

Feb. 20, 1934.

R. A. VOGEL

1,947,891

COIN CONTROLLED VENDING MACHINE

Filed April 8, 1931

3 Sheets-Sheet 1

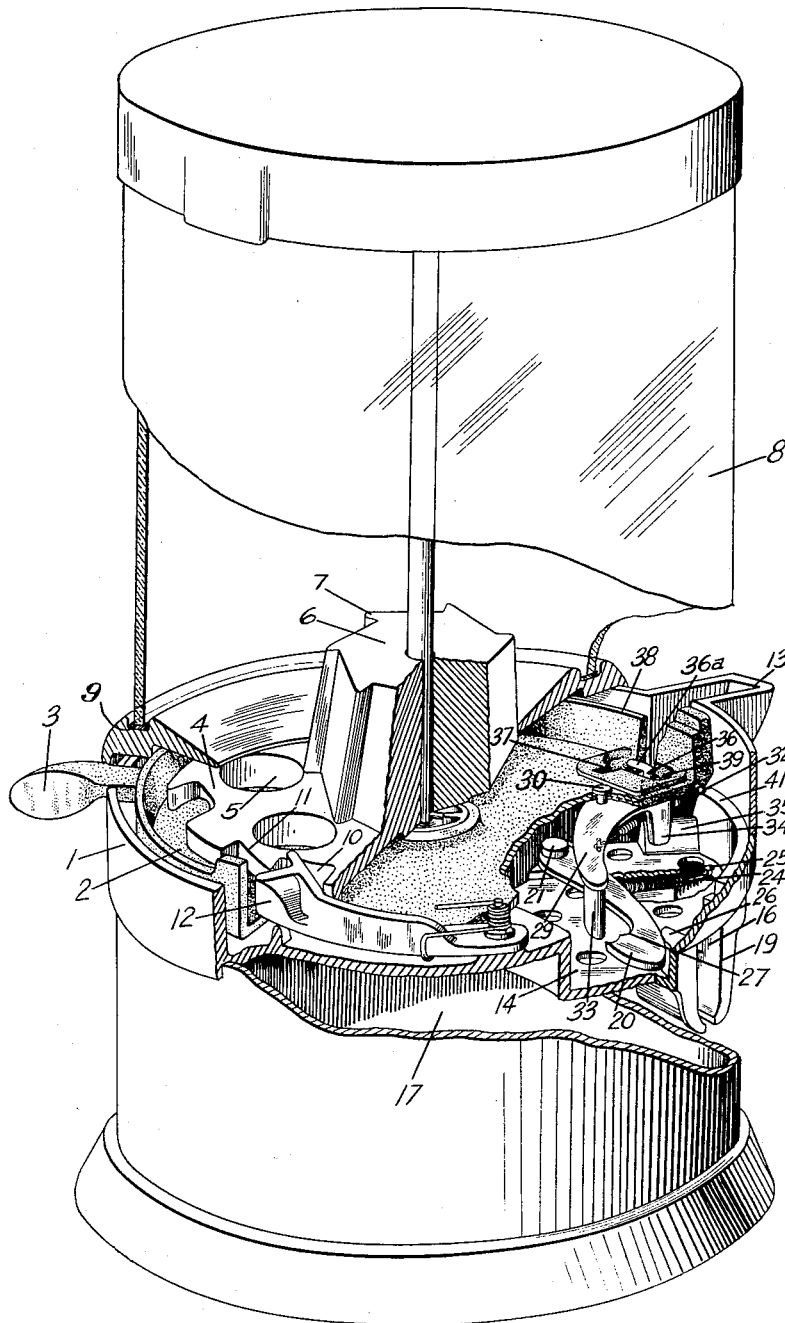


Fig. 1.

