

[54] HIGH CAPACITY, SMALL SIZE VENDOR FOR CANS

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[56] References Cited

UNITED STATES PATENTS

2,124,500	7/1938	Taylor.....	221/109
3,205,994	9/1965	Zibbell et al.....	221/17 X
2,628,875	2/1953	Ossanna.....	221/109 X
2,895,639	7/1959	Little.....	221/17 X
2,681,842	6/1954	Rabkin.....	194/DIG. 19

FOREIGN PATENTS OR APPLICATIONS

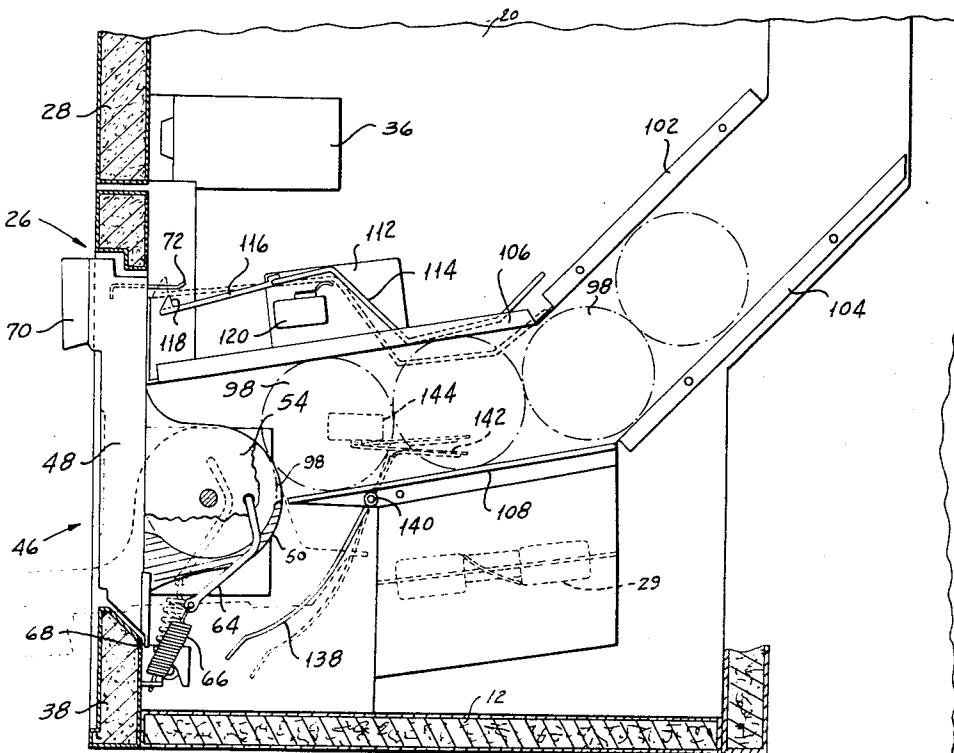
1,129,334 5/1962 Germany 221/109

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[57] ABSTRACT

A small size, high capacity merchandising machine for dispensing canned goods such as beverages in cans in which a common coin mechanism releases a locking means which is common to and which normally holds respective pivoted escapement doors in closed positions at which compartments thereon receive the lowermost cans from respective gravity feed can supplies to permit one door selectively to be pivoted to an open position at which the can therein is accessible to the customer while the remaining cans in the corresponding supply are held in position without back pressure being exerted on the supply. A simple mechanical interlock prevents concomitant opening of both doors.

