

Feb. 28, 1956

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2,736,415

PLURAL COIN MECHANISM FOR VENDING MACHINES

Filed Jan. 21, 1952

4 Sheets-Sheet 1

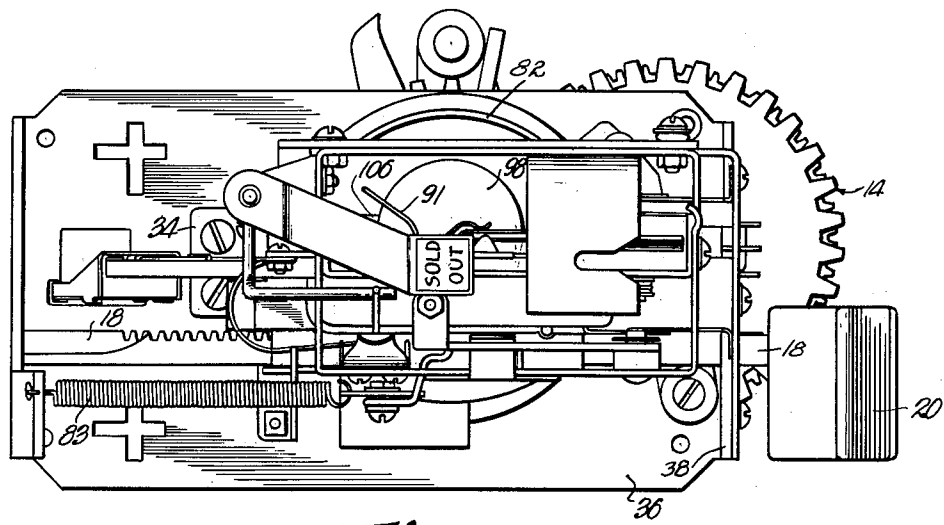


Fig. 1.

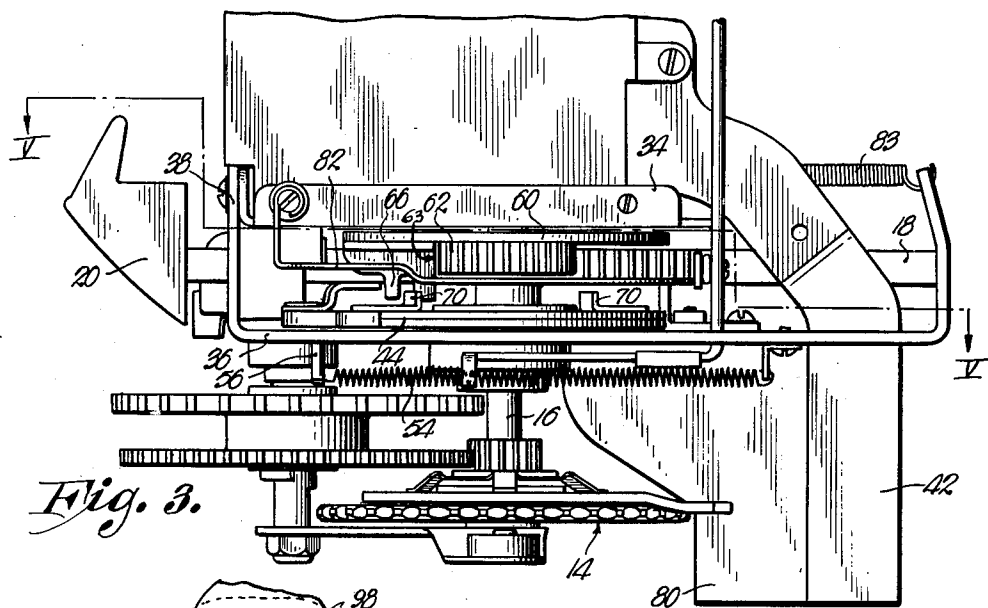


Fig. 3.

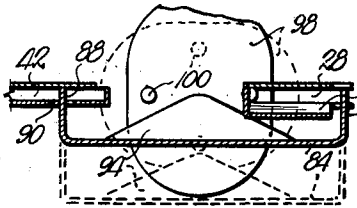


Fig. 12.

