W. I. RAVERT.

COIN CONTROLLED APPARATUS.

APPLICATION FILED APR. 22, 1913.

1,095,418.

Patented May 5, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

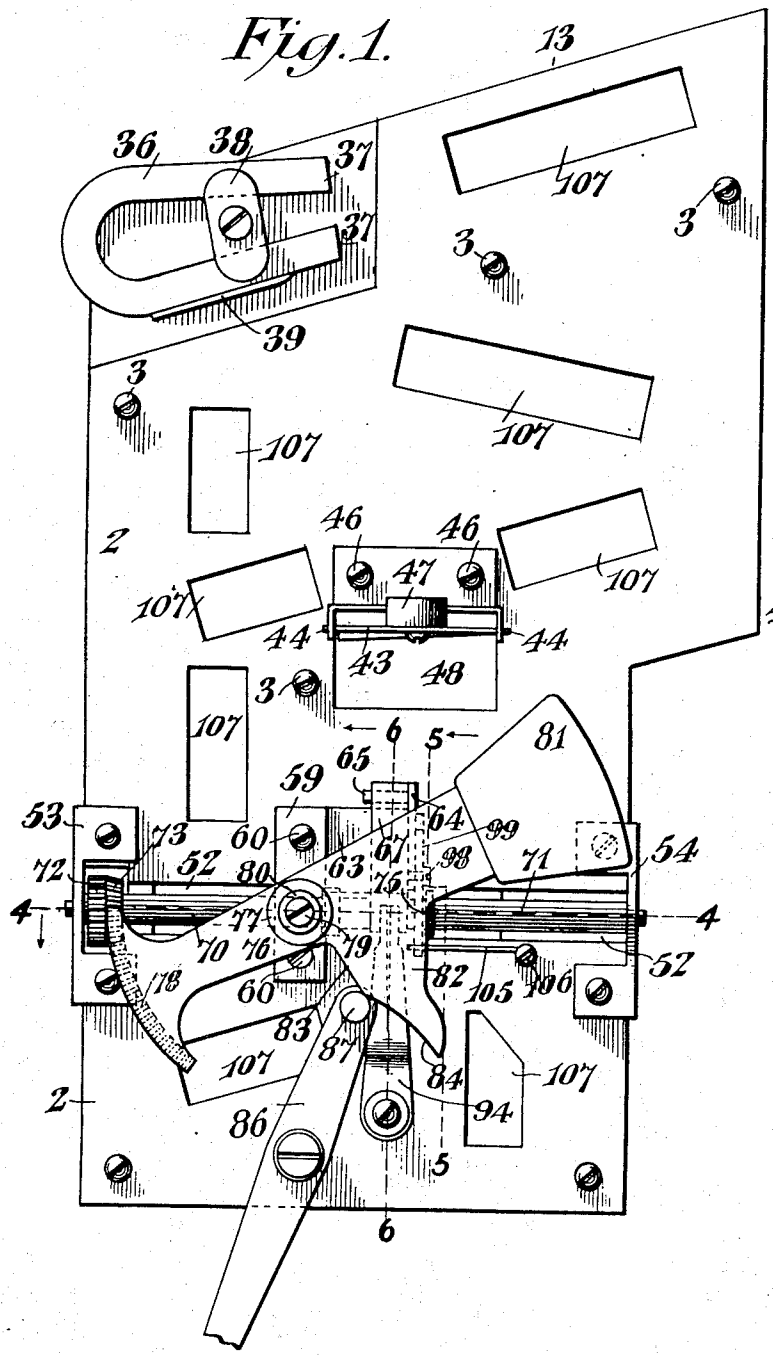
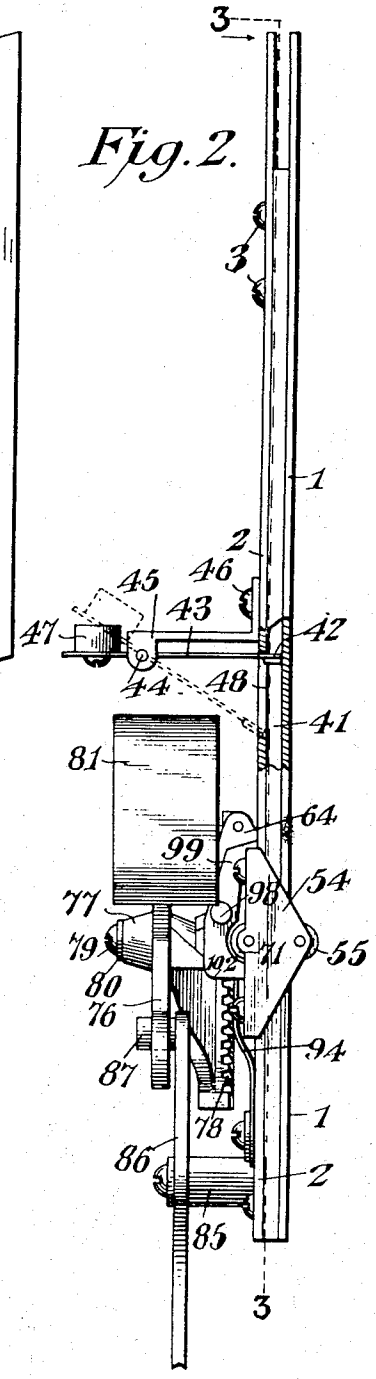


