G. C. REITH.

COIN SELECTOR.

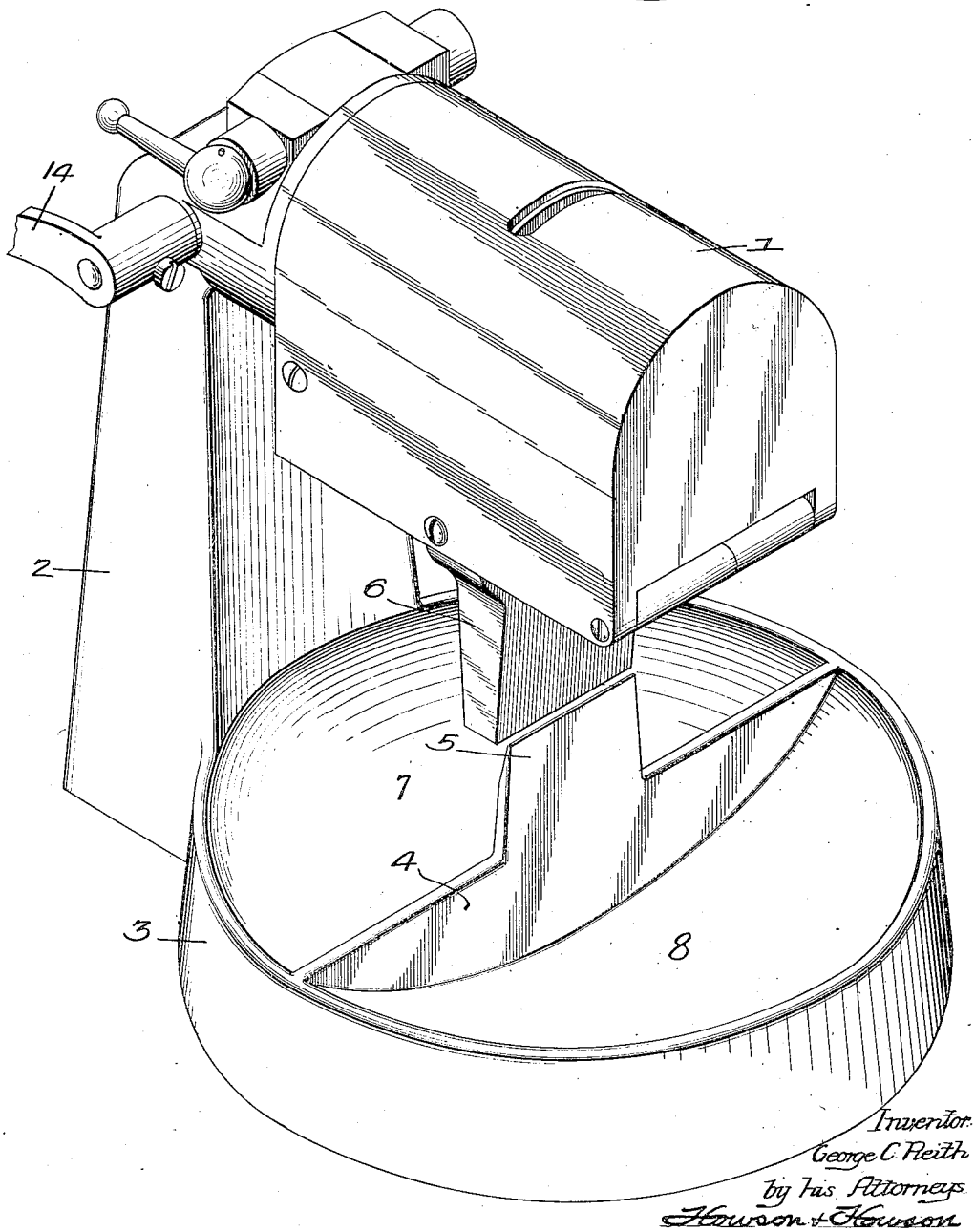
APPLICATION FILED JUNE 9, 1916.

1,236,870.

Patented Aug. 14, 1917.

8 SHEETS—SHEET 1.

Fig. 1.



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Fig. 2.

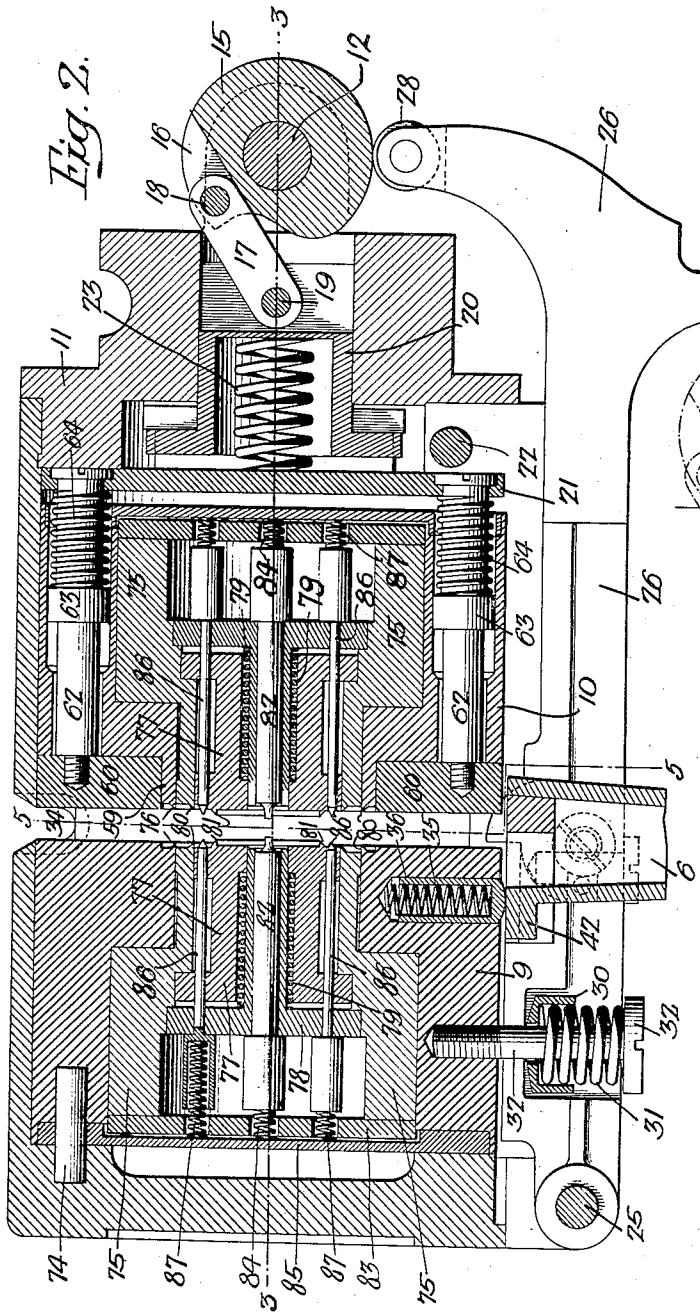
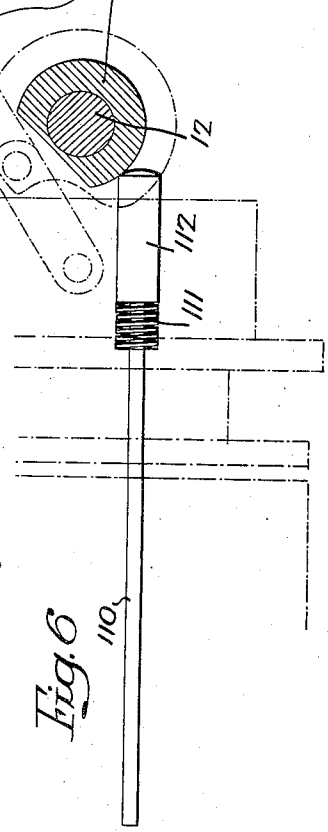


Fig. 6



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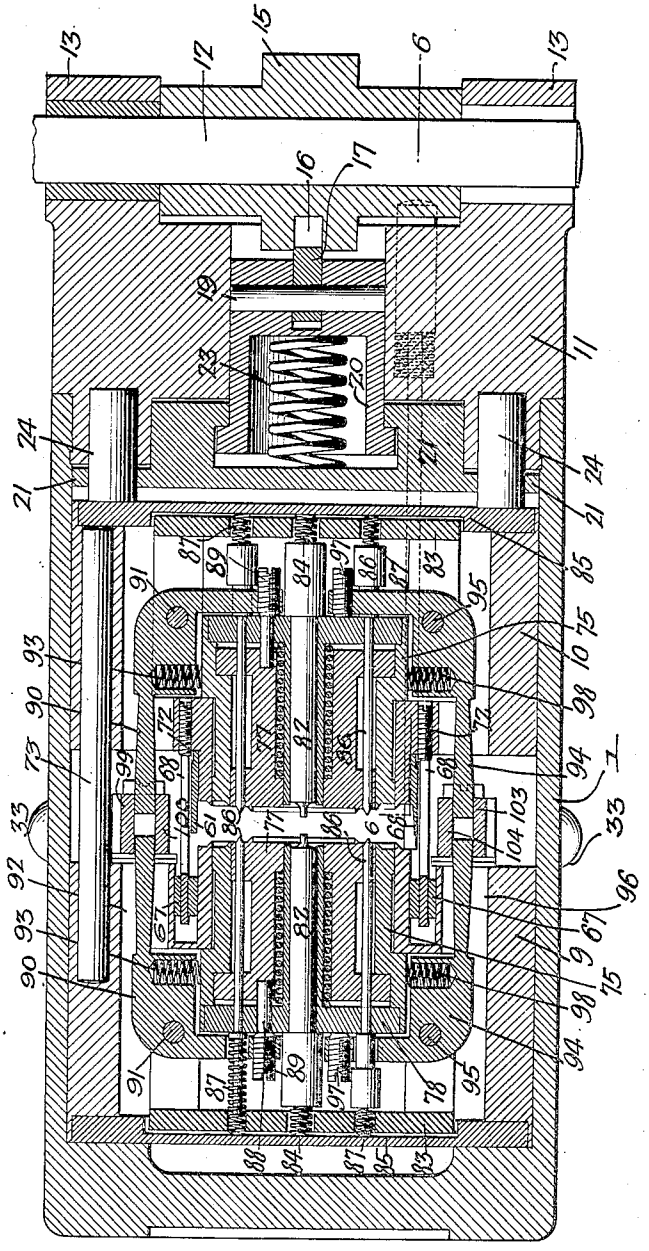


Fig. 3.

