Sheet 1

Fr. Wagner & L. Sexauer's

2 Sheets Sheet 1 Improved Fluid Meter.

75225

Fig 1

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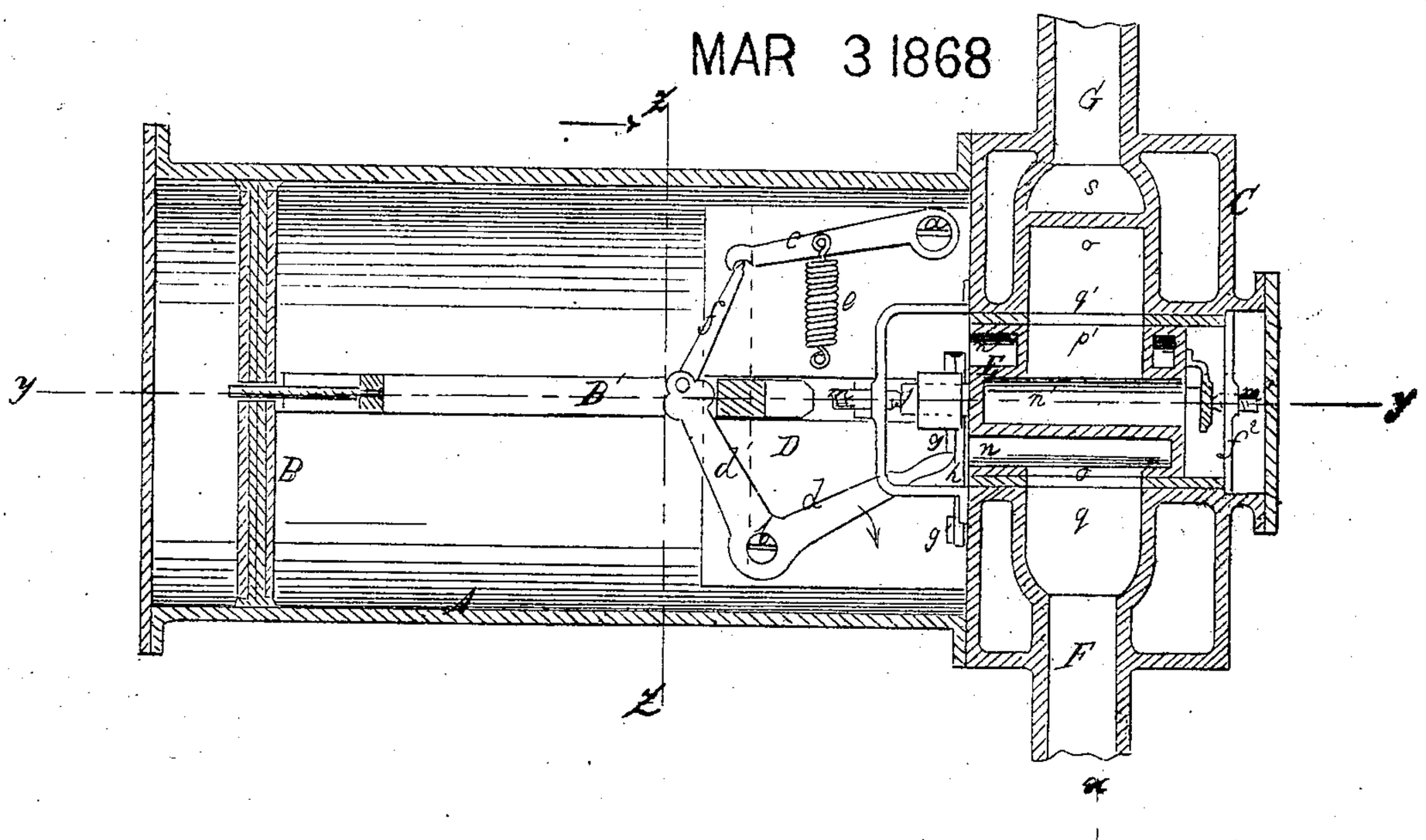
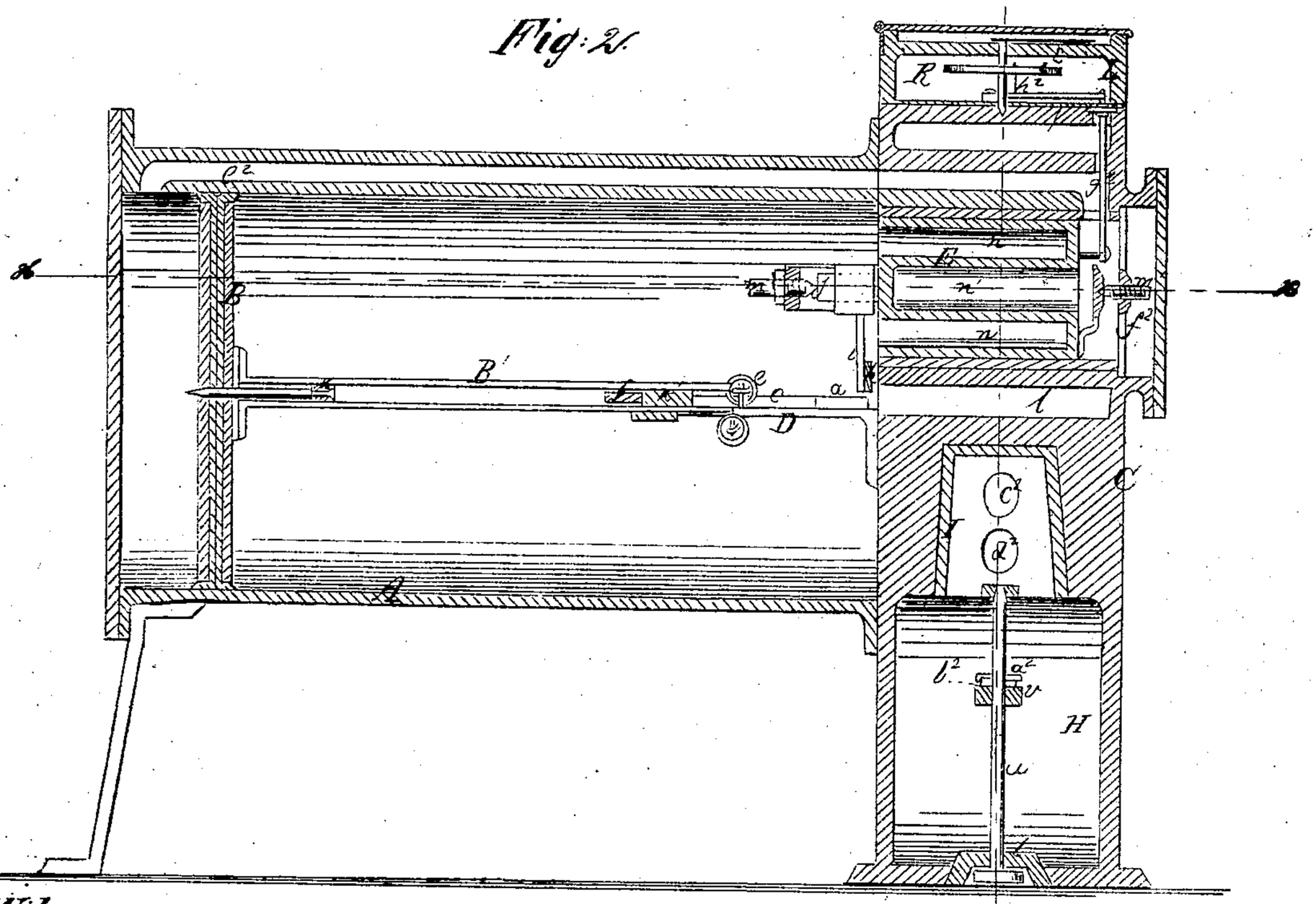