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

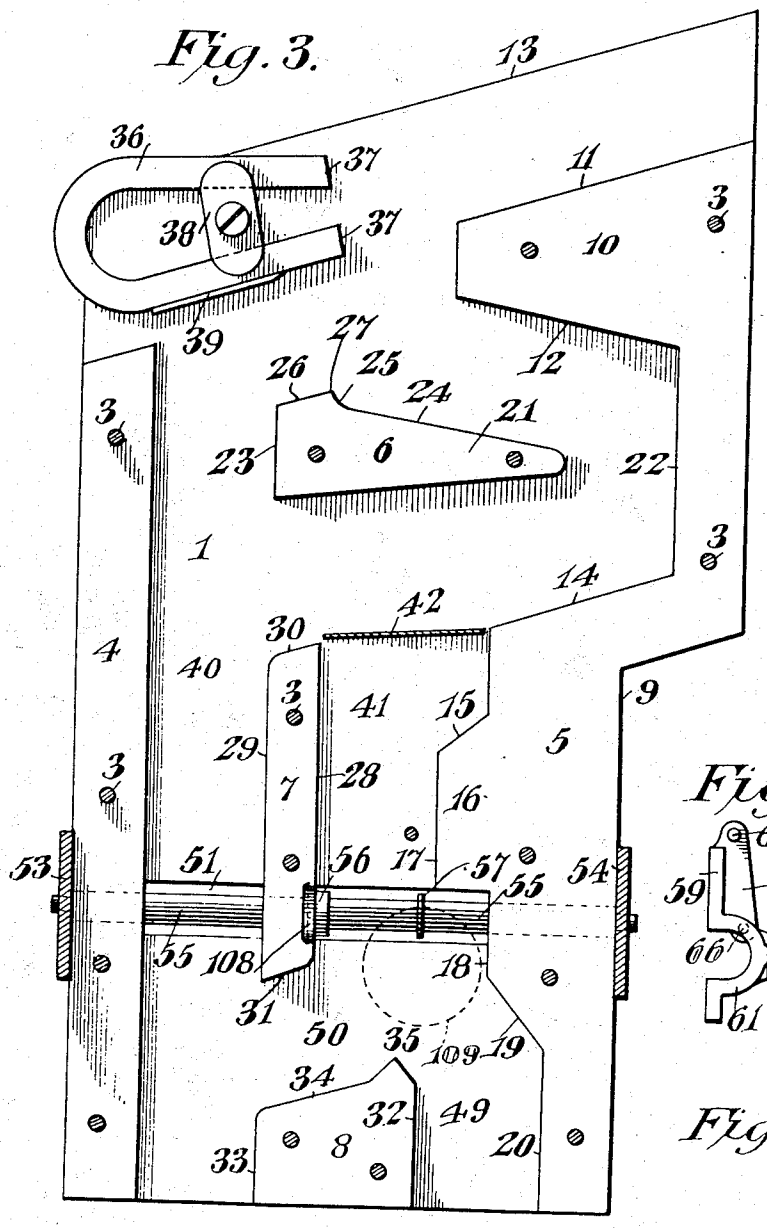


Fig. 12.

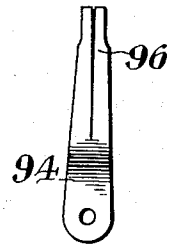


Fig. 9.

Fig. 10.

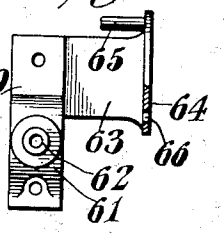


Fig. 11.

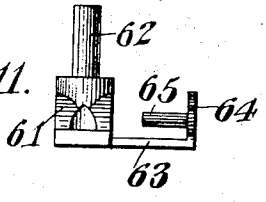
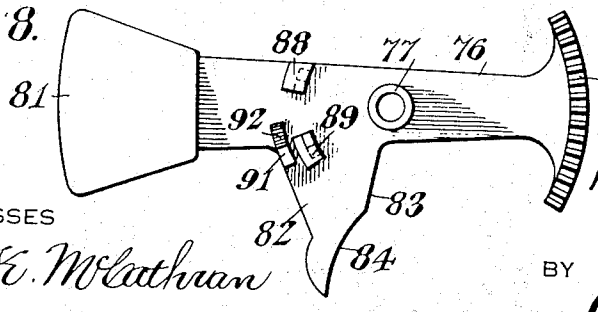


Fig. 8.



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3 SHEETS—SHEET 3.

Fig. 4.

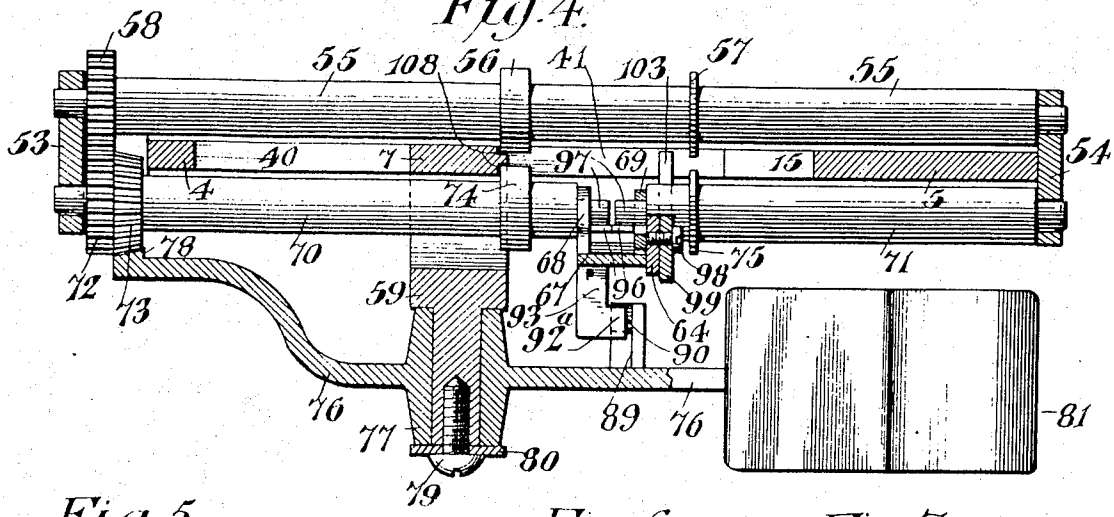


Fig. 5.

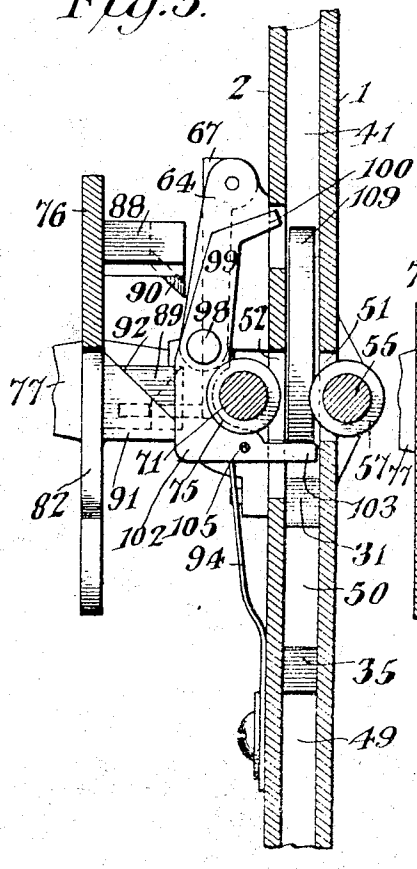


Fig. 6.

