VENDING MACHINE FOR PIES AND THE LIKE

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Application November 20, 1950, Serial No. 196,696

9 Claims. (Cl. 221--82)

This invention relates to coin controlled machines for automatically and individually vending separate articles of merchandise upon deposit of a predetermined amount of money, the primary object being to improve upon the mechanism thereby for holding the spring tensioning thereof to facilitate loading of the machine and energizing the automatic operating elements thereof.

It is the most important object of the present invention to provide a vending machine of the kind having a revolving magazine rotatable mounting that not only permits winding thereof from any position of the machine at the time of tilting the same to a loading position.

Another equally important object of this invention is to provide a magazine actuating means for rotatable magazines of vending machines having parts associated therewith for automatically tensioning the spring and thereby damaging the spring.

It is another very important object of this invention to provide spring actuating means for rotatable magazines of vending machines having parts associated therewith for automatically tensioning the spring upon rotation of the magazine in a direction winding the spring so as to cause rotation of the magazine slightly more than one revolution, thereby assuring that all of the compartments of the magazine will successively move past a discharge point during each cycle of operation.

A further object of the present invention is to provide a dual magazine vending machine each having spring means as above set forth for actuating the same and each having a toothed wheel rotatable therewith provided with a double number of teeth by means of which re-movable stops are provided for holding the magazines in a tilted position; the manner of removably mounting the magazines in the casing through removal of the aforesaid stops; and many more minor details of construction, all of which will be made clear as the following specification progresses.

In the drawing:

Figure 1 is a front perspective view of a vending machine for pies and the like made pursuant to the present invention.

Figure 2 is a fragmentary, front elevational view thereof with the access door of the casing removed, parts being broken away and in section to reveal details of construction.

Figure 3 is a substantially central, vertical sectional view taken on line III--III of Fig. 2 looking in the direction of the arrows showing the aforesaid access door in elevation.

Figure 4 is an enlarged, fragmentary, detailed cross-sectional view taken on line IV--IV of Fig. 3 looking in the direction of the arrows.

Figure 5 is an enlarged, fragmentary, detailed, cross-sectional view taken on line V--V of Fig. 3.

Figure 6 is a fragmentary, cross-sectional view taken on line VI--VI of Fig. 4.

Figure 7 is a detailed, elevational view of one end of the structure illustrated in Fig. 6.

Figure 8 is a fragmentary plan view of magazine supporting means, parts being broken away to reveal details of construction.

Figure 9 is a detailed, cross-sectional view taken on line IX--IX of Fig. 3 looking in the direction of the arrows and.

Figure 10 is a detailed, cross-sectional view taken on line X--X of Fig. 3, looking in the direction of the arrows.

A hollow door 26 is hingedly secured to the flange 24 for swinging movement to and from a closed position, door 26 being adapted to house coin control structure designated by the numeral 28 in Fig. 3 and not otherwise detailed in the drawings for the same is fully disclosed in my co-pending application entitled "Coin Handling Mechanism for Vending Machines," and filed on even date herewith.

A coin-receiving slot 30 is illustrated in Fig. 1 of the drawings and the entire machine is placed in condition for operation in the usual manner by insertion of a coin or coins in the slot 30.

A slug rejector may be associated with the coin control assembly 28 and accordingly a coin-return cup 32 is also illustrated in Fig. 1 mounted on the access door 26. There is also illustrated in Fig. 1, a glass panel 34 behind which may be mounted samples 36 of the merchandise to be vended to the customer merely opening a small closure 38 in door 26 that is spring biased toward the closed position illustrated in Figs. 1 and 3. After insertion of the coin medium in slot 30, the operator or a handle 40 mounted on door 26 in either of two directions depending upon which of the articles of merchandise is desired, the mechanism operating by virtue of the coin insertion to temporarily interconnect the handle 40 with a shaft 42. Oscillation of the shaft 42 along a 180° arc controls either of a pair of escapement mechanisms as hereinafter set forth.

A pair of identical cylindrical merchandise magazines 52 and 54 mounted between the plates 46, are provided...
with a common stationary shaft 56 for rotatably supporting the same, shaft 56 spanning the distance between the plates 46 near the uppermost edge thereof. Each magazine 52 and 54 includes a pair of spaced-apart, parallel, circular plates 58 and 60 that are joined by a cylindrical drum 62 having a diameter less than the diameter of the plates 58 and 60. The drum 62 cooperates with a plurality of radial partitions 64 extending outwardly from the periphery of drums 62 between plates 58 and 60 in presenting a series of circumferentially arranged, outwardly opening pockets 66 for articles of merchandise 68 such as pies, other pastries and any other vendible commodity adapted for handling by the vending machine hereof.

