July 20, 1954 A. OBODZINSKI 2,684,143

VENDING MACHINE COIN MECHANISM

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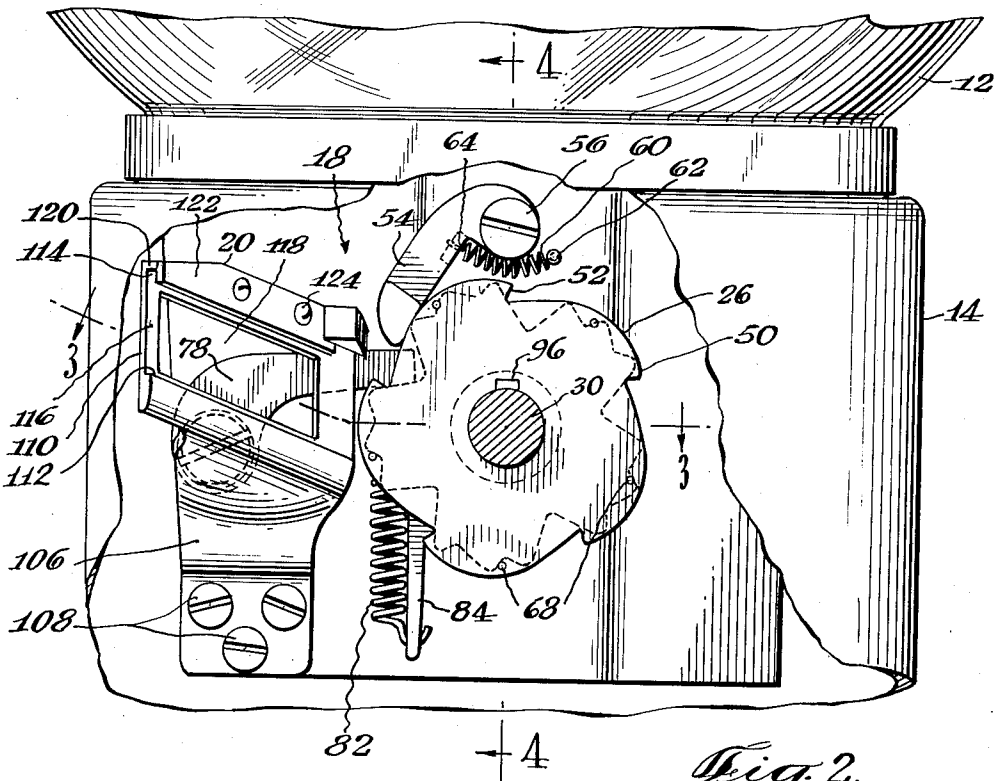



Fig. 2.

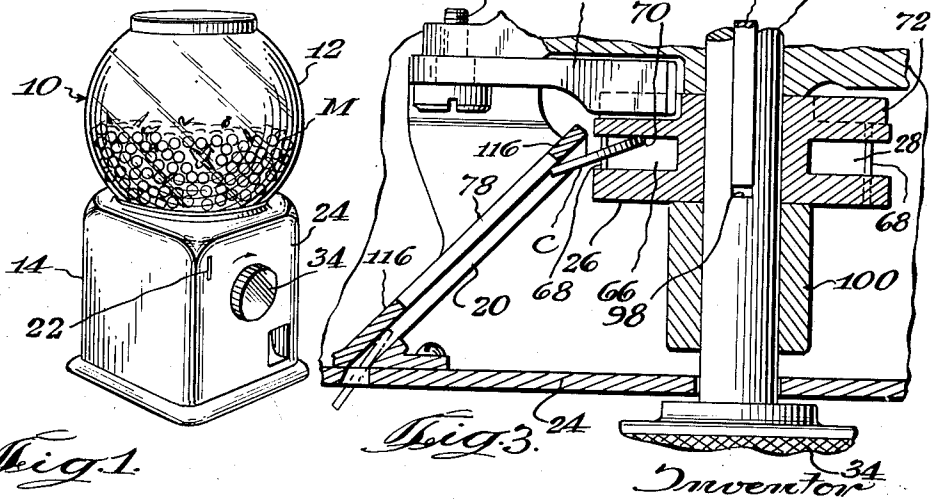



Fig. 1.

