

June 21, 1949.

E. C. JOHNSON ET AL
BOTTLE VENDING MACHINE WITH MAGAZINE
ROTATING ON HORIZONTAL AXIS

2,474,053

Filed March 27, 1944

5 Sheets-Sheet 1

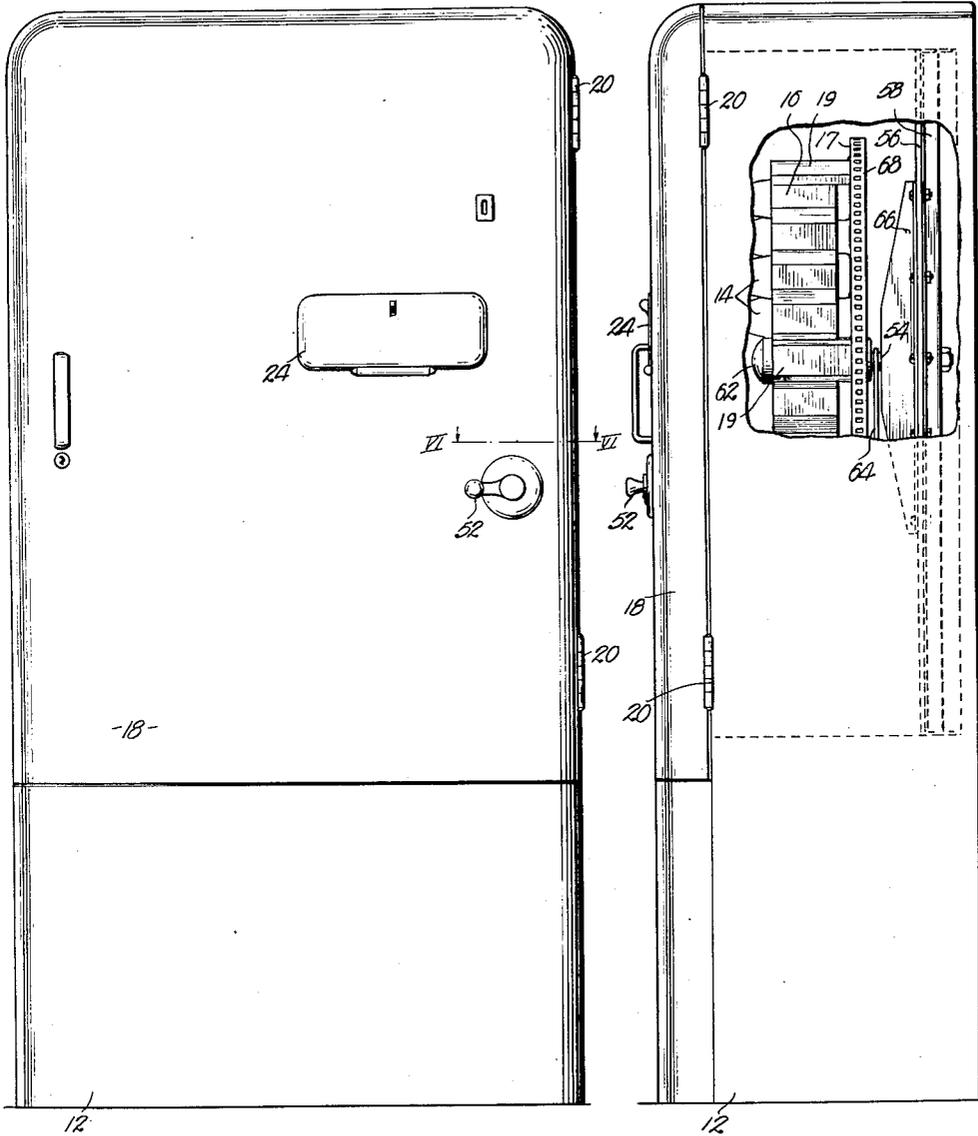


Fig. 1.

Fig. 2.

