July 30, 1940. V. V. KUNKEL 2,209,461

VENDING MACHINE

Filed Aug. 18, 1937 3 Sheets-Sheet 1

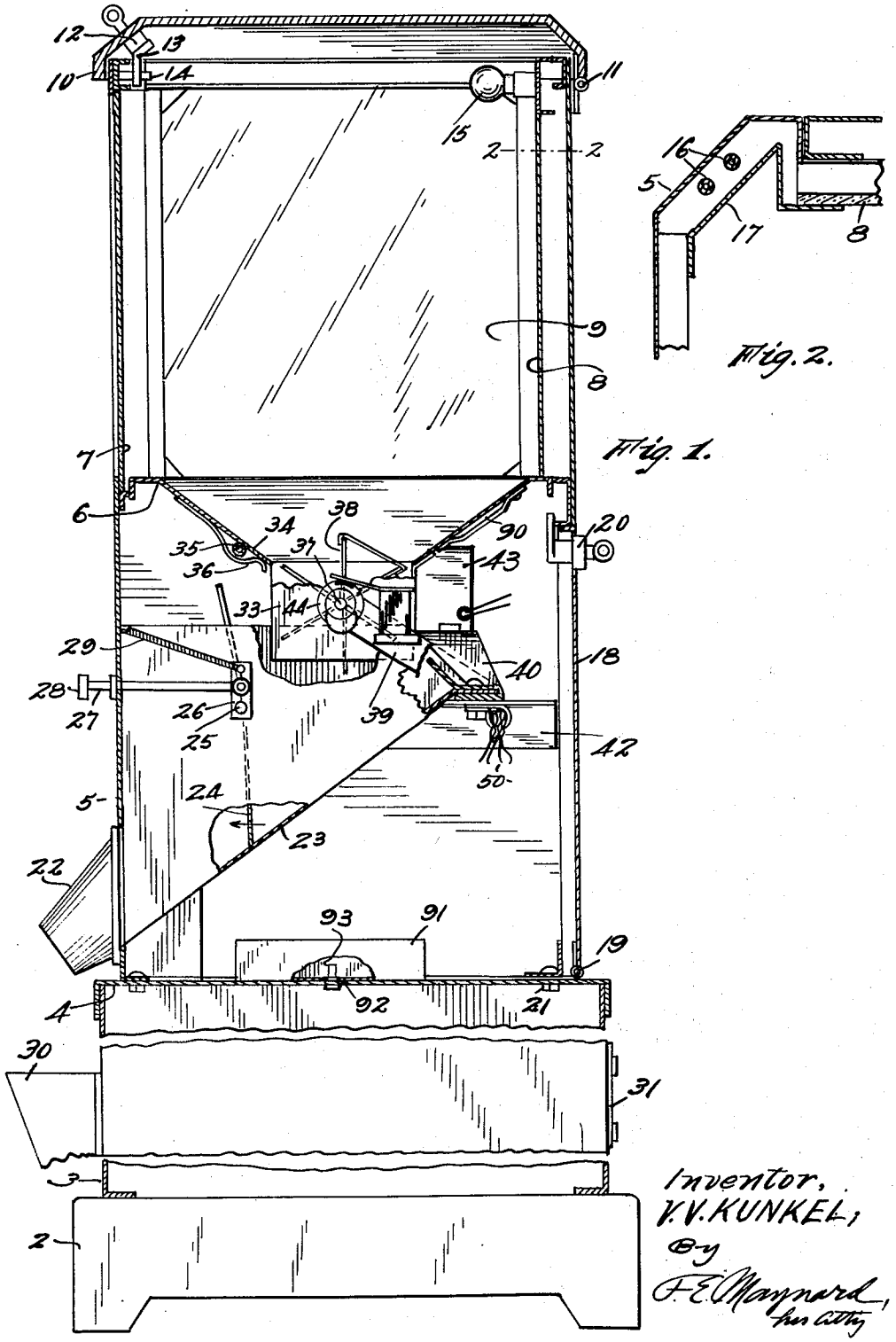


Fig. 1.

Fig. 2.

