Jan. 9, 1923. 1,441,441.

M. O. S. MADSEN.

AUTOMATIC GAS METER.

FILED NOV. 4, 1922.

Fig. 2.

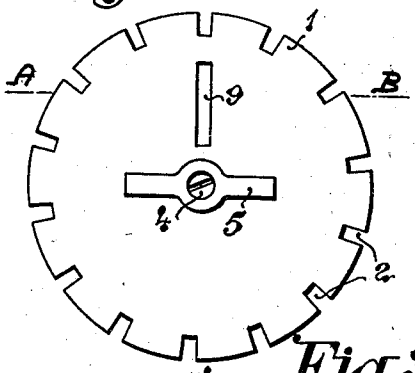


Fig. 4.

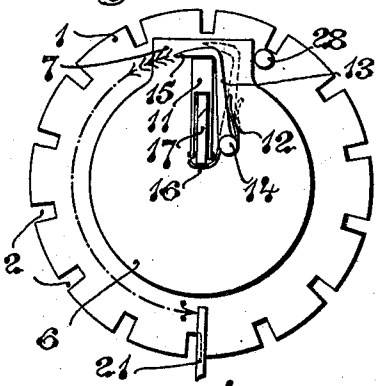
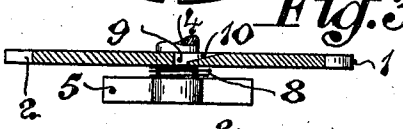


Fig. 3.



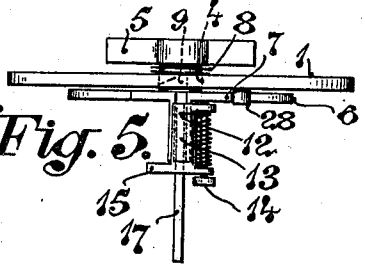


Fig. 5.

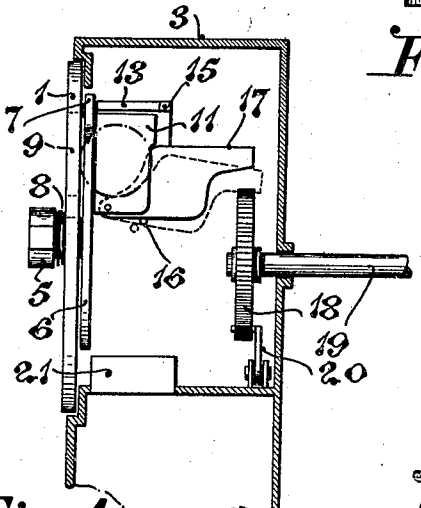
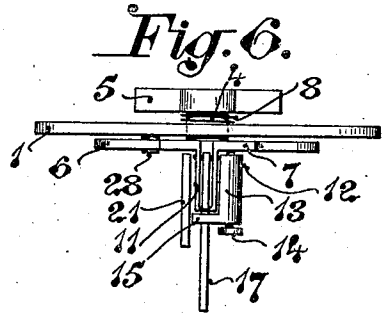


Fig. 1.

Fig. 6.



Inventor

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per

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Patented Jan. 9, 1923. 1,441,441

UNITED STATES PATENT OFFICE.

MATHIAS ODIN SEVERIN MADSEN, OF AARHUS, DENMARK.

AUTOMATIC GAS METER.

Application filed November 4, 1922. Serial No. 599,132.

To all whom it may concern:

Be it known that I, MATHIAS ODIN SEVERIN MADSEN, subject of the King of Denmark, residing at Aarhus, Denmark, have invented certain new and useful Improvements in Automatic Gas Meters (for which I have filed application in Denmark, Aug. 20, 1921; in Germany, Sept. 14, 1921; in Norway, June 15, 1922; in Sweden, June 14, 1922; and in Great Britain, Sept. 22, 1922), of which the following is a specification.