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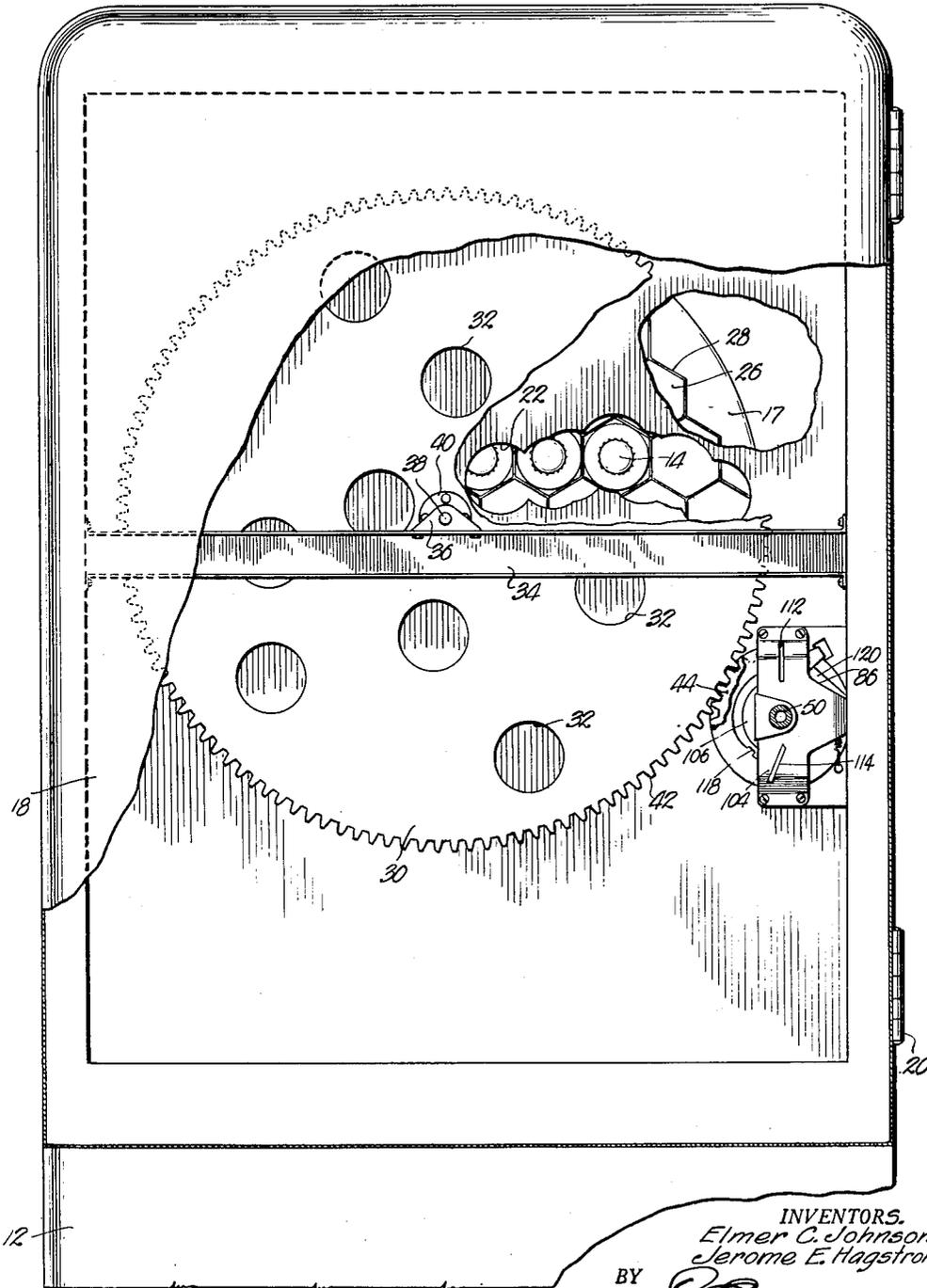


Fig. 3.