Fig: 2.



Witnesses:

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Sheet 2.

Fr. Wagner's & L. Sexauer's Impd Fluid Meter.

Fig: 3.

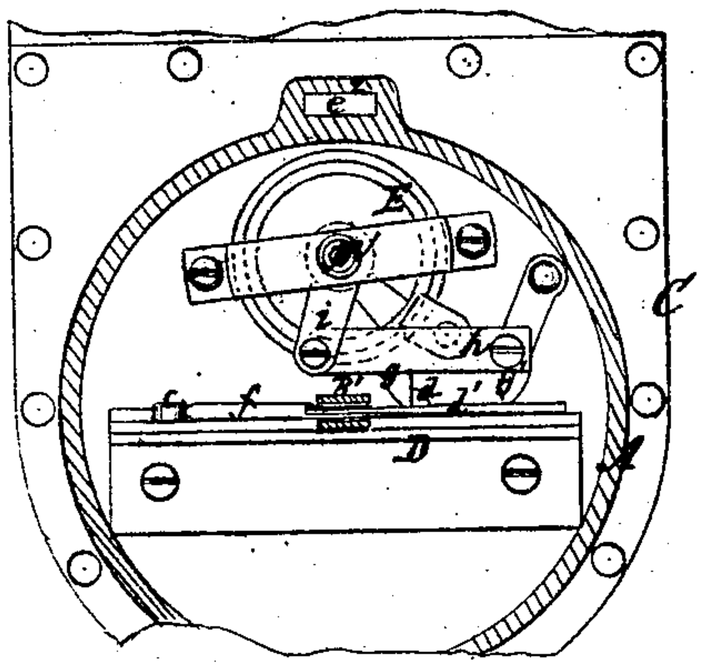
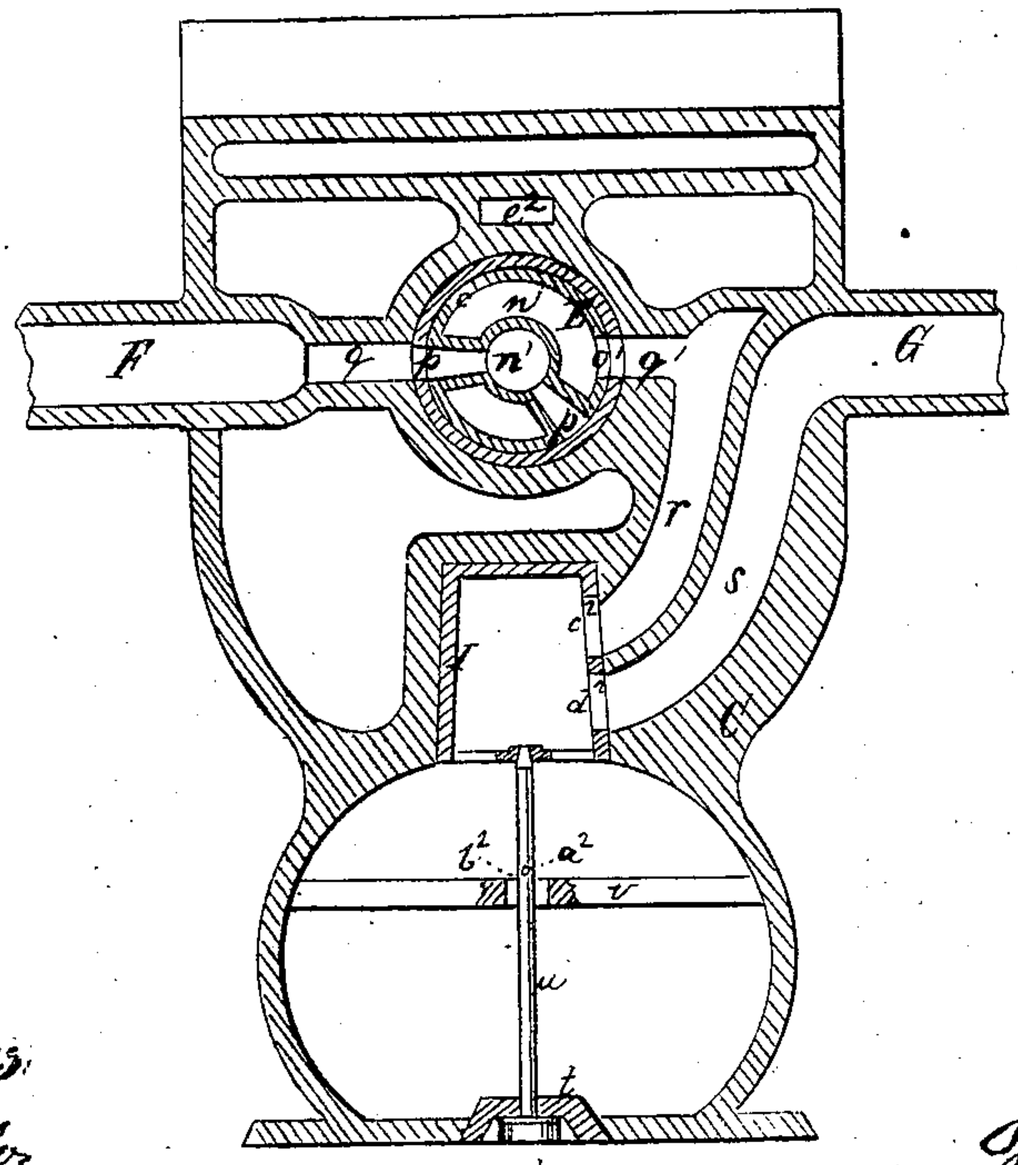


