C. E. HIBBERD.

COIN FREED MECHANISM.

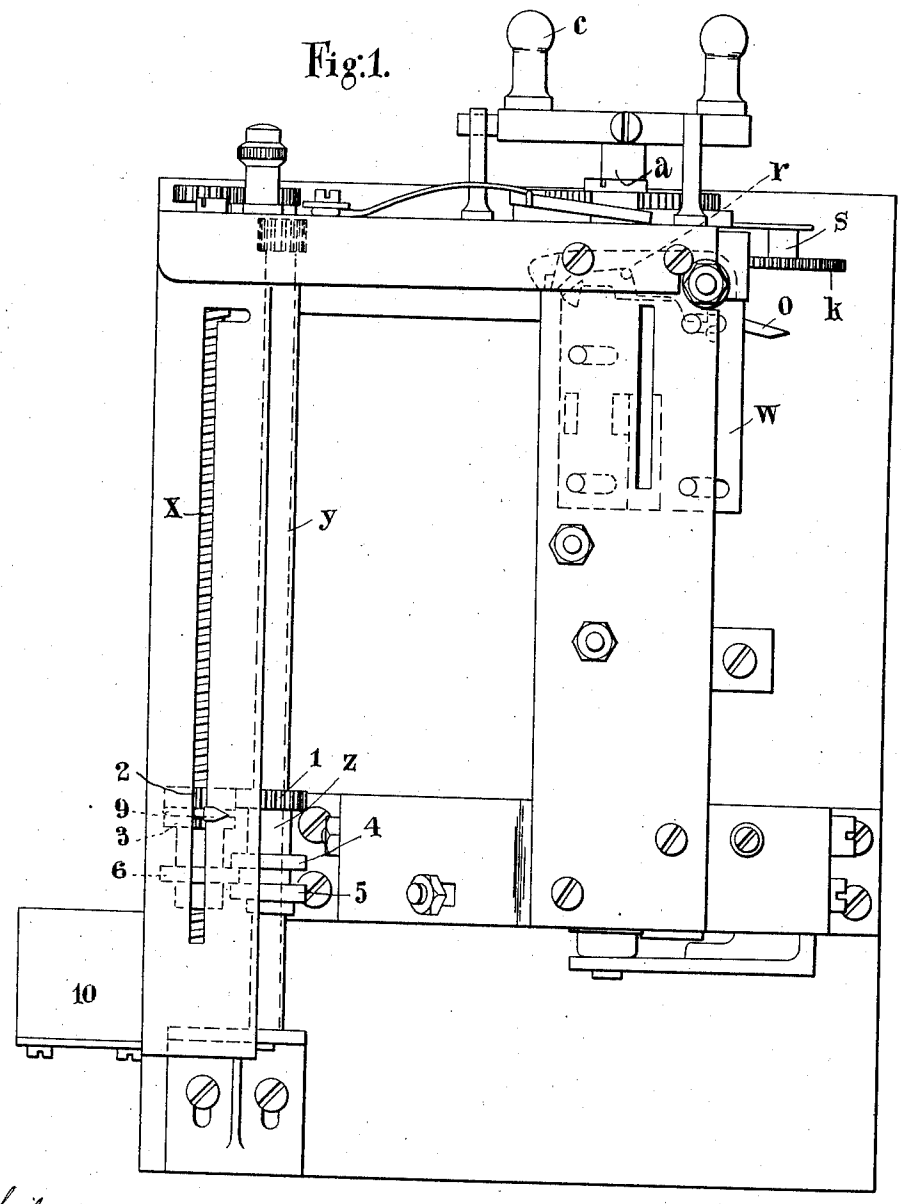
APPLICATION FILED APR. 25, 1911.

1,038,136.

Patented Sept. 10, 1912.

3 SHEETS—SHEET 1.

Fig. 1.