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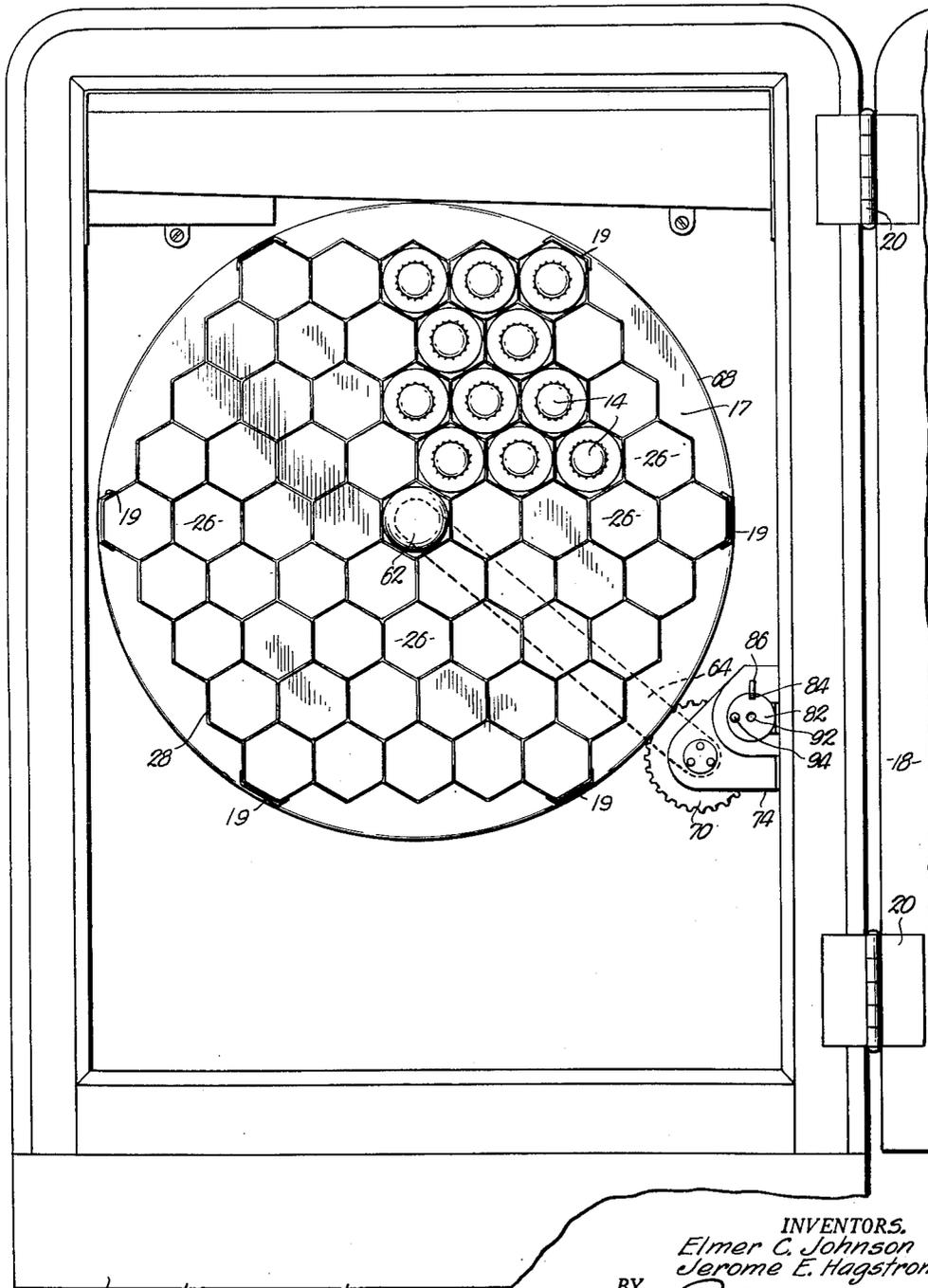


Fig. 4.

