

May 9, 1939.

F. W. HOBAN

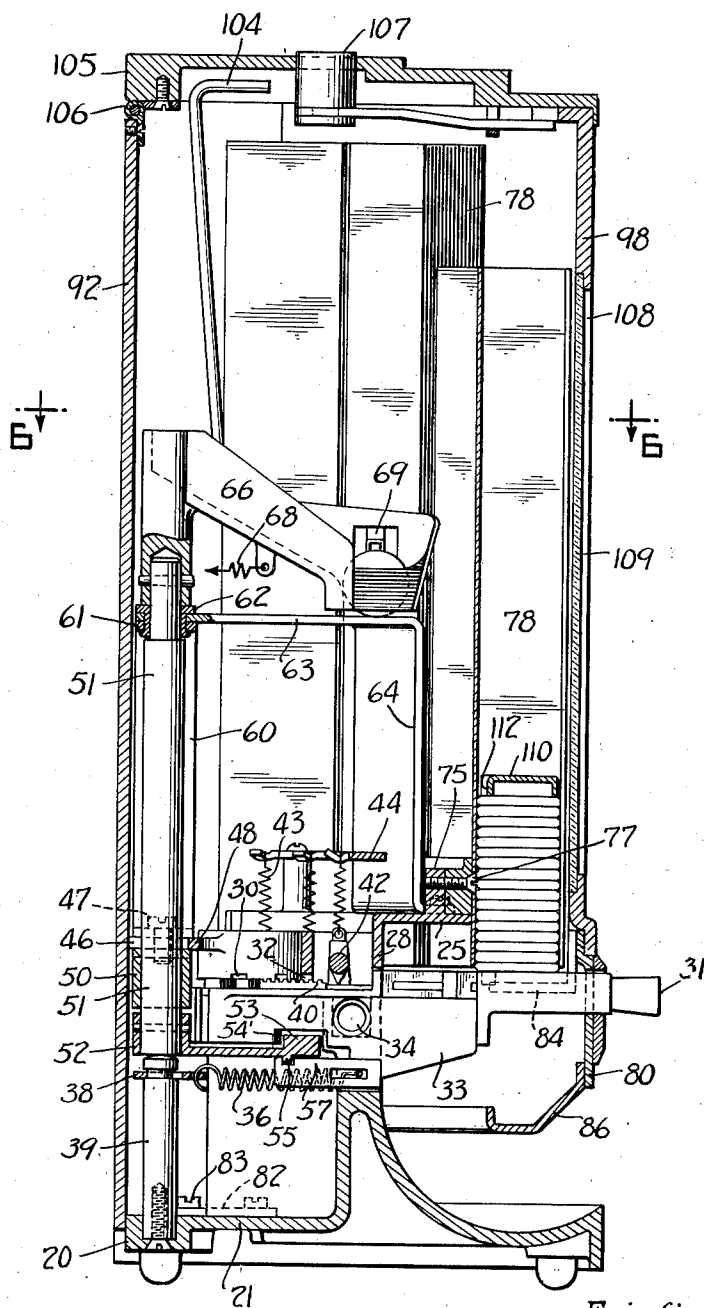
2,157,207

DISPENSING MACHINE

Filed Aug. 21, 1937

4 Sheets-Sheet 2

Fig. 4.



