

Oct. 18, 1932.

F. H. VOGEL ET AL

1,883,170

COIN CONTROLLED VENDING MACHINE

Filed April 2, 1930

2 Sheets-Sheet 1

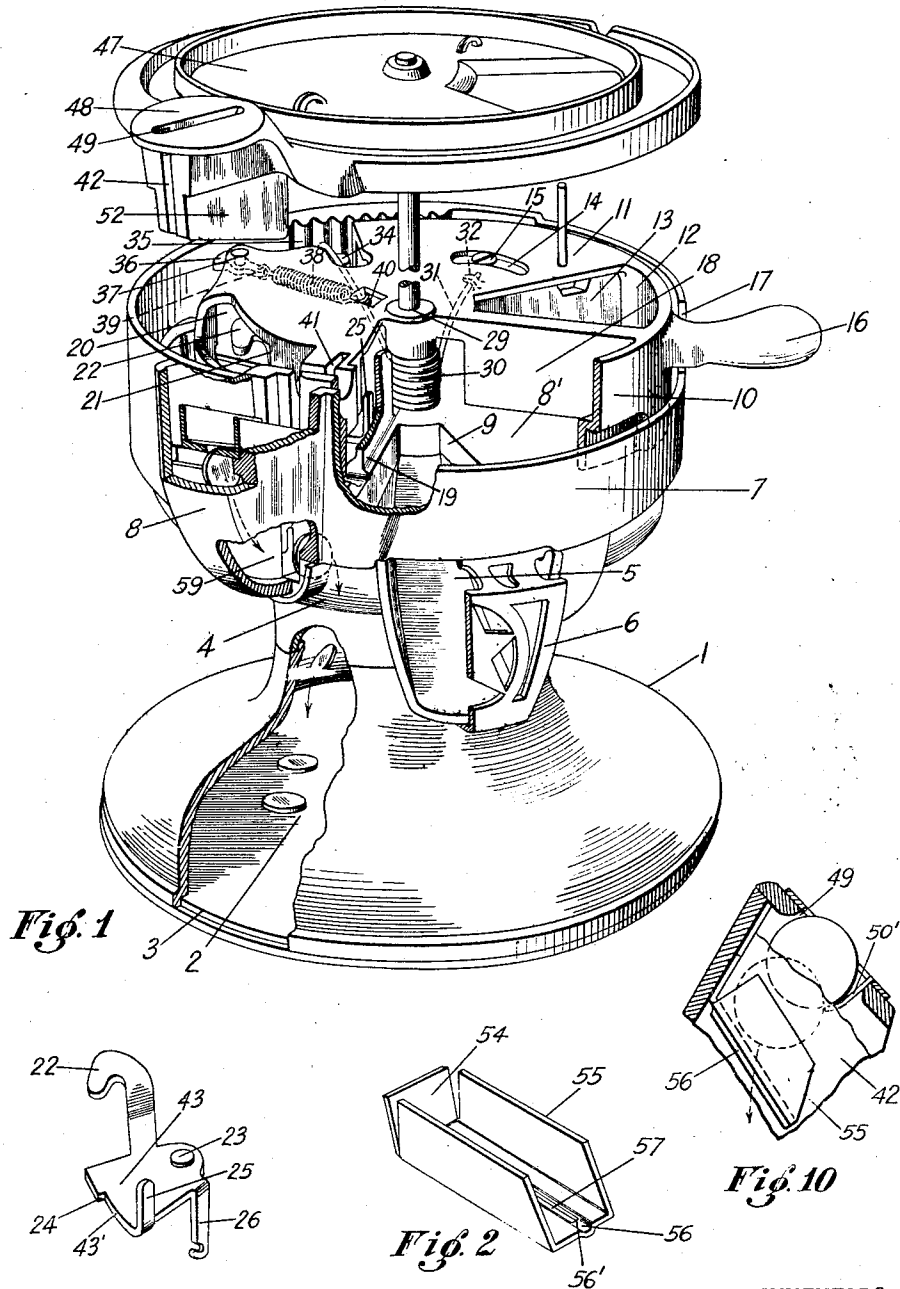


Fig. 9

Fig. 2

Fig. 10

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2 Sheets-Sheet 2

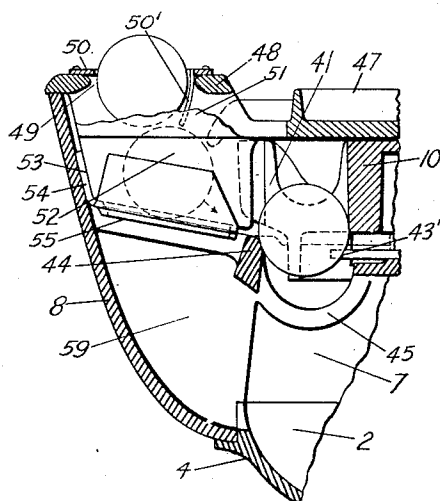


Fig. 3

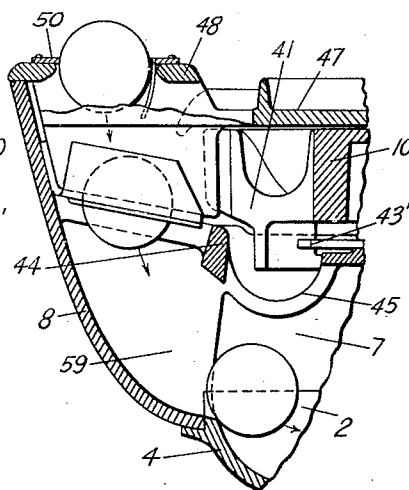


Fig. 4

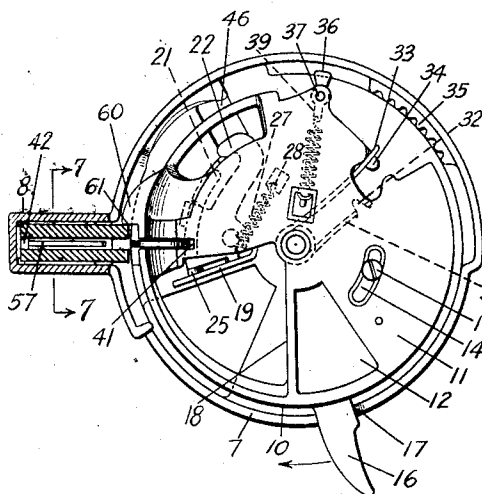


Fig. 5

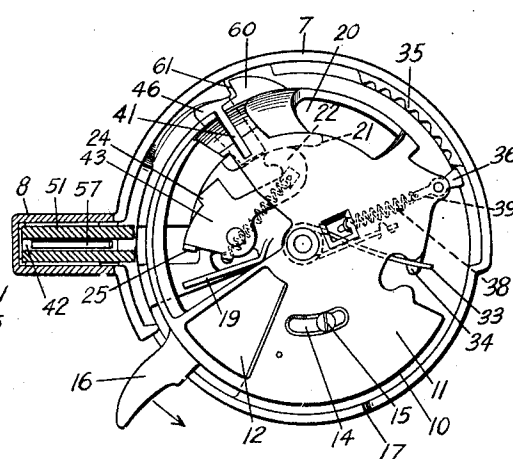


Fig. 6

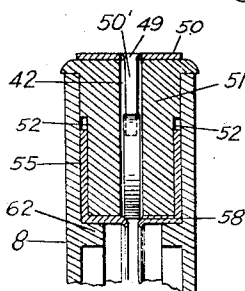


Fig. 7

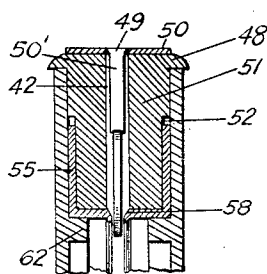


Fig. 8

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UNITED STATES PATENT OFFICE

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COIN CONTROLLED VENDING MACHINE

Application filed April 2, 1930. Serial No. 441,070.

Our invention relates to coin controlled vending machines. It has to do, particularly, with a coin-operating means and elements associated therewith for effectively
5 protecting the machine from operation by coins or devices other than those coins for which the machine is designed.

