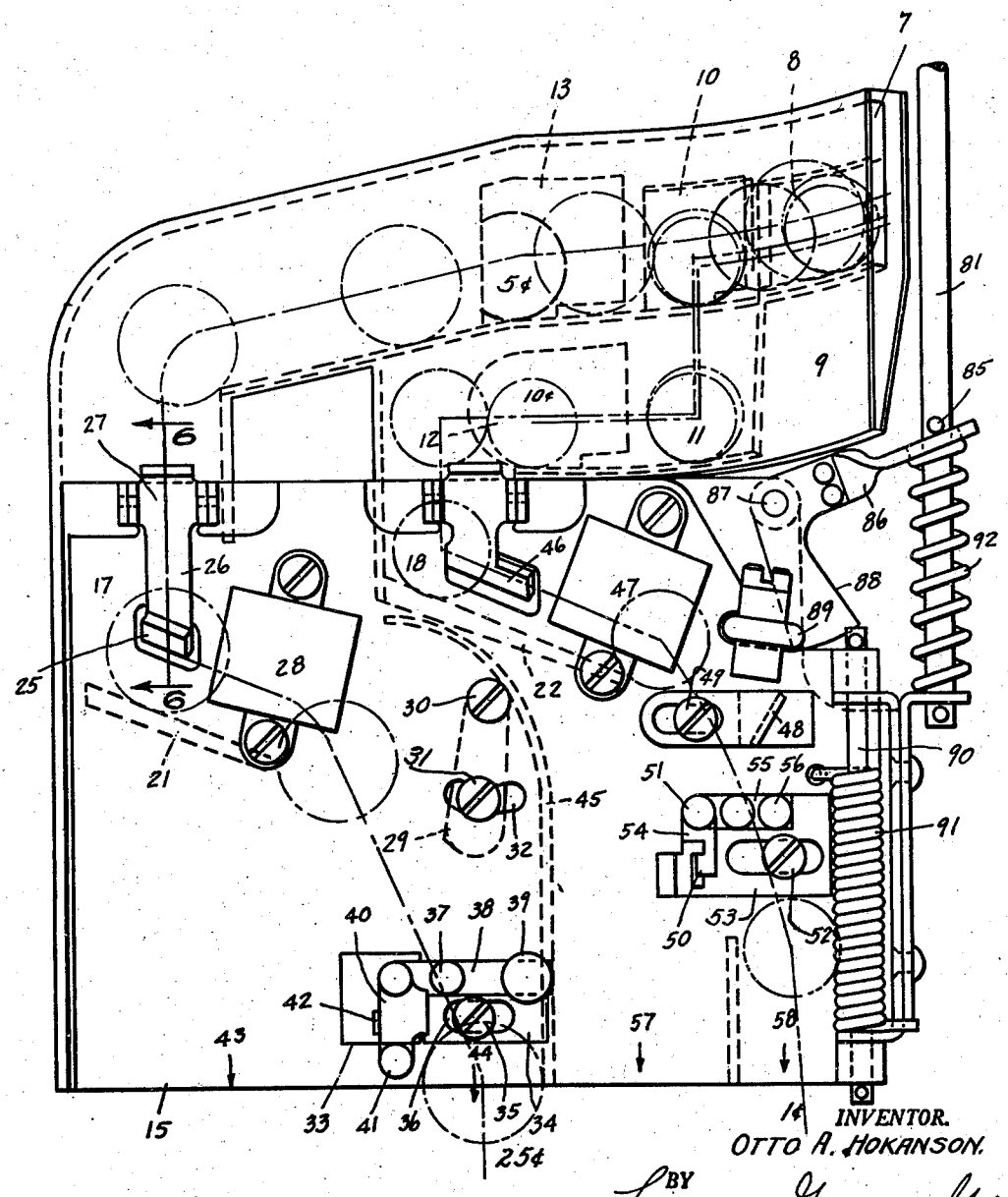
Nov. 9, 1948. O. A. HOKANSON 2,453,437

COIN SELECTING DEVICE

Filed Dec. 11, 1944 7 Sheets-Sheet 1

FIG. 1



INVENTOR.
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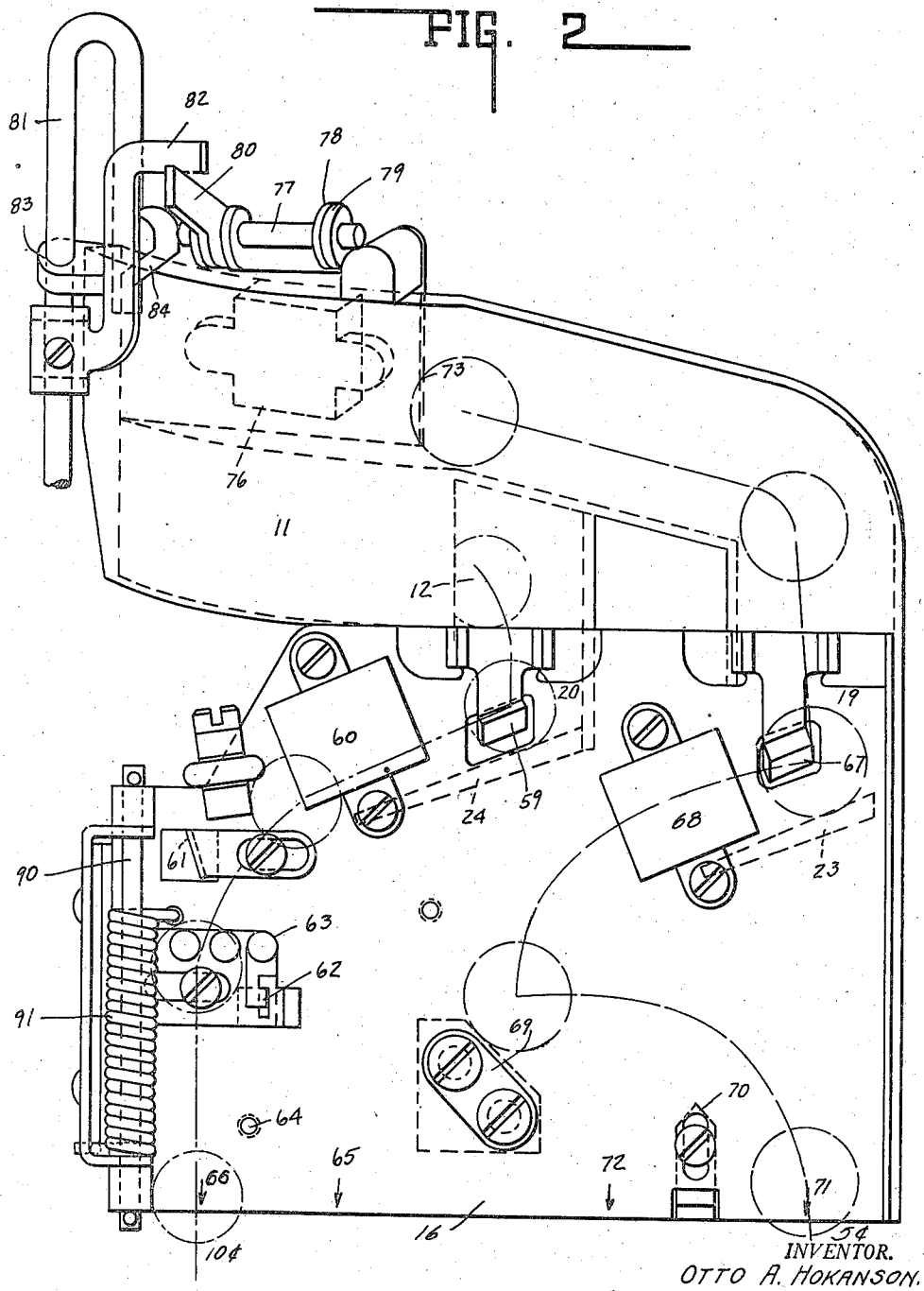
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COIN SELECTING DEVICE

