Oct. 18, 1927. 1,646,277

H. J. DOLMAN

COIN FREED APPARATUS

Filed Feb. 17, 1927 2 Sheets-Sheet 1

Fig. 1.

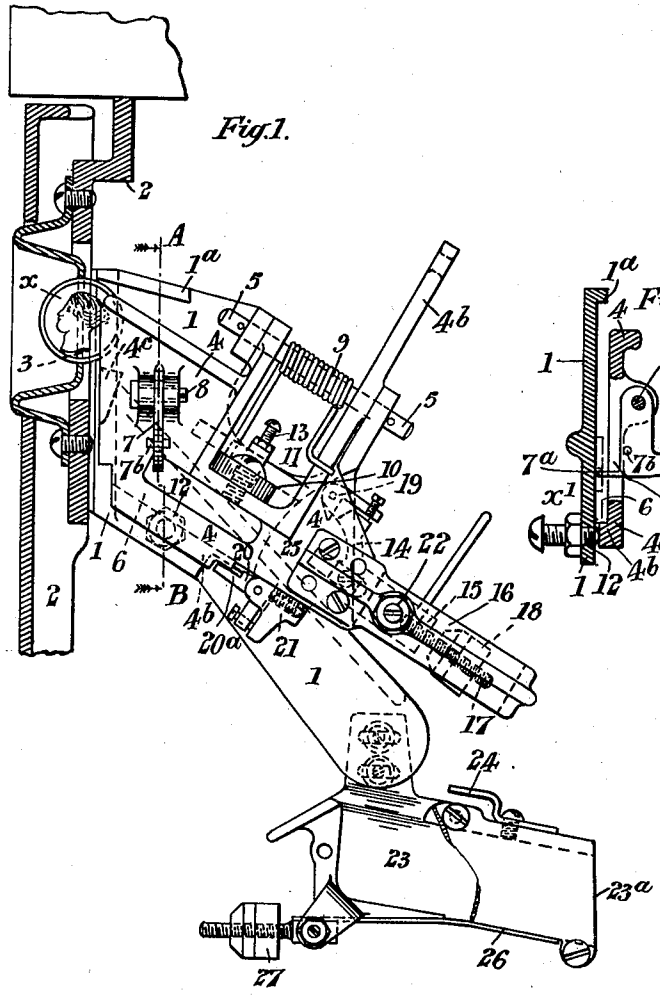



Fig. 3.




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Fig. 2.

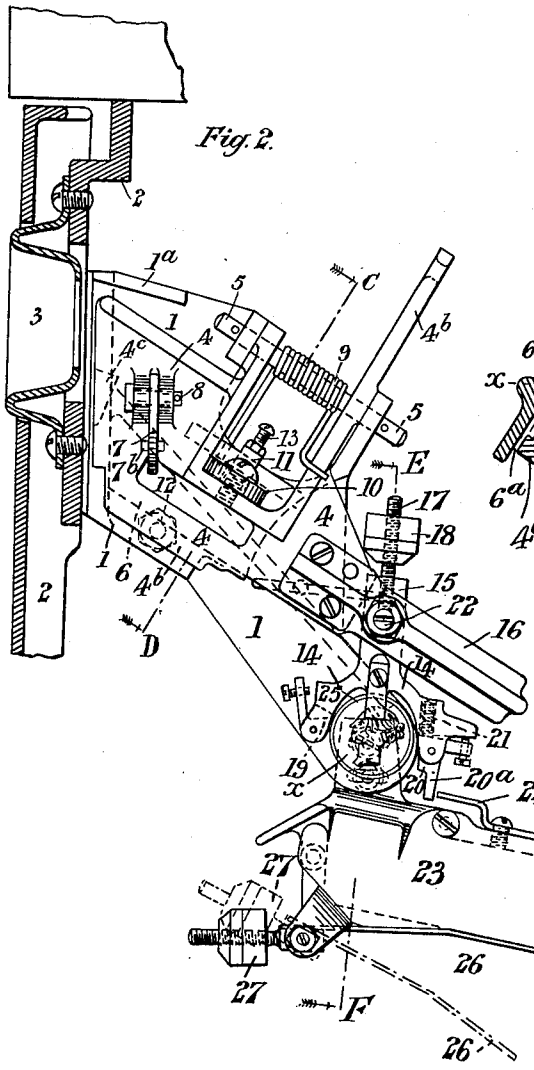



Fig. 4.