In the past, numerous efforts have been made to protect coin-operated vending machines from operation by spurious coins or
10 other devices which ordinarily simulate the coins or other devices for which the machine is designed. Ordinarily, however, such devices have been complicated and not fully
35 effective. Frequently, they have involved the use of magnetic slug detectors which, even though they might be partially effective for the elimination of magnetic slugs, are entirely
20 or coins of a different value from that for which the machine is designed.

One of the objects of our invention is to provide a coin-controlled vending machine which precludes the insertion of coins or
25 slugs which are of too great a diameter and which are of too great a thickness and which also precludes operation of the machine by coins or slugs which are of smaller diameter and lesser thickness than the coins or other
30 devices by which the machine is intended to be operated.

Another object of our invention is to provide a means for eliminating coins or slugs of lesser thickness than the coins by which
35 the machine is designed to be operated, regardless of whether or not these coins or slugs are of a material responsive to magnetic forces.

Another object of our invention is to provide a means for eliminating coins or slugs of lesser thickness than the coins or other
40 devices by which the machine is designed to be operated, this elimination being effected before the undesirable coin or slug reaches the actuating mechanism of the machine.

Another object of our invention is to provide a means for eliminating coins or slugs of an improper nature while, at the same
45 time, effecting this elimination in such a manner that the eliminated coin or slug will

not be returned to the operator who has attempted to defraud the machine. This is particularly effective to discourage fraudulent efforts when an improper coin of some value is used in the fraudulent attempt.

The preferred embodiment of our coin-controlled vending machine comprises a coin slot which forms the entrance to a coin channel and which is of a definite size to preclude the
50 introduction of coins or slugs of greater diameter or of greater thickness than the coin or other device by which the machine is designed to be operated. It also embodies a coin channel carried by the top plate designed to conduct a coin of proper dimensions
55 to the proper position for operating the coin-operated mechanism. In conjunction with this, it comprises a supplemental slot in one wall of this coin channel, this slot being of
70 such a width that coins of the proper thickness will pass over it while coins of insufficient thickness will drop through it. Furthermore, this slot in the wall of the coin channel leads to a supplementary channel
75 which will receive the coins or slugs of improper thickness and conduct them into a compartment in the machine so that they cannot again be utilized by the fraudulent operator. Coins of insufficient diameter but, of the
80 required thickness, will also be eliminated owing to the fact that the coin slot in the vender lever plate is adapted to support only coins of sufficient diameter, and coins of insufficient diameter will drop therethru and
85 into the coin well.

The preferred embodiment of our invention is shown in the accompanying drawings wherein similar characters of reference designate corresponding parts and wherein:

Figure 1 is a perspective view of the major portion of a coin-operated vending machine, with the top plate lifted out of operative position and with parts broken away to show
90 the manner of eliminating coins or slugs of insufficient thickness.

Figure 2 is a perspective view of a removable stamped member which we preferably use to provide the slot in the wall of the main coin channel through which slot coins of in-
95 sufficient thickness are designed to pass.

Figure 3 is a detail view in section, illustrating the main and supplementary channels for conducting the proper coins and the improper coins into a compartment in the machine, this figure showing the path of travel of a coin of proper dimension.

Figure 4 is a sectional view similar to that shown in Figure 3 but illustrating the path of travel of a coin of improper thickness on its way to a compartment in a machine.

Figure 5 is a plan view of our machine with the top plate removed and with the upper end of the main coin channel shown in horizontal section, the vender lever plate being illustrated in the position which it occupies immediately preceding actuation thereof.

Figure 6 is a plan view similar to Figure 5 but illustrating the vender lever plate in the position which it assumes at the end of its operative movement.

Figure 7 is a section taken on line 7-7 of Figure 5, illustrating the position of a coin of proper size as it passes over the slot for eliminating the coins of improper thickness.

Figure 8 is a section similar to Figure 7 but showing a coin of insufficient thickness passing through the slot in the wall of the main coin channel and into a supplemental channel which is designed to conduct it into a compartment in the machine.