Fig. 3.

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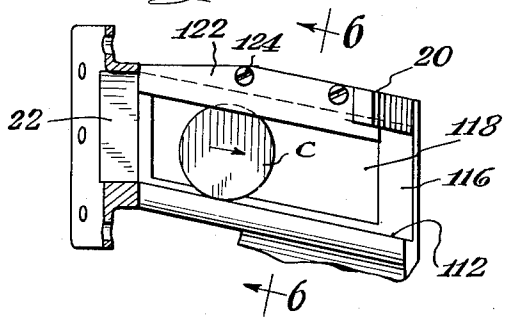
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Fig. 5.



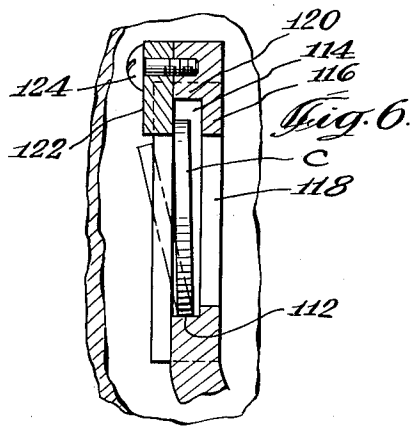




Fig. 6.

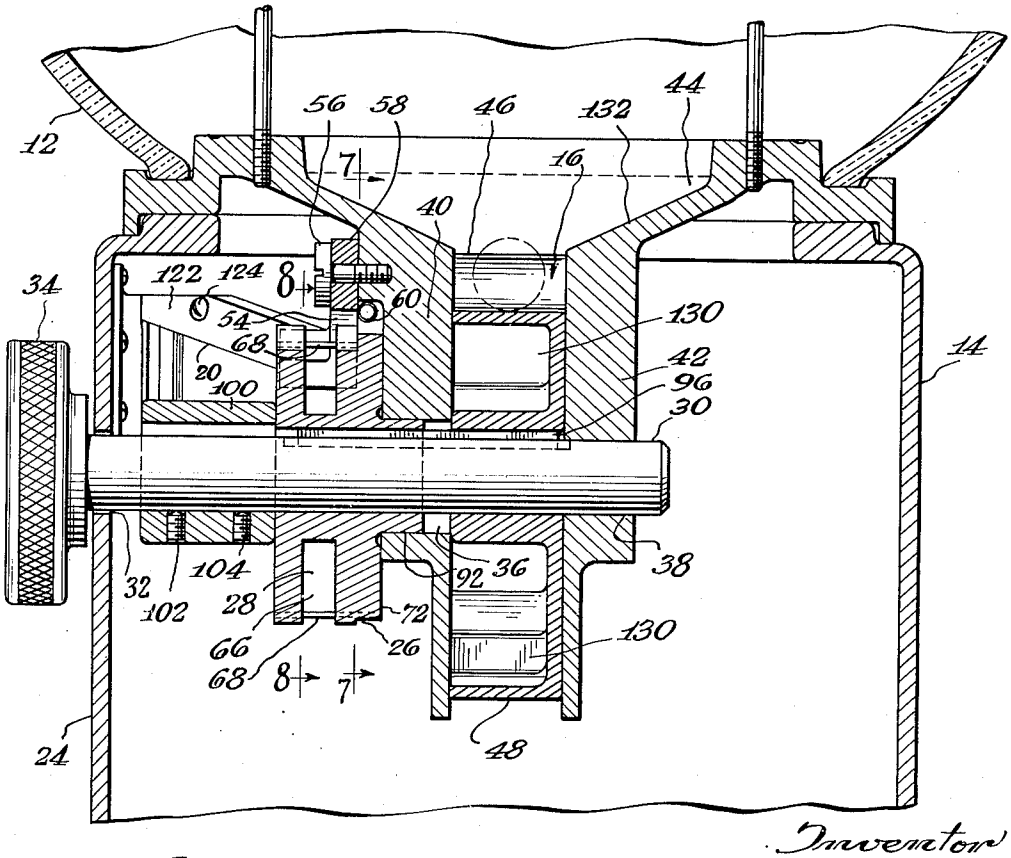



Fig. 4.