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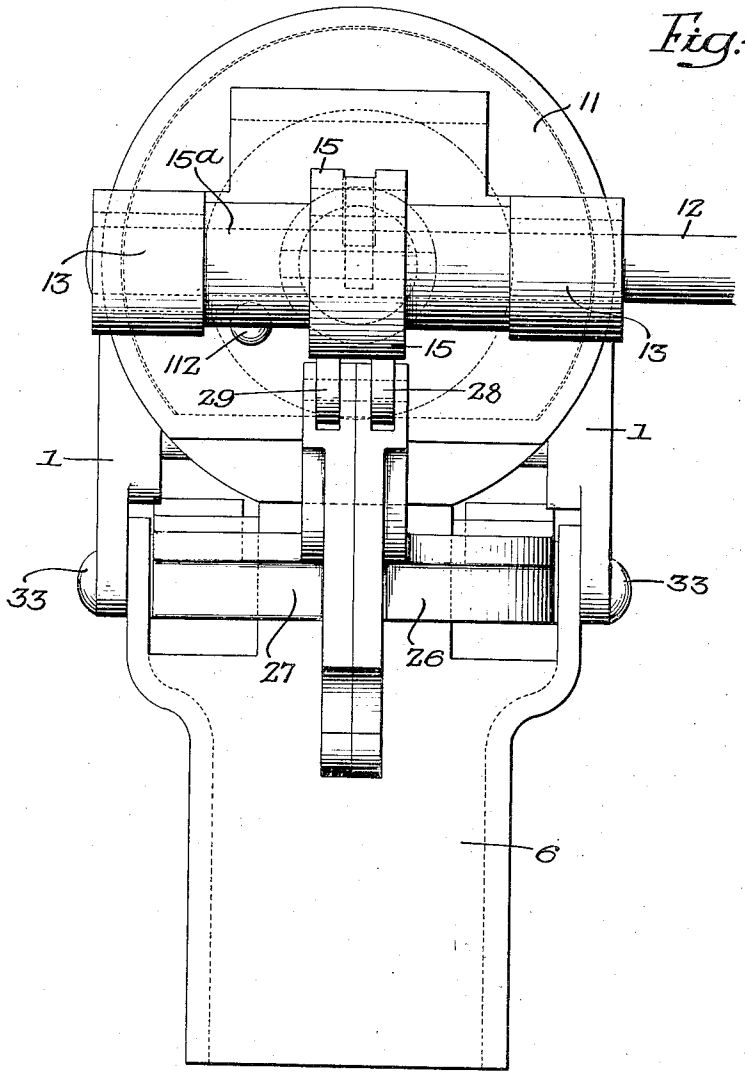
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8 SHEETS—SHEET 4.

Fig. 4.



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8 SHEETS—SHEET 5.

Fig. 5.

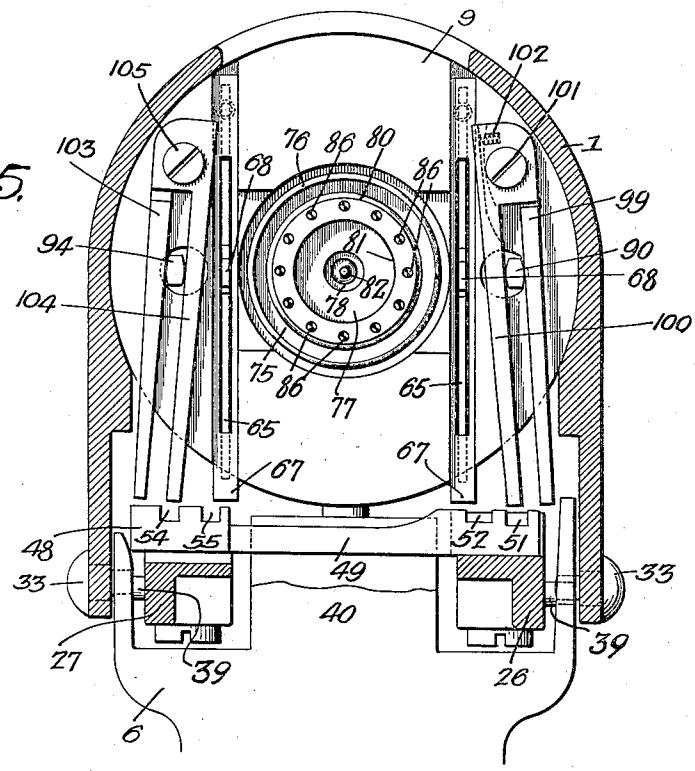


Fig. 7.

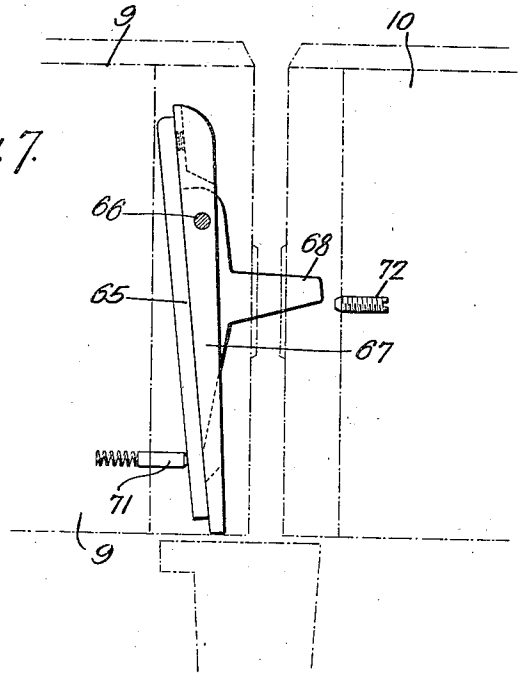
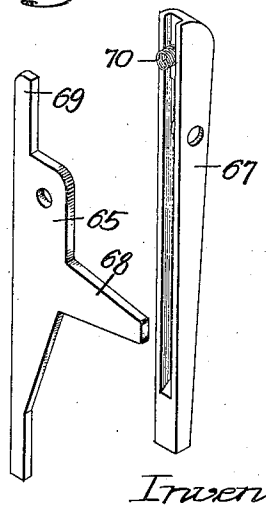


Fig. 8.



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Fig. 9.

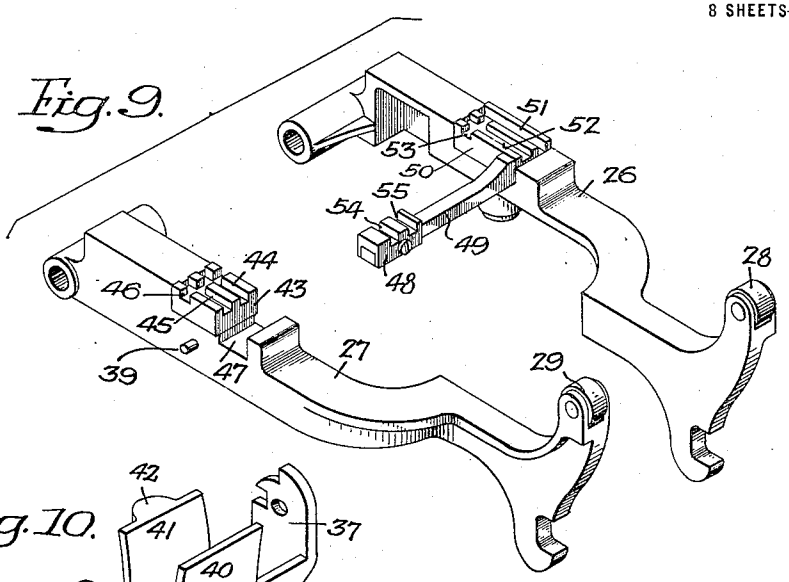


Fig. 10.

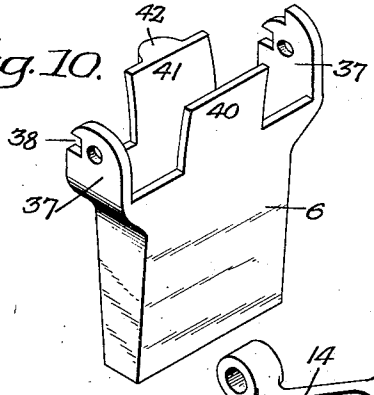


Fig. 11.

