

June 17, 1941.

A. A. BRADT

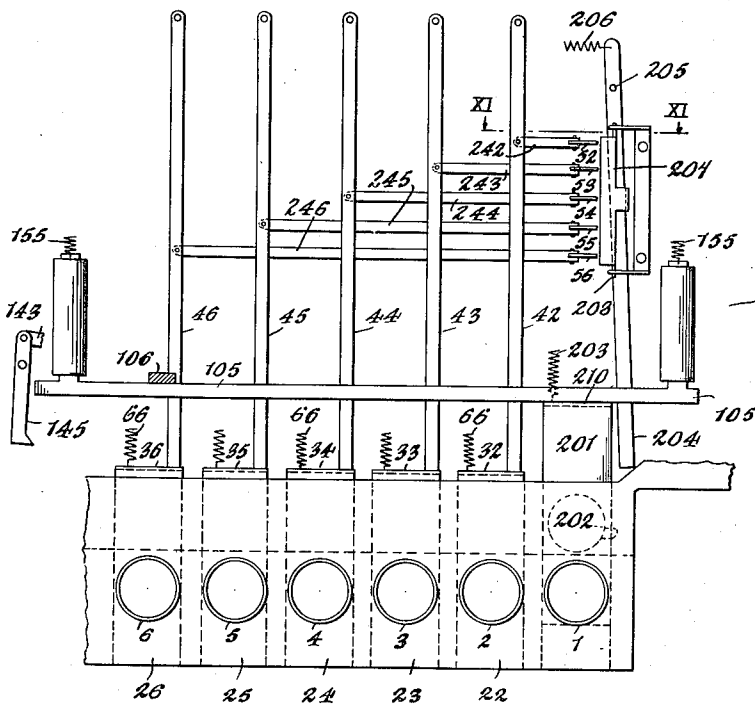
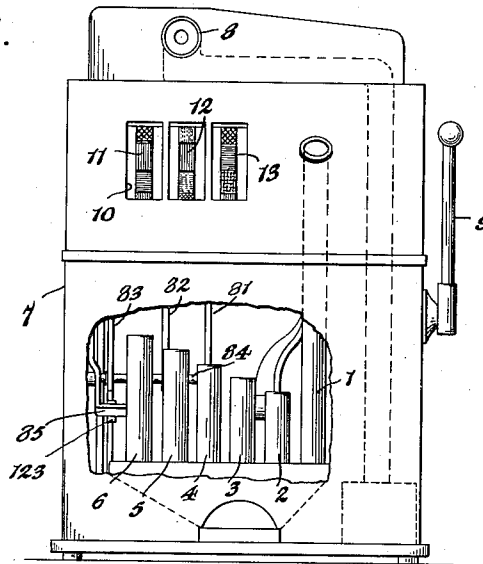
2,245,898

COIN OPERATED VENDING MACHINE

Filed Dec. 16, 1938

4 Sheets-Sheet 1

*Fig. 1.*



*Fig. 9.*

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4 Sheets-Sheet 3

Fig. 3.