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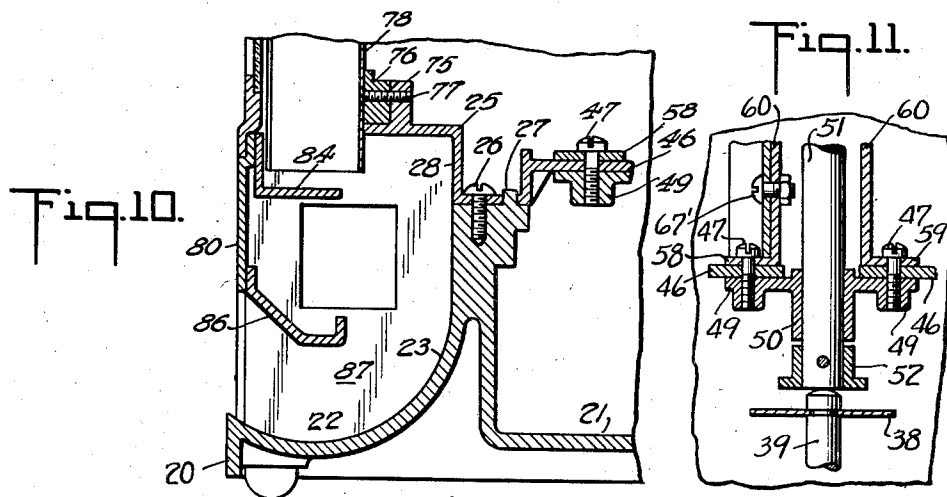
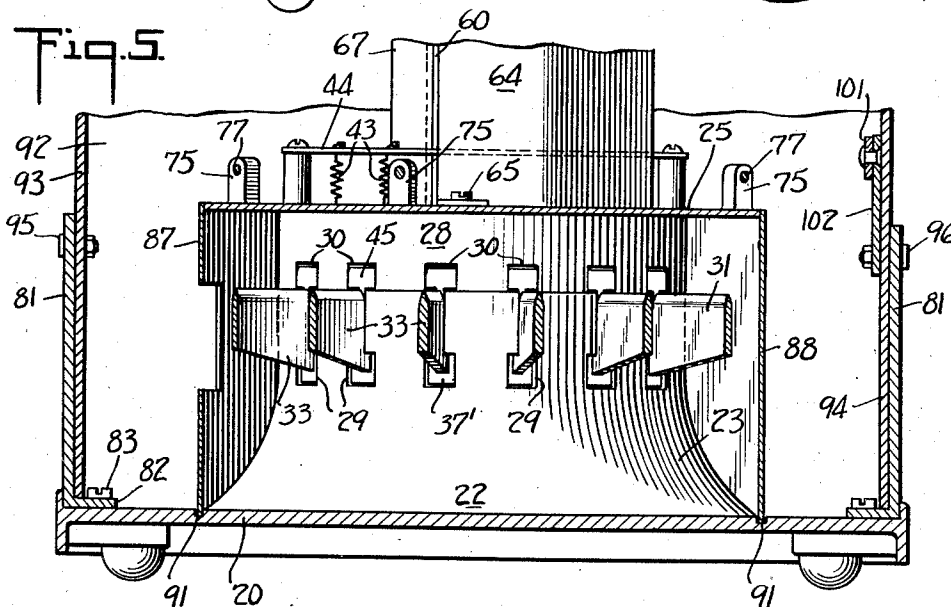
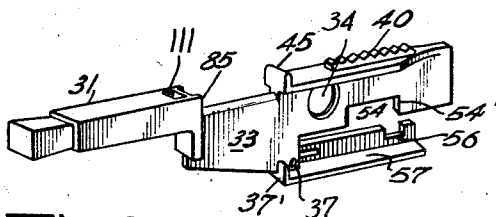
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DISPENSING MACHINE

