

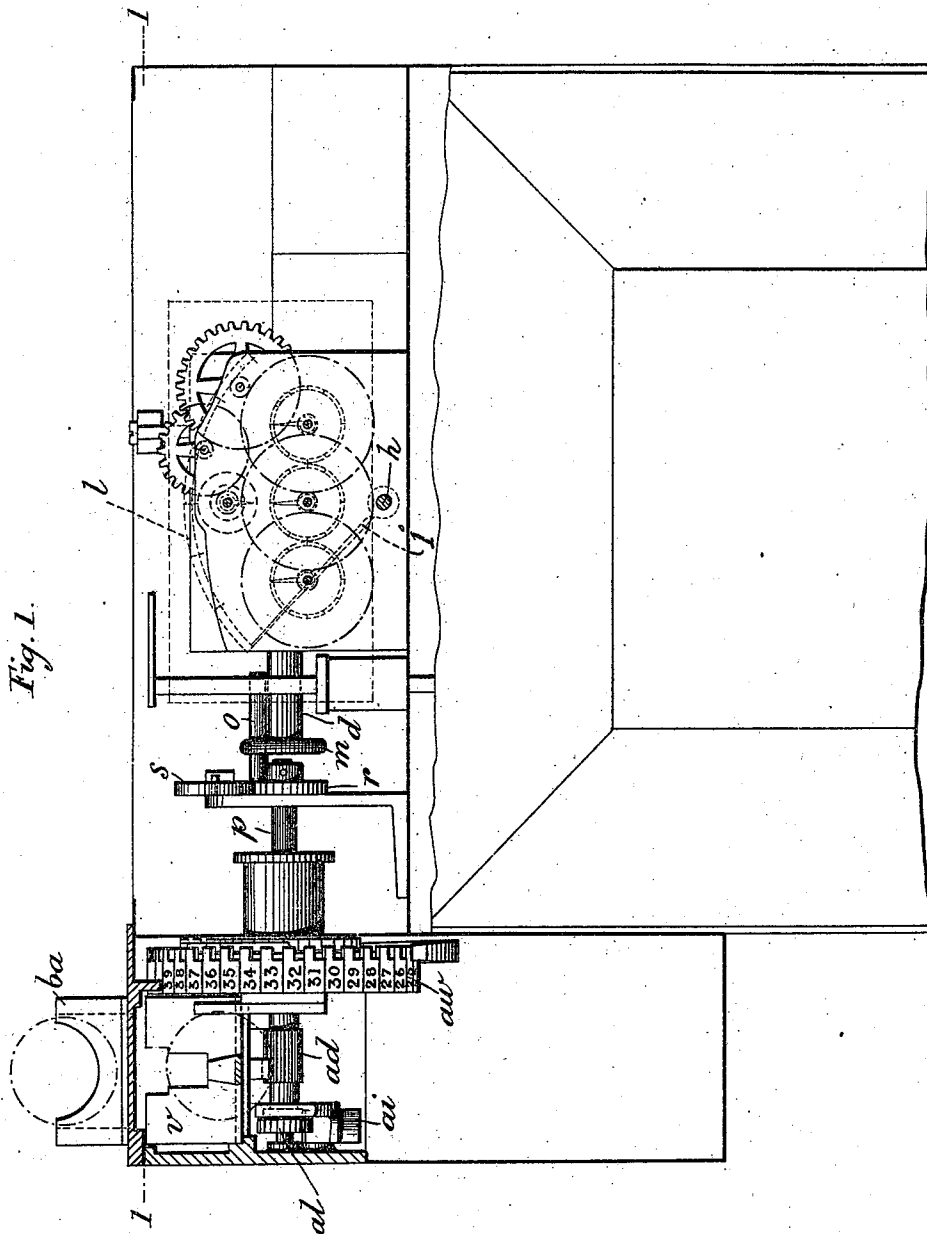
(No Model.)

4 Sheets—Sheet 1.

G. CARTER.
COIN FREED GAS METER.

No. 504,266.

Patented Aug. 29, 1893.



Witnesses
Walter Allen
Albert Popkins

Inventor
George Carter
by Herbert W. Jensen atty.