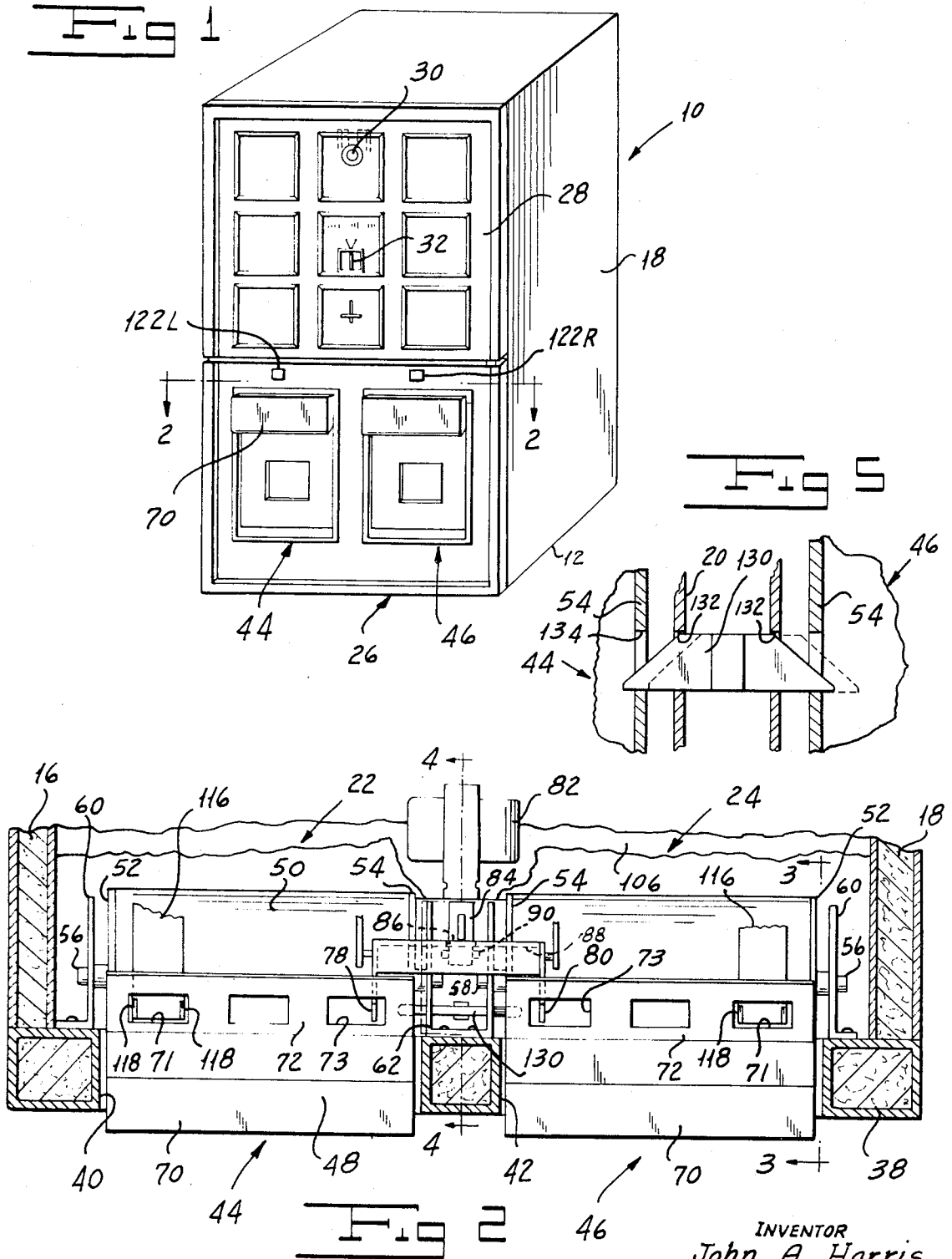
1 Claim, 7 Drawing Figures