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3 Sheets-Sheet 2

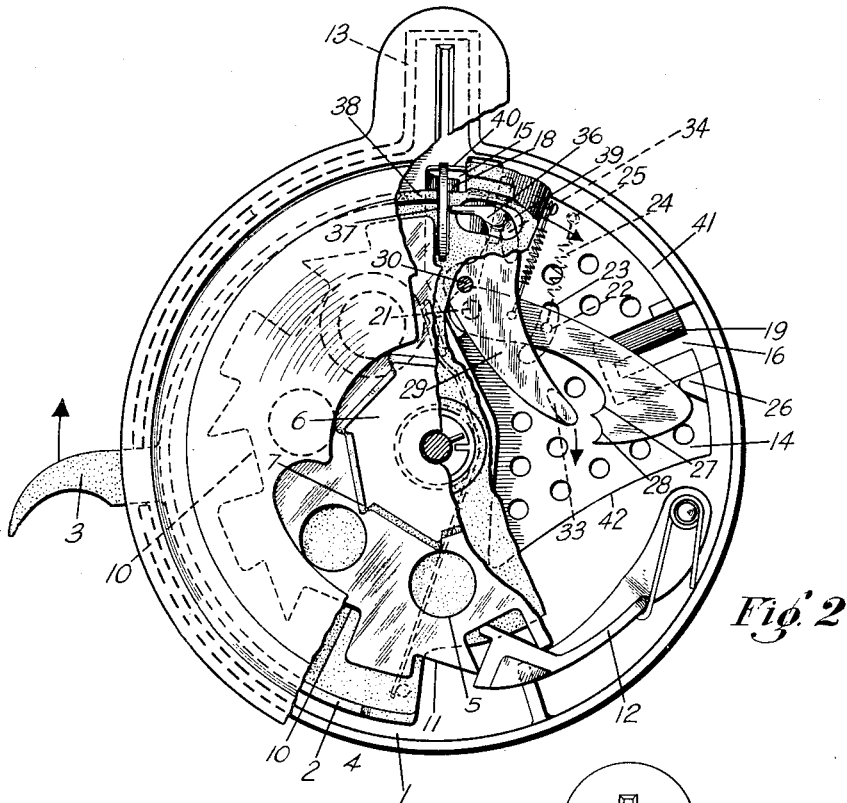


Fig. 2

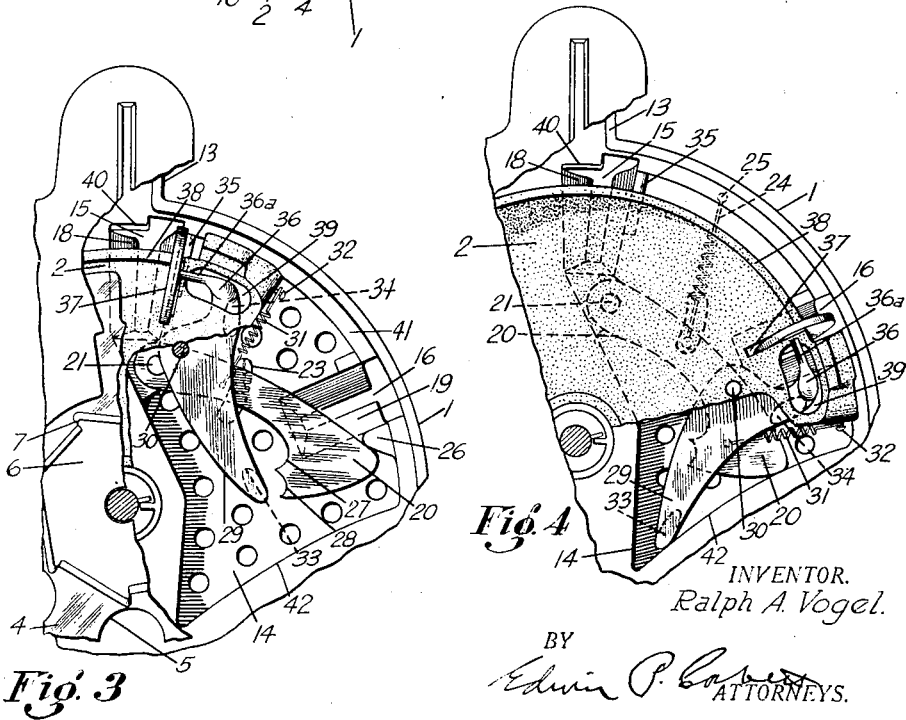


Fig. 3

Fig. 4

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3 Sheets-Sheet 3

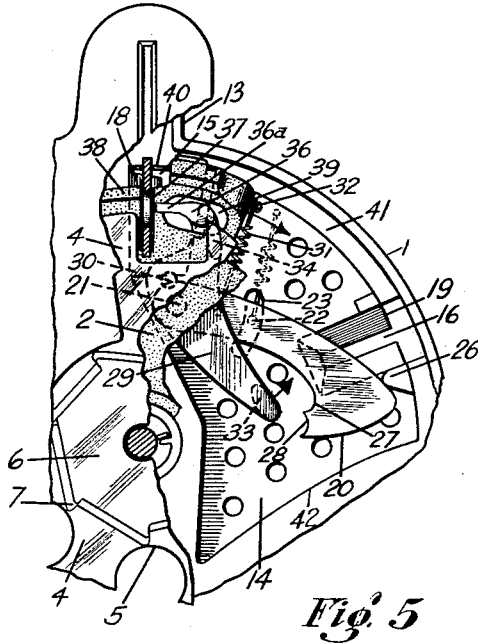


Fig. 5

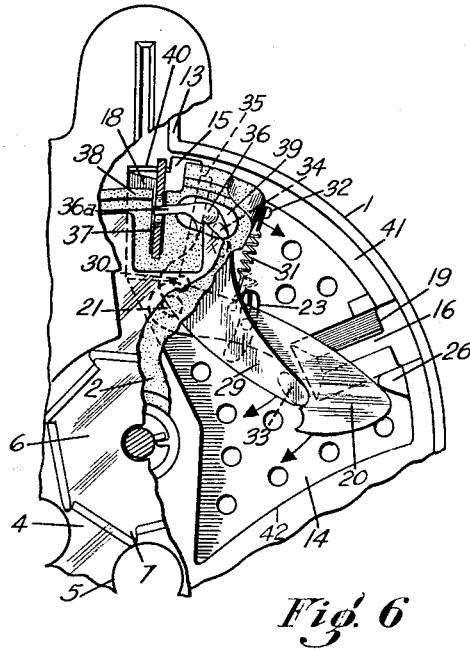


Fig. 6

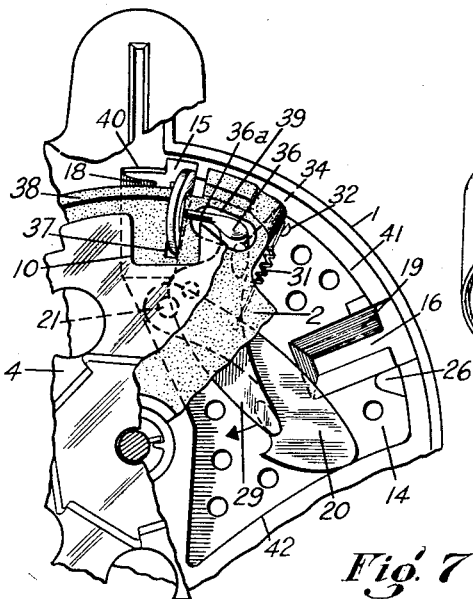


Fig. 7

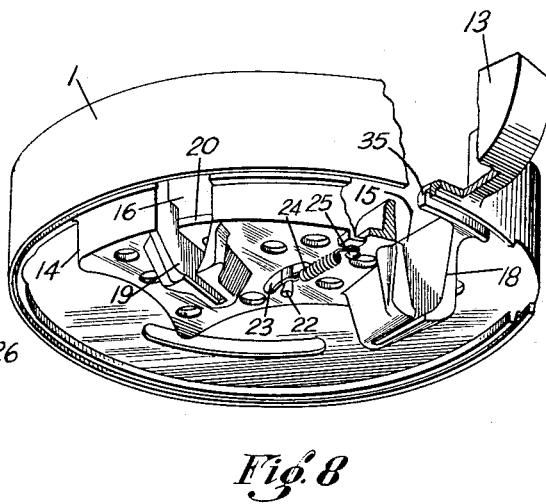


Fig. 8

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UNITED STATES PATENT OFFICE

1,947,891

COIN CONTROLLED VENDING MACHINE

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Application April 8, 1931. Serial No. 528,499

25 Claims. (Cl. 194—93)

My invention relates to coin-controlled vending machines. It has to do particularly with vending machines for use in the vending of ball gum or peanuts, although it is not necessarily limited thereto.

In the past, in machines of this type, much trouble has been experienced in adequately guarding the machine against the use of slugs. Usually these slugs take the form of washers or disks with holes in the center thereof, although they are sometimes in the form of imperforate disks which are thinner than the coin for which the machine is designed. These slugs are usually non-magnetic and, therefore, are not separable by magnetic coin detector. Such devices as have been used for otherwise detecting these slugs and rendering them ineffective to operate the coin-controlled mechanism have ordinarily been of a comparative delicate nature and have constituted a comparative costly addition to the machines to which they have been applied.

