Fig. 11

Fig. 12

Fig. 13

Inventor

Richard E. Horton

Wheeler, Wheeler & Wheeler

Attorneys
This invention relates to improvements in coin controlled dispensing machines.

This application is a division of copending application Serial No. 290,617, filed February 6, 1951, and now abandoned.

The primary object of the invention is to provide a coin controlled dispensing machine which may be made in large quantities by modern mass production methods at relatively low cost per unit, and which will, at the same time, constitute an improvement over prior art devices adapted for the same purpose. In this connection it is an object of the invention to provide a coin operated dispensing machine having a package dispensing cycle responsive to the insertion of a coin of proper denomination, but which will refuse admittance to or reject all coins other than the selected denomination.

A specific object of the invention is to provide a coin operated dispenser in which the coin control mechanism comprises a compact integral unit wholly removable from the dispenser cabinet with which it is associated and which may be fabricated and assembled separately from the cabinet for later incorporation therewith. The coin control mechanism includes a latching mechanism interengageable with the dispensing parts of the cabinet and which prevent the dispensing of an article from the cabinet except when the latch is mechanically displaced from locking position by the active interaction therewith of a properly dimensioned coin. In this connection the invention is characterized by the interplay between the cabinet dispensing parts and the coin control mechanism wherein the dispensing cycle and the coin control mechanism is normally actuated by a plunger connected to an article ejector and also to the coin mechanism through a single connection between the ejector and the coin control mechanism.

Another specific object of the invention is to provide a coin control mechanism having a coin carrier movable between coin accepting and coin depositing positions, and a stop latch mechanism which blocks the carrier from moving through such positions unless displaced laterally by the action of a coin of proper size. The latching mechanism also acts as an undersize coin rejector by serving as a coin size gauging member to interrupt travel of proper size coins and permit travel of undersized coins to a coin reject slot. The proper size coins are halted in position where they are effective to cam the latch away from carrier blocking position upon proper manipulation of the ejector plunger.

A further specific object of the invention is to provide a novel coin track which includes a pivotal portion. The pivotal portion acts, in one position of pivotal movement, as a coin intercepter to intercept a coin of proper dimension after it has cammed the stop latch away from coin carrier blocking movement and to direct the intercepted coin to a coin collecting receptacle. The intercepter also acts, in another position of pivotal movement, as a track upon which undersize coins travel to a coin return slot. Another object of the invention is to provide a spur-
As best shown in Fig. 1, the dispenser comprises a cabinet indicated generally as 16 and a wholly removable coin control mechanism indicated generally as 17. The coin control mechanism is operatively disposed within the cabinet, to be concealed by the housing 18, and in cyclic engagement with the package ejecting mechanism of the cabinet as in Fig. 3.

Within the removable housing 18 the dispenser cabinet comprises a storage compartment or hopper 19 which is bounded by vertical guide channels 20 and a back wall 21, the guide channels 20 comprising inwardly facing angle flanges between which a stack of packaged articles 22 are confined and guided to be gravity fed toward the dispenser floor 23. The packages 22 are rectangular in plan, and may contain any goods desired to be dispensed. The storage compartment of the device disclosed is designed to accommodate packaged folded sanitary napkins, although the adaptability of the machine to dispense a variety of uniformly packaged articles is apparent. Cover 18 is provided with a top locking mechanism 24 which protects the stored articles against theft and secures the cover in place.

The dispenser cabinet 16 further comprises a front panel 27 and a door 30 hinged to swing downwardly, the cover 18 being cut out at 26 to fit about these elements. An operating rod or plunger 28 carrying a terminal 29 extends through a forwardly extending slot 33 in the wall lever arm 33, which is slotted along a medial line. Arm 33 is of such configuration that the slot comprises an intermediate arcuate portion 34, a rectilinear portion 35 at one end of the arm, and a rectilinear portion 36 at the other end of the arm.

