No. 667,054. Patented Jan. 29, 1901.

E. ALLO.

PREPAYMENT METER.

(Application filed Apr. 20, 1898.)

(No Model.)

FIG. 1.

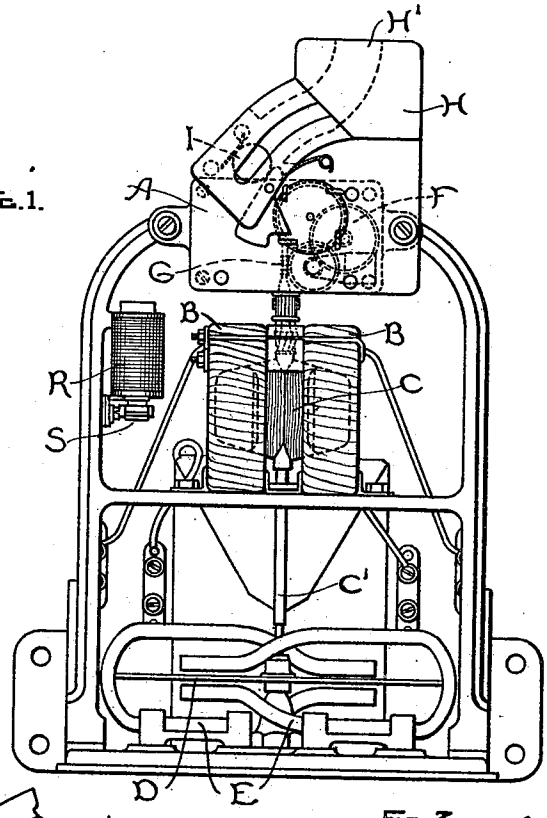


FIG. 2.

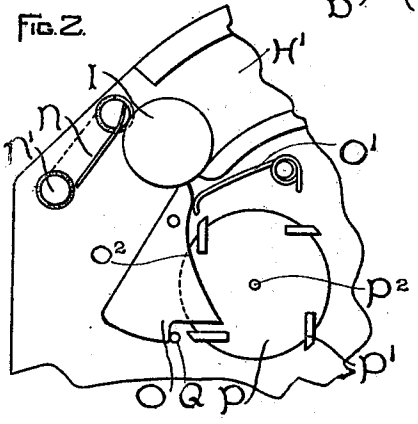


FIG. 3.

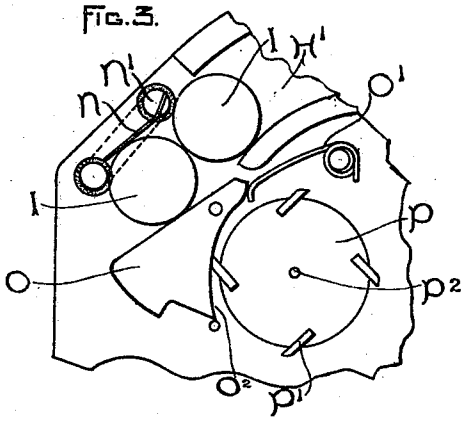
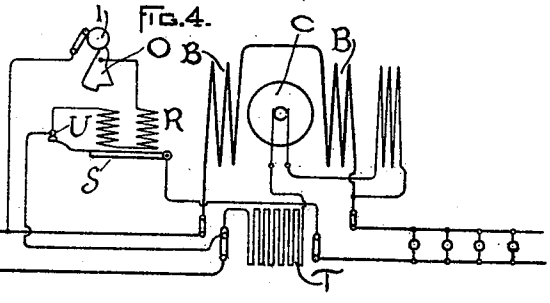


FIG. 4.



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UNITED STATES PATENT OFFICE.

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PREPAYMENT-METER.

SPECIFICATION forming part of Letters Patent No. 667,054, dated January 29, 1901.

Application filed April 20, 1898. Serial No. 678,207. (No model.)

To all whom it may concern:

Be it known that I, EDMUND ALLO, a subject of the King of Belgium, residing at Lynn, county of Essex, and State of Massachusetts, have invented certain new and useful Improvements in Prepayment-Meters, (Case No. 813,) of which the following is a specification.

My invention relates to that class of prepayment devices in which the insertion of a suitable coin or token in a receptacle sets the parts of the apparatus in operative relation to deliver an article or to permit the passage of a prepaid amount of energy.

