May 26, 1931. H. T. GOSS 1,807,404

CIRCULAR VENDING MACHINE

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Fig. 1.

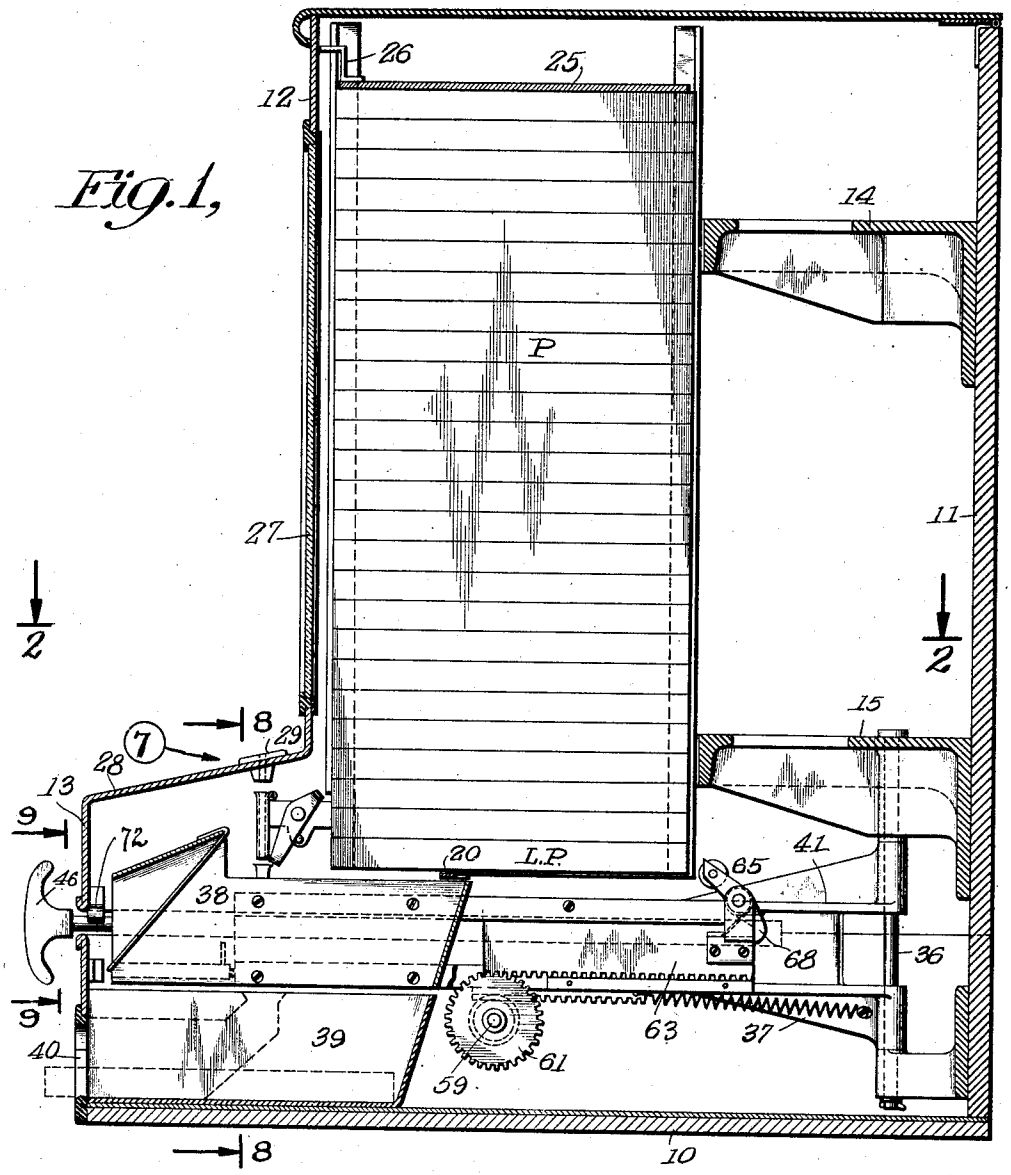
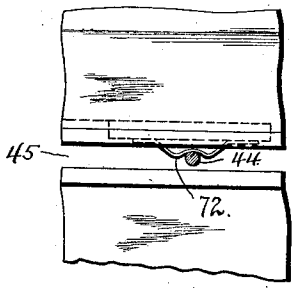


Fig. 9.