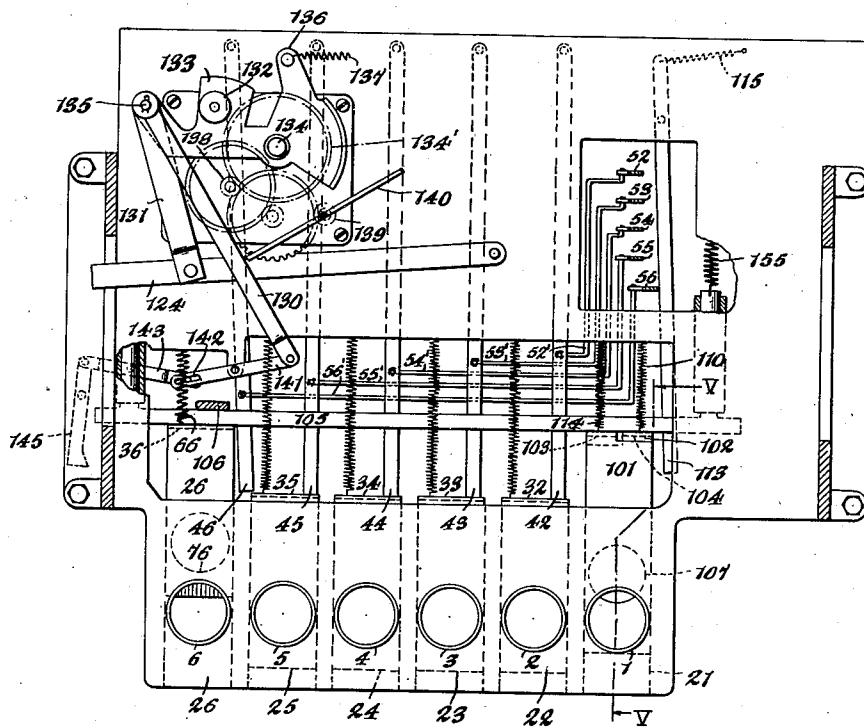


Fig. 5.

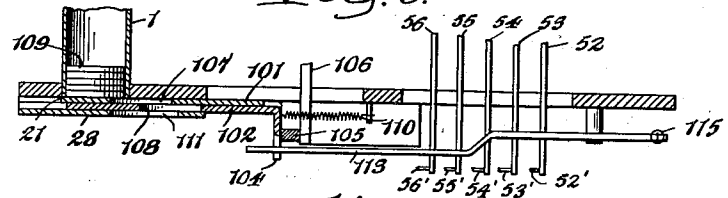
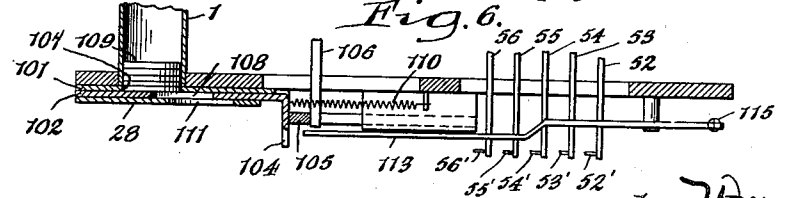


Fig. 6.



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Fig. 4.

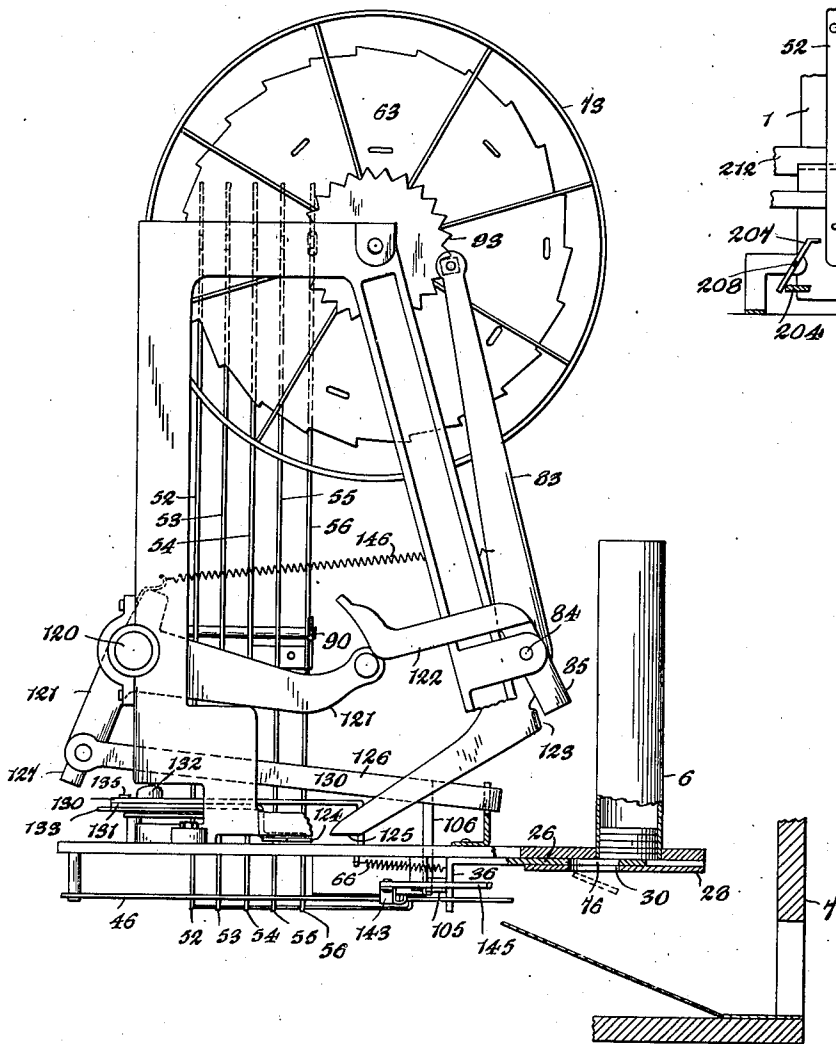


Fig. 11.

