Oct. 29, 1963 L. J. ANDRES 3,108,672

COIN ACCUMLATOR

Filed Feb. 10, 1961 4 Sheets-Sheet 1

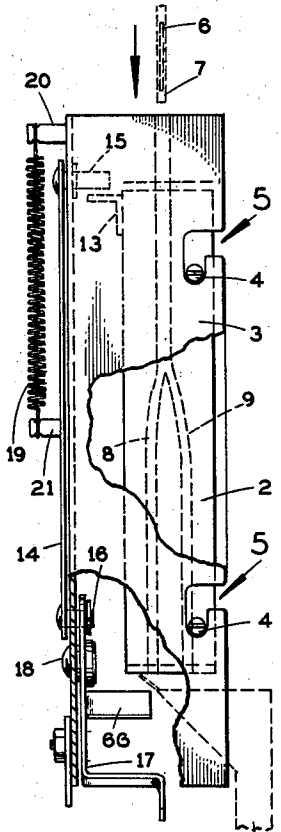


FIG. 2

FIG. 1

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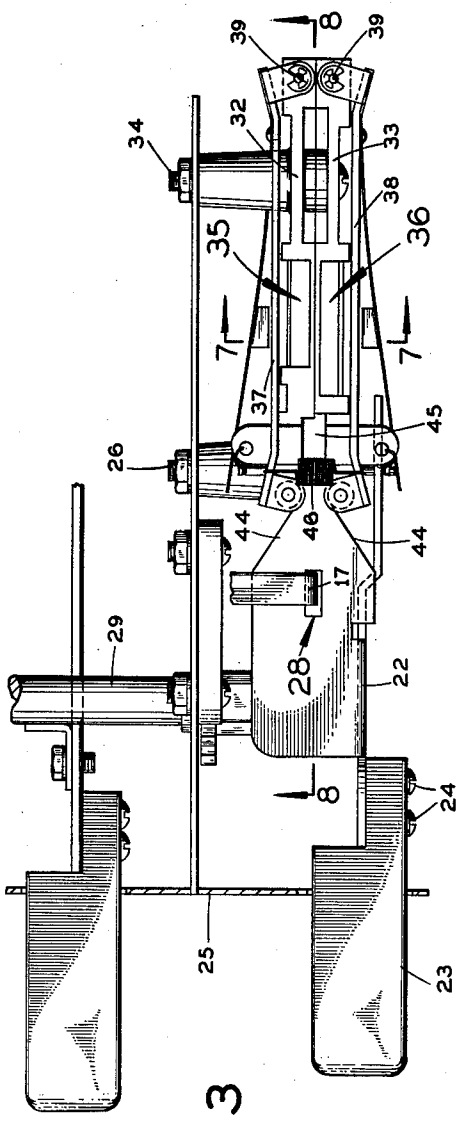