Door 30 is caused to pivot upon its pintles 31, from the position shown in Fig. 7 to that shown in Figs. 15 and 4 by manipulation of the plunger 28. The plunger is connected to a sliding plate 39, which carries a transverse pin 40 engaged with the respective communicating slots 33, and which act as a cam against the sides of said slots. The slot sides respond as cam followers to tilt the door 30 in accordance with the movement of plate 39, cam 40, and plunger 28. Sliding plate 39 is connected by means of its supporting screws 41 through a side panel slot 42 to the fitting 43 connected with the plunger 28 (Figs. 3, 4, and 7). It is to be noted that by reason of the engagement of cam 40 with the rectilinear portion 36 of the arm slot in the rearmost position of the ejector, there is lost motion between the early stages of plunger withdrawal movement and door tilting. The door will not start to tilt toward open position until cam 40 reaches the arcuate portion 34 of the arm slot. After the door has been tilted to fully open position there is again lost motion when the cam 40 reaches the rectilinear portion 35 of the arm slot (see Fig. 15). Accordingly, continued withdrawal of the plunger thereafter will not affect door position.

By reason of the novel configuration of arm 33 and its medial slots, the interconnection of the plunger 28 with the door 30 through the lever arm 33 does not restrict the movement of the plunger at either end of ejector stroke, the plunger and door being positively interlocked only when the cam 40 is engaged with and movable in the arm slot portion 34. For this purpose the arm 33 is shaped so that rectilinear slot 36 is aligned with cam 40 in one extreme position of the door, and rectilinear slot portion 35 is aligned with the cam 40 in the other extreme position of the door, at which time the arm reaches the tilted position shown in Fig. 15. By reason of the aforesaid construction, door 30 is opened independently of any pressure thereon by the article being dispensed, and the door is held positively in open or closed position depending upon the position of the plunger.

An ejection or pusher plate 45 is also connected to the plunger 28 through the motion transmitting connection 43, and through slotted apertures 44 in the floor 23 (Fig. 3) by means of the bolts 47 (Fig. 9). The pusher plate 45 has a vertical package contact or ejecting vertical guide channels 20 and a back wall 21, the guide channels 20 comprising inwardly facing angle flanges between which a stack of packages 22 are confined and guided to be gravity fed toward the dispenser floor 23. The packages 22 are rectangular in plan, and may contain any goods desired to be dispensed. The storage compartment of the device disclosed is designed to accommodate packaged folded sanitary napkins, although the adaptability of the machine to dispense a variety of uniformly packaged articles is apparent. Cover 18 is provided with a top locking mechanism 24 which protects the stored articles against theft and secures the cover in place.

The cabinet 16 is further provided with a set of depending resilient spring fingers 50, mounted on a panel 45 set back from the door 30 and spot welded or otherwise secured to the frontal surfaces of channel 20. The fingers 50 serve to guide the packages in the course of their ejection from the panel 27 for manipulation to extract a package from the dispenser.

As best shown in Figs. 7, 15, and 16, the package in the cabinet is elevated somewhat upon the inclined stock lifting surface 46 of the pusher, which acts as a cam to lift said storage packages. Upon removal of the ejected package the spring fingers 50 will return under self-bias to a position barring access to the storage compartment. At the same time the stored packages 22 will be elevated to a somewhat remote position respecting the door opening. Accordingly, it will be difficult for one to reach in the storage chamber to illegally remove a package. It is to be noted that the inclined stock lifting surface 46 of the ejection lever 50 has its trailing edge 51 disposed somewhat to the rear of the pusher plate 45 so that when the plunger is at the extreme forward end of its stroke, the stored packages are supported somewhat near their center line. In this manner the packages are restrained from falling behind the pusher plate after the forward stroke of the plunger.

Ordinarily, and unless the plunger is held in withdrawn position, immediately upon removal of the ejected package 22 the springs 49 will return the plunger and pusher 45 to rearmost position, and at the same time close the door 30. Spring 50, acting through the package to hold door 30 open, precludes return movement of the ejector until the package is removed.