Inventor
HARRY T. GOSS

By his Attorney
Warren S. Orton

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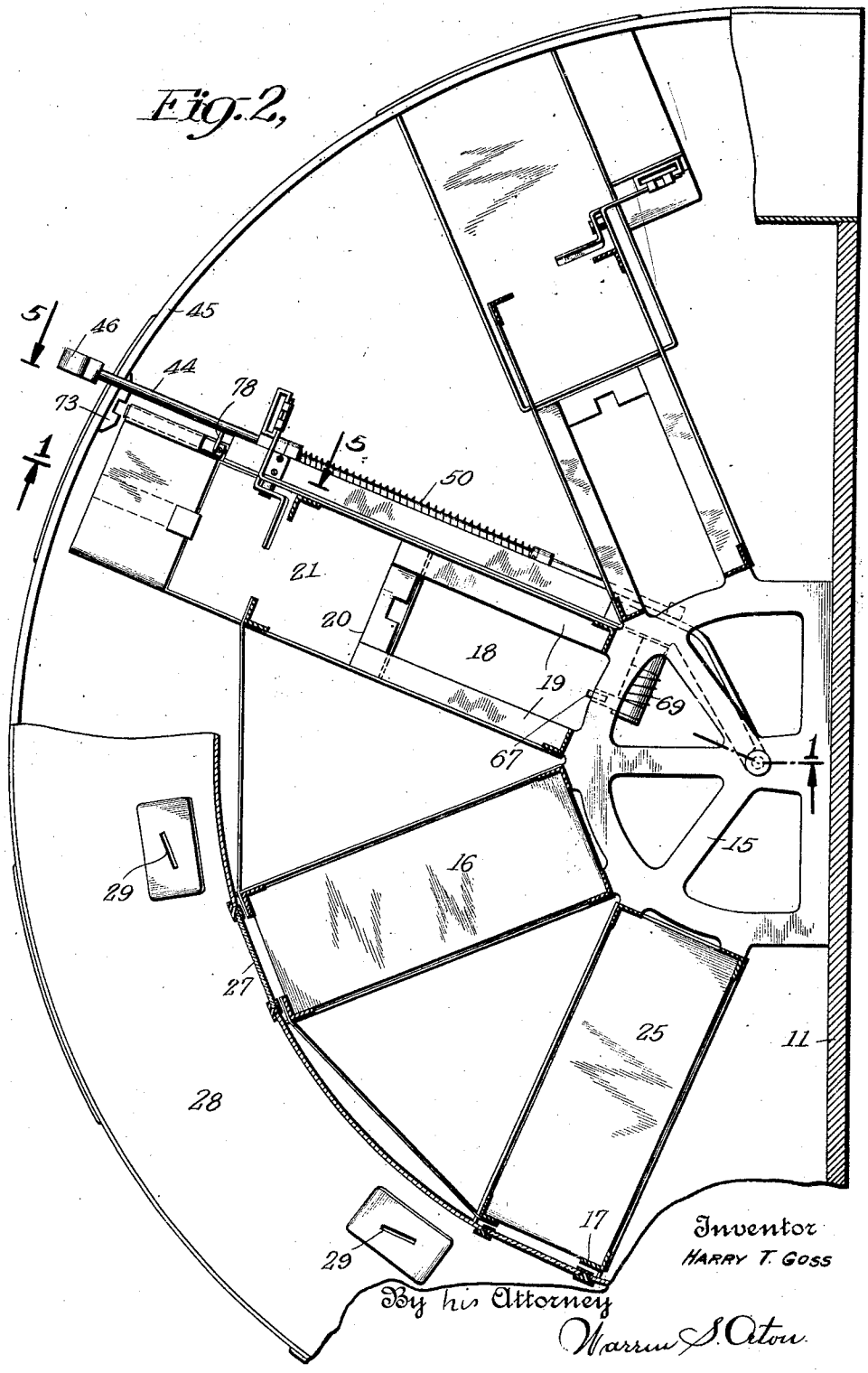
Fig. 2,



