

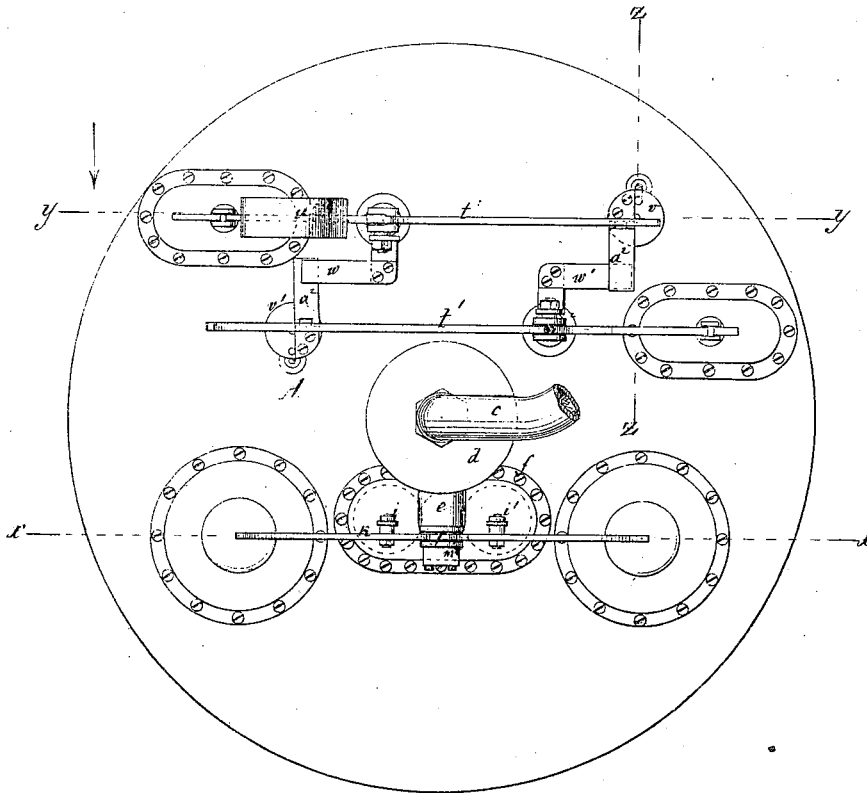
A. Werkmeister,

Fluid Meter,

No. 10,564.

Patented Nov. 22, 1870.

Fig. 1.



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E. F. Rastenhuber
C. W. Ahlers

Inventor:
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By Van Santvoord Maull
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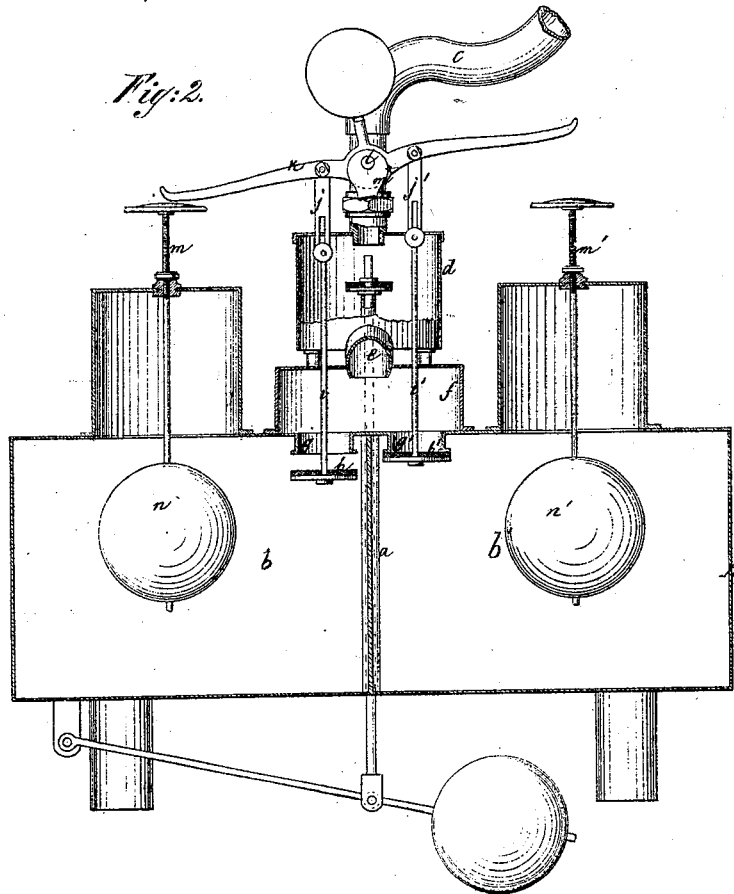
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Fig. 2.



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3. Sheet, Sheet 3.

Fluid Meter.

No. 109564.

Patented Nov. 22, 1870.

Fig. 3.