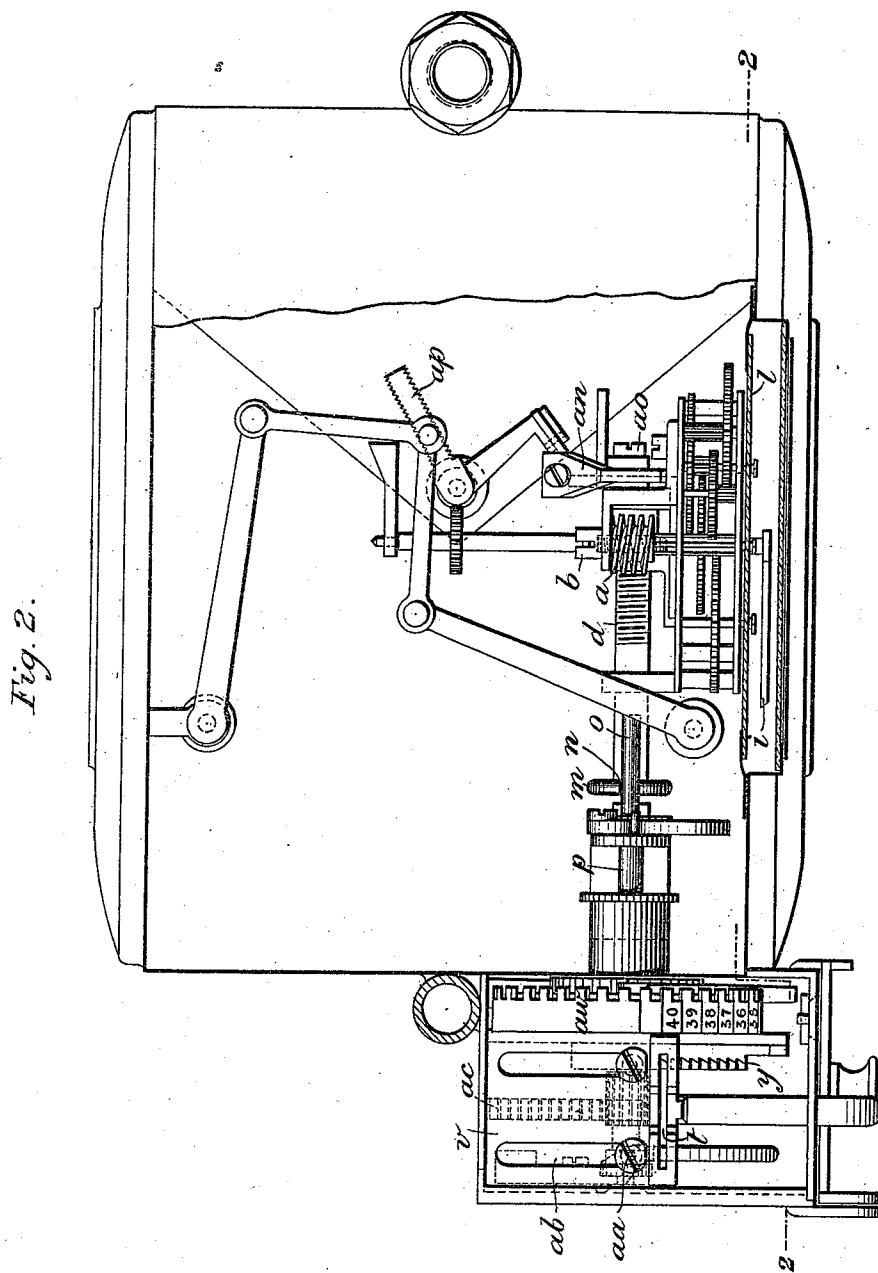
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4 Sheets—Sheet 3.

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Fig. 3.

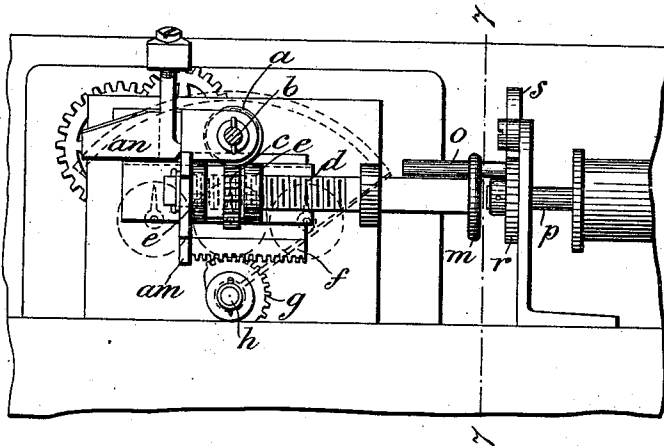


Fig. 4.

