

No. 621,443.

Patented Mar. 21, 1899.

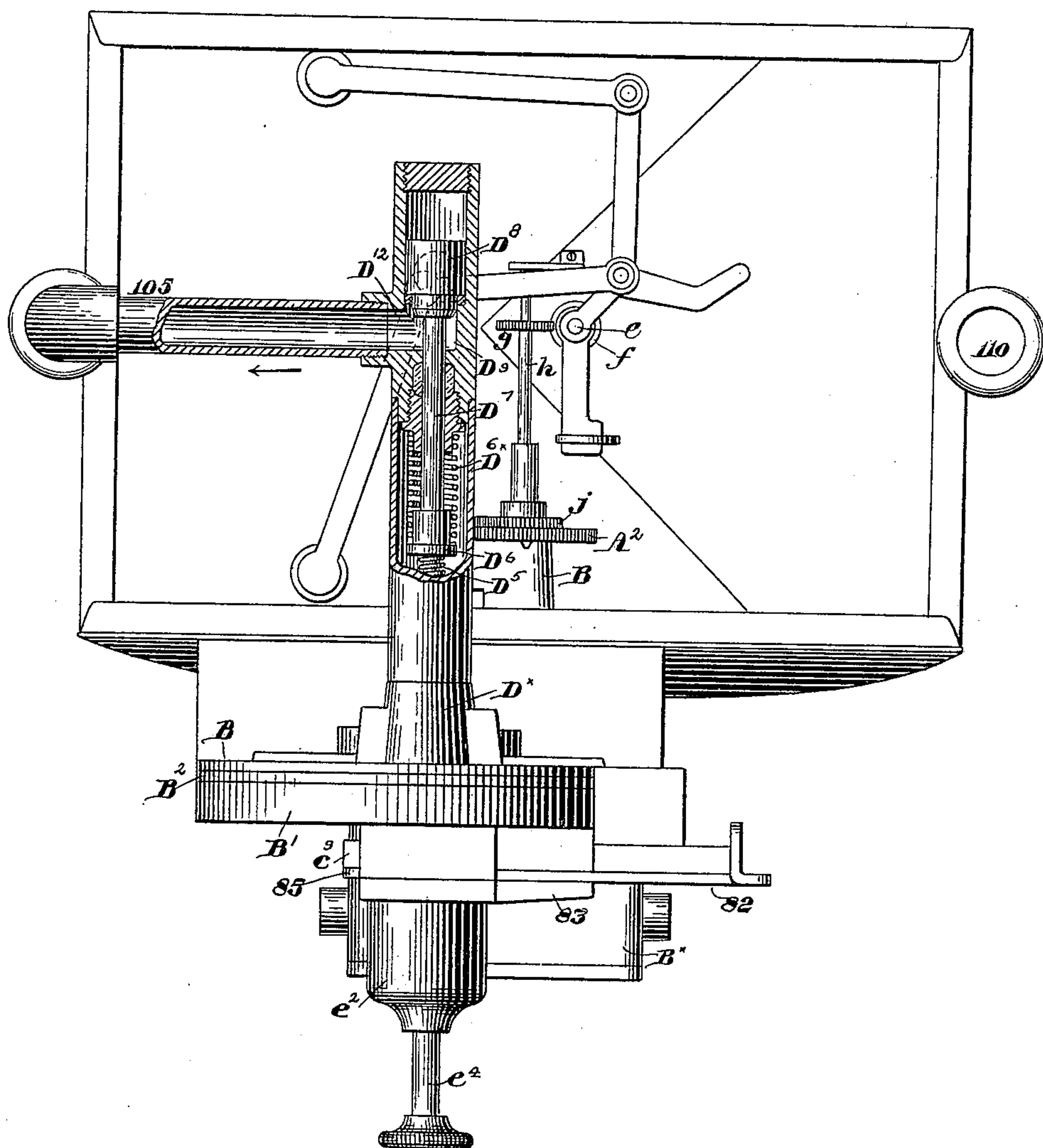
C. M. BURTON.
PREPAYMENT ATTACHMENT FOR GAS METERS.

(Application filed Feb. 26, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



Witnesses:
Walter E. Lombard.
Edward F. Allen.

Inventor:
Charles M. Burton,
by Crosby Gregory,
Attys.