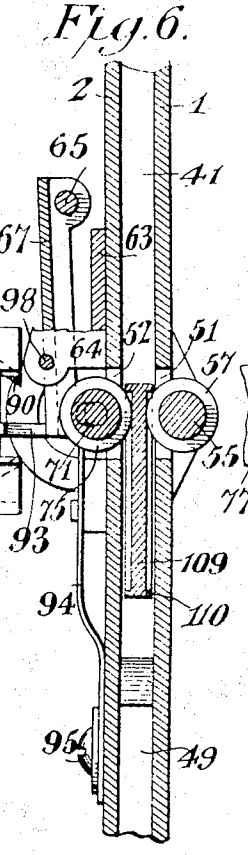
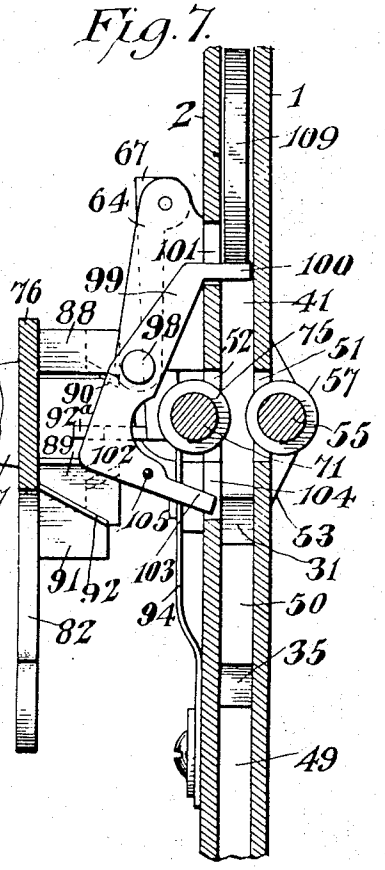


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM ISAAC RAVERT, OF HAZLETON, PENNSYLVANIA, ASSIGNOR TO STANDARD VENDING MACHINE COMPANY, OF HAZLETON, PENNSYLVANIA.

COIN-CONTROLLED APPARATUS.

1,095,418. Specification of Letters Patent. Patented May 5, 1914.

Application filed April 22, 1913. Serial No. 762,959.

To all whom it may concern:

Be it known that I, WILLIAM I. RAVERT, a citizen of the United States, residing at Hazleton, in the county of Luzerne and State of Pennsylvania, have invented a new and useful Coin-Controlled Apparatus, of which the following is a specification.

This invention has reference to improvements in coin controlled apparatus,-and its object is to provide a device which will selectively discard spurious devices and direct genuine coins to the coin controlled lock of the vending apparatus.

The present invention is designed to operate in conjunction with any suitable coin lock and vending apparatus, and consequently such devices having nothing to do with the present invention are neither herein illustrated nor described.

It is customary to unlock vending machines by means of a coin of suitable size and shape and occasionally a check or token of like size and shape is utilized for the legitimate operation of the vending machine. Malicious or fraudulent operation of the machine is customarily attempted by the employment of metal or other slugs, or the use of wires or some such picking devices, and sometimes it is attempted to operate the machine by badly worn coins.

In accordance with the present invention the coin chute is provided with an entering opening of a size to just receive a genuine and relatively unworn coin of the denomination for which the machine is set. The coin chute is constructed, as by making it tortuous, so as to be proof against the introduction of wires or other devices by which the coin lock may be picked. Furthermore, the device is provided with magnetic means for diverting iron slugs or the like away from the proper path for a genuine coin. Moreover, the device is provided with weight responsive means for discarding all light slugs or coins which might be introduced into the machine, even though such light coins be genuine, but because of being of the wrong denomination, or being worn, will not constitute proper payment for the articles to be vended. Genuine unworn coins have certain characteristics wherein they differ from spurious devices usually employed to improperly cause the unlocking of the vending devices, and these characteristics of genuine coins are relied upon for directing such genuine coins to the coin lock and discarding either worn genuine coins or slugs of suitable size and weight which might otherwise get by the fraud preventive devices, and so reach and cause the operation of the vending mechanism to deliver an article from the vending side of the machine.

For convenience of description the term coin will be used hereinafter for designating genuine coins of desirable condition, and also authorized checks or tokens, while the term slug will be employed to designate all spurious devices usually employed by persons desiring to obtain articles from the vending machine without the use of a proper coin.

The present invention is designed to direct all proper coins into the proper channels to cause the operation of the vending machine and to direct all slugs into a discard channel by means of which such slugs and even genuine coins of improper denomination or unduly worn, are returned to the exterior of the machine, whereby the fraudulently inclined operator is notified of the futility of his efforts, while genuine coins other than those desired in payment for the articles to be vended are returned to the owner and the latter suffers no loss.

The invention will be best understood from a consideration of the following detailed description, taken in connection with the accompanying drawings forming a part of this specification, with the further understanding that while the drawings show a practical embodiment of the invention, the latter is not confined to any strict conformity with the showing of the drawings, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention.

In the drawings: Figure 1 is a face elevation of the fraud preventing devices of the present invention. Fig. 2 is an edge or side elevation of the structure of Fig. 1 as viewed from the right hand side thereof, some parts being broken away to reveal some of the interior construction. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a section on the line 4—4 of Fig. 1 drawn on a larger scale and showing some parts in elevation which would be otherwise cut by the section. Fig. 5 is a section on the line

5—5 of Fig. 1, drawn on a larger scale and showing one phase of operation of the device. Fig. 6 is a section on the line 6—6 of Fig. 1 but drawn on a larger scale and showing a different phase of operation from Fig. 5. Fig. 7 is a section similar to Fig. 5 but showing a different phase of operation from the showing of Fig. 5. Fig. 8 is a detail view of an operating lever employed in the structure. Figs. 9, 10 and 11 are views from different sides of a pivot structure employed for carrying the lever of Fig. 8 and for other purposes, Fig. 10 being partly in section. Fig. 12 is a detail view of a spring employed in the structure.