One of the objects of this invention is to provide a device for effectively protecting a coin-controlled mechanism from slugs or coins with holes therein or from imperforate slugs which are thinner than the coin by which the machine is designed to be operated.

Another object of this invention is to provide a mechanism which not only protects the coin-controlled mechanism from slugs of the types described or from coins with holes therein, but which automatically diverts such slugs or coins into a locked compartment so that they are lost to the person attempting to cheat the machine and are not recoverable by him.

Another object of this invention is to provide a coin-controlled mechanism with a means for diverting or sequestering slugs or coins of the objectionable type indicated while, at the same time, providing a rugged and enduring structure of the entire apparatus which will ensure longevity of the operating parts and minimum necessity for repairs and replacement.

My invention preferably contemplates the use of a vender lever plate and means operative upon the deposit in the coin-controlled mechanism of a slug or coin with an opening therein or upon the deposit of an imperforate slug or coin which is too thin to deliver the slug or coin into a locked compartment without operation of the vending mechanism. This same means, however, is of such a structure that the deposit of a good coin in the coin-controlled mechanism will result in the effectual operation of the vending mechanism. The structure is such that an objectionable

slug or coin of the type indicated will be ineffective to release the vending mechanism for a full vending movement, while the use of a coin of proper value will be effective to so release the said vending mechanism.

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

Figure 1 is a perspective view of a coin-controlled ball vending machine embodying my invention.

Figure 2 is a plan view, partially broken away, of a coin-controlled mechanism, showing the initial position of certain parts thereof just preceding the operation thereof by a good coin.

Figure 3 is a partial plan view, partly broken away, with the parts sufficiently advanced to show the manner in which a good coin is effective for actuating the mechanism to permit the vending mechanism to function.

Figure 4 is a view similar to Figure 3 illustrating the position of the mechanism at the termination of the movement into vending position, with the parts in position for deposit of the good coin.

Figure 5 is a partial plan view, partly broken away, of my coin-controlled mechanism, showing the position of the parts when a perforated slug or coin is first introduced.

Figure 6 is a view similar to Figure 5, illustrating the manner in which the perforated slug or coin may be moved towards the opening into which it is to be deposited without actuating the blocking mechanism sufficiently to release the vending mechanism.

Figure 7 is a view similar to Figure 6, but illustrating the manner in which continued movement of my vender lever plate effects withdrawal of the finger of one of the locking hooks from the aperture of the perforated slug or coin to permit dropping of this slug or coin without unlocking the vending mechanism.

Figure 8 is a perspective view, partly cut away, showing the bottom of my casting structure.

In the drawings, I have shown a casting 1 which is provided with a well for the reception of a vender lever plate 2 having a handle 3 thereon. Adapted to be superimposed thereon is a vender plate 4 which is provided with a plurality of circular openings 5 for the ultimate reception of the balls to be vended. This vender plate is further provided with a hub 6 having corrugations 7 thereon for agitating the balls which are contained in the casing 8 and which are supported

upon the vender plate 4 and upon the annular ring 9 which also carries the casing 8.

The vender plate 4 is provided on its periphery with substantially rectangular sockets 10 disposed at regular intervals around the vender plate and these substantially rectangular sockets are designed to be presented by step by step rotation to the point of intervention of the coin. In other words, one rectangular socket is presented to the coin receiving station for each vending operation. Furthermore, these sockets are wide enough to permit sufficient initial movement of the vender plate and vender lever plate, to be described, to permit deposit of a perforated slug or coin in the coin compartment. Thus, the vender plate rotates continuously with a step by step rotation, while the vender lever plate 2 is swung through a predetermined segment for each vending operation and is returned to initial position after each vending operation, being used in conjunction with proper coin to effect successive vending operations of the vender plate 4.

The vender plate 4, intermediate the rectangular cut-away portions 10, is provided with ratchet formations which may be designated 11. These ratchet formations are designed to cooperate with a spring-held pawl 12 to prevent return rotation of the vender plate. This spring-held pawl 12 also cooperates with the rectangular cut-away portions 10 to successively position these rectangular cut-away portions in alignment with the coin-receiving slot of the vending machine which is disposed within a radially extending hood 13 on the casting 1.

