April 14, 1953 E. C. JOHNSON 2,634,847

BOTTLE VENDING MACHINE

Filed April 11, 1949 2 SHEETS—SHEET 1

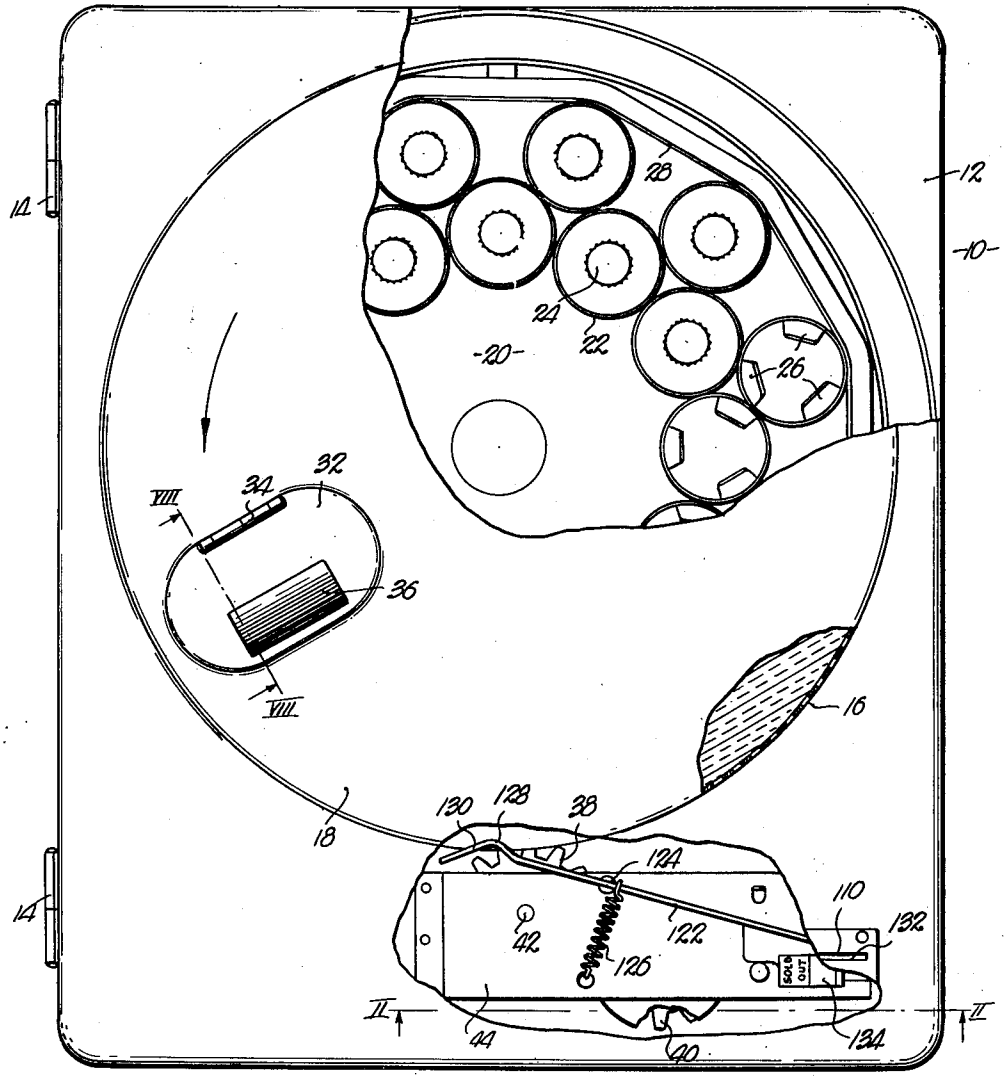

Fig. 1.

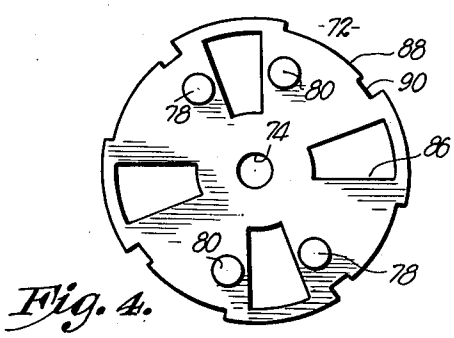

Fig. 4.