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3 Sheets-Sheet 3

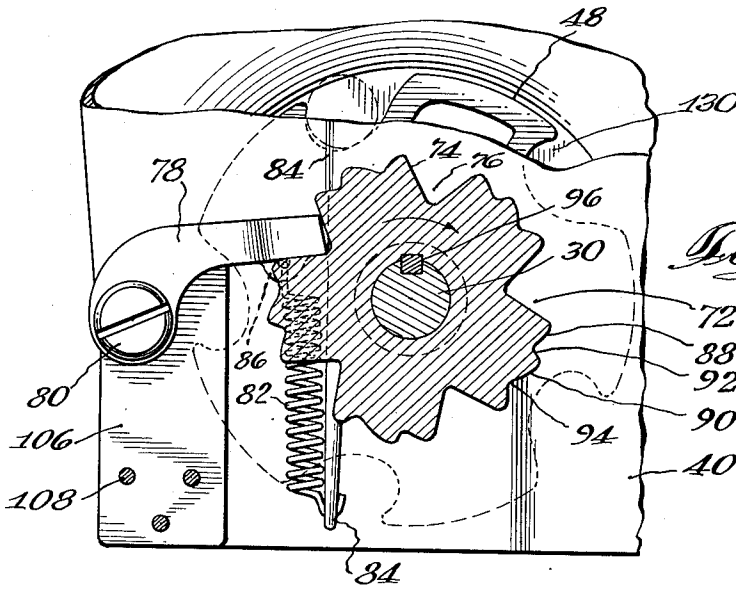



Fig. 7.

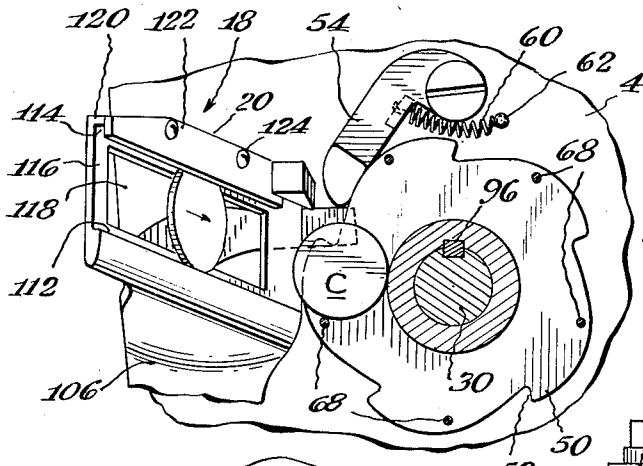



Fig. 8.

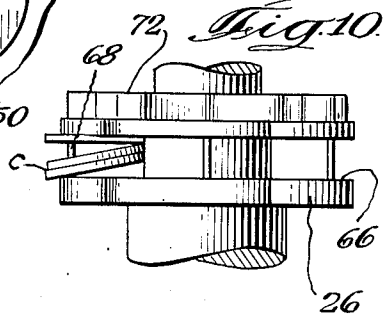



Fig. 10.

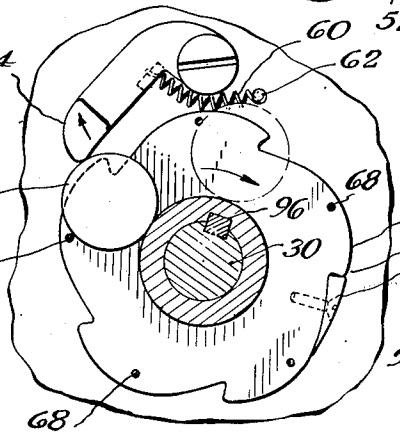



Fig. 9.

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# UNITED STATES PATENT OFFICE

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## VENDING MACHINE COIN MECHANISM

Anton Obodzinski, Chicago, Ill.