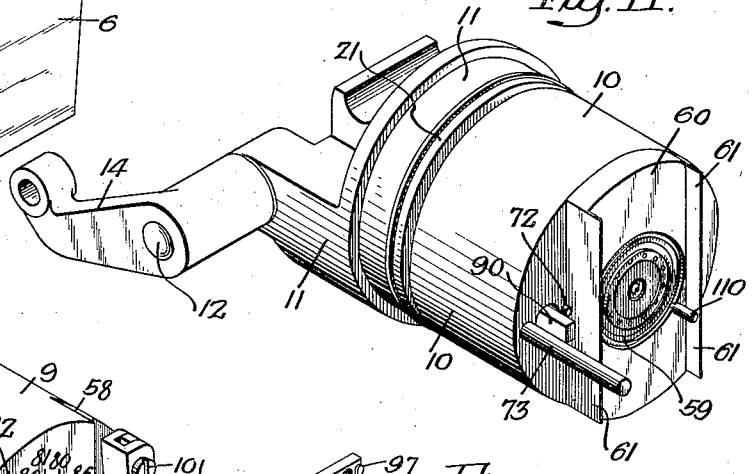


Fig. 12.

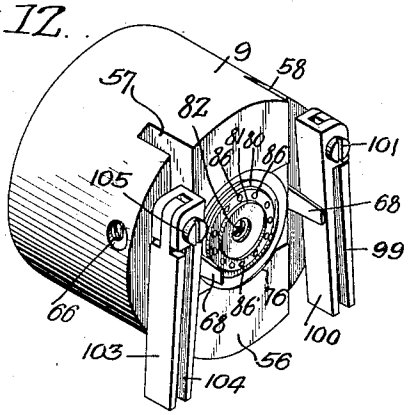
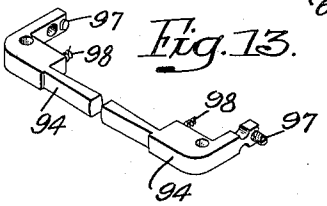


Fig. 13.



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Fig. 15.

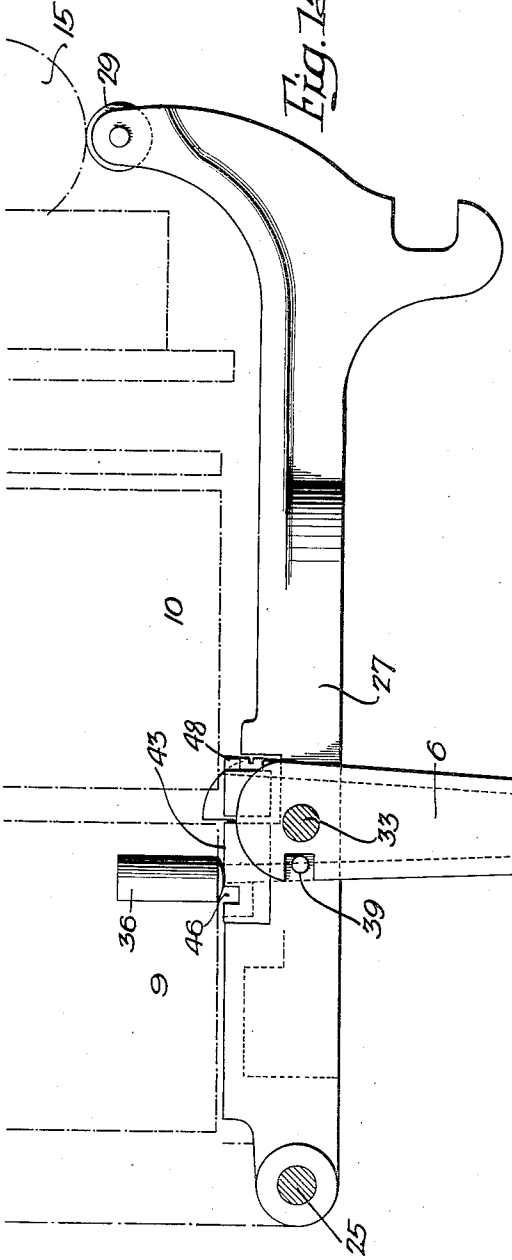
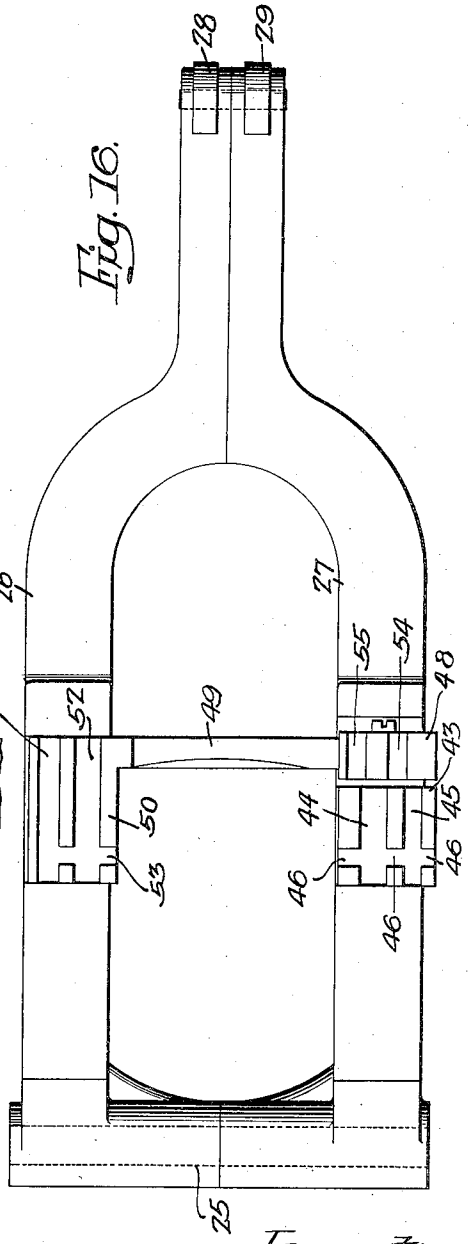


Fig. 16.



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8 SHEETS—SHEET 8.

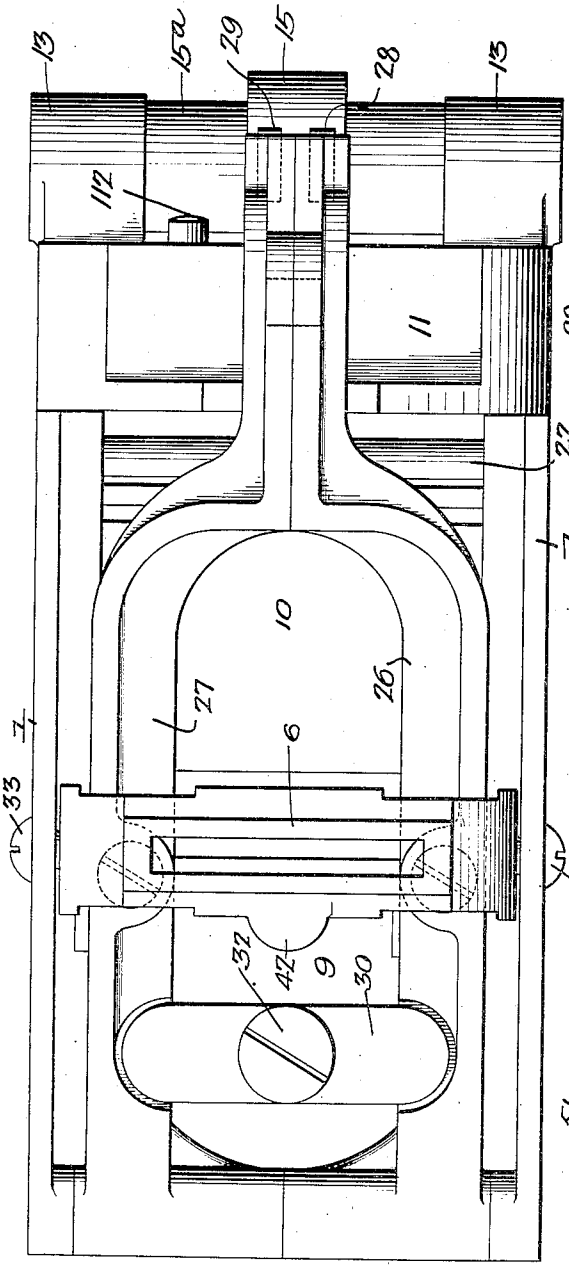


Fig. 14.

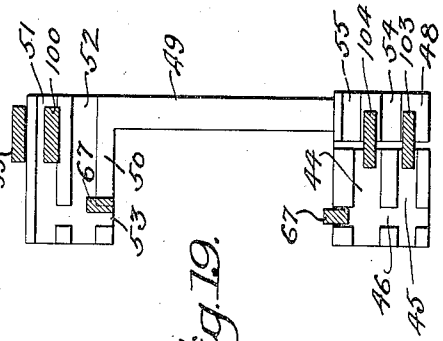


Fig. 19.

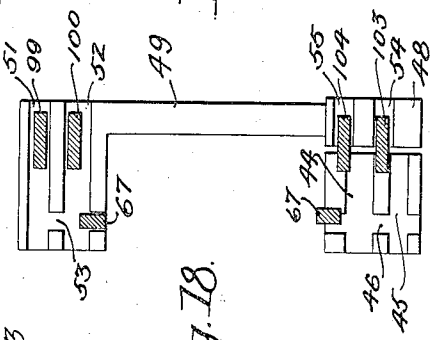


Fig. 18.