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4 Sheets-Sheet 3



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DISPENSING MACHINE

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4 Sheets-Sheet 4

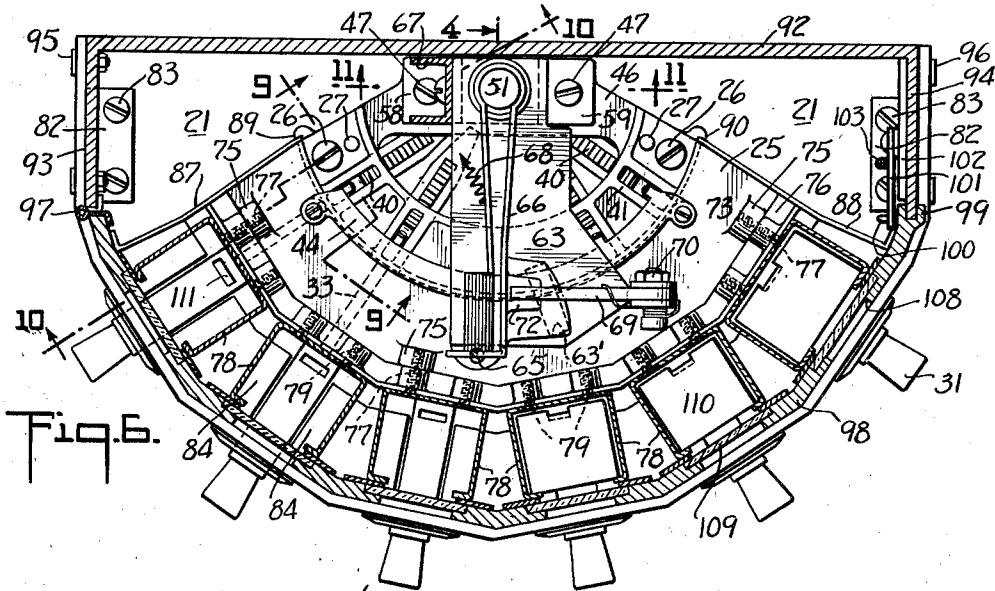


Fig. 6.

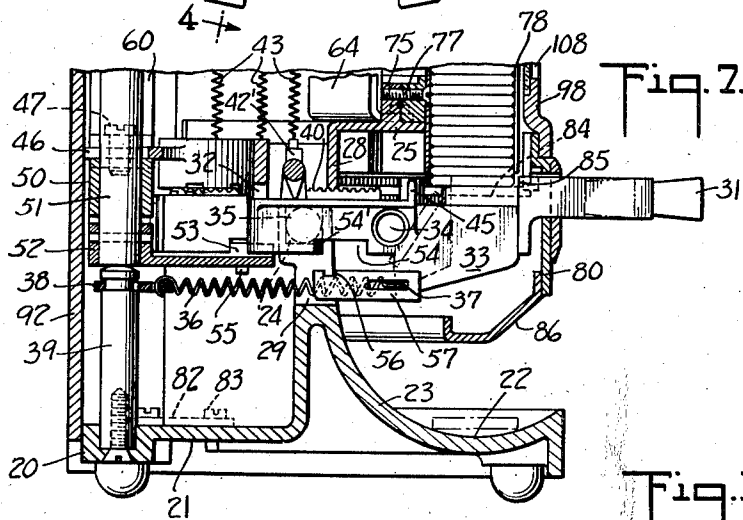


Fig. 7.

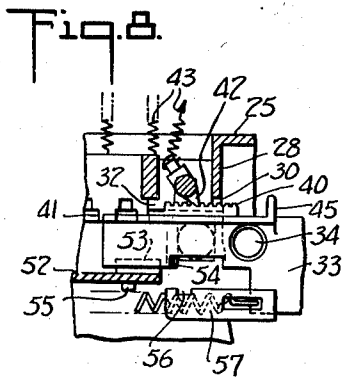


Fig. 8.

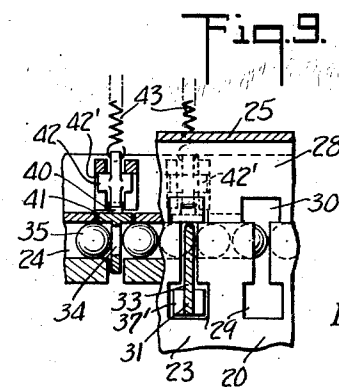


Fig. 9.

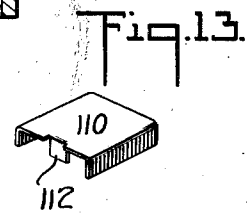


Fig. 13.

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UNITED STATES PATENT OFFICE

2,157,207

DISPENSING MACHINE

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corporation of New York

Application August 21, 1937, Serial No. 160,224

16 Claims. (Cl. 312—68)

The present invention relates to dispensing machines, and is more particularly directed toward machines for dispensing an article from any one of a number of storage magazines.

