

No. 712,911.

Patented Nov. 4, 1902.

W. COX.

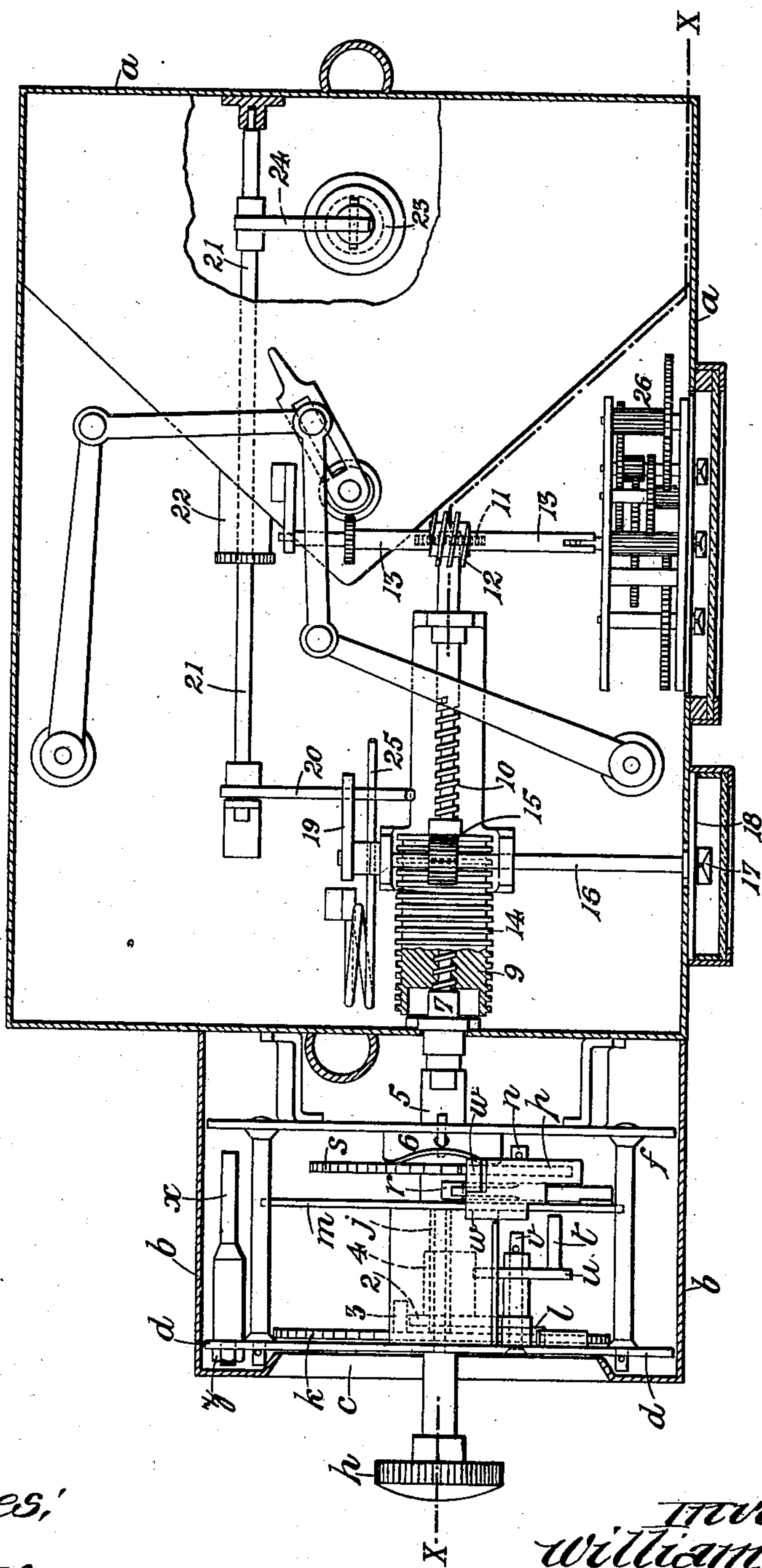
COIN FREED APPARATUS FOR DELIVERING GAS.

(Application filed Dec. 17, 1901.)

(No Model.)

3 Sheets—Sheet I.

Fig. 1.