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5 Sheets-Sheet 4

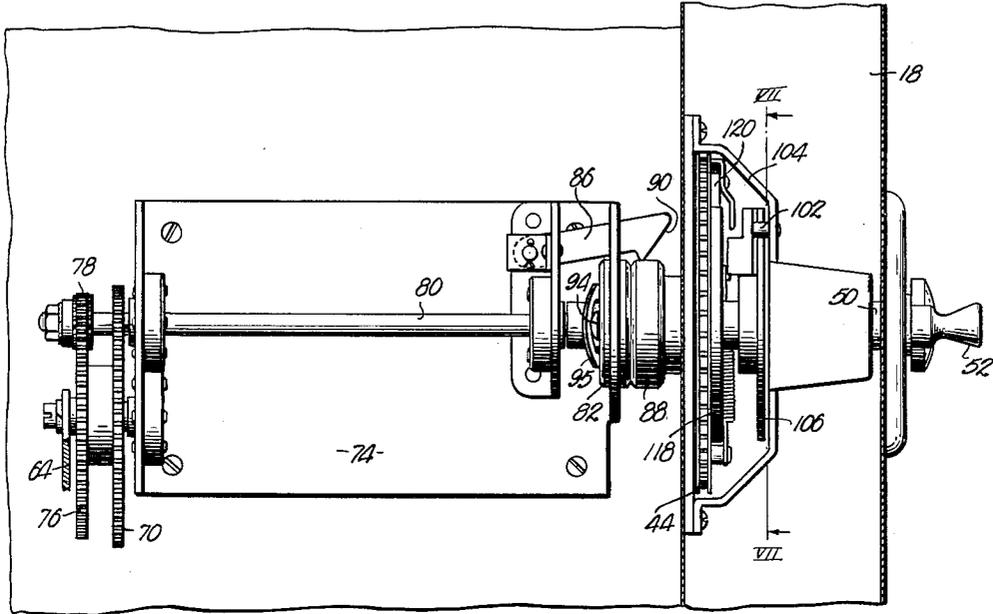


Fig. 5.

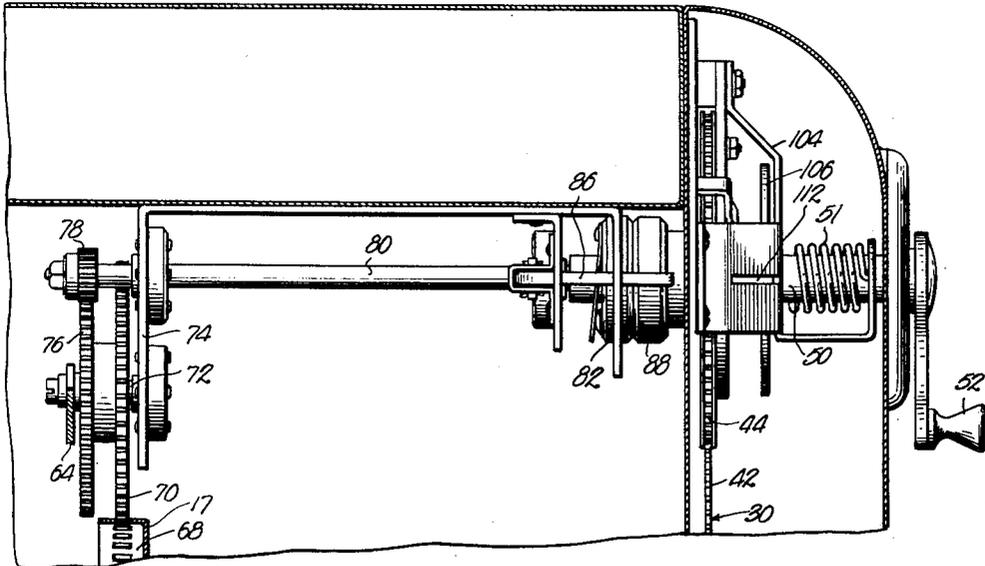


Fig. 6.