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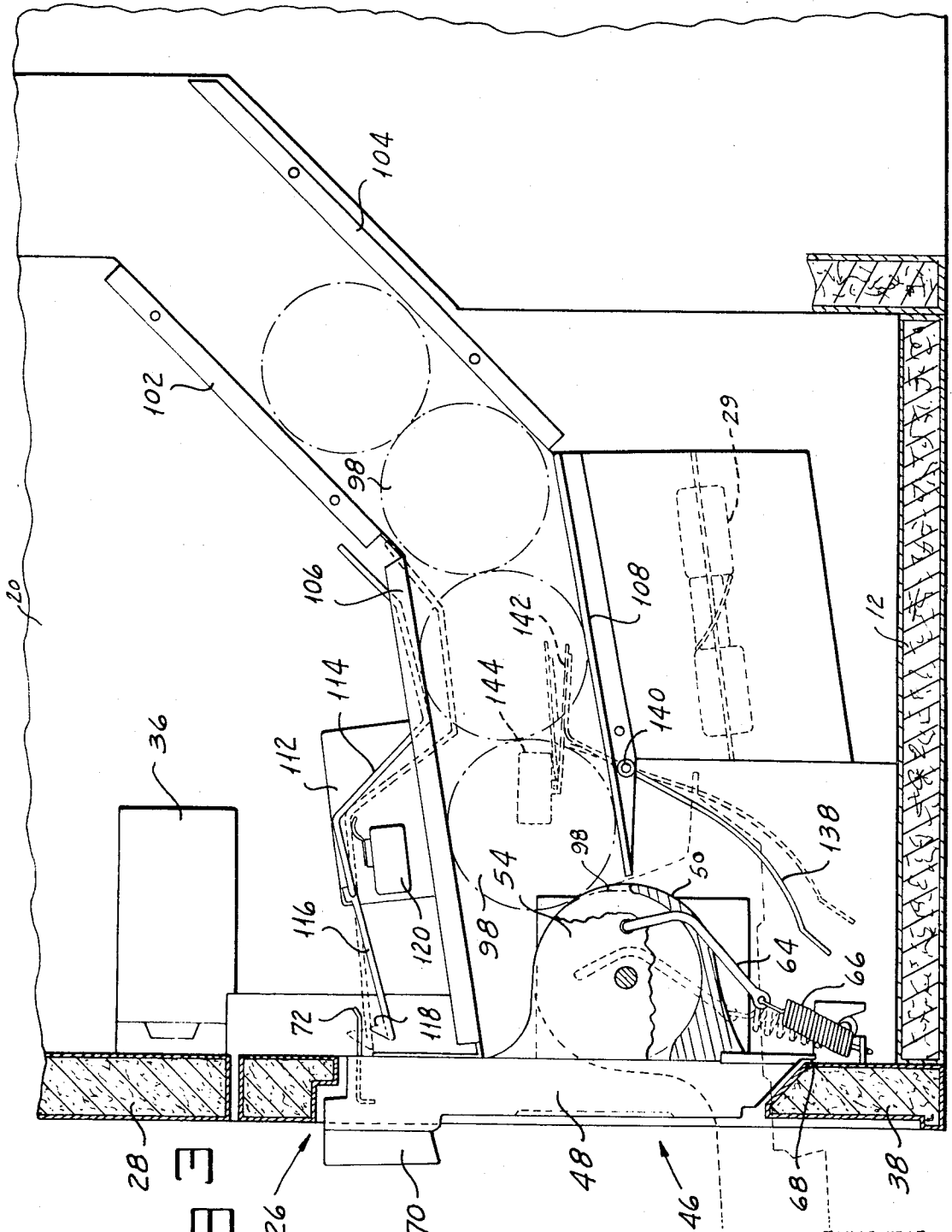
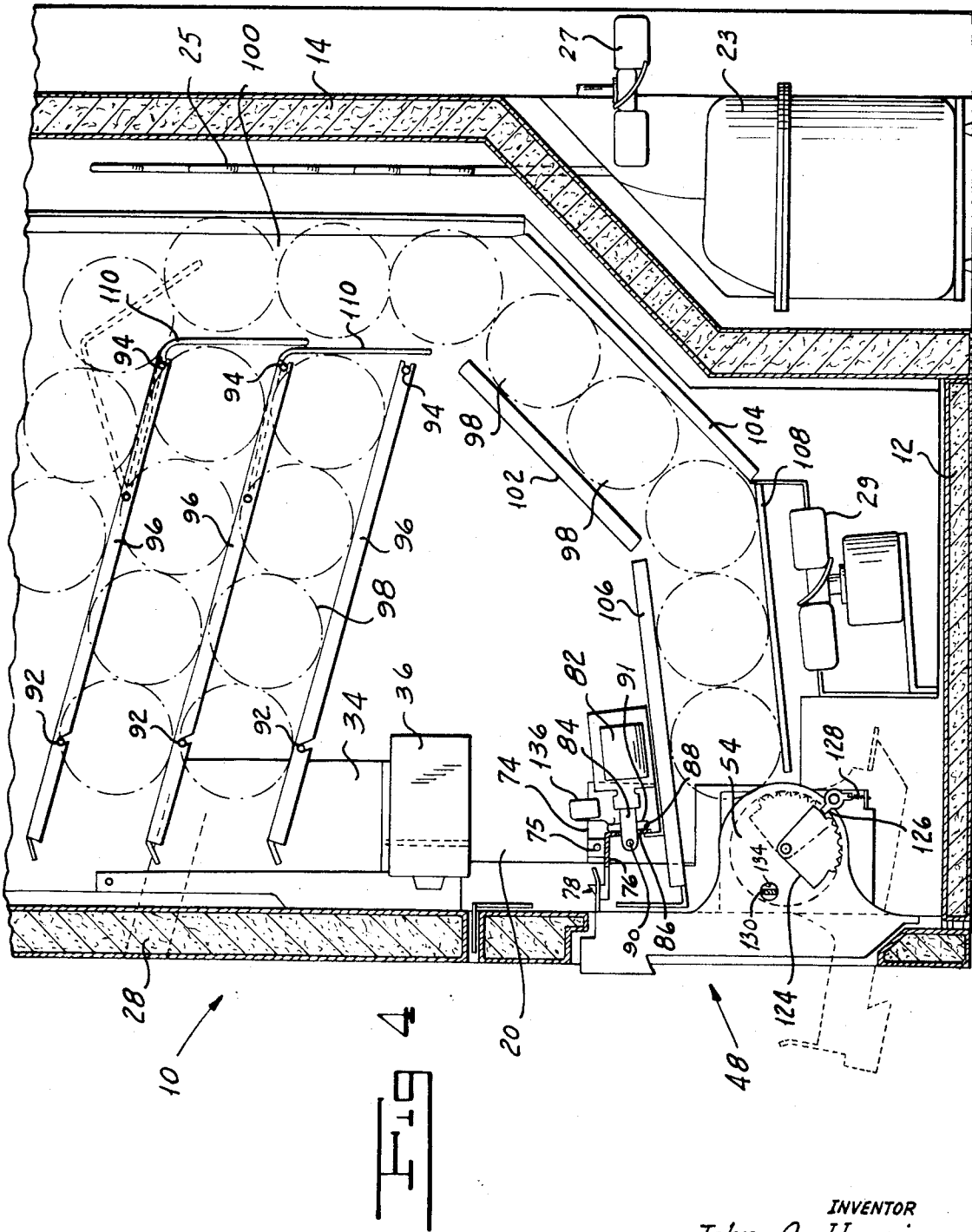


