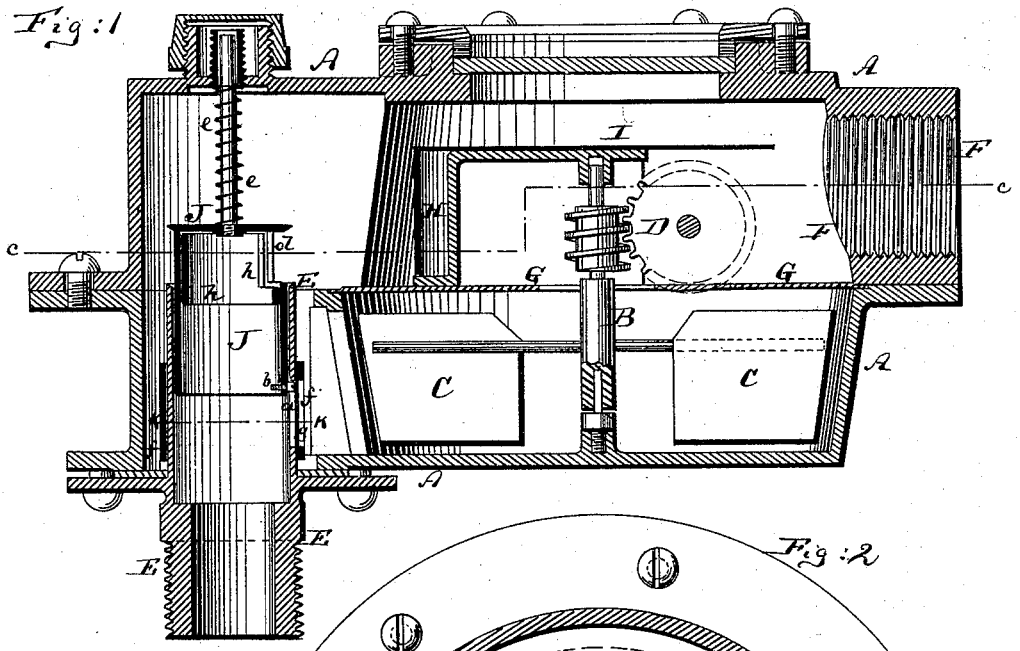

Fig: 2

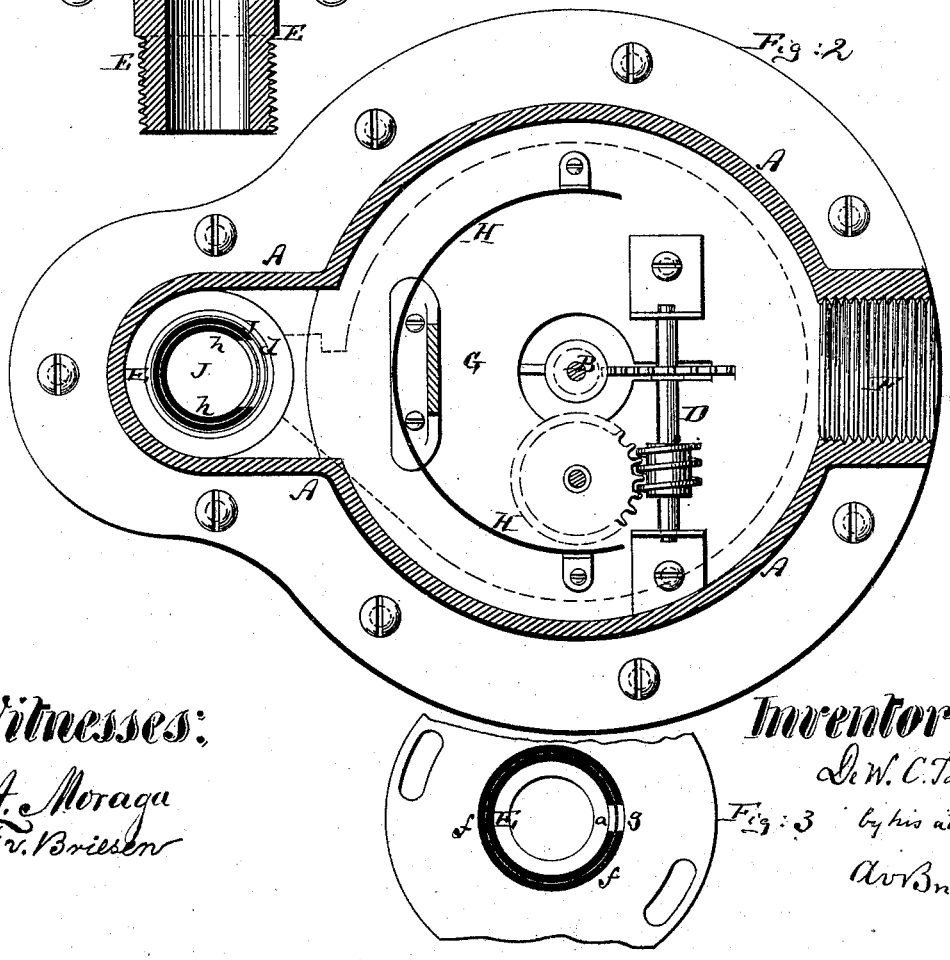

Fig: 3

Witnesses:

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DE WITT C. TAYLOR, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN WATER-METERS.

Specification forming part of Letters Patent No. **168,854**, dated October 19, 1875; application filed July 19, 1875.

To all whom it may concern:

Be it known that I, DE WITT C. TAYLOR, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Water-Meter, of which the following is a specification:

Figure 1 is a vertical central section of my improved water-meter; Fig. 2, a horizontal section of the same on the line *c c*, Fig. 1; and Fig. 3 is a detail horizontal section on the line *k k*, Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

The object of this invention is to produce a water meter which will, although the entire stream of water to be measured passes directly into or through it, ascertain the quantity from a portion of the stream only; and the invention consists, principally, in applying a valve within the inlet-pipe of the water, in such a manner that the said valve will regulate two openings, one of said openings leading into the lower part, and the other into the upper part, of the meter. The water passing through one of said openings will affect the measuring or registering mechanism within the meter, while the water passing through the other opening will not affect such mechanism. The said valve is operated—that is to say, more or less raised or moved—by the whole current of water, and the stronger the current the more will it open the two apertures above referred to.

The particular mechanism described and represented in the drawing has the upper opening formed in the body of the valve; but the parts may be so arranged that the upper opening can be formed in the inlet-pipe the same as the lower.

In the drawing, the letter A represents the shell or casing of the meter, within which is mounted a suitable shaft, B, carrying wings C C, which wings, when struck by the current of water entering the lower part of the meter, will cause the rotation of the shaft B, and the consequent motion of the registering mechanism D D, which mechanism is of suitable kind and construction, and not part of this invention.

I wish to have it understood that, even as to the wings C and shaft B, I do not confine myself to any particular style or construction of the same.