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UNITED STATES PATENT OFFICE

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BOTTLE VENDING MACHINE WITH MAGAZINE ROTATING ON HORIZONTAL AXIS

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8 Claims. (Cl. 312-97.1)

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This invention relates to vending machines of the character wherein a number of articles are racked and individually presented to the operator of the coin controlled equipment.

One of the important aims is the provision of a vending machine for bottled goods, wherein the rack for the bottles is disposed to hold said bottles with their major axes in horizontal positions behind a guard plate and the door of the vending machine cabinet, through which is provided an access opening.

A still further object of this invention is to provide a vertical type vending machine having the vendible commodity thereof disposed in a rotatable, subdivided magazine behind a control or guard plate, the nature and relation to the remaining parts of the vending machine being such as to permit withdrawal of but one of the vendible commodities through the access opening of the machine, at the end of each step-by-step movement, through which the subdivided magazine and guard plate are arranged to travel upon manual manipulation of a coin controlled mechanism by the operator.

A further object of this invention is the provision of a vending machine for bottled goods that must be refrigerated prior to purchase, which machine has a subdivided magazine disposed on a horizontal axis for step-by-step movement by operating means having a portion thereof mounted upon a vertical door in cooperation with the remaining parts of the mechanism which is disposed within the cabinet of the machine adjacent to the said magazine.

Other objects of the invention include the manner in which the manually manipulable coin controlled means is parted when the hingedly mounted door of the vertical cabinet is moved from the closed position; the manner in which the magazine is held against movement when the door of the cabinet is open; the simple, effective and unique mechanism for rotating the subdivided bottle holding magazine and the perforated disc in opposite directions confining the removal of articles to one of the divisions of the magazine when the same is in register with the access opening of the machine; and the means for arresting movement of the magazine and said perforated disc at the end of each step-by-step action and only after a coin has been inserted to insure payment for the article made available to the operator.

A large number of minor objects embodied in the specific details of construction will appear during the course of the following specification,

referring to the accompanying drawings, wherein:

Fig. 1 is a front elevational view of a bottle vending machine wherein the magazine rotates on a horizontal axis;

Fig. 2 is a side elevational view of the vending machine illustrated in Fig. 1 and embodying this invention.

Fig. 3 is an enlarged fragmentary front elevational view of the machine, parts being broken away to reveal relation of certain of the elements.

Fig. 4 is a front elevational view of the vending machine showing the door swung to the open position and revealing the manner of mounting the sub-divided magazine.

Fig. 5 is an enlarged fragmentary detailed sectional view through a portion of the vending machine illustrating the manually manipulable actuating mechanism.

Fig. 6 is a fragmentary horizontal sectional view through a portion of the vending machine taken on line VI—VI of Fig. 1.

Fig. 7 is a vertical sectional view taken on line VII—VII of Fig. 5.

Fig. 8 is a fragmentary sectional view taken on line VIII—VIII of Fig. 7.

Fig. 9 is a fragmentary sectional view through the supporting shaft for the magazine; and

Fig. 10 is a fragmentary detailed view through the coupling establishing connection between the portions of the operating mechanism carried by the door and the parts disposed within the cabinet.

In the illustrated embodiment of the invention the cabinet 12 is of the vertical type in that the floor space occupied thereby is relatively small and the bottles 14 being vended are racked in magazine 16, which is disposed for rotation about a horizontal axis.

Cabinet 12 has a space in its lower portion for the reception of refrigerating mechanism not here shown.

The upper portion of one side of cabinet 12 is open and normally closed by door 18 hinged as at 20 for movement to and from the closed position shown in Fig. 1. This door 18 has an inner and outer wall as illustrated in Fig. 3, and an elongated access opening 22 is formed through the inner wall of the door 18 of such size as to overlie a number of the sub-divisions 26 formed in magazine 16 by partitions 28. A similar access opening, not shown, is formed in the outer wall of the door 18 in alignment with the opening 22, which similar opening is closed by a small door 24 mounted on the normally outer face of the door 18. These sub-divisions 26 are arranged

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around the axis of rotation of magazine 16 in a number of annular paths and when the magazine is arrested at the end of each step-by-step movement, as will hereinafter be set down, a number of sub-divisions 26 underlie the access opening 22 as illustrated in Fig. 3. It is intended that this access opening permit the removal of but one bottle 14 at a time, but due to the short movement where a large capacity is involved, it is desirable to close that portion of access opening 22 which is not directly in register with sub-division 26 from which bottle 14 is to be removed.