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FIG. 2



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COIN SELECTING DEVICE

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FIG. 9

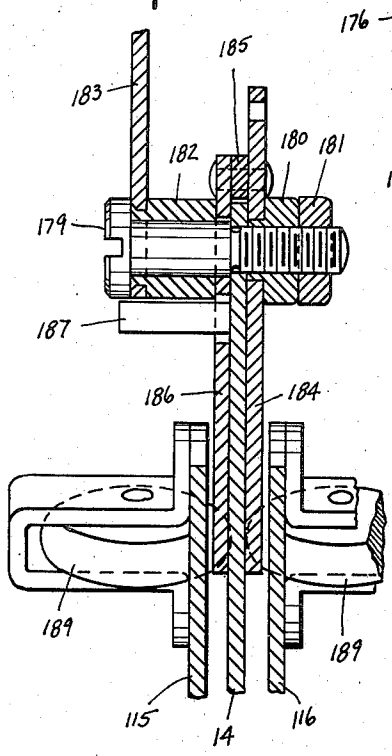


FIG. 10

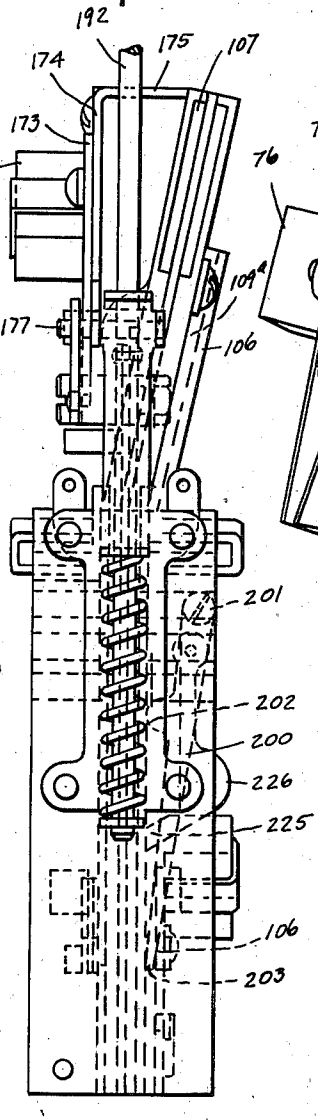
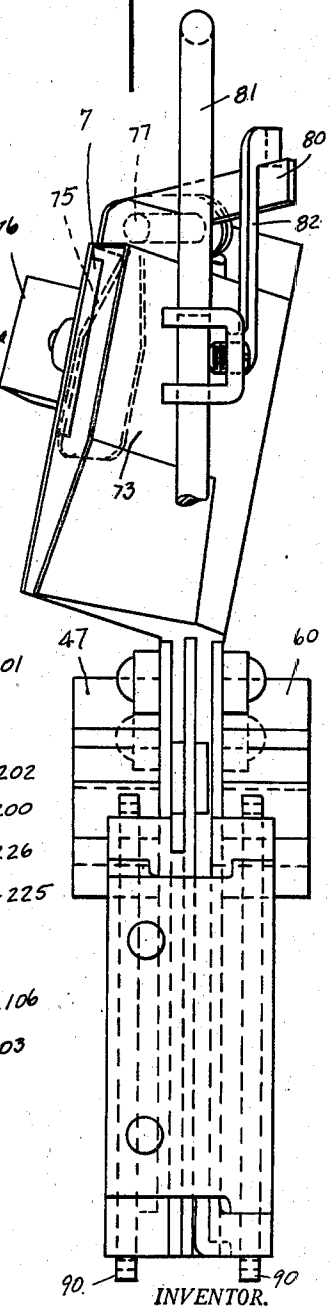


FIG. 3



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COIN SELECTING DEVICE

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FIG. 4

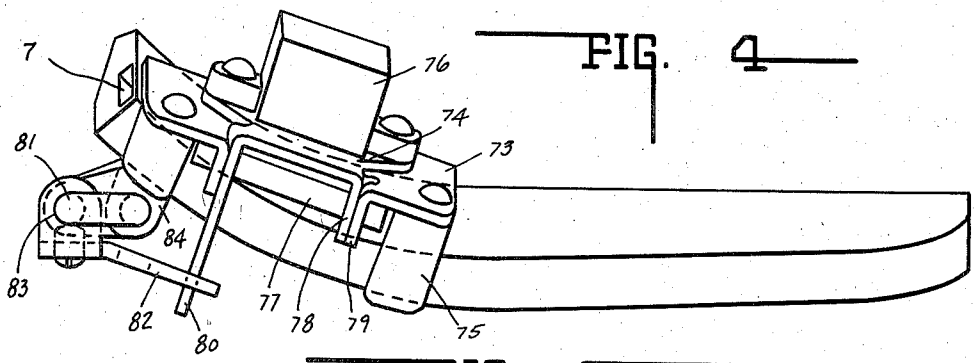


FIG. 5

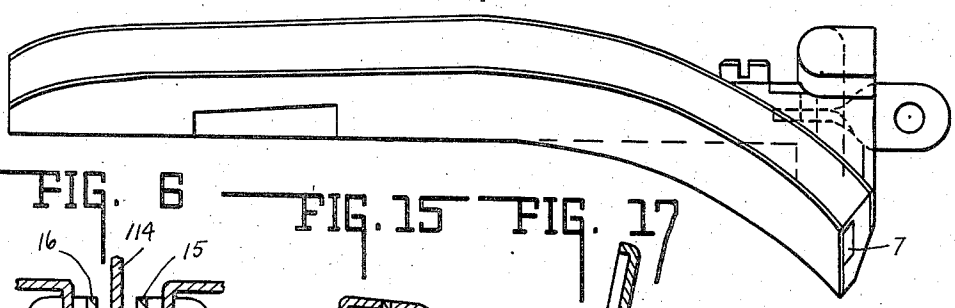


FIG. 6

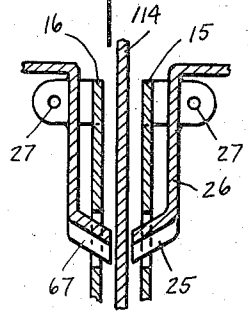


FIG. 15

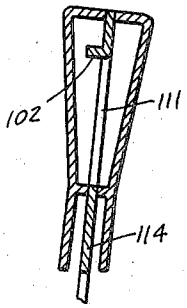


FIG. 17

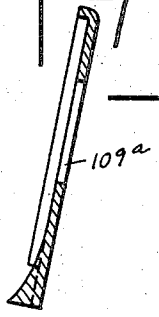


FIG. 16

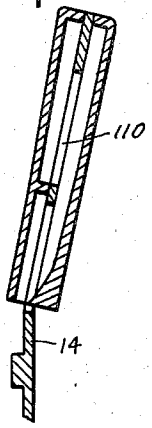
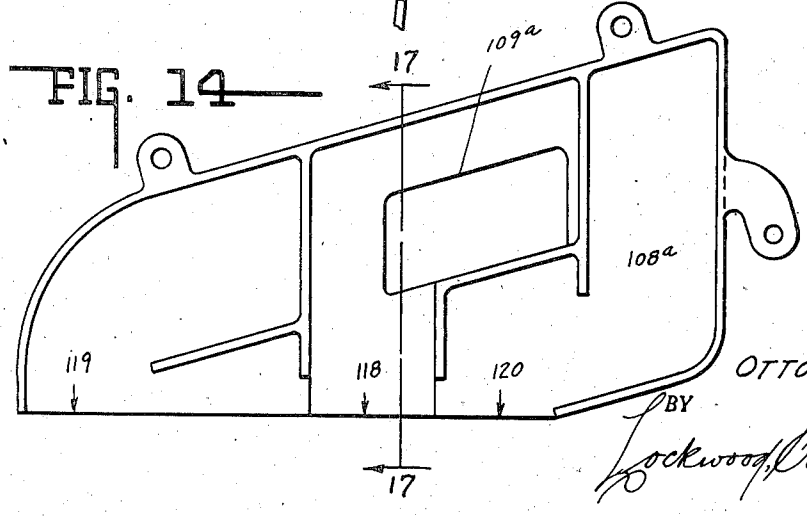