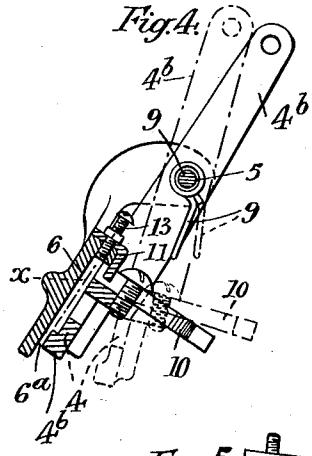
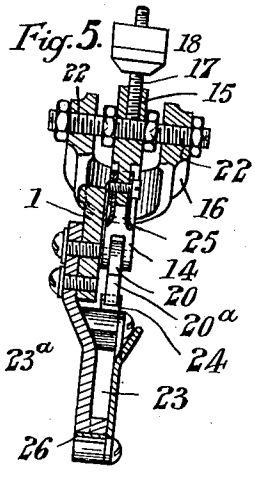



Fig. 5.




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# UNITED STATES PATENT OFFICE.

HENRY JAMES DOLMAN, OF BRISTOL, ENGLAND, ASSIGNOR TO BRECKNELL, MUNRO & ROGERS LIMITED, OF BRISTOL, ENGLAND.

## COIN-FREED APPARATUS.

Application filed February 17, 1927, Serial No. 168,688, and in Great Britain February 6, 1926.

This invention relates to coin-freed apparatus more particularly of the kind which are provided with means for detecting improper coins, or discs, inserted in the coin chute and directing them into other chutes from which they pass from the apparatus without operating the release mechanism, and this invention has for its principal object to provide improved means for detecting and rejecting coins, or discs, which are of too small diameter, have smooth, or imperfectly milled edges, or are over, or under, weight.

Means in accordance with this invention are more especially intended for use with the known means for detecting and rejecting improper coins, or discs, such for example as perforated coins, or discs; coins, or discs of spurious metal; or coins or discs which are either too thin or too thick.

This invention consists in providing coin-freed apparatus more particularly of the kind intended to be freed by milled-edge coins with improved means whereby unmilled, or imperfectly milled, coins will be detected and directed away from the chute, or channel, into which properly milled coins pass to releasing mechanism of any known, or suitable, kind, and mainly consists in providing the said detecting means with a counter-balanced oscillatory carrier so arranged and adapted that only properly milled coins delivered thereinto will be gripped and carried thereby over and delivered into an inlet of the said chute, or channel, along which they then pass to the releasing mechanism, whilst unmilled, or imperfectly milled, coins, or coins of small diameter, or of under weight, delivered thereinto, will, upon movement of the said carrier, fall therefrom before it has reached the inlet to the said chute, or channel.

We will describe this invention with reference to the accompanying drawings, in which Figure 1 shews in elevation coin detecting means including means in accordance with this invention for directing properly milled coins to a chute, or channel, along which they pass to the releasing mechanism (which in the example hereinafter described is presumed to be drawer releasing mechanism) and unmilled, or imperfectly milled, coins, or coins of small diameter, or of under weight, to another part of the apparatus, the part of the said apparatus to which the said detecting means is attached being shewn in section. Figure 2 is a similar view to Figure 1 but shews the counter-balanced oscillatory carrier in a different position to that shewn in Figure 1, Figure 3 is a transverse section taken on the line A, B, Figure 1 and Figures 4 and 5 are transverse sections taken on the lines C, D, and E, F, respectively Figure 2

The detecting means shewn comprises a downwardly inclined member 1 which is secured to the interior of the casing 2 of the apparatus in line with a coin inlet 3 and a member 4 hinged, by a pin 5, to the member 1, the said members being so arranged and adapted that when the hinged member 4 is in its normal, or closed, position, their opposed surfaces constitute a channel, or chute, 6 for the passage of the coins, one of which is indicated at $x$ in Figures 1 and 2 respectively.