Inventor
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By his Attorney
Warren S. Orton

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Fig. 3,

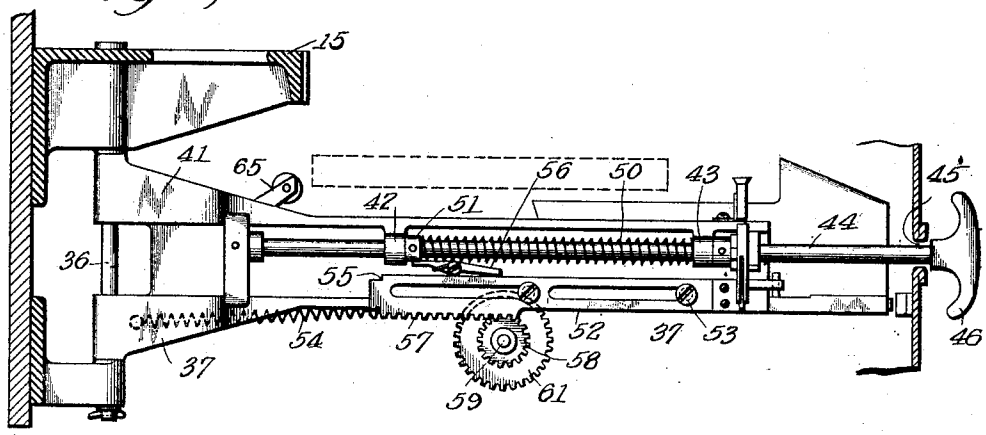


Fig. 4,

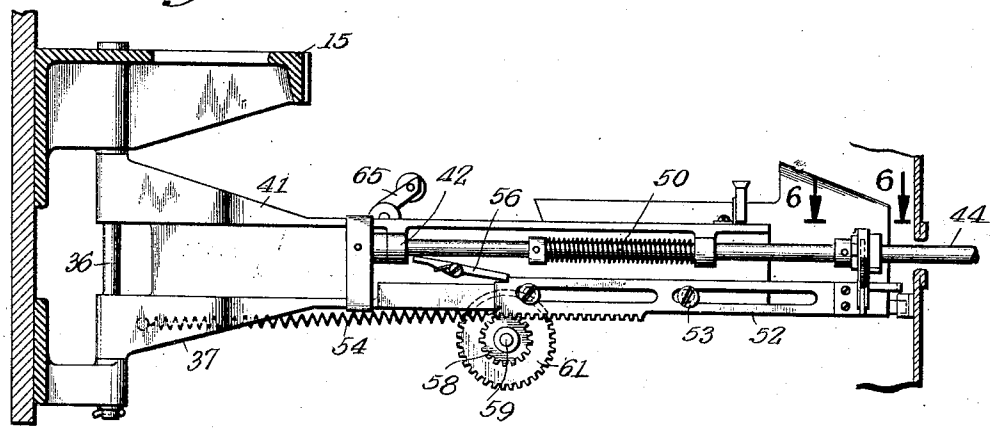


Fig. 5,

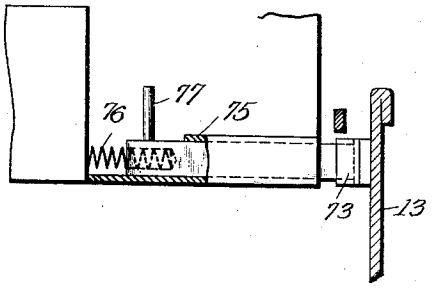
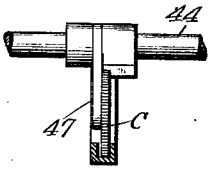


Fig. 6,



Inventor
HARRY T. GOSS

By his Attorney
Warren S Orton.