FIG. 14



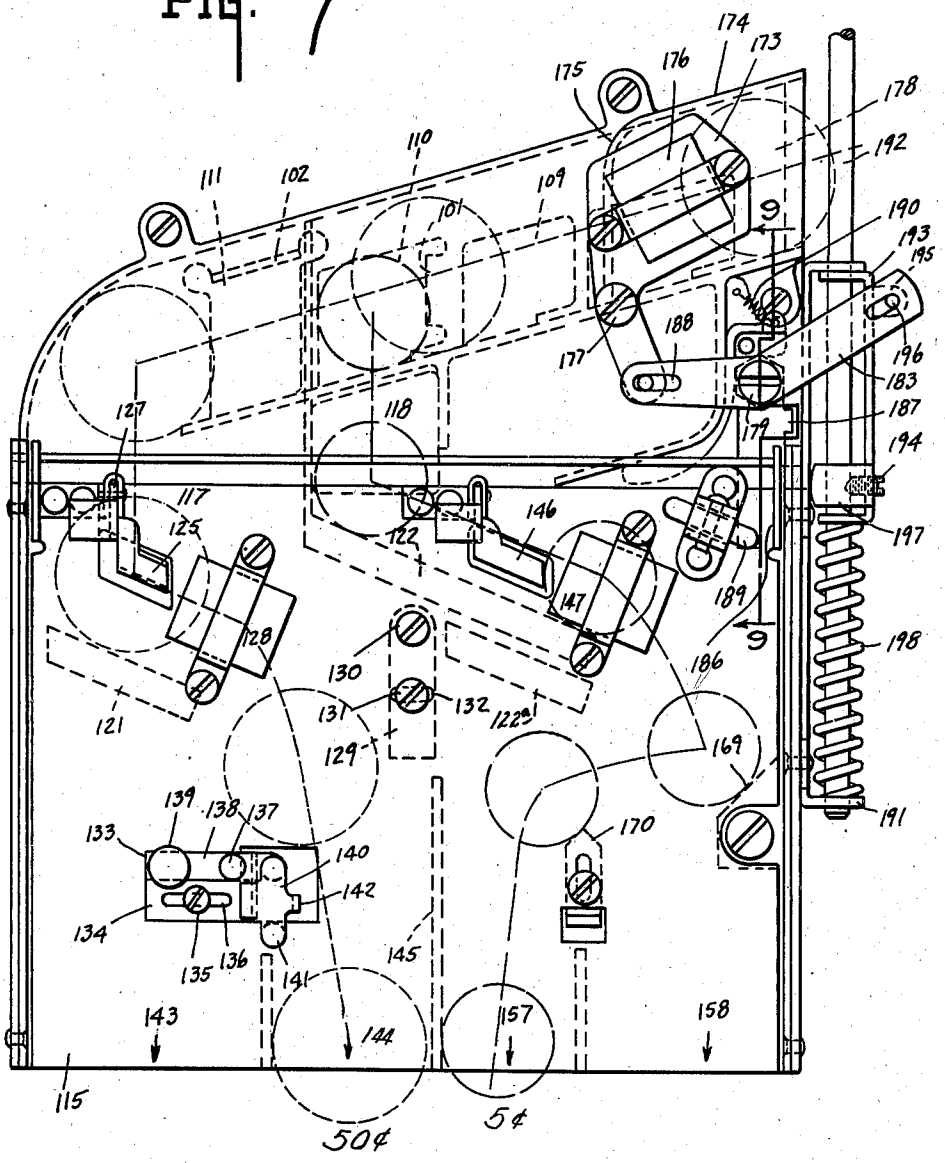
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COIN SELECTING DEVICE

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FIG. 7



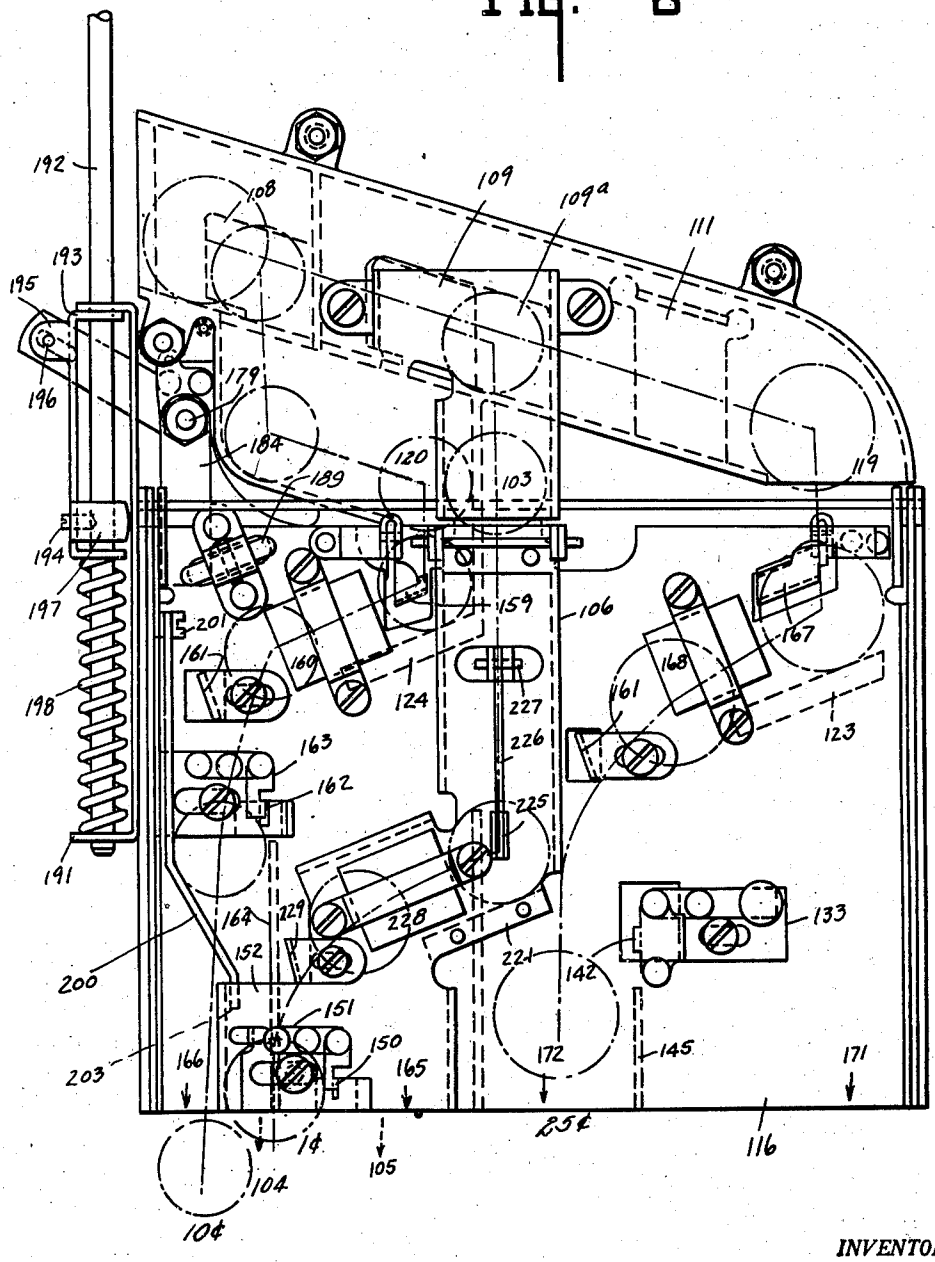
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COIN SELECTING DEVICE

