

Feb. 25, 1964

C. E. REBURN
VENDING MACHINE

3,122,269

Filed June 9, 1960

7 Sheets-Sheet 1

FIG. 1

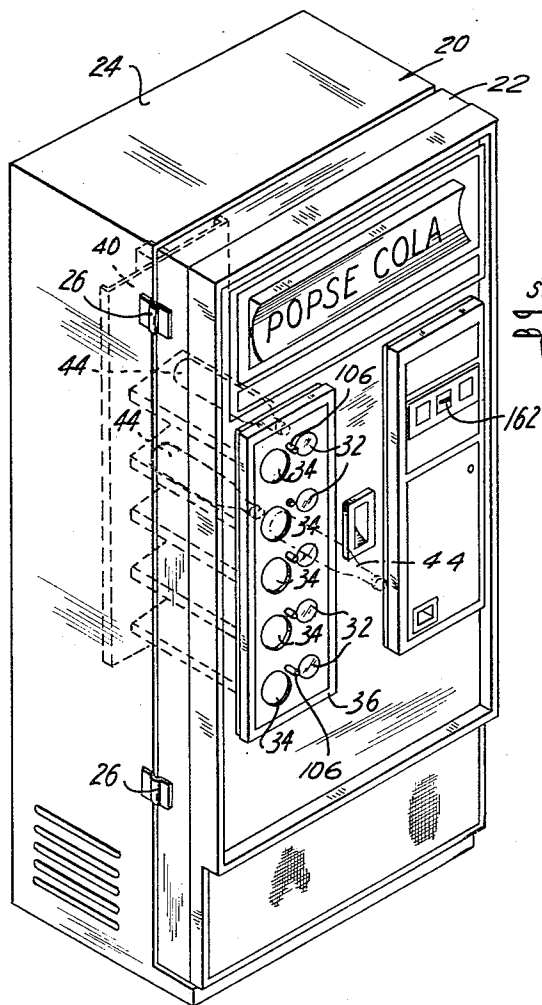
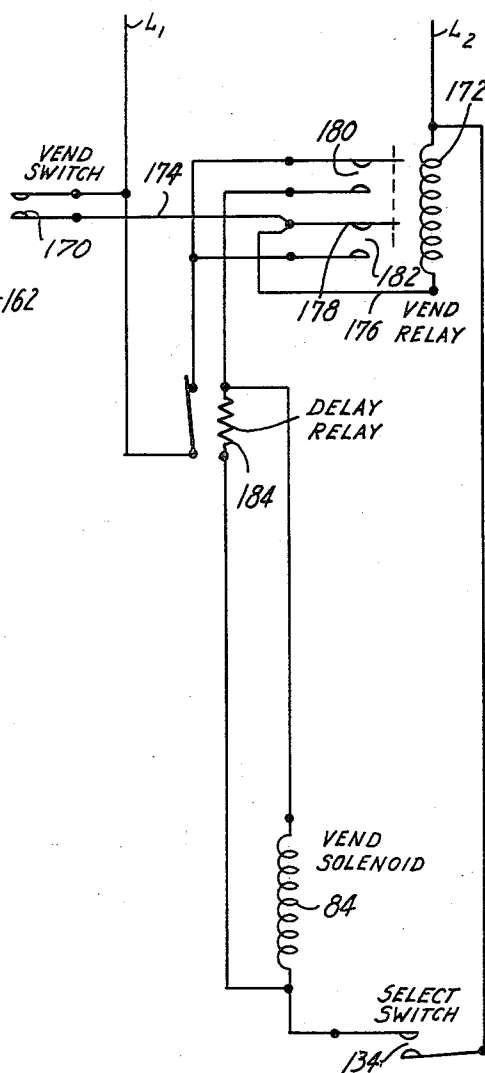