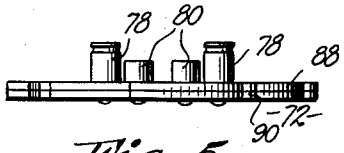

Fig. 5.

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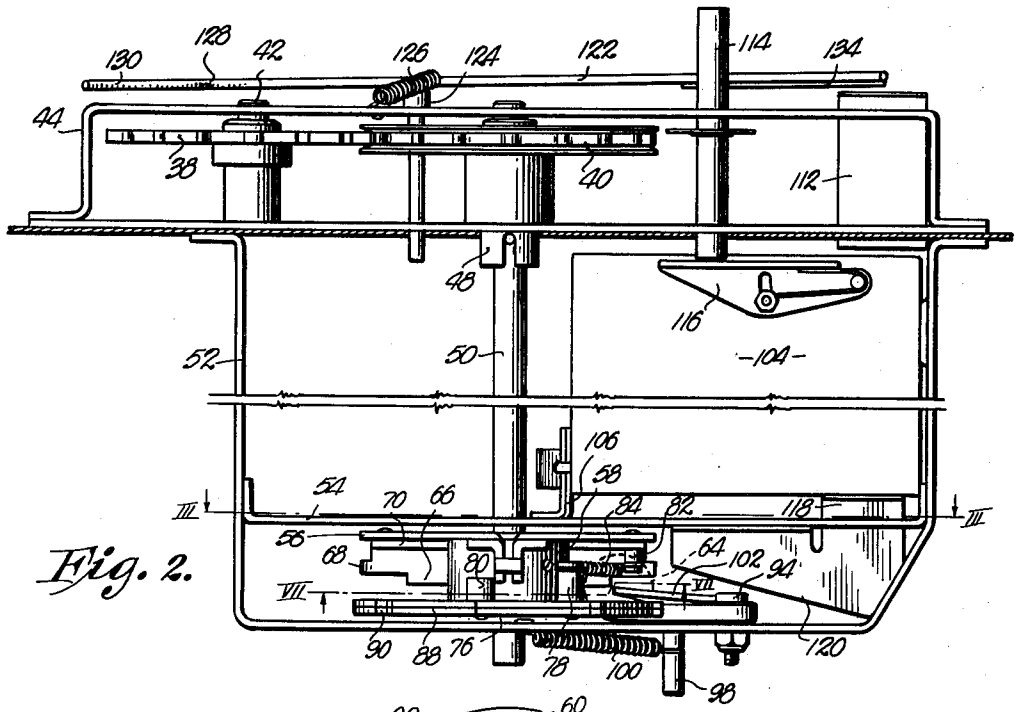

Fig. 2.

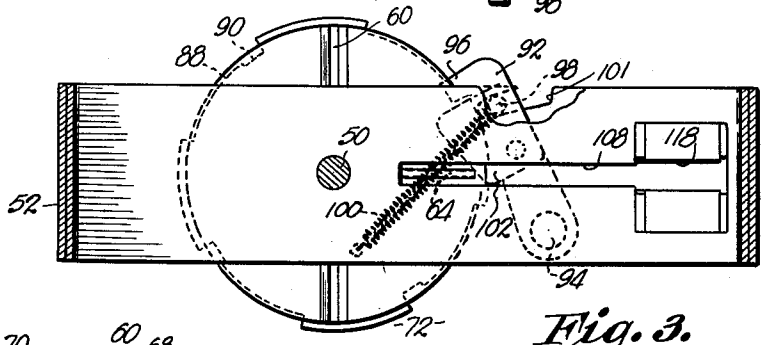

Fig. 3.

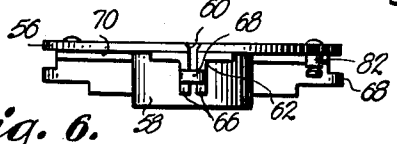

Fig. 6.

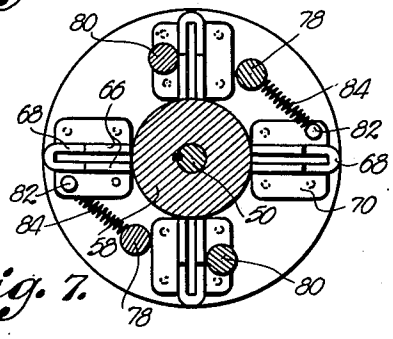

Fig. 7.

