May 27, 1924. 1,495,217

D. M. ALEXANDER

VENDING MACHINE

Filed March 16, 1922 3 Sheets-Sheet 1

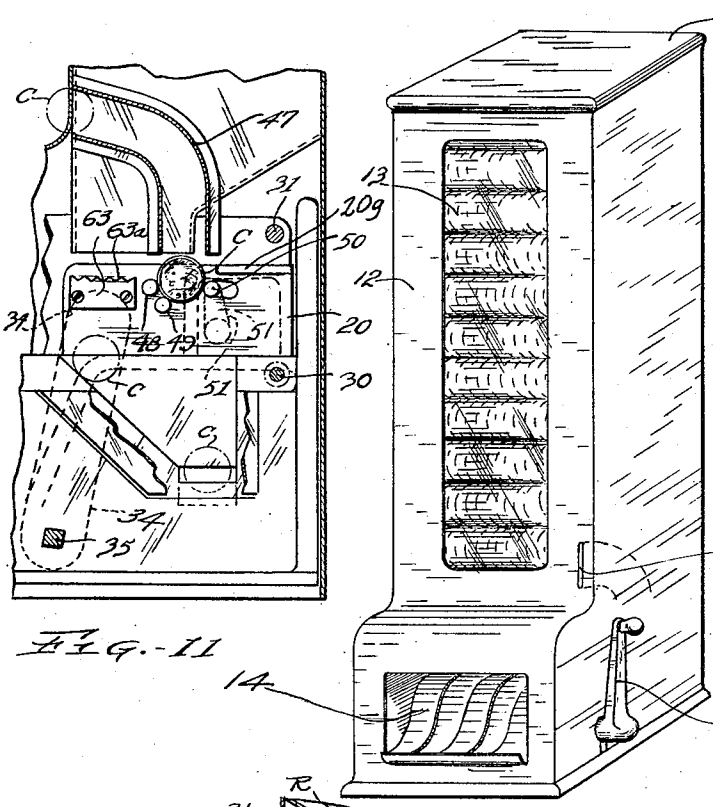


FIG.-I

FIG.-II

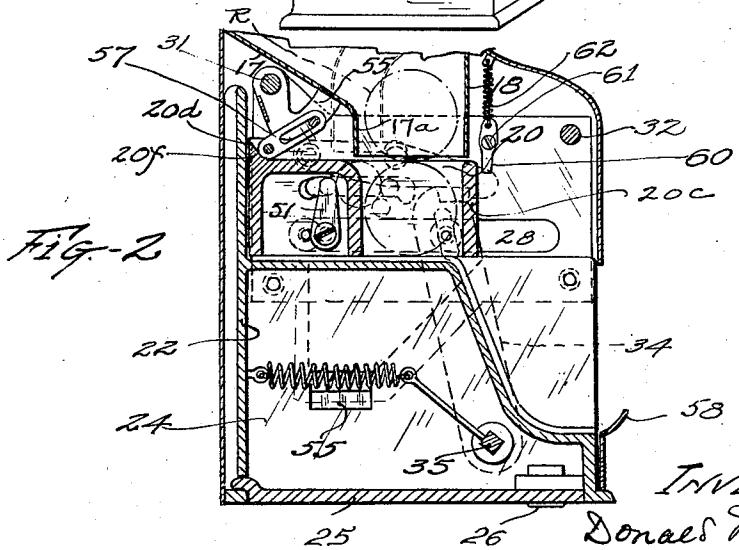


FIG.-2

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May 27, 1924. 1,495,217

D. M. ALEXANDER

VENDING MACHINE

Filed March 16, 1922 3 Sheets-Sheet 2

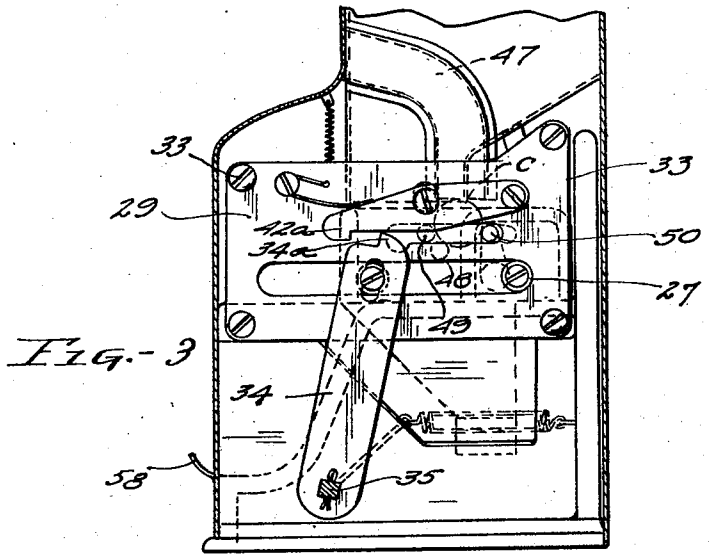