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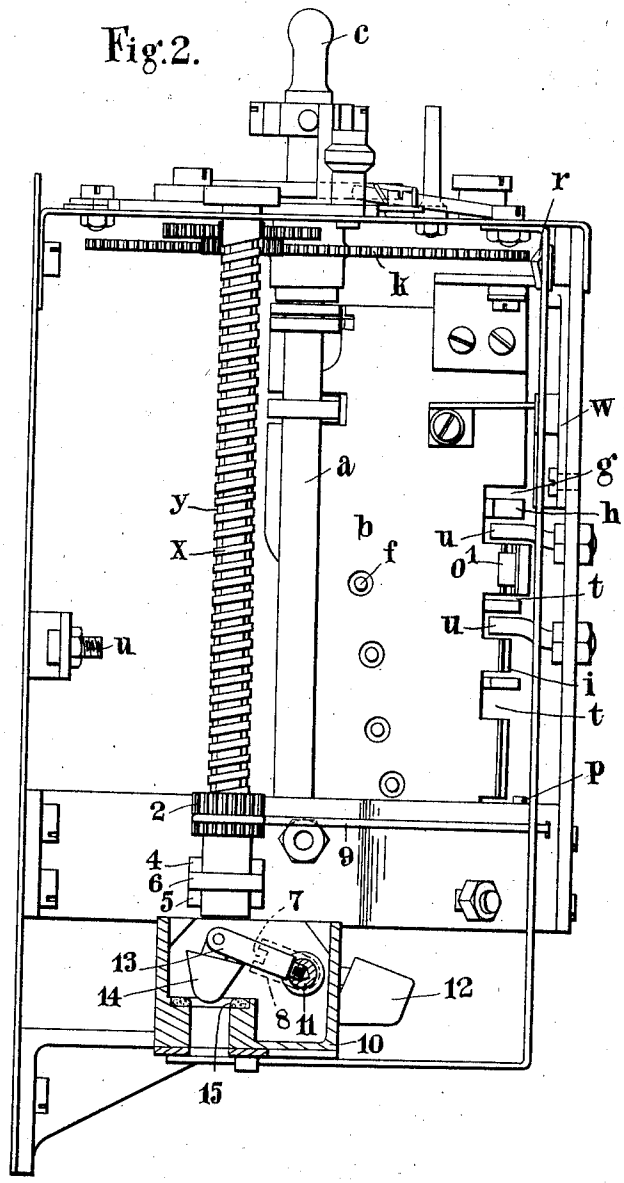
3 SHEETS—SHEET 2.

Fig. 2.



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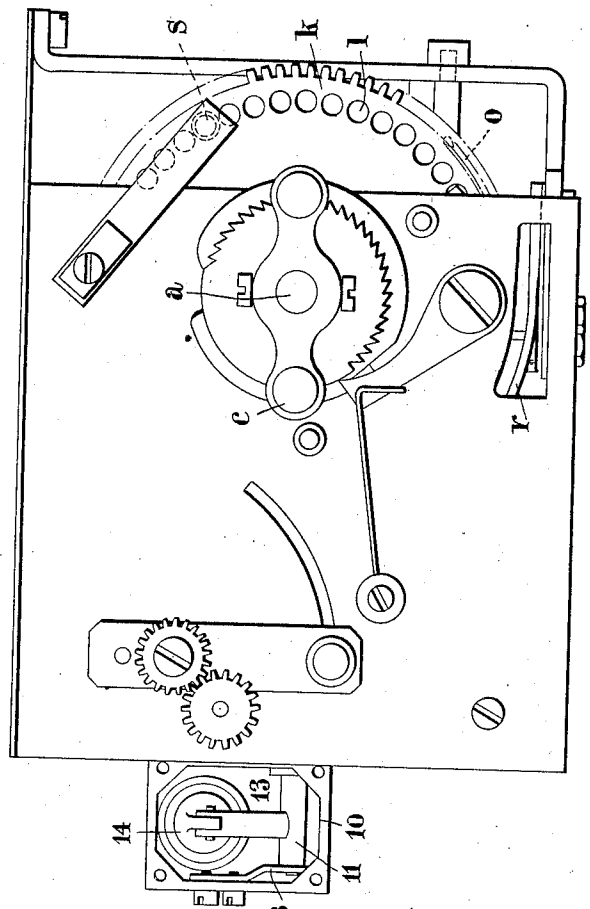
3 SHEETS—SHEET 3.



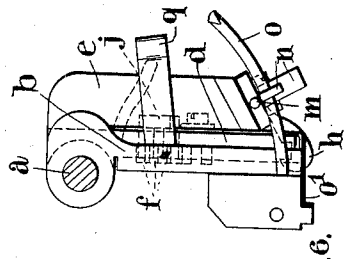


Fig. 6.

Fig. 3.

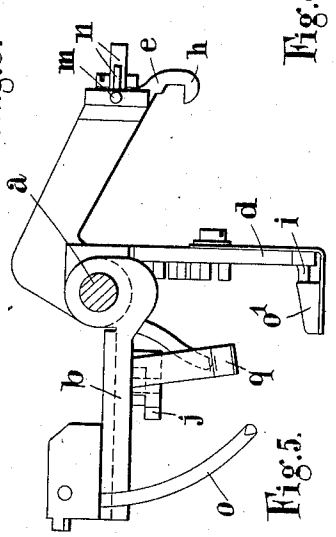


Fig. 5.

