

C. A. CHANDLER.
Fluid-Meter.

No. 226,716.

Patented April 20, 1880.

Fig:1

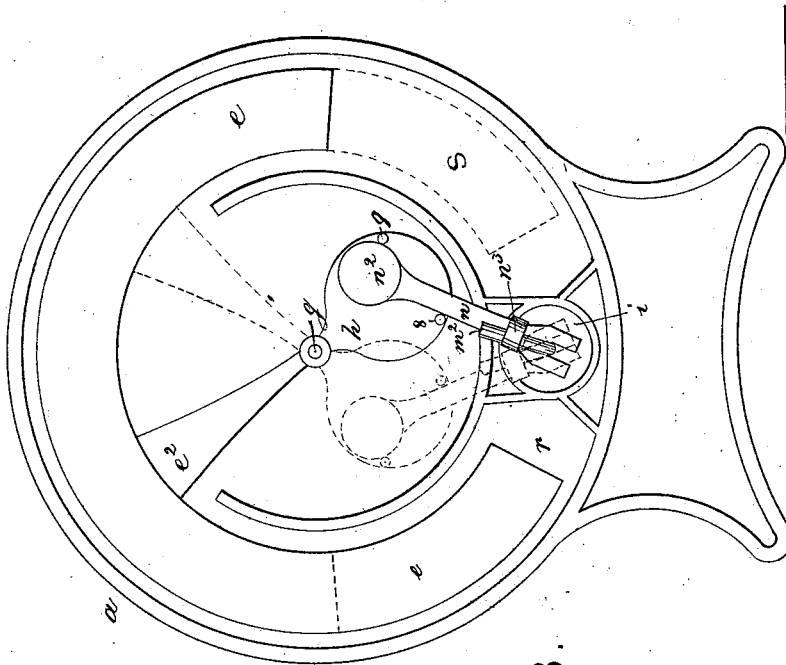
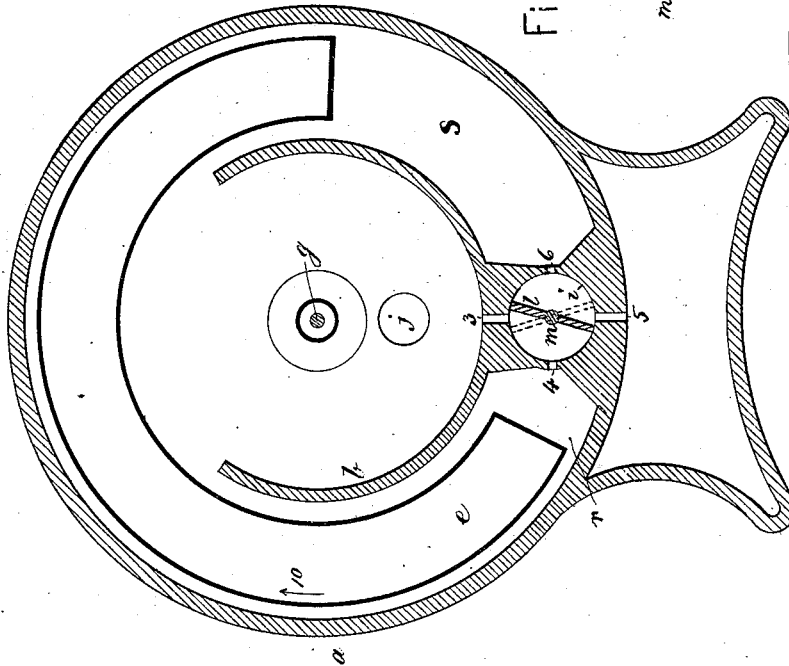


Fig:3.



Fig:2



Witnesses.
L. F. Connor
N. C. Whitney

Inventor.
Clarence A. Chandler
by Crosby Gregory Atty.

UNITED STATES PATENT OFFICE.

CLARENCE A. CHANDLER, OF EAST BRIDGEWATER, ASSIGNOR OF FIVE-SIXTHS OF HIS RIGHT TO JOHN D. GOULD, OF BOSTON, MASS.

FLUID-METER.

SPECIFICATION forming part of Letters Patent No. 226,716, dated April 20, 1880.

Application filed February 20, 1880.

To all whom it may concern:

Be it known that I, CLARENCE A. CHANDLER, of East Bridgewater, county of Plymouth, State of Massachusetts, have invented an Improvement in Fluid-Meters, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to fluid-meters of that class in which the operation of the valve or valves is controlled by a float; and the invention consists, essentially, in the combination, in a meter, of a double-acting counterbalanced float, it operating the movable part or valve of a four-way-valve contrivance, as hereinafter described.