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FIG. 8



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COIN SELECTING DEVICE

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FIG. 11

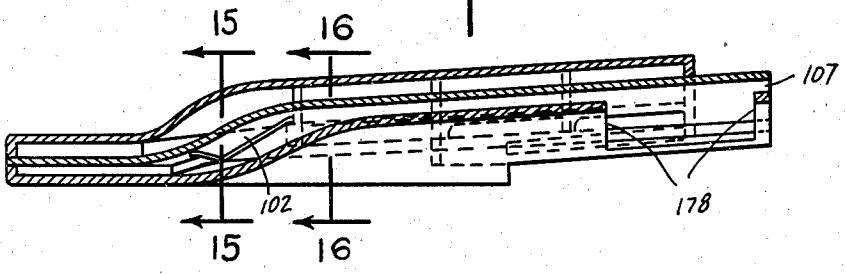


FIG. 12

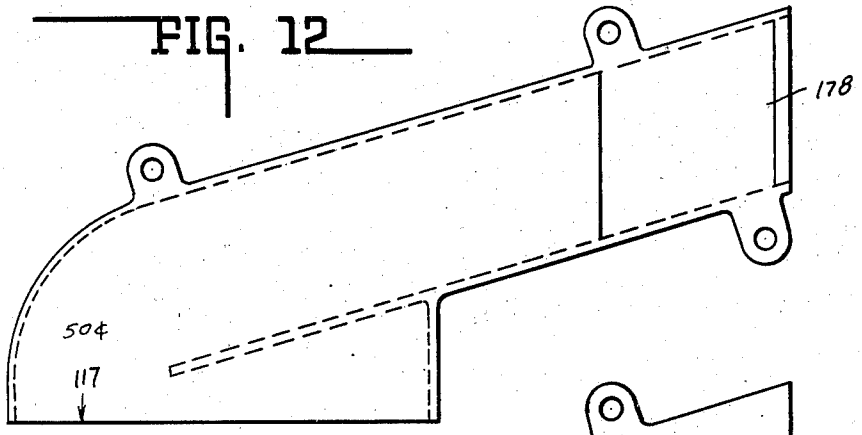
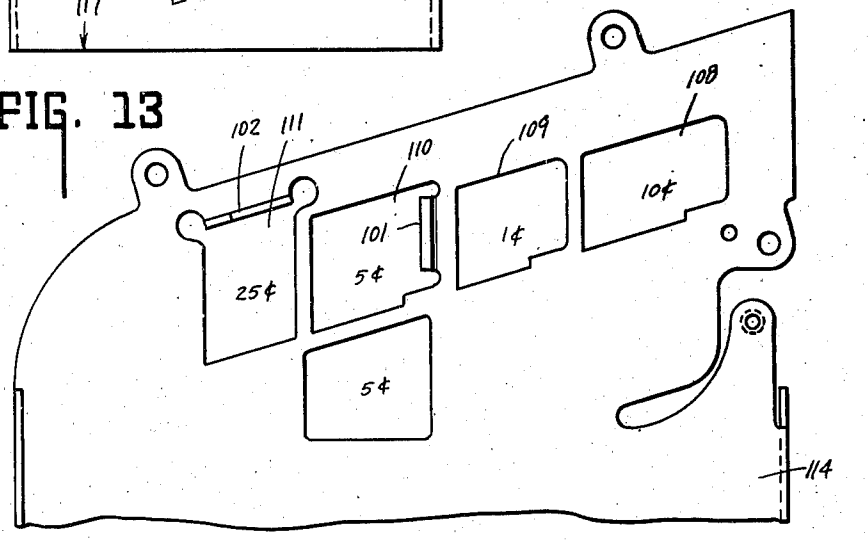


FIG. 13



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Patented Nov. 9, 1948 2,453,437

UNITED STATES PATENT OFFICE

2,453,437

COIN SELECTING DEVICE

Otto A. Hokanson, Snyder, N. Y., assignor to The Rudolph Wurlitzer Company, Chicago, Ill., a corporation

Application December 11, 1944, Serial No. 567,581

3 Claims. (Cl. 194—99)

1

This invention pertains to a coin selecting device of the magnetic type, and wherein a single device is capable of separating multiple denominations of coins and slugs introduced therein through a single slot or coin receiving opening.

By means of this invention a single coin selector may receive through a coin opening coins of all denominations up to the size of a half dollar and separate such coins to direct them into designated channels for either acceptance in operating a vending machine or for rejection. By means of this invention, any slug or coin which is not acceptable is separated out from the acceptable coins and rejected. Acceptable coins are separated according to their respective denominations into certain prescribed passageways through which they pass for operating a vending machine according to their respective values. To this end, all unacceptable slugs or coins are discharged, whereas pennies, nickels, dimes, quarters and half dollars, or any similar group of these coins, are introduced into their respective prescribed passageways.

Wherein all coins and slugs are introduced into the selector through a single entrance, those of paramagnetic material are immediately thereafter separated and discharged. The remaining coins are next passed through a chute which sorts them according to size, as disclosed in Letters Patent to Adrian No. 2,122,550, granted July 5, 1938. Having been separated as to size, they enter passages in which they are weighed, the light ones being restrained for rejection. If they meet the weight test they then pass through a magnetic field, such as to alter their speed of travel according to the magnetic characteristics of their metallic composition. They then pass among certain obstructions which divert them into different directions according to their changed speed of travel or velocity, such diversion sending those which do not meet the magnetic test into a discharge chute for ejection, and those which meet the magnetic test into a designated chute for acceptance and vending machine operation.

It is, therefore, the purpose of this invention to provide vending machines with coin selecting devices having a single coin entrance, whereby the public is offered the convenience of not being required to select from among several slots the one suited to the coin or coins to be deposited. Error, loss, disappointment and vexation are thus avoided. Also, space is conserved since the use of several coin selectors becomes unnecessary, this device occupying about the same space

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as that of a selector adapted to receive coins of but a single denomination. This invention further involves a less complicated selector, since the rejection of all iron coins in the first operation eliminates the necessity for sweeping the iron off the magnets that control the speed of travel or velocity and thereby eliminating a system of cams, rods, pivots and slides, such as to transmit power from a single point of application to each of the sweeps which in this embodiment may number up to five.

This invention is particularly applicable to the future vending machines wherein articles at various prices are sold, each article having a suitable coin selector connected to its dispensing mechanism, or wherein a variety of articles at a variety of prices are dispensed by a mechanism which centralizes selection and payment. It is particularly applicable to such vending machine wherein account is taken of the factor involving sales tax and odd prices involving pennies. A vending machine which is merely capable of receiving a coin no smaller than a nickel compels its owner to absorb the difference within a range of five cents between the selling price and the cost, including taxes. This involves the operator in a large aggregate loss or compels him to overcharge the difference which is a detriment to sales. However, when the vending machine is provided with a coin selecting device capable of receiving all coins, including pennies, best suited to the sale of merchandise, the operator may price his merchandise exactly, thus avoiding either loss of revenue or sales. Since the type of merchandise suitable for sale by vending machines generally offers very narrow margins of profit and depends upon large volume to produce appreciable revenue, this feature is of prime importance.