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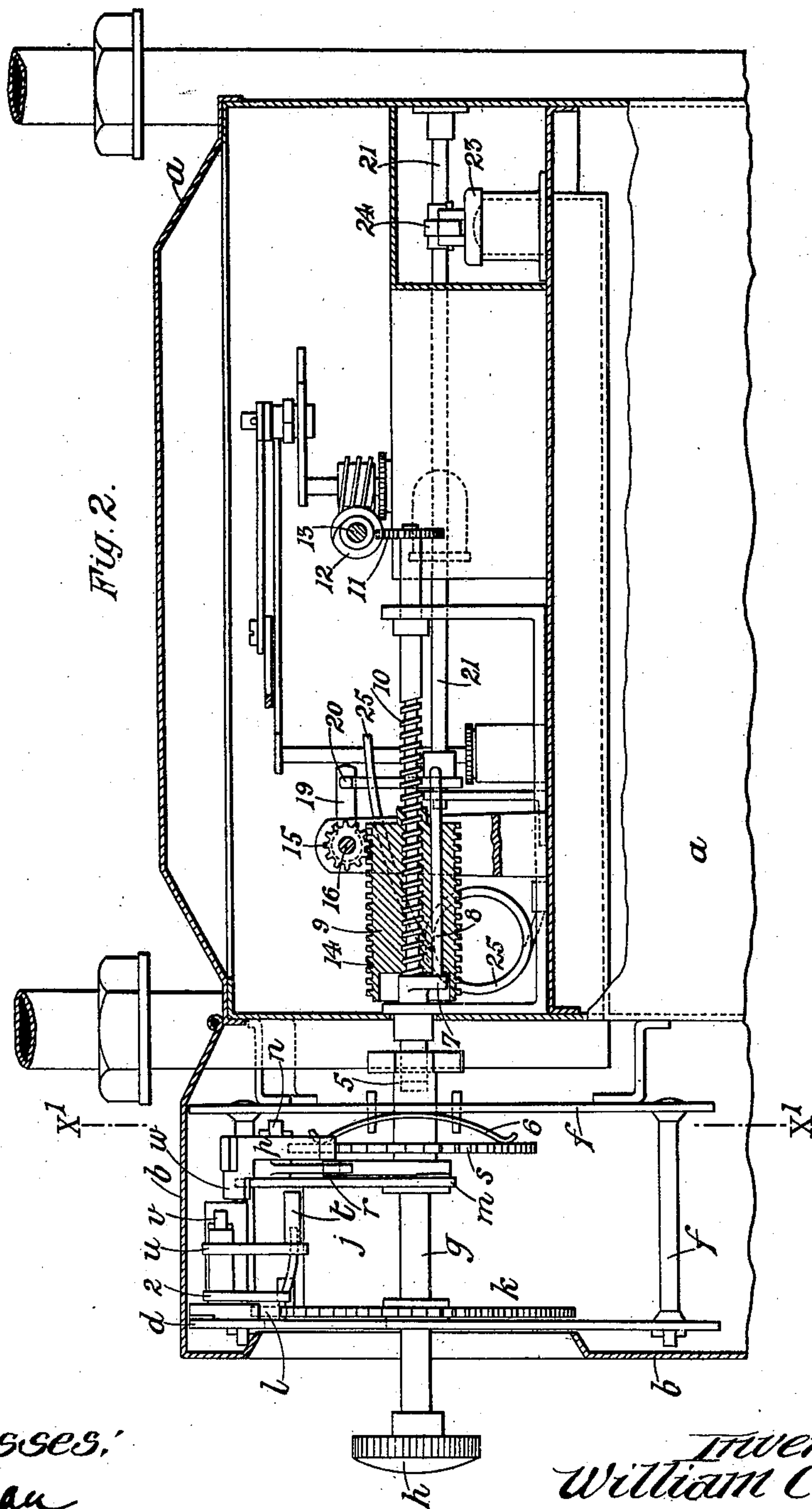
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(No Model.)