Means are shewn for detecting and ejecting perforated coins, or discs, passed into the channel, or chute, 6 the said means consisting of an arm 7 pivotally mounted at 8 to the hinged member 4 and having a part $7^a$ which projects, through a slot $4^a$ in the said member, into the said channel or chute. The leading edge of a coin, or disc, as it passes along the channel, or chute, 6 engages with the inwardly projecting part $7^a$ of the arm 7 in such manner that it is turned on its pivot 8 and the said projecting part then bears lightly on the face of the said coin, or disc. If the coin, or disc, be unperforated it will pass freely along the channel, or chute, 6 regardless of the projecting part $7^a$ of the arm 7 bearing thereon, but if the coin, or disc, be perforated (for example as shewn at $x^1$ Figure 3) the said projection will enter the perforation and prevent the passage of the said coin, or disc, along the said channel, or chute, and when the hinged member 4 is turned on the hinge-pin 5 the said perforated coin, or disc, will fall by gravity onto a part of the apparatus from which it may, if desired, pass to a reject, or return, chute, not shewn. The arm 7 has a pin $7^b$ passing transversely therethrough with which the outer side of the hinged member 4 engages

when the said member is turned so that the said arm moves therewith.

The hinged member 4 may be caused to turn on its hinge-pin 5 by any known, or suitable means, for example, this may be effected by connecting an arm $4^b$, formed in one with the said member, through suitable links and levers to a drawer which when pulled will move slightly outward sufficiently to cause the said hinged member to turn, in opposition to the action of a spring 9 but the said drawer will not be pulled out sufficiently to permit of the extraction therefrom of a packet, or other article.

Means are also provided whereby spurious coins, or discs, made of magnetically attractable metal are detected and rejected. This is shewn as being effected by a horse-shoe magnet 10 adjustably secured to the hinged member 4 with its end adjacent to the path of a coin, or disc, $x$ (see more particularly Figure 4) so that a magnetically attractable metal coin, or disc, passing along the channel, or chute, 6 will be attracted and magnetically held thereby.

When the hinged member 4 is turned on the pin 5 the spurious metal coin, or disc, held by the magnet 10 will be moved into engagement with a piece 11 secured to the fixed member 1 and projecting downwardly between the legs of the horse-shoe magnet 10 so that the said coin, or disc, will be forced from the said magnet and fall onto the beforementioned part of the apparatus from which it may, if desired, pass to a reject, or return, chute.

The lower part of the channel, or chute, 6 upon which the coins, or discs, run is shewn as being constituted by a run, or ledge, $4^b$ formed on the inner side of the hinged member 4 which abuts against a stop 12 provided on the fixed member 1 which stop can be adjusted so that there is a space $6^a$ between the opposed surfaces of the said fixed member and the said run, or ledge, through which coins, or discs, of less than the proper thickness will slip and fall onto the before mentioned part of the apparatus from which they may pass to a reject, or return, chute.