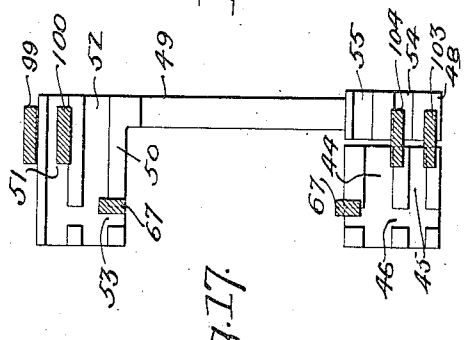


Fig. 17.

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UNITED STATES PATENT OFFICE.

GEORGE C. REITH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO EDWARD F. HENSON, TRUSTEE, OF PHILADELPHIA, PENNSYLVANIA.

COIN-SELECTOR.

1,236,870. Specification of Letters Patent. Patented Aug. 14, 1917.

Application filed June 9, 1916. Serial No. 102,690.

To all whom it may concern:

Be it known that I, GEORGE C. REITH, a citizen of the United States, residing in Philadelphia, county of Philadelphia, State of Pennsylvania, have invented certain Improvements in Coin-Selectors, of which the following is a specification.

My invention relates to devices for separating standard coins of a predetermined denomination from counterfeits, slugs, washers or other disk-like bodies of generally similar dimensions, and one object of said invention is to provide a detector which while so constructed as to accept standard coins of two different sets of dimensions but of the same denomination, shall refuse spurious coins, washers, slugs, etc.

More particularly, the detector constructed according to my invention is designed to receive "Buffalo" and "V" nickels, although its parts are so arranged that it will discard or refuse any other coin, counterfeit nickels or imitations thereof.

A further object of the invention is to provide a machine having the above noted qualities, which shall be relatively simple, substantial and reliable in operation, with its parts so arranged that the likelihood of their getting out of order is reduced to a minimum.

It is also desired to provide a coin detector which shall include what is in effect a plurality of pairs of coin calipering mechanisms or devices, all operatively connected to a single valve or coin-directing member in such a manner that a predetermined standard coin is capable of so actuating the mechanism of one set as to operate the valve independently of the other pairs or sets of mechanism, even though these latter are not actuated to such an extent as to also cause operation of the valve.

I also desire to provide a coin detector with a novel form of mechanism for actuating a valve when a standard coin of any of several designs is presented, the parts being so arranged that the valve operating mechanism is locked in an inoperative position when coins other than those of a predetermined standard denomination are presented to the machine, it being also desired to provide novel mechanism for releasing the valve operating means when a predetermined standard coin is presented.

These objects and other advantageous ends I secure as hereinafter set forth, reference being had to the accompanying drawings, in which:

Figure 1 is a perspective view of a coin detector constructed according to my invention;

Fig. 2 is a vertical section of the coin detector shown in Fig. 1 with the supporting structure omitted;

Fig. 3 is a horizontal section on the line 3—3 Fig. 2;

Fig. 4 is an end elevation of the apparatus;

Fig. 5 is a vertical section on the line 5—5, Fig. 2;

Fig. 6 is a fragmentary vertical section on the line 6—6, Fig. 3;

Figs. 7 and 8 are a side elevation and a detached perspective view illustrating the construction of one pair of the lock-controlling levers;

Fig. 9 is a detached perspective view of the two valve-operating levers;

Fig. 10 is a perspective view of the valve;

Figs. 11 and 12 are perspective views of the two mechanism-containing barrels supported within the main casing;

Fig. 13 is a detached perspective view of two of the pendulum-operating levers;

Fig. 14 is an inverted plan of the machine;

Fig. 15 is a side elevation, partly in section, illustrating certain features of the valve and its operating levers;

Fig. 16 is a plan of the valve-operating levers; and

Figs. 17, 18 and 19 are enlarged diagrammatic plans of the wards, showing the ends of the co-acting pendulums in various positions.

In view of the fact that there are at the present time two designs of five cent pieces in general use in the United States, commonly know as the "V" and "Buffalo" nickels, it has been found extremely difficult to safeguard coin actuated devices against the use by dishonest persons of spurious coins, slugs, washers and the like, since the mechanism of such devices is necessarily so made as to be operated by both of these coins of widely varying dimensions. In other words, it has been found to be practically impossible to devise a machine which would accept either of the above mentioned coins which would not

also accept close imitations or counterfeits thereof whose dimensions were intermediate those of the coins in question. The problem was rendered peculiarly difficult of solution because the variations in thickness of the "V" nickel were relatively slight while those of the "Buffalo" nickel were comparatively large.

The machine of the present invention, therefore, is designed so that while receiving standard "V" or "Buffalo" nickels, its construction is such that it refuses to accept even relatively close counterfeits of these coins as well as slugs or other coins, even though the greater number of their dimensions are similar to or identical with those of the five cent pieces.

In carrying out my invention, I provide a somewhat elongated metallic casing 1, whose upper part is semi-cylindrical and whose lower part is rectangular in section. For the sake of illustration I have shown this as detachably mounted on a standard 2 formed integral with a base piece 3 in the form of a shallow receptacle. This latter has a transverse vertical partition 4 extending diametrically across it and provided at its central part with an upwardly projecting, relatively sharp edged extension 5, designed to coöperate with a swinging valve 6 to direct a coin into one or the other of the two compartments 7 and 8 of the coin receptacle.

Within the casing 1 are mounted two cylindrical barrels 9 and 10, of which the first is rigidly fixed within that end of said casing most distant from the standard 2, while the other is slidably movable within the front or opposite end of the casing. This front end is normally closed by a plate in the form of a casting in the shape of a block 11, having bearings 13 for a horizontal operating shaft 12, which in the present instance is designed to be actuated by a projecting crank arm 14 fixed to it in any suitable manner.

Fixed to the shaft midway between the two bearings 13 is a cam 15 having a radial slot 16, into which extends a link 17 pivotally connected to it by a pin 18. The opposite end of this link is connected by a horizontal pin 19 with a flanged sleeve 20 slidably guided within the end casting 11 and having its flanged end loosely fitting into an undercut recess of a disk 21 the same diameter as and free to move between the barrel 10 and the casting 11. This latter with the barrel 10 and its associated parts is removably held within the casing 1 by a transversely extending bolt 22, extending between the substantially parallel sides of the front of said casing below the casting 11 and in front of the plate 21. The front face of this latter is spaced some distance away from the rear face of the flanged end of the sleeve 20 which contains a relatively powerful spring 23 pressing against said plate, and capable of yielding to save the apparatus from damage in case it is operated after the insertion of a slug of greater thickness than a standard coin. The barrel 10 is held at least a predetermined minimum distance from the plate 21 by two relatively heavy pins 24, fixed in the rear face of the casting 11 and projecting through the plate 21 so that their rear ends engage the front face of the barrel 10 to limit its forward movement.

Pivoted on a horizontal spindle 25 at the bottom rear part of the casing 1 is a pair of valve-operating levers 26 and 27, so formed that they extend forwardly within the lower part of said casing, adjacent the sides thereof and thereafter are bent toward each other at its front end, from which they extend upwardly to a point immediately adjacent the cam 15 where they are respectively provided with rollers 28 and 29 operative on the surface of said cam. Both of these levers are strongly pressed toward the cam and the two barrels 9 and 10 beneath which they lie, by a spring 31 mounted on a bolt 32 screwed into the barrel 9 and engaging a cross bar 30, which in turn fits into recesses in the two levers 26 and 27 at points adjacent their rear ends.

The valve or coin-directing chute 6 is pivotally mounted on trunnion screws 33 projecting inwardly from the lower opposite edges of the casing 1, the arrangement being such that the open upper end of the valve is immediately under the space normally existing between the forward end of the barrel 9 and the rear end of the barrel 10, and in the vertical line through a coin-receiving slot 34 in the top of the casing at the upper end of this space. A spring 35 operative on a plunger 26 slidably mounted in a recess in the under surface of the barrel 9, at all times tends to maintain the valve 6 in such position that it will direct a coin into the compartment 7 of the receptacle 3, which is the one designed for the coins, slugs, etc., rejected by the machine.

As shown in Figs. 5 and 10, the valve 6 consists of a downwardly tapering conduit of substantially rectangular section having at its sides arms 37 perforated for the reception of the trunnion screws 33 and also provided with recesses 38 for the reception of pins 39 respectively projecting from the outer sides of the two levers 26 and 27. In addition, said valve has two upwardly projecting extensions 40 and 41 from its top longitudinal edges, and these are preferably divergent so as to properly direct a coin from between the two barrels 9 and 10 into the valve, the latter extension also having a projecting lug 42 which is engaged by the spring actuated plunger 36.

With such an arrangement of parts as that illustrated, a relatively slight upward

movement of either of the levers 26 or 27 causes its particular pin 39 to so act on the valve 6 as to swing it on its trunnion screws 33 to an extent sufficient to move its lower or discharge end from one side to the other of the partition extension 5, with the result that a coin passing through the valve while so deflected, would fall into the compartment 8 which is reserved for those coins accepted or passed by the machine.

