

F. H. BOSTOCK.
PREPAID GAS OR LIKE METER.
APPLICATION FILED JUNE 16, 1908.

1,058,716.

Patented Apr. 15, 1913.

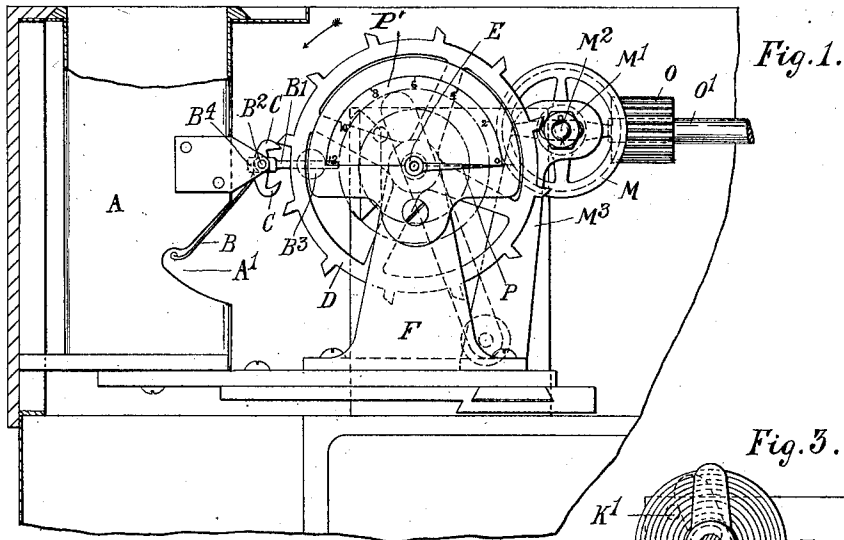


Fig. 1.

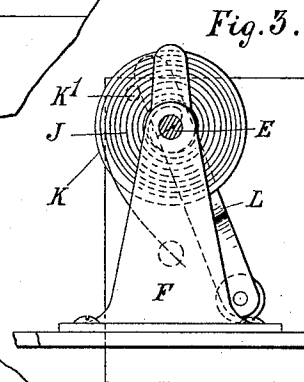


Fig. 3.

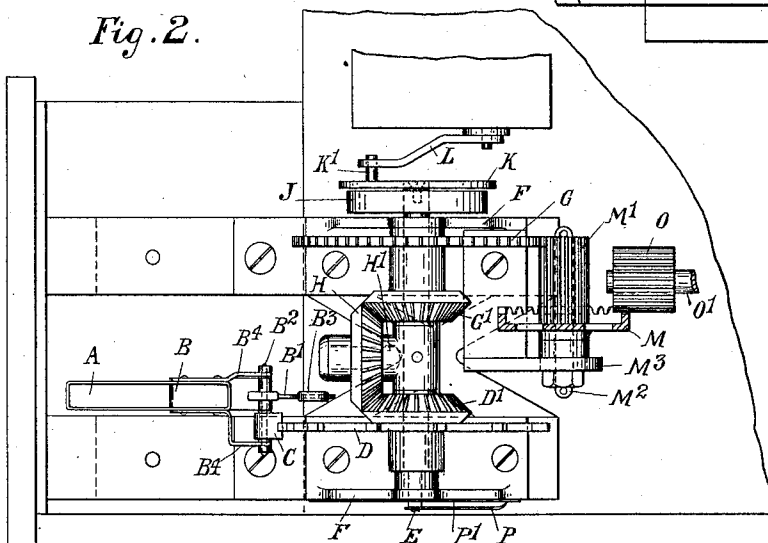


Fig. 2.

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PREPAID GAS OR LIKE METER.

1,058,716.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed June 16, 1908. Serial No. 438,692.

To all whom it may concern:

Be it known that I, FRANCIS HENRY BOSTOCK, a subject of the King of Great Britain, and resident of Nottingham, England, have invented certain new and useful Improvements in Prepaid Gas or Like Meters, of which the following is a specification.