In prepayment-meters or other devices having motors to control it is desirable to employ the coin or token to complete the motor-circuit; and the present invention has for its objects to improve the construction and arrangement of the receiver which holds the coin in position to complete an electric circuit and also to improve the construction of the means employed to release the coin or token after it has accomplished a certain result.

In the accompanying drawings is shown an embodiment of my invention applied to an electric meter, in which—

Figure 1 is a front elevation of a meter. Figs. 2 and 3 are details of the switch mechanism, and Fig. 4 is a diagram of the circuit connections.

My invention has been shown in connection with an electric meter, as it has particular utility in this connection; but, if desired, it may be applied equally well to other prepayment devices in which the coin or token is employed to complete an electric circuit, as in prepayment fan-motors, for example.

Mounted on a frame A are the operative parts of the meter, comprising stationary field-coils B, an armature C, mounted for revolution within the influence of the field-coils, a damping-disk D, mounted on the armature-shaft and revolving between the poles of permanent magnets E, and a train of gears F, operatively connected to a worm G on the upper end of the armature-shaft.

Mounted on a frame A in front of the train of gears is a plate H, provided with a coin-chute H′, adapted to receive one or more coins or tokens I for closing the circuit of the meter. Situated at the end of the coin-chute H′, Figs. 2 and 3, is a contact-spring N and a post N′, both of which are connected to one side of an electric circuit. The contact and post are so situated that each coin or token passing through the chute will make contact therewith. Situated opposite the contact-spring is a pivoted coin-holder O, normally retained in the position shown by the spring O′. The left-hand side of the coin-holder has a straight edge, along which the coin or token rolls after it has been released and continues to maintain the circuit which has been established between the holder and the spring N, the coin-holder and its support being connected to the opposite side of the circuit. The right-hand side of the coin-holder is provided with a curved cam-surface O^2, and engaging therewith are projections P′ on the cam-wheel P.

The cam-wheel is mounted on shaft P^2 of the registering-train and is geared by any suitable form of reducing-gearing to the armature-shaft C′.

A coin or token I upon dropping down to the position shown in Fig. 2 will complete the circuit of the meter in a manner hereinafter described and the circuit will remain closed until cam-wheel P is rotated by the armature and gearing to a position where the projections P′ are out of engagement with the cam-surface O^2 of the coin-holder. At the instant one of the projections P′ leaves the cam-surface O^2 the coin-holder O is forced against stop Q, the coin or token released, and the next succeeding coin, if there be one, caught and held in the same manner as the first coin. By this arrangement any desired number of coins may be inserted in the coin-chute, and the consumer will receive energy so long as any of the coins remain in the chute.

On account of the burning of the coins by arcing as they interrupt the circuit it is desirable to reduce the current flowing through the coin to a very small amount. To accomplish this, a relay-magnet R is employed, which is mounted on the side of the frame A

and controls the switch S. If the current passing through the apparatus be slight, the relay may be dispensed with.

In Fig. 4 are illustrated the circuit connections of the meter. The field-coils B are connected in circuit with the main *a*, and main *b* is provided with a switch S for opening and closing the load-circuit of the consumer and also that of the meter. The armature C is connected across the mains *a* and *b* and provided with the usual resistance T for reducing the current flowing therein. One end of the energizing-coils of the relay-magnet R is connected to terminal U, which also forms one terminal for switch S, and the other end is connected to coin-holder O. The spring-contact N and post N′ are connected to main *a*, which is the opposite side of the circuit. The coin I completes the relay-circuit, which energizes magnet R, and switch S closes the meter and consumption circuits. After the consumer has used the prepaid amount of energy cam P will release the coin-holder O and the coin will drop into a suitable receptacle in the meter.

When the first coin or token is inserted in the coin-chute H′, it lodges between the upper end of the cam O and the contact-spring N, as shown in Fig. 2. If at that time there happens to be a second coin in the meter, it will rest on the first and perform no useful function. Assuming that the circuit has been completed and the meter started into operation by including consumption devices in the consumer's circuit, the cam-wheel P will begin to rotate and force the bottom end of cam O to the left. This will permit the first coin or token I to assume the position shown in Fig. 3—that is, it will be held between the cam and the stationary post N′ or third terminal and still retain its operative relation. In this position it will remain until one of the projections P′ on the cam-wheel passes out of engagement with the cam O. At the instant the cam O swings on its pivot to permit the coin I to drop the upper end of the cam will be moved far enough to the left to engage the second coin and hold it in position, as shown in Fig. 2. By this arrangement there is no interruption of the circuit either of the meter or consumer while changing from one coin or token to the other. This is a very important feature, since it is absolutely necessary in order to give satisfactory service that the lights shall be burning at all times when there are one or more coins on deposit in the meter.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a mechanism controlled by a coin or other token and capable of receiving a number of such coins or tokens, in which the coin or token forms a part of an electric circuit, the combination of a pivoted holder for receiving the coin or token, a cam which is actuated by a moving part of said mechanism for releasing the coin or token, after the mechanism has performed a certain operation, and means for catching and holding each succeeding coin or token in operative relation before the first is released.