Fig: 4.



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FRANZ WAGNER AND LOUIS SEXAUER, OF NEW YORK, N. Y.

Letters Patent No. 75,225, *dated March* 3, 1868.

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 we, FRANZ WAGNER and LOUIS SEXAUER, of New York, county and State of New York, have invented a new and improved Fluid-Meter; and we do hereby declare that the following is 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 drawing, forming part of this specification, in which drawing—

Figure 1 represents a horizontal section of this invention, the line *x x*, fig. 2, indicating the plane of section.

Figure 2 is a longitudinal central section of the same, taken in the plane indicated by the line *y y*, fig. 1.

Figure 3 is a transverse section of the same, the line *z z*, fig. 1, indicating the plane of section, and looking in the direction of the arrow opposite to that line.

Figure 4 is a similar section, taken in the plane indicated by the line *x' x'*, fig. 2.

Similar letters indicate corresponding parts.

This invention relates to a fluid-meter, the action of which depends upon a piston, with a piston-rod, which is provided with two stops, which, as the piston assumes a reciprocating motion, by the fluid acting on it, alternately come in contact with spring toggle-arms, by which the valve is changed. This valve consists of a four-way cock, which has its seat in the end of the cylinder, and which connects by suitable levers with the registering-apparatus. The fluid, on flowing to the meter, passes through a mud-cistern, where sand and other impurities are deposited, and the clean fluid only comes in contact with the working parts of the meter.

A represents a cylinder, into which is fitted a piston, B. Said cylinder is bolted to one side of a standard, C, from which projects a bracket, D, that forms the bearings for the fulcrum-pins, *a b*, of two levers, *c d d'*. The lever *c* is subjected to the action of a spring, *e*, and its loose end forms a cavity to receive the end of an arm, *f*. This arm is pivoted to the end of one of the arms, *d'*, of the elbow-lever *d d'*, catches between two noses, *g g'*, which project from the edge of a rod, *h*. This rod is pivoted to the end of a radius-arm, *i*, which is mounted on the axle, *j*, of a revolving valve, E. The joint of the toggle-arms *f d'* is situated between two stops, *k k'*, which are secured to the piston-rod B' in such a position that when the piston approaches the outer end of its stroke, said toggle-arms are thrown in the position shown in fig. 1, and when the piston approaches the inner end of its stroke, the toggle-arms are forced back, and the elbow-lever *d d'* turns in the direction of the arrow marked near it in fig. 1. As soon as the fulcrum of the toggle-arms has passed the line of equilibrium, (which is shown in dotted lines in fig. 1,) the motion of the lever *d d'* is accelerated by the action of the spring *e*, and as the end of the arm *d* strikes the nose, *g'*, of the rod *h*, the valve E is turned almost instantaneously. If the piston returns towards the outer end of its stroke, the change of the valve takes place in the same manner, by the action of the arm *d* on the nose *g*.

In the drawing, the piston-rod is shown slotted, and the stops *k k'* are situated in its slot, but it is obvious that said stops might be applied to the piston-rod in any other suitable manner. If desired, either or both stops may be made adjustable.

