No. 648,335. Patented Apr. 24, 1900.

F. J. BEAUMONT.

COIN FREED ELECTRIC METER.

(No Model.) (Application filed Jan. 15, 1900.)

2 Sheets—Sheet 1.

Fig. 1.

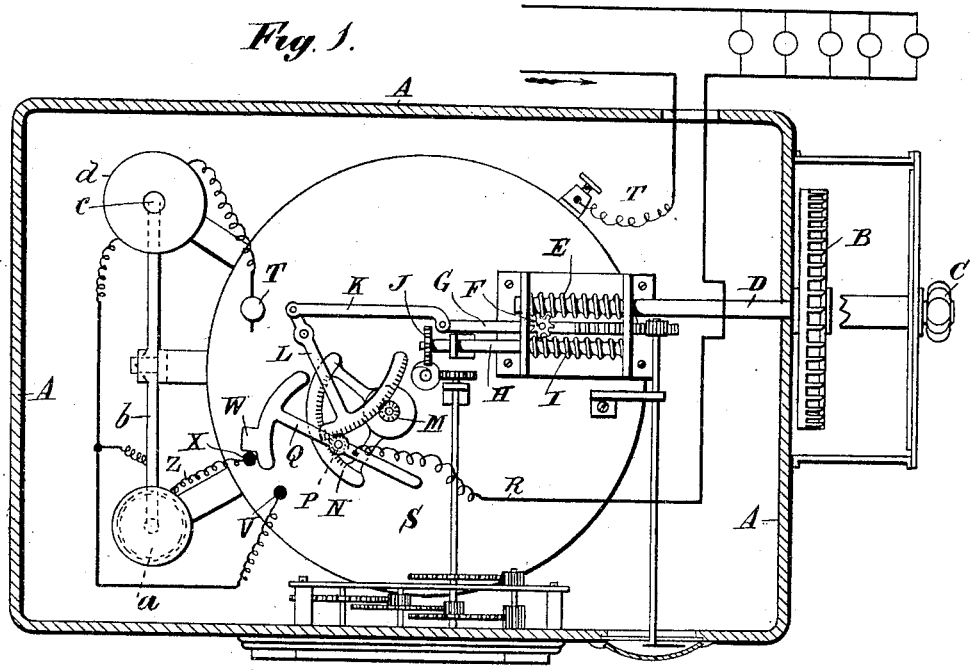
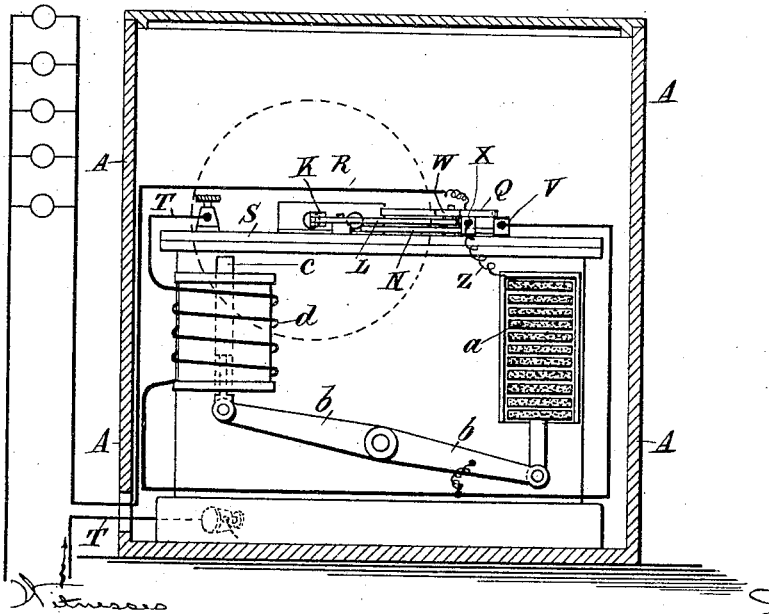


Fig 2



Witnesses

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Fig. 3.