2. In a coin-controlled mechanism, the combination of an electric motor, a circuit therefor, a pivoted coin-holder which is always included in the motor-circuit so long as the motor is in operation, and a cam which is actuated by the motor for first tilting the holder and advancing the coin, so that a second coin will be in operative position, and later releasing the first-mentioned coin, but retaining the second.

3. In a coin-controlled mechanism, in which the coin forms a part of the electric circuit, the combination of a coin-holder which holds the coin in a position to complete the circuit, a motor mechanism, a revolution counter or register actuated by the motor mechanism, and a rotary cam-wheel which is driven by the revolution counter or register for releasing the coin and interrupting the circuit.

4. A coin-controlled mechanism, in which the coin forms a part of an electric circuit, the combination of a coin-chute, a coin-holder which holds the coin in a position to complete the circuit, means for permitting the coin to advance to a point where a second coin can be received and placed in operative relation without interrupting the circuit, a terminal which is connected to one side of the electric circuit, and a rotary cam-wheel which is driven by a motor mechanism for moving the coin-holder to a position where the coin will be released.

5. In a coin-controlled electric motor mechanism, in which the coin forms a part of the electric circuit, the combination of a pivoted coin-holder connected to one side of an electric circuit, a spring normally retaining the holder in position to receive the coin, a spring-terminal connected to the other side of the electric circuit, means for permitting a limited movement of the coin while in operative relation, a second terminal or stop located in the path of the coin, and means driven by the motor mechanism for moving the coin-holder.

6. In a coin-controlled motor mechanism, in which a coin forms a part of the electric circuit, the combination of a pivoted coin-holder connected to one side of an electric circuit, a terminal which is connected to the opposite side of the circuit, a second terminal also connected to the same side of the circuit against which the coin abuts until the motor mechanism has made a certain movement or number of movements, and a third terminal to which the coin advances before it is released.

7. In a coin-controlled motor-meter, in which the coin forms a part of an electric circuit, the combination of a coin-holder connected to one side of an electric circuit, a ter-

minal connected to the opposite side of the circuit, a second terminal connected to the same side of the circuit as the first-mentioned terminal, against which the coin abuts, means for permitting the first coin to advance so that a second coin can assume an operative position before the first is released, and means for releasing the first coin after the motor mechanism has made a certain number of revolutions.

8. In a coin-controlled mechanism, the combination of a coin-chute, a terminal and coin-holder connected to opposite sides of an electric circuit and arranged to catch and hold the coins in a manner to complete the circuit as they are delivered from the coin-chute, the relation between the parts being such that as one portion of the coin-holder moves to release the coin which is then completing the circuit, another portion of the holder moves to a position where it will catch the next succeeding coin, and a rotary cam-wheel for swinging the coin-holder to and fro on its pivot to permit the advance of the coins.

9. In a prepayment mechanism, the combination of a coin-chute, with a pivoted coin-holder having end and side portions which engage with the coin, the end portion being arranged to engage the coin when it first assumes an operative position in the chute and the side portion when it is about to leave the operative position.

10. In a coin or token controlled device, the combination of a holder pivoted for oscillating movement, that portion of the holder on one side of the pivot being arranged to receive the coin or token at the start, and that portion of the holder on the other side of the pivot to receive the coin or token after the apparatus has started into operation, and means for moving the coin-holder.

11. In a prepayment mechanism, the combination of a coin-chute, a receiver arranged to move in a plane parallel to that of the chute, a disk or cam wheel having one or more projections secured thereto and arranged to move in the path of the receiver, a motor mechanism, and gearing between the motor mechanism and the disk.

In witness whereof I have hereunto set my hand this 15th day of April, 1898.

EDMUND ALLO. [L. S.]

Witnesses:
HERMANN LEMP,
O. ALLO.