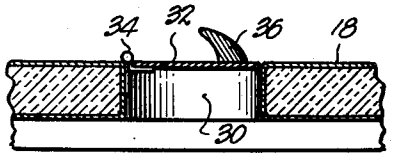

Fig. 8.

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BOTTLE VENDING MACHINE

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7 Claims. (Cl. 194—63)

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This invention relates to vending machines and more particularly to control mechanism therefor, the primary object being to provide means for locking the operating mechanism of the machine against customer operation in the absence of deposit of a coin or like medium thereinto, and to utilize the inserted coin as means for coupling together certain parts and to release locking means as the coin is moved against such lock.

The most important object of the present invention is to provide a control mechanism for vending machines of the kind having structure that is manually movable to a position for rendering available an article in the machine, there being a shiftable lock capable of release by an inserted coin, the mechanism being so formed as to permit partial rotation of the aforesaid manually movable structure to the end that the coin moves against the lock, releases the same, permits continued rotation of the structure for rendering the article accessible, whereupon the coin drops to a receiving box therefor and the lock again prevents further operation of the machine until another coin is inserted.

Another important object of the present invention is to provide a rotatable member that is secured directly to a manually movable structure forming a part of the machine for rendering available an article therein, said rotatable member having a pair of spaced apart plates thereon, one being secured to the shaft for rotation therewith, the other being rotatable on the shaft, said plates being formed and disposed for receiving a coin in coupling relationship thereto, said coin being movable a predetermined distance within the plate that is free on the shaft for releasing a lock that normally holds the last mentioned plate against rotation, all to the end that the entire machine is rendered operable only upon the insertion of a proper coin.

Other important objects including details of construction, will be made clear or become apparent as the following specification progresses, reference being had to the accompanying drawing, wherein:

Figure 1 is a top plan view of a bottle vending machine having an access disc disposed on a horizontal plane made in accordance with the present invention, parts being broken away and in section to reveal details of construction.

Figure 2 is a fragmentary cross sectional view taken on line II—II of Fig. 1.

Fig. 3 is a cross-sectional view taken on line III—III of Fig. 2, looking in the direction of the arrows.

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Fig. 4 is a top plan view of the index plate shown in Figs. 2 and 3 entirely removed from the remaining parts of the control mechanism.

Fig. 5 is an edge elevational view of the index plate.

Fig. 6 is a side elevational view of the uppermost retainer plate illustrated in Figs. 2 and 3 of the drawing, showing the same entirely removed from the associated mechanism.

Fig. 7 is a cross-sectional view taken on irregular line VII—VII of Fig. 2, looking in the direction of the arrows; and

Fig. 8 is a detailed, fragmentary, cross-sectional view taken on line VIII—VIII of Fig. 1.

The vending machine about to be described is, of course, provided with an insulated case that is broadly designated by the numeral 10, and has not been shown in the drawings in detail because the same forms no part of the present invention.

Case 10 is hollow, adapted to be refrigerated, and provided with a lid 12 that is mounted through the medium of a pair of hinges 14, covers the entire open top of the case 10 and is provided with a suitable lock not shown.

A circular opening 16 is formed in the lid 12, said opening being closed by a disc 18 that is rotatably mounted within the opening 16 in overlying relationship to an open top, bottle receiving magazine 20.

Magazine 20 is in turn provided with a plurality of stalls 22 for the individual bottles 24 to be vended. Bottles 24 rest in an upright condition directly upon a number of inturned ears 26 forming the bottom of the stalls 22. It is to be noted in Fig. 1, that there are two circular rows of the stalls 22 concentric with the axis of magazine 20 and the stalls 22 of one row thereof is staggered with respect to the stalls 22 of the other row. These two rows of stalls 22 are adjacent the outermost vertical side wall 28 of the magazine 20.

The disc 18 is provided with an elongated opening 30 so formed and disposed above the stalls 22 as to permit removal of bottles 24 singly from the magazine 20 as the disc 18 is rotated in step-by-step manner. A cover 32 hinged as at 34 covers the opening 30 and is provided with an upstanding finger grip 36 that is grasped by the operator to permit manual rotation of disc 18.