In the drawings all showing of the vending apparatus and the coin lock which may be employed in conjunction therewith has been omitted, and all showing of the usual casing inclosing such structures has also been omitted, since these parts may follow any known or approved practice, and in themselves have nothing to do with the present invention which relates to means for preventing the fraudulent operation of the vending side of a vending machine. There are provided two plates 1 and 2 held together by screws 3 or otherwise, and spaced apart by filling-in blocks or strips 4, 5, 6, 7 and 8, which are thus particularly mentioned for reference hereinafter. The blocks 4 to 8 may be all of substantially the same thickness which should be little more than that of the proper coin designed to provide for the unlocking of the vending side of the machine. The spacing member 4 is located near one edge of the plates 1 and 2 and may be quite narrow and is nearly as long as the corresponding edges of the plates, these plates being longer in one direction than the other. The spacing member 5 conforms along one edge to the shape of the corresponding edges of the plates 1 and 2 which may be inset for a portion of the long edge, as indicated at 9, although this is not essential, except that it saves material. The spacing block or strip 5 stops short of one end of the plates 1 and 2, which end may be termed the upper end, since these plates are usually installed in the upright position, and the upper end of the strip 5 has an inward extension 10, that is, the prolongation 10 extends toward the opposite edge of the plates 1 and 2 or toward the strip 4, while the upper and lower edges 11, 12, respectively of the extension 10 approach one toward the other toward the inner end of the extension 10, so that both edges are inclined to the horizontal, and the upper edge 13 of the plates 1 and 2 may incline in substantial parallelism with the edge 11 of the extension 10. At a point a short distance above the inset portion 9 of the plates 1 and 2 the strip or member 5 has an inwardly declining edge 14 extended toward the strip 4 and this edge terminates in an in-cut portion 15 of the strip or member 5, which is widened below this in-cut portion 15, as indicated at 16, the inner edge 17 of this widened portion 16 being upright. Below the widened portion 16 there is another in-cut portion 18 of the strip 5 merging into a declined angle portion 19, which in turn merges into an upright edge portion 20 all along the inner edge of the strip or spacing member 5.

The block or spacing member 6 has a taper extension 21 entering the space between the edges 12 and 14 of the spacing member 5 about midway thereof and midway of an upright inner edge portion 22 of the strip 5 between the edges 12 and 14. That end of the block remote from the prolongation 21 has an edge portion 23 substantially parallel with and appropriately spaced from the inner edge of the strip 4, while the prolongation 21 has an upper edge 24 substantially parallel with the edge 12, and at the end remote from the edge 22 of the strip 5 rounding upwardly, as indicated at 25, and merging into a declined continuation 26 joining the upper edge of the end 23 and where the edges 25 and 26 join there is formed a nose 27.

The block or spacing strip 7 has one edge 28 spaced from and substantially parallel with the edge 17 of the strip 5 and another edge 29 spaced from and substantially parallel with the inner edge of the strip 4. This strip 7 has an upper end 30 declining from the edge 29 and a lower edge 31 also declining toward the same edge 29, and this strip or spacing member 7 has its upper edge 30 at a point somewhat lower than the lower end of the edge 14 and its lower edge 31 about opposite the upper edge of the declined angle or bevel portion 19 of the spring 5.

The spacing block 8 has an upright edge 32 parallel with, but spaced from the edge 20 of the strip 5, and a shorter upright edge 33 opposite the edge 32 and substantially parallel with, but spaced from the inner edge of the strip 4. The block 8 has an upper edge portion 34 inclining toward the edge 33 and terminating in a doubly inclined nose 35 merging at one side into the corresponding end of the edge 34 and at the other side into the upper end of the edge 32 and located to one side of the center line of the space defined between the edges 17 and 28, the side of said center line occupied by the nose 35 being toward the strip 5.

It is customary to provide coin operated machines with a coin slot, in a suitable plate, of a size to freely yet snugly receive a coin of suitable denomination, but to prevent the introduction of any articles of larger size either in diameter or thickness, and it is assumed that the present structure when in-

stalled upon a vending machine is guarded by such an entrance plate.

The edges 11 and 13, 12, 24, 22 and 14, the edges 17 and 28, and the edges 19, 20 and 32, together with the corresponding side of the nose 35 determine a tortuous coin chute, so that a coin dropped upon the upper end of the edge 11 will roll down the edge 11 by gravity, acquiring a certain momentum. However, in the path of a coin so rolling there is introduced a magnet 36 having polar extremities 37 spaced from the lower end of the edge 11 in substantial alinement with the portion of the coin chute determined by such edge 11. This magnet may be of the familiar horseshoe type, held in place by a clip 38 and having a portion constituting the lower edge of the magnet when installed covered by a plate 39 of non-magnetic material or provided with any other means for preventing direct magnetic contact.

If it be assumed that instead of a coin an iron disk or any other iron or steel object be introduced into the machine so as to be free to move along the declined edge 11 by gravity, it will upon reaching the end of the extension 10 tend to gravitate toward the block 6, but the momentum acquired in rolling down the edge 11 will project the iron article into engagement with the polar extremities 37 and the magnetic attraction established in the absence of other forces holds the iron article to such polar extremities. The momentum acquired, however, in addition to the force of gravity tending to cause the iron article to fall toward the block 6 will carry such iron article around the lower polar extremity 37 and for a short distance toward the yoke end of the magnet, but on reaching the non-magnetic material 39 the magnetic attraction is greatly weakened and the force of gravity and momentum cause the iron article to fall on to the edge 26 to be directed thereby into the passageway between the inner edge of the strip 4 and the corresponding edges of the blocks 6, 7 and 8. The passageway 40 thus defined may be termed the discard passageway or chute, and by means of suitable chutes, not shown, may lead to the exterior of the machine to cause ejection of the slugs reaching the passageway. Suppose, however, that the coin or slug introduced is not of magnetic material, then it will roll down the edge 11 until it strikes the polar extremities 37 when not being attracted thereby, its momentum is arrested and it falls between the inner end of the extension 10 and the polar extremities 37, until it ultimately strikes the edge 24 which declines in the opposite direction from the edge 11 and in substantial parallelism with the declining lower edge 12 of the extension 10. The coin or non-magnetic slug, as the case may be, now gains momentum by rolling down the edge 24 and proceeds toward the edge 22 of the strip 5 and the direction of travel of the coin or slug is diverted by the edge 22 on to the declining edge 14, which declines reversely to the edges 12 and 24 and by this edge 14 is directed toward a section 41 of the coin chute laterally enlarged by the inset portion 15, but below the same contracting to approximately the diameter of a genuine coin between the edges 17 and 28. The receiving end of the section 41 of the coin chute is, however, normally obstructed by a shelf 42 approximately bridging the space between the lower end of the edge 14 and the upper end of the edge 30. This shelf is carried on one end of a lever 43 pivoted at 44 on the free end of a bracket 45, the other end of which is made fast to the plate 2 by a screw 46 or otherwise. The lever 43 is shown as a lever of the first order with the longer arm carrying the shelf 42 and the shorter arm provided with a weight 47 sufficient to slightly overbalance the shelf 42 and hold it in obstructing relation to the upper end of the coin chute section 41. The plate 2 is appropriately slotted, as indicated at 48, for a sufficient rocking of the lever 43 to permit movement of the shelf 42 out of obstructing relation to the coin chute section 41.