Figure 9 is a detail showing the preferred form of our hook shaped latch.

Figure 10 is a detail view in section, showing the main channel and the baffle member disposed therein for precluding the movement of any coin into cooperative relation with the operating mechanism when the machine is tipped on its vertical axis.

In the drawings, our vending machine is shown as comprising a base 1. This base 1, preferably comprises an interior compartment 2, best shown in Figure 1. This compartment may be closed by a base plate 3 which is removable but which may be locked in position. The compartment 2 is designed to receive both the proper coins or operating devices and the improper coins or operating devices.

Carried by the base 1 is an upwardly and outwardly flared spout casting member 4 which rests upon the base and is held thereon in any desired manner. This member 4 comprises a spout 5 that is normally closed by a hinged drop gate 6. The inner end of this spout is located adjacent the center of the machine and in a position to receive the vended material from the vender lever plate which will be hereinafter described.

Superimposed upon this spout casting 4 is a bowl casting 7 which is mainly cylindrical in form but which is preferably provided with a radially projecting hood 8 designed to contain the major portion of the main and supplementary coin channels, as will be described. The bowl casting 7 has a bottom 8' with a

delivery opening 9 directly above the inner end of the spout 5.

Mounted within this casing 7 is a vender lever plate 10. This vender lever plate, as shown best in Figures 1, 5 and 6, preferably comprises the main body portion 11 having a measuring pocket 12 of segmental form, one of the walls 13 of this pocket being adjustable by means of the slot 14 and screw 15 to vary the capacity of the pocket. This vender lever plate also comprises a handle 16 which projects through and operates in an opening 17 in the casing 7. The vender lever plate is also provided with a second segmental cut away portion 18 into which projects an upstanding stop member 19 carried by the casing member 7. Furthermore, this vender lever plate is cut away at one corner as at 20 in such a way as to provide a depending keeper plate 21 which is designed to cooperate with a hook shaped latch 22.

The hook shaped latch 22 is pivotally mounted upon a pin 23 and is normally held in such a position by a retractile spring 27, that its hook shaped end will normally project through the cut away corner of the vender lever plate to such an extent that any attempt to pull the handle of the lever plate to a position for discharge of the material from the machine will cause the depending keeper member 21 to be engaged within the hook portion of the member 22 so as to preclude any more than a very slight rotation of the vender lever plate and thereby preclude any discharge of the material from the machine. The hook shaped latch 22 is also provided, adjacent its pivotal point 23 with a downwardly extending post 26 that projects through the base of the casing 7 and is connected beneath such base with a retractile spring 27 whose other end is connected to a hook 28 downwardly depending from the base of such casing.

The hook shaped latch 22 is, however, shown in Figures 5, 6 and 9, provided with a projecting shoulder 24, with which a coin is adapted to contact for the purpose of forcing the said hook shaped latch out of the path of the keeper 21 in order to enable the vender lever plate to be moved to discharging position whenever a coin of a proper size has reached the operating mechanism, it being remembered, that the hook shaped latch is being thus forced against the resilient pressure of the spring 27 which tends to return the hook to initial position.

The hook shaped latch 22 is further provided upon its rear end adjacent to pin 23 with, an upstanding heel member 25, Figure 9, which projects upwardly into the cut away portion 18 of the vender lever plate, Figure 1. When the vender lever plate is returned to initial position, the retractile spring 27 tends to force the hook shaped latch back into such position as to project thru the cut

away corner of the vender lever plate, but, if for any reason the spring should break, the return of this vender lever plate to initial position will cause the forward wall of the cut away portion 18 to contact with this up-
 5 standing heel member 25 and by forcing it rearwardly insure that the hook shaped portion of the member 22 will be again projected into the path of the keeper 21.

The vender lever plate 10 is pivotally mounted as at 29 upon a central post. Surrounding this central post and in concentric relation therewith is a coil spring 30 whose free ends project outwardly toward the periphery of the vender lever plate one of these
 15 free ends, designated 31 extends beneath a tongue 32 on the base of the casing 7, while the other free end 33 extends outwardly beneath a tongue 34 on the vender lever plate. This coil spring with its free ends is effected
 20 to normally hold the vender lever plate in its initial position and to return it to such position after it has been operated to effect discharge of material from the machine.