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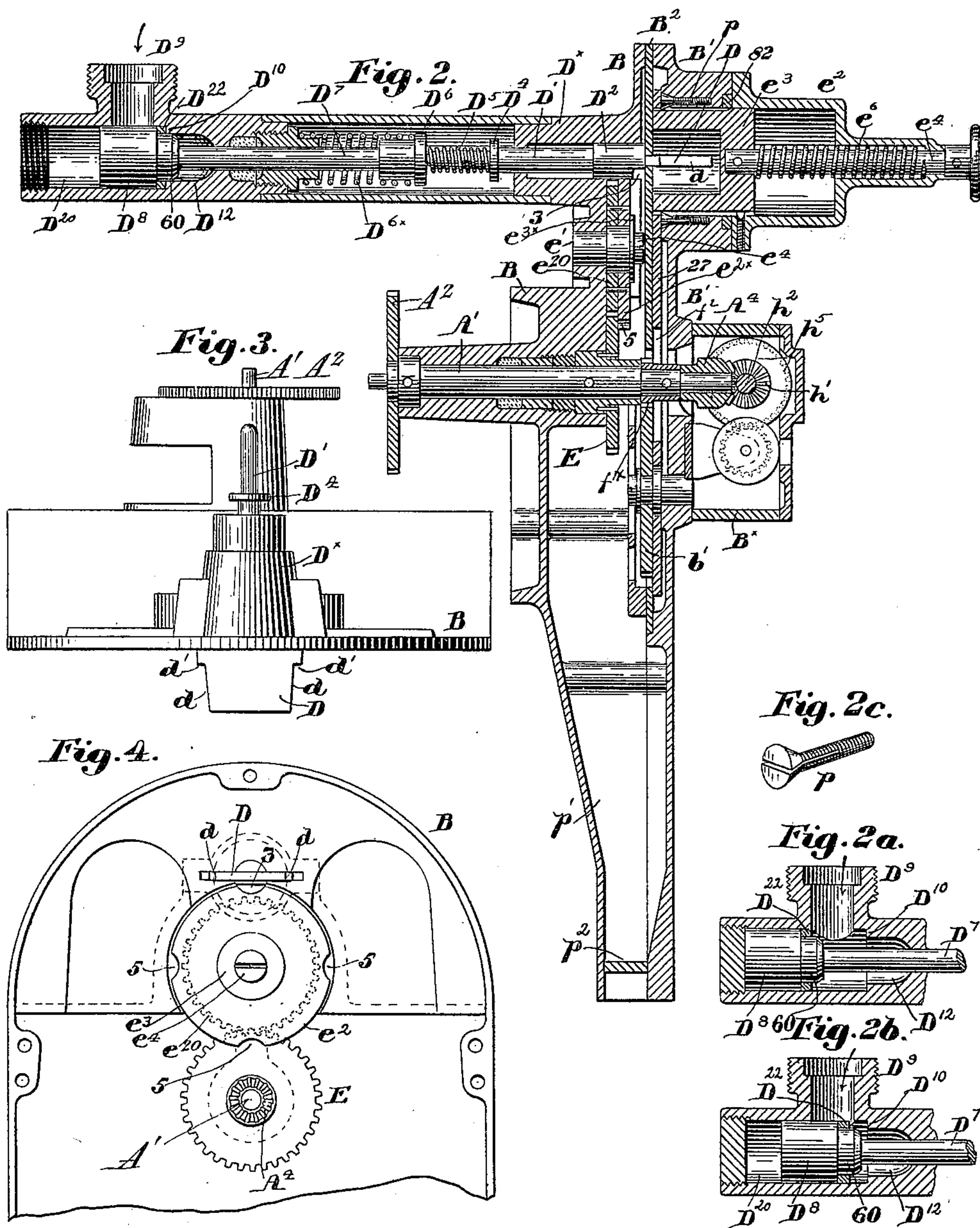
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3 Sheets—Sheet 2.



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 Edward F. Allen.

Inventor:
 Charles M. Burton,
 by Crosby Gregory,
 Atty.

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3 Sheets—Sheet 3.