E is the inlet-pipe, extending vertically or in other direction along the shell A, and made with an opening, *a*, which leads into the lower part of said shell, so that a current of water passing through inlet-pipe and through the opening *a* will reach the wings C, and cause the same to rotate in the desired manner. F is the outlet-pipe from the meter, the same extending from the upper part of the shell A. G is a diaphragm or plate, which divides the upper part from the lower part of the body of the meter, and which has an opening in it, through which the water from the lower part of the meter can pass into the upper part, and thence into the outlet-pipe F. The registering mechanism D is mostly contained above the diaphragm G, and is protected toward the inlet-pipe E by a metallic curtain, H, and on top, if desired, also by a top plate, I. The upper part of the inlet-pipe communicates with the upper part of the meter above the diaphragm G, so that water will flow directly through the inlet-pipe into the upper chamber of the meter, although part of the current will also pass through the aperture *a*. All the water that enters the upper part of the meter passes to the outlet-pipe around the curtain H, and, if the plate I is applied, over the plate I, without affecting at all the registering mechanism that is contained within the meter.

From the preceding description it will be observed that it must be the purpose of this invention more particularly to so regulate the proportionate currents that enter the lower and upper part of the meter that they will invariably bear the same relation to each other and to the entire quantity of water that reaches the meter, so that that portion which enters the lower part of the meter through the opening *a* will invariably represent a given and definite proportion of the entire stream, the record which it produces being a correct record of measurement of the entire stream.

Now, this adjustment I obtain by means of a valve, J, which is introduced within the inlet-pipe E, being in the drawing represented

to be a cylindrical vessel open at the bottom and closed on top, and fitting properly into the pipe E. A pin, *b*, extends from this valve J into and through the opening *a* of the inlet-pipe, its object being to prevent the valve J from turning, and also to constitute a stop for its extremes of vertical motion. If desired, the pin *b* may extend into a suitable groove or guide, and not into and through the opening *a*.