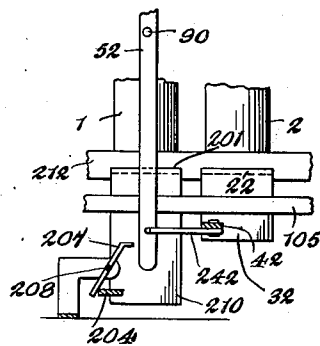
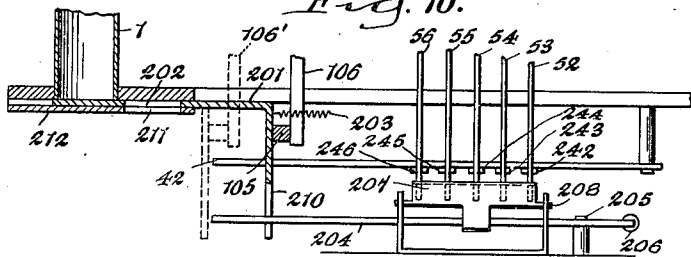


Fig. 10.



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# UNITED STATES PATENT OFFICE

2,245,898

## COIN OPERATED VENDING MACHINE

Ardon A. Bradt, Niagara Falls, N. Y.

Application December 16, 1938, Serial No. 246,055

5 Claims. (Cl. 312-47)

This invention relates to coin operated vending machines and has as an object the provision of an improved machine of the character referred to.

In the drawings, which are appended to aid in the understanding of the invention,

Fig. 1 is a front view of the exterior and part of the interior of a machine embodying the present invention;

Fig. 2 is a front view of a mechanism embodying the present invention;

Fig. 3 is a sectional view through the line III—III of Fig. 2;

Fig. 4 is a side view of the mechanism illustrated in Figs. 2 and 3;

Fig. 5 is a sectional view taken as indicated by the line V—V of Fig. 3, with the pay-out slides in the fully retracted position;

Fig. 6 is a sectional view taken as indicated by line V—V of Fig. 3, with the pay-out slides in the fully advanced position;

Fig. 7 is a plan view of the mechanism shown in elevation in Fig. 5;

Fig. 8 is a plan view of the mechanism shown in elevation in Fig. 6;

Fig. 9 is a simplified view of a modification of the mechanism shown in Fig. 3;

Fig. 10 is a side elevation, partly in section, of a part of the modification shown in Fig. 9; and

Fig. 11 is a sectional view taken as indicated by the line XI—XI of Fig. 9.

The machine illustrated in the drawings is of the type that dispenses tokens, coupons or fortune-telling cards but it is to be understood that the invention is not limited to machines dispensing such articles because the drawings are for illustrative purposes and the machines can be modified to dispense merchandise of substantially any description without departing from the scope of the invention. In the present disclosure, the term "token" will be used for simplicity of language, with the understanding that the term shall mean not only tokens of the usual sort, but coupons of all sorts, fortune-telling cards, and merchandise of the nature that can be dispensed by a machine.

Fig. 1 shows a machine comprising a plurality of magazines 1, 2, 3, 4, 5 and 6, adapted to contain a supply of different kinds of tokens, in a case 7. At the top of the machine illustrated is a coin slot 8 and at the right a handle 9 which is adapted to set into operation the mechanism in the case when pulled down after a coin has been deposited in the slot 8. A window 10 per-

mits a view of the symbols 11, 12 and 13, which are carried on revolvable wheels and which indicate the nature of the token that is to be dispensed at opening 14 at the conclusion of the particular operation of the machine.

Fig. 2 shows the magazines 1, 2, 3, 4, 5 and 6 provided with bottom closure members 21, 22, 23, 24, 25 and 26, which are slidably mounted beneath the respective magazines and supported by the plate 28.