This invention is, therefore, particularly applicable to such coin control mechanism for vending machines as that described in application for Letters Patent of Otto A. Hokanson and Richard C. Jones filed July 28, 1944, Serial No. 546,964, entitled "Multi-coin register and change maker."

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a side elevation of the device showing the arrangement of the coin control parts associated therewith, with parts omitted.

Fig. 2 is a side elevation of the other side of the device showing the coin control parts associated therewith, with parts omitted.

Fig. 3 is a front elevation of the device.

Fig. 4 is a top plan view of the coin chute, as viewed in Fig. 2.

Fig. 5 is a top plan view of the coin chute, as viewed in Fig. 1.

Fig. 6 is a section taken on the line 6—6 of Fig. 1

Fig. 7 is the same as Fig. 1 showing a modified form of the invention.

Fig. 8 is the same as Fig. 2, showing a modified form of the invention, with parts broken away.

Fig. 9 is an enlarged section taken on the line 9—9 of Fig. 7.

Fig. 10 is a front elevation of the modified form of the invention as shown in Figs 7 and 8.

Fig. 11 is a longitudinal section taken through the coin chute of the modified form of the invention.

Fig. 12 is an elevational view of one section of the coin chute of the modified form of the invention.

Fig. 13 is a side elevation of the upper portion of the partition plate as employed in the modified form of the invention.

Fig. 14 is an elevation showing a section of the coin chute.

Fig. 15 is a section taken on the line 15—15 of Fig. 11.

Fig. 16 is a section taken on the line 16—16 of Fig. 11.

Fig. 17 is a section taken on the line 17—17 of Fig. 14.

One modification of the invention, as illustrated in Figs. 1 to 6, has to do with a coin selecting device which may be referred to as a 4 in 1, such as to accept four denominations of coins, as for example, pennies, nickles, dimes and quarters. In this modification there is provided a general downwardly sloping coin receiving chute which at the same time is curved laterally so that as the coins roll down the chute they are thrown to one side and thereby caused to be thrown through selected openings in a partition wall of the chute, depending upon the size of the coin, substantially in the manner shown and described in the above-mentioned Letters Patent to Adrian.

Thus the coins of the four denominations received in this device are entered through a single coin entrance 7. Adjacent the entrance 7 the curved side wall of the chute is provided with a window 8 of such size to permit coins or slugs of less diameter than a dime to pass therethrough into an ejecting chute 9 through which they pass from the selector. In the curved partition wall immediately following the window 8 there is provided a window 10 of such size as to permit passage therethrough of pennies and dimes, but too small to receive nickels and quarters. The pennies and dimes are thrown through the window 10 by centrifugal force so as to fall into a lower passageway 11 having a window 12 in the outer curved wall thereof just large enough to permit a dime to fall therethrough while directing the penny to the discharge end of the lower passageway. The said curved partition wall immediately following the window 10 divides the upper portion of the chute into a primary upper passageway and an auxiliary upper passageway, said partition wall being provided with a window 13 immediately following the window 10 therein through which the nickels are directed to the auxiliary passageway for discharge from the end of the chute, whereas the quarters continue past the window 13 for discharge adjacent, and to one side of the nickels.

Thus, due to the lateral curvature of the chute

the smaller slugs are immediately thrown therefrom by centrifugal force through the first window 8, the pennies and dimes are then directed by said force through the window 10 of the primary upper passageway to drop down into the lower passageway. In the lower passageway the dimes are thrown through the window 12 to one side of the chute, while the pennies pass said window for discharge from the end of the lower passageway on the other side of the chute. The nickels and quarters pass the window 10, but the nickels are thrown by centrifugal force through the window 13 in the partition wall separating the primary upper passageway of the chute from an auxiliary upper passageway. Thus separated, the nickels and quarters roll to the far end of the upper passageways to be discharged therefrom, the quarters on one side of the chute and the nickels on the other side.

Substantially centrally of the chute and depending therefrom there is a center partition plate 14 so arranged relative to the chute that the pennies and dimes are discharged into passages on opposite sides of said plate substantially centrally thereof, and the nickels and quarters are discharged from said chute to passageways on opposite sides of said partition plate adjacent the far edge thereof. This is by reason of the fact that the lower passageway through which the pennies and dimes pass terminates short of the upper passageways.

From the above it will be understood that slugs of less diameter than a dime have already been discharged before separation of the coins, as above described. Also, in the manner hereinafter referred to, those coins of paramagnetic material will have been eliminated and discharged. As above set forth, the remaining coins have been separated as to size. It now remains for each of the separated coins to be again separated as to weight and magnetic character of the material. In this manner the remaining slugs or unacceptable coins are separated from the acceptable coins.

For this purpose there is mounted on each side of the center partition plate 14 a hinged swinging gate, the gate 15 being hingedly mounted on one side therof and the gate 16 on the other side thereof. The nickels and dimes, as above described, are directed to pass between the partition plate 14 and the swinging gate 16, whereas the pennies and quarters are directed to pass between the center partition plate 14 and the swinging gate 15. Each of said gates has mounted thereon the principal coin sorting elements which will now be traced in respect to each size of coin.

The quarter sized coin inserted in the coin slot 7, being of greater diameter than the height of the units 8, 10 and 13, rolls on its edge past them to fall between the partition plate and the gate 15 into a passageway indicated at 17. The penny drops between the partition plate 14 and gate 15 into a passageway indicated at 18. The nickel passes between the opposite side of the partition plate and gate 16 into a passageway generally indicated at 19, whereas the dime passes between the partition 14 and gate 16 into the passageway indicated at 20.

As each coin drops down in its passageway and provided that it is of proper weight, it falls upon an inwardly and downwardly sloping runway. The quarters fall onto runway 21, the pennies onto runway 22, the nickels onto runway 23 and the dimes onto runway 24. Said runways comprise narrow strips of metal formed

or secured to the inner wall of their respective gates to extend adjacent to but free from the partition plate 14.

However, if such coins are below standard weight, allowance for wear being taken into account, they are caught between the center partition plate 14 and a restraining finger mounted upon a counterbalance lever. Thus in the passage 17 through which the quarter passes and in line with its runway 21, there is provided a restraining finger 25 sloping downwardly at an angle parallel to the runway 21 and mounted upon a pivoted counterbalance lever 26 to extend through an opening in the gate toward and immediately adjacent the partition plate. The lever 26 is pivoted to the gate at 27. If the coin is of sufficient weight it rolls down the runway 21, its weight swinging the finger to one side. But if it is underweight, it is stuck or held fast between the fingers 25 and the partition plate to be released and ejected upon the gate being swung to open position as hereafter described.

Mounted upon the gate 15 to lie within an opening so as to face the inner surface thereof, there is provided a magnet 28 past which a coin of proper weight is caused to roll down the runway 21. The purpose of the magnet 28 is to effect the velocity or speed of travel of the rolling coin as it passes through the magnetic field. Thus, the speed or velocity of the coin is varied according to the magnetic characteristics of its composition. Forwardly of the path of travel of a coin of proper composition there is a swinging anvil 29 pivotally mounted at 30 to swing downwardly adjacent the inner face of the gate. The position of said anvil may be adjusted with respect to the path of travel of the coin by an adjusting screw 31 extending through an arcuate slot 32 for clamping it to the gate in adjusted position.