This invention relates to prepaid gas or like meters, and refers to improved delivery or valve controlling mechanism which is actuated by the action of a coin passing down a coin chute on its way to the receptacle provided for the same. The mechanism indicates the amount of gas prepaid and still unconsumed, and counting mechanism for indicating the number of coins inserted, so as to check fraudulent use, may be combined with the same.

Referring to the drawings, Figure 1. is an elevation, and Fig. 2. a plan showing prepaid delivery mechanism constructed according to my invention applied to a gas meter. Fig. 3. is an elevation showing details of construction.

Like letters indicate like parts throughout the drawings.

According to this invention the meter is provided with a preferably vertical coin chute A (see Figs. 1 and 2) formed with a sector shaped opening A¹ (see Fig. 1.) on one side, into which the lower member B of a lever B B¹ projects, so that a coin passing down the chute A must push aside and oscillate said lever. The lever B B¹ described is pivoted at B² in bearings B⁴ secured to the chute A, and its return movement is effected by means of a weight B³ on its upper member B¹ as shown, or a spring as preferred.

The lever B B¹ carries escapement pallets C, which engage with the teeth of an escape wheel D, mounted loosely on a preferably horizontal spindle E carried in bearings in a bearing frame F, secured within the upper part of the meter. This escape wheel D is connected by means of epicyclic gearing to a toothed wheel G (see Fig. 2.) which is mounted loosely on the same spindle E, as the escape wheel D. The wheel G is in turn connected to the registering mechanism of the meter by gearing which is hereinafter described, and it is turned in the reverse direction to the escape wheel D by the said registering mechanism when gas is being supplied, but is at other times stationary.

The epicyclic gearing previously referred to for connecting the wheels D and G, is preferably comprised of three miter wheels which are shown more clearly in Fig. 2, that is one D¹ secured on the side of the escape wheel D, another G¹ secured on the side of the wheel G, and a third H for connecting the two former. The third wheel H is carried on a radial axle H¹ secured to the spindle E, and said wheel H can therefore rotate on its own axis and also move about said spindle E, and in the latter case it carries the spindle E with it.

The escape mechanism described is actuated by means of a clock spring J (see Figs. 2 and 3) acting on the spindle E. This spring J is situated between the bearing frame F and a disk K situated on the rear end of said shaft, the inner end of the spring being connected to the shaft and its outer end to the frame F. The spring J is set so that it will turn the spindle E in the direction indicated by the arrow in Fig. 1, when the escape wheel D is released by tripping the pallets C. The disk K on the spindle E is provided with a crank pin K¹ engaging the valve lever L and closing the supply valve whenever the spindle E is returned to its normal position, in which it is shown.

If preferred a cam or other suitable device may be employed to act on the valve lever L instead of the crank pin K¹, the spindle E may also be actuated by a falling weight instead of the spring J if desirable.

Whenver a coin is passed down the chute A, it trips the escapement pallets C and releases one tooth of the escape wheel D, and allows the latter, which has twelve teeth, to make one twelfth of a revolution. The wheel G¹ being attached to the wheel G which is either stationary or moving in the reverse direction to D, the movement of the latter will cause the wheel H to roll on the wheel G¹ and move the spindle E in the same direction as the wheel D but only one half the distance. This movement releases the supply valve lever L and the valve remains open until the spindle E has been returned to its normal position by the rotation of the wheel G in the reverse direction to the escape wheel D as previously described, when the reverse action will take place, the

wheel D now being held by the pallets C, the wheel H will roll on the wheel D¹ and return the spindle E to its original position again, and close the valve.

5 It will be seen that the epicyclic gearing D¹ G¹ H serves to connect the valve controlling mechanism, that is the spindle E provided with a crank pin K¹, both to the escape wheel D and to the meter registering
10 mechanism, and that said valve is opened by a movement of the former and closed by the latter, through the intermediary of said gear.