The closure plates 22, 23, 24, 25 and 26 have normally projecting legs 32, 33, 34, 35 and 36, respectively, which are engaged by the detents 42, 43, 44, 45 and 46, respectively.

The detent 46 that engages the leg 36 of the closure member 26 is connected to the lever 56 by means of a link 56' shown in Figs. 2 and 3. The other detents 42, 43, 44 and 45 are connected by similar links to similar levers, none of which are shown in Fig. 2 but all of which are shown in Fig. 3.

The movement of the lever 56, and hence the movement of the detent 46, is controlled by the relative positions of the perforated disks 61, 62 and 63, which are connected to the revolvable drums 71, 72 and 73, respectively. Each of the drums and its respectively connected disk is independently rotatable with respect to the other drums and disks.

The disks 61, 62 and 63 have notches completely around their peripheries (as shown in Fig. 4) and these notches are engageable by the spring actuated pawl 80. Engagement of the pawl 80 with the notches in the disks 61, 62 and 63 causes these disks and their respectively connected drums 71, 72 and 73 to rotate freely and independently until the pawls 81, 82 and 83 engage the notched peripheries of the disks 91, 92 and 93, respectively. The disks 91, 92 and 93, being connected to the drum 71, 72 and 73, respectively, cause the drums to come to rest when the pawls 81, 82 and 83 engage notches in their peripheries. The pawls 81, 82 and 83 are rotatable about the shaft 84 and are engaged by the arm 85, which turns on the shaft 84 just prior to the actuation of the drums 71, 72 and 73 by the engagement of the pawl 80 with the notched disks 61, 62 and 63 and pushes the lower parts of the pawls 81, 82 and 83 toward the rear of the machine and thus lifts the opposite ends of the pawls 81, 82 and 83 away from and out of engagement with the notched disks 91, 92 and 93.

When the movement of the handle 9 has proceeded to a certain point it becomes disengaged

from the actuating mechanism and the arm 84 is returned to a position toward the front of the machine and out of engagement with the pawls 81, 82 and 83, whereupon the pawls 81, 82 and 83 again engage the notched disks 91, 92 and 93 and bring the drums 71, 72 and 73 with their respectively connected disks 61, 62 and 63 to rest.

As stated above, the disks 61, 62 and 63 are perforated. These perforations are in a predetermined pattern such that by the disks 61, 62 and 63 coming to rest at certain positions, a perforation in each of the disks will come into alignment and provide an opening through which the finger 86 at the upper end of the lever 56 will be urged by the spring 87. In this arrangement of the disks 61, 62 and 63 the finger 86 passes through all of them and the tip 88 of the finger 86 protrudes beyond the face 89 of the disk 63. This movement of the finger 86 through the disks 61, 62 and 63 causes the lever 56 to turn on its pivot 90 and thereby move its lower arm in a counter-clockwise direction. Such counter-clockwise movement of the lower arm of the lever 56 pulls the detent 45 away from engagement with the leg 36 of the closure means by means of the link 56' and permits the movement of the plate 25 into a dispensing position, as shown in Fig. 3.

When the disks 61, 62 and 63 come to rest in certain other positions, their perforations line up to provide an opening through which one or another of fingers similar to that of the lever 56 shown in Fig. 2, but which are connected to other levers not shown in Fig. 2, may pass and thus cause the operation of one or another of the other closure members 22, 23, 24 or 26, by means of links 52', 53', 54' or 55'.

In still other positions of the disks 61, 62 and 63, no through opening will be provided for any finger of a lever similar to the lever 56 shown in Fig. 2, in which case none of the closures 22, 23, 24, 25 or 26 is caused to open and dispense a token, coupon or fortune-telling card. When the disks line up in such positions that none of the closures 22, 23, 24, 25 or 26 is opened, the closure member 21 of the magazine 1 is operated to dispense a token, coupon, fortune-telling card or other article contained in that magazine.

The closure member 21 for the stack 1 comprises two movable slides 101 and 102 with normal arms 103 and 104, respectively, which are operated by means of the clearance bar 105 in the manner illustrated in Fig. 2 and in more detail in Figs. 3, 4 and 5.