As shown in Figs. 9 and 16, the valve operating lever 27 is provided on its top edge with a block or raised portion 43, having a series of longitudinally extending parallel recesses 44 and 45 and a straight transverse recess 46 all of substantially rectangular section and forming a series of wards in said lever edge. Immediately adjacent the forward ends of the wards is a transverse recess 47 designed to receive a ward block 48 carried on one end of a transverse arm 49, whose opposite end is permanently connected to or formed as part of the second valve-operating lever 26. The upper edge or face of this latter is also provided with a block 50, having a pair of longitudinally extending recesses 51 and 52 and also a transverse recess 53 which form a third series of wards, the block or extended end of the cross bar 49 having a pair of recesses 54 and 55 forming the second set of wards.

As will be noted from Figs. 16 to 19 inclusive, the wards of this second set are not in line with those of the block 43, although the cross bar 49 and the recess 47 are so proportioned that when both the levers 26 and 27 have their rollers 28 and 29 engaging the concentric part of the cam 15, there is a space between the under face of the block 48 and the bottom of the recess 47. This space is of such dimensions that the lever 27 may move upwardly on its supporting shaft 25 as a pivot without interference from the cross bar 49 of the lever 26, when the cam 15 is so moved as to permit of such motion under the action of the spring 30 and certain elements hereafter described, are in the proper positions.

As shown in Figs. 3 and 12, the barrel 9 has its front face so formed that a central portion 56 having parallel vertical sides projects beyond the plane surfaced parts of said end on either side thereof, and between this extended portion and the two side parts of the face are a pair of vertically extending slots 57 and 58.

The adjacent or rear face of the barrel 10 has a central cylindrical projection 59 (Figs. 2 and 11) on which is slidably mounted a vertically extending parallel sided block 60, whose ends are formed on a circular curve of the same diameter as the barrel 10 and whose sides are provided with vertical projecting flanges or edges 61 at such distance apart as to fit on either side of the projecting part 56 of the block 9 and extend for a greater or less distance into the slots 57 and 58 depending on the relative positions of the two barrels. This block 60 is connected to the plate 21 by a pair of bolts 62, (Fig. 2), each of which has its head countersunk in said plate and its opposite end threaded into said block.

Intermediate its ends each of the bolts is provided with a collar or annular projection 63 and between said collar and the plate 21 carries a spring 64, whereby said plate is normally maintained at the maximum distance from the front face of the barrel 10 and the block 60 is held in contact with the rear face of said barrel.

In the slots 57 and 58 of the barrel 9 are pivotally mounted two pendulums of the construction shown in Figs. 7 and 8; each of them consisting of a three arm lever 65 held in its slot by a pin 66 and connected thereby to a second lever 67 whose lower end projects below the cylindrical surface of the barrel 9 as shown in Fig. 5. This latter lever is vertically slotted to permit of the passage of the horizontally elongated arm 68 of the lever 65, and the upper end of said lever 67, which overlies the upwardly extended arm 69 of this lever 65, has a spring 70 mounted between it and said arm. A spring-pressed plunger 71, operative in a cavity of the barrel 9, normally maintains each pair of the two levers 65 and 67 in a position slightly inclined to the vertical with the arm 68 raised slightly above the horizontal, the arrangement being such that pressure exerted on the flat end of said arm will move the lever 65 on its pivot toward a vertical position against the action of the plunger 71, while the lever 67 will follow this movement under the action of the spring 70.

In the rear face of the barrel 10 I mount two pins 72 so that they project on either side of and immediately adjacent the block 60, the arrangement being such that as this barrel is moved toward the barrel 9, the pins engage the ends of the arms 68 and turn the levers 65 on their pivots thereby moving their downwardly projecting ends into certain positions which depend upon the distance between said barrels.

It should be noted that the lower ends of these pendulum levers 65 are designed to coöperate with the wards 52 and 45 of the valve operating levers 26 and 27 in order to prevent their upward movement under the action of the spring 31 except when said first levers occupy such predetermined positions that their lower ends are in line with the recesses 53 and 46.

In order to absolutely prevent the barrel 10 from moving nearer than to within a predetermined distance of the barrel 9, I mount in it a loose pin 73 which projects

into a hole of definite depth in the latter; the arrangement being such that when the barrels are a certain distance apart said pin strikes the bottom of the hole, preventing further approach of the parts.

The barrel 9, which as before noted, is of a substantially cylindrical form, is positioned within the rear end of the casing 1 by a pin 74, and as shown in Figs. 2 and 3 it consists of a relatively heavy cylindrical shell having two concentric cylindrical cavities within which is slidably mounted a plunger 75 having portions of large and small diameter respectively fitting its two cavities. The front face of this barrel as well as that of the part 59 of the barrel 10 are each formed with an annular knife edge 76 concentric with the small diameter opening and the plunger itself contains two other concentric plungers 77 and 78, of which the first surrounds the second and has a flange which coacts with the shoulder within the plunger 75. The innermost plunger 78, which is tubular, has a flange of larger diameter than that of the plunger 77 and pressed away from the latter by a spring 79 surrounding its body. The front ends of the plungers 75 and 77 are provided with annular knife edges 80 and 81 respectively, all concentric with a flat pointed pin 82 which is axially slidable within the plunger 78. As shown in Fig. 2, the rear end of the cavity in the plunger 75 is closed by a plate 83 secured in position by suitable screws and providing a chamber within said plunger between itself and the flange of the plunger 78.

Within this chamber extends the headed rear end of the pin 82 which is at all times pressed toward said plunger by a spring 84, passing through the plate 83 and confined between said pin and a plate 85 suitably secured to the rear face of the barrel 9.

Concentric with the pin 82 is a circle of sharp pointed pins 86 each having a headed portion within the chamber of the plunger 75 and each forced toward the flange of the plunger 78 by a spring 87 confined between it and the plate 85 of the barrel so that its point projects for a definite distance beyond the front face of the plunger 77.

The various knife edges 76, 80 and 81 as well as the points of the pins 86 are thus so placed as to contact with definite parts of the face of a coin supported concentrically with said knife edges and having its center engaged by the pin 82. Moreover, while the plunger 78 has no portion directly engaging the coin, it is so mounted that as the pins 86 are forced into the barrel by reason of the engagement of their points with a coin, it will follow them under the action of the spring 79, with its flange always in engagement with the head of that pin which is least pushed inwardly.

As shown in Fig. 3, the plunger 77 has fixed in its rear face a pin 88 which projects through a suitable opening in the flange of the plunger 78, and extends beyond the rear face thereof. This projecting pin is engaged by a set screw 89 adjustably mounted in one arm of a bell-crank lever 90 fulcrumed on a pin 91 within a slot formed in one side of the plunger 75 and projecting into the chamber thereof. The other arm of this lever 90 extends through an elongated cavity 92 in the wall of the large diameter portion of the cavity in the barrel 9 and through a hole in the end thereof so that it projects beyond the front face of the barrel, being at all times pressed outwardly from the center of the latter by a spring 93. This projecting end of the lever is rectangular in section and its inner and outer faces are respectively convexed as shown in Fig. 5.

The second bell-crank lever 94 which is similar in form to the lever 90, is fulcrumed on a pin 95 within a slot of the barrel 9 so that while one arm projects over the flange of the plunger 78, its second arm extends through a second cavity 96 in the wall of the barrel and projects beyond the front face thereof on the side opposite said first lever. An adjustable set screw 97 is mounted in the first arm of this lever and the arrangement is such that rearward movement of the plunger 78 causes said lever to turn on its pivot, against the action on the spring 98, without affecting the lever 90. This latter, however, is turned on its pin 91 by any rearward movement of the plunger 77. Like the lever 90, that arm of the lever 94 which projects beyond the front face of the barrel 9 has its inner and outward faces slightly convexed.

As shown in Figs. 5 and 12, there is mounted on either side of the front face of the barrel 9 a pair of oscillatory arms or pendulums of which those indicated at 99 and 100 extend on opposite sides of the projecting end of the lever 90, which having its adjacent faces convexedly curved, makes a line contact with said arms. These latter are both movably connected to the front face of the barrel 9 by a pivot screw 101 and while they have a limited movement independent of each other, their lower ends are normally pressed together by a spring 102 acting between suitable portions of their upper ends.

Similarly, a second pair of pendulums 103 and 104 are pivotally supported by a screw 105 on the opposite side of the face of the barrel 9 so as to extend on opposite sides of the projecting arm of the lever 94, which engages them with a line contact as above explained in connection with the lever 90. These two arms with those first mentioned, are likewise movable independently but at all times have both ends pressed toward each

other by a spring similar to that indicated at 102.

These four pendulums 99—100, 103—104 are all of such length that their lower ends project below the lines of the cylindrical exterior surface of the barrel 9 and terminate at or immediately adjacent a horizontal plane through the lower ends of the pendulums formed by the arms 67, being so placed that the first mentioned pair coöperates with the wards of the block 50 of the locking lever 26, while the arms of the second pair (103 and 104) coöperate with the wards of the blocks 43 and 48 connected respectively to the levers 26 and 27.

With the construction shown, when the pendulums 99 and 100 occupy certain definite positions, their lower ends are in line with and immediately above the slots 51 and 52 between the wards of the block 50 so that the lever 26 is free to move upwardly under the action of its spring 31 if the pendulums 103 and 104 likewise occupy certain definite positions with their lower ends in line with the recesses 54 and 55 between the wards of the block 48. The lever 27 however cannot rise because of its wards being in line with the ends of the pendulums 103 and 104, although when these latter occupy other positions immediately over the recesses 44 and 45 between the wards of the block 43, said lever 27 is free to rise, although movement of the lever 26 is prevented.