A guard plate 30 having a number of perforations 32 therein, is therefore, rotatably mounted upon door 18 through the medium of a reinforcing or supporting bar 34, bearing 36 and shaft 38 secured to plate 30 as at 40 and journalled at its inner end in a bearing not here shown but which is secured to the inner wall of the door.

A rack 42 in the nature of a series of gear teeth is developed upon the annular periphery of plate 30. This rack 42 is in mesh with pinion 44, rigid to shaft 46 journalled for rotation in bearing 48 on door 18. A portion of shaft 46 is confined within tubular shaft 50 that extends exteriorly of door 18 and into engagement with crank 52, as illustrated in Fig. 8. These parts form a portion of the coin control, manually manipulable means for rotating both magazine 16 and plate 30 in step-by-step movement and will be more fully hereinafter described.

Magazine 16 is rotatably mounted on stub shaft 54 secured directly to a false wall 56 mounted in cabinet 12 by a frame 58. Stub shaft 54 projects forwardly from the rear portion of cabinet 12 and when magazine 16 is mounted thereon, the magazine is prevented from moving laterally by nut 60, cap 62, brace 64 and a portion of bracket 66, all as illustrated in Fig. 9. Magazine 16 is honeycomb in form and the central opening receives a tubular member which is welded or otherwise tightly secured in place. End wall 17 forms a part of magazine 16 and is held spaced from the inner edges of the honeycombs in the magazine by a number of legs 19 at the periphery (Figs. 2 and 4). Rack 68 is formed in a lateral flange integral with wall 17.

A rack 68 is secured to or formed upon magazine 16 and meshes with pinion 70, rotatably mounted upon shaft 72 carried by a portion of frame 74. Brace 64 extends from shaft 72 to shaft 54 and positively maintains the centers of these shafts in place whereby the rack and pinion 68 and 70 respectively, cannot accidentally become disengaged during the operation of the machine.

Magazine 16 is rotated by turning pinion 70 through the medium of gears 76 and 78—the first mentioned being attached directly to the hub of pinion 70, while the last named gear 78 is mounted upon drive shaft 80 forming a part of the manually operable means. This shaft 80 is journalled in frame 74 as shown in Figs. 5 and 6, and extends to a point adjacent the inner face of door 18 (see Fig. 8) where hub 82 having at least one radial notch 84 therein, is mounted to receive dog 86 when spacer disc 88 travels outwardly with door 18 when the latter is opened. Inclined edge 90 of dog 86 is struck by spacer disc 88 when the door is closed to lift dog 86 from within notch 84. This dog 86 is carried by frame 74 and therefore, is immovable about the axis of shaft 80 and when the dog is in notch 84, magazine 16 cannot be rotated.

Hub 82 has a socket 92 to receive the inner end of shaft 46 when door 18 is closed. A pin 94 in

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hub 82 enters a hole 96 (Fig. 10) in spacer disc 88 when door 18 is closed, and therefore, if shaft 46 is rotated disc 88 being fixed thereto, similar motion is imparted to shaft 80. Spring 95 allows pin 94 to yield until it enters hole 96.

Shafts 46 and 80 cannot be turned until a coin 98 is in the position shown in Fig. 8. Without the coin being in such position, crank 52 and hollow shaft 50 is free to rotate in the direction of the arrow shown in Fig. 7, to a point where shoulder 100 strikes pin 102 carried by yoke 104 close to which coin holder 106 lies.

Coin holder 106 has a slot 108 normally in register with chute 110. Yoke 104 is slotted as at 112 and at 114 to permit movement of coin 98, as hereinafter set down.