FIG 3

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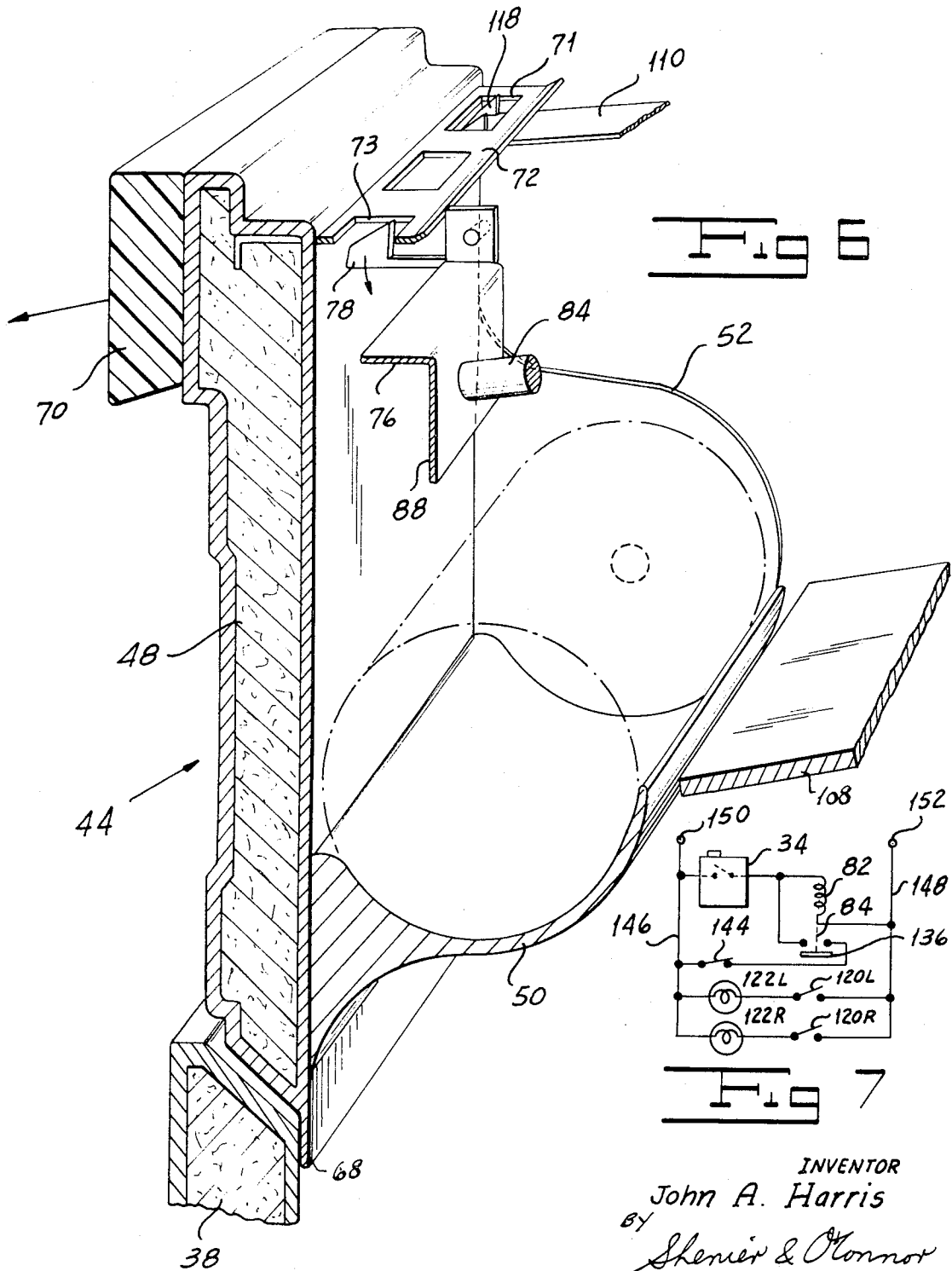


Fig 6

Fig 7

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HIGH CAPACITY, SMALL SIZE VENDOR FOR CANS

BACKGROUND OF THE INVENTION

Various types of canned beverage merchandising machines are known in the prior art. Most of these machines are provided with mechanisms for releasing cans one at a time from a supply to permit them to slide down a chute or the like to a delivery opening at which the released can is accessible to the customer. The mechanisms for delivering the cans while retaining the remaining cans in position so as to prevent any jamming thereof is complicated. Owing to the complicated nature of the delivery mechanism the machines are expensive to construct. Moreover the releasing and retaining mechanism and associated structures occupy an inordinate amount of space for the result accomplished.

I have invented a small size, high capacity machine for merchandising beverages or the like in cans. My machine is of a relatively small size so that it can be set on a desk, a table, or on any convenient stand. It is extremely simple in construction. It is certain in operation. It has a large capacity for its size. It is inexpensive to construct.

BRIEF SUMMARY OF THE INVENTION

One object of my invention is to provide a canned beverage merchandising machine which occupies a relatively small space.

Another object of my invention is to provide a canned beverage merchandising machine which has a relatively large capacity for its small size.

Another object of my invention is to provide a canned beverage merchandising machine which is simple in construction.

A further object of my invention is to provide a canned beverage merchandising machine which is certain in operation.

Still another object of my invention is to provide a canned beverage merchandising machine which is inexpensive to construct.

Other and further objects of my invention will appear from the following description.