The inner wall of the casing 7 is provided with a series of vertical corrugations 35. These corrugations 35 are designed for co-
 25 operation with a pawl member 36 pivotally carried upon the vender lever plate as at 37. This pawl member 36 is resiliently restrained from movement away from the position shown in Figures 5 and 6 by means of a coil spring 38 connected at one end to the
 30 heel 39 of the pawl and at the other end to a downwardly extending tongue 40 on the under surface of the vender lever plate. This pawl and ratchet structure is effective to insure that the vender lever plate will not
 35 be reversed before it has completed its full movement in either direction. The vender lever plate is further provided with a substantially radial slot 41 which is open upon both the upper end of the vender lever plate
 40 and which is also open upon the periphery of such vender lever plate. When this vender lever plate is in initial position, this slot, as
 45 shown in Figure 5, is in alignment with a coin channel 42 which is formed as an integral part of the top plate and is adapted to lie in the upper portion of the hood 8. The
 50 coin is designed to be delivered into the slot 41 by the channel 42 and, when it is received in the slot 41, it is held upright by the walls of this slot. It is supported at two points
 55 from beneath, one of these points being the edge 43' of the surface 43, Figure 9, of the hook shaped latch member and the other point being the shoulder 44, Figures 3 and 4, which is integrally formed on the inner side of the
 60 wall of the casing 7. However, as will be later described, the coin is only supported from beneath by these two points during the initial movement of the vender lever plate and until the keeper 21 has passed be-
 65 yond the hook shaped end of the member

22 and is effective to hold this hook shaped member out of operative position. In other words, the coin passes beyond the shoulder 44 and is permitted to drop down until it is supported in an arcuate groove 45 until
 70 at about the forward limit of this movement of the vender lever plate at which time the coin is permitted to drop thru an opening 46 in the casing 7 and into the compartment 2.

The major portion of the coin channel 42 is contained within a radial extension upon a top plate 47. This radial extension comprises a circular top portion 48 which is
 75 slotted as at 49, the entrance to this slot being guarded by a plate 50 (Figs. 3 and 4) having a suitable slot therein that overlies and co-operates with the slot formed in the top portion 48 and is of such exact dimensions that
 80 it will exclude any coin of too great a diameter or of too great a thickness. It will also be noted that the plate 50 is provided with a depending baffle member 50' that is located at the inner end of the slot therein
 85 and projects downwardly into the channel 42 when the plate is mounted on the surface 48. The baffle member is preferably integral with the plate 50 and is slightly arcuate in form, the lowermost end thereof lying at a
 90 sufficient distance above the groove 56 to allow a coin of proper thickness and diameter to pass thereunder without striking the lower edge thereof. This baffle and its functions will be hereinafter referred to more
 95 in detail.

This radial extension also comprises a depending portion 51 containing the slot 42 (see Figs. 7 and 8) and having its outer side
 100 walls 52 milled so that, at every point, they may be given a definite and certain distance from the center of the slot 42. The coin channel formed by this slot extends downwardly
 105 in a substantially vertical direction and then inwardly to a point where it may deliver the proper coin to the slot 41 in the vender lever plate.

The outermost end of the channel 42 may be partially closed as at 53 (see Fig. 3) by an upstanding portion 54 of a stamped member 55 (see Fig. 2) that, in addition, serves
 110 to preclude inward movement of the stamped member into such position as to interfere with the operation of the device. This stamped member 55 is of general channel formation and is preferably stamped to fit snugly and accurately the milled surfaces 52 of
 115 the portion 51. This stamped channel member is further provided in its base with a central longitudinal groove 56 which is slotted as at 57, the center line of the slot being
 120 accurately spaced from the inner side walls of the stamped member so that this slot will be accurately centered with relation to the channel 42. The longitudinal walls of this
 125
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slot 57 are tapered downwardly and inwardly as at 58.