FIG.-3

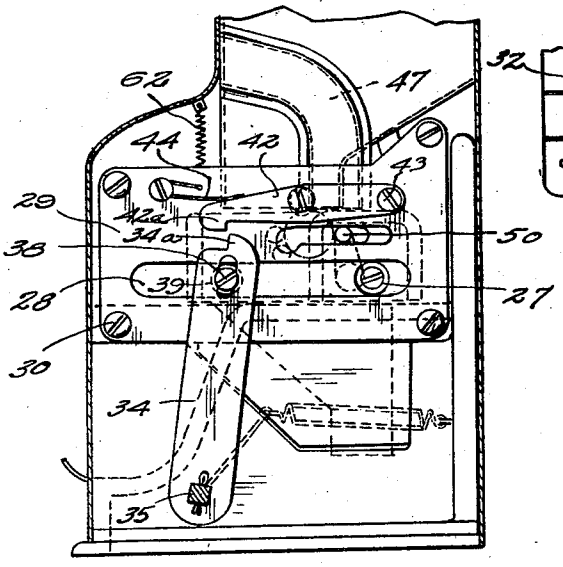


FIG.-5

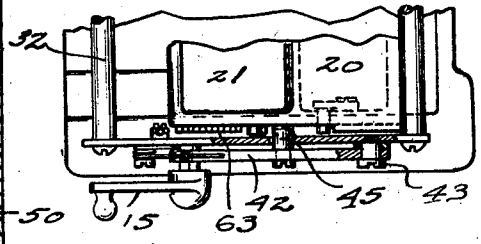


FIG.-4

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May 27, 1924. 1,495,217

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VENDING MACHINE

Filed March 16, 1922 3 Sheets-Sheet 3

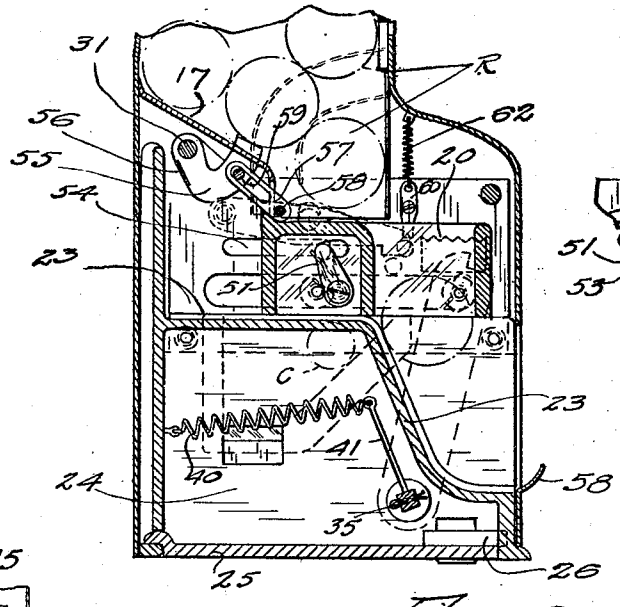


FIG. 6.

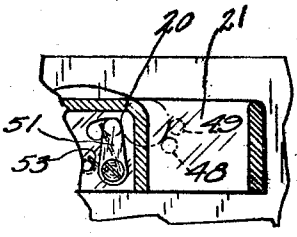


FIG. 8.