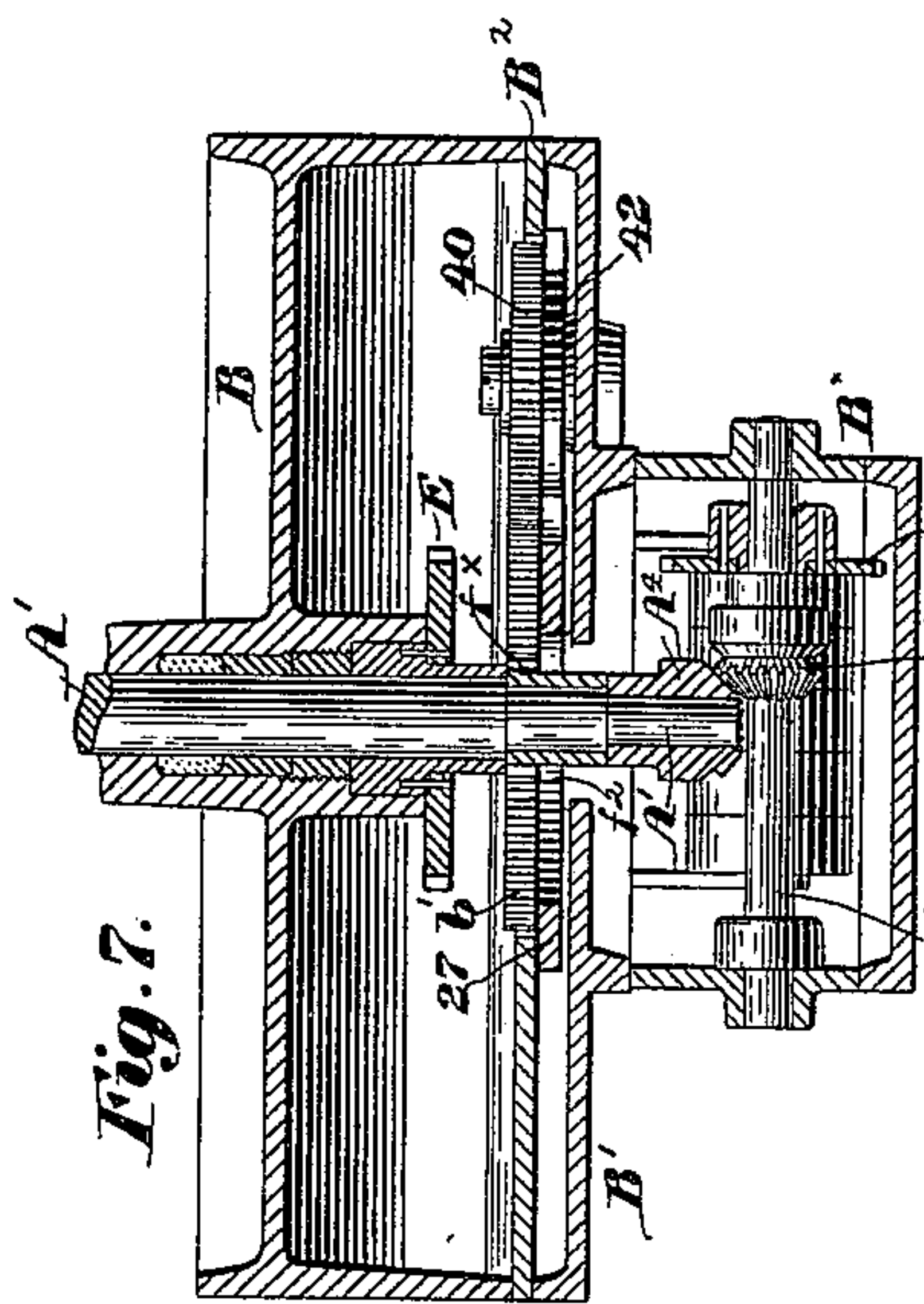


Fig. 7.