5 The present invention contemplates a dispensing machine having a plurality of article ejectors and associated mechanism for interlocking the ejectors to prevent improper operation or tampering, and also the arrangement of the parts to facilitate manufacture economically and to provide a compact attractive machine.

Other and further objects of the invention will appear as the description proceeds.

15 The present application is a continuation in part of my pending application Serial No. 43,813, filed October 7, 1935 (now Patent No. 2,133,453 of October 18, 1938).

20 The accompanying drawings show, for purposes of illustrating the present invention, one of the many embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

25 Figure 1 is a front elevational view of the machine;

Figure 2 is a side elevational view of the same;

Figure 3 is a horizontal sectional view on the line 3—3 of Figure 2, parts being omitted;

30 Figure 4 is a vertical sectional view taken on the line 4—4 of Figures 3 and 6;

Figure 5 is a front elevational view of the interior of the machine, parts being in section on line 5—5 of Figure 3 and parts broken away;

35 Figure 6 is a horizontal sectional view taken on the line 6—6 of Figure 4;

Figure 7 is a vertical section similar to Figure 4, showing one of the ejectors fully protracted;

40 Figure 8 is a fragmentary view showing the ejector in an intermediate position;

Figure 9 is a fragmentary vertical sectional view on the line 9—9 of Figure 6, to illustrate the ejector interlocking mechanism;

45 Figures 10 and 11 are vertical sectional views on the lines 10—10 and 11—11, respectively, of Figure 6;

Figure 12 is a perspective view of an ejector; and

50 Figure 13 is a perspective view of an ejector locking device.

The machine is adapted to rest on a table or other support and has a bottom casting 20 which supports all the parts of the machine. The casting has a bottom wall 21 which in plan is approximately semi-circular, as will be apparent

from the drawings. It is provided with an arc shaped delivery chute 22 formed by upwardly and rearwardly curving walls 23. The casting 20 is also provided with an annular upwardly opening raceway or trough 24 (Figure 3) disposed behind the upper part of the walls 23.

5 A cover plate 25, also in the form of a casting, is secured to the casting 20 by screws indicated at 26, these castings being aligned by dowels indicated at 27. The cover plate 25 covers the trough 24.

10 The casting 25 has a front vertical wall 28 in line with the wall 23 of the base casting 20 and these walls are, as shown in Figure 9, slotted at 29 and 30 to accommodate a plurality of reciprocating article ejectors or plungers 31. The plungers or ejectors 31 extend across the trough 24, passing through slots 32 in the rear wall of the trough, the plungers having a comparatively thin, vertical fin-like portion 33 to traverse these slots. This portion of each plunger is provided with an aperture 34 normally between the trough walls and into which balls 35 carried in the trough or raceway 24 may enter when displaced by the shifting of an ejector outwardly. The plungers are held in the retracted or normal position by springs 36 secured in holes 37 on the plungers and to a spring anchorage 38 secured to a post 39 attached to the base casting 20. Lugs or anchorages 37' are shaped to fill the openings 29 when the plungers are retracted.

15 The inner top portion of the ejectors or plungers 31 has a T-shaped head provided with ratchet teeth 40, which project up through slot 30 in the cover casting 25 to co-operate with pawls 42 pivoted at 42' and held in normal position by springs 43 secured to an arcuate ring 44 carried by the casting 25. The T-shaped head of the plunger has a lug 45 which substantially closes the opening 30 when the plunger is in normal position.

20 The rear of the cover casting 25 has two brackets 46 apertured to receive screws 47 and interconnected by a bridge 48. The screws 47 are threaded into the arms 49 of a bearing member 50 apertured to receive a shaft 51 which is biased to turn counter-clockwise by a spring to be described below.

25 The lower end of the shaft 51 carries a sector shaped plate 52 which extends under the inner ends of the ejectors 31. This plate has cams 53 on its upper face, each of which enters a notch 54 in an ejector. The inner wall 54' of the notch acts as a cam to engage the cam 53 and turn the shaft 51 counter-clockwise. The bottom of the

cam plate 52 has lugs 55 which are adapted to traverse notches 56 in the lower arms 57 of the retracted ejectors, the protracted ejector being moved beyond the range of movement of these lugs.