The present invention relates to an automatic gasmeter of the kind with which the insertion of a coin of a given value will have the effect that a member belonging to the automatic device and serving to close the gas pipe, may be moved by a hand a certain distance away from its closing position so that the said member, which is automatically returned to its closing position when the automatic meter is in operation, will, during such operation have to travel a certain distance, before it shuts off the gas.

The invention, in particular, relates to a coupling device, by means of which the inserted coin will produce and again disengage a coupling between a disc rotatable by hand and the said closing member. The coupling device is remakable by being in itself of a very simple construction, by its affording a guarantee that only coins of the proper size (value) can be used and by its allowing of the automatic meter easily being set to dispense a larger or smaller volume of gas for the money value of one such coin.

In the accompanying drawing is shown a constructional form of the coupling device mentioned.

Fig. 1 is a side elevation of the device, the casing being shown in section.

Fig. 2 shows the device as seen from its outer end (the end of the automatic meter where the coin inserting slot is situated).

Fig. 3 a horizontal section of the disc 1 taken on a line cutting through the coin slot 9.

Fig. 4 an inward view of the device seen in the direction looking towards the outer end mentioned.

Fig. 5 the same seen from above, and

Fig. 6 the same seen from below, when in the position, at which the coin inserted falls out.

1 is a circular disc, which, along its circumference is provided with holes 2, Fig. 2, and which, by means of three screws not shown, passing through three of said holes 2, may be secured to the outermost end of a cylindrical casing 3, Fig. 1, enclosing the device. Centrally through said disc 1 passes a revoluble pin 4, Fig. 3, to the outer end of which is secured a handle 5, and to the inner end of which, which end projects a little beyond disc 1, is fitted a second disc 6 of a diameter smaller than that of the first mentioned disc. The disc 6 is circular only along the greater part of its circumference, having at one part a projecting neck 7, Fig. 4, whilst a torsional spring 8 fitted to the pin 4 at one end and with its other end to the disc 1, tends to hold the disc 6 in such a position that the one edge of the neck 7 bears against a stop pin 28, Figs. 4 and 5, fitted in disc 1.

In disc 1 is provided a slot 9 for the insertion of a coin, Figs. 1 and 3, the one side wall of this slot being made of an oblique surface 10.

To the inner side of disc 6 is soldered a coin pocket 11 which consists of a member bent to a ⊓ section having its open side turned inwards towards a corresponding opening in disc 6, which opening is opposite to the coin inserting slot 9 in disc 1, when the first mentioned disc is in its normal position. The coin pocket 11 is open both at top and bottom, besides being, on the side turned away from the disc 6, open along about the half of its length, which half is lowermost when the disc 6 is in its normal position. At the top the pocket is closed by the bent over end of a flap 13, which is under action of a spring 12 and is revolubly fitted on a pin 14 secured to disc 6, whilst its above mentioned end forms a kind of beak 15, extending a little beyond the pocket 11. Below and on the open half mentioned the pocket is closed by a pawl 17, which is under action of a spring 16 and is pivoted between the side walls of the pocket 11, and which rocks a small distance inwardly from the pocket, so as to engage with a gear wheel 18. The latter is fitted to the outer end of a shaft 19 belonging to the automatic mechanism of the gas meter and is prevented from performing an untimely rotation by a pivoted arm 20 under action of a spring, this arm 20 being held in engagement with the peripheral teeth of the wheel 18 by the said spring, with sufficient pressure to prevent unnecessary or free movement of the wheel 18 and shaft 19.

In the bottom of the casing is an opening through which the coins from the pocket 11 may fall out into a collecting chamber, and at the side of which is provided a stop 21, against which first the beak 15, and subsequently the pocket 11 abuts, when, after the insertion of a coin, the disc 6 is turned by hands by means of the handle 5.