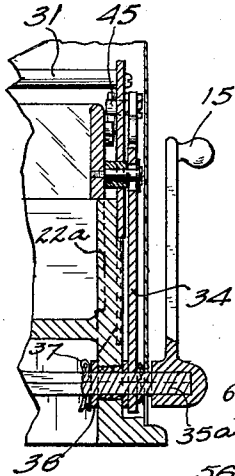


FIG. 9

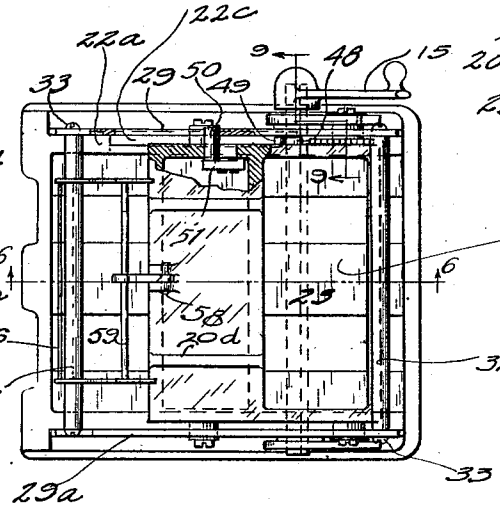


FIG. 7.

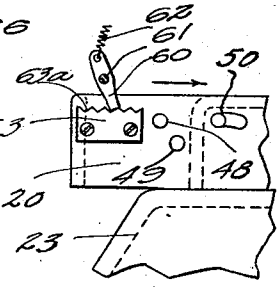


FIG. 10

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Patented May 27, 1924.

1,495,217

UNITED STATES PATENT OFFICE.

DONALD M. ALEXANDER, OF CLEVELAND, OHIO.

VENDING MACHINE.

Application filed March 16, 1922. Serial No. 544,145.

To all whom it may concern:

Be it known that I, DONALD M. ALEXANDER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in a Vending Machine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention is concerned with vending machines and is more particularly directed to the construction of a novel vending mechanism for dispensing packages of merchandise, such as towels, etc., and operable only upon the insertion of a coin of proper denomination.

The general object of my invention is the provision of a simple, durable, efficient package vending machine wherein means for selecting and dispensing one package at a time is provided, and which may be economically manufactured and easily assembled while having no delicate parts likely to get out of order.

A more specific object of my invention is the provision of a locking device that may be released by a slight preliminary movement of the coin when carried by the dispensing means, which movement, if prolonged, will also effect the dispensing of one of the articles being vended by the machine.

A further object of the present invention is the provision of a locking mechanism which may be associated with a dispensing mechanism in such a manner that any undue manual exertion upon an exteriorly disposed vending lever will be taken up by the locking mechanism without exerting any harmful stresses on the various members comprising the dispensing mechanism.

Other objects will be hereinafter set forth in the following description of the accompanying drawings which illustrate a preferred embodiment of my invention. The essential characteristics will be summarized in the claims.

In the drawings, Fig. 1 is a perspective view of the machine; Fig. 2 is a cross sectional elevation taken through the lower portion of the machine showing the dispensing and locking mechanisms in a normal inoperative position; Fig. 3 is a side elevation with the casing in cross section to show the locking mechanism; Fig. 4 is a fragmentary cross sectional view of the locking mechanism; Fig. 5 is a view similar to Fig. 3 after the coin has effected the release of the locking mechanism; Fig. 6 is a cross sectional view similar to Fig. 2 with the dispensing mechanism however, shifted forwardly to the package dispensing position; Fig. 7 is a plan view of the vending mechanism in the position shown in Fig. 6; Fig. 8 is a fragmentary cross sectional view of the dispensing slide when positioned to receive a coin; Fig. 9 is a cross section taken substantially along the line 9—9 of Fig. 7. Fig. 10 is a fragmentary view of the dispensing mechanism; Fig. 11 is a side elevational section taken through the coin passageway.

Referring to the various elements of my machine by the use of reference characters, I have shown in Fig. 1 an outer metallic casing 12, having a suitable display window 13 formed in the front wall thereof for displaying the mercantile contents of a magazine or loading chamber, while in the lower enlarged portion thereof a suitable vending opening 14 is formed. A manually operable lever 15 may be disposed on the lower right hand side of the machine and is the only movable member disposed on the outside of the casing. A coin receiving opening 16 is shown adjacent the lower right edge of the casing. Any suitable means may be secured to the inner face of the front wall for permanently maintaining the glass 13 in place.