3 Sheets—Sheet 2.



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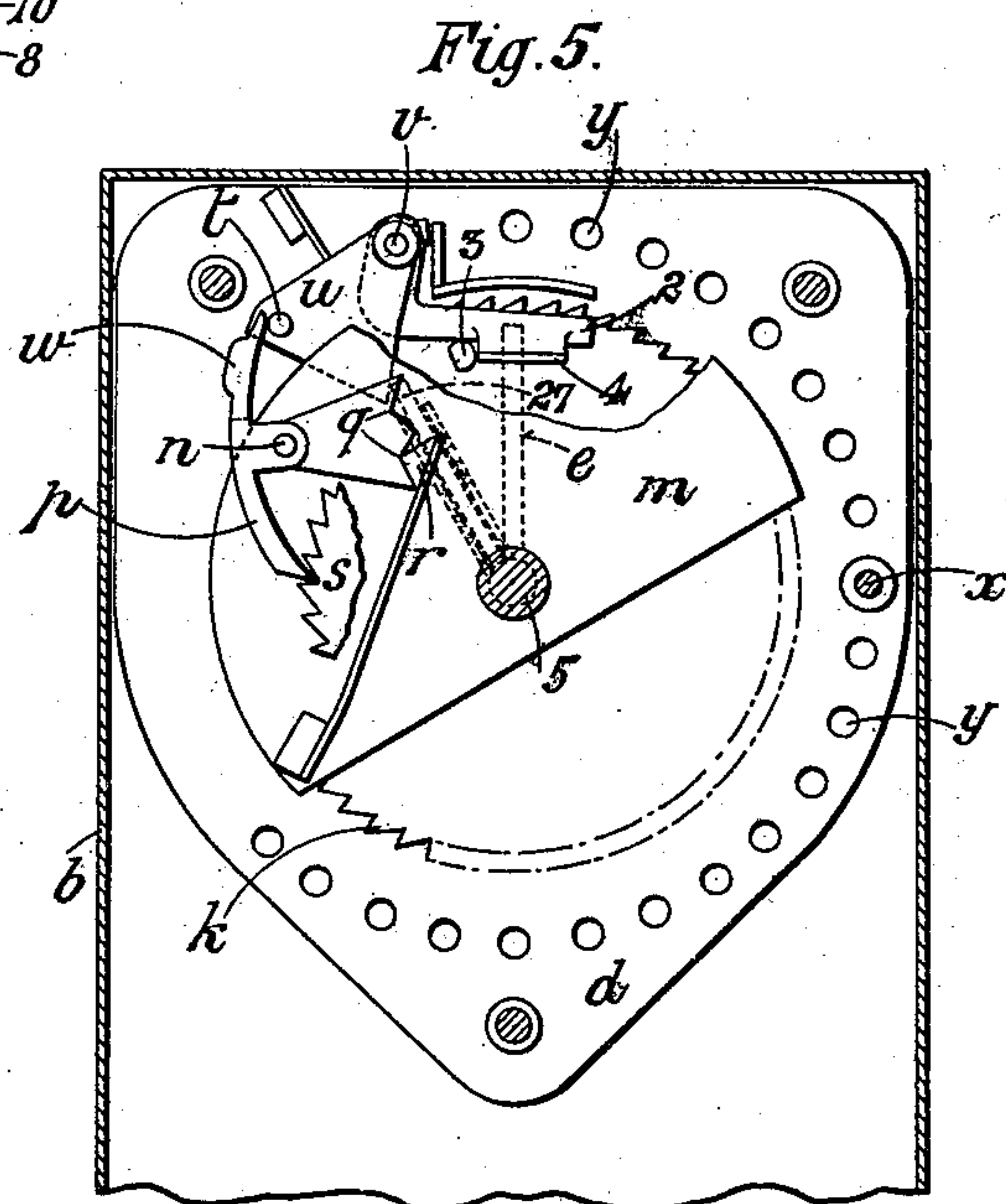
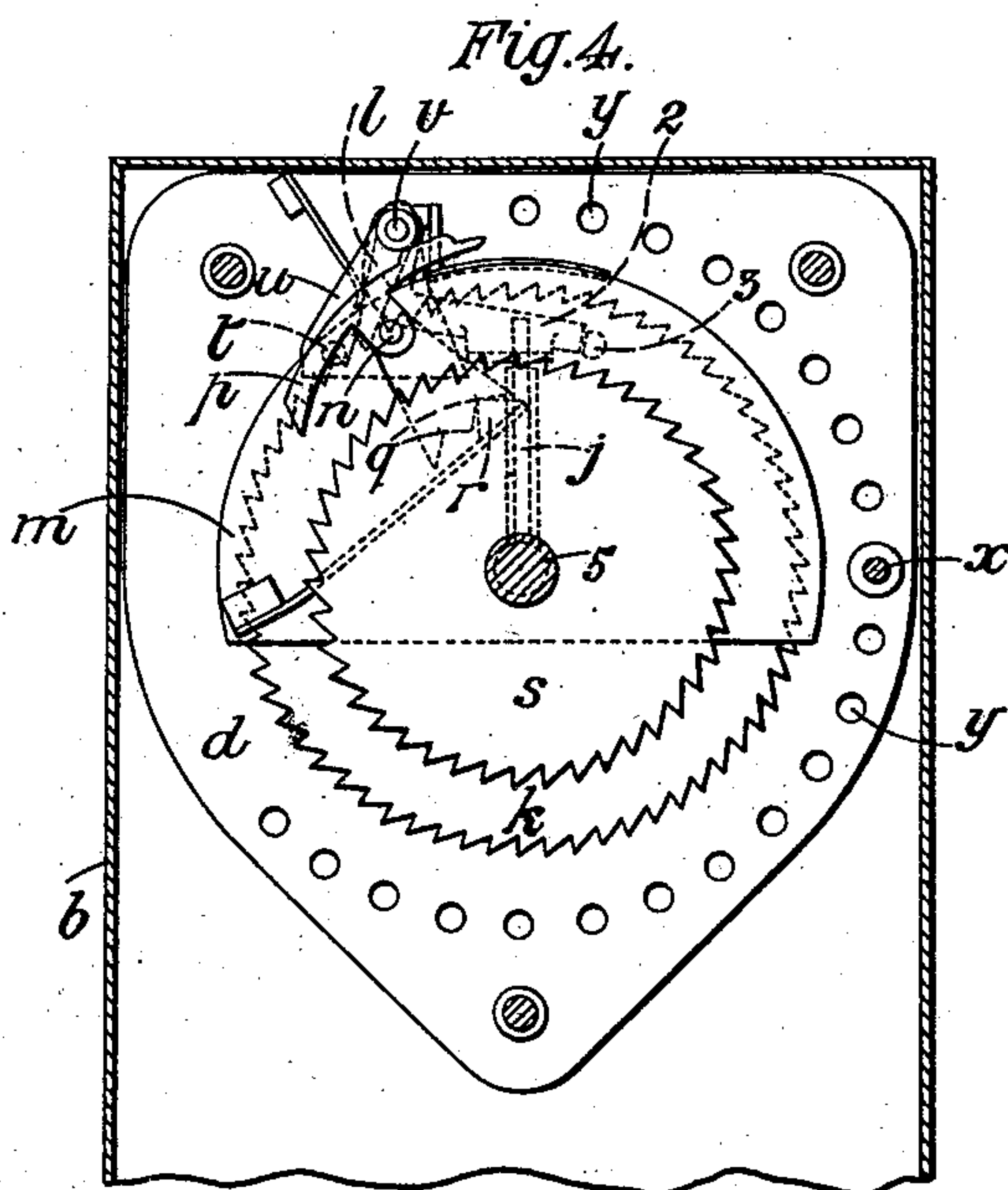
