

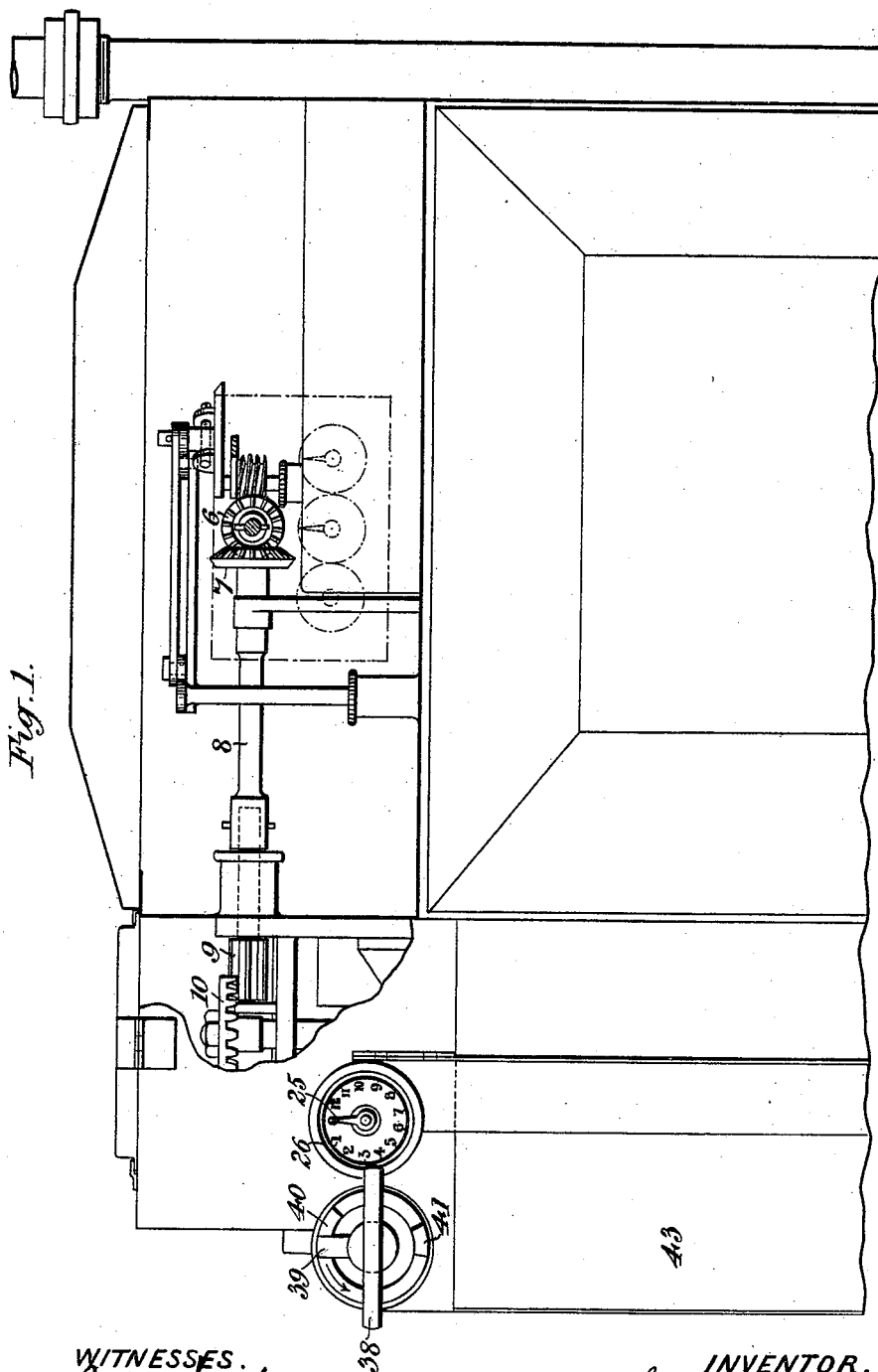
(No Model.)

4 Sheets—Sheet 1.

J. HAWKYARD.
COIN FREED GAS METER.

No. 523,637.

Patented July 24, 1894.



WITNESSES.

John Stephen
Charles H. Glass

INVENTOR.

John Hawkyard.
By His Attorney.
Herbert W. Jenner.

(No Model.)