The dispenser is further provided with means preventing jaming of the cycle whereby to require each cycle to be completed before the next cycle begins. The bottom edge of sliding plate 39 (see Fig. 7) is serrated or notched at 52 to comprise a ratchet. A pawl 53 is mounted on pivot pin 55 with its notch or ratchet engaging end 56 in the path of the notches 52. Spring 54 biases the pawl to upright position. The end 56 of the pawl is behind the face of the notch 52. According toly, the pawl 53 will pivot on its pin 55 to function in the well known manner to require the plate to move completely past the pawl in either direction of movement before the direction can be reversed. By reason of this pawl and ratchet the springs 49 are ineffective to return a partially ejected package once the ejection cycle is started.

From the foregoing it is evident that, but for the coin
control now to be described, all of the packages in the dispenser could be successively ejected through the door 30 by successively reciprocating the plunger 28 in an ejection cycle including withdrawal of the plunger 28 with its pusher plate 45 and package 22, the simultaneous opening of the door 30 to provide access to the package, and retraction of the plunger 28 and pusher plate 45 under the bias of springs 49 with a consequent closing of the door 30. This cycle, however, is made to operate in response to the insertion in the machine of a coin of proper dimension whereby to key the cycle to coin insertion. For this purpose, the wholly separable coin control mechanism 17 is disposed in a readily removable position within the cabinet, but interengages with the package ejecting mechanism to require each ejection cycle of the machine to function only upon use of a pre-selected coin. The coin control mechanism is shown diagrammatically in Fig. 1, and in more detail in Figs. 8 through 14.

As best shown in Fig. 1, the side wall 59 of the dispenser cabinet is apertured to a configuration including an elongated or slot shaped portion 60, and a deeper portion 61 of less length than the slot 60. The motion transmitting connection 43 of the plunger carries a sidewardly extending arm 62 (Fig. 9) having a downwardly apertured ear 63 movable with the plunger and adjacent the wall 60. The apertured ear 63 is engaged by a stud 64 on the coin control mechanism and constitutes the releasable interconnection between the coin control and ejector and serves to key the ejector cycle to coin actuation. Stud 64 is fixed to a coin carrier 65 on the coin control mechanism, the functioning of which will be hereinafter described more in detail.

The coin control mechanism 17 is fixed to the dispenser with its stud 64 engaging the apertured ear 63 of the ejector motion transmitting connection by means of engagement of the notches 66, in the main or backing plate 67 of the coin control mechanism, with the outstruck upstanding lugs 70 on the dispenser wall 59. The single connection of bolt 71 through aperture 72 in the upper portion of the dispenser side wall 59 positively couples the coin control mechanism to the cabinet. Removal of bolt 71 will permit the entire coin control mechanism to be disengaged from the side wall of the cabinet and from interconnection with the ejection apparatus. Accordingly, replacement or repair of the coin control mechanism is facilitated. Replacement might become necessary if a coin control mechanism accepting a coin of a different denomination is desired to be substituted for the one originally provided. By making the coin control separable from the cabinet, each may be serviced separately and brought together only during the final act of assembly. Accordingly, mass production techniques separately adapted to the fabrication of the two components may be utilized to the fullest extent. In particular, the coin control mechanism may be stamped and assembled independently of the cabinet.

As best shown in Figs. 8 through 14 the coin control mechanism 17 comprises a main or base plate 67 upon which all of the other elements of the separately fabricated coin control mechanism are mounted. The base plate is provided with an aperture including an elongated slot 68 and a portion 69 deeper than slot 68. These apertured portions are aligned, when the coin control is mounted on the cabinet, with the slot 60 and opening 61 of cabinet wall 59.