A removable top panel 11 serves to close the casing and may be secured thereto by latching means positioned interiorly of the casing. The latching means may be of any suitable construction controlled by a key to permit ready removal of the top panel when it is desired to reload the machine. An inner guide wall 17 serves to support the packages in properly stacked relation while

at the same time facilitating the guiding of the packages to a transversely movable dispensing carriage 20. The wall 17 is inclined forwardly toward a vertical guide wall 18 and has a downwardly extending portion 17ª parallel with the latter wall which is spaced a sufficient distance therefrom to permit the easy passage of round packages, as illustrated by the dot and dash lines in Fig. 2 and Fig. 6.

The casing is secured to a frame member 22 which comprises an integral body upon which the various movable dispensing members are mounted. The member 22 may be formed of pressed metal but for the purpose of obtaining a rigid support for the coin control and dispensing mechanisms I prefer the frame member to be an aluminum casting having an upper ribbed wall 23 which slopes downwardly to the bottom of the dispensing opening 14. This ribbed wall likewise serves to partition the bottom portion of the casing, thus forming a coin chamber 24 which may be closed by any suitable means, such as a metallic door member 25 secured in place by a lock member 26 mounted thereon.

The dispensing mechanism is comprised of a minimum number of parts, the important one of which is the slide member 20 also preferably formed of aluminum. This member is arranged to slide transversely of the stack of packages or rolls as illustrated in Fig. 6, and is formed in such a manner as to have a vertical wall forming a recess or opening 21 extending therethrough which is of sufficient size to receive one of the rolls R. This member is mounted on roller members 27 secured to the opposite ends thereof which are arranged to roll in and traverse elongated openings 28 formed in side supporting plate members 29.

The plate members 29 may be secured to the side walls 22ª of the member 22 by any suitable means such as screw members 30. Spaced members 31 and 32 may be secured to the upper ends of the plate members 29 by screw members 33, thereby maintaining the parallelism of the opposite faces of the plate members 29. The plates 29 are of sufficient height to permit the positioning of the spacing post 32 therebetween in the manner described while affording sufficient clearance for the transverse movement of the dispensing slide 20.

The dispensing slide may be actuated by upwardly extending levers 34 which are mounted on a square rocker shaft 35 extending through and supported by bearings mounted in the side walls 22ª of the member 22. The flanged bushing members 36, which serve as bearings, may be held in proper relation to the side walls 22ª by any suitable means such as cotter pins 37. The manually operable lever 15 hereinbefore referred to is mounted on an outwardly projecting portion 35ª of the square shaft a sufficient distance away from one of the levers 34 also mounted on the shaft, to provide space for the easy placing of the casing upon the base member 22.

The levers 34 are disposed intermediate of the casing walls and the frame member 22 and are connected to the dispensing member 20 by stud members 38 which also serve as a mounting for the rollers 39, the stud members 38 being rigid with the dispensing member and arranged to engage the lever members 34 in an elongated slot 34ª. Hence a forward movement of the lever 15 will effect a forward dispensing movement of the member 20. The dispensing member 20 may be returned to a normally inward position by a spring member 40 which is disposed within the coin receiving chamber 24 and engages a pin member 41 secured to the shaft member 35.

The coin control mechanism may comprise a lever member 42 pivotally mounted adjacent the upper rear end of the side plate member 29 and a stud member 43. The forward portion of the member 42 may have a notch shaped end 42ª which is disposed above and arranged to engage a projecting portion 34ª formed on the upper end of one of the levers 34. Any means, such as spring member 44 may be used to maintain the lever 42 in a normally downward locking position.

Intermediate the ends of the locking lever 42 and disposed adjacent the path of the coin, I have mounted a roller member 45 thereupon which will be engaged by the coin to disengage the lever member 42 from the lever member 34, thus permitting complete dispensing movement of the member 20 as will presently be described.

The coin control mechanism may include a coin chute 47 extending from the vertical opening 16 inwardly and then downwardly to a position above and in alignment with a group of coin arresting pins 48, 49 and 50, the pin members 48 and 49 being rigidly secured to the end wall of the dispensing slide member 20. The position of the pins 48, 49 and 50 is such as to arrest the falling coin in the position indicated at C in Fig. 11. When so held, the upper edge of the coin will travel in a transverse path which is higher than the lower surface of the roller 45, during the period the coin is carried toward the front of the machine by movement of the dispensing slide 20, and will engage and lift the roller 45 and locking lever 42.