In Fig. 3 the clearance bar 105 is shown in engagement with the normal arms 103 and 104 of the slides 101 and 102, respectively. When the handle 9 is pulled to set the machine in operation the first movement that takes place is one whereby the clearance bar 105 is moved forward by means of the dog 106 in order that any closure member that was opened by the previous operation of the machine may be restored to its closed position. As this forward movement of the clearance bar 105 takes place, it pushes on the arms 103 and 104 to move them under the magazine 1.

Fig. 5 shows the closure member 21 of the stack 1 just before the beginning of the forward movement of the dog 106 and the clearance bar 105. As the clearance bar 105 moves forward, it pushes the upper slide 101 forward until the opening 107 is directly under the magazine 1 and pushes the lower slide 102 forward until the opening 108 is about half-way under the magazine 1. The forward

positions of the upper and lower slides 101 and 102 are shown in Fig. 6.

The upper slide 101 is of such thickness that it will permit one, and only one, of the tokens 109 to drop from the magazine 1 into the opening 107 in the slide 101. When the operation of the machine has proceeded to the point where the perforated disks 61, 62 and 63 have come to rest after freely revolving and no opening there-through has been provided to permit movement of any of the levers 52, 53, 54, 55 or 56, the two slides 101 and 102 are pulled back by the springs 110 and 114, but the movement of the slide 102 is arrested by the detent 113 when the opening 100 is in register with the opening 111 in the plate 28. The plate 101 continues to move back and as it does so, the opening 107 lines up with the openings 108 and 111 and permits the token 109 to drop through and be dispensed.

Fig. 8 shows the detent 113 pulled into the arresting position by the spring 115 and the plates 101 and 102 in positions just prior to engagement of the arm 104 of the slide 102 with the detent 113.

In the event that the perforated disks 61, 62 and 63, after freely rotating, line up with their perforations permitting movement of one of the levers 52, 53, 54, 55 or 56, the detent 113 is kept in the non-arresting position by the engagement of one of said levers with the detent, as illustrated in Fig. 7. In Fig. 7, the lever 56 is shown in engagement with the detent 113 and holding it against the action of the spring 115. With the detent held in non-arresting position, the openings 107 and 108 in the slides 101 and 102 do not line up with the opening 111 in the plate 112 and therefore the token in the opening 107 is retained therein.

Fig. 4 shows a side view of the notched wheel 63, which is connected to the drum 73, when the finger of the lever 56 has passed through the disks 61, 62 and 63 and therefore has moved the detent 46 away from engagement with the arm 36 of the slide 25 under the magazine 6, and has permitted the spring 66 to pull the slide 25 into such position that the opening 76 in the slide 25 registers with the opening 30 in the fixed plate 28 under the slide 26.

Fig. 4 also shows the mechanism for freeing the drum 73 for rotation. As shown in the drawings, the pawl 83 is in engagement with the notched disk 93, which is connected to the drum 73. When the handle 9 (shown in Fig. 1 and Fig. 2) is pulled down, the rear bell-crank 121 is rotated about its shaft 120 in a counter-clockwise direction and thereby engages the forward bell-crank 122 and causes it to move about the shaft 24 in a clockwise direction. As the forward bell-crank moves in a clockwise direction, it engages the foot 123 of the pivoted pawl 83 and causes it to move along in a clockwise direction also. The clockwise movement of the foot 123 of the pawl 83 causes the upper end of the pawl 83 to move out of engagement with the notched disk 93 and thereby frees the drum 73 for rotation. Drums 71 and 72 shown in the other drawings are freed by the similar actions of levers 81 and 82, respectively.

At the same time the foot 123 of the pawl 83 is moved clockwise, the lever 124 is moved forward until it is under the end 125 of the foot 123 of the pawl 83. By this time the rear bell-crank 121 has moved up to its limit of movement and has become disengaged from the actuating handle 9, whereupon it is pulled back in a clock-

wise direction by the spring 146 and permits the forward bell-crank 122 to drop back in a counter-clockwise direction. The lever 124 then temporarily holds up the end 125 of the foot 123 of the pawl 83 so that the drum 73 can rotate freely. Removal of the pawls 81 and 82 from engagement with the notched disks 91 and 92, respectively, is accomplished in the same manner, namely, by means of the forward bell-crank 122 and the lever 124.