FIG. 3

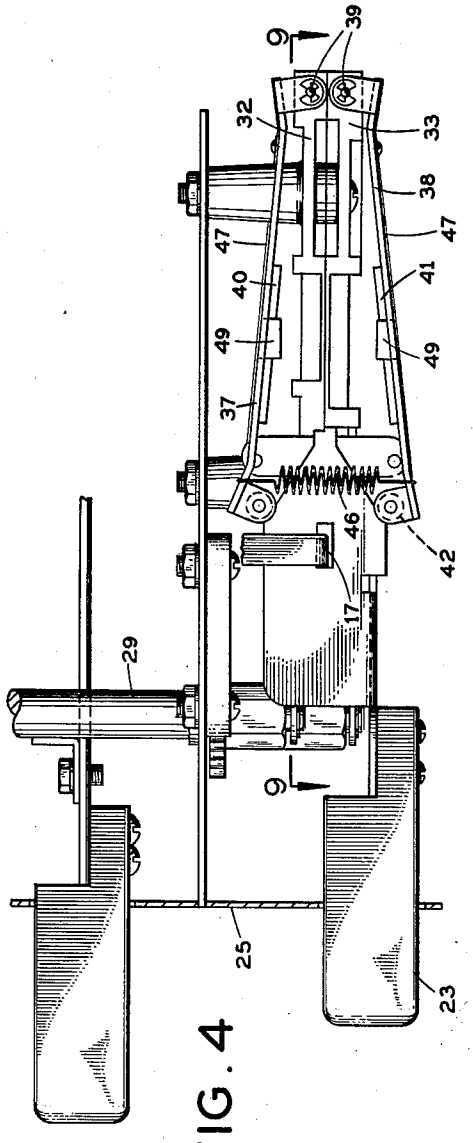


FIG. 4

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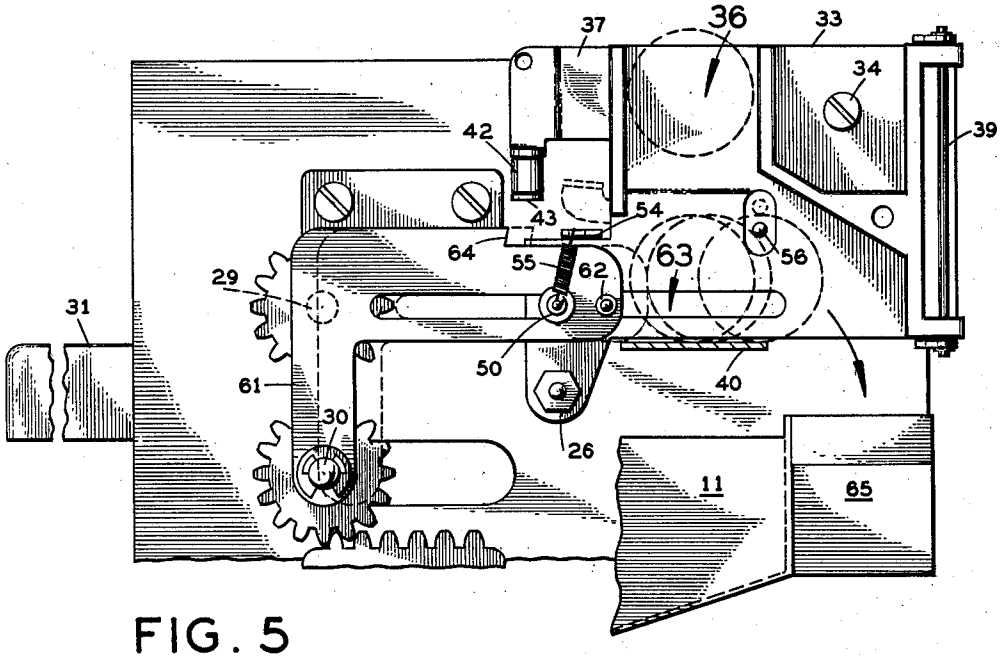