A hole, *d*, is cut through the upper part of the valve J, and is larger than the hole *a*. A spring, *e*, bears on the valve, and has the tendency to lower it down so as to bring the entire length of the hole *d* within the inlet-pipe, thereby closing the top of the inlet-pipe and the hole *d*, and closing also the hole *a;* but when a current of water enters the inlet-pipe it will raise the valve J more or less, according to the size and head of such current, and will in that case open the apertures *a d* to a greater or less extent. Through these apertures the water will escape into the meter, the smaller current passing into the lower part of the meter and operating the registering mechanism, while the larger current passes into the upper part of the meter, and escapes into the outlet-pipe F without affecting the registering mechanism. In all cases the relative size of the lower and upper openings will always bear the same proportion to each other, and therefore the meter will record correctly, providing its registering mechanism is adjusted to show the entire quantity of water, of which a given portion entering the lower part of the meter is measured; but for many causes it may be necessary to specially adjust the sizes of the openings *a d*, and even also to vary the direction of the currents that pass through such openings into the meter; and for this purpose I have placed a ring, *f*, around the inlet-pipe E, where the same is provided with the aperture *a*, said ring containing an opening, *g*, of about the size and form of the aperture *a*, as indicated in Figs. 1 and 3. When this ring is turned more or less to one side or the other it will more or less close or open the aperture *a*, and the ring may also be raised, if desired, for the same purpose; and by the side adjustment of the ring *f* the direction of the current passing through it will also be varied. The aperture *g* through the ring may, if desired, be continued in a short tube that leads into the water. In the same manner can the size and direction of the current passing through the aperture *d* be regulated by a ring, *h*, that is fitted into the tubular valve J, said ring *h* containing, also, an aperture of about the size and shape of the opening *d*, being capable of vertical and of lateral adjustment, for the purpose of varying the size of the said opening, and the direction of the current through the same. Thus its power on the valve which is within the inlet-pipe is exerted by the whole stream of water, and yet said single valve causes said stream to be divided into two currents, of which one will affect the meter and the other not, though both currents pass through the body of the meter. As to this, however, the invention may be carried into effect with the same result if the upper current, instead of passing through the body of the meter, should be carried into the outlet-pipe F by a branch pipe of suitable kind.

I have represented in the drawing a cylindrical valve, J, which regulates the size of the lower opening *a* in the inlet-pipe, and also the size of the escape-opening which is formed in the top of the opening in the inlet-pipe.

I am aware that meters have already been made with valves that regulate the size of the current entering the meter; but in that case the valve never divided the stream into two currents—one to pass into the registering part of the meter, the other to pass off without affecting the registering part.

I am also aware that meters have been made or invented in which there are two valves closing two openings—one leading into the registering part of the meter, and the other by a branch pipe into the escape, the latter being that part of the current which has not to be measured; but in that case one of the valves only was affected by a part of the current, and served to regulate the opening which was produced by the other valve, whereas I have but one single valve, which is affected by the whole stream that enters the meter, and regulates the sizes of the two openings.

The guard or curtain H is of importance in case the upper part of the current is let into the body of the meter; otherwise it may be dispensed with.

It is evident that when a meter of different construction is used this invention may apply as well if the registering mechanism should be placed in the top or any other part of the meter, instead of being placed in the bottom, as shown in the drawing; but in such case the relative positions of the openings *a d* will necessarily also be varied.

I claim as my invention—

1. In a water-meter, the valve J, fitted into the inlet-pipe, to be affected by the entire stream of water, and to regulate the sizes of two openings, *a d*, one of said openings allowing water to enter the registering part of the meter, while through the other opening water passes through or past the meter without affecting the registering mechanism, substantially as specified.

2. The combination of the regulator *f* with the inlet-pipe E, which has an opening, *a*, into the meter, and with the valve J, substantially as herein shown and described.

3. The combination of the regulator *h* with

the valve J, having the opening *d*, and with the inlet-pipe E of a water-meter, substantially as and for the purpose specified.

4. In combination with a water-meter containing the diaphragm G, the curtain or guard H, substantially as herein shown and described.

5. The tubular vertically-movable valve J, constructed with the opening *d*, and combined with the inlet-pipe E, which has the opening *a*, all substantially as specified.

The foregoing description of my invention signed by me this 16th day of July, 1875.

DE WITT C. TAYLOR.

Witnesses:
E. C. WEBB,
F. V. BRIESEN.