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CIRCULAR VENDING MACHINE

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Fig. 7,

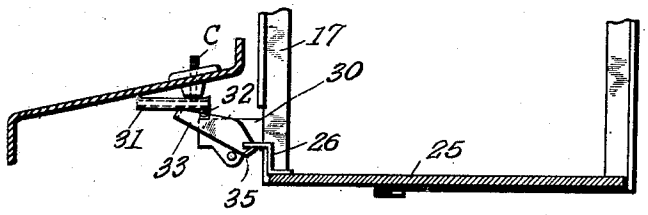
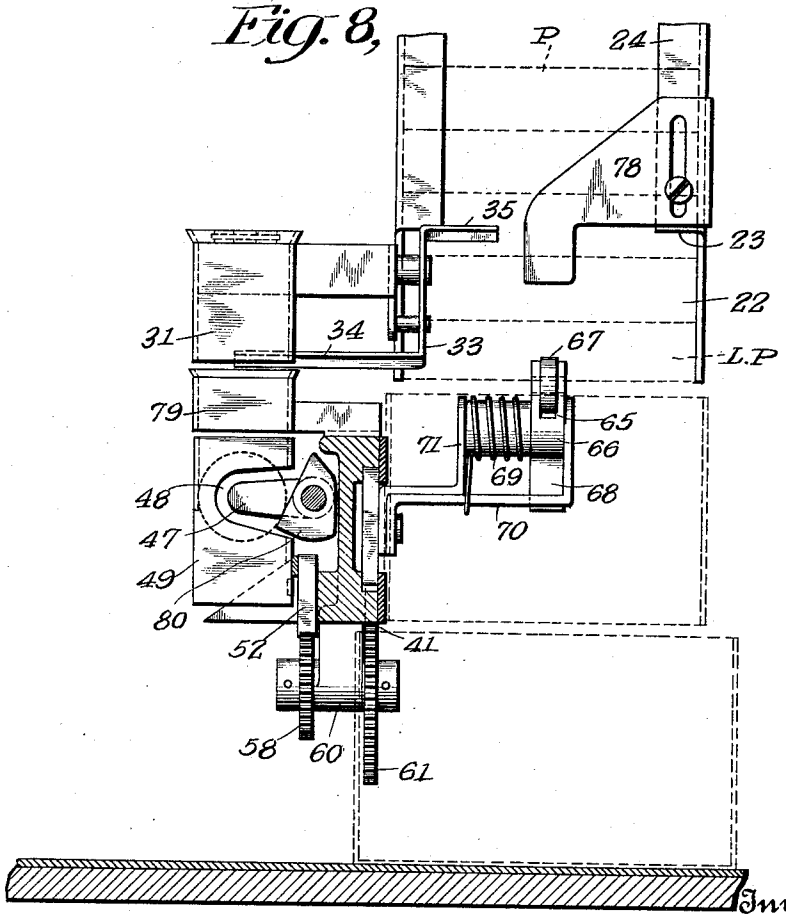


Fig. 8,



Inventor
HARRY T. GOSS

By his Attorney
Warren S. Orton

Patented May 26, 1931 1,807,404

UNITED STATES PATENT OFFICE

HARRY T. GOSS, OF RUTHERFORD, NEW JERSEY, ASSIGNOR TO PACK SHOPS, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

CIRCULAR VENDING MACHINE

Application filed March 4, 1926. Serial No. 92,107.

The invention relates in general to a vending machine of the type designed to vend a plurality of packages which may be different from each other and which may be controlled by coins of different dimensions.

In such constructions heretofore known, it has been necessary to provide ejecting mechanism, one for each of the stacks of packages to be vended. As the coin controlled mechanism of such machines constitute the part which contains most of the refined machinery and numerous small parts, it is appreciated that the duplication of these parts with their multiplicity of machine parts have heretofore rendered such machines expensive.