In addition to causing the disengagement of the pawl 83 with the notched disk 93, the movement of the rear bell-crank 121 also causes the forward movement of the arm 126, to which is attached the dog 106 which engages the clearance bar 105, and the forward movement of the push levers 130 and 131.

The forward movement of the push levers 130 and 131 is accomplished by the engagement of the lower end 127 of the rear bell-crank 121 with the pin 132 of the bell-crank 133, which is pivoted at the point 134, the levers 130 and 131 being pivotally connected to the bell-crank 133 at the point 135.

Reference is made at this point to Fig. 3, which shows a plan view of the system of levers recited above. As shown in Fig. 3, the bell-crank 133 is pivoted at 134 and has an arm 136 to which is attached the spring 137. The pivot 134 is rigidly attached to the bell-crank 133 and also to the gear 134' which is beneath the bell-crank 133 and engages a spur gear 138 which forms a part of a train of gears terminating in the gear 139, to which is connected the vane 140.

When the rear bell-crank 121 is operated by the handle 9 and moves in a counter-clockwise direction, its lower end 127 engages the pin 132 and thereby urges the bell-crank 133 in a counter-clockwise direction. This counter-clockwise movement of the bell-crank 133 causes the arms 130 and 131 to move forward and these in turn move forward the pivoted lever 124 and cause the clockwise rotation of the arm 141 of the toggle 142, respectively.

The function of the pivoted lever 124 has been described above. The clockwise rotation of the arm 141 causes the other arm 143 of the toggle 142 to move in a counter-clockwise direction, and this in turn causes the detent 145 to move in a counter-clockwise direction.

Inasmuch as the dog 106, which engages the clearance bar 105, is started on its forward movement prior to the engagement of the end 127 of the rear bell-crank 121 with the pin 132 of the bell-crank 133, the clearance bar is moved into its most forward position prior to the time the counter-clockwise rotation of the detent 145 brings that member into the path of the clearance bar 105.

Thus, the counter-clockwise movement of the rear bell-crank 121 (Fig. 4) causes the clearance bar 105 to move forward and push against the arms 32, 33, 34, 35 and 36 of the closure plates 22, 23, 24, 25 and 26, and at the proper time moves the detent 145 into position behind the clearance bar to prevent the return of the clearance bar 105 until the proper time.

It will be noted that when the rear bell-crank 121 has reached the position whereby the clearance bar 105 has been moved forward and against the arms 32, 33, 34, 35 and 36 of the closure plates 22, 23, 24, 25 and 26, the spring 137 attached to the arm 136 of the bell-crank 133 has been ex-

tended by the counter-clockwise movement of the bell-crank 133.

When the bell-crank has caused the clearance bar 105 to reach its most forward position, engagement between the handle 9 and the bell-crank 121 is discontinued by latch means not shown in the present drawings.

Upon disengagement between the handle 9 and the rear bell-crank being effected, the rear bell-crank 121 is pulled back to its starting position by the spring 146 connected thereto. The end 127 of the rear bell-crank 121 thus being removed from engagement with the pin 132 of the bell-crank 133, the bell-crank 133 is urged toward its starting position by the spring 137 connected to the arm 136. The rate of return of the bell-crank 133 to its starting position is controlled, however, by the rotating vane 140, which is driven by the train of gears beginning with the gear 134 and ending with the spur gear 139 connected to the shaft supporting the vane 140. The windage caused by the rotation of the vane 140 causes the return of the rear bell-crank 121 to its starting position to be retarded and thereby permit free rotation of the drums 71, 72 and 73 for a period of time of longer duration than would be the case were the rear bell-crank urged back by the spring 137 without interference by the vane 140.

As the rear bell-crank 121 is slowly moved back to its starting position, it pulls the arm 141 of the toggle 142 in a counter-clockwise direction and thereby causes the detent 145 to rotate about its pivot and release the clearance bar 105, which then is pulled back by the spring 155. It also pulls the pivoted lever 124 in a clockwise direction and this clockwise movement of the pivoted lever 124 draws that member from beneath the feet of the pawls 81, 82 and 83. Withdrawal of the pivoted lever 124 from beneath the feet of the pawls 81, 82 and 83 permits those pawls to be drawn into engagement with the notched disks 91, 92 and 93, respectively, and thus stop the rotation of the drums 71, 72 and 73, respectively.