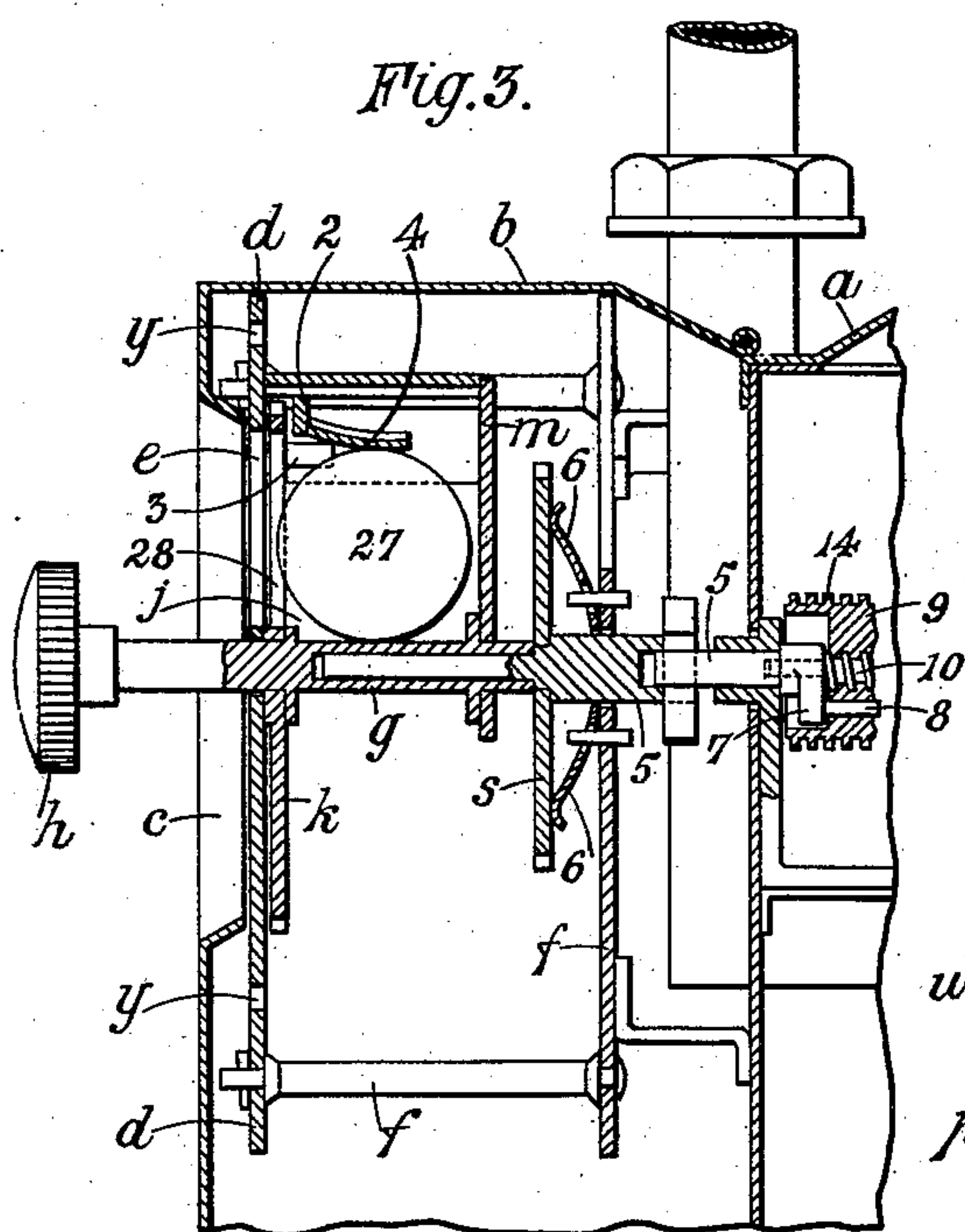
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COIN FREED APPARATUS FOR DELIVERING GAS.