FIG. 12



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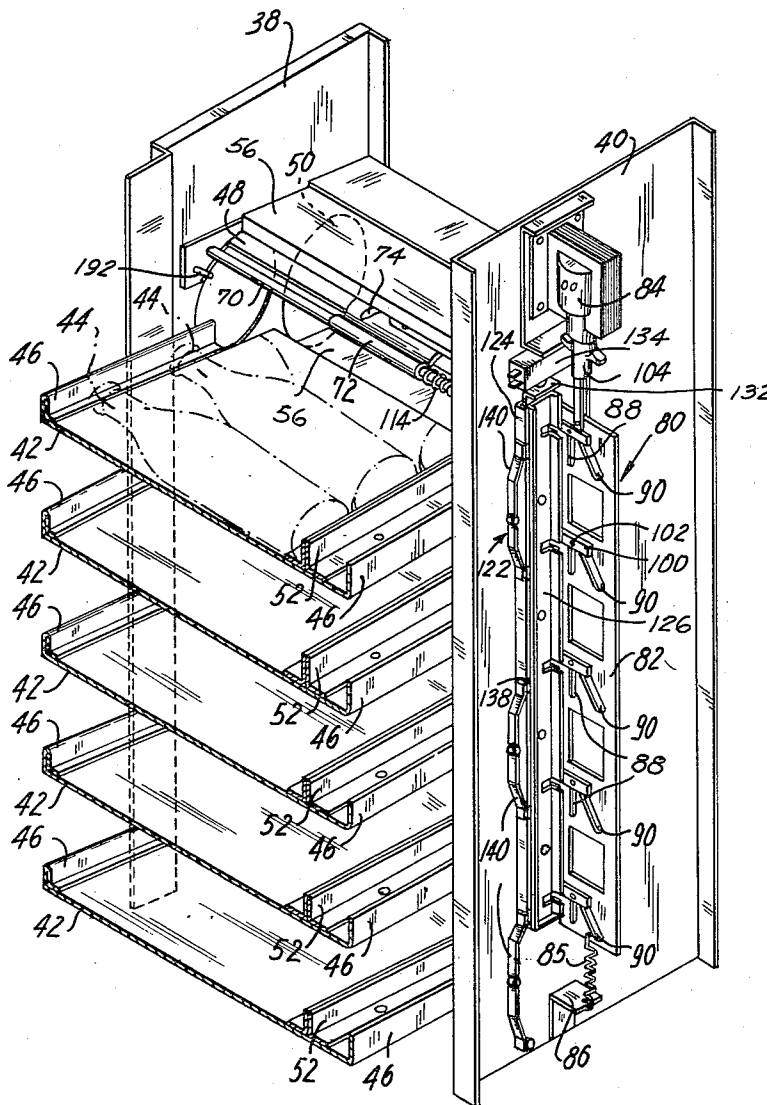
C. E. REBURN
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7 Sheets-Sheet 2