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4 Sheets-Sheet 2

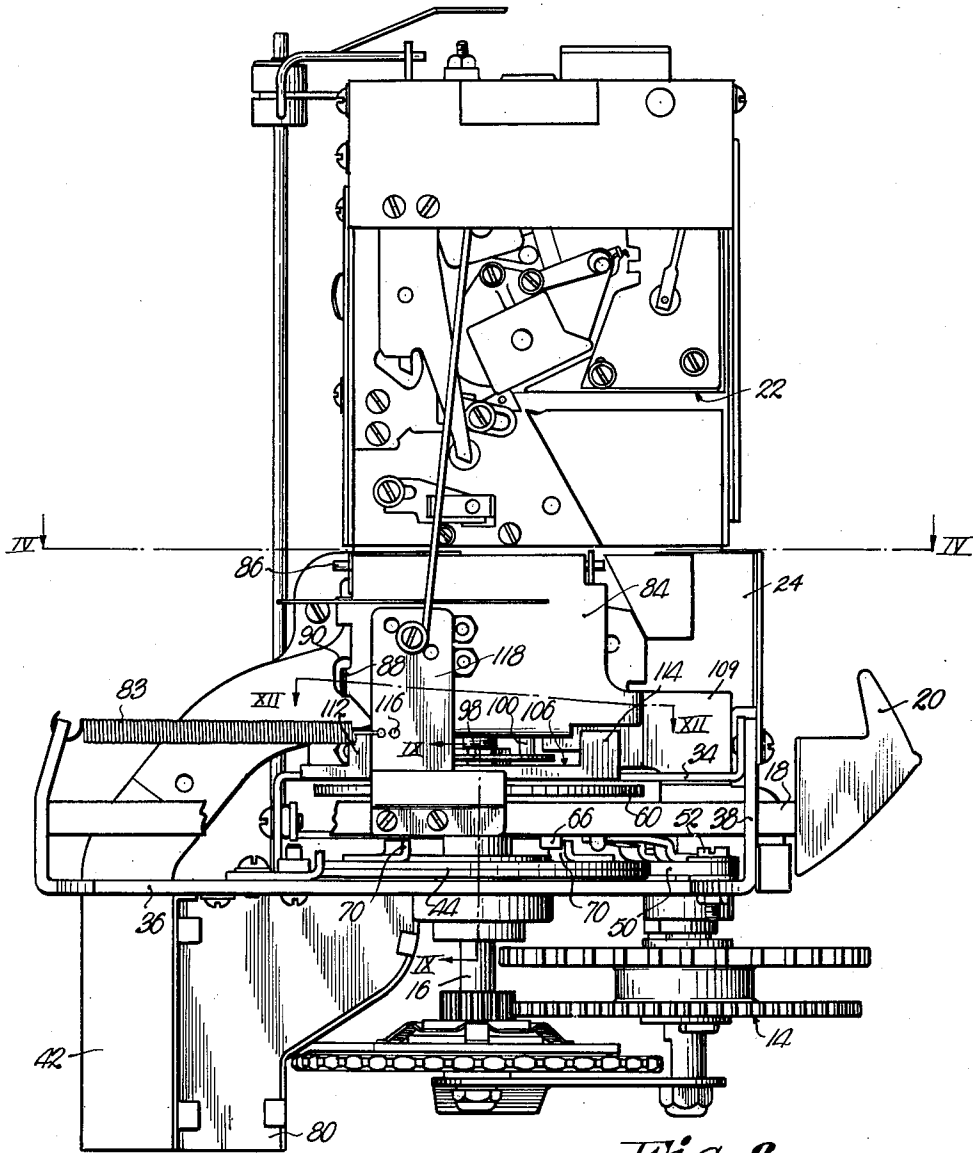


Fig. 2.

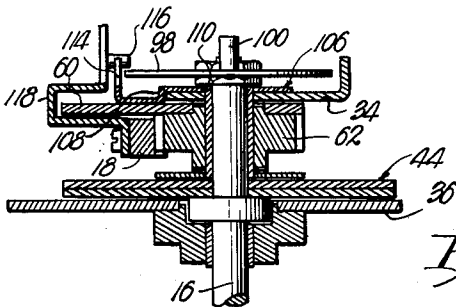


Fig. 9.