In general, my invention contemplates the provision of a small size, high capacity merchandising machine in which respective supplies of cans of beverages or the like roll under the influence of gravity toward escapement doors each of which is pivoted at the front of the machine for movement between a closed position at which it receives the lowermost can of its associated supply to an open position at which the lowermost can is accessible to a customer while the remaining cans in the supply are held in position without any back pressure being exerted thereon. A common releasable locking mechanism normally holds both doors in their closed positions while a simple mechanical interlock prevents concomitant movement of both doors to the open position after the locking mechanism has been released.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings to which reference is made in the accompanying specification and in which like reference characters are indicated by like reference characters in the various figures.

FIG. 1 is a perspective view of my small size, large capacity canned beverage merchandising machine.

FIG. 2 is a fragmentary sectional view of my canned beverage merchandising machine taken along the line 2—2 of FIG. 1 and drawn on an enlarged scale.

FIG. 3 is a sectional view of my canned beverage merchandising machine taken along the line 3—3 of FIG. 2 and drawn on an enlarged scale.

FIG. 4 is a sectional view of my canned beverage merchandising machine taken generally along the line 4—4 of FIG. 2.

FIG. 5 is a fragmentary sectional view illustrating the interlock of my canned beverage merchandising machine.

FIG. 6 is a perspective view with parts shown in section of the door and associated mechanism of my canned beverage merchandising machine.

FIG. 7 is a schematic view of one form of electrical circuit which may be used to control my canned beverage merchandising machine.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, my canned beverage merchandising machine includes a cabinet, indicated generally by the reference character 10, having a base 12, a rear wall 14, sides 16 and 18, and a central partition 20, which divides the machine generally into two sections indicated by the respective characters 22 and 24. I form the walls of the compartment or container 10 from any suitable insulating material. In order to refrigerate the beverage or the like being dispensed by my machine, I provide a compressor 23 for supplying refrigerant to an expansion coil 25. A first fan 27 cools the compressor 23. A second fan 29 circulates the air within the refrigerated portion of the housing 10.

The lower portion of the housing 10 is closed by a door and frame assembly indicated generally by the reference character 26, while the upper part of the front of the housing 10 is closed by a removable panel 28, which may be secured in place by means of a lock or the like. I provide panel 28 with a coin slot 32 through which coins may be inserted into a coin mechanism 34 to be described in detail hereinafter to a cash box 36 inside the cabinet 10.

The door and frame assembly 26 includes the frame 38, having respective openings 40 and 42 in which I position doors indicated generally respectively by the reference characters 44 and 46. Since the doors 44 and 46 are identical I will describe only one of the doors 44 and its associated structure in detail.

The door 44 has a front wall 48 and a can-receiving compartment 50, of generally arcuate cross-sectional shape, secured to the rear of the door by any suitable means. I provide the compartment 50 with sides 52 and 54, carrying respective stub shafts 56 and 58. A side bracket 60 secured to the frame 38 and one arm of a U-shaped central bracket 62 receive the stub shafts 56 and 58. A bent link 64 one end of which is pivoted in the side 54 of the compartment 50 of the door 44 has its other end connected to one end of a coil spring 66, the other end of which is secured to the rear of frame 38. Spring 66 normally urges the door 44 to a position at which a stop flange 68 abuts the inside of the frame 38. A handle 70 on the outside of the door 44, permits the door to be moved against the action of the spring 66 to a position at which the compartment 50 is acces-

sible to the customer. In the open position of the door as illustrated in broken lines in FIG. 3, the end of the link 54, which is pivotally connected to the side 54 is located over the shaft 58 so that the door is releasably held in its open position by means of the overcenter action of the link 64 and spring 66.

I provide the upper edge of each of the portions 48 of the doors 44 and 46 with a rearwardly extending flange 72 formed with respective openings 71 and 73. A bracket 74 on the inside of the cabinet 10 pivotally supports a shaft 75, carrying a common locking member 76 provided with spaced upwardly extending dogs 78 and 80, adapted to engage in the inboard openings 73 of the respective flanges 72 of the doors 44 and 46 releasably to lock the doors.