Application December 28, 1949, Serial No. 135,354

1 Claim. (Cl. 194—63)

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This invention relates to coin mechanisms, and more particularly to improvements in coin mechanisms particularly of the type adapted to be used in merchandise vending machines including those of which an embodiment is disclosed in my co-pending application, Serial No. 98,109, filed June 9, 1949 now Patent No. 2,614,673, issued October 21, 1952.

The use of coin mechanisms in merchandise vending machines is old in the art. Heretofore numerous types of mechanisms have been developed and used to control the dispensing of merchandise from such machines. Some of these mechanisms have proved to be quite effective in controlling the dispensing of the merchandise. However, all of these mechanisms have been characterized by at least one particular undesirable characteristic which has resulted in considerable public criticism of coin controlled merchandise vending machines in general. This objectionable fault essentially resided in the inability to prevent the jamming or sticking of the machine. This failure often resulted either in excessive merchandise dispensing or entirely prevented the dispensing of the merchandise.

The blocking of the machine was accomplished either intentionally or accidentally. Often times pranksters blocked the machine while it was in a dispensing position, and thus obtained free merchandise. Occasionally more than one coin was inserted unintentionally so that again the machine was blocked and no merchandise was dispensed in exchange for the coin. Papers, matches and other extraneous materials were sometimes inserted in the machine. This not only affected the proper operation of the coin mechanism, but often caused serious injury to the machine.

It is, therefore, a primary object of this invention to provide a coin mechanism which may be used in a merchandise vending machine and which will overcome all of the disadvantages set forth above.

Another object is to afford a coin mechanism which cannot be made inoperative by the introduction of dirt and small debris to the coin mechanism.

A further object is to eliminate illegitimate dispensing occasioned by permitting excessive shaft "play" in the mechanism.

And another object is to provide a vending machine coin mechanism which will prevent unjustified merchandise dispensing such as heretofore has sometimes been accomplished by tipping the machine

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And a further object is to afford a vending machine coin mechanism, the actuation of which requires considerably less work than in the machines heretofore used. An object relating thereto is to so construct the mechanism that rotation of the actuating knob through an arc of only slightly more than seventy degrees will dispense the merchandise. Hence, use of the machine is thereby extended to children of younger age groups than heretofore was possible.

Still another object is to provide a coin mechanism which will accommodate coins of varying sizes, and in fact will accommodate these coins without causing the machine to be wedged or otherwise made inoperative.

Still a further object is to afford a coin mechanism for controlling merchandise vending machines which may be readily adapted to give premium or free merchandise portions periodically in relation to the number of paid times that the vending machine is actuated.

Yet another object is to so construct the coin mechanism that illegitimate actuation of the dispensing mechanism cannot be accomplished by juggling the actuating knob. An object relating thereto is to provide novel, ratchet and pawl means which entirely eliminates intermediate "play" during the actuation of the mechanism.

And yet a further object is to provide a merchandise vending machine coin mechanism of simple, inexpensive construction, but yet most effective in controlling the dispensing of the merchandise.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel features of construction, arrangement and a combination of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that various changes in the form, proportion, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

For the purpose of facilitating an understanding of my invention, I have illustrated in the accompanying drawings a preferred embodiment thereof, from an inspection of which, when considered in connection with the following description, my invention, its mode of construction, assembly and operation, and many of its advantages should be readily understood and appreciated.

Referring to the drawings in which the same

characters of reference are employed to indicate corresponding or similar parts throughout the several figures of the drawings:

Fig. 1 is a perspective view of a coin controlled merchandise vending machine embodying the principles of the present invention;

Fig. 2 is an enlarged fragmentary front elevational view with a portion of the pedestal wall broken away to show the mechanism;

Fig. 3 is a fragmentary sectional view taken on the plane of line 3—3 in Fig. 2, and viewed in the direction indicated;

Fig. 4 is an enlarged sectional view taken on the plane of line 4—4 in Fig. 2, and viewed in the direction indicated;

Fig. 5 is an elevational view of the novel coin chute viewed on an oblique angle to better illustrate the details of construction;

Fig. 6 is a fragmentary detail sectional view of the coin chute taken on the plane of line 6—6 in Fig. 5, and viewed in the direction indicated;

Fig. 7 is a fragmentary detail sectional view taken on the plane of line 7—7 in Fig. 4, and viewed in the direction indicated;

Fig. 8 is a fragmentary detail sectional view taken on the plane of line 8—8 in Fig. 4, and viewed in the direction indicated;

Fig. 9 is a fragmentary detail sectional view similar to that of Fig. 8, but showing the coin mechanism in partially actuated position; and

Fig. 10 is a fragmentary top plan view of the coin ratchet wheel showing the details of construction thereof.