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4 Sheets-Sheet 3

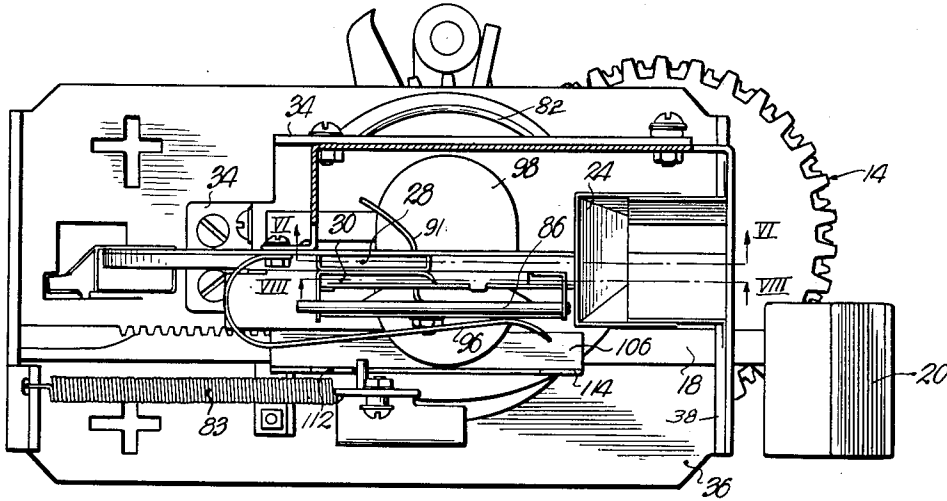


Fig. 4.

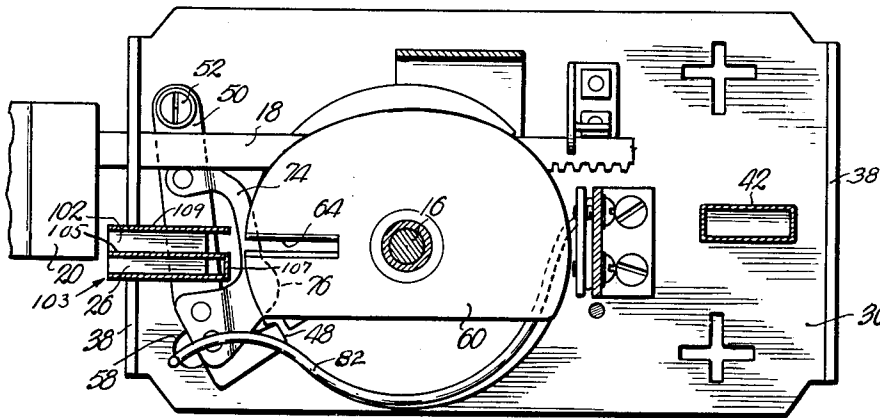


Fig. 5.

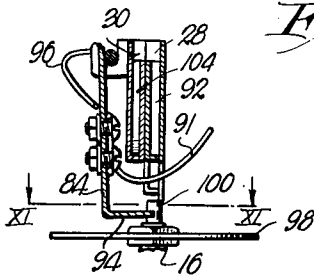


Fig. 10.

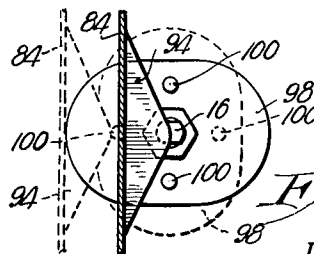


Fig. 11.

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4 Sheets-Sheet 4

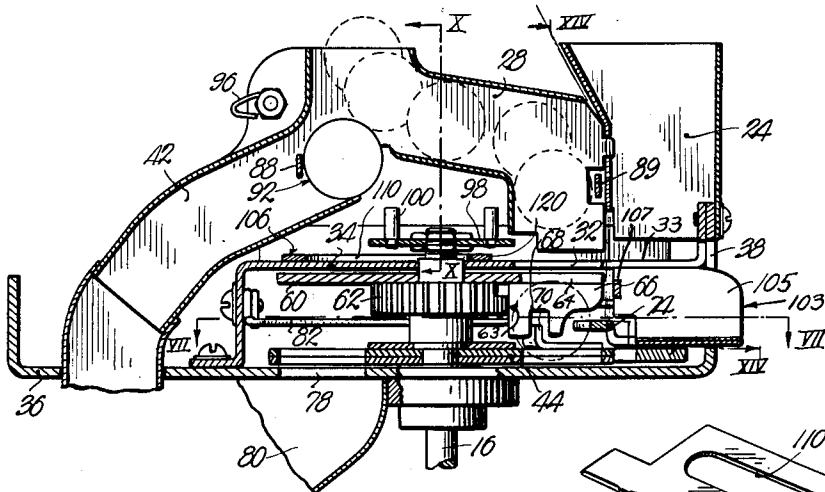


Fig. 6.

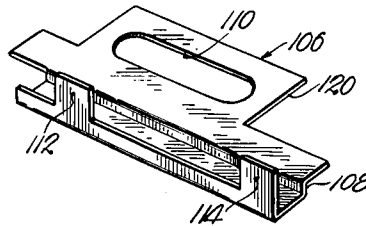


Fig. 13.