If the article introduced into the coin chute and reaching the shelf 42 be a genuine coin, but of another denomination and lighter than the one designed to cause operation of the vending apparatus, or if the coin of the proper denomination be so badly worn as to be relatively light, or if the article introduced be a nonmagnetic slug of a material making it relatively light in weight, then the shelf 42 will remain in traversing relation to the chute section 41, since the weight of the coin or slug is insufficient to overbalance the weight 47 and consequently the coin or slug will pass over the shelf 42 on to the upper edge or ledge 30 of the block or strip 7 and be directed by the latter into the discard chute 40 to be returned to the exterior of the machine. Suppose, however, that the article introduced be of sufficient weight on reaching the shelf 42 to overbalance the retaining weight 47, then the shelf 42 will give to the superior weight and the article reaching the shelf 42 will drop into the coin chute section 41, the shelf 42 being of a width equal to that of the chute section 41 and the inset portion 15 of the strip 5, thus giving time while the article rolls over the shelf 42 for the latter to yield to the superior weight and cause the article to drop into the coin chute section 41. The article is, of course, of no greater diameter than a coin of proper denomination, for it otherwise could not be introduced through the guard plate at the entrance end of the coin chute, so that any article finally reaching the coin chute section 41 must be of a diameter not greater than that of a proper coin and of a

weight not materially less than that of a proper coin, but may be of greater weight and less diameter, and may also be a genuine coin worn quite smooth.

Let it be assumed that the article entering the coin chute section 41 is a circular article with smooth or plain faces which would be the case with practically all slugs, and would also be the case of a smoothly worn genuine coin. In order to dispose of any article entering the coin chute section 41 there is provided a mechanism which will automatically direct all genuine coins, which are not badly worn, into the space between the edges 20 and 32 constituting a terminal portion 49 of the coin chute designed to lead toward the coin lock of the vending machine, while slugs or too smoothly worn genuine coins are directed between the edges 31 and 34 of the blocks 7 and 8 constituting a branch channel 50 opening into the discard chute 40, so that such rejected slugs or coins are returned to the exterior of the machine. To bring this action about there is provided a mechanism which will now be described. At a point about coincident with the lower end of the coin chute section 41 each plate 1 and 2 is provided with a respective horizontal slot 51, 52, the slot 51 being in the plate 1 and the slot 52 in the plate 2. The slots 51 and 52 are extended entirely across the plates and the two sections of each plate thus produced by the slots may be joined by the side strips 4 and 5, so that the two plates, although each formed of two parts, may each be effectively one plate. At the respective ends of the slots 51 and 52 and common to both are bearing brackets 53, 54, respectively, made fast to the plates by screws or otherwise. Journaled at the ends in these brackets is a shaft 55 having two collars 56, 57, thereon in line with the coin chute section 41, while the end of the shaft 55 journaled in the bearing bracket 53 carries a gear pinion 58.

Fast to the plate 2 at the side of the coin chute section 41 toward the bracket 53 there is a bracket 59 secured by screws 60 or otherwise, and this bracket has an outset portion 61 straddling a corresponding part of the slot 52 in the plate 2. This outset portion carries a pin or journal 62 projecting in a direction away from the plate 2, while one portion of the bracket 59 has a lateral extension 63 terminating in an angle flange 64 which at one end carries a pin 65 directed toward the main portion of the bracket and at the other end is provided with a perforation or passage 66. The pin 65 constitutes a journal for one end of a hanger 67 which may be in the form of a flanged strip, the flanges imparting rigidity, while at the lower end, that is, the end remote from the pin 65, the hanger 67 is formed with two parallel spaced ears 68, 69, respectively. These ears have oblong journal bearings for shafts 70, 71, respectively. The shaft 70 has the end remote from the ear 68 journaled in the bracket 53 and adjacent the bracket 53 carries a pinion 72 in mesh with the pinion 58, and immediately adjacent to the pinion 72 carries another pinion 73 which may be a bevel pinion. In matching relation to the collar 56 the shaft 70 carries a like collar 74. The shaft 71 is journaled at the end remote from the ear 69 in the bracket 54, and in matching relation to the collar 57 the shaft 71 has a like collar 75. The two shafts 70, 71 are in approximate alinement and are located opposite the slot 52 and under certain circumstances may enter the slot for a distance. The hanger 67 is capable of swinging on the pin 65 to carry the adjacent ends of the shafts 70 and 71 toward and from the shaft 55, the bearings for these shafts being sufficiently loose to permit this slight angular displacement of the shafts 70 and 71, such displacement being relatively very slight. The shaft 55 may be so mounted as to have practically no movement laterally of its longitudinal axis.

Mounted on the pin 62 is an operating lever 76 having a hub 77 fitting the pin 62 and extending lengthwise thereof, so as to space the lever an appropriate distance from the bracket 59. The lever 76 is shown as of the first order and at one end is formed into a gear segment 78 suitably beveled to match the bevel gear 73 on the short shaft or roller 70 and when the lever 76 is suitably mounted on the pin 62 it may be held by a screw 79 and washer 80, as best shown in Fig. 4, the said gear segment 78 being curved on the axis of the hub 77 as a center.

At the end of the lever 76 remote from the segment 78 is an enlargement 81 designed to operate as a weight sufficient to cause the lever 77 to rock in an appropriate direction to produce certain results to be described. Projecting from one side of the lever adjacent to the hub 70 is a lateral arm 82 having one edge formed into a shoulder 83 extending in a direction approximately radial to the hub 77 for an appropriate distance, and from the outer end of the shoulder 83 the same edge is continued as a curved shoulder 84 which when the parts are in a certain position has its radius extending from a stud 85 projecting from the plate 2 near the bottom thereof, and on this stud there is mounted a sub-lever 86 having one arm of a length to reach the arm 82 and there provided with a laterally projecting member 87 which may be either a pin or roller designed to engage the shoulders 84 and 83 to move the lever 76 against the action of the weight 81 or to permit it to move under the action of the weight 81.