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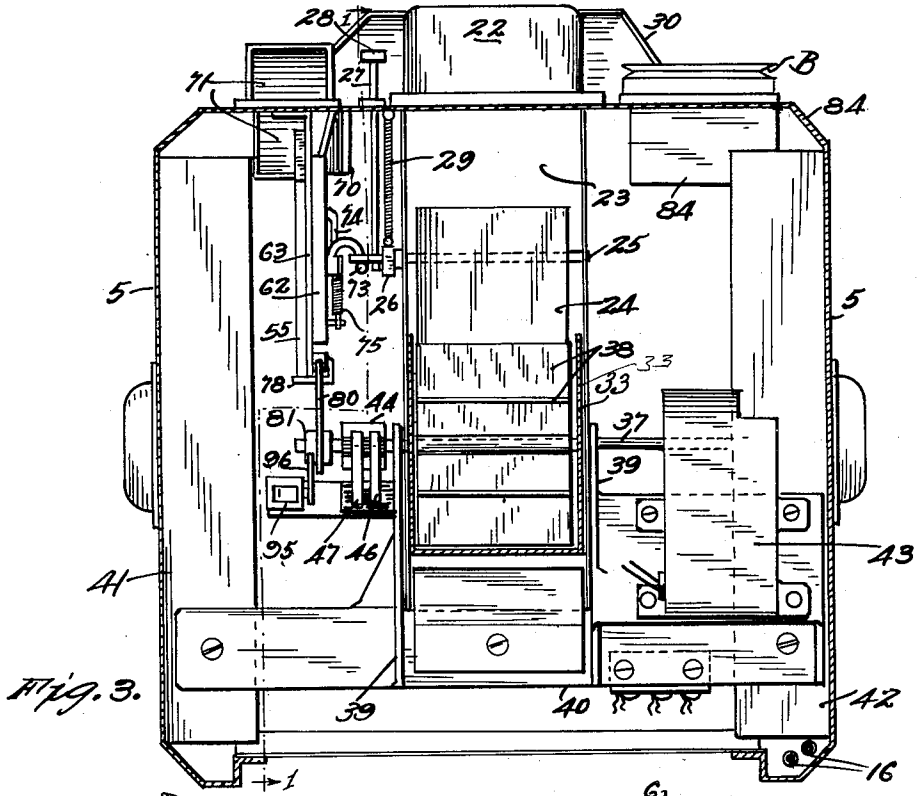


Fig. 3.