Rejection of coins or discs of too large diameter may be effected by making the length of the inlet slot 3 equal to the diameter of the coin the apparatus is intended to receive, and if desired, the fixed member 1 may have an inwardly projecting rib, or flange $1^a$ adjacent to the upper end of the said inlet slot which co-operates with an inwardly projecting piece $4^c$ formed on the hinged member 4 adjacent to the lower end of the said inlet slot, the space between the opposed surfaces of the said co-operating parts being equal to the diameter of the coin as aforesaid, so that coins, or discs, of larger diameter cannot be passed therebetween. As a further precaution, the fixed member 1 may be provided with an adjustable device, such as a screw, with which the edge of coins, or discs, of too large diameter will engage and be prevented from passing along the channel, or chute, 6 and these coins, or discs, will upon the hinged member 4 being turned on the pin 5 fall upon the before mentioned part of the apparatus from which they may pass to a reject, or return, chute. The said adjustable device may conveniently be the screw 13 (see more particularly Figure 4) which secures the piece 11 to the fixed member 1 before referred to.

Coins, or discs, leaving the outlet end of the channel, or chute, 6 pass into an oscillatory carrier which is shewn as consisting of a semi-circular, or arc-shaped piece 14 having at its mid-part an outwardly projecting arm 15 by which it is pivotally connected to a bracket 16 secured to the hinged member 4 and has a screw-threaded stem 17 upon which a counter-balance weight 18 can be adjusted and normally acts to turn the said carrier in the position shewn, in Figure 1 to receive a coin, or disc, as it leaves the channel, or chute, 6. Pivotally mounted on one end of the semi-circular or arc-shaped, piece 14 is a yieldable finger, or pawl, 19 and pivotally mounted on the other end of the said semi-circular, or arc-shaped, piece is another yieldable finger, or pawl, 20 controlled by a spring 21. These yieldable fingers 19 and 20 engage with the milled edge of the coin of correct diameter in such manner as to retain the said coin in the carrier whilst it is turning on its pivots 22, which turning is effected by the weight of the said coin overbalancing that of the counter-balance weight 18. By the momentum imparted to the carrier as aforesaid the coin is brought over a second chute 23 which is shewn secured to the fixed member 1 and when the said carrier has turned to the required position, shewn in Figure 2, to deliver the said coin into the said second chute, a tail $20^a$, on the yieldable finger, or pawl, 20 engages with an abutment 24 adjustably secured to the said chute which causes the said finger, or pawl, to turn on its pivot, in opposition to the action of the spring 21, and thereby releases the said coin which then falls, by gravity, into the said second chute along which it then passes to any known, or suitable, drawer release mechanism (not shewn). Although the aforesaid described means for gripping a properly milled-edge coin is eminently suitable it is to be understood that the invention is not limited to the said means as it is obvious that other gripping devices may be employed without departing from the scope of the invention. The semi-circular, or arc-shaped, piece 14 is shewn provided at its mid-part with a pair of inwardly projecting spring blades 25 which, besides constituting guides for centralizing

the coin in the carrier so that it is properly gripped by the fingers, or pawls, 19 and 20 also act to prevent the said coin falling sideways therefrom. When a coin, or disc, of smaller diameter than that of a coin for which the apparatus is intended, or a coin, or disc, having a plain edge, or an imperfectly milled edge is passed into the carrier it will not be held therein by the yieldable fingers or pawls, 19 and 20 and as the said carrier turns, by the weight of the said coin, or disc, it will fall from the said carrier (before the latter has reached the position shewn in Figure 2) onto the before-mentioned part of the apparatus from which it may, if desired, pass to a reject, or return, chute. The counter-weight 18 is so adjusted that the carrier 14 will only be turned to a position over the inlet of the chute 23 by milled coins of either correct weight or of over weight. A milled coin of under weight would either not turn or would insufficiently turn the said carrier to deliver it into the chute 23 and upon movement of the hinged member 4 relatively to the fixed member 1, the said under weight coin would then be shaken from the said carrier and fall, if it had not already done so, on to the beforementioned part of the apparatus from which it may, if desired, pass to a rejecet, or return, chute.