The lever 76 is provided with two spaced teeth, 88, 89, projecting therefrom toward the plate 2 and these teeth are arranged in concentric relation to the pivotal axis of the lever 76 with the terminal portions of the teeth beveled, as indicated at 90, the teeth themselves being substantially parallel with the corresponding face of the lever but offset therefrom. At a somewhat greater radial distance from the hub 77 the lever is provided with a lug or projection 91 having a beveled face 92 in concentric relation with the pivotal axis of the lever. The teeth 88 and 89 are so disposed as to engage an angle extension 92^a of a finger 93 projecting from the lower or free end of the hanger 67, and this hanger 67 is urged at its free end toward the plate 2 by a spring 94 which may be of the leaf type, and is made fast at one end to the plate 2 by a screw 95 or otherwise, while its other or free end is bifurcated, as indicated at 96, and is so disposed that the respective members of the bifurcated end bear individually upon journal extensions 97 of the respective short shafts or rollers 70 and 71. The spring 94 tends to constantly maintain the adjacent ends of the rollers 70 and 71 toward the long shaft or roller 55, but the end 96 of the spring 94 will yield to a superior force permitting the corresponding ends of the rollers 70 and 71 to be moved away from the roller 55, and as will hereinafter appear this movement of the rollers 70 and 71 may be caused by the engagement of the angle end 92^a by one or the other of the teeth 88 and 89 of the lever 76.

Mounted on the flange 64 of the bracket 59 by means of a screw or pin 98 which may engage in the hole or perforation 66 of the flange 64, is an escapement lever 99 having the upper end formed into a nose 100 movable through a passage 101 in the plate 2 into and out of the coin chute section 41. The end of the escapement lever remote from the nose 100 is formed with an elbow 102 and at the end of the elbow there is provided a finger 103 located and shaped to be moved into and out of the coin chute below the roller 71 through a passage 104 in the plate 2. The lever 99 is under the normal control of a spring 105 having one end passed through the body of the lever to one side of the pivot pin 98 and the other end secured to the plate 2 as by a screw 106, The tendency of the spring is to maintain the lever 99 in a position which will cause the nose 100 to be in traversing relation to the coin chute section 41, while the beveled face 92 of the lug 91 is positioned to engage the elbow 102 and on the appropriate movement of the lever 76 force the finger 103 into traversing relation to the coin chute and at the same time withdraw the finger 100 from such position.

In order that the course of either coins or slugs through the coin chute and discard passages may be followed, suitable sight openings 107 are provided in the plate 2 at various parts thereof. The course through the device of a magnetic slug and the course of either a slug or coin of such light weight as not to operate the shelf or balance 42 has already been traced, and so need not be repeated. Suppose that a flat brass, lead, copper or other metal slug of non-magnetic material and of the same weight as a proper coin reaches the balance 42, and by overcoming the balance drops down into the passageway 41. At this time the weighted end of the operating lever 76 is raised and consequently the lug 91 has engaged behind the elbow 102, thus forcing the finger 103 in traversing relation to the coin chute with the nose 100 withdrawn therefrom, and the tooth 89 is at the time engaged behind the angle extension 92^a of the finger 93 and the hanger 67 together with the ends of the rollers 70 and 71 journaled therein has been rocked against the action of the spring 94, so that the collars on the rollers are in the most distant position one from the other. The slug drops until arrested by the finger 103, and at this time is between the collars 56 and 74 and the collars 57 and 75, all as shown in Fig. 5. Suppose, now, that the lever 86 is rocked so as to release the operating lever 76 to movement under the action of the weight 81, then the gear segment 78 in mesh with the gear 73 causes a rotative movement of the shaft or roller 70. At the same time the tooth 89 moves out of engagement with the angle extension 92^a of the finger 93 and the adjacent ends of the rollers 70 and 71 are released to the action of the spring 94, thus bringing the collars 74 and 75 into engagement with the corresponding face of the slug and forcing the other face into contact with the collars 56 and 57. While these movements are progressing, the lug 91 moves out of engagement with the elbow 102 and the spring 105 causes a rocking of the lever 99 to withdraw the finger 103 from the path of the slug and to interpose the nose 100 into the path of a slug or coin which may be subsequently introduced into the coin chute. These actions occur before the movement of the operating lever is completed, and the rotation of the rollers 55 and 70 cause the slug to be moved straight downwardly until it ultimately escapes from the collars engaging it and it drops on to the upper end of the spacing block 8 to that side of the apex of the nose 35 toward the discard passageway 40 and the slug thereupon rolls down the inclined edge 34 and ultimately reaches the discard passageway and is returned to the outside of the machine. Suppose, however, that a good coin of proper denomination has been

introduced into the coin chute, then it will follow the tortuous passage formed by the inclined edges of the members 5 and 6 until the shelf 42 is reached, and the coin being of sufficient weight overbalances the shelf and drops into the passageway 41 and on to the retaining finger 103 interposed in the coin chute and on the movement of the operating lever in a proper direction the coin is engaged by the collars on the rollers and is moved by these collars toward the discharge end of the chute. The edge 28 of the block or strip 7 is cut away on opposite sides as shown at 108, so as to partially overlap the collars 56 and 74. Coins of the proper denomination are formed with a narrow raised rim inside of which the main body of the coin is thinner than the rim.

In Fig. 5 a coin is indicated at 109 and in Fig. 6 the coin is shown in section and the raised rim is indicated at 110, the showing being more or less schematic. While the collars 56 and 74 engage the raised edge of the coin the collars 57 and 75 engage the depressed faces of the coin inside the raised edge, the independence of the short shaft or roller 71 and a slight looseness of its journals in the journal bearings permitting a corresponding portion of the bifurcated end 96 of the spring 94 to move this roller where provided with the collar 75 closer to the collar 57 than the spacing of the collars 56 and 74, while engaging the raised rim of the coin. Moreover, the roller 70 and the roller 55 are positively driven, but the roller 71 is not driven directly at all. Consequently that portion of the coin engaging between the collars 56 and 74 is propelled downwardly, but the portion of the coin gripped between the collars 57 and 75 is not correspondingly propelled, so that the coin is discharged from between the collars 56 and 74 while still gripped between the collars 57 and 75, wherefore it assumes a pendent position with relation to the collars 57 and 75. The center of the coin is under these circumstances substantially directly beneath the collars 57 and 75 and the coin has been swung with its center to that side of the apex of the nose 35 toward the chute continuation 49, the position of the coin being indicated in dotted lines in Fig. 3. All this occurs while the operating lever is moving under the action of the weight 81, and such movement of the lever continues until the tooth 88 comes into engagement with the angle extension 92[a] of the finger 93, whereupon the rollers 70 and 71 are moved away from the roller 55 and the coin hanging between the collars 57 and 75 is released and drops, so as to strike the apex of the nose 35 in a manner to direct the coin into the chute section 49 from which the coin may travel to the structure depending upon the presence of the coin for its operation, such structure however not being shown in the drawing.