A pair of intermeshing gears 38 and 40 are mounted within the double wall construction of the lid 12. The gear 38 is freely rotatable upon a vertical shaft 42 that is joined to the innermost wall of lid 12 and to an upstanding bracket

44 on said innermost wall. Gear 38 is in mesh with a perforated band 46 that entirely circumscribes the vertical edge of disc 18.

The gear 40 is secured directly to a hub 48 rotatably mounted and extending downwardly through the bottom wall of lid 12 for connection with the uppermost end of a vertical shaft 50. An U-shaped bracket 52 depends from the lid 12 exteriorly of the basket 20 and extends into the cabinet 10 when lid 12 is in the closed condition. Bracket 52 has its legs joined by a dividing strap 54. Shaft 50 extends downwardly through strap 54 and through the bight of bracket 52 for free rotation therein.

A circular retainer plate 56, as shown in Figs. 6 and 7, is provided with a centrally-perforated, downwardly-extending hub 58 that circumscribes and is keyed directly to the shaft 50 immediately below the cross strap 54. Plate 56 is provided with a plurality of radial slots 60 that extend inwardly from the peripheral edge of plate 56.

Underlying each slot 60 respectively and secured directly to the lowermost face of plate 56 is a receiving member 62 for a coin 64. This receiving member 62 includes a pair of spaced-apart, downturned ears 66 that are joined at their outermost edges by a cross bar 68. Each ear 66 is provided with an outturned flange 70 that is spot welded or otherwise affixed directly to the lowermost face of plate 56. As shown in Figs. 2, 6 and 7, the space between the ears 66 is in direct alignment and coextensive in length with the respective slot 60.

An index plate broadly designated by the numeral 72, and detailed in Figs. 4 and 5, has a central opening 74 formed therein for loosely receiving the shaft 50, said index plate 72 being disposed in direct underlying relationship to the hub 58 of retainer plate 56 and resting upon a washer 76 that, in turn, is supported by the bight of bracket 52. The plate 72 is provided with a pair of upstanding stub pins 78 and a pair of shorter, upstanding stub pins 80 arranged as illustrated in Fig. 4 of the drawings. Plate 56 has a pair of diametrically-opposed, downwardly-extending pins 82, and each pin 82 is connected with a corresponding pin 78 by a coil spring 84.

As shown in Fig. 2, each pair of ears 66 is disposed between one pin 80 and one of the next adjacent, longer pins 78, all to the end that rotation of shaft 50 and consequently plate 56 that is rigid thereto is limited to the distance between pins 80 and the next following pin 78 when plate 72 is held against rotation. The plate 72 is provided with a number of substantially rectangular openings 86, there being an opening 86 corresponding to and normally in direct underlying relationship to a respective slot 60 in plate 56.

The outermost periphery of the plate 72 is provided with a number of elongated notches 88 between all of the openings 86, each notch 88 being provided with a relatively short recess 90. A substantially L-shaped latch 92 is swingably mounted upon the bight of bracket 52 by a pivot bolt or the like 94, latch 92 having a short leg 96 that is adapted to fit within any one of the recesses 90 of plate 72. Latch 92 has a downwardly extending pin 98 that receives one end of a coil spring 100, the opposite end of spring 100 being secured directly to one edge of the bight of bracket 52, as shown in Fig. 2.

The bight of bracket 52 is cut away to present a slot 101 for clearing the pin 98. Accordingly, spring 100 serves to hold the leg 96 of latch 92

biased against the periphery of plate 72. A projection 102 secured to the latch 92 intermediate the ends thereof extends laterally into overlying relationship to the uppermost marginal edge of the plate 72 and, as shown in Fig. 3, overlaps a portion of the openings 86 as the latter move therebelow through rotation of plate 72.

A slug rejector of any conventional character and broadly designated by the numeral 104 is secured to one leg of bracket 52 and to the uppermost face of strap 54 by a bracket 106. The outlet opening of slug rejector 104 (not shown) is in direct overlying alignment with an elongated slot 108 formed longitudinally within the strap 54. The slot 108, also, overlies each of the slots 60 of plate 56 as the latter is rotated in step-by-step manner as hereinafter more fully set forth.