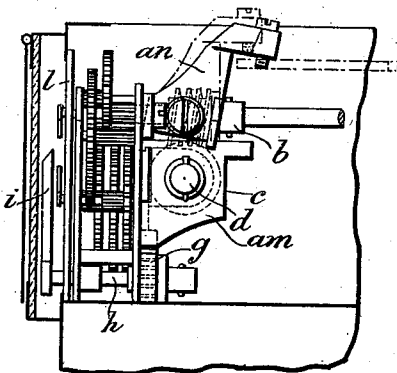
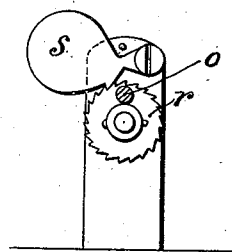


Fig. 5.



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Fig. 7.

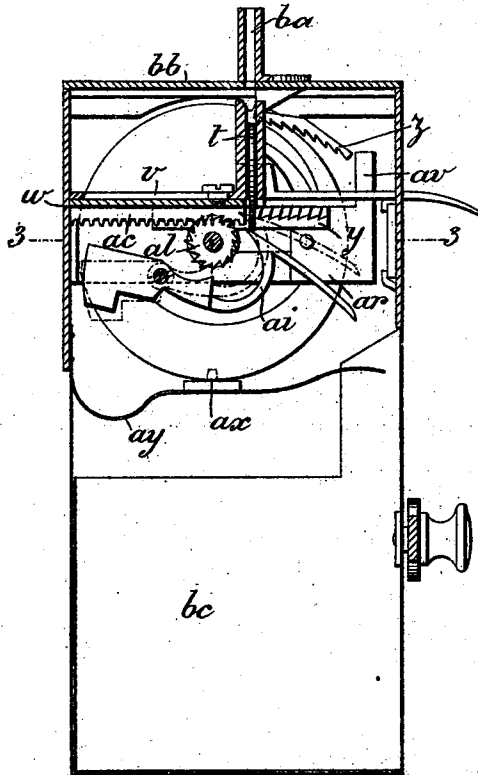


Fig. 8.

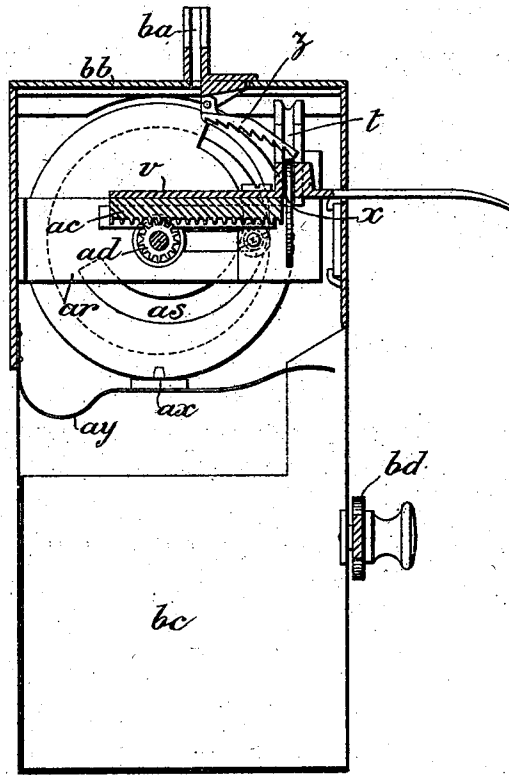


Fig. 6.

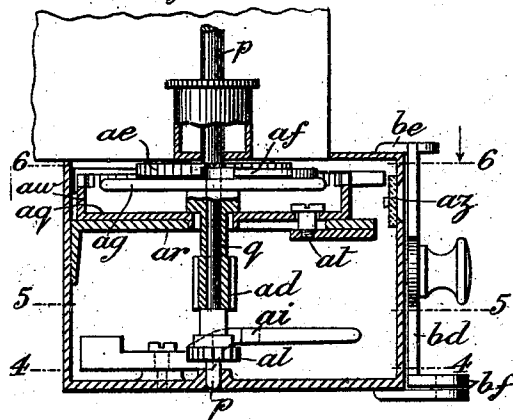
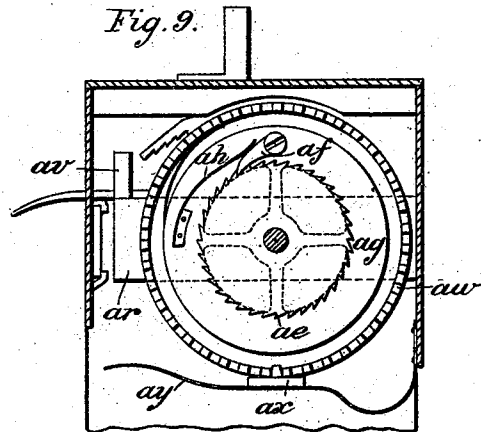