It will be understood that if twelve coins
15 were passed through the chute A in succession, the wheel D would make a full revolution and the spindle E half a revolution, and that the wheel G would have to make a full revolution in the reverse direction to D,
20 in order to return the spindle E to its normal position again and close the supply valve.

The wheel G is connected to the registering mechanism of the meter by means of
25 a crown wheel M and pinion M¹ mounted on an axle M² carried by a bracket M³ secured to the frame F. The crown wheel M gears with a pinion O on a shaft O¹ which is geared to the registering mechanism, while
30 the pinion M¹ gears with the wheel G, so that as the gas passes through the meter and operates the registering mechanism, this wheel G is turned in the reverse direction to the escape wheel D, and through the inter-
35 mediary of the epicyclic gearing returns the spindle E to its normal position again and closes the supply valve, while the escape wheel remains stationary. As the escape wheel D is let off a number of teeth equal to
40 the number of coins inserted, the wheel G must be turned in the reverse direction to the escape wheel D and through the same space as the latter before the spindle E is returned to its normal position again and
45 the supply valve closed, it follows that the amount supplied for each coin inserted is determined by the ratio of the gearing which connects the wheel G to the registering mechanism, and the wheel and pinions M M¹ O
50 are arranged as shown, so that the gearing can be readily changed to suit the price of gas in any particular district.

It will be understood that the escape wheel D is always turned in one direction
55 by the action of the spring J on the spindle E, and the latter is returned to its normal position by the rotation of the wheel G in the reverse direction to the escape wheel D, and that this action re-winds the spring J
60 for actuating the escape wheel and maintains the balance.

The amount prepaid and still unused is indicated by a hand or pointer P on one end of the spindle E, moving over a fixed scale
65 P¹ attached to the bearing frame.

A coin counting mechanism of any suitable description may be employed, and such mechanism may be operated by the same coin actuated lever as that previously described, or a second one situated in the same coin
70 chute and either above or below the former one. Or if preferred counting mechanism of any suitable form may be connected to the escape wheel, the said mechanism being adapted to record the movement of said
75 wheel and thus indicate the number of coins inserted.

The advantage of the arrangement described is that the controlling mechanism is actuated by the weight of a coin in the
80 act of falling, and as the latter falls straight through the chute without a check, it is not likely to lodge or jam and put the apparatus out of action.

Any well known device may be employed
85 in connection with the coin chute to check or divert coins of a less size than that for which it is designed, so that they will miss the lever B. Means may also be provided for preventing the lever B from being
90 worked by an instrument inserted in the chute.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a prepaid gas or like meter, the combination of a gas supply valve, a valve opening and closing device, motor mechanism for actuating the latter, gas supply registering mechanism, an escape wheel, coin actuated escapement pallets for controlling the action
95 of the said wheel, and an epicyclic gear train connecting both the escape wheel and the gas supply registering mechanism to the valve opening and closing device so disposed that the valve opening and closing device
100 and the escape wheel are turned forward by the motor mechanism to open the supply valve, and the valve opening and closing device is turned in the reverse direction or
105 backward by the gas supply registering mechanism to close the valve and wind up the motor mechanism, without turning back the escape wheel or affecting the motor driven in the forward direction substantially
110 as described.

2. In a prepaid gas or like meter, the combination of a gas supply valve, a valve opening and closing main axle, a device thereon to act on the valve, motor mechanism for turning the axle forward, gas supply registering mechanism, an escape wheel, coin actuated escapement pallets for controlling the escape wheel, an epicyclic gear train the intermediate or epicyclic wheel of which is carried by an axis secured to the main axle
120 and the two outer wheels which are mounted on the main axle connected to the escape wheel and the gas supply registering mechanism respectively whereby the main axle and the escape wheel are turned forward by the
125 130

motor mechanism to open the supply valve,
and the main axle is turned back by the
gas registering mechanism to close the valve
and wind up the motor mechanism without
5 turning back the escape wheel or affecting
the motor driven in the forward direction
substantially as described.

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

FRANCIS HENRY BOSTOCK.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."