If the drums 71, 72 and 73 are thus stopped in such positions that their respectively connected perforated disks 61, 62 and 63 are so positioned that perforations in each of them line up to provide an opening into which the end finger of one of the levers 52, 53, 54, 55 or 56, (for example, the end finger 86 of the lever 56), can pass through all three of the disks 61, 62 and 63, one of the closure members 22, 23, 24, 25 or 26 (for example, closure member 26) will operate as described above to permit a token to be dispensed from the magazine controlled by that closure member (for example, magazine 6).

In the event that the drums 71, 72 and 73 come to rest in such positions that none of the fingers of the levers 52, 53, 54, 55 or 56 can pass through the disks 61, 62 and 63 as described above, the closure member under the magazine 1 is operated in the manner described above to dispense a token from that magazine.

It will be noted from the above that in the event that any one of the slides 22, 23, 24, 25 or 26 is moved into the dispensing position, the dispensing means under the magazine 1 is rendered inoperative and no token will be dispensed from that magazine.

A modification of the means for preventing a pay-out from magazine 1 is illustrated in Figs. 9, 10 and 11.

Fig. 9 shows the closure means 22, 23, 24, 25

and 26 of the magazines 2, 3, 4, 5 and 6 in the non-dispensing positions and the closure means of the magazine 1 in the dispensing position. As shown in Fig. 10, the slide 201 having an opening 202 therein has been pulled back by the spring 203 because the detent 204 pivoted at 205 has been pulled back out of the way by the spring 206. The detent 204 occupies the position shown in Fig. 9 because none of the levers 52, 53, 54, 55 or 56 has acted against the pivoted lever 207 to urge the detent 204 in a clockwise direction.

When one of the levers 52, 53, 54, 55 or 56 moves it moves toward and into engagement with the pivoted lever 207 and urges that lever in a clockwise direction about its pivot 209, which movement causes the detent 204 to move into the path of the movement of the slide 201.

Movement of any of the levers 52, 53, 54, 55 or 56 as just described also causes a corresponding movement of one of the respectively connected links 242, 243, 244, 245, 246 which connect the detents 42, 43, 44, 45 and 46 with the levers 52, 53, 54, 55 and 56, respectively.

Fig. 10 shows a side view of the modification shown in plan view in Fig. 9. In Fig. 10, the movable slide 201 with the opening 202 and the normal arm 210 is shown in the pay-out position, namely, with its opening 202 in register with the opening 211 of the fixed plate 212 upon which the movable slide 201 rides.

Fig. 11 shows a part of the modification shown in Fig. 9 and Fig. 10, as indicated by the line XI—XI of Fig. 9.

When the handle 9 of the machine is pulled down, the dog 108 is caused to move to the position indicated in Fig. 10 by the reference numeral 108', which is directed to the dotted outline of the dog. The movement of the dog 108 to the position 108' causes the slide 201 to be moved so that its opening 202 is directly under the magazine 1, and therefore in a position to receive a token from that magazine. The slide 201 is of approximately the same thickness as that of a token, so that one and only one token can pass from the magazine into the opening 202 of the slide.

In the event that the rotation of the drums 71, 72 and 73 has terminated with none of the levers 52, 53, 54, 55 or 56 moving, the return of the dog 108 to its original position permits the movable slide to be pulled back by the spring 203 until the opening 202 containing a token is in register with the opening 211 in the fixed plate 202. Accordingly, a token is dispensed by such movement.

If, however, the drums 71, 72 and 73 stop in such positions that movement of any one of the levers 52, 53, 54, 55 or 56 takes place, the lever that is moved urges the pivoted lever 207 against the detent 204 and causes it to move into the path of the normal arm 210 of the slide 201. The slide 201 thus is held against movement by the detent 204 and no registering of the opening 202 of the slide 201 can take place with the opening 211 of the fixed plate 212. The pay-out from magazine 1 therefore is prevented, but pay-out from one of the magazines 2, 3, 4, 5 or 6 is effected as described above.