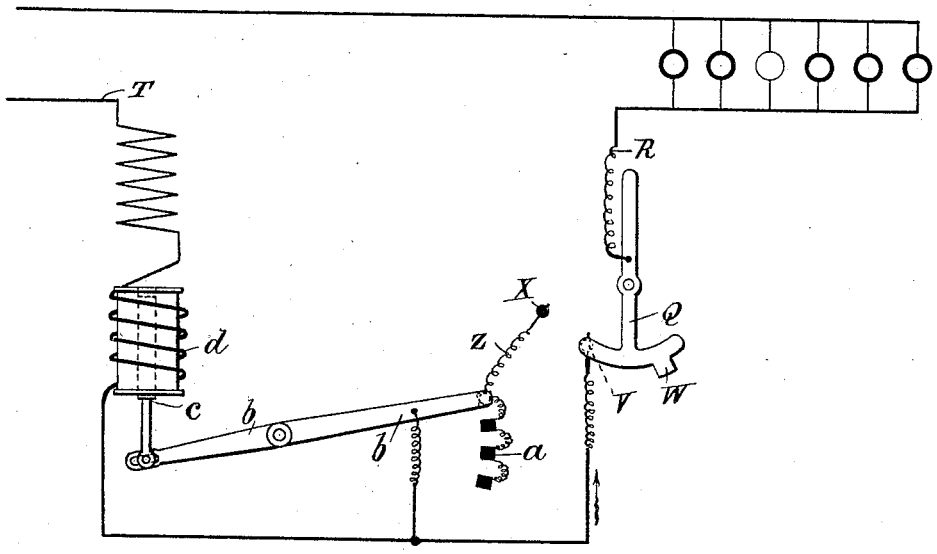
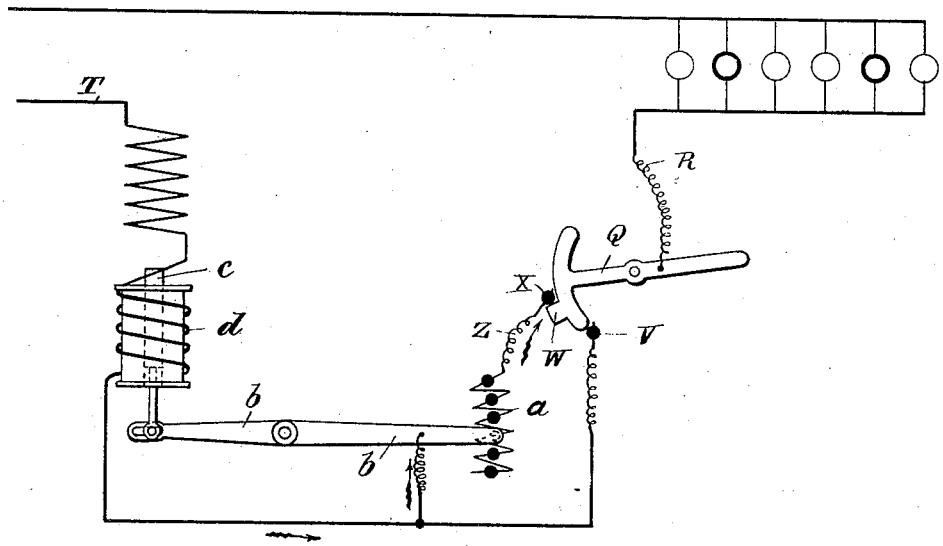


Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERICK JOHN BEAUMONT, OF LONDON, ENGLAND.

COIN-FREED ELECTRIC METER.

SPECIFICATION forming part of Letters Patent No. 648,335, dated April 24, 1900.

Application filed January 15, 1900. Serial No. 1,576. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK JOHN BEAUMONT, a subject of the Queen of Great Britain, residing at 21 Albany road, Stroud Green, London, county of Middlesex, England, have invented certain new and useful Improvements in Coin-Freed Electricity-Meters, of which the following is a specification.

This invention has for its object certain improvements in and connected with coin-freed electricity-meters.

For the purpose of this invention I employ an electric current which after passing through a meter passes through an electro-magnet or solenoid and attracts an armature or iron core, this attraction being controlled by a spring or balanced arm and varies the compression of a number of blocks of carbon or moves a contact over different points and inserts different resistances, according to the number of lamps in circuit, and applicable for coin-freed meters.

My invention is shown on the annexed drawings.

Figure 1 is a plan of operative parts of a coin-freed electrical meter. Fig. 2 is a back end elevation. Fig. 3 is a diagram of the electrical appliances while the main current is in circuit. Fig. 4 is a diagram of electrical appliances with carbon blocks in circuit, such as when the lights are dimming and the value of the inserted coin is being spent.

A is the casing of a meter of any known construction.

B is a notched wheel in which each coin is lodged and utilized for moving the notched wheel around when the handle C is turned.

D is an operating-spindle, and E a screw-thread on the same.

F is a pinion in gear with the screw-thread, said pinion F being on a sliding bar G, by which the controlling appliances are actuated.

H is a second screw-threaded spindle, the screw I of which is also geared into by the pinion F, the spindle H being in connection by pinion J for return operation by the meter mechanism.