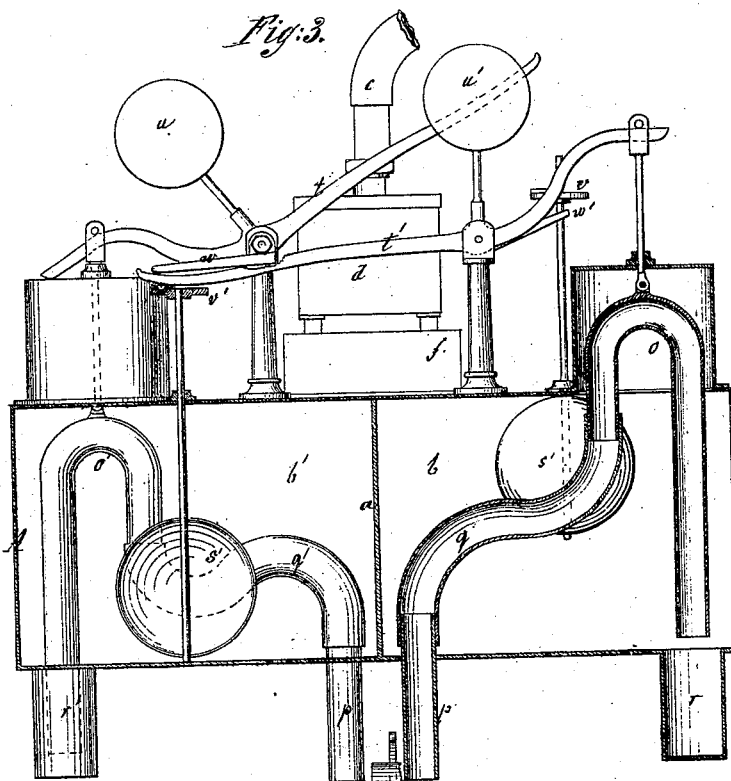
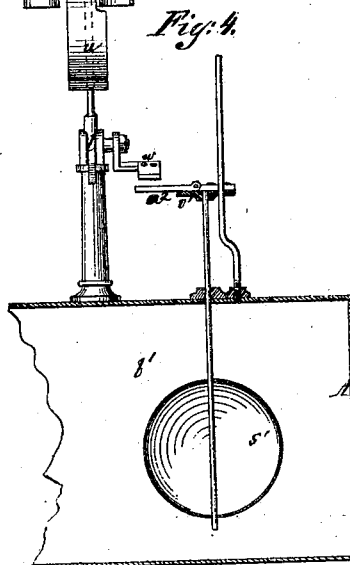


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALBERT WERCKMEISTER, OF BERLIN, PRUSSIA.

IMPROVEMENT IN LIQUID-METERS.

Specification forming part of Letters Patent No. 109,564, dated November 22, 1870.

To all whom it may concern:

Be it known that I, ALBERT WERCKMEISTER, of Berlin, in the Kingdom of Prussia, have invented a new and Improved Fluid-Meter; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which drawings—

Figure 1 represents a plan or top view of this invention. Fig. 2 is a vertical section of the same taken in the plane indicated by the line *x x*, Fig. 1. Fig. 3 is a similar section of the same, the line *y y*, Fig. 1, indicating the plane of section. Fig. 4 is a similar section of the same taken in the plane indicated by the line *z z*, Fig. 1.

Similar letters indicate corresponding parts in all the figures.

This invention relates to an apparatus composed of two measuring-chambers which are supplied with liquid through a common feed-pipe, the flow and discharges of liquid to each chamber being regulated automatically by means of floats. The floats which regulate the supply of liquid to each chamber act upon a lever from which are suspended two valves which alternately close the communication between the feed-pipe and the chambers. The floats which regulate the discharge act on siphons having flexible connections between their legs, each siphon being composed of a stationary and of a movable leg, so that, if the movable leg is depressed, so as to submerge the bight of the siphon below the surface of the liquid, the siphon fills and the liquid discharges, and when the mouth of the movable leg is raised above the surface of the liquid the siphon empties and the discharge of the liquid stops.

In the drawings, the letter A designates a vessel which is divided by a partition; *a*, in two measuring-chambers, *b b'*. These measuring-chambers are supplied with liquid through a feed-pipe, *c*, which rises from the top of a closed chamber, *d*, which communicates by means of a pipe, *e*, with a closed chamber, *f*, from the bottom of which extend two nozzles, *g g'*, one into each of the measuring-chambers *b b'*. The bottom edges of these nozzles form the seats for the valves *h h'*, which are secured