(Application filed Dec. 17, 1901.)

(No Model.)

3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

WILLIAM COX, OF LONDON, ENGLAND, ASSIGNOR OF ONE-HALF TO GEORGE GLOVER AND COMPANY, LIMITED, OF LONDON, ENGLAND.

## COIN-FREED APPARATUS FOR DELIVERING GAS.

SPECIFICATION forming part of Letters Patent No. 712,911, dated November 4, 1902.

Application filed December 17, 1901. Serial No. 86,273. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM COX, a subject of the King of Great Britain, residing at Battersea, London, England, have invented  
5 certain new and useful Improvements in and Relating to Coin-Freed Apparatus for Delivering Gas or Like Fluids, of which the following is a specification.

My invention relates to improvements in  
10 coin-freed apparatus intended for use in connection with gas-meters to open and close a valve controlling the flow of gas through the meter, whereby a definite amount of gas, which amount may be readily varied, is delivered in exchange for a coin inserted in the  
15 apparatus.

An important feature of my said invention is the provision of improved means for putting mechanism controlling the opening and  
20 closing of the gas-admission valve into and out of operative connection with a handle under the control of the gas-purchaser, the said mechanism being readily adjusted in a simple manner to vary the quantity of gas  
25 delivered in exchange for a coin in accordance, for example, with variations in the current price of the gas. The handle aforesaid is connected through its spindle with a coin-carrier and with an arm pivotally supporting  
30 a driving-pawl adapted to engage with a ratchet-wheel and yieldingly retained by a spring in either of two positions—i. e., in engagement with the ratchet-wheel or disengaged therefrom. The said ratchet-wheel is  
35 connected to the quantity mechanism of the meter. A lever having a striking-arm projecting therefrom and pivotally mounted in a suitable position on a fixed part of the frame is moved by the projecting edge of the  
40 coin in the coin-carrier when the handle is turned and raises the striking-arm, so that the latter is pressed against the driving-pawl, which is thereby moved into engagement with the aforesaid ratchet-wheel. The continued rotation of the handle then causes the  
45 ratchet-wheel to turn through a definite angle, which is variable in accordance with the position of a second striking-arm arranged to trip the pawl and draw it out of engagement  
50 with the ratchet-wheel, and thus free the said

wheel again. The said second striking-arm is readily movable on opening the case of the apparatus and can be fixed in different positions to vary the quantity of gas to be delivered in exchange for the coin. In the rotation of the handle the coin does no work after  
55 it has put the pawl into engagement with the ratchet-wheel.

My said invention also comprises other improvements hereinafter set forth. 60

In the accompanying drawings I have shown how my said invention can be conveniently and advantageously carried into practice.