Coins of a proper predetermined character are inserted into the machine by means of a slot 110 formed in the lid 12 of cabinet 10, which slot 110 registers with a chute 112 that, in turn, communicates with the inlet opening of slug rejector 104. Slugs may be returned to the operator by pressing downwardly upon a plunger 114 that extends above the top of lid 12 and bears at its lowermost end against a swingably-mounted link 116 forming a part of slug rejector 104.

Such returned slugs pass into a chute 118 that extends downwardly through the strap 54 in register with the slot 108 and thence outwardly through an opening (not shown) in one leg of bracket 52. Chute 118 is provided with an elongated, inclined stretch 120 that underlies a portion of the slot 108 and terminates in an open end adjacent the periphery of retainer plate 56.

Assuming the component parts of the control mechanism to be formed and arranged as above set forth, its operation is as follows:

With spring 100 holding latch 92 normally locked with respect to one of the recesses 90, plate 72 is held against rotation. Limited rotation of the disc 18 by the operator is possible, however, even with plate 72 locked against rotation. Such limited rotation of the disc 18, in turn, rotates the intermeshing gears 38 and 40 and, consequently, the shaft 50. As shaft 50 commences to rotate, one of the ears 66 of two pairs thereof will move against the longer stub pins 78 and plate 72 will, accordingly, prevent further rotation of disc 18.

Obviously, counter rotation of the disc 18 is prevented by certain of the ears 66 striking the short stub pins 80. When such partial rotation of the disc 18 is attempted, springs 84 will yield and, as soon as the operator releases disc 18, springs 84 will return the plate 56 to a normal position with two of the downturned ears 66 bearing against stub pins 80. Such limited rotation of the disc 18 is not sufficient to permit the operator to remove a bottle 24 from one of the stalls 22 by swinging closure 32 to an open position.

Proper operation of the machine necessitates the insertion of a coin into slot 110 for passage through chute 112 into slug rejector 104 and thence outwardly from slug rejector 104 into slot 108 of strap 54. The coin 64 then drops downwardly into the particular slot 60 that is in alignment with slot 108. Coin 64 comes to rest upon its edge on the uppermost face of the bight of bracket 52. When in this position, a portion of the coin 64 is embraced by the spaced-apart ears 66, and a portion of the coin 64 is within one of the openings 86 of the plate 72.

The operator then grasps the grip 36 and ro-

tates the disc 18 in the direction indicated by the arrow in Fig. 1. As plate 56 and its downturned ears 66 rotate, coin 64 will be carried therewith and will slide along the uppermost face of the bight of bracket 52 within one of the openings 86.

Before ears 66 strike the pins 78, coin 64 will move against the lateral projection 102 of latch 92 and swing the same against the action of spring 100 to release leg 96 with respect to one of the recesses 90. Thereupon, the shaft 50, the retainer plate 56, the coin 64, and the plate 72 will rotate as a unit until coin 64 clears projection 102 and drops downwardly upon reaching one longitudinal edge of the bight of bracket 52 into a collecting cup (not shown). As soon as coin 64 moves away from extension 102, spring 100 will hold the leg 96 of latch 92 against the periphery of plate 72 for relocking with the respective following recess 90.

In the event an operator attempts to insert a coin into the machine while another coin still rests within a pair of ears 66, such second coin will fall from the slug rejector 104 into the slot 108 and upon the uppermost edge of the coin 64 already within the machine. The second coin will thereupon roll from the slot 60 into the proximal open end of the inclined portion 120 of chute 118 and outwardly for recovery by the operator.

It is obvious that the arrangement of the openings 60 in plate 56, as well as the openings 86 in plate 72, together with the gearing 38—40 is such as to position outlet opening 30 of disc 18 above only one stall 22 for each step-by-step machine operation. Consequently, the discs 56 and 72 will complete several revolutions for each complete revolution of disc 18. The entire control mechanism is accessible to the repairman, since the same merely depends from the lid 12 and is completely accessible when lid 12 is swung open upon hinges 14.

Means for indicating to a potential customer when the magazine 20 is exhausted of bottles 24 includes an arm 122 that is swingably mounted as at 124 intermediate the ends thereof and upon the uppermost face of the bracket 44. A spring 126 secured at one end to bracket 44 and at the opposite end to arm 122 holds one end of the arm 122 biased against the periphery of disc 18.