The device operates as follows:

After insertion of a coin of the kind for which the automatic meter is intended, into the slot 9, this coin passes through the corresponding opening in disc 6 which opening is in front of said slot and enters partly into the coin pocket 11 up to the pawl 17, whilst the disc 6 is in its normal position shown in Fig. 4. The pawl 17 is under action of spring 16 held in the position indicated by full lines, viz., out of engagement with the gear wheel 18. As soon as now, by operation of the handle 5 the pin 4 and with it disc 6, is turned in the direction of the arrow in Fig. 4, this disc will carry with it the coin which slides along the oblique surface 10 until its edge has reached the inner surface of disc 1, which it will thereupon follow. Thus the coin is forced inwardly by a distance practically corresponding to the thickness of disc 1, and is thereby caused to press in such a manner against pawl 17 that the latter is, against the action of spring 16, turned into the position indicated in Fig. 1 by the dot and dash lines, in which it is in engagement with the gear wheel 18. The consequence is that the latter and with it shaft 19 must participate in the rotation and by such rotation of shaft 19 the above mentioned, not shown closing member will, in known manner be removed away from its closing position.

Shortly before the moment, when the disc 6 has been turned so far that the pocket 11 is immediately above the opening for the discharge of the coin provided in the bottom of the casing 3, the beak 15 will abut against the stop 21, Fig. 6. At the further rotation of the disc the flap 13 will be turned in such a manner relatively to the pocket itself, that the latter is opened below, whereupon the stop 21 by abutting against the one side wall of the coin pocket will stop the disc 6 with the coin pocket, now open below, immediately above the opening in casing 3, so that the coin will fall through the same. The spring 16 will thereupon immediately swing the pawl 17 out of engagement with the gear wheel 18 and back into its normal position, and if the handle 5 is now released the spring 8 will cause the disc 6 to be automatically returned into its normal position determined by the stop pin 28. The device is then ready to receive a further coin.

A too small coin cannot bring the pawl 17 into engagement with the gear-wheel 18, and a too large coin cannot enter sufficiently far so as to leave the slot 9 in the stationary disc 1, and will thus prevent a rotation of the disc 6.

The distance by which the closing member can be removed from its closing position after the insertion of each coin is determined by the angle (reckoned in the operative sense of rotation of disc 6) between the stop pin 28 and the stop 21. This angle can be varied at will by simply removing the three screws holding the disc 1 and turning this disc 1 thus that the said screws will pass through other holes 2 in the disc than before.

I claim:

1. In a gas supply meter in which the insertion of a coin of a given value permits a gas supply closing device to be moved by hand a given distance from its closing position, a stationary disc having a slot for the introduction of the coin, a rotatable disc having an opening for the passage of the coin, a spring holding the rotatable disc in its normal position with the said opening in line with said slot, a coin pocket carried on the rotatable disc to receive the coin from the said slot and opening, an inclined surface at one side of the slot for forcing the coin into the pocket as the latter is rotated with the rotatable disc, a gear wheel for operating the gas closing device, and a pawl mounted upon the rotatable disc and adapted to be moved into engagement with the gear wheel by a coin of the required diameter, and to rotate the said gear wheel with the rotatable disc.

2. In a gas supply meter having control mechanism according to claim 1, an enclosing casing for the mechanism, operating means comprising a pin secured to the rotatable disc and extending through the stationary disc, and a handle on the outer end of said pin, stop means for the rotatable disc comprising a stop pin on the stationary disc, a projecting part on the rotatable disc for engaging said stop pin when the mechanism is in its normal position, and a fixed stop piece, mounted in the casing to engage the coin pocket, and means for closing the coin pocket comprising a hinged flap mounted on the rotatable disc, a spring for closing said flap over the coin pocket, and a projecting beak portion on the said flap to engage the said fixed stop piece and thus swing the flap so as to release the coin from the pocket.

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

MATHIAS ODIN SEVERIN MADSEN.

Witnesses:

E. MUNN,

P. SORENSEN.