By means of this arrangement, if the coin is of proper composition it will pass through the magnetic field of the magnet 28 in a trajectory short of the anvil 29 so that it will not strike it. If the composition of the coin is such that the field will have little or no effect thereon, its rolling speed will carry it into contact with the anvil, whereupon it will bounce to the left. If, on the other hand, should the magnetic field so affect the coin as to restrain its velocity to a greater extent than a coin of proper composition, its trajectory will fall short and to the left of the trajectory of a coin of proper composition.

To control the disposition of the falling coins according to their respective trajectories, there is provided a diverter 33 arranged to divert the coins dropping through the proper trajectory to the right for entry into the slot for acceptable coins. Those coins which bounce off of the anvil 29 or fall short will be directed by the diverter to the left into a reject chute.

The diverter comprises a plate 34 adjustably mounted on the gate 15 by a screw 35 adjustably clamping the gate through a slot 36. Pivotally mounted on said plate at 37 there is a beam 38 normally resting upon the screw 35 and having at one end thereof a counterbalance weight 39. At the other end of the beam there is a pendulum 40 with a bob 41, said pendulum carrying a lug 42 extending through an opening in the gate transversely of the passageway between said gate and the partition plate 14. The lug 42 may be positioned by the screw 35 to extend at the critical point in the trajectories of the coins. Thus, the first slugs rebounding from the anvil 29 either clear lug 42 or fall upon it with their center of gravity substantially to the left so as to drop into the reject passage indicated at 43. However, the correct trajectory for an acceptable coin of such composition as to be properly controlled by the magnetic field clears the anvil 29 and drops to the right of lug 42 or engages said lug with its center of gravity to the right so as to drop into the coin acceptance chute indicated at 44.

As the trajectories of the center of gravity of acceptable and non-acceptable coins lie very close together, more accurate sorting is accomplished by the diverter 33 than is possible by other known devices. The lever pendulum arrangement of the diverter has the effect of preventing the rebound of the coins which would occur if the diverter was unyielding. When a coin falls upon the lug 42 with its center of gravity to the left, it impels the pendulum 40 to the right about its pivotal mounting upon the beam 38 by virtue of its horizontal component of motion due to the relative positions of its center of gravity and the point on its edge in contact with said lug. Conversely, when the coin impinges upon lug 42 with its center of gravity to the right thereof, said lug is impelled to the left. By this means said lug is increasingly removed during the period of contact from a position beneath the center of gravity from the vertical plane therethrough, thereby increasing the moment of the couple which tends to throw the coin in one direction or the other. Simultaneously the lug 42 descends as the impact of the coin depresses the pendulum and raises the counterweight 39. This has a cushioning effect by reason of the yielding to the impact, increasing the time the coin is in contact with the lug and thereby increasing the distance it may swing horizontally and hence increasing the moment of the couple above mentioned.

A partition 45 may be formed on the inner surface of the gate to enclose the space in which the quarter sized coins are caused to be separated. The coins of other sizes and denominations are similarly acted upon to separate the acceptable coins from those that are unacceptable. On the same side of the partition plate the penny passes between said plate and the gate 15. The penny entering the coin slot 7 is thrown through the window 10 by the curvature of the wall to drop down into the lower passageway 11 and roll to the end thereof past the window 12 through which the dime drops on the other side of the partition. The penny then falls through the passage indicated at 18 and if of insufficient weight it is restricted by a finger 46. Otherwise it rolls down the runway 22 through the magnetic field created by a magnet 47. If it is of both the proper weight and of the proper material, it will be so affected by the magnetic field as to drop in a trajectory to the left of and free from engagement with an anvil 48. The anvil 48 is readily adjusted through the screw and slot 49 so as to extend inwardly from the inner wall of the gate in adjusted relation to the proper trajectory of the acceptable coin. Such trajectory of the coin passes to the right of lug 50 of the diverter generally indicated at 51.

This diverter 51 is slightly different from the diverter 33 above described, but serves the same purpose. The differences between the two are due to the smaller mass of the coins involved. This diverter has an adjusting screw 52 for slidably mounting a supporting plate 53 upon the gate 15. The lug 50 is mounted on a pendulum 54

pivotally suspended from one end of a beam **55**, which beam is fulcrumed upon the plate **53** and is provided with a counterweight **56**. It will be noted that the pendulum **54** does not have a weighted bob at the lower end thereof, as in the diverter **33**, and the masses are more restricted.

As above described, if the coin is not sufficiently retarded by the magnetic field it strikes the anvil **48** and rebounds to the left of the lug **50**. On the other hand, if it is excessively retarded its center of gravity falls to the left of the lug **50**. In either event such coin is inacceptable and passes through the passage indicated at **57** into the slug rejecting chute. On the other hand, if the coin is of proper composition, the magnetic field through which it passes will so affect its trajectory as to cause it to clear the anvil and fall to the right of the lug **50** or engage said lug with its center of gravity to the right. Thereupon it will drop into the passage indicated at **58** as an acceptable coin.

Dimes will drop through the window **12** from a lower passageway **11**, as above described, and thereby be directed to the other side of the partition plate **14** to drop between said plate and the opposed gate **16**. They will then pass through the passage indicated at **20**, engaging a weight control finger **59** similar in all respects to fingers **25** and **46**. If the dime is of sufficient weight to pass the finger, it rolls down the runway **24** past the magnetic field induced by a magnet **60** which magnetically controls the path of its trajectory. If it is not sufficiently restrained by the field, it strikes an anvil **61** which is in all respects the same as the anvil **48** above described, and bounces to the right of a lug **62** on a diverter generally indicated at **63**. Said diverter **63** is in all material respects the same as the diverter **51** above described. The coin will thereupon drop to the right of a separating stud **64** through a passageway for unacceptable coins generally indicated at **65**. Similarly, a coin which is excessively slowed down by the magnetic field will drop short of the anvil **61**, but with its center of gravity to the right of the lug **62** and through the passage **65**. However, if the dime is of proper material the effect of the magnetic field will be such that its trajectory will carry its center of gravity to the left of lug **62** so that it will pass the stud **64** to the left and drop into the passage for acceptable dimes generally indicated at **66**.

Nickels, having passed through window **13**, will be guided to the space between the partition plate **14** and the gate **16**, carrying to the extreme end of the chute to pass through the passage generally indicated at **19** onto the runway **23**. In doing so, the nickel must pass the weight control finger **67**. If it is of sufficient weight to pass the finger **67** it will roll through the magnetic field of the magnet **68**. The trajectory of the acceptable coin, as affected by its passage through the magnetic field, will cause it to impinge upon an anvil **69** secured to and extending inwardly from the gate **16** with its surface at a substantially 45 degree angle. A nickel of proper alloy will bounce from the anvil **69** over a diverter **70** and drop to the right of said diverter to fall through the passage generally indicated at **71**. Unacceptable coins which are so affected by the magnetic field as to have less momentum fail to strike the anvil **69** with energy enough to be thrown beyond the diverter **70**, and are either repelled by it or fall through to the left, or may fail entirely to strike the anvil and, therefore, fall between said anvil and the

diverter. In any event, such unacceptable coins are caused to fall to the left of the diverter for rejection through the passage generally indicated at **72**.