In order to support a coin dropped through the slot 34 so that its center is coincident with the center line of the two barrels, I mount in the block or end piece 11 and barrel 10 a longitudinally movable rod 110 of the construction shown in Fig. 6, its front end being enlarged and projecting beyond the front end of the block 11 in such a position as to coöperate with a portion 15^a of the cam on the operating shaft 12, with which it is held in contact by a spring 111. While said part of the cam is for the most part concentric with the shaft 12, it has a flat low portion (Fig. 6) and the length of said rod 110 is such that when its head 112 rests against the concentric part of the cam its rear end projects across the narrow vertical space normally existing between the two barrels and particularly between the flanges 61 of the block 60 attached to the barrel 10 (Fig. 11).

The interior construction of the barrel 10 is practically identical with that of the barrel 9 so far as the number and general arrangement of parts is concerned, although the various parts, and more particularly the set screws 89 and 97 of the two levers 90 and 94, are given an adjustment different from those of the barrel 9.

With the particular instrument above described and illustrated, the arrangement and adjustment of parts is such that when a perfect "Buffalo" nickel is placed in the slot 34, it falls through the guideway provided by the flanges 61 of the barrel 10 until it strikes the projecting end of the rod 110, which as shown in Fig. 11, extends practically tangent to the inner wall of the small diameter part of the cavity in the barrel 10. Said coin then comes to rest upon this rod and the wall provided by one of the flanges 61, and the position of said rod is such that the coin is concentric with the center line of the two barrels and of their central pins or plungers 82. Obviously at this time the valve or coin directing chute 6 is held by the two levers 26 and 27 so that its lower end is in position to direct a coin falling through it into the compartment 7 of the base receptacle 3, and said levers are prevented from moving under the action of the spring 31 primarily by reason of the fact that their rollers 28 rest upon and are held down by the concentric part of the surface of the cam 15. Even if said cam should be so turned as to offer no resistance to the upward movement of the levers 26 and 27, this would be effectually prevented by reason of the fact that the ends of the six pendulums 99—100, 103—104, and 67 are opposite the wards carried by said levers.

If now the crank handle 14 and the shaft 12 be turned through slightly more than quarter of a revolution, the barrel 10 is moved toward the barrel 9; it being noted that power is transmitted from the cam 15 on said shaft through the link 17 to the sleeve 20, spring 23, and plate 21, which in turn first acts through the spring 64 to move the block 60 toward the barrel 9 and thereafter to bodily move the barrel 10 in the same direction. This primary movement of the block 60 causes it to receive within its central cavity the coin which has been inserted; it being noted that the subsequent movement of the barrel 10 with its knife edges and pins into engagement with the coin, occurs while the shaft 12 is so moving that the pivot pin 18 is approaching a straight line between the center of the shaft and the pivot pin 19 which occurs during the first half of the forward movement of the crank handle 14. As said movement is continued through its last half the link 17 acts to draw back the barrel 10, and the part 15^a of the cam on said shaft is so placed that during this last half of its forward rotation its flat portion shown in Fig. 6 permits forward movement of the rod 110 under the action of the spring 111 with the result that the rearward end of said rod is withdrawn from the space between the barrels. Consequently just before the termination of the forward movement of the shaft 12, the barrel 10 and with it the block 60 are moved back to their normal positions,

leaving the coin unsupported. It therefore falls into the chute formed by the valve 6, and is delivered into one or the other of the compartments 7 and 8 of the receptacle 3.

A reversal of the movement of the shaft 12 causes the barrel 10 to again be rearwardly projected toward the barrel 9 and thereafter restored to the position shown in Fig. 2. From this figure it will be noted that shortly after the beginning of the forward movement of the shaft 12, the cam 15 is so turned as to be free from the rollers 28 of the levers 26 and 27, leaving these free to move upwardly under the action of their strong spring 31 except for the restraining action of the pendulums and wards.

As the barrel 10 begins its movement toward the barrel 9, by reason of the plate 21 being forced against its back, its knife 76 engages the outer part of the coin immediately inside of its rim or flange and clamps it against the corresponding knife edge of the barrel 9. The coin is thus firmly gripped and held by these knife edges within the cylindrical cavity of the block 60 during a large portion of the revolution of the shaft 12, and after such gripping occurs the spring 23 is compressed and thereafter allowed to expand as the sleeve 20 is moved under the action of said shaft and link 17. As is shown in Figs. 2 and 3 the remaining knife edges and pins or plungers of both barrels are all brought into engagement with different parts of the two faces of the coin while it is gripped as above noted between the knife edges or dies 76, so that all of the pins 86 are forced backwardly into said barrels as are also the two central pins 82. The engagement of the knife edges 80 and 81 with the faces of the coin likewise forces back the two plungers 75 and 77, and as the various pins move back the action of the spring 79 causes the plunger 78 to follow them up, for while said spring cannot force rearward motion of any one of the pins 86 against the action of its spring 87, it none the less maintains the flange of said plunger 78 in engagement with the head of that one of the pins which is least moved back by engagement with the coin.

As a result of this operation of the several pins and plungers, the levers 94 and 90 of both barrels are caused to turn on their pivots 95 and 91 by reason of the action of the plungers 78 and 77 on the set screws carried by their arms. The machine of the present invention is so designed that if the "Buffalo" nickel presented to the machine lies with its "head" in engagement with the plungers and pins of the barrel 9, its lever 94 is acted on or turned to a predetermined extent and causes swinging of the pendulum 104 inwardly on its pivot 105, so that its lower end is moved to a position directly over the recesses 44 between the wards of the block 43. At the same time the engagement of the pins and plungers of the barrel 10 with the "tail" side of the coin so turns the lever 94 of said barrel that it permits the pendulum 103, under the action of its spring 102, to likewise swing inwardly until it comes to rest with its lower end immediately over the recess 45 of the block 43. While the two levers 90 of the barrels 9 and 10 likewise actuate their pendulums 99 and 100, these latter are not moved into positions in which their lower ends clear the wards of the block 50.

As the barrel 10 approaches the barrel 9 as above described, the pins 72 on its rear face strike the ends 68 of the two levers 65, turning them on their pivots and likewise causing the two levers 67 to swing toward a vertical position until, when the standard "Buffalo" nickel above specified is tightly gripped by the knife edges 76, the lower end of that one of these levers 67 which lies adjacent the pendulums 103 and 104 is immediately above the recesses 46 across the wards of the block 43 carried by the lever 27, as shown diagrammatically in Fig. 18. Obviously, therefore, there are no further obstacles to the upward movement of this lever on its pivot spindle 25, so that it swings upwardly under the action of the spring 31 until the ends of the pendulums 103, 104 and 67 strike the bottoms of the recesses in the ward block 43. This upward movement however, through the pins 39, causes the coin directing valve 6 to turn on its trunnions 33 so that its lower end passes over the edge 5 of the partition 4, and as a consequence, when the coin is released from between the two barrels, it is directed into the compartment 8 of the base which is reserved for perfect or standard coins.

As the crank handle 14 is returned to its original position after causing the above operations, its cam 15 acts on the roller 28 of the lever 27, swinging the latter downwardly on its pivot spindle against the action of its spring 31 until it again occupies its original position with the coin directing valve in a position to deliver a coin into the compartment 7. The pendulums are released by the wards of the lever just before the latter has completed its downward movement, and return to the positions shown in Fig. 17. It is to be noted that the upward operating movement of the lever 27 above described is made possible by reason of the clearance between the bottom of the block 48 on the arm 49 and the adjacent bottom of the recess 47 of the lever 27 in which it fits.

If the same coin as that above noted should be presented to the machine with its "head" directed toward the barrel 10, then the lever 94 of this barrel is turned on its pivot to the same extent as was the corresponding lever

of the barrel 9 when the position of the coin was reversed and as a consequence the pendulum 104 is swung inwardly by a lever which is acted on by pins and plungers engaging the "head" of the coin, while the second pendulum 103 as before has the position of its lower end determined by a lever 94 (in this case carried by the barrel 9) moved under the action of pins and plungers engaging the "tail" side of the coin.

The machine is therefore operated as previously described so that the valve 6 directs the nickel into the compartment 8 for good coins regardless of how it is presented to the machine.

If now a "V" nickel is presented to the machine with its "head" toward the barrel 9 it likewise is supported on the pin 110 and one of the flanges 61 between the two barrels, but in this case the parts are so adjusted that as the various pins and plungers are made to engage its two faces, the lever 90 of the barrel 9 is turned on its pivot to such an extent that the pendulum 100 is swung inwardly until its lower end lies immediately above the recess 52 between the wards of the block 50. At the same time the lever 90 of the barrel 10 is so moved that it permits the pendulum 99 to swing inwardly until its lower end is likewise directly above the recess 51. Moreover, when a "V" nickel is firmly gripped between the two knife edges 76, the levers 65 and 67 adjacent the pendulums 99 and 100 are moved to such positions that the lower end of the latter lever is immediately above the cross recess 53 of the ward block 50.

In this case, however, while the two levers 94 of the barrels 9 and 10 are brought to such positions that the ends of the pendulums 103 and 104 lie immediately over the wards of the block 43 on the lever 27, a standard "V" nickel so acts on the pins and plungers that the ends of said levers are directly over the recesses 54 and 55 of the ward block 48 on the lever 26. This latter is consequently free to move upwardly when released by the cam 15 so that it rises until stopped by engagement of the lower ends of the pendulums with the bottoms of the recesses between its wards. As before the coin directing valve 6 is swung on its pivot to direct the coin after it has been released, into the compartment 8 of the receptacle. As in the case of the "Buffalo" nickel, so reversal of the "V" nickel in the machine causes the lever 90 of the barrel 10 to actuate the pendulum 100, since the pins and plungers by which it is moved, engage the "head" of the coin, while the lever 90 of the barrel 9 determines the ultimate position of the pendulum 99 by reason of the operation of the pins and plungers caused by the varying contour of the "tail" face of the coin.