FIG. 5

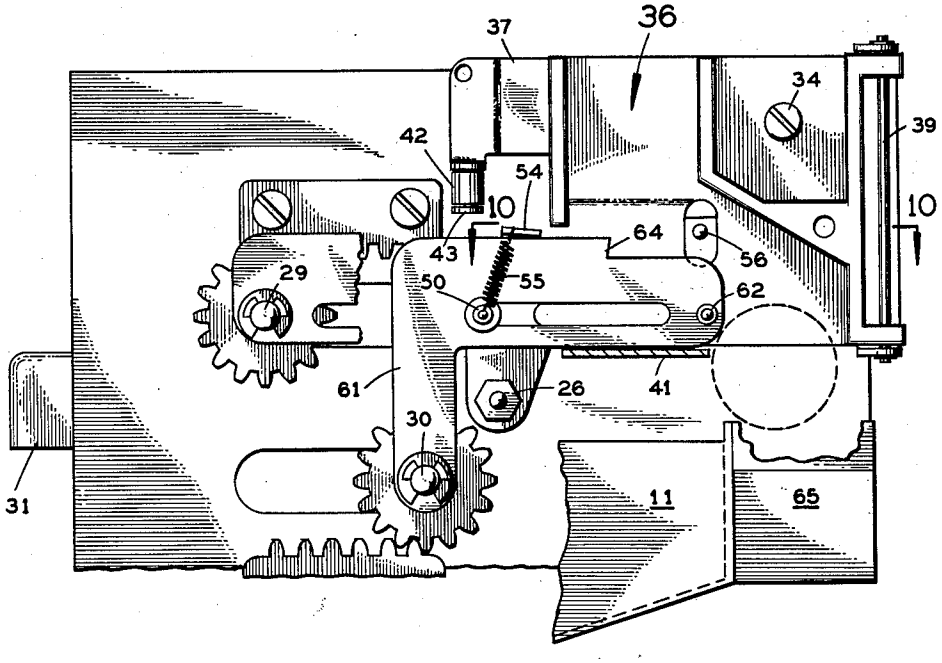


FIG. 6

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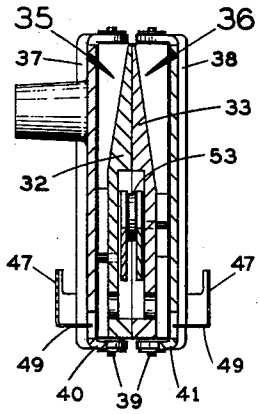