A pair of diametrically opposite segmental cavities 116 are formed in a disc on the side of pinion 44 and when coin 98 is in slot 108, it will have a portion thereof projected into one of the cavities 116 to form a clutch or bridging member between the hollow shaft 50 and shaft 46. It is notable that coin holder 106 is rigid to hollow shaft 50. A pair of diametrically opposed notches 118 are formed in that portion of pinion 44 having cavities 116 therein (Fig. 7), and a dog 120 pivotally mounted to a portion of the door as at 122, lies within one of these notches 118 when the machine is ready to receive a coin.

A cam face 124 provided on dog 120 lies in the path of travel of coin 98, and after the coin has been positioned as illustrated in Fig. 8, movement of the coin holder 106 in the direction of the arrow shown in Fig. 7, by manually manipulating crank 52, will first raise dog 120 from its locking position, whereupon all of the magazine operating mechanism is movable to rotate magazine 16 through one step.

When the coin has been carried by holder 106 to a point where it registers with slot 114, it will drop into a suitable receiver, not here shown. Coin holder 106 thus travels through one-half of a complete revolution and in so doing, disposes the other of cavities 116 in place behind slot 108 when it returns to its original position. The other of notches 118 is engaged by dog 120 when holder 106 has moved through one-half of a revolution.

Perforated plate 30 is moved in one direction about its center of rotation while magazine 16 moves in the opposite direction due to the gears 76 and 78 and pinion 70. The length of the step-by-step movement is determined by stop 102, and the escape of coin 98 when crank 52 has moved through its normal path of travel of one-half of a complete revolution. Spring 51 wrapped around hollow shaft 50 has one end secured to this shaft and its other end fastened to yoke 104. This spring yieldably maintains parts 50, 52 and 106 in a place where slot 108 is ready to receive a coin from chute 110.

The speed or rotation of magazine 16 is slower than that of plate 30, and as the machine is operated, a bottle may be removed from a sub-division 26 in the several annular groups thereof, one after the other. Perforations 32 of plate 30 successively move to register with one sub-division of adjacent analogous group from which the bottle is being removed and at the same time, guards the bottles in the remaining sub-divisions so that when door 24 is opened but one bottle is presented to the operator.

Manifestly, door 18 may be opened to refill magazine 16 and access to all of the sub-divisions of the magazine is possible because plate 30 is mounted within hollow door 18 and moves there-

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with. The inner wall of door 18 lies between perforated plate 30 and magazine 16. No manipulation of the operating mechanism need occur when opening door 18 and this operating mechanism parts when shaft 46 is withdrawn from hub 82. Dog 86 automatically moves to the locking position when the door 18 is opened.

Magazine 16 is made to receive bottles 14 that are formed with bulged bases. In other words, bottles 14 are of the commercial type having a narrow section intermediate their ends and when disposed horizontally, the enlarged part at the bottom may be utilized as shown to preclude accidental escape from the sub-divisions. End wall 17 is in a vertical plane. The walls of the many sub-divisions 26 are spaced from wall 17 into which space the bulged portions of bottles 14 may project.

Advantages arising from equipment of the character above described and illustrated in the accompanying drawing are obvious and it will be apparent to those skilled in the art that a large number of benefits may be enjoyed when a vending machine having the characteristics of that explained is employed.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A vending machine of the character described comprising a cabinet having one side thereof provided with an inner and outer wall, said walls each having an elongated access opening formed therein in substantial axial alignment; a sub-divided magazine rotatably supported in the cabinet; manually manipulable, coin controlled means for rotating the magazine, step-by-step to successively position certain of the divisions of the magazine in register with the access openings; and a guard plate provided with a plurality of perforations, said plate being revolvably disposed between the access openings in said inner and outer walls, operably engaged by the means for rotating the magazine whereby to be moved therewith, and adapted to have one of its perforations in register with the said access openings and one of the sub-divisions of the magazine at the end of each step-by-step movement, said perforations of the guard plate being substantially the same size as the cross sectional area of each of the sub-divisions of the magazine to confine removal of articles from but one sub-division at the end of each step-by-step movement, said perforations being arranged in staggered relation on said plate, each being disposed for registration with the divisions of certain groups thereof as the plate is rotated.