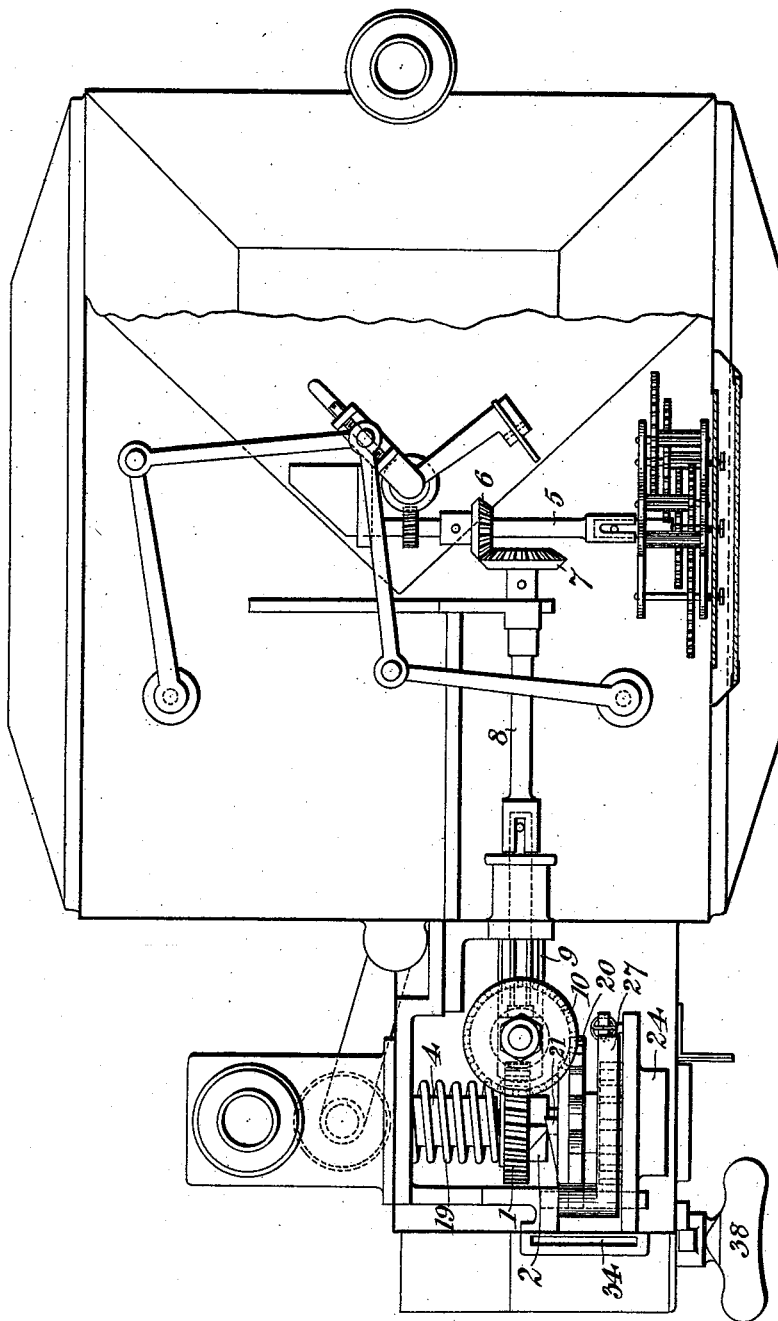
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Fig. 2.