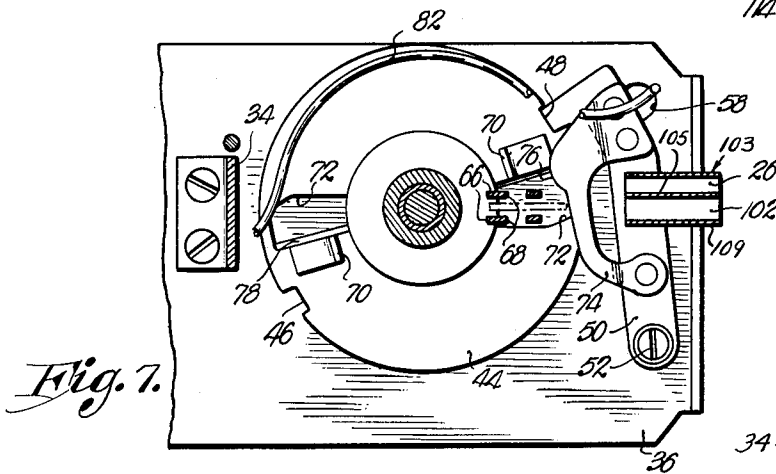


Fig. 7.

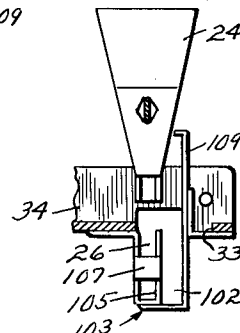


Fig. 14.

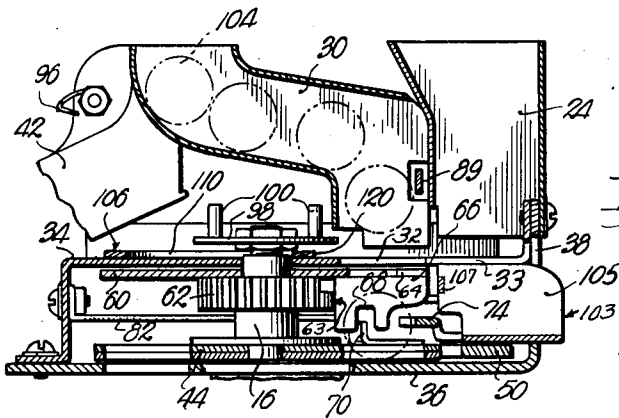


Fig. 8.

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2,736,415

**PLURAL COIN MECHANISM FOR VENDING MACHINES**

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Application January 21, 1952, Serial No. 267,391

7 Claims. (Cl. 194—61)

This invention relates to vending machines and more particularly to coin control mechanism therefor, the primary object being to provide a control adapted to receive coins of differing denominations whereby for instance, a single coin of one denomination will permit operation or alternately, a pair of coins of a differing denomination may be used to place the control in operation.

There are many articles that are today priced at 10¢, making it advantageous to provide an automatic vending machine capable of receiving either a dime or two nickels, it being therefore, necessary to provide control means incapable of permitting actuation of the machine manually by the customer upon insertion merely of a single nickel.

It is accordingly the most important object of the present invention to provide control mechanism for coins capable of being operated by a single dime, but not by a single nickel, there being included releasable means for receiving and holding the first nickel inserted between the point of insertion of coins and the actual control mechanism for subsequent release along with the second nickel inserted upon operation.

It is another important object of the present invention to provide control means including a pair of rotatable devices hereinafter termed "a rotatable coin disc" and "a rotatable locking disc" having aligned openings for receiving the coins and adapted to hold either a nickel or a dime in a position for release of the locking disc notwithstanding the differences in diameters of such coins.

It is a further object of this invention to provide control means for vending machines and the like that includes a swingable member that moves into and out of a coin chute for receiving a first nickel inserted thereinto and holding the same until the machine is operated, thereby requiring the insertion of a second nickel before the operator can receive his merchandise.

Other objects include the way in which the primary control discs are operably connected with the holding structure for the first nickel whereby to release the latter when the control discs are rotated; the way in which a latch is provided for the locking disc that is in turn provided with a bridging member to hold a nickel in an elevated position; and the manner of providing a cam release on the bridging member engageable by either a dime or a nickel for release each time the operator actuates a pull rod.

In the drawings:

Figure 1 is a top plan view of plural coin mechanism for vending machines made pursuant to the present invention.

Fig. 2 is a side elevational view thereof.

Fig. 3 is a fragmentary view showing a portion of that side of the mechanism opposite to Fig. 2.

Fig. 4 is a transverse, cross-sectional view taken on line IV—IV of Fig. 2.

Fig. 5 is a transverse, cross-sectional view taken on irregular line V—V of Fig. 3.

Fig. 6 is an enlarged, fragmentary, detailed, cross-sectional view taken on line VI—VI of Fig. 4.