FIG. 7

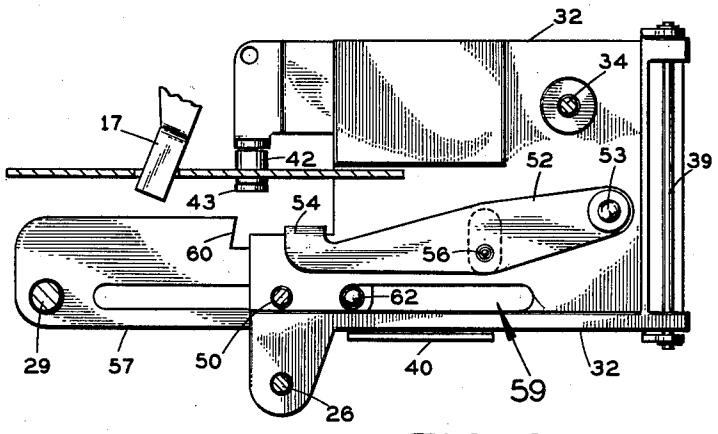


FIG. 8

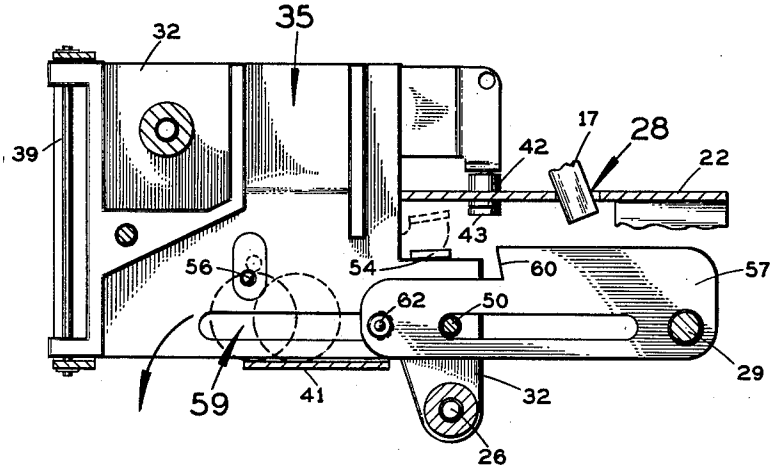


FIG. 9

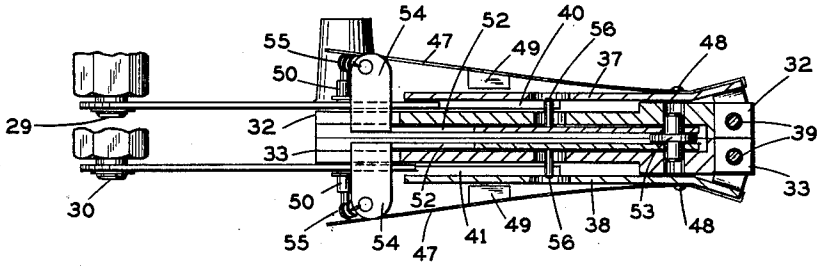


FIG. 10

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3,108,672
COIN ACCUMULATOR

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Filed Feb. 10, 1961, Ser. No. 88,501
3 Claims. (Cl. 194—57)

This invention relates in general to coin operated devices and more particularly to a coin accumulator responsive to coins of different denominations for use with a manually operated selective vending machine.

Coin accumulators prior to this invention were often disabled and made inoperative as a result of a deposit of improper coins including metal or paper objects and other debris, even when preceded by a coin testing device. Other prior accumulators also become inoperative upon the unwarranted deposit of more than the required number of coins of proper or improper denominations and other prior accumulators often failed to properly return acceptable and/or non-acceptable coins because of inadequate scavenging means.

The above objections and disadvantages are overcome in the present invention by the provision of a manually operated combination coin accumulator and scavenging means for selectively unlocking a vending machine when normally operated and for opening the coin passageways therein to dislodge coins or debris retained therein when the scavenging portion is operated which means is a principal object of the invention.

Another object of the invention is the provision of a coin accumulator for accepting the gravity deposit of coins of two different denominations in a predetermined position for selectively unlocking a vending machine for each of three values of operation thereof and independently transferring each coin from a receiving position to an acceptance position for gravity deposit.

Another object of the invention is the provision of a mechanism for simultaneously agitating a combination slug detector and sorting mechanism and opening passageways in an accumulator permitting the free passage of coins retained in the slug rejector to gravitate through the accumulator and into a coin return cup.

A further object of the invention is the provision of means forming a pair of adjacently positioned passageways for the descent of coins to adjacent acceptance positions and a pair of swingable gates comprising the outer walls of said passageways with said gates simultaneously movable therefrom including spring means for simultaneously dislodging coins resting in said acceptance positions.

These and other objects and advantages in one embodiment of the invention are described and shown in the following specification and drawings:

FIG. 1 is a side elevation of the accumulator secured to a typical vending machine and positioned below a typical combination slug rejector and coin sorting device.

FIG. 2 is a fragmentary front elevation of elements, shown FIG. 1.

FIG. 3 is a top plan view of the accumulator, shown FIG. 1.

FIG. 4 is the same as FIG. 3 in changed position.

FIG. 5 is a side elevation of the accumulator, shown FIG. 1, with elements removed.

FIG. 6 is the same as FIG. 5 in changed position.

FIG. 7 is a cross-sectional elevation taken through section lines 7—7, FIG. 3.

FIG. 8 is a cross-sectional elevation taken through section lines 8—8, FIG. 3.

FIG. 9 is a cross-sectional elevation taken through section line 9—9, FIG. 4.

FIG. 10 is a cross-sectional plan view taken generally through section line 10—10, FIG. 6.

Referring to FIG. 1, the coin accumulator is secured to one end of a base 1 or chassis of a typical vending machine. A well known conventional coin testing device comprising a combination coin sorter and slug rejector 2 is retained in a channel member 3 secured to the base 1, as shown. The rejector 2 is provided with a pair of studs 4—4 in each side thereof which are in loose engagement with bayonet slots 5 in the channel member 3 for the gravity retention of the rejector and providing for small vertical movement thereof, better shown in FIG. 2.

In this particular embodiment, the rejector 2 is adapted to receive coins of two different predetermined denominations in a single entry in the upper end thereof. The two different coins 6 and 7 when deposited are sorted by gravity means and if genuine will descend in adjacent paths from the bottom of the device illustrated by dotted pathways 8 and 9. Spurious coins are rejected in a separate path 10 from the lower end of the device and carried into a return cup 11 by a chute 12 illustrated by dotted lines.