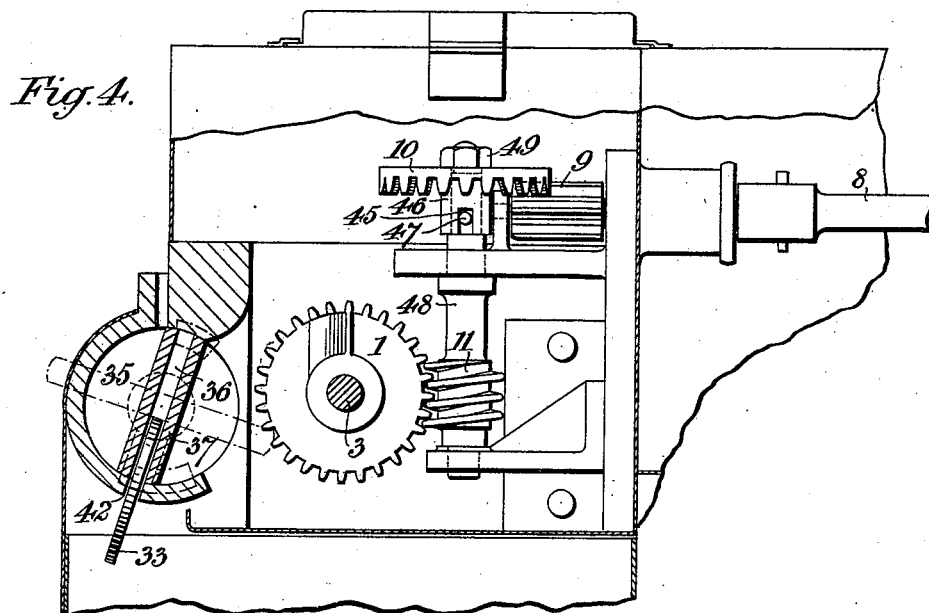
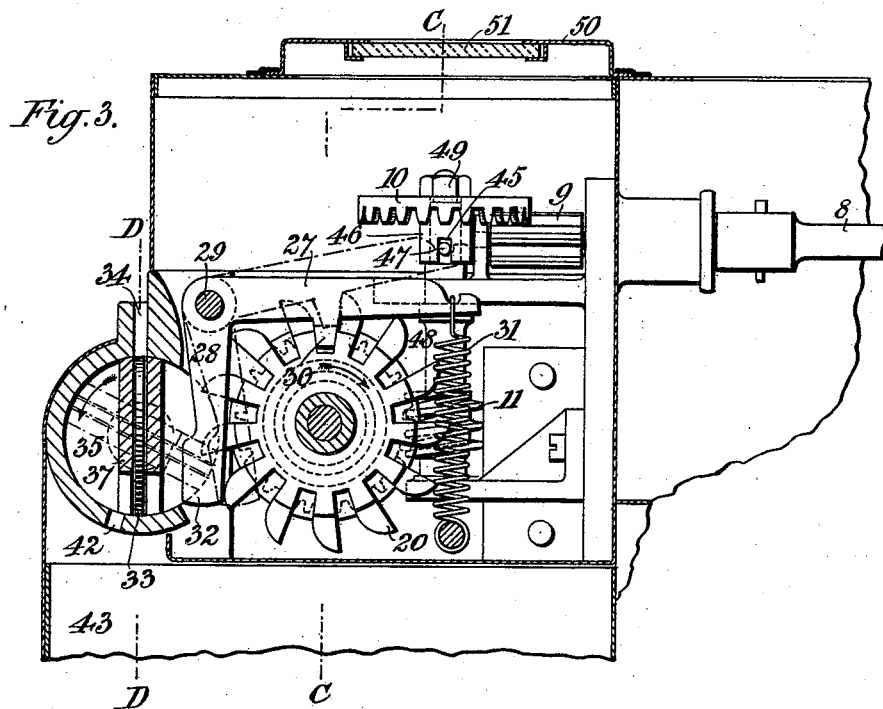
WITNESSES.
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George H. Bliss