Fig. 9.



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UNITED STATES PATENT OFFICE.

GEORGE CARTER, OF LONDON, ENGLAND.

COIN-FREED GAS-METER.

SPECIFICATION forming part of Letters Patent No. 504,266, dated August 29, 1893.

Application filed May 22, 1893. Serial No. 475,063. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CARTER, a subject of the Queen of Great Britain and Ireland, residing at Liverpool Road, Islington, London, in the county of Middlesex, England, have invented certain new and useful Improvements in Coin-Freed Gas-Meters; 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 for improvements in coin freed gas meters relates to gas meters fitted with coin controlling mechanism which, on the insertion of one or more coins of predetermined size and value, such as a penny or pennies, allows the gas measuring device to act so as to automatically deliver to the purchaser a quantity of gas equal in value to the coin or coins so inserted.

This invention has for its principal object to arrange and construct such mechanism or apparatus, capable of being applied to any ordinary wet or dry meter, in such a manner that on the insertion of one or more proper coins of the predetermined value it shall automatically set the measuring device free to act so as to deliver to the purchaser a quantity of gas equal in value to the inserted coin or coins, and shall at all times indicate the amount of gas, if any, to the credit of the purchaser, and which shall also be capable of being readily adjusted to deliver any quantity of gas per unit coin to suit any variation in price.

Referring to the accompanying drawings Figure 1 represents a sectional elevation on a plane 2—2 Fig. 2, of a coin freed gas meter constructed according to this invention. Fig. 2 represents a sectional plan on a plane 1—1 Fig. 1. Fig. 3 represents a sectional back elevation of the measuring and indicating mechanism, and Fig. 4 is a sectional end elevation of the same. Fig. 5 represents a sectional elevation on the plane 7—7 in Fig. 3, of a ratchet and detent for preventing back motion of the coin rack spindle. Fig. 6 represents a horizontal section on the plane 3—3, Fig. 7, of the coin and price regulating mechanisms. Fig. 7 is a vertical section of the same on the plane 4—4, Fig. 6. Fig. 8 is a vertical section of the same on the plane 5—5,

Fig. 6, and Fig. 9 is a vertical section of the same on the plane 6—6, Fig. 6, looking from the back side as indicated by the arrowhead.

In the arrangement of coin freed gas meter shown as applied to a dry meter, a worm *a* is mounted on the unit index spindle or arbor *b* and gears with a screw threaded pinion *c* mounted on the threaded part of a sliding screw rod *d* the said pinion being held in position laterally by suitable cheeks *e* so that, as it is rotated it imparts a longitudinal or axial motion to the said screw rod.

Connected to and partaking of the longitudinal sliding motion of the before mentioned screw rod is a sliding toothed rack *f* gearing with a corresponding toothed quadrant *g* mounted on an arbor *h* carrying an index pointer *i* working over an indicating dial *l* so that, as the screw rod is slid longitudinally in either direction the said index pointer is correspondingly rotated. One end of the sliding screw rod *d* has a flange *m* provided with a slot *n* in which a crank pin *o* connected to an intermediate rod or spindle *p* engages so as to connect the rod *d* to a coin rack sleeve *q* hereinafter described so that the two rods *d*, *p* may slide longitudinally relatively to one another, but must rotate together and are prevented from rotating in one direction by a suitable ratchet *r* and click or detent *s*.