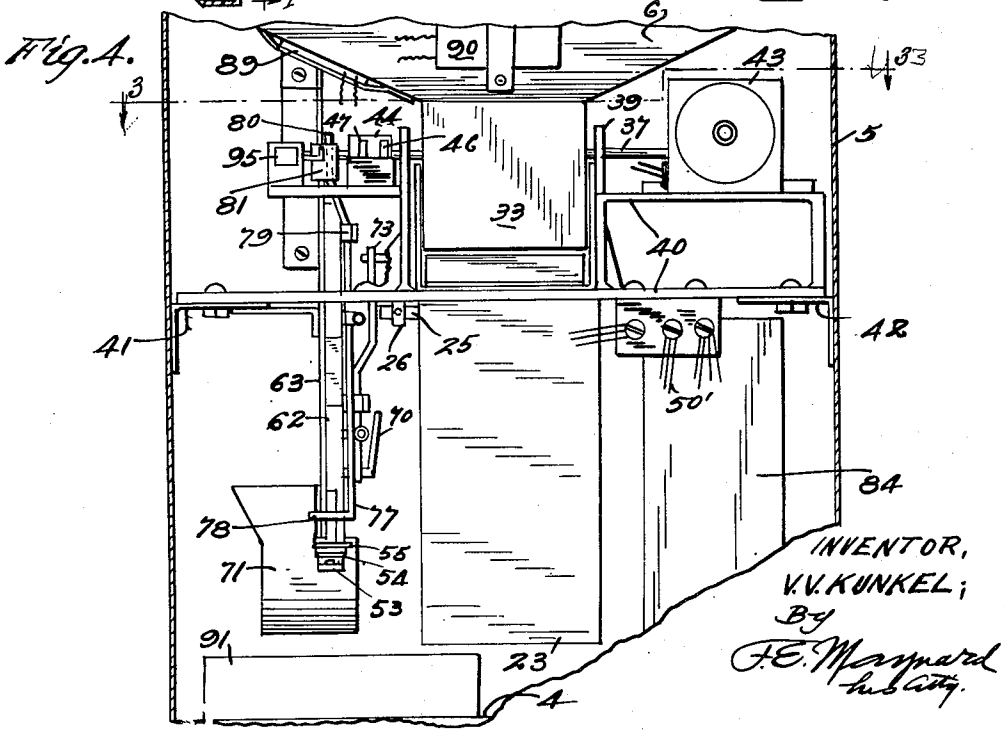


Fig. 4.

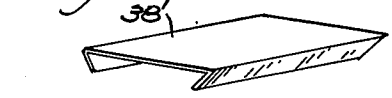
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VENDING MACHINE

Filed Aug. 18, 1937 3 Sheets-Sheet 3

Fig. 8.



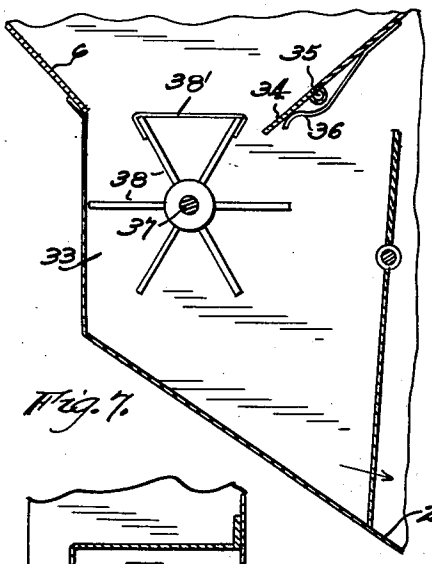


Fig. 7.

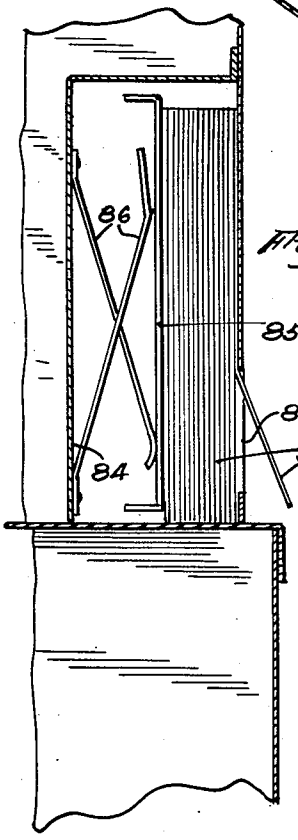


Fig. 9.

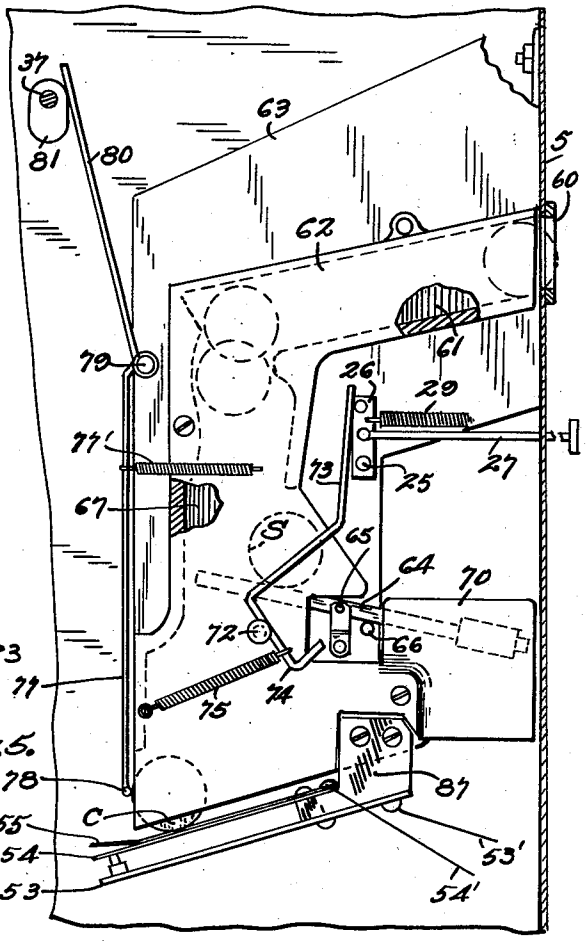


Fig. 5.