Accordingly, the primary object of the present disclosure is to provide a simple form of multiple stack vending machine in which the reservoirs containing the packages are fixed in position and which machine can be actuated by the manipulation of a single ejecting mechanism mounted so as to be moved selectively into position by the vender and actuated, after the insertion of the proper coin, to vend a package from the selected stack.

The invention has for another object the assembling of the ejecting mechanism into a single unit, which can be readily removed for repair and substitution thus permitting the ready replacement of a substitute ejecting mechanism for one which may become damaged while in use.

Among the other objects of the invention are to provide a vending machine in which machining and difficultly formed parts have been reduced to a minimum, which will permit an easy operation of the device when legitimately actuated and which will tend to defeat attempt to actuate the same illegally or to mutilate the machine.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of device embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings:

Fig. 1 is a view in vertical section taken axially through a preferred embodiment of the invention and taken on the line 1—1 of Fig. 2 looking in the direction indicated by the arrow;

Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1 looking downward as indicated by the arrows;

Figs. 3 and 4 are views in side elevation of the swinging ejector carriage looking at the same from the reverse side shown in Fig. 1, Fig. 3 showing the parts in their normal inoperative or retracted position and Fig. 4 showing the relation of the corresponding parts with the manually actuated ejector at the end of its outward operative ejecting stroke;

Figs. 5, 6 and 7 are detailed views, Fig. 5 being a vertical section taken on the line 5—5 of Fig. 2, Fig. 6 being a horizontal section taken on the line 6—6 of Fig. 4, and Fig. 7 being a detailed view of the coin chute lock at the point indicated by the arrow 7 in Fig. 1 and distinguishing therefrom in showing the chute in inoperative position;

Fig. 8 is a vertical sectional view taken on the line 8—8 of Fig. 1 looking in the direction indicated by the arrow, and

Fig. 9 is a fragmentary view of the front of the casing taken on the line 9—9 of Fig. 1 and showing means for preventing accidental shifting of the carriage.

In the drawings, there is shown a mechanism containing casing including a bottom 10, a rear support 11 and a containing casing including curved front plates forming a semi-circular upper casing 12, and a larger lower casing 13.

Suitably supported from the front edge of

horizontally extending brackets 14 and 15 secured to the rear support 11, are a plurality of radially extending relatively long and narrow package containing reservoirs 16, of which four, two filled and two empty are shown in Fig. 2. The reservoirs are each formed of four upstanding corner angle bars 17 and are provided with a bottom 18 formed of parallel side or edge supports 19 connected adjacent their outer ends by means of a connecting strip 20, disposed as shown in Fig. 2 in spaced relation to the front of the reservoir to provide a package discharge space 21. This open space in the bottom of the reservoir is continuous with the vertical discharge space 22 formed between the bottom of the stack and the lower edges 23 of the front flanges 24 which constitute the part of the angle bars 17 forming the front of the reservoir. Positioned within the reservoir are packages P and positioned on top of the stack of packages is a weight 25 provided with a tripping finger 26 for controlling the coin chute as the last package is discharged through mechanisms hereinafter to be described.

The portion of the front 15 facing each of the reservoirs is provided with a window 27 through which may be viewed the stack of packages to be vended.

The lower end of the curved metal plate which forms the upper front 12 is connected to the upper edge of the lower front 13 by means of a slightly declined semi-circular front plate 28 provided with a plurality of fixed coin slots 29, one for each of the reservoirs and positioned in advance and to one side of the same as particularly shown in Fig. 2.