Referring now to the drawings, reference numeral 10 indicates generally a coin controlled merchandise vending machine comprising a merchandise storage member 12, here shown in the form of a transparent glass globe, mounted on a pedestal 14 in which may be positioned a dispensing mechanism such as is generally indicated by the reference numeral 16. This dispensing mechanism 16, which may be of the type disclosed in my above mentioned co-pending patent application, is controlled by my novel coin-mechanism indicated generally by the reference numeral 18 for dispensing the merchandise M.

The coin mechanism 18 comprises essentially a coin chute 20 communicating at its outer end with a coin slot 22 formed in a wall 24 of the pedestal 14. The other end is positioned adjacent to a novel coin-carrying ratchet wheel 26 which will subsequently be described in detail. Hence, a coin C may fall by gravity from the chute 20 into a coin slot 28 formed in the wheel 26.

The wheel 26 is mounted on a shaft 30, the outer end of which is journaled through an opening 32 formed in the front wall 24 of the pedestal 14. To the outer end of the shaft an actuating knob 34 may be affixed. The inner end of the shaft 30 is journaled through a pair of aligned openings 36 and 38 formed in parallel depending walls 40 and 42 which are integrally formed with a pedestal top closure member 44. Walls 40 and 42 are spaced one from the other to provide a central opening 46 in which may be mounted a measuring and dispensing wheel 48. The construction and operation of this wheel 48 as well as the construction and operation of the above described supporting structure is fully described in my above mentioned co-pending application. However, it should be understood that any suitable measuring and dispensing mechanism may be used in connection with the coin mechanism which comprises the subject matter of this application.



From the description as heretofore set forth and as will subsequently be made more detailed, it should be evident that the dispensing wheel 48 may be actuated by rotation of the shaft 30 which in turn is accomplished through the actuating knob 34. Hence, by controlling the rotation of the shaft 30 the dispensing of the merchandise may be likewise controlled. This is accomplished by way of the wheel 26 together with certain cooperating pawls and mechanisms which will now be described in some detail.

The wheel 26 is formed with a plurality of teeth such as 50, each of which has a pawl engaging abutment face 52 at one end. This face 52 is adapted to be engaged by a pawl 54 pivotally positioned above the ratchet wheel itself. This pawl 54 may be affixed to the wall 40 by means of a pivot bolt 56 threaded into a boss 58 which may be integrally formed with the depending wall 40. A coil spring 60, one end 62 of which is affixed to the wall 40 and the other end 64 of which is affixed to the pawl 54, urges the pawl into position for engagement with the teeth of the wheel 26. Thus, to permit rotation of the wheel 26 the pawl must first be lifted from engagement with the teeth 50 of the wheel 26. This is accomplished by so constructing the wheel that the coins are carried thereby and each protrudes sufficiently beyond the outer arcuated face of a companion tooth such a distance that it will lift the pawl sufficiently to allow the pawl to clear the tooth 50.

The above mentioned construction is embodied in a slot 66 which is formed circumferentially in the body of the wheel 26 in a plane parallel to the plane of the wheel 26. This slot is designed to accommodate therein the coin C, and is positioned to receive the coin from the chute 20 as illustrated in Fig. 3 of the drawings.