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WITNESSES
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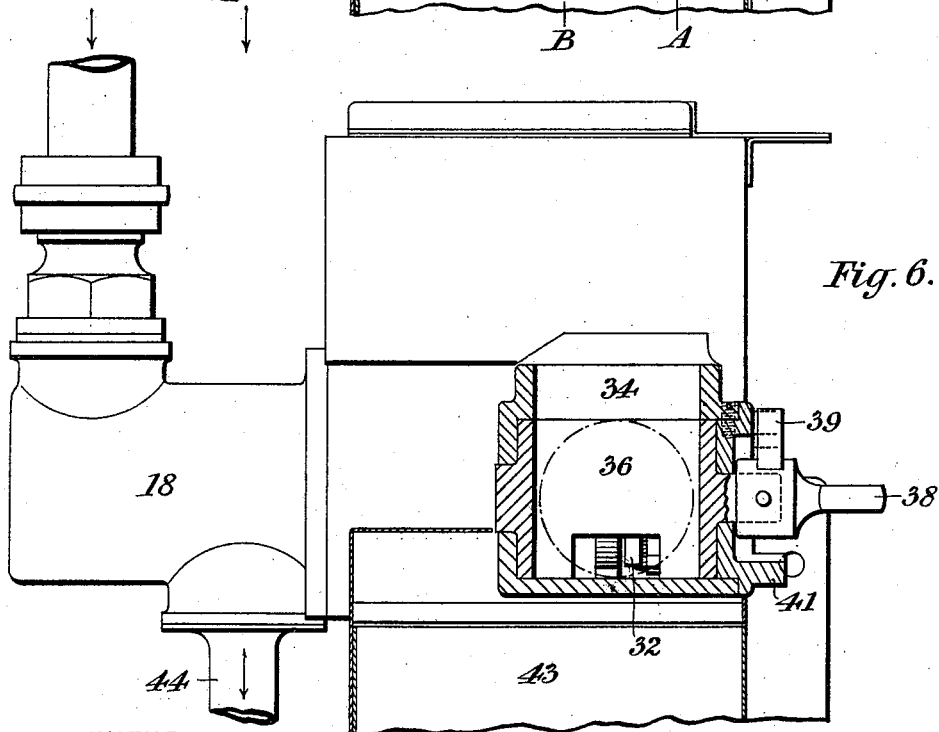
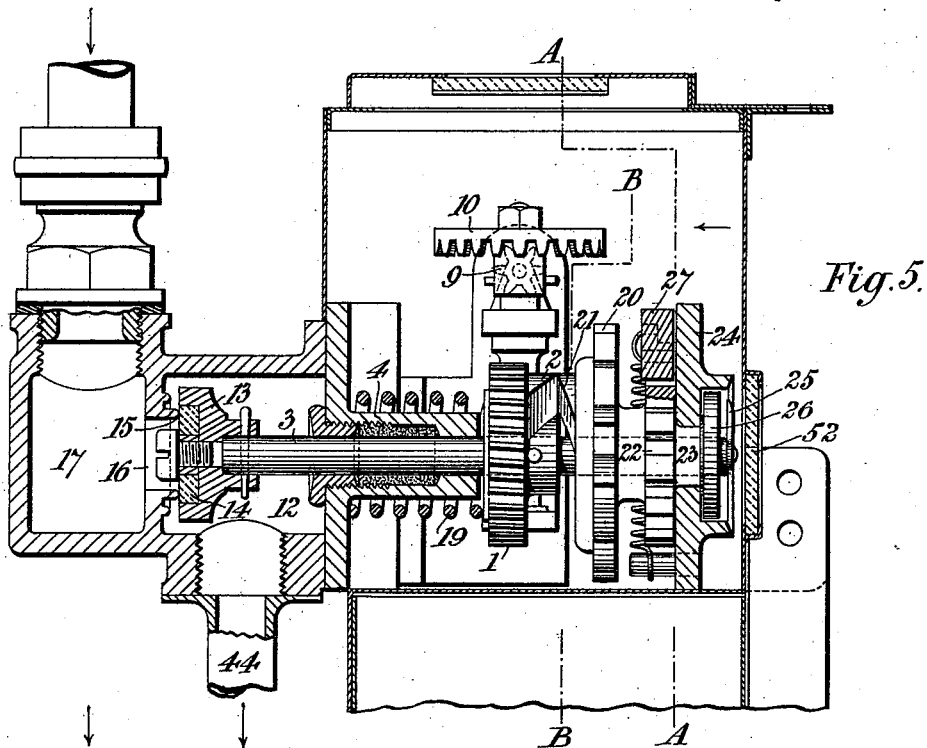
(No Model.)

4 Sheets—Sheet 4.

J. HAWKYARD.
COIN FREED GAS METER.

No. 523,637.

Patented July 24, 1894.



WITNESSES.
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By his Attorney.
Herbert W. Jenner.

UNITED STATES PATENT OFFICE.

JOHN HAWKYARD, OF SADDLEWORTH, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WILLIAM COULSON PARKINSON, OF COTTAGE LANE, CITY ROAD, ENGLAND.

COIN-FREED GAS-METER.

SPECIFICATION forming part of Letters Patent No. 523,637, dated July 24, 1894.

Application filed March 15, 1894. Serial No. 503,748. (No model.) Patented in England August 12, 1890, No. 12,584, September 17, 1890, No. 14,655, May 4, 1892, No. 8,410, and May 16, 1893, No. 9,771.