The coin control elements include a coin chute 76 having a coin admitting funnel shaped end 77 which aligns, when the coin control mechanism is mounted on the cabinet, with a coin slot 78 on the casing 18. The coin chute 76 is formed from a stamped plate spaced somewhat from the base plate 67, and bolted thereto by the several bolts 79. As diagrammatically illustrated in Fig. 8, a coin inserted in the machine through the coin slot 78 will travel by gravity down the chute 76 and past the coin depositing end 80 of the chute. The coin chute is provided with an offset or jog 75 for a purpose to be hereinafter pointed out.

Disposed immediately below the coin depositing end 80 of the chute is what is denominated a coin carrier 65. The coin carrier 65 is slideable between and through a coin accepting position, shown in Fig. 8, and a coin depositing position, shown in Fig. 11. The coin carrier 65 is provided with an inturnd rear edge 81, and is supported upon screw heads or rivets 82 which are engaged in a slot 83 of a stamped plate 84 mounted in spaced parallel relation to the main plate 67 by the screws 85. The spacing from the main plate of plate 84 and coin carrier 65 provides a continuation of the coin chute 76, so that the coin carrier 65 bears on its slot support 83 in a direction paralleling the path of the package ejector 45 within the cabinet.

After leaving the depositing end 80 of the coin chute 76 a coin will be supported in the coin accepting position of the carrier 65 on a floor or track 88, conveniently struck out from the base plate 67. The main plate 88 is provided by a pivotal track 89 and a track 90, track 90 being on a lower level than pivoted track 89 and terminating at a coin return slot 91 on the cabinet. All sized coins will roll through chute 76 and align tracks 88, 89 and 90 to the coin return slot 91. When the machine is set to accept a nickel, pennies and dimes 110 are undersized and will roll unobstructed to the coin return 91.

Proper sized coins, as a nickel 98, will be stopped by abutment with the latch 93 which projects into the path. Latch 93 is mounted on pivot 92 and is biased by spring 94 into contact with the top edge 96 of the carrier 65. The coin carrier 65 is further provided with a side portion notch 95. If no coin 98 of proper size is inserted in the device, the notch 95 is engaged by the latch 93 when the carrier is withdrawn slightly from the coin accepting position of Fig. 8 and to the cycle locking position shown in Fig. 12. The latch 93 thereupon prevents further movement of the coin carrier 65. As the coin carrier 65 carries stud 64 which is interconnected with the apertured ear 63 fixed to ejector 45, the latch will prevent further movement of the ejector 45. Accordingly, as long as latch 93 is free to enter notch 95 the machine is locked against package ejection.

It is to be noted that there is a short distance or lost motion through which the coin carrier 65 may move from coin accepting position to the position where the latch 93 engages the notch 95 (Fig. 12). This distance corresponds with the extent of the longitudinal rectilinear slot portion 56 of the door pivot arm 33. Accordingly, plunger 28 and ejector 45, motion is transmitted therefrom through the interengaging apertured ear 63 and stud 64 to draw the coin carrier 65 along its slotted support 83. Coin 98 will be urged against the latch 93 by pressure of the carrier back edge 81 and will act to cam the latch 93 over the notch 95, thereby preventing latch 93 from entering the notch 95 and interfering with the ejection of the package 22. The relative position of the parts after the latch has been cammed away from the notch is shown in Fig. 11 where the latch 93 rests on the upper edge 97 of the opposite side of the notch 95 from edge 96. The coin is then free to drop into the coin collecting box 99 (Fig. 9). The coin is guided toward the box 99 by a shelf or chute 100 which curves inwardly from the plate 84 and through the deep apertures 69 in the back plate 67.
During the course of coin carrier movement along its supporting slot 83 towards coin depositing position, the pivoted track portion 89 is pivoted on its supporting pintle 102 to a position where the track portion 89 is swung clear of the way for the coin 95 to fall onto the shelf 100, and also to extend into the path of the coin to intercept the coin and prevent it from proceeding onward to the coin return track portion 96. The pivoting of the intercepter 89 is accomplished by providing the intercepter with a fixed pin 103 offset from its pivot 102 and which rides in a slot 104 in the coin carrier 65. Slot 104 is elongated in the direction of ejector movement and is provided with an upturned portion 105 in which the fixed pin 103 of the intercepter 89 is positioned when the coin carrier is in coin accepting position. Upon movement of the coin carrier from coin accepting position towards the coin depositing position the pin 103 acts as a crank to pivot the intercepter on its pivot 102 to the position shown in Fig. 11, when the intercepter is fully raised and cleared of the path of the coin into the coin box. In this position the pin falls into the elongated or slot portion 104 so as to permit further withdrawal of the ejector and carrier without interference by pin 103.