A plurality of pins such as 68 are positioned in spaced relationship to each other across the slot 66 and permanently affixed near the outer peripheral edge of the wheel 26 to serve as backstops to the coin C. Hence, when the wheel is rotated in a forward direction rearward movement of the coin C is limited by the pin engaged thereby. In operation, when a coin is inserted through slot 22 into the chute 20 it slides by gravity along the chute until its forward edge engages the rear wall 70 of the slot 26, as clearly shown in Fig. 3. This cants the coin sufficiently to permit its entering the slot 66. Then, when the shaft 30 is rotated together with the wheel in the forward direction indicated by the arrow in Fig. 9 of the drawings, the rear edge portion of the coin C bears against the pin 68 and the coin is thereby moved forwardly with the wheel. The protruding edge portion of the coin then engages the pawl 54 causing this to ride up on the coin, thus raising it from engagement with the abutment face 52 of the tooth until the coin has passed under the pawl. The tension of the spring 60 then draws the pawl back to its natural position so that it engages the abutment face of the next tooth of the ratchet wheel, thereby locking the mechanism until another coin is inserted.

The above described mechanism, of course, controls rotation of the shaft 30 and the dispensing wheel 48 only in one direction (clockwise). To prevent rotation in the opposite direction, as indicated by the arrow in Fig. 7 of the drawings, a second pawl and ratchet assembly is provided as shown in Fig. 7 of the drawings. This mechanism comprises a second ratchet 72 which may be integrally formed or affixed to the rear face of the first ratchet wheel 26. This ratchet is

provided with a plurality of teeth such as 74 which provide pawl engaging recesses such as 76. A second pawl 78 is pivotally mounted on the wall 40 by means of a pivot bolt 80. A coiled spring 82, affixed at its lower end to a lug 84 formed in the wall 40 and at its other end to a lug 86 formed in the pawl 78, constantly urges the pawl downwardly. Hence, rotation of the shaft 30 in the clockwise direction is accomplished against the work of the spring 82, but rotation in the opposite direction is prevented by the pawl 78 and ratchet 72 engagement as well as the upper end of the lug 84 which limits the downward movement of the pawl 78.

To prevent "play" or intermediate "rocking" of the dispenser during the "paid" rotation of the shaft 30, intermediate teeth such as 88 and 90 are provided in the outer circumferential end of each tooth 74. Intermediate pawl engaging recesses such as 92 and 94 are thereby provided which materially limit the intermediate movement of the shaft 30 and dispensing wheel 48 during the "paid" interval of rotation. Thus, illegitimate dispensing resulting from excessive shaft "play" is thereby prevented.

The ratchet wheel 26 may be formed with a boss 92' of a diameter adapting it to be rotatably mounted within the opening 36, and the entire wheel may be non-rotatably, but removably, affixed to the shaft 30 by means of a key 96 inserted in a key-way 98 formed in the shaft 30 and wheel 26. A spacer sleeve 100 which may be mounted on and removably affixed to the shaft 30 by means of a pair of set screws 102 and 104 maintains the ratchet wheel 26 in position by preventing its forward movement on the shaft.

Turning now to a consideration of the novel coin chute 20 it will be noted that it comprises a mounting bracket 106 with its lower end affixed to the wall 40 by means of a plurality of screws such as 108. The upper end of the bracket is formed to provide a generally rectangular shaped chute 110 having a bottom shoulder 112 which constitutes a coin runway and a top guide slot 114 spaced therefrom by a single wall 116. The wall 116 has a substantial portion thereof cut away or otherwise removed to afford a rectangular shaped opening 118 therein. The top slot 114 may be formed by forming a shoulder 120, similar to the bottom shoulder 112, and affixing a side guide piece 122 to the end thereof as by bolts or rivets such as 124.

The entire chute 110 is inclined so that when a coin in inserted in the slot 22 it rolls along on the bottom runway in the direction indicated by the arrow in Fig. 8 of the drawings until it drops into the slot 66 in ratchet 26. The coin is guided only through its top portion in the guide slot 114. Thus, small coins, papers, matches and other extraneous material cannot ordinarily enter the mechanism since they would fall from the chute 20 to a cash box (not shown) below before it reaches the ratchet 26 as illustrated in Fig. 6 of the drawings.

The dispensing wheel 48 which has heretofore been disclosed in my aforementioned co-pending application, comprises essentially a wheel in which a plurality of measuring and dispensing, substantially cylindrically shaped slots as 130 are formed transversely in the peripheral portion of the wheel 48. It may be filled with and dispenses the merchandise contained in the storage member 12 and resting on the centrally inclined top surface 132 of the top closure member 44 in the manner described in said co-pending application.



