H. Howson,

Gas Meter,

No. 24,080. Patented May 17, 1859.

Fig: 1

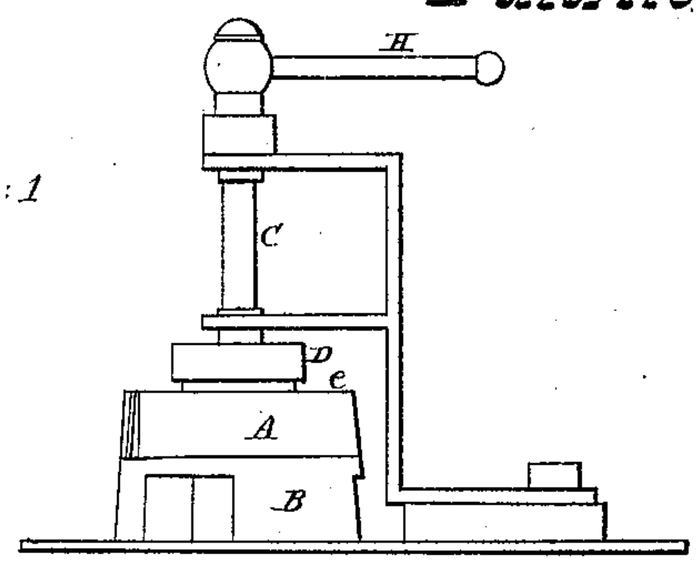


Fig: 2.

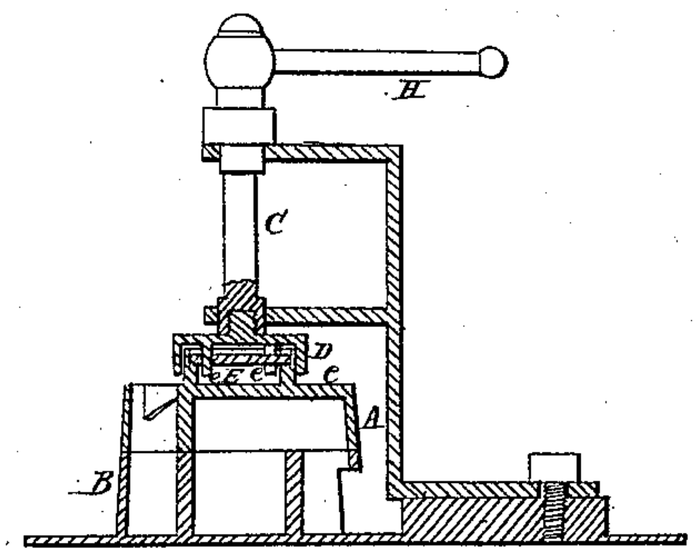


Fig: 3.

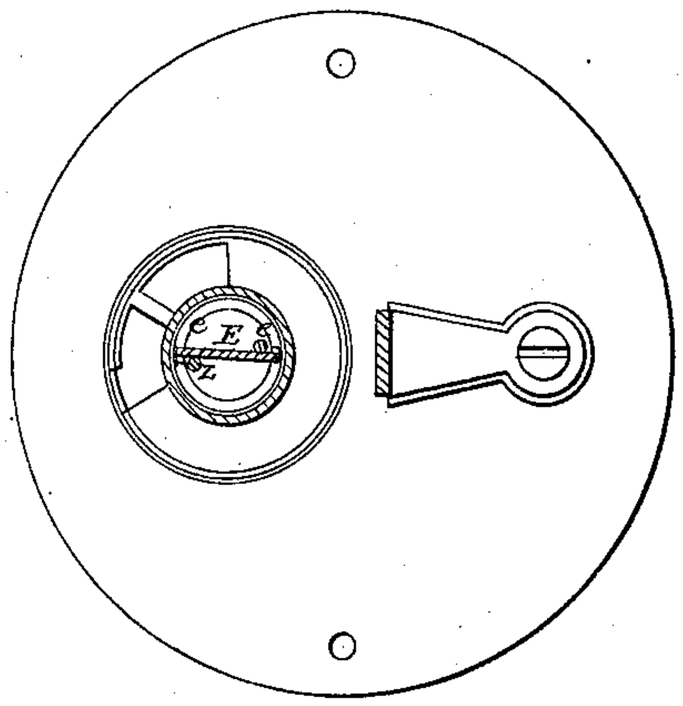
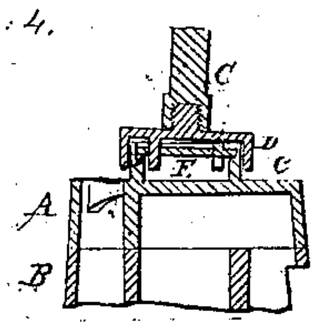


Fig: 4.



Witnesses:
Henry Odwine
Horace See

Inventor:
Henry Howson

UNITED STATES PATENT OFFICE.

HENRY HOWSON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO ANDREW AND JOHN W. HARRIS, OF SAME PLACE.