Figure 1 is a plan, partly in section, of a  
65 gas-meter having my improved coin-freed mechanism applied thereto. Fig. 2 is a section, partly on the line X X, Fig. 1, the coin mechanism being in elevation. Fig. 3 is a section of the coin mechanism on the line X X,  
70 Fig. 1. Fig. 4 is a section on the line X' X', Fig. 2, showing the parts in their normal position before the insertion of a coin; and Fig. 5, a similar section to Fig. 4 with the driving  
75 ratchet-wheel partly broken away, the parts being shown in the positions which they occupy after the insertion of a coin and after the handle has been turned sufficiently to put the pawl in gear with the ratchet-wheel.

Like reference characters indicate corresponding parts throughout the drawings. 80

*a* is the casing of the meter, and *b* an auxiliary casing for the coin mechanism.

*c* is an opening in the casing *b*, this opening exposing the central part of a plate *d*,  
85 which has in it a slot *e* for the insertion of a coin and which forms part of a frame *f*, secured to the casing *a*. In the frame *f* is journaled a spindle *g*, having an external handle *h*, whereby it can be readily turned. This  
90 spindle also bears a coin-pocket *j* and a ratchet-wheel *k*, with which engages a retaining-pawl *l*, so as to allow the said spindle to rotate in one direction only. The coin-pocket  
95 *j* is open at the side thereof next to the plate *d* to permit the insertion of a coin, a corresponding slot 28 being formed in the ratchet-wheel *k*. The said coin-pocket is also open at its outer end—i. e., its end farthest from  
100 the spindle *g*—so as to enable the coin to fall



out, as hereinafter described. The spindle *g* also bears an arm in the form of a plate *m*, to which is pivoted at *n* a feed-pawl *p*. This pawl has an arm formed with two notches *q*, into one or other of which engages a spring-pressed projection *r*, so as to hold the said pawl either in or out of engagement with a ratchet-wheel *s*, mounted coaxially with the spindle *g* and connected to the quantity mechanism, as hereinafter described. The pawl *p* is moved into engagement with the ratchet-wheel *s* by means of a striking arm or pin *t* on a lever *u*, pivoted to the plate *d* at *v*, when the lever *u* is acted upon by a coin in the coin-pocket *j*, the pin *t* acting on an extension *w* of the said pawl for this purpose. The pawl *p* is moved out of engagement with the said ratchet-wheel by means of a second striking arm or rod *x*, which can be secured in one or other of a series of holes *y* in the plate *d* by means of a nut *z*, so that the pawl *p* remains in engagement with the ratchet-wheel *s* during a greater or less portion of each revolution of the spindle *g*, accordingly as the amount of gas to be supplied per coin increases or diminishes. After acting on the lever *u* the coin drops out of the coin-pocket *j* into a money-box as the said pocket approaches its inverted position in the rotation of the spindle *g*.

In order to insure that after each operation of the mechanism the coin-pocket shall always come to rest with its lateral opening 28 opposite to the slot *e*, I provide a lever 2, pivoted at *v* to the plate *d* and extending into the path of a pin 3 on the ratchet-wheel *k*, so as to arrest the motion of the spindle *g* and coin-pocket *j* when the said lateral opening of the coin-pocket registers with the slot *e*. The coin-pocket and connected parts are released by the next coin inserted, this coin acting on an inclined extension 4 of the lever 2 and raising the said lever out of engagement with the pin 3. The extension 4 also serves to prevent a coin which has failed to drop out of the coin-pocket from actuating the lever *u* a second time, such a coin coming into engagement with the said extension and preventing the coin-pocket from being again moved into registration with the slot *e* until the coin has been removed, which can only be done by a person having access to the interior of the casing *b*. While the coin is stopped by the extension 4 the coin-slot *e* is closed by the ratchet-wheel *k*, which fits closely up against the plate *d*, so that there is no risk of the said extension being raised by a wire or other instrument inserted through the coin-slot. By this means attempted frauds by the use of coins covered with adhesive material can be detected.