While the foregoing disclosure has described in detail one embodiment of the present invention it will be realized that there are other modifications that are within the scope of the invention. For example, the revolvable drums and their respective perforated disks, which in the present disclosure are shown with their axis of rotation parallel with the front of the machine, can be

replaced by revolvable disks having a common axis of rotation perpendicular to the front of the machine. In such a modification, the closure means for the various magazines can be as described above and the detents controlling said closure means can be connected directly to the levers that cooperate with the revolvable disks to select the magazine that is to pay out at any given operation of the machine.

Having described my invention, I claim:

1. In a vending machine, the combination comprising a plurality of token magazines and means for withdrawing and dispensing one token only from one only of said magazines at each operation of the machine comprising a bottom closure member for each of said magazines, and selective releasing means for said closure members comprising means operating upon said closure members to urge them open, a detent for each of said closure members restraining said opening means from opening said closure members, and automatically operated means for moving one only of said detents out of its restraining position at each operation of the machine.

2. In a vending machine, the combination comprising a plurality of token magazines and means for withdrawing and dispensing one token only from one only of said magazines at each operation of the machine comprising a bottom closure member for each of said magazines, and automatically operated selective releasing means for said closure members comprising means operating upon said closure members to urge them open, a detent for each of said closure members restraining said opening means from opening said closure members, and means for moving one only of said detents out of its restraining position at each operation of the machine comprising levers of the first class and links respectively connecting the detents with said levers of the first class, means exerting a moving force against said levers, means for restraining the movement of said levers and for automatically permitting one only of said levers to move at each operation of the machine.

3. In a vending machine, the combination comprising a plurality of token magazines and means for withdrawing and dispensing one token only from one only of said magazines at each operation of the machine comprising a bottom closure member for each of said magazines, and automatically operated selective releasing means for said closure members comprising means operating upon said closure members to urge them open, a detent for each of said closure members restraining said opening means from opening said closure members, and means for moving one only of said detents out of its restraining position at each operation of the machine comprising levers of the first class and links respectively connecting the detents with said levers of the first class, means exerting a moving force against said levers, means for restraining the movement of said levers and for automatically permitting one only of said levers to move at each operation of the machine comprising a finger rigidly attached to and projecting at an angle from the end of each lever opposite that to which the connecting link is attached and means for actuating one only of said fingers at one time.

4. In a vending machine, the combination comprising a plurality of token magazines and means for withdrawing and dispensing one token only from one only of said magazines at each operation of the machine comprising a bottom closure



member for each of said magazines, and automatically operated selective releasing means for said closure members comprising means operating upon said closure members to urge them open, a detent for each of said closure members restraining said opening means from opening said closure members, and means for moving one only of said detents out of its restraining position at each operation of the machine comprising levers of the first class and links respectively connecting the detents with said levers of the first class, means exerting a moving force against said levers, means for restraining the movement of said levers and for automatically permitting one only of said levers to move at each operation of the machine comprising a finger rigidly attached to and projecting at an angle from the end of each lever opposite that to which the connecting link is attached, and means for actuating one only of said fingers at one time comprising a plurality of independently rotatable disks mounted coaxially and having a plurality of perforations therein providing a plurality of combinations wherein a perforation in one of the disks lines up with perforations in the other disks to provide an opening to receive one only of the said fingers and thereby permit full actuating movement of the lever to which said finger is attached.

5. In a vending machine, the combination comprising a plurality of token magazines and means for withdrawing and dispensing one token only from one only of said magazines at each operation of the machine comprising a bottom closure

member for each of said magazines, and automatically operated selective releasing means for said closure members comprising means operating upon said closure members to urge them open, a detent for each of said closure members restraining said opening means from opening said closure members, and means for moving one only of said detents out of its restraining position at each operation of the machine comprising levers of the first class and links respectively connecting the detents with said levers of the first class, means exerting a moving force against said levers, means for restraining the movement of said levers and for automatically permitting one only of said levers to move at each operation of the machine comprising a finger rigidly attached to and projecting at an angle from the end of each lever opposite that to which the connecting link is attached, and means for actuating one only of said fingers at one time comprising a plurality of independently rotatable disks mounted coaxially and having a plurality of perforations therein providing a plurality of combinations wherein a perforation in one of the disks lines up with perforations in the other disks to provide an opening to receive one only of the said fingers and thereby permit full actuating movement of the lever to which said finger is attached and providing also a plurality of combinations wherein the perforations of the several disks are out of alignment and thereby prevent full actuating movement of all of the levers.

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