The casting 1 is preferably provided with a well 14 which is of segmental form and which lies substantially beneath the segmental path of travel of a good coin in the normal actuation of the vending mechanism thereby. This well 14 is provided in its base with spaced apertures 15 and 16 which lead into a coin compartment 17 and which are guarded from beneath by guard flanges 18 and 19. The aperture 15 is designed to receive perforated slugs or coins and the aperture 16 is designed to receive good coins, the manner in which this is accomplished being described hereinafter.

Located within the well 14 is a locking lever 20 which is pivoted at 21 and which has a pin 22 extending downwardly from the lower side thereof through an arcuate slot 23 in the base of the well so that it may be connected to a tension spring 24 which is in turn connected to a pin 25 on the base of the casting. This tension spring normally tends to maintain the free end of the locking lever 20 outwardly against a stop 26 which may be integrally formed upon the outer wall of the well 14.

The locking lever 20 is preferably provided on its inner edge with a hook-like depression 27 and with an additional hook-like depression 28. Disposed for cooperation with this locking lever 20 is a pawl 29 which is carried upon the underside of the vender lever plate, being pivotally mounted thereon as at 30 and having its outer end normally held outwardly by a tension spring 31 connected to a pin 32 upon the vender lever plate. The pawl 29 is provided at one end with a downwardly depending heel 33 which is designed for cooperation with the depressions 27 and 28 of the locking lever 20. The pawl 29 is further provided upon its lower side with a downwardly depending toe 34 which is adapted, under certain conditions, to contact with the outer edge of the locking lever 20, and which is also designed for cooperation with a shoulder 35 to prevent the projection of a

finger 36 of this pawl across the slot which initially receives any coin or slug introduced into the coin-controlled mechanism.

The vender lever plate is further provided with a radial coin receiving slot 37 and with an upstanding shoulder 38 terminating flush with one wall of said slot. The finger 36 of the pawl 29 extends vertically upward from the top of this pawl through an opening 39 in the vender lever plate and is provided thereabove with a laterally extending portion 36A which would project across the radial slot 37 in the vender lever plate but for the fact that, in the normal position of this vender lever plate, it is held retracted by contact of the toe 34 with the shoulder 35, as illustrated in Figure 2.

Immediately beneath the coin slot which is disposed within the hood 13 of the casting 1, is a shoulder formation 40 which cooperates with the base of the radial slot 37 in the vender lever plate to limit downward movement of the coin while the vender lever plate is in its initial position. This shoulder 40 is comparatively short and immediately adjacent thereto, in the normal path of movement of the coin is the slot or opening 15 which is designed to receive the perforated slugs or coins. Just beyond this slot 15 is a shoulder 41 which is designed to cooperate with a good coin while it is moving toward the opening or slot 16 through which it is ultimately delivered.

In the operation of this structure, after the insertion of a good coin and the passing of this good coin into the slot 37 of the vender lever plate, as illustrated in Figure 2, the movement of the vender lever plate in the direction shown by the arrow in Figure 2, immediately results in release of the pawl 29 from the restraining action of the shoulder 35 which has been hitherto exerted upon the toe 34 of this pawl 29. Immediately, the laterally extending portion 36A of the finger 36 moves against the side of the good coin and clamps it against the opposing wall of the slot 37 and the upstanding shoulder 38 of the vender lever plate. This clamping action occurs before the vender lever plate has moved the coin beyond the shoulder 40 and it remains effective to prevent dropping of the coin through the slot 15 as it passes thereover.

If there were no coin in position in the radial slot 37, initial movement of the vender lever plate toward vending position would immediately release the toe 34 from restraint by the shoulder 35 and the heel 33 of the pawl 29 would lock either in depression 27 or depression 28 of the locking lever 20. However, with a good coin in position in the radial slot 37 and exerting pressure against the lateral extension 36A of the finger 36, the pawl 29 will be held in such position that the heel 33 thereof will escape the locking lever 20, as shown in Figure 3, so that the vender lever plate may continue on its movement towards vending position. As this movement progresses, the good coin is not only held in the radial slot 37 by the pressure of the finger 36, 36A, but it is supported against dropping by the shoulder 41 on the wall of the casting well. Continued movement eventually results in contact of the toe 34 of the pawl 29 with the outer edge of the locking lever 20 which has, prior to this time, extended across and blocked the coin deposit opening 19. The vender lever plate then moves on until the radial slot 37 reaches a position above the coin delivery slot 16 in the casting 1. Just before it reaches this position, as

shown in Figure 4, the heel 33 of the pawl 29 contacts with a cam surface 42 formed in the end wall of the well 14. This swings the pawl 29 to such a position that the coin is relieved from the pressure of the finger 36, 36A. Shortly afterwards, the radial slot with the coin therein reaches a position above the coin delivery slot 16 and the coin drops therethrough into the coin compartment beneath the casting 1. The vender lever plate is then returned to initial position and the various parts described assume their initial positions.