FIG. 2



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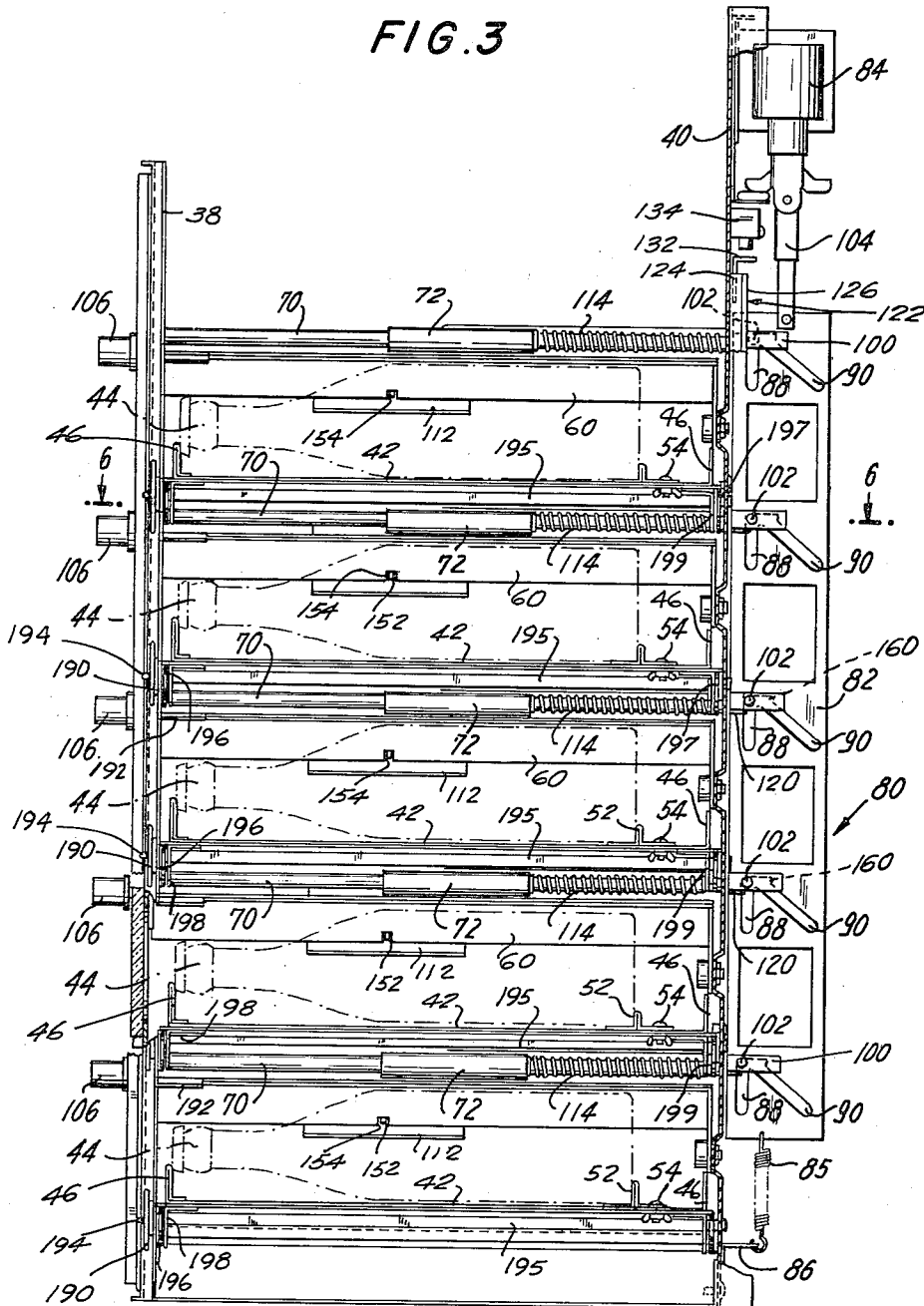
C. E. REBURN
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7 Sheets-Sheet 3