The lugs 55 and notches 56 insure that the ejector be completely retracted and that the plate 52, shaft 51 and all devices (including latch 69 to be described) return to their normal position before another ejector can be pulled out. This makes it impossible for one to pull out a second ejector before the latching mechanism 69 functions to lock the plate against movement. Owing to the possibility of pulling on one ejector to take up the slack between the balls as the other ejector is slowly let back to rest, the ball interlock alone is likely to operate too sluggishly to prevent such tampering. It is, however, rugged and functions fully except where a pulling force is exerted on the second ejector as the first is slowly returned.

The screws 47 which attach the lower bearing member 49 to the cover plate 25 also pass through feet 58 and 59 of a U-shaped strap 60 extending upwardly alongside the shaft 51 and apertured at 61 to accommodate a bearing bushing 62 for the upper end of the shaft 51. The bushing is secured to a forwardly extending platform member 63 having a downwardly extending front portion 64 secured to the casting 25 by screw 65.

The upper end of the shaft 51 is pinned to an arm 66 which acts as a coin chute (the coin being received from coin scale and scavenging mechanism, shown in the application above referred to, the latter mechanism being secured to a channel shaped member 67 secured to the U-strap 60 by bolts 67'. The arm 66 is biased in a clockwise direction by a spring 68 connecting the arm and channel shaped member 67.

The coin chute arm 66 is adapted to hold a coin of the proper denomination vertical, and when an ejector 31 acts on the cam plate 52 to shift the shaft 51 this coin is brought against a latch 69 pivoted at 70 to the platform 63 and raises the latch to permit a full stroke of the ejector and to pass the coin to the hole 63' in the plate 63. In the absence of a coin an extension 72 on the coin shifter engages the latch and further movement of the shaft and ejector are rendered impossible, all as set forth in the application above referred to. This latch mechanism may be manually released, if desired.

The forward portion 73 of the cover plate 25 is provided with three upwardly extending lugs 75 tapped to receive screws. These lugs support a strap 76 by means of screws 77 passing through certain of the magazines 78, as shown. These magazines are also secured to the strap by screws 79. The magazines are made of sheet metal and extend down to the plungers or ejectors 31.

Above and in front of the delivery chute 22 is a fixedly supported curved front member 80 which at the rear has downward extensions 81 provided with feet 82 secured to the casting 20 by screws 83. This front member 80 is outside the lower ends of the magazines, is apertured for the ejectors, and carries inwardly extending shelf-like members 84 below the level of the top of the ejectors and into which the stack of articles in the magazine drops when the ejector is withdrawn to bring the shoulder 85 outside the stack (see Figure 7). On release of the ejector the spring pulls it back and the shoulder 85 pushes the article from the magazine whereupon it falls down past the fin 33 into the delivery chute.

The front 80 carries an inwardly extending element 86 which prevents access to the mechanism. The ends of the trough 22 are closed by plates 87 and 88 carried in guides 89 and 90 and enter into recesses 91 in the casting 20.

The bottom casting 20, the ejectors 31 and front 80 may be readily assembled, forming a base portion of the machine. The cover plate with pawls 42, pawl springs 43 and ring 44, previously assembled as a unit, may be secured in place, and then the shaft 51 with cam plate 52 secured in place by the bearing member 50. The strap 60 and platform 63 and associated parts may be readily attached to the cover casting 25. The coin chute or arm 66 may then be pinned to the shaft 51 and the upright 67 and mechanism carried thereby secured in place. The magazines 78 and strap 75 may be attached to the plate 25. All these assembly operations may take place before the mechanism is enclosed in a cabinet and all testing carried out.