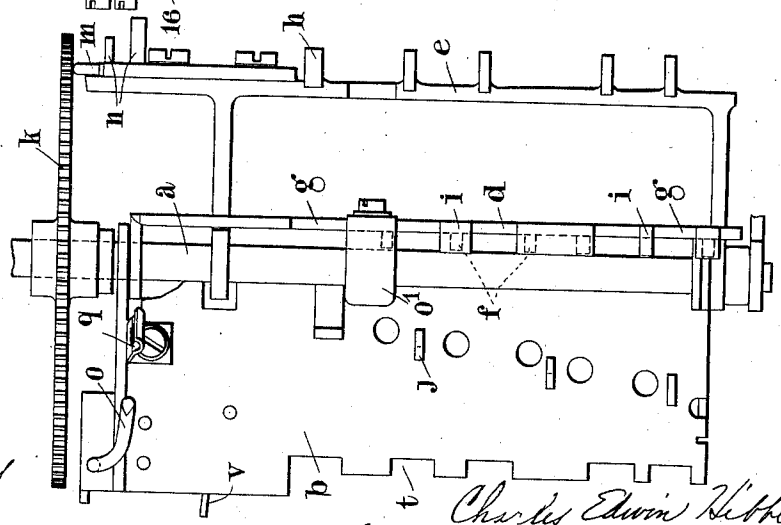


Fig. 4.

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UNITED STATES PATENT OFFICE.

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COIN-FREED MECHANISM.

1,038,136. Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed April 25, 1911. Serial No. 623,224.

To all whom it may concern:

Be it known that I, CHARLES EDWIN HIBBERD, a subject of the King of Great Britain and Ireland, and residing at 28 Victoria Mansions, Victoria street, Westminster, in the county of London, S. W., England, have invented certain new and useful Improvements in and Relating to Coin-Freed Mechanism, of which the following is a specification.

This invention relates to coin freed mechanism more particularly as applied to prepayment meters and has for its object to provide an improved construction of mechanism of the kind described in British Patent No. 14758 of 1909.

Particular objects of the invention are to provide mechanism having or allowing of the use of a smaller number of part or parts which are less delicate or capable of derangement or which are cheaper than in the constructions heretofore proposed, more especially in multicoin prepayment mechanism.

The invention consists in the combinations of elements hereinafter described and particularly pointed out in the claims.

In Figures 1, 2, and 3 of the accompanying drawings are shown respectively in front and side elevation and plan a prepayment mechanism according to the present invention with the outer case removed. Figs. 4 and 5, show respectively in elevation and in plan the controlling shaft and leaf members mounted thereon opened out, Fig. 6, showing these members in the position they assume when closed together.

In carrying the invention into effect in this form in which it is shown as applied to multi-coin mechanism for meters, the coin controlled mechanism comprises a vertical shaft *a*, to which is rigidly secured the front leaf, *b*, and an operating handle, *c*, the latter being outside the casing. Loosely mounted on this shaft behind the leaf are arranged two more leaves or freely mounted members *d*, and *e*, hereinafter referred to as the middle and rear leaves. The middle leaf is provided with a series of pins, *f*, on its front side with slots *g*, at its outer edge, through which pass hook-like projections *h*, from the outer edge of the rear leaf. Lugs *i*, are provided on the middle leaf, each of which forms with one of the pins *f*, a rest for the coin when inserted, said coin being arrested in a position dependent on its size. The coin has the effect of locking the middle leaf *d*, rigidly to the rear one *e*, owing to the hook-like projections *h*, co-acting with the front surface of the coin. The middle leaf *d*, is also provided with apertures (not shown) through which pass hook-shaped ejecting fingers *j*, projecting behind the coin when the latter is inserted and all the leaves are closed together.

A toothed disk *k*, mounted loosely on the top of the vertical shaft *a* is adapted to operate the commodity controlling means in any convenient manner, the quantity obtainable being dependent upon the amount of rotation of said disk. The disk is provided with a series of perforations or recesses *l*, adjacent its circumference, which are adapted to be engaged by a bolt member *m*, slidably carried on the rear leaf *e*. Said sliding member is also provided with a pair of pins or like projections *n*, adapted to be engaged with an arm, *o*, projecting rearwardly from the front leaf, *b*, so that when the leaves are closed up the sliding bolt member, *m*, is forced into engagement with one of the apertures *l*, in the toothed disk *k*, and when leaves are opened out the same is forced out of engagement therewith.