The operating coin is inserted in a slot *t* in a traversing carriage *v* working between suitable guides and whose base rests and slides upon a base plate *w* of similar configuration in such manner that when the corresponding parts in the said base and base plate coincide, the inserted coin in passing through the coinciding slots *t*, *x* locks the carriage and base plate together, its retrograde motion being arrested by a saw toothed coin rack *y* against which it presses, and which allows the carriage and base plate to be withdrawn, but prevents their return to their initial positions until they have been withdrawn the full length of traverse allowed, when the coin, passing the end of the said rack, falls into a suitable receptacle and permits the return of the carriage and base plate to their initial positions for a fresh operation. The return of the coin carriage is also further prevented, until its full traverse has been ac-

complished, by a hinged toothed lever *z* which engages with the inserted coin on the withdrawal of the coin carriage.

The carriage and base plate are connected together by screws *aa* in the base plate, which when no coin is inserted, slide freely in the slots *ab* in the carriage and permit it to be traversed without operating the base plate *w*.

On the under side of the base plate is a toothed rack *ac* which gears with a pinion *ad* mounted on the sleeve *q* coupled to the before mentioned intermediate spindle *p* by means of a ratchet coupling, comprising a ratchet wheel *ae* mounted on the spindle *p* and a pawl *af* pivoted to the disk plate *ag* mounted on the sleeve *q*, the said pawl being pressed into engagement with the ratchet disk *ae* by means of a spring *ah* so that when the coin is properly inserted and the coin carriage withdrawn by hand the said coin rack sleeve is rotated and with it the intermediate and screw spindles or rods, but in returning the coin carriage to its initial position only the coin rack sleeve is rotated. It will thus be seen that as each successive coin is inserted, and the coin carriage operated, the screw spindle *d* is rotated through a definite angle, which carries it forward axially through a corresponding space and with it the index rack *f* which operates the index pointer *i* to indicate the quantity of gas to the credit of the purchaser. The rotation of the unit index spindle or arbor *b* under the action of the measuring device on the passage of the gas rotates the before mentioned worm pinion *a* on the screw rod *d* and gradually returns it and the index rack *f* and pointer *i* to their initial positions, unless further coins are inserted before the quantity paid for is exhausted. The said screw rod *d* is normally prevented from rotating with the said worm pinion *a* by a counterweighted pawl lever *ai* engaging with a ratchet pinion *al* mounted on the spindle *p*, the said pawl lever being displaced by the inserted coin which disengages the pawl and permits the coin slide to be withdrawn, the discharge of the coin, again permitting the pawl lever to resume its normal position of engagement with the ratchet pinion *al*. When the supply paid for is exhausted the index pointer indicates zero, and the screw rod *d* is at the extremity of its traverse as shown in the drawings, so that the projecting end plate *am* is withdrawn from underneath a weighted cam lever *an* pivoted to the pin *ao* which permits it to fall forward into the path of the rotating arm or tangent *ap* of the measuring device spindle, and prevents its further rotation, and so cut off any further supply of gas until a further coin is inserted.

In order to meet the requirements of the varying price of gas a device is provided comprising a circular disk *aq* mounted in the plate *ar* and concentric with the rack sleeve *q* and having formed in it a curved slot *as* of the involute type in which a stud *at* for se-

curing the coin rack *y* works so that on rotating the said disk, the position of the rack varies and the traverse of the coin carriage is thereby regulated, a projecting arm *av* on the said rack acting as a stop to limit the traverse of the coin carriage. A graduated drum or limb *aw* serves to indicate the quantity of gas per unit coin in any position of the said disk. The drum is retained in any position by a tooth *ax* which is held in engagement with a corresponding tooth in the drum by the spring lever *ay* which can be operated from below. The index drum is observed through a glass eyepiece *az*. The coin is inserted through a slot *ba* placed in the upper plate *bb* in such a position that when the coin carriage is pressed home properly into its initial position the slots *ba* and *t* stand opposite each other. The coin on leaving the coin carriage falls into a till *bc* which is secured by a lever *bd* which engages with a hook *be* and is finally fastened by means of a padlock in the lugs *bf*.

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

1. The combination, with the index spindle of a gas meter having a worm secured on it, of a longitudinally-sliding screw rod *d*, the toothed wheel gearing into the said worm and engaging with the said screw rod, a toothed rack sliding with the said screw rod, a toothed quadrant gearing into the said rack, a stationary index dial, and a pointer operatively connected with the said quadrant, substantially as and for the purpose set forth.

2. The combination, with the index spindle of a gas meter, the longitudinally-sliding screw rod *d* provided with a stop plate normally preventing its movement in one direction, and the worm *a* and toothed pinion *c* operatively connecting the said index spindle and screw rod; of means for revolving the screw rod whereby it and its stop are moved back longitudinally to permit the said index spindle to revolve and to return the said parts to their normal position, substantially as set forth.