It should be noted in Fig. 10 of the drawings that the coin slot 66 is wide enough to accommodate more than one coin so that the machine cannot be made inoperative in this manner. As a matter of fact, when the slot 66 is filled, additionally inserted coins will be retained on the chute 20 or probably fall therefrom into the cash box (not shown in the drawings). So also should be noted the advantages of using the novel pin 68 construction. This construction estops one from making the machine inoperative by filling the slot 66 with dirt or debris, since any such extraneous matter can readily by-pass the pins 68 and fall out of the wheel 26 to the cash box at the bottom.

To operate the machine a coin C is inserted in the slot 22 so that it rolls down the chute 20 until it is canted and drops into the slot 66. The knob 34 is then grasped and turned in a clockwise direction. The portion of the coin C protruding above the edge of the ratchet wheel 26 moves under the pawl 54 causing it to be raised out of engagement with tooth 50 and ride on the coin until it passes thereunder. The pawl then drops down to engage the next tooth 50. The shaft is thus rotated together with the dispensing wheel 48 so that a measured amount of merchandise is dispensed.

The number of ratchet teeth 50 may be the same as the number of measuring slots 130 so that each coin-actuation dispenses a measured amount of merchandise. However, if desired, periodic "free" merchandise may be dispensed by merely affixing a plug such as 134 on the wheel 26 as shown in Fig. 9 to eliminate one of the teeth 50 thereby. This permits two, instead of one, measuring slots 130 to be dispensed when the plug 134 is under the pawl 54, as the pawl will not engage the wheel until the next (unfilled) tooth is moved thereunder.

It is believed that my invention, its mode of construction and assembly, and many of its advantages should be readily understood from the foregoing without further description, and it should also be manifest that while a preferred embodiment of the invention has been shown and described for illustrative purposes, the structural details are nevertheless capable of wide variation within the purview of my invention as defined in the appended claim.

What I claim and desire to secure by Letters Patent of the United States is:

In a coin controlled apparatus, a structure including a vertical wall having a transverse opening, a shaft rotatably mounted in said opening and extending beyond the wall, a coin carrying wheel mounted on the outwardly projecting portion of said shaft and keyed thereto, said wheel formed midway of its peripheral surface with a groove extending entirely about its circumference and defining inner and outer flanges spaced transversely from each other and connected by a hub portion of the wheel, said flanges being formed with oppositely disposed circumferentially extending recesses defining teeth, each tooth having an arcuate outer marginal edge terminating at the outer end of an abrupt end face extending substantially radially of the wheel and at its inner end intersected by the rear end of the arcuate side edge of an adjoining tooth, coin-engaging pins carried by said flanges and extending across said groove between opposed companion teeth intermediate the length of the ar-

cuate side edge faces of said companion teeth, the distance between each pin and the front ends of the teeth between which the pins extend being less than the diameter of a coin intended to be carried by said wheel and the depth of the groove being less than the diameter of the coin, whereby the coin has a marginal portion protruding from said teeth, a chute for delivering coins into the groove of said wheel, a pivoted pawl mounted against said wall and urged towards the peripheral edge of the wheel and formed at its free end with a transversely extending bill resting against the arcuate side edges of the teeth and for a portion of its length extending across the slot of the wheel in position for riding along the protruding portions of the coin and over the front ends of the teeth to permit limited turning of the wheel and the shaft, a ratchet wheel formed integrally with the inner face of the coin carrying wheel and being of less diameter than said coin carrying wheel and disposed against the adjacent face of said vertical wall, an integral circular boss projecting from the outer face of the ratchet wheel surrounding said shaft and extending into the opening in the vertical wall, said ratchet wheel having spaced relatively deep teeth formed in the periphery



thereof, and additional teeth of less depth formed in the periphery of said ratchet wheel and arranged between the aforesaid spaced deep teeth, and a pawl pivoted against said vertical wall and coacting with the teeth on the ratchet wheel to prevent intermediate rotation of the shaft during the time that the first mentioned pawl is lifted out of engagement with the teeth on the coin carrying wheel.

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