To all whom it may concern:

Be it known that I, JOHN HAWKYARD, a subject of the Queen of Great Britain and Ireland, and a resident of Shaw's Lane, Upper Mill, Saddleworth, in the county of York, England, have invented certain new and useful Improvements in Coin-Freed Gas-Meters, (for which I have obtained patents in Great Britain, No. 12,584, dated August 12, 1890; No. 14,655, dated September 17, 1890; No. 8,410, dated May 4, 1892, and No. 9,771, dated May 16, 1893;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to the construction of automatic apparatus to be applied to an ordinary wet or dry gas meter for the purpose of supplying a definite amount of gas on prepayment by a corresponding coin or coins.

The nature of this invention and the manner in which the same is to be performed or carried into practical effect will be readily understood on reference to the annexed four sheets of drawings and the following description thereof.

Figure 1 represents a front sectional elevation of a gas meter constructed according to this invention, a part of the upper front plate and index being removed. Fig. 2 is a plan with the cover plates removed in order to show the operating mechanism. Fig. 3 is a cross section on the line A—A, Fig. 5, through the coin receiver. Fig. 4 is a similar view to Fig. 3, but on the line B—B, Fig. 5. Fig. 5 is a section on the line C—C, Fig. 3, through the gas inlet valve, and Fig. 6 is a section on the line D—D, Fig. 3 through the coin receiver.

A worm wheel 1 carrying a cam tooth 2 is mounted on a valve spindle 3 rotating in and sliding through a stuffing box 4 and is driven from the index spindle 5 through the bevel wheels 6, 7, spindle 8, pinion 9, detachable crown change wheel 10 and worm 11.

On the end of the spindle 3 in the gas chamber 12 is secured a gas valve comprising a socket 13 with base 14 of cork or other suit-

able material for forming a close joint on the seat 15 of the passage 16 communicating with the chamber 17 of the inlet elbow 18. Normally the valve is pressed away from its seat by a spring 19, on the stuffing box 4, which presses against the wheel 1 and thus keeps the valve open for the passage of gas so long as there is any coin in the apparatus to the credit of the purchaser.

Loosely mounted on the front end of the spindle 3 is a lobed coin wheel 20 carrying a cam 21, while forming a part with the said lobe wheel is a toothed stop wheel 22 the reduced end 23 of which works in a fixed bracket or plate 24. On the end of the spindle 3 is fixed a pointer 25 while on the part 23 is secured a graduated dial disk 26, the relative position of the said pointer and dial indicating the relative position of the cam surfaces 2 and 21 and consequently the amount of gas or coin to the credit of the purchaser as will be hereinafter explained. A two armed stop lever 27, 28, pivoted at 29 is provided, one arm 27, having a tooth 30, being normally pressed by the spring 31 into engagement with one of the spaces in the toothed stop wheel 22 while the other arm 28 is formed with a cam end 32 to engage with the operating coin 33.

The operating coin 33 is inserted in a slot 34 in a cylindrical casing 35 and falls into the slot 36 of the oscillating receiver 37. The receiver is then rotated to the left by means of the handle 38 whose travel is limited by the arm 39 and stops 40 and 41. On its rotation the coin 33 engages with and depresses the cam 32 (Fig. 3) lifting the tooth 30 out of engagement with the stop wheel 22 in which position it is held until the coin is in engagement with a tooth of the lobed coin wheel 20, the continued rotation of the coin causing the wheel 20 to advance a tooth when the stop tooth is again caused by the spring 31 to fall into engagement with the stop wheel 22. On further rotating the coin receiver the coin falls through the slot 42 into a coin receptacle 43 below. The coin receiver is cut away as shown to enable it to pass the cam 32 and lobes 20.

The rotation of the coin wheel 20 through

one division or tooth causes the cam 21 to advance one unit forward relatively to the cam tooth 2 on the wheel 1, the quantity of gas passing through the meter while the tooth 2 is catching up the tooth 21 again representing the quantity per unit coin.

The insertion of a coin and the advance of the cam 21 relatively to the cam 2 allow the spring 19 pressing against the wheel 1 to slide the spindle 3 axially and remove the gas valve from its seat, thereby permitting the passage of gas through the chamber 17, passage 16, chamber 12 and pipe 44 to the measuring device of the meter; but, as the gas to the credit of the purchaser is gradually consumed, the cams 2, 21, again engage with each other and force the gas valve on to its seat, thereby closing the gas passage and shutting off the supply.