Pivotally mounted on one side of an outwardly extending bracket 30 projecting integrally from the adjacent corner angle 17 of each reservoir is the second element of a four part coin chute of which the uppermost part is the fixed chute 29. This second coin chute 31 the upper end is hinged on a pivot pin 32 and the parts are so associated that when the pivoted coin slot 31 is moved from its normal vertically disposed position beneath the fixed slot 29, as shown in Fig. 1, into its inoperative outwardly swung position, shown in Fig. 7, it forms a stop to prevent the further entrance of coin C into the fixed slot 29. The pivoted coin slot 31 is moved from its vertically aligned, operative position into its horizontal inoperative position by means of a tripping lever 33, one upper bent arm 34 of which extends across the rear or back side of the coin slot 31 adjacent its lower end and the other bent arm 35 of which extends across and is disposed slightly in advance of the front of the associated reservoir and in the path of downward movement of the tripping finger 26 forming part of the weight on top of the stack of packages. From this construction it is appreciated that as the weight descends on to the bottom of the reservoir as shown in Fig. 7 the finger piece carried thereby engages the lever and acts therethrough to move the swinging of the coin slot into its inoperative position to prevent the insertion of additional coins into the machine after the packages have been exhausted from the associated reservoir.

Mounted to swing horizontally about a vertically extending pin 36 at the center of the casing is a horizontally extending ejector carriage 37 mounted to be swung from the front of the casing into position beneath and in operative engagement with each of the reservoirs to eject, therefrom when properly actuated, the lowermost package of the selected stack. Secured to the forward end of the carriage is a package chute 38 opened at its top to receive the lowermost package LP from the selected stack and opened at its lower side to permit the ejected package to drop therethrough into a receiving basin 39, one for each of the reservoirs, as more particularly shown in Fig. 1. The lower front side 13 is provided with a plurality of package discharging ports or openings 40, one for the front side of each of the basins 39.

The carriage comprises essentially a rugged casting 41 providing at its rear end under bearing connections with the pin 36. Slidably mounted in bearings 42 and 43 formed on one side of the acting horizontally and radially extending manually actuated ejector rod 44 which extends forwardly through a horizontally extending slot 45 in the front 13 and terminating in a finger pull piece 46. When the casing and the rod 44 is provided with a laterally extending coin engaging finger 47 designed when the coin chute is free of the coin to pass laterally through an opening 48 in the lowermost coin chute 49 idly without actuating the ejector mechanism. The ejector rod is provided with a coil spring 50 positioned between the bearing 43 and a collar 51 secured thereto and which spring acts normally to return the ejector rod to its normal, inoperative retracted position as shown in Fig. 3. The coin chute 49 is secured to a sliding rack bar 52 mounted by means of a part of screw and slot connection 53 to one side of the casting 41 as particularly shown in Figs. 3, 4 and 8, and so disposed that when a coin is positioned in the slot 49 the forward movement of the ejector rod will act therethrough to shift the rack bar 52 forwardly or from the position shown in Fig. 3 into the advanced position shown in Fig. 4. A spring 54 with its rear end connected to the rear portion of the bar 42 acts to return the bar to its normal position as shown in Fig. 3 when free of the manual tension on the ejector rod. The upper rear end of the bar 52 is provided with a notch 55 in which is designed to drop a spring controlled pawl 56 the upper end of which is disposed in the path of the collar 51 in its

retreat from its ejected into its retracted position passing from Fig. 4 to Fig. 3. From this construction it is understood that after the bar 52 has been once advanced by the advancing of the ejector rod the rack bar is held from retreat until the pawl is positively moved into an unlatched position by the retreat of the ejector rod.

The underside of the bar 52 is provided with a rack 57 engaging with the small gear 58 of a pair of gears mounted on a shaft 59 journaled in a bearing 60 forming a part of and depending from the casting 41. On the opposite side of the bearing 60 is a relatively large gear 61 secured to the shaft 59 and meshing with a rack 62 secured to and depending from the lower edge of an ejector bar 63 slidably mounted in a guide way therefor formed in the side of the casting 41 as particularly shown in Fig. 8. From this construction it is understood that a relatively long pull on the ejector rod 44 will cause a relatively short advance in the same direction of the ejector bar 53 and the package engaging parts carried thereby. These parts include an ejector finger 65 carried thereby. This finger is in the form of a normally upstanding lever 66 carrying at its upper end a roller 67 designed to engage the lowermost package LP to eject the same from its associated stack. The lower arm 68 of the lever is maintained by a spring 69 in its position engaging a fixed part 70 of a journalling bracket 71 projecting laterally from and secured to the ejector bar 63 as particularly shown in Fig. 8. This pusher finger 65 is so positioned that when the ejecting mechanism is in the normal position shown in Fig. 1 the arm is positioned in the rear of the lowermost package and provides a rigid connection with the ejector mechanism.