As noted in Fig. 12, movement of the coin carrier from coin accepting position to the position where the latch 93 engages the notch 95 is also sufficient to raise the coin intercepter 89 to coin intercepting position. However, in this position of the coin carrier, no coins can pass the depositing end 80 of the chute 76 as the top edge or rear edge 81 of the coin carrier 65 is then disposed beneath the discharge end 80 of the coin chute. After the coin carrier 65, with its inturnd rear edge 81, has been advanced to clear the coin chute discharge end 80, a spring biased stop 108 will snap into position below the coin discharge end 80 of the chute, as shown in Figs. 10 and 13, to prevent passage of a coin past the end of the discharge chute. Accordingly, coins inserted in the device at mid-cycle will be stored in position to key the cycle when the carrier returns to coin accepting position. As best shown in Fig. 10 the stop member is provided with a beveled edge 109 which acts to cam the stop away from chute blocking position upon return of the coin carrier to coin accepting position.

In the embodiment of the invention shown in Fig. 13 a modification is shown where floor 88 is replaced by a floor 127 which is at a higher level than floor 88. By so disposing floor 127 the machine is adapted to be keyed to a dime 128, rather than a nickel. Floor 127 is in closer proximity to the latch 93 than floor 88 so that the dime 128 is halted by abutment with latch 93, and will act to cam away the latch upon movement of the coin carrier towards coin depositing position. The coin slot 78 may be made of such size as to refuse admittance to coins larger than a dime. In this manner the apparatus may be very simply converted to operation with a dime, rather than with a nickel, and without requiring extensive changes in the aforesaid mechanism.

The machine is further provided with a spurious coin rejector which deflects underweight coins, slugs, or tokens from the coin carrier and latch mechanism directly to the coin return slot 91. The rejector comprises an unbalanced lever 111 swungly mounted to the main plate 67 on pivot 112. The arm, in the position which it normally assumes by gravity, extends across the chute 76, which is jogged or offset at 75 to deflect an incoming coin against the arm 111. In normal position the weight portion 107 of the arm abuts the internal wall 106 of the plate 113 (hereinafter described) to define the position of the arm as it extends into the path of coins traveling down the chute.

The coin chute 76 is also provided with a side open-
from the dispenser for replacement or repair. The construction of the coin control mechanism is such that it may be rapidly assembled with conventional stamped parts in a rapid inexpensive mass production technique. The novel and improved details of the cabinet and coin control mechanism contribute to the improved operation of the device.

I claim:

1. In a device of the character described, an independently fabricated coin control mechanism, removably applicable to an article dispenser, comprising a main plate, an auxiliary plate mounted in spaced parallel relation upon the main plate, a coin carrier mounted between said plates so as to be slidable therebetween, a coin chute comprising an additional auxiliary plate mounted in spaced relation to the main plate and leading from a coin admitting slot to a coin delivery position, said carrier having a coin accepting position immediately below the coin delivery end of the chute, a floor below the coin carrier and upon which an accepted coin rests as laterally confined between the carrier and one of said main and auxiliary plates, one of said auxiliary and main plates being provided with an elongated slot, said carrier being provided with guide pins engaged in the slot and upon which the carrier is guided between coin accepting and coin depositing position, said carrier being provided with a notched side parallel with said plates, and a latch pivotally mounted upon the main plate and projecting into the path of the carrier notch to block movement of the carrier from coin accepting to coin depositing position, the distance between the floor aforesaid and the notch being such that a coin of predetermined size admitted into the carrier will span the carrier notch to cam the latch away from notched engagement on movement of the carrier toward coin depositing position, in further combination with a coin interceptor mounted for pivotal movement between said main and auxiliary plates and in a plane parallel thereto, said interceptor having a fixed pin, said carrier having an opening in which the pin is journaled and by means of which the interceptor is pivoted about its pivotal axis to coin intercepting position upon movement of the carrier towards coin depositing position.