Figure 1 represents, in front elevation, a fluid-meter containing my invention, one face of the case being removed to show the interior parts, the full and dotted lines showing the float in two different positions. Fig. 2 is a vertical section taken back of the float-support, and Fig. 3 a detail of the connection between the valve stem or arm and the tripper.

The case *a* of the meter, preferably of cast metal, is divided by partition *b* into two chambers, *r* *s*, in which moves the float *e*, made preferably as a shell and of sheet metal, such as copper. This float has attached to it a leg or support, *e*², which, at a point intermediate of its length, is mounted upon the axle *g*. The lower end of the support *e*² is enlarged or weighted, as at *h*, to counterbalance the weight of the float, thus permitting it to be easily moved by the fluid as it, rising in the chamber, *r* or *s*, then being filled, acts upon the end of the said float.

That portion of the meter-case between the chambers *r* *s*, the interior wall, *i*, of which forms what I shall hereinafter call the "valve-seat," is provided with four ports, 3, 4, 5, and 6. The inlet for the meter-case is designated at *j*. The port 3, at the lower side of the partition *b*, permits the fluid to enter the chamber-like space within the valve-seat. The ports 4 and 6 communicate, respectively, with the chambers *r* and *s*, and the port 5 is the outlet for the fluid. In connection with this valve-seat I employ a valve, *l*, made as a plate, mounted on an axle, *m*, one arm or stem of which, as at *m*², is extended upward, so as to be acted upon by situa-

ble projections on the valve-tripper *n*, (herein shown as a loose arm sustained by the said axle and provided with a weight, *n*²;) the said tripper being free to move with relation to the said axle when acted upon by projections on the support or counter-balance *e*², to thereby permit the said tripper to be moved through the instrumentality of the float in advance of the movement of the valve and its axle or stem.

The tripper has on it a valve-moving projection, *n*², herein made as a loop, (see Fig. 3,) it being so formed as to afford a certain amount of lost motion between it and the said stem *m*², to enable the tripper to be lifted by the float into substantially vertical position, after which any further movement of the tripper will place it under the control of its weight *n*², which will move it forward suddenly, with more or less force, according to the specific gravity or size of the weight, causing the loop or valve-moving projection to strike the arm or stem *m*² of the valve as with a blow, and turn the axle *m* and valve *l* quickly, such blow starting the valve promptly and carrying it to its next position.

The counterbalanced part *h* is provided with two pins, 8 9, to act upon the tripper at the proper times and lift it into vertical position and a little past its center of gravity. When the parts are as in Fig. 2 the fluid will pass through ports 3 4 into chamber *r*, act upon the end of the counterbalanced float in the said chamber, turn it in the direction of the arm 10, and cause the opposite end of the float, then resting on and in contact with the fluid in chamber *s*, to force the fluid from this latter chamber out through the ports 6 and 5.

In the drawings forming part of this specification the space between the float and the case *a* and partition *b* is exaggerated to avoid confusion of lines; but in practice it will be understood that the float will never be made as a fit to the space between the parts *a* *b*, but will be of such size as will permit the float to move therein with the smallest practicable amount of air-space, so as to enable an air communication to be kept up between the two chambers *r* and *s*. This air-space is made available in the discharge of the fluid from the meter, as the fluid in the chamber to be exhausted is,

by the air communication kept up between the said chambers, subjected to the same pressure as that in the receiving-chamber.

5 Instead of the loop n^3 , it is obvious I might use two projections, or one projection in a slot in the tripper n , and so, also, the tripper might be placed upon an independent axis.

10 The valve l is of a thickness to cover the port-holes when opposite them, and the valve l and valve-seat form what might be called a "four-way valve."

Any usual registering apparatus may be suitably attached and derive its motion from that of the valve-arm or of the float.

15 I claim—

20 1. In a fluid-meter, the combination, with the case and valve to control the passage of the fluid through it, of the double-acting counter-balanced pivoted float, substantially as described.

2. In a fluid-meter, the counterbalanced float and valve to control the flow of water through the meter, combined with the tripper actuated by the float to act upon and turn the valve, substantially as described. 25

3. In a fluid-meter provided with two chambers, r and s , the pivoted double-acting float, placed in the said chambers and proportioned in size with relation to the said chambers, as herein described, to always insure an air communication between the said chambers in all positions of the float, substantially as described. 30

In testimony whereof I have signed my name to this specification in the presence of two 35 subscribing witnesses.

CLARENCE A. CHANDLER.

Witnesses:

G. W. GREGORY,
L. F. CONNOR.