Fig. 7 is a cross-sectional view taken on line VII—VII of Fig. 6.

Fig. 8 is a fragmentary, detailed, enlarged, cross-sectional view taken on line VIII—VIII of Fig. 4.

Fig. 9 is a fragmentary, detailed, cross-sectional view taken on line IX—IX of Fig. 2.

Fig. 10 is a fragmentary, detailed, cross-sectional view taken on line X—X of Fig. 6.

Fig. 11 is a cross-sectional view taken on line XI—XI of Fig. 10.

Fig. 12 is a cross-sectional view taken on line XII—XII of Fig. 2.

Fig. 13 is a perspective view of a reciprocable coin plunger forming a part of the control mechanism and shown entirely removed therefrom; and

Fig. 14 is a detailed, fragmentary, substantially vertical cross-sectional view taken on irregular line XIV—XIV of Fig. 6, looking in the direction of the arrows.

The plural coin mechanism of the present invention is shown in the drawing completely detached from a vending machine with which the same is intended to be used, it being understood that through manual operation thereof, any suitable apparatus capable of vending an article of merchandise may be actuated.

To this end, a train of gears broadly designated by the numeral 14, may be coupled with the vending machine apparatus in any suitable manner not shown. The train of gears 14 includes a vertical shaft 16 detailed in Fig. 9 of the drawings, the present invention relating to the coin control means for causing rotation of the shaft 16 and accordingly, operation of the train of gears 14 upon exertion of a pull on an elongated bar-like rack 18. A pull handle 20 is secured to one end of the rack 18 for convenience of the potential purchaser of merchandise from the vending machine with which the plural coin mechanism hereof is adapted to be used. Likewise, coin selector means, i. e. structure for accepting good coins and rejecting slugs and the like, forms no part of the present invention and is shown in Fig. 2 for the purposes of clarity only. Such coin rejector assembly is broadly designated by the numeral 22.

A hopper 24 is disposed to receive slugs and other spurious coins or the like and return the same to the customer by means of outlet 26. (See Figs. 5, 7 and 14.) Good coins emanating from the rejector 22 are fed to the control mechanism of the present invention and more particularly, nickels gravitate into a chute 28 and dimes into a coin chute 30 (see Figs. 4, 6, 8 and 10). The lowermost ends of both chutes 28 and 30 are aligned with a slot 32 widened at 33 and formed in a bracket 34 secured to a bottom wall 36 and to a flange 38 extending upwardly from bottom wall 36. Figs. 2 and 6 of the drawings also clearly show a branch chute 42 for the nickel chute 28 and extending in the opposite direction through the wall 36, terminating above a coin-receiving receptacle not shown. The shaft 16 extends upwardly through the wall 36 and is mounted for rotation therein in the manner illustrated in Fig. 9 of the drawings.

A locking disc 44 (shown in Fig. 9 as comprising a pair of superimposed, interconnected plates) is secured directly to the shaft 16 for rotation therewith on the uppermost surface of the wall 36. The locking disc 44 is provided with a pair of diametrically opposed notches 46 and 48 that alternately receive an L-shaped latch 50 (Fig. 7) mounted for swinging movement on the uppermost surface of wall 36 by means of a pivot pin 52. The latch 50 is held yieldably biased toward the periphery of the locking disc 44 against which it slides when the disc 44, is rotated, by a spring 54 below the wall 36 (Fig. 3) and connecting the latter with a pin 56 depend-

ing from the latch 50 and swingable within a clearance slot 58 formed in the wall 36 (Fig. 7).

A coin disc 60 (Fig. 5) is mounted on the shaft 16 (Fig. 9) for free rotation thereon below bracket 34 and spaced above the locking disc 44. The reciprocable bar-like rack 18 is operably connected with the coin disc 60 through the medium of a small gear 62 connected with the disc 60 therebelow, i. e., between the discs 44 and 60 for rotation with disc 60. The disc 60 is provided with a coin-receiving slot 64 extending inwardly from its periphery and, therefore, open at one end thereof that is normally disposed directly below the slot 32 in the bracket 34.

A pair of spaced ears 66 (Fig. 7) depend from the disc 60 with the space therebetween registering with the radial slot 64 in the disc 60. The ears 66 are in turn provided with notches 68 for clearing a pair of diametrically opposed lugs 70 extending upwardly from the uppermost surface of the locking disc 44.

While the coin-receiving slot 64 in the disc 60 is relatively narrow, the locking disc 44 is provided with a pair of diametrically opposed openings 72, one of which is always normally below the ears 66 and accordingly, in register with the slots 64 and 32 (see Fig. 7). These closed openings are appreciably wider than the thickness of a coin.