Referring to FIGS. 1 and 2, the rejector contains well known scavenging means operated by the downward movement of a lever 13, better shown FIG. 2, which is operated by a link 14 slidably retained in channel 3 by suitable studs 15 and 16. Stud 15 is positioned to engage lever 13 and stud 16 is engaged with a bell-crank 17 journalled for oscillation in channel 3 on stud 18. A spring 19 biased between a stud 20 on channel 3 and a stud 21 on link 14 normally urges the link in upward position with the rejector 2 conditioned to accept coins.

A reject slide 22 also shown FIG. 3 is secured to a reject button 23 by screws 24—24 and journalled for reciprocation in an extension 25 of base 1. The slotted inner portion of slide 22 is retained for reciprocation on a shoulder stud 26 by means of conventional C washer. The offset arm 27 of bell-crank 17 is engaged in an aperture 28 in the upper portion of slide 22, better shown FIG. 3.

Thus it is apparent that when the button 23 is pushed inward against the restraining action of spring 19, the slide will rotate bell-crank 17 and move link 14 in a downward direction and operate the scavenging lever 13 to the rejector.

The typical vending machine in this embodiment utilizes two shafts 29 and 30, shown FIGS. 1, 5 and 6, adapted to be independently and selectively reciprocated by engagement with gear means in a direction normal to their axes by the selective operation of a push button delivery mechanism not shown. The shafts 29 and 30, shown in FIG. 5, are in their normal rest positions. FIG. 6 illustrates the displaced position of shaft 30 corresponding with the delivery of an article corresponding to the coin 7 of large denomination by the operation of a typical select button 31. The displacement of shaft 29 by like means illustrates the delivery of an article corresponding to the coin 6 of smaller denomination. This construction also comprehends the displacement of both shafts 29 and 30 for vending an article corresponding in value with both coins 6 and 7.

Referring to FIG. 3, the main body of the accumulator consists of an inner member 32 and an outer member 33 secured to base 1 adjacent each other by screw 34 and shoulder stud 26. The inner member 32 defines one side and two edges of a vertical coin pathway 35 for the coin 6 of small diameter. The outer member 33 defines one side and two edges of a vertical pathway 36 for the coins 7 of large diameter. The pathway sides of members 32 and 33 are better shown in FIGS. 5, 7 and 9, respectively. It is to be noted that both pathways 35 and 36 have

tapered entries, as shown in FIG. 7, to avoid precise alignment of the rejector in its position above the accumulator and to funnel therein downward descending debris.

Referring to FIG. 3, a pair of gates 37 and 38 are hinged to the rear portion of members 32 and 33 respectively by hinge pins 39—39 retained by C washers, as shown. Each gate provides the outward wall of each pathway 35 and 36 respectively when the gates are in closed position, as shown. Each gate includes an integral rail 40 and 41 along the lower edge thereof, as shown in FIGS. 7, 8 and 9. A roller 42 is secured to the forward portion of each gate by a shoulder stud 43, as shown in FIGS. 1 and 5.

Referring to FIG. 3, the slide 22 has a symmetrical wedge cam 44 which terminates in a tongue 45 slidably journalled for reciprocation between members 32 and 33. A spring 46 secured to both gates 37 and 38, as shown, normally urges the gates in closed position, as shown in FIG. 3.

Referring to FIGS. 1, 7 and 10, each gate is provided with a tilt spring 47 secured thereto by a rivet 48 and including a projection 49 positioned to project through an appropriate clearance aperture, better shown in FIG. 1, in each gate for dislodging coins or debris lodged on the rails 40 and 41, as shown in FIG. 4.

Referring to FIG. 10, a stud 50 retained through both members 32 and 33 provides opposite abutments for holding the tilt springs 47 in outward position with the projections 49 withdrawn from the coin pathways when the gates are closed.