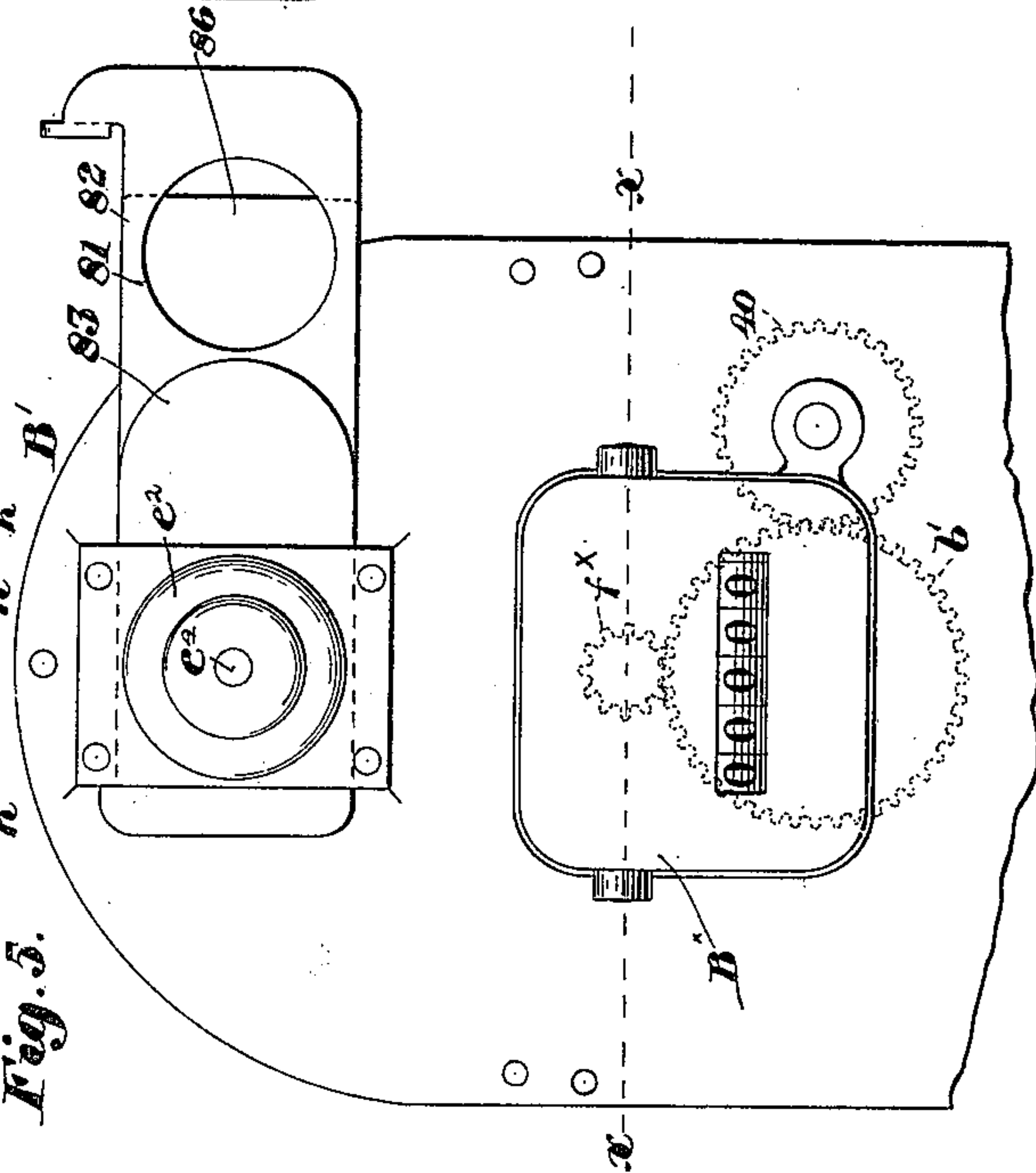


Fig. 5.