This said one end of arm 122 has an offset portion 128 formed thereon designed to enter a recess 130 within disc 18 when disc 18 has rotated to the position where all bottles 24 have been removed from the magazine 20. When the arm 122 swings to the position shown in Fig. 1 with portion 128 thereof in recess 130, a short leg 132 on the opposite end of arm 122 moves in underlying, traversing relationship to slot 110, preventing insertion of further coins 64 thereinto. Arm 122, also, carries a small plate 134 having suitable indicia thereon such as "Sold Out," which plate 134 moves into underlying relationship with respect to a transparent panel (not shown) in full view of the potential customer when arm 122 is in the position shown in Fig. 1.

Obviously, the entire machine will be provided with suitable means for maintaining the bottles 24 in a refrigerated condition; but, if articles other than bottles are vended by the machine, then such refrigerating means will become unnecessary. It is obvious that the control structure forming a part of the present invention is virtually foolproof and positively will prevent unauthorized access to the contents of magazine 20 in the absence of coin insertion. The formation of the plates 56 and 72 and particularly the number and size of the slots of the openings therein will be dependent upon the number of articles to be vended, as well as the size and shape of the coin that the machine is intended to accommodate.

Obviously, the mechanism is subject to many changes and modifications, and those that fairly come within the scope of the appended claims are contemplated hereby.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Control means of the kind described comprising a pair of spaced-apart, rotatable members having means on the proximal faces thereof for receiving a coin in connecting relationship thereto, said means on one of the members being formed to permit movement of the coin with respect to the one member when the other member is partially rotated; parts on said one member disposed for engagement by a portion of said other member for limiting the extent of rotation of the latter; and releasable mechanism for holding the one member against rotation, said mechanism having parts within the path of travel of said coin for releasable engagement thereby, whereby to permit continued rotation of the other member.

2. Control means of the kind described comprising a pair of spaced-apart, rotatable discs having means on the proximal faces thereof for receiving a coin, said means on one of the discs constituting an opening therethrough, there being a wall on the opposite face of said one disc closing said opening, said opening being formed to permit partial rotation in one direction of the other disc and the coin carried thereby separate from said one disc; releasable mechanism for holding the said one disc against rotation and having parts within the path of travel of said coin formed to release said mechanism as the coin is moved, thereby to permit continued rotation of the discs and the coin as a unit in said one direction; and means on the one disc for limiting rotation of the other disc in the opposite direction with respect to the one disc.

3. Coin control means as set forth in claim 2 wherein said last-mentioned means comprises laterally extending pins on said one disc within the path of travel of the other disc.

4. Control means of the kind described comprising a coin disc and a locking disc, said discs being spaced and rotatable, and provided with a number of normally aligned, coin-receiving openings, the openings of the locking disc being larger than the thickness of a coin whereby said coin is rendered movable by the coin disc relative to the locking disc when the coin is within one opening of each disc respectively; interengageable parts on the discs for limiting the extent of rotation of the coin disc; and a releasable latch for holding the locking disc against rotation, said latch being within the path of travel of said coin for release thereby upon partial rotation of the coin disc relative to the locking disc.

5. In a vending machine, an article storage cabinet; a rotatable closure for the cabinet having an access opening; a rotatable shaft coupled with said closure; and structure for controlling the rotation of said closure comprising a pair of spaced, rotatable members having means on the proximal faces thereof for receiving a coin in connecting relationship thereto, said means on one of the members being formed to permit movement of the

coin with respect to said one member when the other member is partially rotated, said other member being secured to the shaft; parts on said one member disposed for engagement by a portion of said other member for limiting the extent of rotation of the latter; and releasable mechanism for holding the one member against rotation, said mechanism having parts within the path of travel of said coin for releasable engagement thereby, whereby to permit continued rotation of the other member.

6. In a vending machine as set forth in claim 5 wherein said coin-receiving means of the members comprise normally aligned openings, the openings of said one member being wider than the thickness of said coin.

7. In a vending machine as set forth in claim 5 wherein is provided means connecting said parts and said other member for yieldably holding the latter biased against rotation.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,410,955	Pruitt	Mar. 28, 1922
1,703,937	Johnson	Mar. 5, 1929
1,990,987	Frick	Feb. 12, 1935
2,305,348	King	Dec. 15, 1942
2,309,055	Ferris	Jan. 19, 1943
2,396,011	Johnson	Mar. 5, 1946