Several coins may be inserted consecutively, the cam 21 being advanced at each insertion relatively to the cam 2 until they engage when the coin wheel cannot be further operated until a further unit quantity of gas is consumed.

To permit of the longitudinal sliding motion of the spindle 3 the teeth in the worm wheel 1 are made sufficiently wide to insure complete engagement between the worm 11 and wheel 1 in all positions.

In order to vary the quantity of gas supplied per unit coin inserted, the crown change wheel 10 gearing with the long pinion 9 is made detachable so that it may easily be replaced by another wheel having such a number of teeth as will give the requisite velocity ratio between the spindle 8 and worm 11, as will be readily understood. A slot 45 in the sleeve 46 of the wheel 10 engages with a pin 47 passing through the spindle 48 and thus prevents their relative rotation, the wheel 10 being further secured by the nut 49.

A sliding cover 50, normally locked, allows access to the interior to change the wheel 10, while the said wheel may be observed and the price rate deduced therefrom through a glass screen 51. The amount of coin or gas to the credit of the purchaser may also be ascertained on the disk 26 through the glass screen 52 (Fig. 5).

What I claim is—

1. The combination, with the gas valve, the cam 2 secured on the gas valve spindle, and a spring for opening the gas valve; of the cam 21 journaled on the gas valve spindle adjacent to the cam 2 and operating to close the gas valve, the lobed coin wheel 20 for revolving the cam 21, and the oscillatory receiver 37 for holding a coin and causing its edge to turn the coin wheel when moved in one direction, substantially as set forth.

2. The combination, with the gas valve, the cam 2 secured on the gas valve spindle, and a spring for opening the gas valve; of the cam 21 and the lobed coin wheel 20 journaled on the gas valve spindle, the stop wheel 22 revolving with the said coin wheel, a spring-

operated stop lever normally locking the stop wheel, and the oscillatory receiver 37 for holding a coin and causing its edge to release the stop wheel and turn the coin wheel when moved in one direction, substantially as set forth.

3. The combination, with the gas valve, the revoluble wheel 1 and the cam 2 on the gas valve spindle, and a spring for opening the gas valve; of a revoluble cam journaled on the gas valve spindle and operating to close the gas valve by contact with the cam 2; a gas meter; and driving devices operatively connecting the said wheel 1 with the gas meter, whereby the said cams are placed in contact with the gas valve closed by the meter, substantially as set forth.

4. The combination, with the gas valve, the revoluble wheel 1 and the cam 2 on the gas valve spindle, and a spring for opening the gas valve; of a revoluble cam journaled on the gas valve spindle and operating to close the gas valve by contact with the cam 2; a gas meter having a revoluble spindle 5; and the beveled toothed wheels 6 and 7, the spindle 8, the toothed pinion 9, the detachable crown change wheel 10, and the worm 11 operatively connecting the said wheel 1 with the spindle 5, whereby the said cams are placed in contact, substantially as set forth.

5. The combination, with the spring-operated gas valve, and the cam 2 on the gas valve spindle; of the cam 21 journaled on the gas valve spindle adjacent to the cam 2 and operating to close the gas valve, the lobed coin wheel 20 and the stop wheel 22 revolving with the cam 21; the spring-operated stop lever normally locking the stop wheel; the cylindrical casing 35 provided with the coin slots 34 and 42, and the receiver journaled in the said casing and provided with a handle for oscillating it, said receiver operating to hold a coin placed therein and press its edge against the stop lever and coin wheel, whereby the said coin wheel is released and revolved, substantially as set forth.

6. The combination, with a gas meter, of a spring-operated gas valve controlling the inlet of gas to the meter, cams operatively connected with the gas valve and operating to close it when brought in contact, coin-controlled operating mechanism permitting the said cams to be separated by hand, thereby allowing a predetermined volume of gas to pass into the meter; and driving mechanism operatively connecting one of the said cams with the gas meter and operating to place the said cams in contact automatically when the said volume of gas has passed through the said gas valve, substantially as set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN HAWKYARD.

Witnesses:

JOHN LONSDALE,
GODFREY NOBLE.