It is now apparent that when a coin or other article is resting on either of the rails 40 and 41 it will be dislodged therefrom by the inward movement of projections 49 and permitted to gravitate downward into the return cup 11 when the gates are moved to their open positions, shown at FIG. 4.

Referring to FIGS. 8, 9 and 10, a pair of latches 52 are pivoted for independent vertical movement on a spacer stud 53 retained in opposite holes in members 32 and 33. Each latch terminates in an outward depending stop 54. A spring 55 secured to each stop is anchored to each end of stud 50 for normally urging both latches in their downward lock position. A coin pin 56 is positioned in each latch a predetermined distance above corresponding rails 40 and 41 respectively for camming engagement by corresponding coins moved along their respective rails.

A coin blade 57 is retained on stud 50 by suitable washers and includes a guide stud 62 positioned to reciprocate in a slot 59 in member 32. The outer end of blade 57 is loosely retained on selector shaft 29, as shown. A lock abutment 60 is positioned to engage stop 54 for preventing the full inward movement of shaft 29 when the stop is in its lower lock position. When a coin 6 descends in pathway 35, it will come to rest on rail 41 and when the shaft 29 is moved inward, the coin will be moved inward by the inner end of blade 57, as shown by dotted lines, and cam pin 56 upward and raise stop 54 to unlocked position, shown in dotted lines, and permit the blade 57 to travel its full inward movement to deliver a corresponding vended article and discharge the coin from rail 41 into acceptance chute 65, as shown by arrow.

Referring to FIG. 5, a coin blade 61 is retained on stud 50 by suitable washers, as shown, including a guide stud 62 positioned for reciprocating movement in a slot 63 in member 33. The downward depending portion of the blade 61 is loosely retained on shaft 30 and a lock abutment 64 is positioned to engage stop 54 for preventing the full inward movement of shaft 30.

When a coin 7 is deposited in pathway 36, it will descend to rest upon rail 40 and the inward movement of shaft 30 will engage the inner end of blade 61 with the coin and move the latter, as shown in dotted lines, and cam pin 56 upward and raise stop 54 to position shown in dotted lines and thus permit the full stroke of shaft 30 to deliver a corresponding vended article and simultaneously move the coin from the rail 40 to descend into acceptance chute 65, as illustrated in FIG. 6.

Referring to FIGS. 1 and 2, an arm 66 integral with bell-crank 17 is positioned to project under the lower edge of rejector 2, as shown in FIG. 2, for the purpose of engaging the rejector and raising same against the action of gravity a predetermined small distance when the reject button 23 is depressed and the bell-crank 17 assumes the position shown in dotted lines in FIG. 1. When the button 23 is released, the entire rejector will descend by gravity to its normal rest position with sufficient velocity to provide an attendant shock, by virtue of the rapid restoration of the reject means under the influence of spring 19, which shock will dislodge coins, slugs or debris retained in the rejector not effectively scavenged thereby. Thus acceptable coins will descend through the accumulator into the return cup 11 or non-acceptable coins and other articles will descend directly into the return cup via the chute 12 shown in dotted lines. This jarring action to the rejector is particularly effective in dislodging coins with moisture or adhesive substances on their surfaces.

It will be apparent to those skilled in this art that an alternate construction in the form of an additional cam on slide 22 can be positioned to raise and lower the slug rejector 2 and thus dispense with bell-crank 17.

In operation, it is apparent that the deposit of a coin 6 of small denomination in the rejector and the subsequent selective movement of shaft 29 will unlock the vending machine for the release of a selected article corresponding to coin 6 and deposit the coin in the acceptance chute 65 and that the deposit of a coin 7 of larger denomination will permit the movement of shaft 30 for vending a selected article corresponding to the coin 7 and deposit the coin in acceptance chute 65.

It is also apparent that the deposit of both coins 6 and 7 will permit the simultaneous movement of both shafts 29 and 30 for the delivery of a selected article of corresponding value and simultaneously deposit both coins in acceptance chute 65.