Obviously, if the coin presented is a standard but is worn beyond a predetermined amount at any of a number of points, one or more of the knife edges or pins are not moved back when the coin is gripped, to such an extent as to cause the predetermined movement of one or both of the levers 90 or 94 of each pair, as the case may be, and consequently the operation of the crank handle fails to bring all of the pendulums into positions which will allow movement of one or the other of the locking levers 26 and 27. Therefore, the coin is automatically gripped, calipered, and released without any resulting movement of the valve 6 on its trunnions and is consequently directed by said valve into the compartment 7 of the receptacle which is reserved for rejected coins.

Obviously, it is a practical impossibility for the machine to accept a slug or counterfeit coin, since even though a majority or all but one of the various pins and plungers should be actuated to the predetermined extent, the one or more which had not been so actuated would serve to prevent the proper movement of one or both of the levers 94 or 90 of each pair, as the case might be, so that the slug or counterfeit would certainly be directed into the compartment for rejected coins.

In case the coin presented to the machine should be thicker at one or more points than the coins which my machine is designed to accept, the spring 23 will be compressed when the crank handle 14 is turned, thus preventing injury or strain to any part. Obviously such a coin would not be accepted by the machine, since, even though the pendulums 99—100 and 103—104 were moved to their releasing positions, neither of the pendulums 67 would not be actuated to such an extent as would bring its lower end over the corresponding recesses in one of the levers 26 and 27. Likewise, if the coin presented was thinner than a standard coin, the same pendulums would still occupy such positions when the machine is operated as would fail to unlock the levers 26 and 27.

It is to be noted that in the machine illustrated when a "V" nickel is presented both pairs of the levers 90 and 94 with their two pairs of pendulums as well as one pendulum 67, must occupy predetermined positions, before the lever 26 is free to move under the action of its spring. Obviously, the "Buffalo" nickels require but one pair of the pressure actuated levers; viz., those indicated at 94, and the second one of the pendulums 67, to be brought to definite positions for the machine to be operated to accept them, since the lever 27 is released when the single pair of pendulums 103 and 104 and this second pendulum 67 have been brought into register with the recesses between the wards. If desired, however, the reverse arrangement

may be adopted; *i. e.*, the machine may be adjusted so that both pairs of pendulums controlled by the two sets of calipering members comprised by the pins and plungers, may be required to register with the recesses between main and auxiliary wards carried by the lever 27 before this lever is released, and obviously, each lever instead of one only, may be equipped with main and auxiliary wards.

From the above it will be noted that one of the most important features of the invention resides in the simultaneous predetermined calipering of both faces of a coin presented before it will be accepted, for where previous machines have included two sets of calipering members respectively operative on opposite faces of a coin, the arrangement was such that but one of these sets controlled the acceptance of the coin at any one time; that is to say both sets of calipering members were adjusted to act on the same face of the coin so that a standard coin would be accepted regardless of how it was presented. In such a case, if the calipering members were set to cause the coin to be accepted if its "head" was properly formed, then that set of said members which engaged its "tail" face was not in use and in no way coacted with the other set to govern the acceptance or rejection of the coin.

On the other hand in my machine, both sets of calipering members are required to be simultaneously brought to predetermined positions, one by the "head" and the other by the "tail" of the coin, before the latter can be accepted; it being understood of course that this is true both with the "V" nickels and of the "Buffalo" nickels.

It is further to be noted that by the term "calipering means" I refer to the pins or rods 82 and 86 and to the various knife edges employed in my invention, as well as to any equivalent thickness-measuring means, and by the term "coin directing" or "coin governing means" I refer to the valve 6, with or without its associated spring actuated levers 26 and 27; it being immaterial just what form is given to this part of the apparatus, since obviously structures other than an oscillatory valve may be actuated or controlled by the calipering members to accept standard coins and reject those which are spurious, without departing from my invention. The "pressure actuating" devices referred to are the levers 90 and 94, with or without the pendulums controlled by them, as the case may be.

I claim:—

1. The combination in a coin selector of calipering members mounted to engage opposite faces of a coin; coin directing means; with two sets of mechanism respectively connecting said members with said means and both requiring to be operated in a predetermined manner before the coin directing means will permit the acceptance of a coin.

2. The combination in a coin selector of calipering members mounted to respectively engage the two faces of a coin; with means operatively connected to both of said members and acting to reject the coin unless the members are actuated to predetermined amounts.

3. The combination in a coin selector of calipering members mounted to respectively engage the two faces of a coin; means for causing the acceptance or rejection of a coin; with two sets of mechanism respectively connecting said members with said means and both requiring a predetermined actuation to permit of the acceptance of a coin.

4. The combination in a coin selector of calipering members mounted to respectively engage the two faces of a coin; means for causing the acceptance or rejection of the coin; and two independent sets of mechanism connecting each of said members with said means for permitting the acceptance of two coins of different dimensions.

5. The combination in a coin selector of a calipering member mounted to engage one face of a coin; means for causing the acceptance or rejection of the coin; and two independent sets of mechanism operatively connecting said member with said means, both capable of causing the acceptance of a coin.

6. The combination in a coin selector of a calipering member mounted to engage one face of a coin; coin directing means including two normally locked members; and two independent sets of mechanism connecting said calipering member with said coin directing means and each capable of releasing one of said locked members.

7. The combination in a coin selector of calipering means; a coin directing device; two members, each capable of operating said device; and two lock mechanisms respectively controlling the operation of said members and both releasable by predetermined but different operations of the calipering means.

8. The combination in a coin selector of calipering members mounted to respectively engage the two faces of a coin; coin directing means; and two pairs of devices operatively connecting the calipering members with the coin directing means.

9. The combination in a coin selector of two sets of calipering members mounted to respectively engage opposite faces of a coin; two sets of mechanism actuated by each set of calipering members; and coin directing means controlled jointly by either of the two sets of mechanism.

10. The combination in a coin selector of

calipering members mounted to respectively engage the two faces of a coin; means for causing the coin to be accepted or rejected; and two independent sets of mechanism interposed between each set of calipering members and the coin controlling means for causing the latter to accept either of two coins while refusing all other coins.

11. The combination in a coin selector of two sets of calipering members mounted to respectively engage the opposite faces of a coin; coin directing means; and a member for controlling the action of said means governed jointly by both sets of calipering members.

12. The combination in a coin selector of a calipering member; a coin directing device; a member normally tending to move said coin directing device; a second member normally locking said first member from movement; and means for moving the second member into a releasing position when a definite standard coin is presented to the calipering member.

13. The combination in a coin selector of two devices for simultaneously calipering both faces of a coin; and a coin directing device actuated to accept the coin only when both of said calipering devices are actuated by a predetermined standard coin.

14. The combination in a coin selector of two sets of devices for simultaneously calipering the opposite faces of a coin; two sets of pressure actuated mechanism governed by each set of calipering devices; and a coin governing member controlled by said sets of mechanism to cause the acceptance of two coins of the same denomination but of different design while rejecting all other coins.

15. The combination in a coin selector of a calipering member; a pendulum controlled thereby; and a coin governing device including means locked against movement by said pendulum except when the latter moves to a predetermined position under the action of the calipering means when a standard coin is presented thereto.

16. The combination in a coin selector of a calipering member; a pendulum controlled thereby; a member having wards placed to coöperate with the pendulum; a coin directing device governed by said latter member; and means tending to move the ward member.

17. The combination in a coin selector of two calipering members placed to engage opposite faces of the coin; two pressure actuated members respectively controlled by the calipering members; a pendulum movable under the action of either of said pressure actuated members; and coin directing means including a part coöperating with the pendulum to accept or reject a coin.

18. The combination in a coin selector of calipering members placed to engage opposite faces of a coin; pressure actuated members respectively controlled by said calipering members; a pair of pendulums both placed to be movable under the action of either of said pressure actuated members depending upon the face of the coin engaged by the calipering members; and coin governing means including parts coöperating with both pendulums to prevent the acceptance of any but a standard coin.

19. The combination in a coin selector of calipering members placed to respectively engage opposite faces of a coin; two pressure actuated members governed by each of the calipering members; pendulums each movable under the action of either of two pressure actuated devices belonging respectively to the two calipering members; and coin governing means including parts coacting with the pendulums for causing the rejection of all but either of two coins of predetermined dimensions.

20. The combination in a coin selector of two calipering members placed to respectively engage opposite faces of a coin, two pressure actuated members respectively controlled by each of the calipering members; two pairs of pendulums of which one member of each pair is controlled by a pressure actuated member belonging to one calipering member and the other is controlled by a pressure actuated member belonging to the other calipering member; with coin governing means including parts coöperating with the pendulums to prevent the acceptance of any but two coins of predetermined dimensions.

21. The combination in a coin selector of two opposed sets of calipering members; two pressure actuated members governed by each set of calipering members; two pairs of pendulums of which both elements of each pair extend in position to be controlled by either of two pressure actuated members respectively belonging to the two sets of calipering members; and coin governing means including parts coöperating with the pendulums to cause the rejection of any but two standard coins of different dimensions.