K is a rod jointed to the sliding bar G and also with toothed quadrant-rack L, which in turn is in gear with pinion M.

N is an inner toothed quadrant secured on the spindle of pinion M and is in gear with pinion P of a vibratory contact-arm Q, this having one of the main-circuit wires R affixed, the supporting-plate S having the other main-circuit wire T affixed. The vibratory contact-arm Q is available for moving over and in touch with the contact-piece V and remains in contact proportionately to the number of coins inserted into the meter-casing, each coin so inserted demanding a separate action on the handle C, according to the quantity of current to be delivered in exchange for the amount thus paid in advance.

The action of the meter rotates the pinion J, and this causes the screw-spindle I to rotate also, and this by being in gear with the pinion F by its rotation moves back the bar G and bar K.

It will be understood that there is no motion of the screw E except by hand when the handle C is turned.

During the working action of the meter the arm Q is gradually slid back upon the contact-piece V, and just as its end is leaving the piece V an ear W rides upon the contact-piece X, which is in connection by wire Z with carbon-block resistances *a*, superposed and controlled by the balanced beam-lever *b*. The carbon blocks *a* are preferably of the spongy kind, capable of certain amount of compression to govern the degree of resistance to be inserted in the circuit. The other end of the beam-lever *b* has connected to it the iron core *c* of the solenoid *d*, the windings of which are connected, respectively, with the main-circuit wire T and of the top plate S, as indicated.

The diagrams Figs. 3 and 4 indicate the respective positions of "on" and "off," the main circuit being shown closed in Fig. 3 and the shunt-circuit closed in Fig. 4 by the ear W of the sliding arm Q being in touch with the resistance-contact X.

As indicating a method by which my invention can be carried out I have shown a beam-lever arrangement. After inserting a coin the mechanical parts comprised by the screws and pinions and rods are pulled over, and the end of this lever Q pushes the switch relatively into the position shown in the diagram Fig. 3, in which it will be seen that said switch is in electrical contact with the terminal and the current may uninterruptedly flow to the main

circuit and will continue to do so until the rotation of the worm I by the action of the electrical meter with which it is mechanically connected has returned the lever Q to allow the switch to move gradually back to its original position as the light is being used. This will continue till such time as the value has been given for the money, when the switch will be moved to the position indicated by diagram Fig. 4, where it will be seen that the said switch is no longer in contact with the terminal, but is in electrical connection with the resistance-terminal, from which it follows that as the current must flow through the resistance a reduction of the light will take place and give warning that if more light is required another coin or coins must be inserted. If, on the other hand, no coins are inserted, the switch will move to its original position (shown in Fig. 1) and the light will go out by reason of the circuit being opened.

A fixed resistance would be objectionable for the purposes of this invention, since the number of lamps in circuit is subject to a constant variation, and if the resistance is invariably the same the dimming of the light will vary and may even produce such a reduction in the current as to cause a practical extinguishment of the lamps. It is desirable to avoid this, and by the insertion of a variable resistance, which will be cut in according to the number of lamps that are in circuit, the dimming effect will be substantially the same in all cases. For example, if only one lamp should be burning the solenoid-coil would only get half an ampere, while with twenty lamps in circuit it would get ten amperes. The core being attracted proportionately would move the beam-lever *b* and cut in such a part of the whole series of resistances as corresponded with the difference.

The carbon-block resistances are shown in Fig. 3, and in Fig. 4 I have indicated conventionally a series of coils of wire of the usual kind, both forms of variable resistance being well known.

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

1. In an electric meter, the combination with a metering mechanism and lamp-circuit, of a controlling-switch to cut off the supply, a solenoid having its coil connected through said switch in the lamp-circuit, a lever connected to the solenoid-core and having a contact, a series of resistances swept by said contact, and a resistance-contact in the path of the switch and connected to the series of resistances, and a shunt-circuit including one or more of the latter, the resistance-contact and the coil of the solenoid, substantially as described.

2. In an electric meter, the combination with a metering mechanism and lamp-circuit, of a pivoted switch-arm connected in said circuit, means for moving said arm by the action of the metering mechanism, a solenoid, a beam-lever connected at one end to the core of the solenoid, a series of resistances in the path of a contact on the other end of said lever, a resistance-contact in the path of a lip on the switch-arm, a shunt-circuit including the resistance-contact, the series of resistances, the contact on the end of the beam-lever and the solenoid-coil, and means for moving said switch-arm by the action of the metering mechanism.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FREDERICK JOHN BEAUMONT.

Witnesses:
WM. O. BROWN,
EDMUND S. SNEWIN.