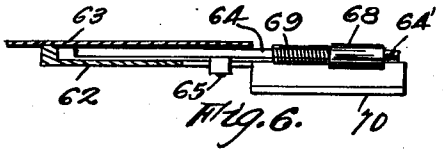


Fig. 6.

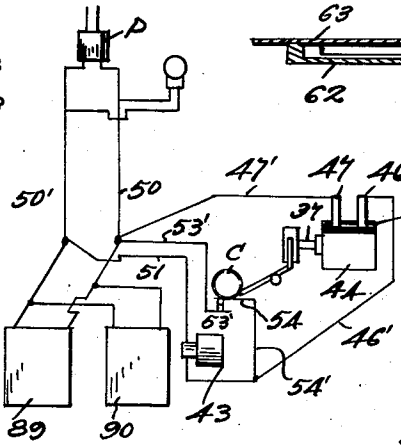


Fig. 10.

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Patented July 30, 1940

2,209,461

UNITED STATES PATENT OFFICE

2,209,461

VENDING MACHINE

Victor V. Kunkel, Los Angeles, Calif.

Application August 18, 1937, Serial No. 159,629

3 Claims. (Cl. 194—97)

This invention is a coin or token controlled vending machine particularly of the type for dispensing measured quantities of goods from loose bulk.

It is an object to provide a simple, substantial, practical, reliable and low-cost vending machine of this type.

An object is to provide a vending machine which will either deliver the goods or will automatically return the coin or token, or provide for manual motivation of return mechanism.

An object is to provide a unitary, manual device which acts to discharge the measured goods or to return the inserted coin, token or slug for one reason or another.

A purpose is to provide an electrically motivated measuring device and provide for initiation of motor action by virtue of means adapted to be operated by a suitable coin or token as a means to close a circuit breaker and provide for automatic interruption of the motor circuit following a predetermined cycle of measuring action, and to provide for the automatic clearance of the effective coin during such action so that the circuit breaker will be open before another circuit for the motor is automatically broken.

An additional object is to provide a protective device whereby to automatically, carefully select defective or undesired coins, tokens and slugs from those having a predetermined weight and which will be permitted to pass on to the circuit breaker for effecting its closure, and to provide for the automatic or the manual-effort return of the ineffective coins, tokens or slugs.

The invention consists in certain advancements in this art as set forth in the ensuing disclosure and having, with the above, additional objects and advantages as hereinafter developed, and whose construction, combination and details of means, and the manner of operation will be made manifest in the description of the annexed illustrative embodiment; it being understood that modifications, variations and adaptations may be resorted to within the scope, principle and spirit of the invention as it is more directly claimed hereinbelow.

Figure 1 is a vertical section from front to rear of the casing showing one side of the hopper in elevation and partly broken away.

Figure 2 is a horizontal section on line 2—2 of Fig. 1, showing a detail of corner construction for concealing electric wires.

Figure 3 is a horizontal section about on line 3—3, of Fig. 4.

Figure 4 is a horizontal section on a plane to show the discharge chute in plan.

Figure 5 is a side elevation of the coin-race, and control, and circuit breaker assembly; the circuit being shown closed by a coin.

Figure 6 is a sectional plan of the coin selective or control device.

Figure 7 is an end elevation of the measuring device in situ.

Figure 8 is a perspective of a cover part for closing of a compartment of the measuring device to regulate its goods discharging volume.

Figure 9 is a vertical section of a bag holder which is combined with the machine case for free issue of paper bags to customers.

Figure 10 is a diagram of electric wiring system of the machine.

The machine preferably includes a rectangular, foot frame 2 of suitable size and structure, on the bed of which is secured a waste receptacle 3 having a table top 4 which forms the bottom of a complementary, rectangular, upper case 5 provided with a hopper shelf 6.