As shown in Figs. 3, 4 and 5, near the coin opening **7** there is a plate **73** of paramagnetic material secured to the coin chute by the lugs **75**. The wall of the chute adjacent said plate is cut away, and contiguous thereto there is a plate **74** of similar material. To this second plate **74** there is attached a magnet **76** which is pivotally mounted by a hinge pin **77** in lugs **78** corresponding to lugs **79** on the plate **73**. One of the lugs **78** extends laterally to provide an arm **80**. This arm, when depressed, causes the plate **74** with its magnet **76** to swing outwardly about the hinge pin **77** away from the plate **73**.

The magnetic field of the magnet **76** is sufficient to traverse the space intervening between the plate **73** and the coin chute. Consequently a coin of paramagnetic material entering the chute is attracted through the cut away portion of the inner wall thereof, and if heavy enough it drops between said wall and plate **73** outside of the chute to be discharged. On the other hand, if the coin of such material is not heavy enough to drop away, it is held magnetically on the inner face of the plate **73** until the magnet **76** is swung away therefrom by depressing the arm **80**. The coin will thereupon be released to drop downwardly from outside of the chute for discharge.

To swing the magnet **76** away from the chute for the above purpose, the arm **80** is depressed by the downward longitudinal movement of a rod **81**. Said rod is provided with a hook portion **82** engaging and bearing upon the upper edge of the arm **80**. Said rod is mounted to slide in the guides **83**. It is kept from revolving in its guides by having its down turned upper end inserted in an adjacent guide **84** beside the guide **83**.

Extending through said rod **81** (Fig. 1) there is a pin **85** which bears upon one end of a bell crank **86** which is pivoted at **87** upon partition plate **14**. The opposite end of the bell crank **86** consists of two spaced parallel camming arms **88** extending astride the plate **14** to swing between said plate and the camming rollers **89** rotatably mounted in the respective gates **15**, **16**. Upon the rod **81** being depressed the pin **75** will swing the bell crank **86** to cause its camming arms to engage their respective rollers **89** to swing the respective gates laterally away from the partition plate.

Said gates are hingedly mounted upon opposite sides of the partition plate by a hinge pin **90** and are held close against the partition plate under tension of the springs **91**. The rod **81**, together with the bell crank lever **86**, is returned to normal position under tension of a compression spring **92**.

The rod **81** is arranged to be manually depressed, in event of a coin being deposited and neither accepted for operating the machine or returned. When the rod is thus depressed the magnet **76** is swung away to permit any coin adhering to the plate **73** to drop and be discharged. The same action through the bell crank **88** swings both gates **15**, **16** away from the partition plate **14**, carrying with them the fingers **25**, **46**, **59** and **67**. Therefore, any light coins which are wedged under the fingers are freed and are thrust by said fingers laterally to drop past the respective runways **21**, **22**, **24** and **23**, said runways being mounted upon the swinging gate. This per-

mits a light coin wedged against the partition plate to be freed and dropped past the respective runways 21, 22, 24 and 23 to drop out of the selector.

In the modified form of the invention shown in Figs. 7 to 17, the coin selecting device is designed to handle five coins, i. e., a penny, nickel, dime, quarter and fifty cent piece. Basically the same principle and many of the same parts are employed in this modification as in the one previously described for handling four coins, and to that end many of parts of this modified form are designated by the same numbers as the related part of the foregoing modification, but in the 100 series.

The coin entrance 107 leads to a coin chute of substantially the character above described wherein there is provided a partition wall having a series of windows, a dime passing through the window 108, a penny through the window 109, a nickel through the window 110, and a quarter through the window 111. The dime passes into the channel 108a to discharge through passage 120. The penny rolls past the window 108, falling through window 109 into channel 109a to be hereinafter described. The nickel falls through the window 110 into channel 118, and the quarter passes through the window 111 and drops down through passage 119. The fifty cent piece rolls by all of the windows and drops down through passage 117.

Extending laterally from the forward side edge of the window 110 there is an inwardly curved lip 101 bent at a shallow angle to divert pennies passing through the window 109 from the rear passageway through the rear wall into the window 109a. Bent laterally from above the window 111 through which the quarters pass there is a projection 102, the lower face of which just clears the edge of the rolling quarter. However, a rolling half dollar is thrust away from the quarter window so that its leading edge will not catch on the lip. This projection 102 is provided so that the half dollar will not fall from the sloping chute, the chute being so bent that the half dollar will be in a vertical plane as it passes therethrough. Since the quarter window 111 is in the concavity of the bend of the chute, the half dollar leaning against the lateral slope of the middle wall is brushed aside by the lip 102 to prevent it entering the quarter window. Since there are now five coins, an additional channel is provided for the pennies, whereby the pennies pass through the window 109 into the opening 109a and then downwardly through a confined vertical channel which provides the passage 103, as shown in Fig. 8.

With this five coin arrangement, the side of the device embodying the gate 115 of Fig. 7, corresponding to the gate 15 of Fig. 1, receives the fifty cent pieces in the extreme rear passage 117 and receives the nickels in the forward passage 118. The unacceptable coins separated from the fifty cent pieces are discharged through the passage 143, whereas the acceptable fifty cent pieces are discharged through the passage 144. The unacceptable coins separated from the nickels are discharged through the passage 158, whereas the acceptable nickels are discharged through the passage 157. On the opposite side of the partition plate 114 the quarters passing through window 111 are carried to an extreme rear passage 119, the acceptable quarters being discharged at the bottom passage 171 and the unacceptable coins separated therefrom are discharged through the passage 172. The dimes fall through window 108 into the channel associated with the gate 116 to be directed into the passage 120, the acceptable dimes being discharged through a passage 166 and the unacceptable coins through a passage 165. The pennies fall through windows 109 and 109a into a channel 103 in association with the gate 116, the acceptable pennies being discharged through an offset confined passage indicated at 104, and the unacceptable coins separated therefrom being discharged from the offset confined passage indicated at 105. The offset passages 104 and 105 are formed in conjunction with the chute defined by the partition walls 106.

As described in the first modification in relation to quarters, the fifty cent pieces of this modification enter passage 117 to roll down runway 121 if heavy enough to pass the finger 125 pivoted at 127. The fifty cent piece then passes through the magnetic field of magnet 128 to drop between the anvil 129 and the lug 142 of the diverter 133. It is further guided by the partition 145 to discharge through the passage 144. The anvil 129 is pivoted at 130 for adjustment by screw 131 in slot 132. The diverter 133 comprises the beam 136 fulcrumed at 137 on the plate 134 for adjustment through the screw and slot 135, 136. It carries at one end the counterweight 139 and at the other end the pendulum 140 with the bob 141 from which the lug 142 extends into the path of the coin toward the partition plate.

The nickels similarly pass between the partition plate and the gate 115, dropping onto the runway 122 from the passage 118 (Fig. 7). If of sufficient weight to pass the finger 146, it rolls through the magnetic field of magnet 147 to strike the anvil 169 and bounce over the diverter 170 for discharge thorugh the passage indicated at 157, as in Fig. 7. An unacceptable coin will drop between the anvil and diverter or bounce therefrom so as to be discharged through the passage indicated at 158.

The pennies, dimes and quarters pass between the partition plate and the gate 116, as shown in Fig. 8. The dime drops from passage 120 past the finger 159 and if of sufficient weight rolls down the runway 124 through the magnetic field of magnet 160 between the adjustable anvil 161 and the lug 162 of the diverter 163 to be discharged through the passage 166 within the partition 164.

The quarters roll to the rear of the chute to drop through passage 119 past the finger 167 and if of sufficient weight they roll down the runway 123 through the magnetic field of magnet 168 to drop between the adjustable anvil 161 and the lug 142 of the diverter 133. They are then discharged through the passage indicated at 172 adjacent the partition 145.