22. The combination in a coin selector of two structures movable toward each other to grip a coin; a member controlled mutually by said structures and movable to a predetermined position when a coin of standard dimensions is gripped by said structures; and coin governing means including a part coacting with said member to cause the acceptance of such a coin when the member is moved to a definite point.

23. The combination in a coin selector of two structures movable relatively to each other to grip a coin; two members moved respectively to definite positions when two standard coins of different dimensions are gripped by said structures; and coin govern-

ing means including parts respectively cooperating with said members to cause the acceptance of a coin when either of them is moved to its predetermined position.

24. The combination in a coin selector of a plurality of calipering members placed to operate on the same face of the coin; pressure actuated members respectively controlled by the calipering members; pendulums respectively controlled by said pressure actuated members; and coin governing means including parts placed to coöperate with both of said pendulums to cause the acceptance of a standard coin of a predetermined denomination while rejecting others.

25. The combination in a coin selector of calipering members; two locking members controlled thereby and each movable into two predetermined positions upon the presentation to the calipering members of two standard coins of the same denomination but different dimensions; and coin governing means including a structure having portions coöperating with each of said locking members and movable only when they both occupy predetermined positions.

26. The combination in a coin selector of a set of calipering members placed to operate on one face of a coin; pressure actuated devices governed by said calipering members; coin governing means including a member having wards; with two other members coöperating with the wards to normally prevent operation of the governing means and movable under the action of the pressure operated devices to positions allowing operation of the governing device.

27. The combination in a coin selector of a set of calipering members placed to operate on one face of a coin; a pressure actuated device governed by said calipering members; coin governing means including a member having wards; with a second member coöperating with the wards to normally prevent operation of the governing means and movable under the action of the pressure operated device to a position allowing operation of the governing device.

28. The combination in a coin selector of a set of calipering devices operative on one face of a coin; two pressure actuated devices governed by said calipering devices; a coin governing means including two independent members each capable of causing its operation, one of said members having two locking portions respectively coöperating with the two pressure actuated devices and the other having a single locking portion cooperating with one of said pressure actuated devices.

29. The combination in a coin selector of a coin governing device; two members, each capable of actuating the same; two pairs of locking members for normally preventing operation of said actuating members respectively; two pairs of pressure actuated devices, each operative on one pair of said locking devices; and two sets of calipering members respectively operative on opposite faces of the coin and each governing two pressure actuated devices.

30. The combination in a coin selector of a calipering member; a lever controlled thereby; a pendulum controlled by the lever; a spring actuated locking lever controlled by the pendulum; and a valve governed by the locking lever.

31. The combination in a coin selector of two calipering members respectively operative on the faces of a coin; two levers respectively controlled by said calipering members; a pendulum operative by either lever; a spring actuated locking lever normally prevented from movement by the pendulum; and a coin directing valve controlled by the locking lever.

32. The combination in a coin selector of two calipering members operative respectively on the opposite faces of the coin; two levers respectively controlled by said calipering members; two pendulums so mounted that each may be actuated by either lever; a coin directing valve; and a lever for moving said valve, having portions placed to receive the pendulums only when these occupy predetermined positions under the action of a standard coin upon the calipering members.

33. The combination in a coin selector of two sets of calipering members respectively operative on the two faces of a coin; two levers controlled by each set of calipering members; a pair of pendulums, each controlled by either of two levers respectively belonging to the two sets of calipering members; a coin directing valve; and two locking levers both governing the valve and each having portions formed to receive pendulums only when either of two standard coins is presented to the calipering portions.

34. The combination in a coin selector of two sets of calipering members respectively operative on the two faces of a coin; two levers controlled by each set of calipering members; a pair of pendulums, each controlled by either of two levers respectively belonging to the two sets of calipering members; a coin directing valve; and two locking levers both governing the valve and each having portions formed to receive the pendulums only when either of two standard coins is presented to the calipering portions, one of said locking levers having a portion shaped to receive a pendulum belonging to the other locking lever when it receives its own pendulums.

35. The combination in a coin selector of two structures movable together to grip a

coin; a pendulum moved to a predetermined position when the standard coin is gripped; a calipering member; a second pendulum controlled by said calipering member; and coin governing means coöperating with said two pendulums to accept the coin when they both are moved to predetermined positions.

36. The combination in a coin selector of two members movable together to grip a coin; a pendulum whose position is dependent upon the distance between said two members; a calipering member on one of the members; a second pendulum controlled by said calipering member; a coin directing member; and operating means for said latter member governed by the two pendulums to actuate the coin directing member only when a standard coin is gripped.

37. The combination in a coin selector of two structures movable together to grip a coin; two pendulums moved by said structures into positions depending upon the distance between said structures; two sets of calipering members respectively carried by said structures; two pairs of pendulums of which those of each pair are respectively controlled by the two sets of calipering members; a coin directing device; and two members each capable of causing operation of said device, each of said latter members having locking portions coacting with one of the first two pendulums and also with one pair of the pendulums controlled by the calipering members.

38. The combination in a coin selector of a calipering member; a pendulum controlled thereby; a member having a ward and tending to move toward the pendulum; means for holding said latter member free of the pendulum until this has assumed a definite position when the machine is operated; and coin directing means controlled by said ward member.

39. The combination in a coin selector of two calipering members placed to respectively operate on opposite faces of a coin; two pendulums respectively controlled by said calipering members; a member normally pressed toward the pendulums and having wards between which portions of said pendulums may enter; means for normally holding said ward member free of the pendulums; and coin directing means controlled by the ward member.

40. The combination in a coin selector of a calipering member; a pendulum controlled thereby; a member normally pressed toward the pendulum and having wards between which said pendulum may fit under predetermined conditions; and a coin directing device operatively connected to said ward structure.

41. The combination in a coin selector of two structures movable together to grip a coin; a pendulum moved by said structures to a position depending upon their distance apart; a calipering member carried by one of the structures in position to engage a coin gripped by them; a second pendulum controlled by said calipering member; a member having wards between which said pendulums may fit under predetermined conditions and tending to move toward the same; means normally holding the structure free of the pendulums; and coin directing means controlled by said ward member.

42. The combination in a coin selector of a set of calipering members placed to engage one face of a coin; two pendulums controlled by said calipering members; two movable members each having wards respectively placed to receive between them portions of the pendulums when the latter occupy predetermined positions; means for pressing said ward members toward the pendulums; means for normally holding the wards clear of the pendulums; and coin directing means operative by either of said ward members depending upon which of them is permitted by its pendulum to move.

43. The combination in a coin selector of a set of calipering members; two pendulums controlled by said members; two members respectively pressed toward the pendulums and each having wards placed to receive one of the pendulums under predetermined conditions, one of the ward members having supplementary wards placed to receive the pendulum of the other ward member when it receives its own pendulum; and coin directing means operative by movement of either of said ward members.

44. The combination in a coin selector of two sets of calipering members respectively operative on opposite faces of a coin; two pairs of pendulums of which one of each pair is governed by one set of calipering members and the other is governed by the second set of calipering members; two levers tending to move toward the pendulums; a set of wards carried by one of the levers in position to receive between them the pendulums of one pair when these occupy predetermined positions; main and auxiliary wards carried by the other lever and respectively placed to receive between them pendulums of both pairs when these occupy certain other predetermined positions; and coin directing means mounted to be operated by movement of either lever.

45. The combination in a coin selector of two sets of calipering members respectively operative on opposite faces of a coin; two pairs of pendulums of which one of each pair is governed by one set of calipering members and the other is governed by the second set of calipering members; two spring actuated levers; a set of wards carried by one of the levers in position to receive between them the pendulums of one

pair when they occupy predetermined positions; main and auxiliary wards carried by the other lever respectively placed to receive between them the pendulums of both pairs when these occupy certain other predetermined positions; coin directing means mounted to be operated by movement of either lever; with pendulums respectively coöperating with the wards of said two levers and dependent for their action on the distance between the sets of calipering members when these are in operative positions.

46. The combination in a coin selector of a coin directing valve; a lever for moving said valve; a cam normally preventing movement of the lever; means for actuating the cam to free the lever; and coin calipering means for governing the action of the lever after it is otherwise free to move.

47. The combination in a coin selector of a coin directing valve; two levers mounted to independently move said valve; a cam normally preventing movement of the levers; means for actuating the cam to free the levers; and a plurality of sets of coin calipering means for governing the movement of the levers after they are otherwise free to move.

48. The combination in a coin selector of a coin directing valve; two levers mounted to independently move said valve; a device for normally preventing movement of the levers; means for causing said device to free the levers; two sets of locking devices for preventing movement of the levers; and two sets of mechanism respectively actuated by two coins of the same denomination but of different dimensions for controlling the release of said locking devices.

49. The combination in a coin selector of a set of calipering members; coin directing means; and two sets of mechanism connecting said set of calipering members with said cam directing means, one of said sets of mechanism including means for causing a standard coin of a definite denomination to be accepted by the coin directing means, and the other set including means for causing the acceptance of a standard coin of the same denomination but of a different design.

50. The combination in a coin selector of two sets of calipering members respectively operative on opposite faces of a coin; coin directing means; and two sets of mechanism independently connecting both sets of calipering members with the coin directing means, one of said sets of connecting mechanism being adjusted to cause the coin directing means to accept a standard coin of a definite denomination, and the other set of mechanism being adjusted to cause the acceptance of a standard coin of the same denomination but of a different design.

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

GEORGE C. REITH.

Witnesses:

OTTO KRAUS, Jr.,

A. C. ANDERSON.