If desired means may be provided for rejecting, or returning, coins or discs which are of over weight. This is shewn as being effected by providing an opening in the bottom of the chute 23 which is normally closed by a counter-balanced lever 26 pivotally mounted on the said chute, the counterweight 27 on the tail end of which can be so adjusted that coins of correct weight will pass along the said lever without turning it and pass out at the outlet end $23^a$ of the said chute, but coins of greater weight will over-balance the weight 27 and cause the said lever to turn on its pivot whereupon the said coin will fall through the said opening onto the beforementioned part of the apparatus from which it may, if desired, pass to a rejecet, or return, chute.

If desired the hereinbefore described oscillatory carrier for selecting milled coins, from unmilled, or imperfectly milled coins, or coins of small diameter, or of less than a predetermined weight, may be used alone in co-operation with an inlet coin chute such as 6, the means for detecting and rejecting coins, or discs, which are either too large in diameter or are too thick, are perforated are made of magnetizable metal, or which are too thin, being dispensed with, and, if desired, the said carrier may be employed as a means for carrying coins, one at a time, from one part of the apparatus to another part of the apparatus to ensure that only one coin is passed at a time so that the liability of the drawer release, or other operating mechanism being jammed by two, or more, coins, is prevented.

What I claim is:—

1. In a coin-freed apparatus, a pivoted oscillatory coin carrier adapted when in normal position to receive and grip a coin, and counterbalancing means upon said carrier adapted to maintain the carrier in normal position when no coin is held therein, but to permit said carrier to be swung into substantially vertical position by the weight of a coin so long as the coin is held therein, in combination with means for releasing the coin when the carrier is in substantially vertical position.

2. In a coin-freed apparatus, an inclined chute, a second inclined chute having one end below said first chute, and an oscillatory coin carrier pivoted above the upper end of said second inclined chute with its coin carrying end, when in normal position, adjacent the lower end of said first inclined chute, in combination with means on the coin carrying end adapted to grip coins of predetermined character, counterbalancing means upon said carrier adapted to maintain said carrier in normal position but to permit a coin of proper weight when gripped by the coin carrying end to swing the carrier into substantially vertical position above the second chute, and means upon the second chute for releasing the coin when the carrier is in the last named position.

3. In a coin-freed apparatus, a pivoted coin carrier in combination with fingers on said carrier adapted to yield for reception of a coin, one of said fingers being adapted to retain the coin, and a spring tending to hold the other finger in retaining position.

4. In a coin-freed apparatus, a pivoted oscillatory coin carrier, in combination with two fingers pivoted to said coin carrier adapted to grip a coin, and a spring controlling one of said fingers, the other finger being controlled by the weight of a coin which the fingers are adapted to grip.

5. In a coin-freed apparatus, a pivoted oscillatory coin carrier, in combination with two fingers pivoted to said coin carrier, and a spring controlling one of said fingers, the other finger being controlled by the weight of a coin which the fingers are adapted to grip, said fingers being adapted to grip only properly milled coins through having knife-edge gripping parts positioned less than a coin's diameter apart.

6. In a coin-freed apparatus, a counterbalanced oscillatory carrier adapted to receive coins one at a time, said carrier comprising an arc-shaped piece, an outwardly projecting arm at the mid-part of said arc-shaped piece adapted to be pivotally attached to a desired part of the apparatus, a screw-threaded stem provided on said arm,

and a counterbalancing weight adjustable on said screw-threaded stem, in combination with a finger pivotally mounted on one end of said arc-shaped piece, and a spring controlled finger pivotally mounted on the other end of said arc-shaped piece, substantially as described.

7. In a coin-freed apparatus, a counterbalanced oscillatory carrier comprising an arc-shaped coin-gripping piece, and an outwardly projecting arm at the mid-part of said arc-shaped piece adapted to be pivotally attached to a desired part of the apparatus, in combination with a counter-balancing weight adjustable on said outwardly projecting arm to permit full displacement of the oscillatory carrier by a coin of predetermined weight, but only partial displacement of the carrier by a coin below the predetermined weight, substantially as described.

In testimony whereof I have signed my name to this specification.

HENRY JAMES DOLMAN.