The unacceptable coins passing with the dimes through passage 120 will strike the anvil 161 and bounce, or fall directly from the magnetic field with their center of gravity to the right of the lug 162 for discharge on the opposite side of partition 164 from the acceptable dime passage 166, to fall through the passage indicated at 165. The unacceptable coins passing with the quarters through passage 119 similarly rebound from the anvil 161 or fall with their center of gravity to the right of the lug 142 of the diverter to drop on the other side of the partition 145 from the quarters for discharge through passage 171.

The pennies are given an auxiliary passage entering the confined chute 106 from passage 103. At the end of said chute (Fig. 8) they pass the finger 225 suspended by the arm 226 from the pivotal mounting 227. If of sufficient weight to pass the finger, they roll down the runway 221 past the magnet 228 to drop to the left of the lug 150 carried by the diverter 151 which is similar in all respects to the diverter 51 of Fig. 1. They are confined by an auxiliary chute 152 by which they are guided for discharge. The unacceptable coins passing down the chute 106 will strike the anvil 229 and bounce or freely drop through the magnetic field with the center of gravity to the right of the lug 150 for discharge on that side of said auxiliary chute 152.

Similarly to the modifications of Figs. 1 to 6, this modification is provided with a magnet 176 mounted adjacent the opening of the chute. It is supported upon the swinging plate 173 pivoted at 177 to swing up and down along the side of the coin chute. The plate 173 swings upward adjacent the scraping flange 174 formed on a curved hood 175. As the plate swings upwardly a slug of paramagnetic material, which may be stuck to the wall thereof by the magnet, will be scraped therefrom by the movement past the scraping edge 174. Said scraping edge of the hood 175 extends over an opening 178 in the forward wall of the chute through which such slug will drop out of the device. The magnet 176 is weak by comparison with the magnets located on either side of the runways, as previously described. The purpose of the latter magnets is to provide a strong magnetic field which sets up eddy currents in the passing coins. However, the purpose of the magnet 176 is to divert iron and steel slugs. Its weakness prevents too frequent an operation of the scavenging mechanism, for in a great majority of cases it draws iron slugs out of the chute far enough to fall freely through the opening 178 but not far enough to reach the magnet and cling to it.

The scavenging operation is shown in Fig. 9. A shoulder screw 179 is secured against turning in the partition plate 14 by a shoulder nut 180 and the lock nut 181. A sleeve 182 revolves on the screw 179 and has secured to its end a lever 183. An arm 184 is free to oscillate on the neck of the shoulder nut 180. A spacer 185 and associated rivets connect the arm 184 and a similar arm 186 above the upper edge of the partition plate 14 so that the two arms oscillate in unison in the space between the partition plate and the gates 115, 116. The arm 186 is provided with a lug 187 which extends across the path of the lever 183. When the lever is depressed it swings arms 186 and 184 by means of said lug. Each of the gates 115, 116 is provided with a roller 189 which engages the partition plate at a point within the path of movement of the swinging arms 184, 186. When said arms are forced between said rollers and the partition plate by the lever 183, the gates will be forced away from said plate. The opposite end of the lever 183 is slotted at 188 to receive an actuating pin so that upon movement of the arm 183 the magnet 176 will be swung upwardly to cause a stuck coin to be scraped therefrom. A spring 190 serves to return the arms 184, 186 back to normal inoperative position.

A bracket 191 is riveted to a flange of the plate 14 having perforated lugs for receiving a rod 192 through which it slides vertically. Said rod is provided with a slide 193 attached thereto by a set screw 194. Said slide is provided with a pair of parallel lugs 195 which are traversed by a horizontal stud 196 which enters a slot in the lever 183. Said slide near its lower end has a pair of parallel lugs 197 whose curved ends are in contact with the upper end of the bracket 191 and serve to keep the slide parallel thereto to prevent rod 192 from turning. A spring 198 surrounding said rod bears downwardly on the lower lug of bracket 191 and upward on the lower lug of the slide 193, returning the latter and the rod to upper position after having been depressed. The downward movement of the rod causes the stud 196 to depress the lever 183, thereby operating the scavenging mechanism.

As noted in Fig. 8, to scavenge the penny selector there is provided an arm 200 which is pivoted at 201 to the inner wall of the gate 116. It is formed with a cam 202 (Fig. 10) in contact with said gate. When the gate 116 is swung away from the partition plate, it presses the cam 202 before it, swinging the tip 203 through a still longer arc to remove the penny selector far enough from said gate to allow anything caught by the scale finger 225 to fall free.

As shown in Fig. 7, there is an extra runway 122*a* beneath the nickel runway 122. It is attached to the partition plate 14, extending toward the gate 115 and serves to prevent a scavenged slug from entering the nickel exit directly below.

It will be noted from the above that in respect to this second modification, wherein five coins are handled up to and including a fifty cent piece, the principle of operation is substantially the same as the first described modification, particularly in respect to the various paths of travel of the coins with the control levers therein. However, to make room for the fifth coin, an auxiliary channel is provided for the penny intermediate the channels of the dimes and quarters (Fig. 8), and which involves a somewhat different arrangement of structure, both in the coin receiving chute and the slug scavenging mechanisms.

It is to be understood that the term "coin" is herein used in its broadest sense to not only apply to legally minted money, but to those metal pieces simulating minted money and generally referred to as "slugs." Thus by the term "unaccepted coin" as herein employed, is meant that metal piece sometimes referred to as a "slug," and "acceptable coin" that which is legally minted.

The invention claimed is:

1. A coin selecting device including a coin receiving chute, a selector providing a confined space for receiving coins of predetermined size from said chute, a sloping runway in said space for causing said coins to roll downwardly thereon and drop therefrom, means for producing a magnetic field through which said coins are directed by said runway to vary their velocity and trajectory upon leaving said runway depending upon the magnetic composition thereof, a yielding diverter adjustably supported on said selector below said runway generally in the path of said coins to divert those coins dropping on said diverter to one side or the other thereof, depending upon the relative positions of the center of gravity of said coins when striking said diverter, said diverter comprising a lever pivotally mounted intermediate its ends having a counterbalance weight on one end thereof and a pivoted pendulum on its opposite end with a depending bob, and an intermediate lug on said pendulum

extending into the path of the coin to be struck thereby.

2. A coin selecting device including a coin receiving chute, a selector providing a confined space for receiving coins of predetermined size from said chute, a sloping runway in said space for causing said coins to roll downwardly thereon and drop therefrom, means for producing a magnetic field through which said coins are directed by said runway to vary their velocity and trajectory upon leaving said runway depending upon the magnetic composition thereof, a yielding diverter adjustably supported on said selector below said runway generally in the path of said coins to divert those coins dropping on said diverter to one side or the other thereof, depending upon the relative positions of the center of gravity of said coins when striking said diverter, said diverter comprising a lever pivotally mounted intermediate its ends having a counterbalance weight on one end thereof and a pivoted pendulum on its opposite end with a depending bob, and an intermediate lug on said pendulum extending into the path of the coin to be struck thereby.

3. A coin selecting device including a coin chute having a single coin entrance for receiving coins of different denominations, a selector comprising a partition plate depending from said chute, a gate hingedly mounted on each side of said plate and spaced therefrom to provide a series of coin passages between said partition plate and the respective gates, an auxiliary coin passage member pivotally mounted exteriorly of one of said gates to swing therefrom, means provided in said chute for separating said coins according to size and directing a coin of predetermined size into said auxiliary passage member and other coins according to size to predetermined locations leading to passages extending downwardly between either side of said plate and the respective opposed gates, and manually actuated means for simultaneously swinging said gates away from said partition plate and said auxiliary passage member away from the gate upon which it is pivotally mounted to free any coins lodged in the respective passages.

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