The ratchet-wheel *s* is fixed to a spindle 5, arranged coaxially with the spindle *g*, but capable of rotating independently thereof, the motion of the spindle 5 being damped by a spring 6, bearing against the ratchet-wheel

*s*, so as to prevent it from overrunning or being turned by the spindle *g* when the feed-pawl *p* is out of engagement with the said ratchet-wheel. The spindle 5, which is shown in two detachable parts to facilitate dismantling of the apparatus, bears at its other end a crank-arm 7, to which is secured a crank-pin 8, adapted to slide in an eccentric hole or socket in a nut 9. This nut turns on a screw-threaded spindle 10, which can rotate independently of the spindle 5 and is driven through worm-gearing 11 12 from the rotary arbor 13 of the meter, so as to return the nut 9 to its original position after being displaced by the action of a coin or coins. The nut 9 is provided on its exterior with a circular rack 14, which engages with a pinion 15 on a transverse shaft 16, one end of which bears a pointer 17, moving over a dial 18, graduated to show the amount of gas prepaid at any moment, while the other end bears a lever-arm 19, which is adapted when the nut 9 is at one end of its travel to bear on an arm 20 on a horizontal rock-shaft 21, passing through a stuffing-box 22 in the "bridge" of the meter, and thereby shut off the gas by means of a valve 23, pivotally mounted on a second arm 24 on the said rock-shaft. The valve 23 is opened automatically by a spring 25, acting, for example, on the arm 20 when the arm 19 is raised.

26 is the ordinary counting-train of the gas-meter driven from the arbor 13 of the meter.

The operation of my improved apparatus is as follows: Assuming the parts to be in the position shown in Fig. 4, a suitable coin 27 is inserted into the coin-pocket *j*, so as to raise the lever 2 and release the spindle *g* and connected parts. The said spindle is then turned so as to bring the coin into engagement with and turn the lever *u*, thus turning the feed-pawl *p* about its axis *n* and bringing it into engagement with the ratchet-wheel *s*, as shown in Fig. 5. The spindle *g* is then turned until the extension *w* of the pawl *p* engages with the pin *x*, whereupon the said pawl is moved out of engagement with the ratchet-wheel *s*, the coin meanwhile dropping out of the coin-pocket *j*. On further turning the spindle *g* it is brought to rest by the pin 3, as above described. During the time the feed-pawl *p* is in engagement with the ratchet-wheel *s* the spindle 5 and crank-pin 8 are turned, thus screwing the nut 9 onto the screw-threaded spindle 10, and thereby turning the pinion 15 and arbor 16, so as to release the lever 20 and allow the gas-valve 23 to be opened by the spring 25. On now allowing gas to flow through the meter the screw-threaded spindle 10 is rotated by the meter mechanism so as to return the nut 9 to its original position, Figs. 1 and 2, and thus close the valve 23 when the amount of gas prepaid has been consumed. A limited number of coins can be successively passed into the coin-slot to actu-



ate the machine, this number being dependent on the length of the circular rack 14 and on the number of teeth in the pinion 15.

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

1. The combination, in prepayment mechanism for fluid-meters, of a rotatable coin-pocket, a feed-pawl mounted on said coin-pocket, means for automatically holding said pawl in either of two positions, a pivoted lever arranged in the path of the coin and oscillating about a stationary axis, a striking-arm on said lever, an adjustably-fixed striking-arm, a ratchet-wheel arranged adjacent to said pawl, and quantity and valve mechanism connected to said ratchet-wheel, substantially as, and for the purpose specified.

2. The combination, in prepayment mechanism for fluid-meters, of a rotatable coin-pocket, a feed-pawl mounted on said coin-pocket, a ratchet-wheel fixed to said coin-pocket, a ratchet-pawl engaging said ratchet-wheel, automatic means for yieldingly holding said feed-pawl in either of two positions, a pivoted lever arranged in the path of the coin and oscillating about a stationary axis, a striking-arm on said lever, a second ratchet-wheel arranged adjacent to said feed-pawl and coaxially with said coin-pocket, an adjustably-fixed striking-arm, and quantity and valve mechanism connected to said second ratchet-wheel, substantially as described.

3. The combination, in prepayment mechanism for fluid-meters, of a rotatable coin-pocket, a ratchet-wheel connected to the quantity and valve mechanism of the meter, a feed-pawl pivotally mounted on said coin-pocket and arranged adjacent to said ratchet-wheel, an arm on said feed-pawl, a plurality of notches in said arm, a spring-pressed projection engaging with one or other of the notches in said arm, an extension on said feed-pawl, a pivoted lever arranged in the path of the coin, a striking-arm on said pivoted lever for acting on one side of said extension, and an adjustably-fixed striking-arm for acting on the other side of said extension, substantially as described.