2. A vending machine as set forth in claim 1, wherein the magazine and the said perforated plate are rotated in opposite directions about a common axis by the said manually manipulable coin controlled means.

3. A vending machine of the character described comprising an open sided cabinet; a hingedly mounted door, for closing the open side, having an access opening formed therethrough; a sub-divided magazine rotatably mounted within the cabinet, having the sub-divisions thereof arranged in annular paths around the axis of rotation; a perforated guard plate revolvably carried by the said door in opposed relation to the magazine when the door is closed; and manually manipulable, coin controlled means for rotating the magazine and guard plate in opposite directions step-by-step to

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periodically position in register, one of the sub-divisions of the magazine, one of the perforations of the guard plate and the access opening of the door, said manually manipulable means having a latch to prevent rotation of the magazine when the door is swung from the closed position.

4. A vending machine of the character described comprising a cabinet having an open vertical side; a hingedly mounted hollow door for closing the open side, having an access opening formed therethrough; a sub-divided magazine rotatably mounted within the cabinet, having the sub-divisions thereof arranged to hold bottles in horizontal positions with their tops adjacent to the door; a perforated guard plate revolvably carried by said door within the hollow thereof; and manually manipulable, coin controlled means for rotating the magazine and the guard plate step-by-step to periodically position in register one of the sub-divisions of the magazine, one of the perforations of the guard plate and the access opening of the door.

5. A vending machine of the character described comprising a cabinet having an open vertical side; a hingedly mounted hollow door for closing the open side, having an access opening formed therethrough; a sub-divided magazine rotatably mounted within the cabinet, having the sub-divisions thereof arranged to hold bottles in horizontal positions with their tops adjacent to the door; a perforated guard plate revolvably carried by said door within the hollow thereof; and manually manipulable, coin controlled means for rotating the magazine and the guard plate step-by-step to periodically position in register one of the sub-divisions of the magazine, one of the perforations of the guard plate and the access opening of the door, said manually manipulable means having a portion thereof for rotating the perforated plate disposed within the hollow of the door.

6. In a machine for vending bottles having a bulge at the bottom thereof; a magazine mounted for rotation on a horizontal axis; a plurality of elongated bottle-receiving stalls formed in said magazine, said stalls having their longitudinal axes disposed parallel to the axis of rotation of the magazine, the length of said stalls being less than the length of said bottles whereby said bulged part thereof extends beyond one end therein; and a vertical plate disposed in spaced relation to said one end of the stalls and arranged to cooperate with the magazine in holding the bottles in the stalls, said bulged part of the bottles being disposed between said plate and said one end of the stalls respectively.

7. In a vending machine of the character described, a cabinet provided with a wall having an elongated access opening formed therein; a magazine rotatably mounted on one side of said wall, said magazine having a plurality of open-end stalls forming a part thereof, certain of said stalls being movable successively into simultaneous register with the said access opening as the magazine is rotated; and a rotatable guard plate on the opposite side of the said wall, said plate having a number of perforations formed therein, each of said perforations registering with a portion of the access opening as the plate is rotated, said perforations being arranged in staggered relation whereby certain of the perforations register with one portion of the access opening and

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other perforations register with other portions of the access opening respectively.

8. In a vending machine of the character described, a cabinet provided with a wall having an elongated access opening formed therein; a magazine rotatably mounted on one side of said wall, said magazine having a plurality of open-end stalls forming a part thereof, certain of said stalls being movable successively into simultaneous register with the said access opening as the magazine is rotated; and a rotatable guard plate on the opposite side of the said wall, said plate having a number of perforations formed therein, each of said perforations registering with a portion of the access opening as the plate is rotated, said perforations being arranged in staggered relation whereby certain of the perforations register with one portion of the access opening and other perforations register with other portions of the access opening respectively; and common

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means for rotating the plate and the magazine in opposite directions.

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