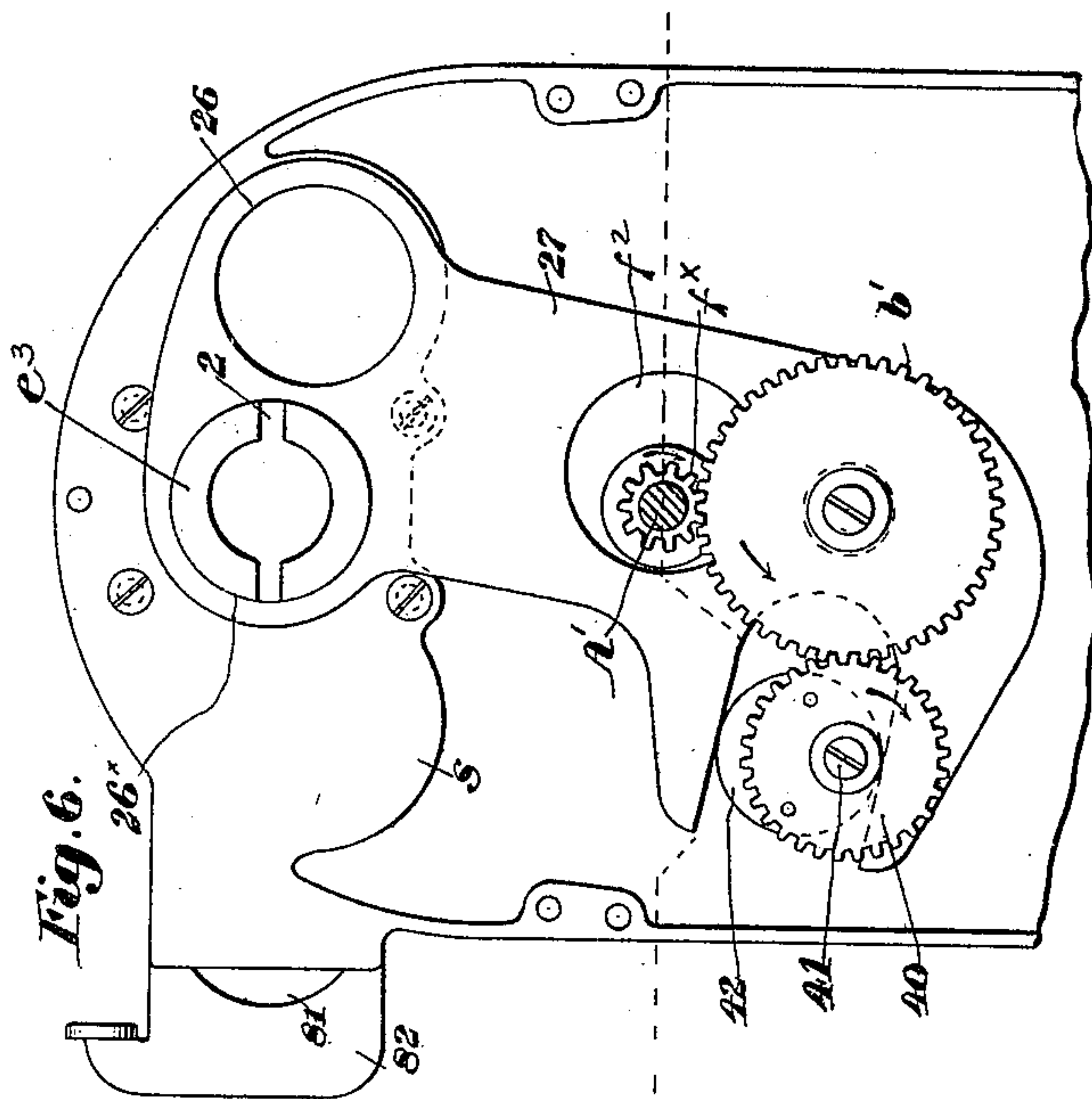


Fig. 6.

Witnesses:
Walter E. Lombard
Edward F. Allen.

Inventor:
Charles M. Burton,
by Masby Gregory,
Attys:

UNITED STATES PATENT OFFICE.

CHARLES MAUZY BURTON, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO
HENRY G. THOMPSON & SON, OF SAME PLACE.

PREPAYMENT ATTACHMENT FOR GAS-METERS.

SPECIFICATION forming part of Letters Patent No. 621,443, dated March 21, 1899.

Application filed February 26, 1898. Serial No. 671,802. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MAUZY BURTON, of New Haven, county of New Haven, State of Connecticut, have invented an Improvement in Prepayment Attachments for Gas-Meters, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention in prepayment attachments for meters has for its object to control the flow of gas into the meter and also to provide means to positively restrain any movement of the controlling device after the valve has operated to shut off the gas-supply.

The invention to be herein described is shown as embodied in connection with a prepayment attachment substantially such as shown in United States Patents Nos. 604,173 and 604,175, dated May 17, 1898. The Patent No. 604,173 shows a locking device which enters and restrains the movement of the coin-carrier whenever a coin is absent therefrom. Herein I have operatively combined with said locking device a valve to control the flow of gas into the meter, and I have so shaped said valve and its seat that the valve is kept clean and free from any corroding or adhering material when the same is closed upon its seat, and I have so shaped the locking device that instead of entering a hole or pocket of the coin-carrier instantly to check its rotation said locking device may enter the said pocket gradually, thus gradually effecting the closing of the valve and gradually reducing the lights in order that the user of the meter may be warned that should he not at once supply the prepayment attachment with coin the lights will go out.