The presence of a coin of itself does not unlock the machine. When in the position described, on the forward movement of the dispensing slide, it raises the locking lever

42, permitting the complete movement of the dispensing mechanism. To prevent the surreptitious operation of the machine, that is, by the use of force without the insertion of a coin, the locking lever 42 engages the upper end of the lever 34 by the shoulders 42^a and 34^a as described. The position of the locking shoulder 42^a is such as to permit a preliminary movement, which, if the coin is present, causes the unlocking, and in the absence of the coin it will prevent further movement of the lever 34. It is to be noted that the attachment of the locking devices is such that even though great force is used upon the exterior operating lever, this force is taken up directly through the substantial members shown by the direct engagement of the locking shoulders on levers 34 and 42, and by the frame of the machine through the pivot 43.

To permit the passage of the coin to the coin chamber 24, it is important that one of the pins 48, 49 or 50 be movable relative to the others at a certain predetermined point in the transverse movement of the dispensing member and I accordingly prefer to secure the pin member 50 to the upper end of a small lever member 51 which is mounted on the inner face of the end wall of the dispensing slide 20. This pin may be of sufficient length to extend through the thickness of the wall and transversely of the slot 54 formed in the plate member 29. This slot is of sufficient length to permit an uninterrupted movement of the pin member 50 which is slightly less than the full movement of the dispensing slide 20. The pin 50 and lever 51 may be maintained in a normal coin arresting position such as is illustrated in Figs. 2, 3, 5 and 8 by a small spring member 53. At the extreme outer dispensing position however, the pin member 50 will strike the end of the slot and cause a shifting of the pin about the supporting pivot of the lever 51, thereby permitting the coin to drop downwardly through a suitable opening 22^c formed in the end wall 22^a of the base member 22. This chute terminates in an opening 55 which comprises a communication between the chute and the coin chamber 24.

The operation of the machine is as follows: A coin is inserted in the exterior opening 16 from whence it rolls by gravity through the guide tube 47 and drops downwardly until arrested by the pins 48, 49 and 50. The purchaser then draws forwardly on the lever 15, thus causing a rocking of the shaft 35 and consequently a swing of the levers 34. The forward movement of the slide also carries the coin C forwardly and the upper edge of the coin acts upon the roller 45, thus raising the locking lever 42 out of the arcuate path of the upper end 34^b of the lever 34. The swinging of the levers 34 imparts a transverse movement to the dispensing slide 20, and a package, (in this instance a towel roll), is moved along the ribbed wall 23 until the slide is in the position substantially shown in Fig. 6, whence the roll drops downwardly toward the vending opening 14 and is arrested by a stop rail 58. The package may then be removed from the machine.

When the lever 15 is released the spring member 40 imparts a reverse motion to the shaft 35 and levers 34, thus effecting the return movement of the slide 20. During the forward movement of the slide member camming ribs 20^d formed on the upper surface of the dispensing slide engage the bottom roll in the supply chamber and causes it to raise slightly, thus agitating all of the rolls in the supply chamber, and as the slide 20 returns to its normal inward position the roll thus acted upon will drop into the opening of the slide and rest upon the upper portion of the ribbed wall 23, as illustrated in Fig. 2.

Upon the return swing of the upper end of the lever 34 the locking lever 42 is cammed upwardly and drops again under the force of the spring 44 after the levers 34 are returned to their normal inward position.

From Fig. 2 it is apparent that communication between the supply chamber and the dispensing opening 14 will be closed by the front wall 20^e of the dispensing slide when the slide is back, thus preventing the insertion of the hand or other tampering with the contents of the machine.

To insure the proper feeding of the packages from the magazine to the dispensing slide, and to prevent a congesting of the packages at the bottom of the magazine, I have provided additional mechanism for agitating the packages each time the dispensing slide is shifted through a dispensing movement. This mechanism may comprise a pair of pivotally mounted lifting fingers 55 integrally formed from flat metal with a connecting bridge portion 56 extending therebetween.

The fingers may be supported on the spacing rod 31, as illustrated in Figs. 6 and 7, and are maintained in proper position relative to the magazine by contact with the walls of slots formed in the inclined bottom member 17 of the magazine. The fingers are swung upwardly and downwardly by a link member 57 which is pivotally mounted on the upper rear end of the slide member 20, at 58 as indicated in Fig. 7.