The back of the machine is indicated at 92. It has forwardly extending side elements 93 and 94 which are secured to the front member 80 by bolts, indicated at 95 and 96. The side element 93 at the left carries a hinge 97 which supports a front cover 98. The lower edge of the cover overlaps the upper part of the front member 80, as is clear from Figures 4 and 7, and its free edge 99 embraces the front edge of the side 94, as shown in Figure 6. The free edge of the cover carries an inwardly extending lug 100 which is engaged by a hook shaped member 101 pivoted to a plate 102 carried by the bolts 96. The hook 101 is connected with an operating rod 103 having a grip 104 at the top.

A top cover 105 is hinged at 106 to the back plate. This cover overlies the front of the front cover, as indicated in Figure 4, and the parts may be locked together by a lock, indicated at 107. The top cover cannot be closed unless the rod 103 is pushed down, thereby insuring the locking of the hinged front cover before the top cover is closed. The hinged cover 98 has elongated front openings 108 behind which are secured glass panels 109 disposed opposite the magazines, so as to permit viewing the contents of the magazines.

Followers 110 (see Figure 13) are adapted to be placed on top of the articles in the stack, and after the last article has been ejected from the stack, the ejector is arrested against movement by the entry of a prong 112 on the follower into notches 111 on the ejector.

When the device is assembled as shown in the drawings, and merchandise, for example, packages of gum, placed in the magazines, one can try to actuate the machine without depositing a coin. When the selected ejector is grasped and pulled outwardly it first brings this ejector beyond the range of movement of the corresponding lug 55 on the cam plate, and then the cam 54' engages the camming lug 53 on the cam plate to start swinging this cam plate about its axis. By the time the cam plate is swung far enough to be stopped by the latch mechanism 69, the sliders or balls 35 will have been moved so as to lock all the other ejectors against movement. On release of the selected ejector it returns to normal position. If, however, a coin had been inserted into the machine the latch 69 would have been released and further withdrawal of the ejector would have brought the teeth 40 on the ejector past the locking pawl 42 so that there could have been no return movement until 75

the stroke had been completed. When the ejector is withdrawn to the full extent and then released, it pushes the lowermost portion of merchandise inwardly, as shown in Figure 7, and allows it to drop down into the delivery chute.

It is obvious that the invention may be embodied in many forms and constructions within the scope of the claims and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. In a dispensing machine, a base having an arcuate delivery chute, an axially disposed spring anchorage, a plurality of radially disposed, horizontally reciprocable article ejectors carried in the base above the chute, a plurality of radially extending springs secured to said anchorage and to the ejectors for restoring the ejectors to normal position, and an article storage magazine above each ejector and from which the ejector is adapted to remove an article, the magazines being equidistant from the axis about which the ejectors are disposed.

2. A dispensing machine such as claimed in claim 1, having ejector interlocking mechanism whereby only one ejector may be actuated at a time, said mechanism comprising an arcuate raceway in the base across which the ejectors extend and members in the raceway, the ejectors having recesses into which the members may enter and camming surfaces adjacent the recesses for displacing the members when the selected ejector is actuated.

3. A dispensing machine such as claimed in claim 1, wherein each ejector restoring spring is stretched to extend in front of the wall of the delivery chute when the ejector is projected, and wherein the chute wall is apertured to accommodate the springs and ejectors.

4. In a dispensing machine, a base having an arcuate delivery chute, a plurality of radially disposed, horizontally reciprocable article ejectors carried in the base above the chute, springs for restoring the ejectors to normal position, an article storage magazine above each ejector and from which the ejector is adapted to remove an article, a cam plate movably supported by the base, a spring biasing the cam plate to one position, ejector-carried cams for shifting the cam plate against the spring tension, and interlocking elements carried by the cam plate and ejectors for locking the non-selected ejectors against movement when a selected ejector is moved out of normal position.

5. In a dispensing machine, a base having an upwardly opening, arcuate raceway, a front wall spaced from the raceway, a plurality of radially disposed, horizontally reciprocable article ejectors extending across the raceway and through the front wall and having recesses normally in the raceway, ejector interlocking members in the raceway displaceable by movement of one ejector to force them into recesses in the other ejectors and prevent operation of more than one ejector at a time, and a storage magazine above the portion of each ejector inside said front wall and from which the ejector is adapted to remove an article.