4. The combination, in prepayment mechanism for fluid-meters, of a rotatable coin-pocket, a ratchet-wheel fixed to said coin-pocket, a retaining-pawl engaging said ratchet-wheel, a feed-pawl mounted on said coin-pocket, automatic means for yieldingly holding said pawl in either of two positions, a pivoted lever arranged in the path of the coin and oscillating about a stationary axis, a striking-arm on said lever, a second ratchet-wheel adjacent to said pawl, an adjustably-fixed striking-arm, a screw-threaded arbor driven by the meter mechanism, a nut fitting onto said arbor, an eccentric hole in said nut, a crank-pin fitting loosely in said eccentric hole and connected to said second ratchet-wheel, a circular rack on the exterior of said nut, a pinion engaging said rack, a valve

closed by said pinion, and a spring for opening said valve, substantially as described.

5. The combination, in prepayment mechanism for fluid-meters, of a casing, a rotatable coin-pocket, lateral and peripheral apertures in said coin-pocket, a projection on said coin-pocket, a pivoted lever arranged in the path of said projection, an extension of said lever arranged inside said casing and in the path of the coin as it is inserted into the coin-pocket, a feed-pawl pivotally mounted on said coin-pocket, means for yieldingly holding said pawl in either of two positions, a second pivoted lever oscillating about an axle independent of said coin-pocket, a striking-arm on said second lever for acting on said feed-pawl in one direction, an adjustably-fixed striking-arm for acting on said feed-pawl in the other direction, and a ratchet-wheel arranged adjacent to said feed-pawl and connected to the quantity and valve mechanism of the meter, substantially as described.

6. The combination, in prepayment mechanism for fluid-meters, of a rotatable coin-pocket, a feed-pawl mounted on said coin-pocket, means for yieldingly holding said pawl in either of two positions, a ratchet-wheel arranged adjacent to said pawl and connected to the valve mechanism of the meter, coin-operated means independent of the coin-pocket for bringing said pawl into engagement with said ratchet-wheel, and a fixed striking-arm for bringing said pawl out of engagement with said ratchet-teeth, substantially as described.

7. The combination, in prepayment mechanism for fluid-meters, of a rotatable coin-pocket, lateral and peripheral apertures in said coin-pocket, a ratchet-wheel fixed to said coin-pocket, a retaining-pawl engaging said ratchet-wheel, a projection fixed to said coin-pocket, a pivoted lever arranged in the path of said projection, an extension of said lever arranged in the path of the coin as it is inserted into the coin-pocket, a fixed coin-slot registering with said lateral aperture when said projection abuts against said lever, a feed-pawl pivotally mounted on said coin-pocket, means for holding said pawl in either of two positions, a second pivoted lever, a striking-arm on said second lever for acting on said feed-pawl in one direction, an adjustably-fixed striking-arm for acting on said feed-pawl in the other direction, and a second ratchet-wheel arranged adjacent to said feed-pawl and connected to the quantity and valve mechanism of the meter, substantially as described.

8. The combination, in prepayment mechanism for fluid-meters, of a rotatable coin-pocket, lateral and peripheral apertures in said coin-pocket, a ratchet-wheel fixed to said coin-pocket, a retaining-pawl engaging said ratchet-wheel, a projection fixed to said coin-pocket, a pivoted lever arranged in the path



of said projection, an extension of said lever  
arranged in the path of the coin as it is in-  
serted into the coin-pocket, a fixed coin-slot  
registering with said lateral aperture when  
5 said projection abuts against said lever, a  
feed-pawl pivotally mounted on said coin-  
pocket, means for holding said pawl in either  
of two positions, a second pivoted lever, a  
striking-arm on second lever for acting on  
10 said feed-pawl in one direction, an adjust-  
ably-fixed striking-arm for acting on said  
feed-pawl in the other direction, a second  
ratchet-wheel arranged adjacent to said feed-  
pawl and coaxially with said coin-pocket and  
15 connected to the quantity mechanism of the  
meter, and a damping-spring bearing against  
the said second ratchet-wheel, substantially  
as described.

9. The combination, in prepayment mech-

anism for fluid-meters, of a rotatable coin- 20  
pocket, a feed-pawl pivotally mounted on said  
coin-pocket, a ratchet-wheel arranged adja-  
cent to said pawl and connected to the valve  
mechanism of the meter, coin-operated means  
independent of said coin-pocket for acting on 25  
one side of said pawl, a fixed striking-arm for  
acting on the other side of said pawl, an arm  
on said feed-pawl, a plurality of notches in  
said arm, and a spring-pressed projection en-  
gaging one or other of the notches in said 30  
arm, substantially as described.

In testimony whereof I have hereunto set  
my hand in presence of two subscribing wit-  
nesses.

WILLIAM COX.

Witnesses:

CONRAD K. FALKENSTEIN,  
WALTER J. SKERTEN.