The latch 50 is provided with a substantially U-shaped member 74 that has its bight above the plane of latch 50 and above the disc 44 in partial overlapping relationship to the latter. Accordingly, as shown in Fig. 7 of the drawings, the member 74 also partially overlaps the proximal opening 72 and is provided with a cam edge 76.

The wall 36 is provided with a coin outlet 78 that is substantially diametrically opposed to the latch 50 and in register with one of the openings 72, while the other opening 72 is disposed beneath the slot 32. A chute 80 depending from the wall 36 in register with the outlet opening 78, also registers with the coin receptacle above mentioned.

A semi-circular guide 82 is mounted above the disc 44 on one side of its axis of rotation in concentric relationship thereto and adjacent the periphery of the disc 44. A spring 83 yieldably holds the rack or bar 18 at the innermost end of its path of travel shown in Fig. 1. The coin chutes 28 and 30 carry a swingable plate 84 on one face thereof above the bracket 34 by means of a horizontal pin 86 substantially parallel with the path of reciprocable movement of the bar 18. The plate 84 has a laterally extending lug 88 (Figs. 2 and 6) that extends into the branch 42 by means of a hole 90 in the latter, together with a second lug 89 projecting into the chutes 28 and 30 adjacent hopper 24. A loop 91 on the innermost face of the plate 84 above bracket 34 and below chutes 28 and 30, extends laterally and upwardly as shown in Figs. 1, 4 and 10, to one side of a nickel 92 when the latter is supported in the manner shown in Fig. 6 of the drawings. It is seen in Fig. 6 that when the lug 88 is within the branch 42, it is disposed in the path of travel of nickels 92 passing from chute 28 to branch 42 thereof. The plate 84 is likewise provided with a triangular extension 94 on the lowermost edge thereof underlying the chute 30 above the bracket 34 and extending in the same direction as the lug 88. The plate 84 is held biased toward the chutes 28 and 30 with the lug 88 within branch 42 by a spring 96 (see Fig. 4). The shaft 16 has a plate 98 rigidly secured thereto at its uppermost end (Fig. 9) between the extension 94 and the bracket 34 that is in turn provided with a pair of diametrically opposed, upstanding studs 100, one being positioned normally on each side respectively of the extension 94 (see Figs. 9, 11 and 12). A reciprocable plunger 106 (Fig. 13) is slidably carried by the bracket 34 for movement in parallelism with the path of travel of the rack bar 18. Plunger 106 is below the plate 98 as shown in Figs. 6 and 9 of the drawings, and is offset as at 108

for overlapping and sliding movement along one longitudinal edge of the bracket 34. An elongated slot 110 in the plunger 106, clears the shaft 16. A pair of spaced, upstanding ears 112 and 114 on the plunger 106, are engaged by a pin 116 therebetween and mounted on a bracket 118 secured to the rack bar 18. The cutaway portion in the plunger 106 presents an edge 120 that is in alignment with the slot 32 in bracket 34. A chute 102 in alignment with the space between ears 66 and the slot 64, is provided to return excess coins to the customer.

An E-shaped element 103 secured to bracket 34 forms the open top, side-by-side chutes 26 and 102, which are separated by partition 105 extending upwardly toward widened portion 33 of slot 32. The outer ends of chutes 26 and 102 are open, as shown in Figs. 5, 7 and 14 and a tab 107 extends across the inner end of chute 26, as is clear in Figs. 5 and 14. The outer leg 109 of chute 102 extends through slot portion 34 and terminates alongside hopper 24. Both chutes 26 and 102 register with slot portion 34 and extend beyond bracket 34 through wall 38. Chute 26 is directly below hopper 24 while chute 102 is disposed to receive excess coins from chutes 28 and 30.

If a customer inserts a dime into the machine for the purpose of causing the same to operate and therefore, deliver a vendable commodity, the dime 104 rolls down the chute 30, falls through the slot 32 of bracket 34, thence into the slot 64 of disc 60, between the ears 66 and into the underlying opening 72, coming to rest upon the uppermost smooth surface of the wall 36, all as clearly shown in Fig. 8 of the drawings. If another dime 104 is inserted into the chute 30 while the first dime 104 rests on the wall 36, or at any other time during the cycle of operation, such second dime will be deflected outwardly through the chute 102 and be returned to the customer. With a dime resting on wall 36, the customer need merely pull upon the handle 20, thereby moving the rack 18 and rotating the disc 60 through the gear 62, carrying the dime 104 therewith by virtue of its disposition in slot 64 and between the ears 66.