3. The combination, with the index spindle of a gas meter, the longitudinally-sliding screw rod *d* provided with the flange *m* and a stop plate normally preventing its movement in one direction, and the worm *a* and toothed pinion *c* operatively connecting the said index spindle and screw rod; of the revoluble actuating rod *p* provided with a crank pin *o* engaging the flange *m*, and means for preventing the rod *p* from being revolved in more than one direction, substantially as and for the purpose set forth.

4. The combination, with the revoluble actuating rod *p* provided with the crank pin *o* and the ratchet wheels *r* and *ae*, of the pivoted pawl *s* engaging with the ratchet wheel *r*, the sleeve *q* journaled on the rod *p* and provided with the toothed pinion *ad*, the disk *ag* and the pawl *af* pivoted to the disk *ag* and engaging with the ratchet wheel *ae*; and the sliding

base plate *w* provided with a toothed rack gearing into the pinion *ad*, substantially as and for the purpose set forth.

5 The combination, with the revoluble sleeve *q* provided with the toothed pinion *ad*, of the sliding base plate *w* provided with a toothed rack gearing into the pinion *ad*, and a coin slot *x*; and the operating carriage *v* provided with a coin slot *t* adapted to be placed over the slot *x* whereby the said carriage and plate are locked together by a coin inserted in the said slots, when coincident, substantially as and for the purpose set forth.

6. The combination, with the revoluble sleeve *q* provided with the toothed pinion *ad*, of the sliding base plate *w* provided with a toothed rack gearing into the pinion *ad*, and a coin slot *x*; the operating carriage *v* provided with the coin slot *t*, the revoluble actuating rod *p* passing through the sleeve *q*; the ratchet wheel *ae*, the disk *ag*, and the pawl *af*, operatively connecting the sleeve *q* and rod *p*; the ratchet wheel *al* secured on the rod *p*, and the counterweighted pawl lever *ai* engaging the ratchet wheel *al* and adapted to be released from it by a coin inserted in the slots *t* and *x*, when coincident, substantially as and for the purpose set forth.

7. The combination, with the sliding base plate *w* provided with a toothed actuating rack for the purpose set forth, and a coin slot *x*; of the operating carriage *v* provided with a coin slot *t*; and the saw-toothed rack *y* arranged below the base plate and adapted to support a coin inserted in the said slots, when coincident, until the said parts have been moved forward sufficient to carry the coin beyond the front tooth of the said rack, substantially as set forth.

8. The combination, with the sliding base plate *w* provided with a toothed actuating rack for the purpose set forth, and a coin slot *x*; of the operating carriage *v* provided with the coin slot *t*, the rack *y* for supporting the coin when inserted in the slots *x* and *t*, and

the pivoted rack lever *z* adapted to engage the upper edge of the coin and prevent the base plate from being moved backward until the coin is dropped, substantially as set forth.

9. The combination, with the sliding base plate provided with the coin slot *x*, and the operating carriage *v* provided with the coin slot *t*; of the longitudinally-adjustable saw-toothed rack *y*, adapted to support a coin in the said slots, when coincident, and permitting the said coin to drop and unlock the said parts at any pre-arranged point in the forward movement of the base plate, substantially as set forth.

10. The combination, with the sliding base plate provided with the coin slot *x*, and the operating carriage *v* provided with the coin slot *t*; of the saw-toothed rack *y* adapted to support a coin in the said slots, when coincident; a revoluble disk *aq* provided with a curved slot, and a stud *at* projecting from the rack *y* and engaging the said curved slot, whereby the position of the said rack is adjusted longitudinally by turning the said disk, substantially as and for the purpose set forth.

11. The combination, with the index spindle of a gas meter, the longitudinally-sliding rod *d*, and intermediate driving mechanism operatively connecting the said parts; of the end stop plate *am* limiting the movement of the said rod *d* in one direction, and the pivoted cam lever *an* normally supported by the said stop plate and permitted to fall into the path of an arm on the spindle of the measuring device, to prevent its further rotation, when the movement of the rod *d* is arrested by the said stop plate, substantially as set forth.

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

GEORGE CARTER.

Witnesses:

W. H. WHEATLEY,
THOMAS LAKE.