IMPROVEMENT IN VALVES FOR DRY GAS-METERS.

Specification forming part of Letters Patent No. **24,080,** dated May 17, 1859.

To all whom it may concern:

Be it known that I, HENRY HOWSON, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Valves for Dry Gas-Meters; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to an improved device for operating the rotating valve of the class of dry gas-meters in which the gas passes through and is measured by chambers with moving diaphragms; and my improvement consists in a self-adjusting pin fitted loosely on the valve and intervening between the latter and the driver, as fully described hereinafter, so that the said pin may adjust itself to any inequality in the movement of the driver, thereby obviating the tendency, which such unequal movements have, to raise the valve from its seat and allow the gas to escape. The driver is constructed in the peculiar manner described hereinafter, so as to serve the double purpose of preventing the tar and refuse from coming in contact with the driving-pins and to maintain the valve in its proper position as regards the seat.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is an exterior elevation of the valve, valve-seat, and driving-shaft of a dry gas-meter with my improvements; Fig. 2, a sectional elevation; Fig. 3, a sectional plan on the line 1 2, Fig. 1; Fig. 4, a sectional view of the valve and driver, illustrating the advantages of my improvement.

A is the rotating valve of a dry gas-meter; B, the valve-seat; C, the driving-shaft, and H the arm to which the devices connected with the yielding diaphragms of the chambers are attached, so as to turn the shaft. The valve and valve-seat are similar, as regards the chambers and passages, to those of the rotating valves of other dry gas-meters. The shaft C is also driven and motion from it communicated to the fingers of the dials in a manner well known to those conversant with the construction and operation of this class of meters.

As the above parts form no part of my improvement, a detailed description of them will be unnecessary.

It is indispensable that the valve should remain at all times perfectly gas-tight on its seat and at the same time turn freely and with as little friction as possible. The plan in general use for accomplishing this end is to allow the weight of the valve, unaided by any superincumbent weight or pressure, to maintain the valve in close contact with the seat, making the valve dependent on the driver as regards its rotating movement, but independent of it as regards the vertical position of the valve.

In some instances the end of the shaft is made square, and the square end fitted loosely into a recess of corresponding form in the valve. In other instances, as in the patent of C. L. Lloyd, (assigned to Hopper and Gratz,) June 22, 1858, the driver is made of a forked shape, the forks catching onto lugs on the outside of the valve. In either case, if the carrier does not revolve truly with the surface of the valve-seat, there is some danger of the valve being temporarily raised, thereby allowing the gas to escape. It is to obviate the possibility of such an occurrence that my improvements are especially designed.

An inverted circular cup, D, is secured to the lower end of the driving-shaft C, and this cup fits over an annular flange, *e*, which is secured to the top or forms a part of the valve with which the flange is concentric. Two vertical pins, *i i*, project from the inside of the inverted cup D, one pin catching on one side and the other on the other side of a horizontal pin, E, so that on turning the shaft and cup the valve must necessarily turn with it. Now it will be observed, on reference to Fig. 2, that this pin E, owing to the size of the recesses in which its end fits, is allowed a limited vertical movement. Each of its ends is also allowed a slight lateral movement in its recess, so that, although confined to a certain space, the pin is quite loose. The flange *e* fits so loosely within the cup that no undue friction is caused

by the two rubbing together, and yet it fits so closely that the cup serves the purpose of maintaining the valve in its proper position during its movements. Should the shaft C or its driver D revolve untruly, the driving-pins on the inside of the cup will at some points in their movement be higher and at others lower; or, in other words, they would be constantly changing their vertical position, thereby causing an equally constant danger of the valve being raised from its seat and allowing the gas to escape. This effect will be best understood on reference to Fig. 4, where the shaft is illustrated as being slightly inclined. It is evident that as long as the driver revolves at the angle shown it will have a tendency to depress one side of the valve and raise the other, but for the intervention of the self-adjusting pin E. The latter, being quite loose and light, will rise and fall with the driving-pins, thus accommodating itself to the unequal movements of the driver, leaving the valve undisturbed on its seat. The pin E at the same time serves as an effective medium through which the rotary motion is communicated from the driver to the valve.

Another advantage of my improvement is that the pin E is at all times maintained free from contact with the tar and refuse which would collect within the space inclosed by the flange *e*, but for the inverted cup D. The valve may be made of block-tin, as usual, although I prefer to make it of glass as being a much lighter material.

I do not claim, broadly, operating the valve of a dry gas-meter by a device independent of the valve as regards the vertical position of the latter; but

I claim and desire to secure by Letters Patent—

1. A pin, E, or its equivalent, fitted loosely to the valve and intervening between the valve and the driver, substantially as herein set forth, and for the purpose specified.

2. Constructing the driver in the form of an inverted cup, D, with driving-pins in the inside, said cup being so arranged in respect to the annular flange *e* of the valve as to serve the double purpose of maintaining the latter in its proper position and of preventing the access of tar to the driving-pins.

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

HENRY HOWSON.

Witnesses:

HORACE SEE,

HENRY ODIORNE.