The lever is so mounted that after the package has been ejected the roller is depressed by its engagement with the lower forward edge of the next adjacent package and the lever is depressed thus permitting the retreat of the ejector mechanism without interference from the packages in the stack yet to be vended. The roller is free to roll under the lowermost package back into its initial position shown in Fig. 1 and in this way tending to tear the wrappings on the packages is minimized.

In order to secure the rotatably mounted carriage with its ejecting mechanism in its position beneath the selected stack and to locate the same accurately in position and at the same time defeat accidental shifting of the ejecting mechanism from its set position spring retainers 72 are positioned adjacent the slot 45 and designed to engage the ejector rod 44 as it is positioned therein in swinging the ejector mechanism into operative position beneath the selected stack from which it is desired to vend the package.

To assist in locking the swinging carriage in position after the ejector rod has been pulled forward, notched plates 73 are secured to the rear side of the front 13, and a bolt 74 mounted in a guideway 75 secured to the advanced end of the casting 41 is designed to engage in the notch of each of the plates. A spring 76 acts to maintain an upstanding pin 77 in the path of movement of a laterally extending finger 78 projecting from the ejector rod 44. A vertically adjustable stop plate 78 is secured to one of the flanges 24 as shown in Fig. 8 to permit the ejection of the lowermost package and to hold the next uppermost package from being accidentally discharged.

In operation and assuming that the reservoirs are each filled with stacks of packages to be vended as shown in Fig. 1, the operator by engaging the projecting finger piece of the rotatably mounted ejecting mechanism swings the same horizontally into position beneath the reservoir from which he desires to eject a package. When in such position, the freedom of rotary movement will be intercepted by the spring retainer and the operator will then know that he is in the proper position to vend the package. Inserting a coin in the fixed slot in the casing and before the ejecting rod is drawn forward will cause the actuation of the device as hereinafter described. Should a coin be inserted into one of the slots offset from the ejecting mechanism the coin will simply fall through the slot and is returned to the vendor without actuating the machine and the coin can be obtained from the basin through the opening 40.

With the apparatus set and the proper coin inserted it will drop through the fixed slot 79, through the tiltable slot 31, through the slot 79 carried by the casting 41, and into the slot 49 carried by the ejector bar, where it is caught on the incline 80 carried by the rod 44. The forward movement of the ejector rod will bring the finger 47 in contact with the rear side of the coin C as shown in Fig. 6 and acts therethrough to advance the sliding bar 52. This advancing of the sliding bar will act through the gearing 58—61 and correspondingly advance the finger piece 65 and cause the ejection of the lowermost package as is usual in the operation of such construction.

As soon as the forward pulling tension is relieved on the ejector bar the coin is free to drop from the slot 49 and fall into the bottom of the casing but of course off set from the package discharging basin.

By means of a device of this character, it is possible to provide a multitude of stacks of different kinds of merchandise to be vended and provide for the selective ejection of a package from any one of the stacks through the use of but a single ejecting mechanism.

As the ejecting mechanism is obviously the most expensive part of a device of this character, the disclosure features economy in construction and the providing for the vending of a large number of different articles each controlled by its appropriate dimension of coin and at the same time confined practically all of the operating mechanism to a single unit which need not be duplicated for each stack of merchandise.