A spring *o'*, is provided for elastically keeping the front and middle leaves together when they are forced into such relation, and also spring *p*, on the frame for elastically holding the rear leaf *e*, in its normal position when it is forced there. A flat spring *q*, may also be provided on the front leaf, *b*, to force the middle leaf *d*, back to its extreme position carrying with it the back leaf member *e*, before the leaves close together, and the bolt member, *m*, is locked to the perforated wheel *k*.

A pawl or catch lever, *r*, is mounted on the frame adapted to engage the front leaf *b*, when all the leaves are in their normal position ready for the insertion of a coin, said catch lever positively preventing any movement until a coin is inserted. The unlocking of this catch lever is effected as follows:—The sliding member, *m*, on the rear leaf carries a cam-like projection, which may be one of the pins *n*, referred to, which is adapted when in its raised position to engage the catch lever, *r*, and trip the same as the leaf moves forward. Upon the closing of the leaves the rearwardly projecting arm, *e*, from the front leaf raises the sliding member, as hereinbefore described, and the cam

like projection or the pin n, is in its operative position. The movement of the handle c, without inserting a coin is very slight, and necessarily fails to move the rear leaf, e, since the latter can only be dragged around when the leaves are locked together by the insertion of a coin.

Means are provided for preventing the operating handle c, and shaft a, from being returned to normal position until they have been moved forwardly throughout their whole movement. A spring pawl, s, is also preferably provided for engaging the perforations l, of the toothed disk k, to prevent rearward motion of the same. Slots or recesses t, are provided in the outer edge of the front leaf b, whereby the latter can pass a series of stops u, secured to the frame, but one of said stops will engage a coin when the latter is inserted and the leaves rotated owing to the fact that the coin will project into one of said slots and opposite to one of said stops. The stops f are so arranged that the coin is arrested at a predetermined position according to its value, and the stops u, are so arranged that the amount of rotation of the handle before stoppage of the leaves is proportioned to the value of the coin inserted.

In the operation of the device, assuming all parts in their normal position, a coin is inserted and locks the middle and rear leaves d, and e, together. The handle c is then rotated moving all the leaves forward and together slightly, the cam projection on the pin, n, on the rear leaf e, then raising the catch lever r, allowing the parts to continue their travel, the toothed disk k, which actuates the commodity controlling means being carried around by action of the bolt member m. When the coin reaches its corresponding stop u, it is arrested and with it the middle and rear leaves d, and e. The front leaf b, however, continues its rotation thereby positively ejecting the coin by means of the hook-shaped ejecting fingers j, also forcing the sliding member m, on the rear leaf e, downward, thus releasing the toothed disk k. The front leaf is then moved around to its limit of travel and afterward returned to its normal position carrying the other leaves d, and e, with it. The front leaf is preferably provided with a radial arm, v, adapted to operate the coin slot closer w, (Figs. 1 and 2) when the leaves are moved forward, and open the same when they are returned to normal position.

Although the above mechanism is described for a "multi" coin meter, *i. e.*, one giving a quantity of commodity depending on the value of the coin inserted, the same may be constructed to suit a single coin only. This commodity controlling mechanism comprises two parallel spindles x, and y, one of which y, is grooved, and the other x, is screwed. One of said spindles is rotated by the meter motor mechanism and the other by the coin controlled hand actuated mechanism. Upon the grooved spindle is mounted a sleeve z, having a key so as to be positively rotated with the spindle, but adapted to slide longitudinally thereon. Said sleeve is provided with a gear wheel 1, adapted to engage a similar wheel 2, upon an internally threaded sleeve 3, on the other spindle. One of said sleeves is provided with a pair of collars 4, and 5, or the like, between which engages a collar 6, on the other sleeve, whereby they are caused to move together longitudinally on the spindles and one of said sleeves is adapted to positively open and close the valve or the like by co-acting with a notch 7, or groove on the valve arm 8. A pointer 9 is provided adapted to move longitudinally with the sleeves to indicate the amount of commodity obtainable. This arrangement of gearing provides a more rapid movement of the sleeves than the worm gearing usually employed, with consequent advantages.