In the operation of this structure, after the insertion of a perforated slug or coin, the parts being in the position illustrated in Figure 5, initial movement of the vender lever plate brings the perforated slug or coin into the position shown in Figure 6, wherein the lateral extension 36A of the finger 36 projects through the aperture in the slug or coin. This movement also releases the toe 34 of the pawl 29 from the restraining contact of the shoulder 35 and permits this pawl 29 to swing outwardly to such an extent that the heel 33 thereof will catch in either the depression 27 or the depression 28 of the locking lever 20. However, owing to the fact that the pivot of the pawl 29 swings in an arc outside of the pivot of the locking lever 20, the vender lever plate may continue its movement so as to exert a pressure upon the hook of the locking lever 20 of such a nature as to slightly swing this locking lever inwardly and to also swing the pawl inwardly to an extent sufficient to withdraw the finger from the hole in the slug. When this occurs, the radial coin slot with the slug therein is above the coin or slug delivery slot 15 and the perforated slug or coin will drop through this coin delivery slot 15 and into the coin compartment beneath the casting 1. However, this swinging of the locking lever 20 and the pawl 29 is quite limited and they remain in locking relation so that the vender lever plate is restrained from further movement toward delivery of the articles. As a matter of fact, the interlocking action of the pawl with the locking lever to restrain further movement of the vender lever plate is supplemented by the contact of the locking lever with the end wall of the well 14. As previously pointed out, the rectangular sockets 10 are wide enough to permit the occurrence of movement of the vender lever plate sufficiently to deposit the perforated slug without contact with the slug or coin.

It will of course be obvious that the locking of the locking lever 20 and the pawl 29 as well as their combined locking contact against the end wall of the well 14 in the casting 1 occurs in a similar manner when it is attempted to move the vender lever plate to vending position when no coin or slug of any type has been deposited in the radial slot 37 of the vender lever plate.

While I have shown and described my apparatus only in operation, either with a good coin or with a perforated slug or coin, it will be understood that, upon the introduction of a slug or coin which is less than a given thickness, the operation will be substantially the same as that shown in Figures 5, 6 and 7. In other words, a coin which is too thin will act, just as the perforated slug or coin will, in that it will fail to exert sufficient pressure upon the finger 36, 36a to hold the locking pawl 29 out of the path of the depressions 27 and 28 of the locking lever 20. Therefore, the vender lever plate will be movable sufficiently to deliver the slug or coin which is too

thin into the deposit slot 18, but it will ultimately be checked in its movement towards vending position by the interlocking of the heel 33 of the pawl 29 with the locking lever 20. Although the claims of my application only specify operation either with a good coin or with a perforated slug or coin, it will be understood that this operation of my device to divert and sequester slugs or coins of less than a given thickness is an inherent function of my invention and is intended to be covered by these claims.

It will be apparent that I have disclosed a novel form of coin-controlled mechanism wherein the mechanism which is utilized for the release and operation of the vending machine upon the introduction of a good coin into the mechanism is also operative upon the introduction of a slug or coin of objectionable character to automatically divert and sequester this objectionable slug or coin, while at the same time leaving the vending mechanism and the coin-controlled mechanism in such position that the vending operation cannot be performed. The apparatus is of such a nature that it will automatically detect whether or not the slug or coin has an aperture therein or is too thin and, if so, will deposit this coin in a locked compartment without operating the vending mechanism. If the slug or coin is not objectionable, the vending mechanism will operate. Furthermore, this dual function is obtained by a single mechanism which is of extreme simplicity and of rugged form.

Having thus described my invention, what I claim is:

1. Coin-controlled mechanism comprising a locking means, a means for receiving a coin and transporting such coin, a deposit aperture for perforated slugs or coins, and means rendered effective to prevent operation of said locking means in response to transportation of a good coin, said means being automatically effective to permit a perforated slug or coin to drop by gravity force into said aperture during transportation thereof and without effecting release of said locking means.

2. Coin-controlled mechanism comprising a locking means, a means for receiving a coin and transporting such coin, a deposit aperture for perforated slugs or coins, a deposit aperture for good coins, said transporting means being automatically operative when moved in one direction to deposit perforated slugs or coins in the deposit aperture provided for and to deposit good coins in the deposit aperture provided therefor.