Since the openings 72 are appreciably wider than the thickness of the coin, the dime will slide freely along the wall 36 until it moves into engagement with the cam edge 76 of member 74. Such action imparts swinging movement of the latch 50 against the action of spring 54, moving latch 50 out of the notch 46 or 48 as the case may be, releasing the locking disc 44 for free rotation. The coin 104 thereupon moves against one of the lugs 70, causing the disc 44 to rotate substantially 180 degrees until the dime 104 falls into the chute 80 through outlet opening 78.

It is seen that rotation of the disc 44 causes rotation of the shaft 16 and accordingly, operates the train of gears 14 for actuating the vending machine apparatus. As the dime 104 falls into the chute 80, the latch 50 again moves into one of the notches 46—48 by virtue of the force of spring 54. Release of the handle 20 causes the rack 18 to return to the normal position shown in Figs. 2 and 3 for instance, by the force of spring 83.

If the customer desires to purchase an article through the use of a pair of nickels 92, he makes insertion of a first nickel, which after passing through the slug rejector 22, enters the chute 28 and falls into the branch 42 until the same comes to rest against the lug 88 of plate 84 as shown in Fig. 6 of the drawings. It becomes necessary therefore, for the customer to insert a second nickel 92, which second nickel falls upon the uppermost edge of the nickel 92 that is resting against the lug 88. The second nickel then rolls along chute 28 and thence downwardly to a locking position in the manner shown in Fig. 6 of the drawings. The nickel that interconnects the discs 44 and 60, does not however, fall upon the wall 36. Instead, it is bridged between the innermost end of an opening 72 and the member 74. It is

only after release of the latch 50 that the nickel 92 falls to a point of sliding movement on the wall 36 as it is carried to the outlet opening 78. By virtue of the member 74 providing a bridge or support for the nickel 92 while permitting the dime 104 to clear the same and come to rest upon the wall 36, both coins may be used to release the latch 50 without danger of either coin being forced out of position when the handle 20 is actuated, where the latch 50 is not released. In other words, the dimes 104 strike the cam surface 76 at a point on the edge of the dime where such engagement with the member 74 does not tend to elevate the dime and thereby cause jamming of the machine or failure so far as release of the disc 44 is concerned.

Any tendency for nickels 92 to be cammed upwardly by member 74 out of the openings 72 will be opposed by such coins moving against flat, chord-like edge 63 on the gear 62, which extends across the innermost ends of ears 66 and by the innermost end of slot 64.

When the nickel 92 is carried around to the outlet opening 78 to in turn rotate shaft 16, the plate 98 is rotated from the position shown by full lines in Fig. 11, to the dotted line position. One of the pins 100 moves into contact with an inclined edge of the extension 94, thereby swinging the plate 84 outwardly against the action of spring 96. Lug 88 moves out of the branch 42, releasing the nickel 92 being held therewithin and accordingly, both nickels are released to the coin-receiving box.

It is seen that the pins 100 alternately contact the triangular-shaped extension 94 to cause release of the retained nickel.

During each outward swinging movement of the plate 84 by virtue of rotation of plate 98 and the action of studs 100, loop 91 comes into contact with the nickel 92 held in place by the lug 88 thereby tilting the nickel 92 and assuring its release and therefore, gravitational movement down branch 42.

In the absence of lug 89 normally traversing the chutes 28 and 30, the coins 92 and 104 would by momentum, tend to travel through the chute 102 rather than fall through the slot 32 and thence downwardly into the slot 64. However, sufficient space is provided below the lug 89 so that if three nickels or two dimes are inserted, the extra coin will fall through slot 32 until the same strikes the uppermost edge of a coin between the ears 66 and thereupon roll into the chute 102 below the lug 89. By retracting the lug 89 each time the machine is placed in operation, it is impossible for a customer to insert a third nickel after partial rotation of the disc 60, permitting such nickel to rest upon the uppermost face of disc 60 and thereupon utilize the retained extra nickel to obtain another article of merchandise after return of the handle 20 to a position where the slot 64 will receive the third nickel. In other words, after the lug 89 is retracted, all coins thereafter inserted, will return to the customer via slot 32 and chute 102.