Each of the plates 58 of the magazines 52 and 54 has an out-turned, perforated flange presenting an annular toothed edge 72 at one end thereof. Shaft 42 is rotatable and extends in a direction when the shaft 42 is wound to provide sufficient tension as hereinbefore discussed fully. Reverse rotation of the magazines 52 and 54 to tension the respective springs 72 thereof, intermittent movement is provided and maintained by means of detent 74 (Fig. 5) for each magazine 52 and 54 respectively.

The two detents 74 are mounted on a common shaft 76 that carries a spring 72 operably connected with each magazine 52 and 54 respectively for rotating the same in one direction when the shaft 42 is wound to provide sufficient tension as hereinbefore discussed fully. Each detent 74 is operably connected with the shaft 42 when the shaft 76 rotates in a direction for winding the springs 72 of the magazine 52 and 54 through the medium of a detent 74 (Fig. 5) for each magazine 52 and 54 respectively.

Each magazine 52 is provided with a peripheral edge that includes an arcuate portion 96 concentric with the rotation of the shaft 42, wherein the arcuate portion 96 is adjacent the arcuate portion 102 that is a second flat portion 104 between arcuate portions 96 and 102. Each magazine 52 is equipped with a notched block 106, the proximal end of shaft 42 extending into the notch 106 and rotating in a direction for winding the springs 72 thereof an indeterminate number of revolutions without danger of break
ing or otherwise damaging the spring 72. However, by virtue of the fact that spring 124 may be rotated a slight distance about the shaft 56 by movement of stop 123 before the spring section 112 releases its grip to allow the shaft 12 to be rotated, damage to the spring 72 to cause rupture of the corresponding magazine 52—54 may more than a complete revolution. Consequently, there is an assurance at all times that the entire magazine will move parallelly and come into register with the outlet throat 50 of wall 48 with but one winding of the spring 72.

The magazines 52 and 54 are each provided with a lock 126 which prevents engagement of the corresponding member 132 rigidly thereto and extending laterally for mounting of its legs thereof on the shaft 130. The shaft 130 is freely reciprocable and rotatable in a direction perpendicular to the lock 126 and a polygonal portion thereof on the shaft 130 receives the proximal legs of the two members 132 for reciprocably mounting the shaft 130 with respect thereto, but forcing the members 132 to move with the shaft 130 when the latter is rotated.

An elongated closure 136 for each magazine 52—54 respectively within the outlet throat 50 extends through an opening 138 in the latter and is provided with a pair of spaced ears 140 exteriorly of the throat 50 that are freely mounted on the shaft 130.

A notch 142 formed in each ear 140 respectively of the shaft 130 into the path of swinging movement of member 132 when the same is actuated by rotation of shaft 130 in one direction. An L-shaped member 144 secured to the closure 136 is pivoted on shaft 130 and has a tab 146 also within the path of travel of the corresponding member 132.

The throat 50 is provided with a horizontal flange 148 that rests on a pair of springs 150 and 152 by means of a common fastening element 154. The ends of the looped spring 150 are secured to the two innermost of the four ears 140 for holding the two closures 136 yieldably held together. The fastening element 154 is illustrated in Fig. 4 of the drawings. The ends of the looped spring 152 are secured to links 156 there being a link 156 depending from each lock 126 respectively, spring 152 engaging therewith the link 156 and holding the lock 126 toward the wall 48 and in the position illustrated in Fig. 5 for holding the corresponding magazine 53—54 against reverse movement.

On the plates 46 proximal to magazine 52 is provided with a notched block 158 on the outer face thereof for receiving a lateral pin 160 on the shaft 130 when the latter is reciprocated inwardly against the action of a spring 162 at the opposite end of shaft 130.

When it is desired therefore, to rotate the magazines 52—54 in a direction to wind the spring 72 thereof, the operator, after opening door 26, pushes down on the shaft 130 and thereupon rotates the shaft 130 in the direction of the arrow of Fig. 7 against the action of springs 159 and 152, whereupon the shaft 130 is released and rotated to the position illustrated in Fig. 4 of the drawings. When the shaft 72 under the influence of springs 159 and 152 is prevented by the locking engagement between pin 160 and block 158 of the lock 126 from rotating, the shaft 130 is prevented from rotation against the action of the lock 126.

In order to lock the shaft 130, a ratchet wheel 70 is engaged by the ratchet wheels 70 move past the pawls 78, detents 74 will be rocked intermittently to permit such rotation as rollers 90 move into notches 100 of cam members 92, the latter normally being disposed for receiving the rollers 90 as illustrated in Fig. 5.

The end of shaft 130 adjacent door 26 is of such length as to be engaged by the latter when moved to the closed position, thereby releasing the pin 160 from block 158 and returning the locks 126 as well as the closures 136 to the normal positions illustrated in Figs. 5 and 7 under influence of springs 152 and 150 respectively if the service man, loading and resetting the magazines 52—54 fails to so release the shaft 130. Means for locking the shaft 94 against oscillating movement in either or both of its two directions of movement, is illustrated most clearly in Figs. 4 and 8 of the drawings.