Figure 1 is a top view of a meter with its top plate taken off to show the usual meter mechanism, it showing the usual inlet and outlet pipes of the meter, my improved mechanism being in position on said meter, the inlet-pipe being broken out partially to represent the valve for cutting off the supply of gas and the stem of the locking device co-operating therewith. Fig. 2 of the drawings shows in vertical section a prepayment attachment having applied to it the improve-

ment to be herein claimed. Figs. 2^a and 2^b show portions of the inlet-pipe with the gas-valve in different positions. Fig. 2^c shows the catch detached. Fig. 3 is a top view showing part of the back plate of the attachment with the coin-locking device and its shank. Fig. 4 is a partial front view of the inner face of the back plate of the attachment chiefly to show the locking-wheel referred to, it also showing the locking device. Fig. 5 is a front elevation of the whole attachment shown in Fig. 1, viewing it from the right, with the exception that the lower parts of the front and back plates have been broken off to save space upon the drawing. Fig. 6 is a detail showing the inner side of the front plate, with the coin-carrier in position, together with some of its actuating parts; and Fig. 7 is a section in the line *x* of Fig. 5.

The back plate B, the front plate B', the dividing-wall B², the little casing B^x, attached to the front plate and containing the gas-recording device, represented as a series of disks figured at their peripheries to show each one a number through the slot in said case, the wheel *h*⁵ to actuate said recording device, the shaft *h*³, carrying said wheel, it also having a beveled gear *h*⁷, the plunger *e*³, having the attached stem *e*⁴, surrounded by a spiral spring *e*⁶, which normally acts to press said plunger toward the left, viewing Fig. 1, said plunger having a slot, as 2, the cup or shell *e*², the shaft A', having fixed to it the gear A² and supposed to be driven from a shaft *e*, worm *f*, gear *g*, shaft *h*, pinion *j*, actuated by the mechanism of the meter to which this attachment is applied, the gear *g*, driving gear A² by suitable intermediates, and the bevel-gear A⁴ on said shaft, it engaging the bevel-gear *h*⁷ and operating the recording mechanism, are and may be all substantially as shown in United States Patent No. 604,173, dated May 17, 1898. The coin-carrier in said patent is shown as a toothed wheel, and herein the coin-carrier is composed of an elbow-lever, provided with coin-pockets 26 and 26^x, said lever having a forked end which is entered by a cam or eccentric 42, mounted on a stud 41 and having connected to it a pinion 40, which is engaged and rotated by a toothed

gear b' , and the ledge s , against which one side of the coin-carrier 27 works, while its opposite side works snugly against the division-wall B^2 , are and may be all substantially as shown in United States Patent No. 604,175, dated May 17, 1898. Both said patents show a locking device free to slide for a certain distance back and forth in the back plate, said locking devices entering pockets of the coin-carrier whenever an empty pocket arrives opposite said locking device; but the width of the locking device therein shown is of just the diameter of the pocket.

I have herein designated the locking device by the letter D , and, as best shown in Fig. 3, it has two tapering edges d d and two shoulders d' d' , the two shoulders being required because the coin-carrier herein shown has a to-and-fro movement; but should a rotary coin-carrier, such as shown in United States Patent No. 604,173, be used, then only one inclined edge and one shoulder would be needed. This locking device is connected with a stem D' , an enlarged part D^2 of said stem being cut away at its under side for a short distance, as at 3. The stem D' of the locking device is extended through the hub D^x , attached to the back plate, and outside the said hub it is provided with a collar D^4 , (see Fig. 2,) and then a further part of the shank is surrounded by a rather closely coiled spiral spring D^5 , the end of said spring and the end of said shank touching the head D^6 of the rod or shank D^7 , carrying the valve D^8 , which is free to play to and fro in the gas-inlet pipe D^9 , said valve meeting the seat D^{10} and cutting off the supply of gas coming into the meter, as in Figs. 1 and 2, when said locking device has fully entered a pocket of the coin-carrier. When the stem D^7 is pushed back from its seat, the gas passes in the direction of the arrow from the pipe D^9 through the opening D^{12} , Figs. 1 and 2, and thence into the continuation 105 of the inlet-pipe, the gas coming out of the meter at the outlet 110.

The gas-controlling valve D^8 is made cylindrical in cross-section and of considerable length, it presenting two different diameters, the smaller diameter next the valve-stem being marked 60.

The inlet-pipe D^9 has at one end an extension to form a pocket D^{20} to receive the valve D^8 whenever the locking device acted upon by a coin put into the attachment is pressed back to open the valve and admit gas. The exterior of this valve fits this pocket closely and stands therein, as in Fig. 2, when the gas is being used and the meter is in operation.

The valve between its two diameters is shown as provided with a packing or washer D^{22} , which meets the face of the annular seat D^{10} when the valve is closed, the smaller diameter 60 of the valve entering the space inside said annular seat and filling said space closely when the packing contacts with the seat.