3. Coin-controlled mechanism comprising a coin transporting means having a slot therein for the reception of the coin, said coin-controlled mechanism having a deposit slot for perforated slugs or coins, and means forming a part of said transporting means of such a structure that it will preclude deposit of a good coin in said deposit slot but will permit deposit of a perforated slug or coin upon movement of said transporting means in one direction.

4. Coin-controlled mechanism comprising a locking means, a coin transporting means having a coin-receiving slot therein, said coin-controlled mechanism having a deposit slot for perforated slugs or coins in the transportation path, and said transportation means being movable sufficiently in a forward direction to deposit a perforated slug or coin in such deposit slot without releasing said locking means.

5. Coin-controlled mechanism comprising a locking means, a coin transporting means having

- a coin-receiving slot therein, said coin-controlled mechanism having a deposit slot for perforated coins in the transportation path, and said transportation means being movable sufficiently to permit a perforated coin or slug to drop by gravity into such deposit slot without releasing said locking means, and means coactive with a good coin to preclude its deposit in said deposit slot and to prevent operation of said locking means.
6. Coin-controlled mechanism comprising a locking means, a coin transporting means having a coin-receiving slot therein, said coin-controlled mechanism having a deposit slot for perforated coins in the transportation path and a deposit slot for good coins in the transportation path, and means on said transportation means operative by the movement of said transportation means to permit a perforated slug or coin to drop by gravity into said first deposit slot but to deposit a good coin in said second deposit slot.
7. Coin-controlled mechanism comprising a locking means, a coin transporting means having a coin-receiving slot therein, said coin-controlled mechanism having a deposit slot for perforated coins in the transportation path and a deposit slot for good coins in the transportation path, and means on said transportation means operative in response to transportation of a good coin for preventing operation of said locking means and depositing the good coin in the said second-named deposit slot but operative to deposit a perforated slug or coin in said first-named deposit slot without releasing said locking means.
8. Coin-controlled mechanism comprising a transporting means, having a coin receiving slot therein, a pivoted locking lever, a pawl carried by said transporting means, said pawl being of such structure that the movement of said transporting means with a good coin therein will prevent operation of said locking means and permit full movement of said transporting means while movement of said transporting means with a perforated slug or coin therein will permit a limited movement of said transporting means.
9. Coin-controlled mechanism comprising a coin transporting means, a locking lever, a co-operative locking pawl, and a finger on one end of said pawl designed to be subject to pressure by a good coin upon transportation thereof by said transporting means to prevent said locking pawl from interlocking with said locking lever and permit full movement of said transporting means.
10. Coin-controlled mechanism comprising a coin transporting means, a locking lever, a locking pawl comprising a means for interlocking with said lever, a finger on said locking pawl designed for contact with a good coin in said transporting means, and means for restraining said locking pawl to prevent contact of said finger with a good coin while said transporting means is in its initial position.
11. Coin-controlled mechanism comprising a transporting means, a locking lever, a locking pawl designed to be coin-actuated, said coin-controlled mechanism comprising a coin deposit slot normally obstructed by said locking lever, and means responsive to movement of said transporting means for moving said locking lever away from obstructing relation to such coin deposit slot.
12. Coin-controlled mechanism comprising a stationary member, a movable member, means for locking said members together, a coin deposit slot for perforated slugs or coins, said locking means permitting sufficient movement of said movable member in one direction to effect delivery of a perforated coin to said coin deposit slot.
13. Coin-controlled mechanism comprising a locking means, a means for receiving a coin and transporting such coin while it is supported in a vertical position, a deposit aperture for perforated slugs or coins, and means rendered effective to prevent operation of said locking means in response to transportation of a good coin in a certain direction, said means being automatically effective to permit a perforated slug or coin to drop into said aperture during transportation thereof in the same direction without effecting release of said locking means.
14. Coin-controlled mechanism comprising a movable member and a stationary member, said movable member having a coin-receiving slot therein and being adapted to support the coin in vertical position, a deposit aperture for perforated slugs or coins formed in said stationary member adjacent said coin-receiving slot, and means effective to preclude deposit of a good coin in said deposit aperture and to permit deposit of a perforated slug or coin in said aperture during the initial forward movement of said movable member.
15. Coin-controlled mechanism comprising a movable member and a stationary member, a locking means, a coin-receiving slot in said movable member, a deposit aperture for perforated slugs or coins formed in said stationary member adjacent said slot, and means adapted to permit deposit of a perforated slug or coin in said deposit aperture during the initial forward movement of said movable member without releasing said locking means.
16. Coin-controlled mechanism comprising a movable member and a stationary member, said movable member having a coin-receiving slot therein and being adapted to support the coin in a vertical position, a deposit aperture for perforated slugs or coins formed in said stationary member adjacent said slot, and means operative upon the introduction of a perforated slug or coin into said slot and the initial forward movement of said movable member to first project through the perforation in said slug or coin and to then withdraw from such perforation to permit said slug or coin to drop into said deposit aperture.
17. Coin-controlled mechanism comprising a coin transporting means having a coin-receiving slot therein adapted to support the coin in a vertical position, said coin-controlled mechanism having a deposit slot for perforated coins in the transportation path and a deposit slot for good coins in the transportation path and means on said transporting means operative by movement of said transporting means to permit deposit of a perforated slug or coin in said first deposit slot without releasing said locking means but to deposit a good coin in said second deposit slot.
18. Coin-controlled mechanism comprising a transporting means having a coin-receiving slot therein, a pivoted locking lever carried independently of said transporting means, a locking pawl carried by said transporting means and adapted to cooperate with said locking lever, the pivots of said locking lever and said pawl being located out of axial alignment, said pawl and said locking lever being of such a structure that full movement of said transporting means with a good coin therein will be permitted while move-