This slot 57 is so narrow that a coin of proper thickness will not pass downwardly through it, while a coin of materially less than proper thickness will pass downwardly through it. This is illustrated in Figures 7 and 8.

Located directly beneath the slot 57 and formed in the hood 8 of the machine is a coin channel 59. This coin channel leads downwardly and inwardly into the compartment 2 of the machine, as shown in Figures 3 and 4.

It is important that the vender lever plate assume an initial position which will bring the slot 41 in the vender lever plate in exact alignment with the coin channel in the member 51. This is ensured by providing a stop 60 formed integrally upon the vender lever plate and having a milled surface 61 which cooperates with one of the milled walls of the portion 51 of the radial extension of the top plate. Since the spring 30 always returns the vender lever plate to the position shown in Figure 5, the milled surface 61 of the stop 60 will contact with the milled wall of the member 51 and, owing to the accurate dimensions of these parts, the slot 41 will exactly center with the channel 42.

Referring to Figures 7 and 8, it will be noted that the hood member 8 is provided with inwardly projecting shoulders 62. These shoulders serve to adequately support the stamped member 55 and maintain it in proper relation to the member 51.

In operation, a coin which is not of too great a diameter or not too thick may be introduced through the slotted plate 50 and into the slot 49 in the member 48. This coin then drops downwardly into slot 42 until it strikes the bottom of the stamped member 55. If it is too thin, it will be guided by the tapered walls 58 of the slot 57 so that it will pass directly through this slot into the channel 59 and thence into the compartment 2. Thus, this coin or other device which is too thin will be diverted entirely from the coin operated mechanism and will be sequestered so that it may not be used again by the person who is attempting to defraud the machine.

If, for any reason, the coin should be of such thickness as a fall partially thru the slot and be supported by engagement of the side walls thereof with the opposing faces of the coin, the momentum of the coin will cause it to move, while thus suspended, toward the edge 56', Figure 2 of the groove 56, on striking this edge the coin will be jarred out of engagement with the slot and will fall by gravity into the passageway 59.

If the coin is of adequate thickness, it will not go through the slot 57 but will roll along the groove 56 and be delivered into the slot 41 of the vender lever plate, assuming the posi-

tion shown in Figures 3 and 5 of the drawing. The vender lever plate being in the position shown in Figure 5 will then be moved in the direction indicated by the arrow. The coin, resting upon the hook shaped latch 22 at 43' and upon the shoulder 44, as shown in Figure 3 will travel with the vender lever plate until it contacts with the shoulder 24 of the hook shaped member 22 and, thereafter, will continue to travel in the same position until the hook portion of the hook shaped member 22 has been moved out of restraining position by the pressure exerted on the shoulder 24 by the coin.

As the movement progresses, the keeper 21 will pass beyond the nose of the hook shaped portion of the member 22 so that this hook shaped member 22 can no longer return to a position where it would restrain further movement of the vender lever plate. As this further movement of the vender lever plate continues, the coin will pass off the end of the shoulder 44 and will drop downwardly into the groove 45, although the upper edge of this coin still remains within the slot 41 of the vender lever plate. Ultimately, the coin will drop through the slot 46. However, before this occurs, the major part of the material containing pocket 12 in the vender lever plate will have become superimposed over the inner end of the spout 5 and will have delivered its material into this spout.

As the vender lever plate is moved toward delivery position, the periphery thereof serves to close the main coin channel. Thus the operator may drop one or more coins into the machine, during operation of the lever plate, yet the coin will remain in the coin channel until the slot in the vender lever plate is aligned therewith.

At the time the keeper 21 of the vender lever plate begins to pass the hook shaped latch, the pawl 36 begins to traverse the series of corrugations 35. When this action has been initiated, the movement of the vender lever plate must be continued in the same direction until delivery has been effected, since the pawl 36 will preclude any reverse movement until it has completely passed over the series of corrugations 35.

After delivery has been effected, the vender lever plate will return to initial position under the resilient action of the spring 30. The pawl 36 will traverse the series of corrugations 35 on the return movement of the vender lever plate, as well as on the delivery movement thereof and, will be effective to preclude return of the vender lever plate to delivery position, without first returning it to initial position.