In earlier forms of valves used in prepayment gas-meters, so far as I am aware, a conical face has been permitted to contact with the seat; but in practice it has been found that the face of the valve enveloped in gas when the valve is opened, as well as when closed, causes a sediment to be deposited thereon, and when the valve is moved to contact with the seat and cut off the supply of gas the presence of this sediment on the valve prevents the secure closing of the valve on the seat and gas escapes more or less, and consequently there is a discrepancy oftentimes between the amount of gas said to be consumed by the customer and the quantity of coin put into the meter. I have devised the special valve herein shown and described and have provided the pocket into which it may enter, so that the surface of said valve may be scraped every time the valve is opened and enters the pocket, so that any sediment on the valve is removed, and when open the cylindrical exterior of the valve resting in said pocket is not exposed to the gas. Consequently sediment cannot be deposited upon it.

It will be obvious that the valve as it is permitted to close gradually, as will be described, will cut off the gas, this being done by the entrance of the part 60 (see Fig. 2) within the walls of the annular seat D^{10} and the approach of the packing D^{22} toward said seat. This gradual closing of the valve is of considerable importance, as it gradually reduces the pressure of the gas in the meter.

The only time that the valve is exposed so that any sediment whatever could be formed upon it is just as the last coin in the meter is giving warning, as will be described, to the user to at once supply the attachment with coin to prevent the light going out, and should the coin not be supplied the valve, cleaned and practically free from deposit of sediment, will close on the seat firmly and securely.

The shaft A' of the attachment has an attached toothed wheel E , which engages a toothed wheel e^{20} of the same diameter mounted to turn loosely on a stud e' in the back plate of the frame, said pinion having suitably pinned to it, so as to rotate in unison with it, the locking-plate e^{2x} , said locking-plate having a series of suitable notches, as 5, in its periphery. The wheel and locking-plate are kept under the said stud by means of a suitable washer, as e^{3x} , which is entered by a screw e^4 , the screw being fitted into the stud e' . The shaft A' also has fast upon it a suitable pinion f^x , which engages the toothed gear b' , before referred to, thus rotating said toothed wheel and driving the eccentric or cam 42 (see Fig. 6) to vibrate the locking device, the locking device being cut away, as at f^2 , to enable it to play back and forth at each side of the said shaft A' , I having aimed to get a very compact arrangement of the parts.

To supply coins in position to be put in the coin-carrier, I have shown a coin-feeder com-

posed of a plate 82, it having a coin-hole 81. This plate rests upon a projection 86 from one side of the front plate B', said projection constituting a table against which the rear side of the coin is laid when the coin is placed in the coin-feeder 82. The sleeve-like portion e^2 , in which the plunger works, has projecting from one side of it, as shown, a lip 83, which bears on the outer side of the coin-feeder, so that when a coin is put into the hole 81 and the feeder is moved to the left, viewing Fig. 5, the coin will be placed under the lip 83, and the coin will finally arrive directly opposite the end of the plunger e^3 , it then being supposed to be fully retracted to the right into the space of the sleeve-like portion e^2 , and the coin will be pushed by the plunger into the space in the front plate B', and said coin, acted upon by the plunger, will meet the end of the locking device and push the same to the left, viewing Fig. 1, finally pushing the coin into the coin-pocket in which the locking device then stands, the inner end of the plunger stopping in line with the face of the coin-carrier. The incoming of a coin into the coin-carrier completely removes the locking device from the pocket of the coin-carrier, thus releasing the devices for moving the coin-carrier, so that they will immediately start up. As the locking device is moved to the left, Fig. 1, its large part D^2 will be removed from the notch 5, in which it stands in the locking-wheel, thus freeing it, so that it can be started by the shaft A', and this movement of the locking device also pushes the valve D^8 away from its seat to the left, permitting the gas to enter freely the meter through the usual inlet.

It will be understood that the user of the meter may put several coins one after another into the chamber of the front plate, leaving several coins therein one upon the other, and the prepayment attachment will continue to move until all the coins have been taken from said chamber by the movement of the coin-carrier.

When an empty pocket of the coin-carrier comes opposite the outer end of the locking device reduced in width, the latter enters the empty pocket and is gradually moved farther therein, owing to its inclined edge d contacting with the edge of the pocket, and finally the shoulder d' of the locking device meets the rear side of the coin-carrier, and thereafter the coin-carrier has to move a distance equal to the length of said shoulder before the locking device can fully enter the pocket and stop the further movement of the coin-carrier. The light is gradually reduced while the locking device is entering the pocket to its shoulder d' . The length of the shoulder determines the length of time that the lights will stand in their reduced condition preparatory to cutting off the supply of gas.