When a coin of proper denomination and condition is introduced into the machine and reaches the rollers, the collars 56 and 74 operate upon the rim of the coin in the same manner as they do upon a flat slug, but the collars 57 and 75 engage the depressed faces of the coin within the rim, so as to still grip or retain the coin, after it escapes from the collars 56 and 74, and the coin gravitates to a pendent position and at the same time moves laterally into position to be directed into the portion of the coin chute leading to the devices to be coin operated. With all flat faced devices, such as slugs, or even a smooth coin which might reach the rollers, this lateral displacement of the article does not take place, and unless the article be laterally displaced it will fall against a part which directs it to the discard instead of to the coin operated mechanism. The rollers therefore become selective to proper coins because of characteristics of the coins due to their surface configuration rather than to weight or diameter, or even to their thickness generally. The engagement of the sub-lever 86 with the operating lever 76 prevents any sudden movement of the operating lever even though the sub-lever 86 should be suddenly operated by a person manipulating the machine and the parts of the machine herein shown therefore proceed without jar or jerk. Of course, it will be understood that the means for operating the coin operating and selecting rollers may be changed to suit the particular slot machine to which the fraud preventing devices of the present invention may be attached.

What is claimed is:—

1. A fraud preventing device for coin-controlled vending machines, having coin selecting and propelling means shaped and spaced to engage the coin both at the rim and interior thereto, said coin propelling means acting directly on the coin for selectively directing the proper coin edgewise toward the operating mechanism of the machine.

2. In a device for the purpose described, rotatable coin engaging and propelling members in opposition and movable one toward and from the other, and each having coin engaging and propelling parts separated by a distance less than the diameter of a proper coin interior to its rim portions, means for causing the rotation of the rotatable members to propel a coin edgewise between them, and means for causing movement of the coin engaging members toward and from each other.

3. In a device for the purpose described, means for selecting coins having marginal rims raised with respect to the faces of the coins, comprising opposed rotatable coin engaging and propelling members each having

coin engaging parts spaced apart in the direction of the axis of rotation by a distance less than the diameter of the coin inside of the raised rim, means for actuating and means for moving the rotatable members toward and from each other.

4. In a device for the purpose described, opposed rotatable members arranged in pairs, one pair of the members being relatively broad and the other pair relatively narrow and one pair being spaced from the other pair by a distance less than the diameter of a proper coin, means for actuating the rotatable members, and means for causing the approach and separation of the members of the pairs of the rotatable members one with respect to the other.

5. A device for the purpose described provided with a coin chute, a roller having collars thereon spaced apart less than the width of a proper coin within the rim thereof, one collar being relatively wide and the other relatively narrow, another roller opposed to the first-named roller and provided with a relatively wide collar in matching relation to the wide collar of the first-named roller, the two rollers being connected together for simultaneous rotation, a third roller in opposed relation to the first roller and in substantial alinement with the second roller and provided with a relatively narrow collar matching the narrow collar of the first-named roller, means for causing rotation of the rollers, and means for causing movements of the second and third rollers toward and from the first roller.

6. In a device for the purpose described, rotatable members having engaging portions for a coin or slug, said engaging portions being movable toward and from each other, and a weighted member connected to the rotatable portions for imparting rotative movement thereto and provided with means for causing movements of the engaging portions one toward and from the other.

7. A device for the purpose described, provided with a coin chute, a rotatable member located adjacent the coin chute and provided with collars of different axial extent in position to enter the coin chute, another rotatable member connected to the first-named member for rotation therewith and provided with a collar matching the wider collar of the first-named rotatable member, a third rotatable member adjacent to the first-named member provided with a collar matching the narrower collar of the first-named member, the two last-named members being in approximate alinement, a support for the adjacent ends of the second and third named members, means for urging the second and third named members toward the first-named member, a gravity actuated means connected to the first and second named members for imparting rotative movement thereto, and interconnecting means on the support for the adjacent ends of the second and third named members and on the gravity member for causing movement of the second and third named members away from the first named member in opposition to their normal tendency.

8. A device for the purpose described provided with a coin chute, a roller having a relatively wide and a relatively narrow collar thereon in position to enter the coin chute near opposite edges thereof on one side of said coin chute, another roller shorter than the first-named roller and geared thereto for simultaneous rotation therewith, said second named roller terminating adjacent to the coin chute and provided with a relatively wide collar matching the wide collar of the first-named roller, a third roller having one end adjacent the coin chute and the corresponding end of the second roller and provided with a relatively narrow collar matching the narrow collar of the first-named roller, the second and third named rollers being on the side of the coin chute remote from the first-named roller, a movable journal support for the adjacent ends of the second and third named rollers, a weighted lever having one end geared to the interconnecting gearing of the first and second named rollers, coacting means on the lever and movable journal support for causing movement of said journal support in one direction, and elastic means for urging the journal support in the other direction.

9. A device for the purpose described provided with a coin chute, a roller having a relatively wide and a relatively narrow collar thereon in position to enter the coin chute near opposite edges thereof on one side of said coin chute, another roller shorter than the first-named roller and geared thereto for simultaneous rotation therewith, said second named roller terminating adjacent to the coin chute and provided with a relatively wide collar matching the wide collar of the first-named roller, a third roller having one end adjacent the coin chute and the corresponding end of the second roller and provided with a relatively narrow collar matching the narrow collar of the first-named roller, the second and third named rollers being on the side of the coin chute remote from the first-named roller, a movable journal support for the adjacent ends of the second and third named rollers, a weighted lever having one end geared to the interconnecting gearing of the first and second named rollers, coacting means on the lever and movable journal support for causing movement of said journal support in one direction, and elastic means for urging the journal support in the other direction, the coacting means on the lever and journal support comprising oppositely located teeth

on the lever and a finger on the journal support in the path of the teeth.