On the return movement of the vender lever plate, the upstanding heel member 25 of the hook shaped latch is contacted by the wall of the opening 18 so that the hook shaped end of the latch is finally and positively moved

back to such a position that it will again protrude into the path of the keeper 21 so as to restrain the vender lever plate against further movement until this hook shaped latch is again released by intimate contact with a coin. It will, of course, be understood that the return movement of the vender lever plate to initial position is automatically effected by the spring member 30 in a manner that will be understood readily

In the event that an attempt be made to introduce a coin into the machine and pass it into the operating mechanism without permitting it to contact with the base of the channel member 55, as by introducing the coin while the machine is in such a position as that shown in Figure 10, the baffle member 50' will preclude this possibility. It projects down into such a position that it will obstruct direct passage of the coin through the tilted coin channel 42 to such an extent as to ensure that the coin will be forced to pass along the bottom of the member 55. As indicated in Figure 10, when such an attempt is made, the coin entering the slot 49 can only progress into the coin channel by rolling over and around the lowermost end of the baffle 50'. In passing around this lowermost end of the baffle, the coin will necessarily be directed against the bottom of the member 55 adjacent the outermost end of the groove 56. If it is of proper thickness, it will roll down the groove 56 and into the operating mechanism of the machine. If it is too thin, it will drop through the slot 57 and thus be eliminated and finally pass through the channel 59 and into the compartment 2.

It will be seen that we have provided a novel type of coin control vending apparatus wherein it is not possible to utilize a coin or other operating device which is of too great a diameter, which is too thick, which is too thin or which is of too small a diameter. It is particularly important to notice that we have provided a means for eliminating coins or other devices which are too thin, even though they may be of proper diameter or if they should be of too small a diameter. Furthermore, it should be noted that the mechanism which we utilize for eliminating coins which are too thin effects this elimination before these coins reach the operating mechanism of the machine. In fact, however, all improper coins or similar devices with the exception of coins of proper thickness but too small a diameter are eliminated before the operating mechanism is reached and these latter coins will drop so far down into the operating mechanism that they will be ineffective.

It should also be noted that we have provided a detecting means for improper coins which is not dependent upon magnetism. Since there are many coins or similar devices used to defraud machines of this type which are not responsive to magnetism, this, in it-

self, is an important aspect of our invention.

It will also be noted that we have provided a positive means for accurately centering the various slots which we utilize so that the coin or similar device will be accurately directed into the channels for which it is intended.

Likewise, the provision of the various milled surfaces together with the stamped element utilized makes possible the manufacture of these machines on a production basis without danger of inaccuracies occurring during the assemblage of the parts. The manner of supporting the stamped member is also important in that it ensures accuracy of operation.

There are many other features of advantage in this invention and this will be more clearly indicated by the claims appended hereto.

In the claims appended hereto, the term "coin" is used and no reference is made to other devices such as slugs, checks, etc. It will be understood, however, that the term coin where ever used is to be interpreted broadly enough to include any devices which may be utilized to operate mechanisms of this type.

Having thus described our invention, what we claim is:

1. Coin-controlled mechanism comprising a portion containing a coin channel, the outer walls of said portion being milled, a slotted member designed to fit snugly upon the milled surfaces of said portion to insure the proper centering of its slot with said coin channel, a coin receiving member having a substantially radial slot therein, and a stop member having a milled surface for coaction with one of the milled surfaces of said portion.

2. Coin controlled mechanism comprising a body portion, a hood projecting from said body portion, a plate, a slotted structure extending from said plate and adapted to fit in said hood, and a removable member for covering the base of said slotted structure.

3. Coin controlled mechanism comprising a body portion, a hood projecting from said body portion, a plate, a slotted structure extending from said plate and adapted to fit in said hood, and a removable member for covering the base of said slotted structure, said removable member having a slot therein which aligns with the slot in said structure and which is sufficiently narrow to permit the escape of coins or disks which are too thin but not coins or disks of adequate thickness.

In testimony whereof we hereby affix our signatures.

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