The valve used is constructed automatically to insure a gas tight closure of the bearings or equivalent parts through which moving members of the valve operating means, or of the valve enter the gas duct or like part. This valve consists of a box like element 10, having an inlet and outlet orifice connected to the gas main, and a shaft 11, passing out of this box, and carrying outside it an arm 8, provided with a notch 7, adapted to co-act with the operating member such as the slidable sleeve 5, as above referred to, and carrying a counterpoise member 12. Inside the box member the shaft is provided with an arm 13, projecting therefrom and carrying pivotally a conical valve plug 14, adapted upon partial rotation of the shaft 11, to effect closure of one of the orifices referred to, which is provided with a proper valve seat 15, and by preference a leather or cork washer suitably treated to prevent deterioration on long standing. The shaft has only one bearing in the casing and it has its other in the spring member 16, attached to the casing, and normally tending to press the shaft longitudinally out of the same. The bearing in the casing is preferably coned on the inside and co-acts with a conical shoulder upon the shaft inside the casing, which parts are normally pressed together by the spring, a washer being if desired inserted between them and a gas tight closure is in this manner automatically obtained. The counterpoise of the external valve arm is of such nature as to tend to open the valve, and it is provided, in order that the jarring of the meter when the slidable member of the commodity controlling shaft has passed from the notch, shall not close the valve and thus

the valve arm in such a position that the slidable member will on return foul the same and be unable properly to reach its limit of travel.

It will be understood that although the above construction includes many useful features, many modified forms of the mechanism may be constructed without departing from the spirit of the same.

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

1. In coin-freed prepayment mechanism, the combination of a spindle; a pair of inter-penetrating members loosely mounted on said spindle and lockable together by an inserted coin; a third member in driven relationship to said spindle and a connection between said third member and one of said other members, as set forth.

2. In coin-freed prepayment mechanism, the combination of a spindle; a pair of leaves loosely mounted on said spindle and lockable together by an inserted coin; a third leaf in driven relationship to said spindle and a connection between said third leaf and one of said other leaves, as set forth.

3. In coin-freed prepayment mechanism, the combination of a spindle; a leaf loosely mounted on said spindle and having apertures therein; a second leaf also loosely mounted on said spindle and having hook-like elements disposed to project through said apertures; a third leaf in driven relationship to said spindle and a connection between said third leaf and one of said other leaves, as set forth.

4. In coin-freed prepayment mechanism, the combination of a spindle; a pair of leaves loosely mounted on said spindle and lockable together by an inserted coin; a third leaf in driven relationship to said spindle; a connection between said third leaf and one of said other leaves; a commodity disk; a movable lock between one of said other leaves and said disk and a member mounted on said third leaf operating said lock, as set forth.

5. In coin-freed prepayment mechanism, the combination of a spindle; a leaf loosely mounted on said spindle and having apertures therein; a second leaf also loosely mounted on said spindle and having hook-like elements disposed to project through said apertures; a third leaf in driven relationship to said spindle; a connection between said third leaf and one of said other leaves; a commodity disk; a movable lock between said hook-carrying leaf and said disk and a member mounted on said third leaf operating said lock, as set forth.

6. In coin-freed prepayment mechanism, the combination of a spindle; a pair of leaves loosely mounted on said spindle and lockable together by an inserted coin; a third leaf in driven relationship to said spindle; a connection between said third leaf and one of said other leaves; a stationary part; a lock between said part and said third leaf and a member mounted on one of said other leaves operating said lock, as set forth.

7. In coin-freed prepayment mechanism, the combination of a spindle; a leaf loosely mounted on said spindle and having apertures therein; a second leaf also loosely mounted on said spindle and having hook-like elements disposed to project through said apertures; a third leaf in driven relationship to said spindle; a connection between said third leaf and one of said other leaves; a stationary part; a lock between said part and said third leaf and a member mounted on said hook-carrying leaf operating said lock, as set forth.

8. In coin-freed prepayment mechanism, the combination of a spindle; a leaf in driven relationship thereto; another leaf loosely mounted on said spindle; a connection between said leaves; a commodity gear disk separate from said leaves and loosely mounted on said spindle; automatically operated means for locking said disk to one of said leaves, together with commodity-controlling means operated by said disk, as set forth.

9. In coin-freed prepayment mechanism, the combination of a spindle; a leaf loosely mounted on said spindle and having apertures therein and having also coin supports thereon; a second leaf also loosely mounted on said spindle and having hook-like elements disposed to project through said apertures and hook a coin; a third leaf in driven relationship to said spindle; a yieldable connection between said third leaf and one of said other leaves; stationary stops disposed in the path of an inserted coin and coin-ejecting means carried by said third leaf and acting on stoppage of said other leaves to push a coin from its support to fall from its hook.

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

CHARLES EDWIN HIBBERD.

Witnesses:

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