6. A dispensing machine such as claimed in claim 5, wherein the base has an inwardly extending partition wall carried by the lower part of the front wall, and a wall extending down-

wardly and forwardly from the raceway behind the partition wall to form a delivery chute.

7. In a dispensing machine, a base having an upwardly opening, arcuate raceway, a front wall spaced from the raceway, a plurality of radially disposed, horizontally reciprocable article ejectors extending across the raceway and through the front wall and having recesses normally in the raceway, ejector interlocking members in the raceway displaceable by movement of one ejector to force them into the recesses in the other ejectors and prevent operation of more than one ejector at a time, a raceway cover having radial slots through which the ejectors extend, a pawl pivoted to the cover above each ejector and cooperating with ratchet teeth on said ejector to require a full stroke of the selected ejector, and a storage magazine above the portion of each ejector inside said front wall and from which the ejector is adapted to remove an article.

8. A dispensing machine such as claimed in claim 7, wherein the storage magazines are secured to the raceway cover.

9. In a dispensing machine, a horizontal raceway having slots in its side walls, a raceway cover having slots above the raceway, article ejectors extending across the raceway and occupying the slots in the walls and cover, members in the raceway displaceable by movement of one ejector to force them into the recesses in the other ejectors and prevent operation of more than one ejector at a time, ratchet teeth carried by the top of each ejector, and a cover supported pawl co-operative with the teeth on each ejector to require a full stroke operation thereof.

10. A dispensing machine such as claimed in claim 9, wherein the ejectors have downwardly extending spring anchorages to one side of the raceway, and having ejector restoring springs secured to the anchorages, and to a fixed support and extending underneath the raceway.

11. In a dispensing machine, an article storage magazine laterally opening at the bottom and having a slotted support for articles stored therein, a transversely extending reciprocable article dispenser normally extending through said slot and having a shoulder which separates a front elevated portion from a lower vertical fin portion, to the rear thereof, and an ejector restoring spring, the shoulder being engageable with the article when the dispenser is moved against the spring tension and laterally shifting the article off said bottom and out of the magazine when the spring restores the plunger to normal position, the article falling down past the fin portion.

12. In a dispensing machine, a base provided with a delivery chute, a plurality of slots in the wall of the chute, a plurality of manually operable, horizontally reciprocable article ejectors extending through the slots in the chute, springs connected to the ejectors and to the base and acting to restore the ejectors, a plate secured to the base and covering a portion of each ejector, the plate having a forwardly extending portion and a plurality of article storage magazines carried by said portion of the plate one above each ejector.

13. A dispensing machine such as claimed in claim 12, wherein the rear ends of the ejectors have ratchet teeth and the cover plate carries co-operative pawls to insure a full stroke of the ejector.

14. A dispensing machine having a fixed support, a plurality of manually operable, reciprocatory ejectors, springs connected to the ejectors

and to the support and acting to restore the ejectors, a member movable with respect to the support and biased to a fixed position and having a plurality of cams each operable by an ejector during the initial movement thereof away from normal position for shifting the movable member away from normal position and preventing the return of the movable member to normal position until the ejector has completed its return stroke, and interengaging elements carried by the movable member and the ejectors which lock all the non-selected ejectors against movement when a selected ejector is out of normal position.

15. A dispensing machine such as claimed in claim 14, having a trough across which the ejectors extend and ejector locking members in the trough, co-operable with member displacing elements carried by the ejectors.

16. A dispensing machine having a fixed support, a plurality of radially disposed, manually operable, reciprocatory ejectors, springs connected to the ejectors and to the support and acting to restore the ejectors, an oscillatory cam plate biased to a fixed position and having a plurality of cams each operable by an ejector during the initial movement thereof away from normal position for shifting the cam plate away from normal position and preventing the return of the cam plate to normal position until the ejector has completed its return stroke, and interengaging elements carried by the cam plate and the ejectors which lock all the non-selected ejectors against movement when a selected ejector is out of normal position.

FAIRFIELD W. HOBAN.