The connecting link 57 moves the fingers by acting on a rod member 59 which is connected to the fingers in such a manner that a swinging movement of the link may take place without effecting a movement of the

fingers, the rod passing through a slot formed in the link to permit this swinging movement.

It will be noted that as the dispensing slide is shifted forwardly the link will ride along the rod until swung from its normal angular position, illustrated in Fig. 2, to the angular position illustrated in Fig. 6, whence a further rearward swinging of the link is prevented by a stop shoulder 20^f formed on the rear of the slide. As the link comes to rest on the shoulder a camming action is obtained on the finger rod 59, causing the rod 59 to swing about the rod 31 and to travel along the slot of the link, thus swinging the fingers to the position illustrated in Fig. 6.

The ends of the fingers contact with the package in the magazine which is resting over the wall slots through which the fingers pass, and the weight of the packages is relieved from the lowermost one, whence that one is free to drop into the receiving opening or recess of the slide when the slide is again shifted to rearward position.

The purchaser frequently inserts several coins before operating the machine. To insure the proper operation thereof in such a case I have provided a rail portion 20^g on the end of the slide which will pass under the coin chute and maintain the additional coins in the chute when the first coin is carried forwardly by the pins on the slide.

I have also provided means to arrest a backward or a forward movement of the slide before full operative movement thereof has been completed which may comprise a pawl member 60, as illustrated in Figs. 2 and 6 which is arranged to swing freely on a pivot pin 61, secured to the side plate member 29. A spring member 62 maintains the pawl in a normal vertical position.

A rack plate 63 may be secured to the end wall of the slide in such a manner as to swing the pawl to a substantially 45° position from its normal vertical position, and the end of the pawl clicks over the rack teeth 63^a when the slide is moved. As long as the pawl is in this 45° position, a premature return movement of the slide is prevented until the forward movement has been completed, upon which the pawl will be swung free of the rack under the influence of spring member 62. The reverse movement of the slide will cause the rack to displace the pawl to a 45° position in the opposite direction and the pawl will again function in the manner described, until the return movement of the slide has been completed.

From the foregoing description of my invention it is to be seen that I have provided a compact, durable dispensing machine wherein a complete movement of the dispensing mechanism is prevented unless a coin of the proper denomination is first inserted in the machine. Furthermore, I have arranged the coin control mechanism of the device in such a manner that if the proper coin is not inserted in the device, any forcing or tampering with the lever 15 will not strain or impair the elements of the vending mechanism.

Having thus described my invention what I claim is:—

1. In a device of the character described, the combination of a supply chamber adaptable for the reception and storage of uniformly shaped packages, dispensing means for selecting one of the packages including a transversely movable slide disposed beneath said chamber, means carried by said dispensing means and relatively movable thereto for receiving and supporting a coin during a transverse movement thereof, and locking means responsive to the movement of said coin for releasing said dispensing means during the first stage of the movement of said dispensing means, said coin supporting means being actuated to release the coin during the last stage of the movement of the dispensing slide.

2. In a vending machine of the character described, the combination of a supply chamber, a transversely movable slide disposed therebeneath, means movable with the slide and relatively movable thereto for receiving and carrying the coin, a coin controlled lock for arresting the movement of said dispensing means including a locking lever the releasing movement of which is effected by the movement of the coin carried by said transversely movable slide, said coin being released by actuation of the coin carrying means during the last stage of the dispensing movement of the slide.

3. In a device of the character described, the combination of a dispensing slide having an opening therein adapted to receive the package to be dispensed, a package magazine disposed above the slide, a rocker shaft, a manually operable lever for imparting movement thereto, a lever member operated by said shaft and adapted to move said slide, coin arresting means carried by the dispensing slide, means for locking the slide against movement in the absence of a coin and means carried by the slide for releasing said coin upon a transverse movement of said dispensing means.

4. In a device of the character described, the combination of a supply magazine, dispensing means comprising a slide movable transversely of said magazine, said slide having a cavity corresponding to the size of the package being dispensed and normally in registration with an opening in the bottom of said magazine, locking means responsive to the movement of a coin, and means carried by said slide and relatively movable thereto for holding said coin dur-

ing a transverse movement of the slide when vending a package, said coin holding means being actuated substantially at the end of the movement of the slide.