A feeler arm 164 under the arcuate wall 48 is provided for each magazine 52—54 respectively and pivotally mounted on the shaft 76. One end of each feeler arm 164 extends through an opening 166 in the wall 48 underlying the corresponding series of partitions 64 in a position for engagement by the articles 68 as the magazines 52 and 54 are rotated. The feeler arms 164 are biased in the position illustrated in Fig. 4 by means of a weight 168 thereon.

As each shaft 76 is rotated opposite that portion of the arm 164 in opening 166. A disc 170 for each arm 164 respectively, rigid to the shaft 94 is provided with a notch 172 that locks with an ear 174 on the shaft 164 when rotation of the shaft 94 is attempted in an anti-clockwise direction viewing Fig. 4. However, as long as an article 68 bears against the arm 164, the inherent weight thereof will swing the latter against the action of weight 168 to move free of notch 172 thereby permitting rotation of the shaft 94 in the aforesaid anti-clockwise direction.

It is accordingly seen that the feeler 164 operates to lock the shaft 94 when a weight 168 is removed and a corresponding magazine 52—54 is depleted of all merchandise 68.

The assembly just described and shown in Fig. 4, corresponds to the magazine 52 and in order to make an interchange of the two discs 164, as well as the two discs 170, interchangeable, the former is provided with a second ear 176 and the disc 170 is provided with a second notch 172. Thus, in the first assembly for magazine 54, the ear 176 and the notch 178 operate to prevent rotation of shaft 94 in a clockwise direction viewing Fig. 4 when the magazine 54 is depleted of all articles of merchandise 68.

It is noteworthy at this point that although one of the magazines 52 or 54 may be empty thereby preventing rotation of shaft 94 in one direction by virtue of operation of its feeler arm 164, such condition will not prevent rotation of the shaft 94 in the opposite direction to operate the escapement mechanism including detent 74 of the magazine 52—54 still having articles of merchandise 68 contained therein.

Limited rotation of the shafts 42 and 94 upon operation of handle 40 is provided for through the medium of a disc 180 secured to the shaft 94 and having a laterally extending eccentric pin 182 thereon that strikes a reinforcing cross-bar 184 joining shafts 76 and 94. A spring 186 joining disc 180 with the proximal wall of casing 20 or other suitable anchor, returns the disc 180 to a normal position after each operation of the handle 40.

All of the parts within the casing 20 above described with the exception of chute 44, are mounted for tilting movement to and from the casing 20 upon the shaft 130 impacted interchangeably to the members 152 whereupon the same first engage notches 142 of ears 140 to cause upward swinging movement of the closures 136 to present bridges across the access opening 22 when door 26 is open as illustrated in dash lines in Fig. 3 of the drawings by means of a pair of opposed, up-standing brackets 188 on the end walls of casing 20, each provided with a notch 190 at the uppermost end thereof.

The brackets 188 are disposed on one side of a median vertical plane between and parallel to the plates 46 below magazine 54 as illustrated in Fig. 3. Cross brackets 192 interconnecting plates 46, each carry a pintle 194 re-ceived by corresponding notch 190. A pair of opposed L-shaped bars 196 are simply secured to plate 46 by a pin proximal to door 26 are each provided with a lateral extension 198 on one end thereof engageable with flange 24 when the assembly is tilted as illustrated in Fig. 3 and a lateral projection 200 on the other end thereof is engageable with the opposite face of flange 24 when the assembly is in the normal operating position within casing 20 as illustrated in full lines in Fig. 3.

It is clear that when the supporting plates 46 with their arcuate interconnecting wall 48, together with the
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In a vending machine, a structure having an outlet port; an interminently revolvable magazine having a series of circumferentially-oriented article pockets successively registrable with said outlet port thereat; a ratchet wheel secured to the magazine; a lock swingable in the radial plane thereof; and a resilient element therebetween, the latter against the action of said yieldable means; and means for locking said apparatus against movement when an empty pocket is passed, including an element on the device engageable with said member upon swinging movement of the device toward said one end thereof by means of a movement on the part of the member in one direction winds the spring and a stop having connection with the member disposed for engagement with said one end of the spring for loosening the grip of said convictions on the shaft as the member is rotated in said one direction, whereby to limit the extent to which the spring may be wound.

In a vending machine, a structure described, a non-rotatable shaft; a member rotatably mounted on the shaft; a spring coiled about the shaft and having a number ofconvolutions adjacent one end thereof in tight gripping relationship to the shaft, the opposite end of the spring being secured to the member, whereby rotation of the member in one direction winds the spring and a stop having connection with the member disposed for engagement with said one end of the spring for loosening the grip of said convictions on the shaft as the member is rotated in said one direction, whereby to limit the extent to which the spring may be wound.

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tively and mounted on the shaft, one of said elements hav-
ing means thereon engageable with its device to release the latter when the shaft is rotated in one direction and the other of said elements having means thereon engageable with its device to release the latter when the shaft is rotated in the opposite direction.

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