Above the level of the hopper the case 5 is provided with a front window 7 and a forwardly facing, back mirror 8, and opposite sides of the case have windows, of which one is shown at 9. Thus bulk goods, as popped-corn on the hopper is attractively displayed in the case.

The case is charged with the desired goods after a top cover 10, hinged at 11, is raised. The top has a suitable lock 12 with a hook 13 to engage a keeper or pin 14 fixed on the rim of the case.

An electric lamp 15 is mounted in the rim of the case and has circuit wires 16 extending down a vertical corner, and concealed by a vertical mold strip 17.

A rear door 18 is hinged at 19 to the lower end of the case 5 and is lockable at the top end by a suitable lock 20.

The case 5 is removable as a unit from the table top 4 after unfastening its holding screws or bolts 21, thus permitting the case to be placed on any suitable counter or other support at a sales location.

The front of the casing 5 is provided with a suitable mouth tube 22 from which extends inwardly and upwardly a chute 23 between the side walls of which is a transverse discharge gate 24 fixed on a rock-shaft 25 mounted in the side walls of the chute; the shaft having a rigid, vertical arm 26 to which is pivoted the inner end of a push rod 27 having a button 28 on its end outside of the case 5. When the button is

pushed inward against tension of a rod spring 29, any goods held by the gate in the chute 23 will be released by the opened gate to gravitate to and discharge at the mouth 22.

Any waste from the mouth will fall to a catch trough 30 and pass into the waste box 3, to be later removed through a door 31 thereof.

From the hopper bottom extend vertical, guide walls 33, about a measuring wheel 38, forming a throat opening directly onto the chute 23 which leads from said guide wall 33, Fig. 1. A jam-breaking leaf 34 is hinged at 35 to the near portion of the hopper 6 adjacent to the side of the throat closed by the gate 24; the leaf being yieldably supported by a spring 36.

Extending transversely in the chamber 33 is a shaft 37 on which is fixed a multi-compartment paddle wheel 38; the shaft being journaled in bearing horns 39 of a mounting frame 40 whose ends are secured to base brackets 41—42, Fig. 4. One end of the shaft 37 connects with and is driven by a suitable, reduction-geared motor 43 fixed on frame 40, and the opposite end of the shaft is provided with a cylindrical, rotary circuit breaker. This breaker includes a conducting segment 44 and an interposed, narrow, interrupting insulation segment 45, Fig. 10.

Contact brushes 46—47 constantly bear on the rotary breaker and are connected to circuit wires 46' and 47'; the former leading to the motor 43 and the latter tapping into a feeder line 50. From the other side of the motor a wire 51 taps into feeder 50'. Normally the insulator segment stands idle under the brushes 46—47 and the motor is dead but if the motor is otherwise energized the conductor segment 44 turns into contact with the brushes and the motor circuit 46'—47' is closed and sustained until the insulation 45 is interposed at the brushes by rotation of the shaft 37.

For the purpose of closing the motor circuit around the dead contact brushes 46—47 means are provided here whose operation is contingent upon the insertion of a suitable, effective coin or token C, hereinafter called the "piece." When such a piece is deposited in the machine and is, by it, passed on to a normally open circuit breaker this will be operated to close a motor circuit, Fig. 10, which includes a rigid contact bar 53 having a wire 53' to the feeder 50, and a flexible contact finger 54 having a wire 54' tapping circuit wire 46'.

Fig. 5 shows a controlling piece C as resting on an insulative strip 55 disposed above the spring contact finger 54 and the weight of the piece acting to depress the finger into electrical contact with the stationary bar 53. Therefore, the motor circuit is completed at 53—54 and the active motor causes segment 44, Fig. 10, to engage contact arms 46—47 and complete circuit in wires 46'—47'.

The controlling piece C is introduced at coin slot 60, Fig. 5, and rolls down channel 61 in a track plate 62 secured to a bracket plate 63 which is bolted to the front wall of case 5. Means are provided for selective function to eject an underweight piece, to balance it, or to pass a correct piece to the motor starting circuit contacts 53—54. This means includes a balance beam 64 having an intermediate pivot 65 and normally resting on a stop 66. One end of the beam 64 swings vertically in a vertical drop path 67, in the track plate 62, to intercept a deposited piece C. In order to carefully weigh each piece C the beam has a threaded portion 64' and a counterpoise 68 is adjustable thereon against the resistance of a helical spring 69 on the beam and which spring has the function of reliably retaining the poise 68 at any given position at which to determine whether a control piece should be rejected as too light or be passed as of the correct weight or over it.