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ment of said transporting means with a perforated slug or coin therein will be limited.

19. Coin-controlled mechanism comprising a coin-transporting means having a coin-receiving slot therein, a locking lever, a locking pawl comprising a means for interlocking with said lever, said locking pawl being adapted to grip said coin in said slot during movement of said transporting means, and a cam surface with which said pawl is adapted to contact as said transporting means nears the limit of its movement so that said pawl will be operated to release said coin.

20. Coin-controlled mechanism comprising a coin-transporting means having a coin slot therein, a locking lever having a plurality of notches therein, a locking pawl comprising a means for interlocking with said notches, said locking pawl being adapted to grip a good coin in said slot during movement of said transporting means, means for restraining said locking pawl to prevent contact thereof with a good coin while said transporting means is in its initial position, said coin-controlled mechanism having a coin deposit aperture for good coins normally obstructed by said locking lever, means responsive to movement of said transporting means for moving said locking lever away from obstructing relation to such coin deposit aperture, and a cam surface with which said locking pawl is adapted to contact in order to release gripping pressure on said good coin to permit it to drop into said deposit aperture.

21. Coin-controlled mechanism comprising a stationary member, a movable member, a locking member carried by said stationary member, a resiliently movable locking member carried by said movable member, said resiliently movable locking member being operative by a good coin to permit said movable member to move and simultaneously grip said coin but operative to project through a perforated slug or coin and permit limited movement only of said movable member.

22. Coin-controlled mechanism comprising a locking means, a means for receiving a coin and transporting such coin, a deposit aperture for perforated slugs or coins, and means rendered effective to prevent operation of said locking means in response to transportation of a good coin, said means being automatically effective to permit a perforated slug or coin to drop by a gravity force into said aperture during transportation thereof.

23. Coin-controlled mechanism comprising a locking means, a means for receiving a coin and transporting such coin, a deposit aperture for perforated slugs or coins, and means rendered effective to prevent operation of said locking means in response to transportation of a good coin, said means being automatically effective to permit a perforated slug or coin to drop by a gravity force into said aperture during transportation thereof in a single direction.

24. Coin-controlled mechanism comprising a locking means, a coin transporting means having a coin receiving slot therein, said coin-controlled mechanism having a deposit slot for perforated coins in the transportation path, and said transportation means being movable sufficiently in a single direction to deposit a perforated coin or slug in such deposit slot without releasing said locking means, and means coactive with a good coin to preclude its deposit in said deposit slot and to prevent operation of said locking means.

25. Coin-controlled mechanism comprising a locking means, a coin transporting means having a coin receiving slot therein, said coin-controlled mechanism having a deposit slot for perforated coins in the transportation path and a deposit slot for good coins in the transportation path, and means on said transportation means operative by the movement of said transportation means in a single direction to deposit a perforated slug or coin in said first deposit slot but to deposit a good coin in said second deposit slot.

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