It will be understood that the locking device is made to enter the pocket of the coin-carrier by or through the action of the com-

bined springs D^5 and D^{6x} ; but should the valve D^8 or its stem D^7 be stuck, so that it could not be moved, then the spring D^5 will act to partly push the locking device into its position to fully enter and stop the further movement of the coin-carrier, and at this time the end of the plunger e^3 will also enter the pocket of the coin-carrier, the end of the plunger being slotted, so that it may pass over the end of the locking device. The coin-carrier cannot be started again until the plunger is withdrawn and other money is put into the coin-feeder and pushed into position to enable the plunger to act upon it and press the coin into the chamber of the front plate B', so that said coin may act upon the end of the locking device and push it back, as before stated.

To prevent a piece of money, it having entered the coin-carrier, from escaping therefrom back into the chamber in which the plunger moves, I may provide the front plate B', at the end of said chamber next the coin-carrier, with a plurality of catches, which may yield as the money enters a pocket of the coin-carrier and spring behind said money as it gets into place in the pocket. The catches shown resemble screws beveled under their heads and split from the center of their heads well down along the shank of the screw in the line of the usual screw-driver slot, so that the exposed half of the screw-head, standing in the chamber in the path of movement of the money and plunger, may yield as the money passes it, springing immediately outward behind the money.

The money or coin will in practice be discharged from the pockets of the coin-carrier, all as provided for in either of said patents, and leaving the coin-carrier the money will enter the chamber p' , having its bottom plate removable, but capable of being locked in place.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a prepayment attachment for meters, a coin-carrier, means to move it; a gas-controlling valve; and a separate detached locking device having its stem mounted to slide in a suitable guide of the attachment-frame and adapted to enter a pocket of said coin-carrier; the stem of said locking device occupying a position with relation to said gas-valve to be moved directly thereby in a direction to enter an empty pocket of the coin-carrier, substantially as described.

2. In a prepayment attachment for meters, a coin-carrier, means to move it; a gas-controlling valve; a separate detached locking device to enter a pocket of said coin-carrier; the stem of said locking device occupying a position with relation to said gas-valve to be moved thereby directly in a direction to enter an empty pocket of the coin-carrier, and a spring interposed between said locking device and said valve, substantially as described.

3. In a prepayment attachment for meters, a coin-carrier, means to move it; a gas-controlling valve; a separate detached locking device to enter a pocket of said coin-carrier; 5 the stem of said locking device occupying a position with relation to said gas-valve to be moved thereby directly in a direction to enter an empty pocket of the coin-carrier, and a spring to act normally to close said gas-valve, 10 and a second spring interposed between said locking device and said valve, substantially as described.

4. In a prepayment attachment for meters, a coin-carrier, means to move it; a gas-controlling valve; and a separate detached locking 15 device to enter a pocket of said coin-carrier; the stem of said locking device occupying a position with relation to said gas-valve to be moved directly thereby in a direction to 20 enter an empty pocket of the coin-carrier, said locking device having a shoulder, the shoulder part of the said locking device fully entering the pocket after slight rotation of the coin-carrier and fully cutting off the gas-supply, substantially as described. 25

5. In a prepayment attachment for meters, a coin-carrier, means to move it; a gas-controlling valve; and a separate detached locking device to enter a pocket of said coin-car-

rier; the stem of said locking device occupying a position with relation to said gas-valve 30 to be moved directly thereby in a direction to enter an empty pocket of said coin-carrier, said locking device having a shoulder and a tapered edge leading to said shoulder to enable 35 it to gradually enter a pocket of said coin-carrier to thus enable said valve to be gradually closed to gradually cut off the gas or reduce its pressure preparatory to fully cutting off the gas-supply, substantially as 40 described.

6. In a prepayment attachment, a coin-carrier, means to move it; and a spring-controlled locking device to cooperate with its 45 pockets; combined with a shaft in said attachment; a locking-wheel intermediate said shaft and locking device, said locking-wheel having notches at its periphery to be engaged by said locking device when fully entered into 50 one of said pockets, substantially as described.

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

CHARLES MAUZY BURTON.

Witnesses:

GEORGE E. HAIGHT,
HENRY G. THOMPSON.