It will be seen that if the arbitrary coin is a 5-cent piece the balance beam 64 can be set so as to pass all such pieces if of near mint weight, but if below the weight necessary to tilt the inner end of the beam down to clearing position in path 67 then the coin or other piece will be lifted by the heavier poise 68 of the beam and this will assume its normal, inclined rest position, Fig. 5, and cause the underweight piece (or slug S) to roll down into a trap formed by a frame lip 70 and a basin 71, Fig. 3; the latter in the front wall of the case 5 to present the ejected piece to the customer. This return of the piece is entirely automatic.

Should the piece C be counterbalanced by the beam 64 and neither ejected nor passed to the contacts 53—54 it will be returned to the customer by means of a device operated by the manual push rod 27. This device includes a crank lever pivoted at 72 on the frame 62 and including an upwardly extending arm 73 engaging arm 26, and a downwardly extending arm 74 arranged below and engageable with the inner end of the beam 64. A spring 75 presses the crank arm 73 against its actuating arm 26.

It will be seen that the push bar or rod 27 will swing open the gate 24 to discharge the measured corn in the chute, and at the same time it will also tilt up the beam 64 so that a balanced piece C (as slug S) will be rolled down and out to the basin 71.

If a proper piece is passed to the contacts 53—54 the motor is energized and the wheel 38 is rotated clockwise, Fig. 7, so that its top, open compartments are filled with popped-corn from the loaded hopper 6. One or more of the wheel compartments may be closed by a slip-on cover panel 38' so as to determine the discharge volume.

Prior to the stopping of the motor by the circuit breaker segment 45, the effective piece, Fig. 5, closing the contact 54 onto contact 53 is automatically released by a trip lever 77 having a stop foot 78 interposed at the foot of the channel frame 63 to arrest the effective piece at the contact 54. This lever 77 has a pivot 79 and an arm 80 engaging a cam 81 fixed on shaft 37 and which, in its rotation, will rock the lever 77, against tension of its spring 77', to clear the arrested piece C thus permitting contact 54 to self-open and break circuit at 53. However, at this time the motor is on the circuit closed by rotary contact 44.

The wheel 38 turns forward at the top toward the gate 24 and away from the back wall of chamber 33, and the leaf 34 will yield downwardly if any corn is jammed during wheel cycle.

The front wall of the case 5 has, near its base, an opening 83, Fig. 9, and back of this is a bag box 84 for a bank of vertically disposed bags B which are pressed forward by a presser plate 85 under effort of springs 86 in the box. The bags may be individually drawn from the front opening 83 by a customer.

The contacts 53—54 are fixed on an insulating block 87 attached to the coin channel, track frame 63.

The circuit wires 16 for the lamp 15 tap into the main feeders 50—50'.

Electric heaters 89—90 are wired to the feeders 50—50' and are attached to the lower faces of the bottom of the hopper 6 for heating the load of popped-corn.

The feeders 50—50' are secured in a common electric plug P and the machine can thus be readily arranged in any given sales location having electric current service.

Removably disposed below the piece-releasing foot 78 of lever 77 there is a money tray 91 having a central bottom hole 92 to receive a centering post 93, and pieces which have passed the coin seletcing means are collected as they fall from the release 78.

A counting instrument 95 has a lever 96 engaging and operative by the cam 81 on the shaft 37.

What is claimed is:

1. A coin-controlled vending machine having a discharge chute, a gate for said chute, means for intercepting improper coins, and manually operative means for operating the gate and at the same time actuating said intercepting means to effect return ejection of intercepted coins held thereby.

2. A machine as set forth in claim 1, and said intercepting means including a weighing beam engageable by a part of the gate operating means.

3. A machine as set forth in claim 1, and said intercepting means including a weighing beam, and the manual means including a push rod operatively connected to the gate, and a crank lever operative by the push rod and having a part engageable with and providing for normal tilt of the beam without interference.

VICTOR V. KUNKEL.