10. A device for the purpose described provided with a coin chute, a roller having a relatively wide and a relatively narrow collar thereon in position to enter the coin chute near opposite edges thereof on one side of said coin chute, another roller shorter than the first-named roller and geared thereto for simultaneous rotation therewith, said second named roller terminating adjacent to the coin chute and provided with a relatively wide collar matching the wide collar of the first-named roller, a third roller having one end adjacent the coin chute and the corresponding end of the second roller and provided with a relatively narrow collar matching the narrow collar of the first-named roller, the second and third named rollers being on the side of the coin chute remote from the first-named roller, a movable journal support for the adjacent ends of the second and third named rollers, a weighted lever having one end geared to the interconnecting gearing of the first and second named rollers, coacting means on the lever and movable journal support for causing movement of said journal support in one direction, and elastic means for urging the journal support in the other direction, the coacting means of the lever and journal support comprising oppositely located teeth on the lever and a finger on the journal support in the path of the teeth, the device being also provided with an escapement lever movable into and out of the coin chute above and below the rollers.

11. A device for the purpose described provided with a coin chute, a roller having a relatively wide and a relatively narrow collar thereon in position to enter the coin chute near opposite edges thereof on one side of said coin chute, another roller shorter than the first-named roller and geared thereto for simultaneous rotation therewith, said second named roller terminating adjacent to the coin chute and provided with a relatively wide collar matching the wide collar of the first-named roller, a third roller having one end adjacent to the coin chute and the corresponding end of the second roller and provided with a relatively narrow collar matching the narrow collar of the first-named roller, the second and third named rollers being on the side of the coin chute remote from the first-named roller, a movable journal support for the adjacent ends of the second and third named rollers, a weighted lever having one end geared to the interconnecting gearing of the first and second named rollers, coacting means on the lever and movable journal support for causing movement of said journal support in one direction, and elastic means for urging the journal support in the other direction, the coacting means on the lever and journal support comprising oppositely located teeth on the lever and a finger on the journal support in the path of the teeth, the device being also provided with an escapement lever movable into and out of the coin chute above and below the rollers, said escapement lever having means tending to move it into the coin chute above the rollers and the weighted lever having means for engaging the escapement lever and moving it in opposition to its normal tendency into the coin chute below the rollers.

12. A device for the purpose described, provided with a coin chute, propelling means in the path of a coin passing through the chute for engaging and feeding the coin along the chute, and means for engaging the faces of the coin at thin parts thereof to there hold the coin against the action of the propelling means.

13. A device for the purpose described, provided with a coin chute, propelling means in the path of a coin passing through the chute and situated to engage the coin at the edge portion of opposite faces of the coin at one side of the center line of the chute, and means for engaging the coin interior to the edges and located at the other side of the center line of the chute from the first-named means.

14. A device for the purpose described provided with a coin chute, means in the path of a coin passing in the chute for engaging the coin at the edges on one side of the center line of the chute, and means for engaging the coin interior to the edges and located on the other side of the center line of the chute from the first-named means, said first-named means being constructed to propel the coin along the coin chute, and said second-named means being constructed to release the coin after escaping from the first-named means.

15. A device for the purpose described having a coin chute, propelling means for the coin entering the chute and constructed to direct a coin straight through the chute where said means are located, and means for causing the actuation of the propelling means, said propelling means including means for engaging a coin at one side of the center thereof to swing it to the corresponding side of the straight line of travel after escaping from the other parts of the propelling means.

16. A device for the purpose described, provided with a coin chute, propelling means situated with respect to the chute to engage a coin in the chute and cause it to move therealong, and means for retarding the progress of the coin and situated with respect to the center line of the chute to cause the coin to swing toward that side of the chute remote from the propelling means.

17. In a device for the purpose described, a coin chute, a diverting means in the coin chute for directing a coin in one direction or another, and engaging means for the coin before reaching the diverting means, said engaging means including propelling means tending to move the coin toward one path of travel of the diverting means, and retarding means constructed to cause the coin to swing on said retarding means toward the other path of travel of the diverting means.

18. In a device for the purpose described, a coin chute, and pairs of rollers in operative relation and located with reference to the coin chute to engage a coin situated between them at the edge portions on one side of the then upright center line of the coin and to engage the faces of the coin interior to the edge portions at the other side of said center line.

19. A device for the purpose described provided with a coin chute and pairs of rollers in operative relation to the coin chute and located with reference to the margins of the coin chute to engage a coin at one side of the center at the edge portions of the coin and at the other side of the center interior to the edge portions of the coin, the pair of rollers for engaging the edge portions of the coin having means for driving both rollers positively and the other pair of rollers having one roller positively driven and the other being free to rotate.

20. A device for the purpose described provided with a coin chute, rollers having pairs of coin engaging members with one pair in operative relation to the coin chute near one edge thereof and the other pair near the other edge of the coin chute, means for causing one roller of each pair to move toward and from the roller of the other pair, a weighted lever movable under the action of its weight, gearing connections between the lever and the rollers for causing rotative movements thereof, means carried by the lever for causing the withdrawal of the movable rollers away from the other rollers, and operating means for the lever comprising an arm on said lever with active and inactive shoulders and another lever in position to engage the shoulders to move and hold the first-named lever in opposition to the weight and to release the first-named lever to the action of the weight.

21. A device for the purpose described, including a coin chute, means associated therewith for selectively discarding all slugs and coins except those having characteristics of genuine full-value coins, and means for selecting the genuine full-value coins and discarding slugs having similar characteristics to such coins, comprising rotatable propelling devices related to the coin chute to engage the slug or coin on opposite faces and on opposite sides of the then upright center line of the slug or coin, one set of propelling devices being situated to grasp the marginal portion of the slug or coin, and the other set of propelling devices being situated to grasp the slug or coin interior to the marginal portion, means for actuating the propelling devices, and means for moving the propelling devices out of contact with an engaged coin to release the latter.

22. A device for the purpose described, including a coin chute, means associated therewith for selectively discarding all slugs and coins except those having characteristics of genuine full-value coins, and means for selecting the genuine full-value coins and discarding slugs having similar characteristics to such coins, comprising rotatable propelling devices related to the coin chute to engage the slug or coin on opposite faces and on opposite sides of the then upright center line of the slug or coin, one set of propelling devices being situated to grasp the marginal portion of the slug or coin and the other set of propelling devices being situated to grasp the slug or coin interior to the marginal portion, means for actuating the propelling devices, and means for moving the propelling devices out of contact with an engaged coin to release the latter, the propelling devices being provided with automatic means for causing their movement in the active direction.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WILLIAM ISAAC RAVERT.

Witnesses:

A. C. HOHMAN,

A. W. HALL.