2. In a device of the character described, a coin control mechanism having a coin chute with a discharge end, a coin carrier having a coin accepting position below said chute discharge end, said carrier having a coin depositing position remote from the discharge end of the chute, a latch effective upon the carrier between its coin accepting and coin depositing position to normally prevent such movement, said carrier being provided with a shoulder toward which the latch is normally biased, a track spaced below the discharge end of the chute and spaced from the latch a distance sufficient that a coin of predetermined size will rest upon the track and cam the latch away from the shoulder during the course of carrier movement from coin accepting to coin discharge position, in further combination with a coin interceptor mounted for pivotal movement in the path of a coin advanced by the carrier to coin depositing position, and motion transmitting connections between the carrier and interceptor for pivotally moving said interceptor to coin intercepting positions in the course of carrier movement to coin depositing position, said motion transmitting connections between the interceptor and carrier comprising a slot in the carrier elongated in the direction in which the carrier is movable, and a fixed pin on the interceptor offset from its pivotal axis and engaged with the slot, said slot comprising a transversely offset portion which engages the interceptor pin when the carriage is in coin accepting position.

3. A device of claim 2 wherein said mechanism further comprises a coin box and a chute communicating with the coin box, said last mentioned chute being disposed beneath the interceptor and uncovered by the interceptor during the course of its pivotal movement.

4. The device of claim 2 wherein the said coin carrier has a notched side constituting said shoulder and a top edge so spaced from the track that an undersized coin will roll beneath the latch when it rests against said edge.

References Cited in the file of this patent

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Inventor</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>394,812</td>
<td>Beetz</td>
<td>Dec. 18, 1888</td>
</tr>
<tr>
<td>1,154,711</td>
<td>Messinger</td>
<td>Sept. 28, 1915</td>
</tr>
<tr>
<td>1,217,616</td>
<td>Mann</td>
<td>Feb. 27, 1917</td>
</tr>
<tr>
<td>1,367,678</td>
<td>Abbot</td>
<td>Feb. 8, 1921</td>
</tr>
<tr>
<td>1,505,725</td>
<td>Abravivos</td>
<td>Aug. 19, 1924</td>
</tr>
<tr>
<td>1,577,302</td>
<td>Schultz</td>
<td>Mar. 16, 1926</td>
</tr>
<tr>
<td>1,704,930</td>
<td>Wagner</td>
<td>Mar. 12, 1929</td>
</tr>
<tr>
<td>1,776,625</td>
<td>Henderson</td>
<td>Sept. 23, 1930</td>
</tr>
<tr>
<td>1,919,017</td>
<td>Giles</td>
<td>July 18, 1933</td>
</tr>
<tr>
<td>2,037,462</td>
<td>Du Grenier</td>
<td>Apr. 14, 1936</td>
</tr>
<tr>
<td>2,159,603</td>
<td>Rowe</td>
<td>May 23, 1939</td>
</tr>
<tr>
<td>2,320,378</td>
<td>Neidig</td>
<td>June 1, 1943</td>
</tr>
<tr>
<td>2,364,939</td>
<td>Benjamin</td>
<td>Dec. 12, 1944</td>
</tr>
<tr>
<td>2,777,554</td>
<td>Steiner</td>
<td>Jan. 15, 1957</td>
</tr>
</tbody>
</table>