While the piston moves towards the inner end of its stroke, the piston-rod passes into a cavity, *l*, in the standard C, (see fig. 2.)

The valve E is made slightly tapering, and it is ground into its seat in the standard C. It is supported by two centre-points, *m m'*, which are adjustable by screw-threads, so that, by their action, the valve can be adjusted in its seat to the required position. Said valve is constructed with two chambers, *n n'*, each of which has two ports, *o o'*, *p p'*, best seen in fig. 4, and from the seat extend two channels, *g g'*, one to the discharge-pipe F, and the other to a channel, *r*, which communicates with the supply-pipe G. This communication, however, is not direct, but the fluid, as it passes from the supply-pipe G into the meter, enters, through a channel, *s*, into the mud-cistern H, which is in the lower part of the standard C, and thence it rises, through the channels *r* and *q*, into either of the chambers of the valve.

In the bottom of the mud-cistern is fitted a valve, *t*, which is held up to its seat by a bolt, *u*. This bolt passes up through a slot in the cross-bar *v*, and its upper end is square and catches in a corresponding cavity in a plug, I, which is ground into a seat in the interior of the standard C. Through the bolt *u* passes a pin, a^2, which bears on inclined planes b^2, secured to the cross-bar *v*, and, as the bolt is turned in the proper direction, said pin slides up on the inclined planes, and forces the valve *t* and the plug I up into their seats. In this

position, the apertures c^2 d^2 in the plug correspond with the channels r s, and the fluid passes freely through the meter, and all the heavy impurities, such as sand, contained in the fluid, are precipitated, and retained in the mud-cistern.

When it is desired to clean out said mud-cistern, the bolt u is turned back, and, in turning it, the plug I is also turned, and the channels r s are closed. When the bolt has been turned to such a position that the pin a^2 can pass through the slot in the cross-bar v, the valve t can be removed, and the mud-cistern can be cleaned, the flow of the fluid through the meter being stopped by the plug I.

When the valve occupies the position shown in fig. 4, the fluid passes through the channel e^2 and chamber f^2, (see fig. 2,) into the chamber n', whence it escapes through the port p, channel q, and discharge-pipe F.

When the piston reaches the outer end of its stroke, the valve is changed, the port p' being brought opposite the channel q', (see fig. 1.). In this position, the fluid passes from the supply-pipe G through the channels s r q' into the chamber n', thence through the chamber f^2 and channel e^2, fig. 2, to the outer end of the cylinder, and the piston begins to recede towards the inner end of the cylinder, the fluid behind the piston being driven out through the chamber n, port o, and channel q, to the discharge-pipe F.

By these means a fluid-meter is obtained which operates with very little pressure, and independent of the head, under which the fluid enters to or discharges from the meter. If the piston has four inches diameter, and the fluid acts on the same with a pressure of one pound, or even less, to the square inch, all the friction created by the working parts is easily overcome, and no fluid is permitted to pass through the meter unless it is measured.

Our meter can be placed in the ground floor of a building, and it will indicate the water drawn from any of the faucets in the house, whether on the first, second, or any other floor.

The registering-apparatus R is situated in a chamber, L, on the top of the standard C, and its wheels are set in motion by a lever, g^2, fig. 2, which connects with the valve E, and which acts on a pawl, h^2, which engages with the ratchet-wheel i^2. For every oscillation of the valve the ratchet-wheel is propelled one tooth. This connection, however, may be changed in many different ways.

The lever g^2, as the same enters the chamber L, is packed so that no water will pass to the registering-apparatus.

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

1. The oscillating-valve E, with chambers n n and ports o o' p p', in combination with the reciprocating piston B, stops k k, toggle-arms d' f, spring-lever c, and elbow-lever d d', all constructed and operating substantially as and for the purpose described.

2. The combination of the valve t, bolt u, and plug I, in the mud-cistern H, substantially as and for the purpose set forth.

3. The channels s r, in combination with the supply-pipe G, mud-cistern H, and cylinder A, substantially as and for the purpose described.

This specification signed by us, this 15th day of January, 1868.

FRANZ WAGNER,
LOUIS SEXAUER.

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.