5. In a device of the character described, the combination of a supply magazine, dispensing means comprising a slide movable transversely of said magazine, said slide having a cavity corresponding to the size of the package being dispensed and normally in registration with an opening in the bottom of said magazine, locking means responsive to the movement of a coin, and means carried by said slide for holding said coin during a transverse movement of the slide, including a pin member mounted on a lever carried by the slide adapted to carry the pin out of engagement with the coin at a predetermined position when said slide is shifted from said magazine opening.

6. In a machine of the character described, the combination of a supply magazine, a transversely movable dispensing slide disposed therebeneath, said slide having a package receiving cavity normally in registration with a package outlet formed in the bottom of the magazine, a casing therefor, a downwardly extending coin chute, means carried by said slide for arresting the coin after it has traversed the chute, means for manually operating said slide including an exteriorly disposed manually operable lever and interiorly disposed levers, a rocker shaft upon which said levers are mounted, and locking means responsive to the transverse movement of the coin when carried by said slide, said locking means being arranged to act directly on said levers in the absence of said coin whereby movement of the levers is prevented.

7. In a machine of the character described, the combination of a supply magazine, a transversely movable dispensing slide disposed therebeneath, said slide having a package receiving cavity normally in registration with a package outlet formed in the bottom of the magazine, a downwardly extending coin chute, means carried by said slide for receiving the coin after it has traversed the chute including a lever pivotally mounted on the slide and relatively movable thereto, means for manually operating said slide including a lever, locking means responsive to the transverse movement of the coin when carried by said slide, said locking means being arranged to arrest the movement of said lever in the absence of said coin.

8. In a device of the character described, the combination of a magazine for the storage of packages to be vended and having an inclined bottom frame member adapted to guide the packages singly to an opening formed in the bottom thereof, a transversely movable dispensing slide, a rocker shaft, levers mounted thereon and adapted to move said slide, a body member constituting a support for said slide, a locking lever adapted to prevent a complete movement of said levers, said locking lever being mounted on a pivot in rigid relation with said frame member, whereby any undue strain exerted upon said lever when locked will be taken up by said body member.

9. In a device of the character described, the combination of a package magazine having an opening in the bottom thereof through which one of the packages may pass, a transversely movable dispensing slide adapted to receive said package upon passing through said opening and shift it to a vending opening in the machine, a coin chute terminating adjacent one end of said slide, pins carried by the slide adapted to arrest the downward movement of the coin upon leaving said chute, a rocker shaft, levers mounted thereon adapted to impart said transverse movement to the slide, a locking lever adapted to normally prevent movement of said rocker levers but responsive to the movement of the coin when carried on said pins during the first portion of the movement of said slide, and means for shifting one of said pins relative to the others to permit the release of said coin after said locking lever has been shifted out of the path of said rocker lever.

10. In a device of the character described, the combination of a slide-supporting frame, a dispensing slide, a manually operable lever for imparting movement thereto, coin arresting means carried by said dispensing slide, a second lever pivoted on said frame and locking said first named lever and responsive to a transverse movement of the coin when carried by said coin arresting means.

11. In a vending machine of the character described, the combination of a supply chamber having a discharge opening, a slide-supporting member, a slide movable transverse of said opening and adapted to receive an article from the chamber and discharge the same, a coin controlled locking lever pivotally mounted on the slide supporting member, a second lever adapted to move said slide upon a manual operation of the machine, and coin arresting means movable upon the operation of said last named lever and adapted to carry the coin into operative association with said locking lever, whereby the locking lever is displaced to permit complete movement of said slide.

12. In a device of the character described, the combination of a dispensing slide, a manually operable lever for imparting movement thereto, coin arresting means movable upon the movement of the slide, and a second lever arranged to interrupt a complete movement of said manually operable

lever and responsive to a preliminary movement of said coin arresting means by said manually operated lever.

13. In a vending machine of the character described, the combination of a supply chamber, a slide movable transversely of said opening and recessed to receive a package passing from the opening, a coin controlled locking lever, a second lever for moving the slide, and coin carrying means movable upon the operation of said last named lever and adapted to release the coin after the coin has acted upon said locking lever.

In testimony whereof, I hereunto affix my signature.

DONALD M. ALEXANDER.