A solenoid 82 has an armature 84, which extends through an opening 86 in a flange 88 in the locking member 76. When the solenoid is energized in a manner to be described its armature is retracted against the action of its return spring and pin 90 engages flange 88 to move the locking member 76 to a position at which the dogs 78 and 80 are outside the two openings 73. The doors may now be opened. When the solenoid returns to its deenergized position an element 91 on the armature 84 returns the locking member 74 to its initial position.

I provide means for storing respective supplies of cans of beverages or the like in each of the sections 22 and 24 to permit the cans from the supplies to be dispensed one by one in the manner outlined below. Each side of the partition 20 and the inner surfaces of the sides 16 and 18 in the upper region of the cabinet 10 carry pairs of pins 92 and 94, each pair of which detachably receives a guide rail 96 by means of slots formed in the rail. The guides 96 extend generally rearwardly and downwardly of the section so that each pair of the guides 96 receives a row of cans 98 and guides the cans downwardly and rearwardly toward the back 14 of the machine. The cans of the uppermost row roll down the guides to a vertical space 100 between the rear edges of the guides 96 and the wall 14. The cans move down through the space 100 to forwardly and downwardly extending guides 102 and 104 which direct the cans toward guides 106 and 108 extending forwardly and slightly downwardly toward one of the doors 44 or 46.

I provide each set of rails 96 except the lowermost set with a wire form retainer 110, normally so disposed as to prevent cans from the row below the particular set of guides 96 from interfering with cans moving downwardly in the space 100. These retainers 110 normally are held in the full line position illustrated in FIG. 4 by the cans in the space 100 which hold retainers in position to prevent cans in the lower rows from rolling off the guides so as to interfere with cans moving down the space 100, which might result in a jam. When the supply of cans in a row above a lower row is exhausted as the cans move downwardly in the space 100 past the row the retainer 110 is moved by the cans in the lower row to the broken line position shown in FIG. 4 so that the cans of that lower row can move downwardly off the guides 96 and into the space 100.

Referring now to FIGS. 2 and 3, I provide each of the sections 22 and 24 with means for locking its associated door 44 and 46 when the supply of cans 98 in that particular section reaches a predetermined low level. A bracket 112 associated with one of the sections pivot-

ally receives a feeler 114, which extends downwardly through a space in the corresponding guide 106 to a position at which it can sense the presence of the second can 98 on the guide 108. When it so senses a can the feeler 114 occupies the full line position shown in FIG. 3. Feeler 114 carries a locking arm 116, provided with dogs adapted to engage in the opening 71 to lock the corresponding door against movement to its open position. When feeler 114 senses the presence of the second can on guide 108, lock 116 occupies the full line position shown in FIG. 3 so that the dogs 118 are out of the associated opening 71 and the door can be opened as soon as the releasable locking means is actuated. When the supply of cans in a section 22 or 24 reaches a level at which one can is in the door compartment 50 and only one other can is on guide 108, feeler 114 under the influence of gravity moves to the broken line position shown in FIG. 3 and dogs 118 move into the opening 71 to lock the door. As the feeler 114 moves from the full line position to the broken line position it closes a normally open switch 120 to illuminate a lamp 122 on the front of the door and frame assembly 26 to indicate that the supply of cans in that section is exhausted.

Referring again to FIG. 4 I provide each of the doors 44 and 46 with a follow-through mechanism to ensure that the door is moved from closed to fully open position when it is operated. I secure a ratchet section 124 to the side 54 for movement therewith. A spring 128 urges a pivoted pawl into engagement with the teeth of the segment 124. The arrangement is such that a person operating the door must move it to fully opened position once he has started to move it before he is able to close the door.

Referring to FIGS. 2, 4, and 5 I also provide my machine with an extremely simple mechanical interlock for ensuring that only one door 44 or 46 at a time can be moved from closed to open position after release of the locking mechanism. Respective openings 132 in the legs of bracket 20 slidably support an interlock bar 130 having tapered ends which extend into openings 134 in sides 54 of the respective doors 44 and 46. When either door 44 or 46 is moved from closed toward open position the edge of the associated opening 134 engages a cam surface of the interlock bar 130 to shift the bar toward the other door. That is, if for example, door 44 is operated bar 130 moves from the full line position shown in FIG. 5 to the broken line position shown therein. In that position of the interlock bar if an attempt is made to operate door 46 so as to cause the edge of the opening 134 in that door to try to drive the bar such operation cannot be accomplished since the outer edge of the wall 54 of the other door 44 prevents movement to the left of the bar 130. On the next operation of the machine, however, the interlock bar 130 can be shifted by the operation of door 46 since it is free to move to the left and since the righthand inclined portion thereof is still disposed in the opening 134 of door side 54 of door 46.