In the event improper coins are suspended in the rejector 2 preventing the normal operation of the machine, the depression of reject button 23 will directly return the spurious coins through chute 12 into return cup 11 and, in the event proper coins are deposited and descend into the accumulator, the user may depress reject button 23 and return the coins in return cup 11 before operating either of the selecting shafts 29 or 30.

The deposit of an excessive number of proper or improper coins reaching the accumulator and normally jamming therein may be released to gravitate into the return cup 11 by depressing reject button 23 by virtue of the wide opening of the gates 37 and 38 and the dislodging action of tilt springs 47.

Thus the operation of the reject button will simultaneously clear from the rejector and the accumulator any suspended coins or other debris tending to render the vending machine inoperative.

Certain modifications in the above described construction utilizing the features described are intended to come within the scope of the appended claims.

Having described my invention, I claim:

1. A coin actuator for a three selection vending machine for operation by each or both of two coins of predetermined first and second size comprising a means forming a frame having an independent coin channel in each opposite side thereof, each said channel forming an inlet and an acceptance pathway for each of said first and second size coins respectively, a gate means corresponding to each said pathway independently pivoted to said frame normally in closed position adjacent each of said channels and adapted to guide said coins edgewise therein and to temporarily hold each of said first and second size coins descended in each said inlet pathway respectively, each said gate means adapted for movement to an open posi-

tion for releasing said coins for gravity discharge from each corresponding said inlet pathway when operated, a tilting means on each said gate means biased against said frame adapted and constructed to engage and tilt each of said coins from corresponding said gate means for descent by gravity when each said gate means is moved to said open position, means for urging each said gate into said closed position, a manually operated cam means retained for movement in said frame positioned and adapted to simultaneously engage both said gate means and move same to said open position when operated, a coin blade corresponding to each said channel retained for movement in said frame from a rest position to a vend position constructed and adapted to independently traverse each said inlet pathway for displacing each of said coins retained therein into each said corresponding acceptance pathway for gravitation therefrom when actuated, selective vending means in said vending machine independently connected to each said blade for selectively actuating the latter when operated, a latch secured for movement in said frame respectively associated with each said blade adapted for independent engagement with each of the latter for normally restricting the movement thereof to a locked position, an abutment on each latch projecting into each corresponding said inlet pathway respectively positioned for camming movement by each of said coins therein for independently moving each said latch out of the path of engagement of each said blade and permitting each said coin to be displaced into each corresponding said acceptance pathway and simultaneously permitting the selective operation of said vending means.

2. In a coin mechanism of the character described, a means forming a frame, a coin accumulator means on said frame for receiving gravity propelled coins of predetermined size including scavenging means for releasing said coins retained therein for gravity descent when actuated, a coin testing device suspended in said frame for predetermined vertical reciprocation positioned above said accumulator means and adapted to normally test and

guide acceptable gravity propelled coins deposited therein into said accumulator means, said device including a testing means for normally conducting gravity propelled non-acceptable coins and debris deposited therein in a path by-passing said accumulator means, a manual reject means movably retained to said frame cooperatively associated with said scavenger means and said device adapted to simultaneously actuate same when moved from a rest to a reject position, urging means for downwardly urging said reject means into said rest position whereby said acceptable and non-acceptable coins and debris suspended in said testing device will be shock released for gravity descent therefrom and whereby said coins and debris suspended in said accumulator means will be released for gravity descent when said reject means is rapidly moved to said reject position.

3. In a coin mechanism of the character described, a means forming a frame, a coin testing device suspended in said frame for vertical reciprocation adapted to test and normally conduct gravity propelled coins of predetermined denomination in an acceptance pathway and to test and normally conduct nonacceptable coins and debris in a reject pathway, a manual reject means movably retained to said frame constructed and adapted to reciprocate said testing device between a normal rest position and a predetermined raised position when operated, urging means for downwardly urging said reject means into said rest position whereby said coins or debris retained in said device will be shock released to gravitate from said device in said respective pathways when said reject means is operated and when said testing device is permitted to rapidly move to its rest position.

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