Except for the plunger 106, it would be possible for a customer to tilt the machine to prevent such third coin from rolling off the uppermost face of disc 60 into the chute 102. Accordingly, when the handle 20 is moved outwardly to cause operation of the machine by the second inserted nickel, such movement of handle 20, rack bar 18, bracket 118 and pin 116, will carry plunger 106 therewith by virtue of plunger 116 striking ear 114. The edge 120 of plunger 106 will thereupon traverse the slot 32 and push a nickel therein and riding upon the uppermost surface of disc 60 into the chute 102. When the handle 20 is returned to the normal position shown in the drawings, the pin 116 will come into contact with the ear 112 and return the plunger 106 to the normal position shown in the drawings clearing the slot 32 for reception of additional coins.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. Control means comprising a coin chute; releasable

structure for supporting a first coin inserted in the chute; a pair of spaced-apart, rotatable devices; releasable mechanism for holding one of said devices against rotation; means on the other device for receiving a second coin inserted in the chute and disposed to move said coin into releasing engagement with said mechanism as the other device is rotated through a portion of its path of travel; means on said one device for releasing said structure upon rotation of the one device; manual means for rotating said one device; and means coupled with said manual means for forcing a third coin inserted in the chute out of the latter as the manual means is actuated.

2. Control means comprising a coin chute; releasable structure for supporting a first coin inserted in the chute; a pair of spaced-apart, rotatable devices; releasable mechanism for holding one of said devices against rotation; means on the other device for receiving a second coin inserted in the chute and disposed to move said coin into releasing engagement with said mechanism as the other device is rotated through a portion of its path of travel; a shiftable element normally within the chute for deflecting said second coin into said means on the other device; means on said one device for releasing said structure and shifting said element upon rotation of the one device; means for receiving additional coins inserted in the chute after shifting of said element; manual means for rotating said one device; and means coupled with said manual means for forcing said first coin from the structure as the latter is released.

3. Control means comprising a coin chute; releasable structure for supporting a first coin inserted in the chute; manually operable coin control mechanism disposed to receive a second coin inserted in the chute; a shiftable element normally within the chute for deflecting said second coin into said mechanism; means coupling said mechanism with said element and with said structure for releasing the latter and shifting the element upon operation of said mechanism; means for receiving additional coins inserted in the chute after shifting of said element; and means connected with said mechanism for forcing said first coin from the structure as the latter is released.

4. In a vending machine having a coin control mechanism provided with a rotatable member, structure for controlling coin movement including coin return means; a coin chute having a first branch discharging to said mechanism and to said coin return means, and a second branch discharging to a collection box and disposed to normally receive all coins inserted into the chute; a plate provided with a first lug normally traversing the second branch for retaining a first coin inserted in the chute within the path of travel of additional coins subsequently inserted into the chute whereby such additional coins are deflected by said first coin into the first branch, said plate having a second lug normally traversing the first branch for deflecting the second coin inserted into the chute to said mechanism; means swingably mounting the plate for simultaneous movement of the lugs into and out of the branches; and a pin mounted on said member for engagement with said plate upon operation of said mechanism to swing the plate and thereby retract the lugs whereby to release said first coin to the collection box and to discharge coins in the first branch to said coin return means.

5. In a vending machine as set forth in claim 4 wherein said plate is provided with a lateral projection overlying the member and within the path of travel of said pin.

6. In a vending machine having a coin control mechanism provided with a rotatable member, structure for controlling coin movement including coin return means; a coin chute having a first branch discharging to said mechanism and to said coin return means, and a second branch discharging to a collection box and disposed to normally receive all coins inserted into the chute; a plate provided with a first lug normally traversing the second

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branch for retaining a first coin inserted in the chute within the path of travel of additional coins subsequently inserted into the chute whereby such additional coins are deflected by said first coin into the first branch, said plate having a second lug normally traversing the first branch for deflecting the second coin inserted into the chute to said mechanism; means swingably mounting the plate for simultaneous movement of the lugs into and out of the branches; a pair of pins mounted on said member; and a triangular element on the plate and extending between the pins, said pins being disposed for engagement alternately with said element upon operation of said mechanism to swing the plate and thereby retract the lugs whereby to release said first coin to the collection box and to discharge coins in the first branch to said coin return means.

7. In a vending machine having a coin control mechanism, structure for controlling coin movement including coin return means; a first coin chute discharging to said coin mechanism and to said coin return means; a second coin chute having a first branch discharging to said mechanism and to said coin return means, and a second branch discharging to a collection box and disposed to normally receive all coins inserted into the second chute; a plate provided with a first lug normally traversing the second branch for retaining a first coin inserted in the second chute within the path of travel of additional coins subsequently inserted into the second chute whereby such additional coins are deflected by said

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first coin into the first branch, said plate having a second lug normally traversing said first branch and said first chute for deflecting the first coins which enter the first branch and first chute to said mechanism; means swingably mounting the plate for simultaneous movement of the lugs into and out of the branches and the first chute; and means mounted on said mechanism for engagement with said plate upon operation of the mechanism to swing the plate and thereby retract the lugs whereby to release the coin retained by the first lug to the collection box and to discharge coins in the first chute and in the first branch to said coin return means.

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