When winding 82 is energized its action closes a normally open switch 136 to provide a holding circuit for the winding in a manner to be described.

I provide my machine with a shaft 40 carrying a common vens flap 138 associated with the doors 44 and 46. Shaft 140 also carries a switch actuator 142 adapted to open a normally closed switch 144 when the flap 138 is actuated to turn shaft 140.

Referring now to FIG. 7, one form of electrical circuit which can be employed to control my machine includes respective conductors 146 and 148 connected to the terminals 150 and 152 of a suitable source of power. I connect the coin register 34 and winding 82 in series between conductors 146 and 148. Similarly, the empty signal lights indicated as 122L and 122R are connected in series with their respective switches 120L and 120R between conductors 146 and 148.

In operation of my can merchandising machine it is first loaded with supplies of cans in the two sections 22 and 24. In order to make a purchase, the customer deposits the required sum in coins through the coin slot into register 34 momentarily to complete the circuit of winding 82. When that occurs the winding completes its own holding circuit through switch 136 and through normally closed switch 144 which switches by-pass the coin mechanism 34. At the same time the locking number 76 rotates in a counterclockwise direction as viewed in FIG. 4 to release both of the doors 44 and 46. The customer now selectively opens one of the two doors. The full stroke mechanism including ratchet segment 124 and pawl 128 ensures that he moves the door through a full stroke. At the same time the interlock element 130 shifts to one side or the other to prevent concomitant opening of both doors. As the selected door moves to the fully open position the overcenter link 64 and spring 66 hold it in that position. The customer then removes the can from the compartment 50 of the selected door. As the door moves from its closed to its open position the flange 68 strikes the corresponding vend flap 138 to open switch 144 to interrupt the circuit of solenoid 82 to reset the mechanism. If the supply of cans in either of the machine's sections is down to two cans, the associated empty switch mechanism closes the switch 120 to illuminate the corresponding light.

It will be seen that I have accomplished the objects of my invention. I have provided a small size, high capacity can merchandising machine. My machine is simple in construction. It is certain in operation. It is inexpensive to construct with the result achieved thereby.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and subcombinations.

This is contemplated by and is within the scope of my claims. It is further obvious that various changes may be made in details within the scope of my claims without departing from the spirit of my invention. It is, therefore, to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, what I claim is:

1. A machine for dispensing cans including in combination, a cabinet having a wall formed with spaced openings, means for holding respective first and second supplies of cans in said cabinet, first and second guide means for conducting cans from the respective supplies to said openings, first and second doors formed with respective can receiving compartments at the backs thereof, means mounting said doors respectively in said openings for movement between closed positions at which said compartments receive cans from said guide means and open positions at which said compartments are accessible from outside said cabinet, each of said doors being formed with a flange having a recess therein, an arm formed with spaced dogs, means mounting said arm on said cabinet for movement between a first position at which said dogs are out of said recesses and a second position at which said dogs are in said recesses to lock said doors, means biasing said arm to said second position, means responsive to the deposit of money for moving said arm to said first position against the action of said biasing means to unlock said doors, each of said compartments having a side formed with a recess, said doors being arranged in side by side relationship with said side recesses adjacent each to the other and in alignment, an interlock bar having cam ends, means mounting said bar between said sides of the respective compartments with said ends in said side recesses for sliding movement toward one of said doors in response to movement of the other door toward its open position to prevent movement of the other door toward open position, each of said flanges having a second recess therein, respective levers having second dogs at first ends thereof adapted to be received in said second recesses and means mounting said levers in said cabinets with said second dogs biased into said second recesses and with second ends of said levers in the paths of cans moving along said guide means.

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