I claim:

1. In a vending machine, the combination of a plurality of vertically disposed package containing reservoirs radially disposed about an axis, a plurality of mechanism locating spring retainers, one for each reservoir, a single package ejecting mechanism pivotally mounted to be swung about said axis and including an ejecting rod coacting with said spring retainers and adapted to be positioned selectively in operative engagement to eject the lowermost package from any one of the reservoirs.

2. In a vending machine, the combination of a plurality of fixed reservoirs for containing packages to be vended a fixed, vertically disposed pivotal support and a package ejecting mechanism including a rugged supporting casting pivotally mounted on said support and means slidably mounted for radial movement in said casing and adapted to be swung selectively into operative engagement with the lowermost package in any one of the reservoirs to eject the same and movable radially to eject the lowermost package from any of the selected reservoirs.

3. In a vending machine, the combination of a plurality of fixed reservoirs for containing packages to be vended, a pivotally mounted package ejecting mechanism operatively disposed to be swung into engagement with the lowermost package in any of the reservoirs to eject the same, said ejecting mechanism comprising an actuating handle movable in one direction radially to locate the ejecting mechanism in operative position with the selected reservoir and operatable axially to eject a package from the selected reservoir.

4. In a package vending machine, the combination of a reservoir for containing the packages to be vended, a shiftable package ejecting mechanism mounted for swinging movement in a horizontal plane about a vertical axis and adapted in one position to be located in operative relation beneath the reservoir to eject the lowermost package therefrom and restraining means tending to hold and prevent accidental shifting of the ejecting mechanism from its operative relation to said reservoir while permitting a forceful shifting of the mechanism from its operative relation to said reservoir.

5. In a package vending machine, the combination of a reservoir for containing a stack of vertically disposed packages to be vended, a pivotally mounted package ejecting mechanism movable in a horizontal plane and adapted in one position to be located in operative relation to the reservoir to eject the lowermost package therefrom and in another position to be inoperative relative to said reservoir and means forming part of the pivotally mounted ejecting mechanism for returning the same idlely to its normal inoperative position.

6. In a vending machine, the combination of a plurality of fixed reservoirs for containing packages to be vended, a package ejecting mechanism pivotally mounted at one end for movement about a vertical axis and in a horizontal plane into position selectively beneath any one of the reservoirs, said mechanism provided with a rod bearing combined ejector and mechanism swinging rod slidably mounted in said bearing and adapted when moved horizontally to shift the mechanism as a whole into operative relation with the reservoirs, and a package ejecting finger piece carried by said mechanism, offset from and movable parallel to the longitudinal movement of the ejector rod and operatively controlled to be actuated by an axial movement of the ejector rod.

7. In a vending machine, the combination of fixed brackets, a package ejecting mechanism including a casting pivotally mounted in said brackets, a manually actuated ejector rod slidably mounted in said casting, a package engaging member slidably mounted in said casting, and gear connecting means between the sliding ejector rod and the sliding package engaging member.

8. In a vending machine, ejector mechanism including a pivotally mounted frame adapted to be swung into a plurality of operative positions, an ejector rod slidably mounted in the frame, package engaging ejector means slidably mounted in the frame for movement parallel to the ejector rod, and means providing a connection between the ejector rod and the package engaging member.

9. In a vending machine, ejector mechanism including an elongated frame pivotally mounted at one end and adapted to be swung into a plurality of operative positions, an ejector rod slidably mounted in the frame, package engaging ejector means slidably mounted in the frame, mechanism providing a connection between the ejector rod and the package engaging member and means controlled by the displacement of the ejecting mechanism from its operative position for causing the mechanism to become inoperative.

10. In a vending machine, the combination of a horizontally extending ejector carriage mounted for swinging movement about a vertical axis, an ejector rod slidably mount-

ed in the carriage, a spring normally acting on the rod to return it to a normal inoperative position when free of manual tension, a rack bar adapted to be actuated by the ejector rod, an ejector bar, a reducing gear connection between the ejector rod and the ejector bar and package ejecting means carried by the ejector bar.

Signed at New York in the county of New York and State of New York this 1st day of March, A. D. 1926.

HARRY T. GOSS.