to rods *i i'*. (Best seen in Fig. 2 of the drawings.) These rods are suspended from links *j j'*, which are connected to an oscillating-lever, *k*, having its fulcrum on a pivot, *l*, secured in a standard, *m**, which rises from the top of the vessel A. The position of the lever *k* is controlled by two floats, *n n'*, which are suspended from rods *m m'*, being situated one in each of the measuring-chambers *b b'*, and when the position of said lever has been changed by the action of the floats it is retained by a balance-weight, which also serves to trip it rapidly, whenever the floats raise one of its ends to the proper height. As the chamber *b'* is being filled the float *n'* rises and the lever *k* is thrown in the position shown in Fig. 2, the nozzle *g'* is closed, and the nozzle *g* opened, and the liquid begins to flow in the chamber *b*, and while this chamber is being filled the chamber *b'* is emptied automatically, as follows: Each of the chambers *b* and *b'* contains a siphon, *o* and *o'*, and these siphons are so constructed that their receiving ends are connected to the discharging ends *p* and *p'* by means of flexible pipes *q* and *q'*, so that the receiving ends can be raised or depressed. If the chamber *b* is full and the siphon *o* is depressed, so as to submerge its bight below the surface of the liquid, this siphon fills and the liquid discharges; and in order to effect a complete discharge, each chamber is provided with a well, *r* and *r'*, so that the movable legs of the siphons can be depressed below the bottom of their chambers.

The position of the siphons *o o'* is governed by the floats *s s'* and by levers *t t'*, which are provided with balance-weights *u u'*, so that as soon as one of the levers is raised by the action of the appropriate float it will be suddenly tripped by its balance-weight. By comparing Figs. 2 and 3 of the drawings, it will be noticed that the chamber *b* is receiving liquid while the chamber *b'* discharges. By the time this last-named chamber has fully discharged, the chamber *b* begins to fill, the float *n'*, Fig. 2, is down, and the float *n* rises, and thereby the supply to the chamber *b* is stopped and the supply to the chamber *b'* opened. As soon as the liquid begins to rise in the chamber *b'* the float *s'* (which, when the chamber is empty, is clear down on the bottom of the chamber) begins to rise, the equilibrium of the balance-weight *u'* is disturbed,

the lever t' is tripped, the siphon o is depressed, and the chamber b discharges; and as the float s' rises, a button, v' , attached to its rod, strikes a tappet-arm w , secured to the lever t , and the siphon o' is gradually raised, so that its bight will be above the level of the liquid when the chamber b' is full, and said chamber will not commence to discharge until the lever k , Fig. 2, has changed its position, and the supply of liquid to said chamber has been stopped.

In order to produce a correct action of the apparatus the floats nn' , which control the position of the supply-valve lever k , are not permitted to sink clear down to the bottoms of their chambers, so that the liquid will act on the floats $n n'$, and, furthermore, said floats $n n'$ are adjustable on their rods, so that they can be made to trip the supply-valve lever k at the proper moment.

The buttons $v v'$, which act on the tappet-arm $w w'$ of the discharge-controlling levers $t t'$, are constructed with hinged arms a^2 , (see Fig. 4,) and said buttons are allowed to turn, so that when one of the floats, s or s' , rises its button will strike the tappet w' or w and trip the lever, and then turning slightly round slip past the same, and rise above it to the position occupied by the button v in Fig. 3, so that the float s will not interfere with the depression of the siphon o ; and when the float sinks down the arm a^2 turns up and allows its button to pass down below the tappet, ready to trip the lever at its subsequent rising.

In order to produce a correct operation of this apparatus the area of the cross-section of the discharge siphons and openings ought to be considerably larger than that of the supply-openings, so that each measuring-chamber will be empty before the liquid in the other chamber rises high enough to effect the change in the position of the supply-valve lever.

It must be remarked that the siphons could be replaced by simple valves, to be opened

and closed by the action of the floats $s s'$ and levers $t t'$.

The measuring-chambers $b b'$ will be made of such capacity that they are capable of receiving a certain fixed quantity of liquid, and the lever k is to be connected to a registering-apparatus, so as to keep a record of the quantity of liquid having passed through the measuring-chambers. The whole apparatus will be inclosed in a suitable jacket, so that its working parts cannot be meddled with, and the liquid discharging from the measuring-chambers can be received in a vessel provided with a float, which is secured to a lever, from which extends a rod through a tubular space in the partition a . To the upper end of this rod is secured a valve, which, when the float rises to a certain height, closes up against a seat formed at the inner end of the feed-pipe, and thereby the supply of liquid is cut off automatically.

What I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of two distinct measuring-chambers, each containing two floats, one to control the supply of fluid and the other to control the discharge of fluid, substantially as described.

2. The combination of a movable siphon and float with the measuring-apparatus, substantially as described, to control the discharge of the liquid from the measuring-chambers.

3. The wells $r r'$, in combination with the measuring-chambers $b b'$ and movable siphons $o o'$, substantially as set forth.

4. The hinged arms a^2 on the rods of the floats $s s'$, in combination with the tripping-levers $t t'$ and movable siphons $o o'$, substantially as described.

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Witnesses:

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