FIG. 3



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3,122,269

Filed June 9, 1960

7 Sheets-Sheet 4

FIG. 4

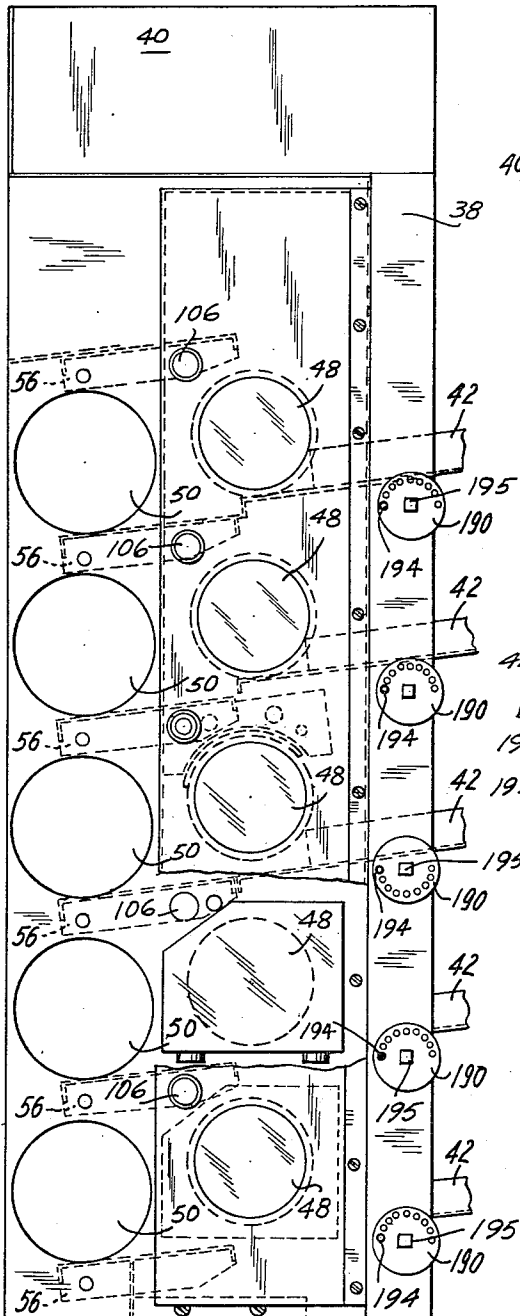
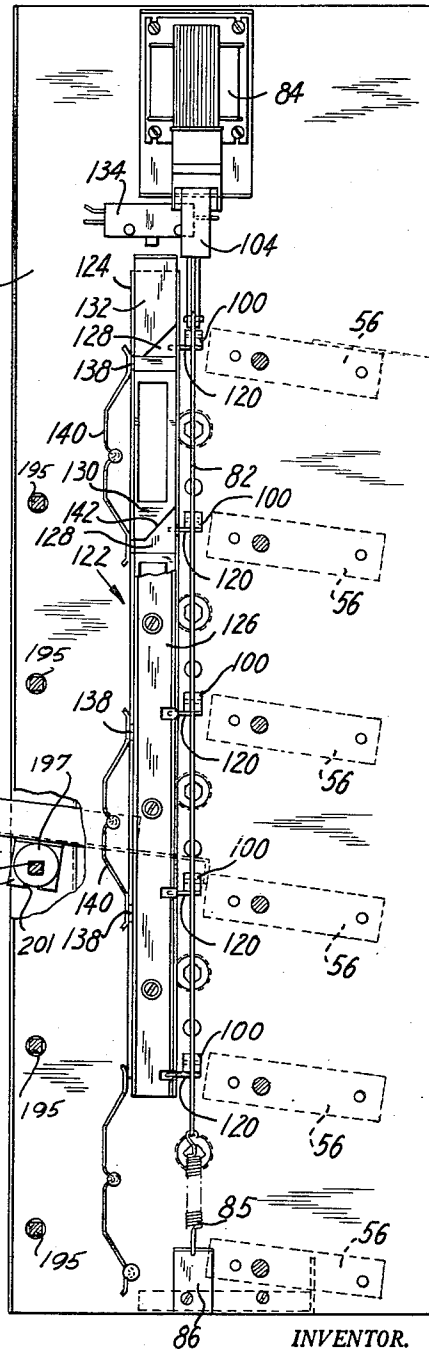


FIG. 5



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3,122,269

VENDING MACHINE

Filed June 9, 1960

7 Sheets-Sheet 5

FIG. 6

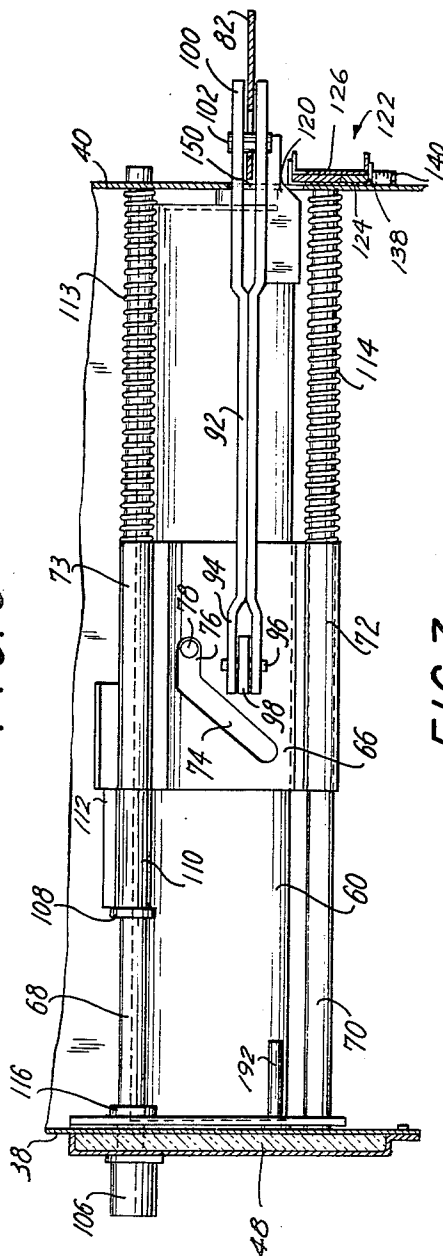
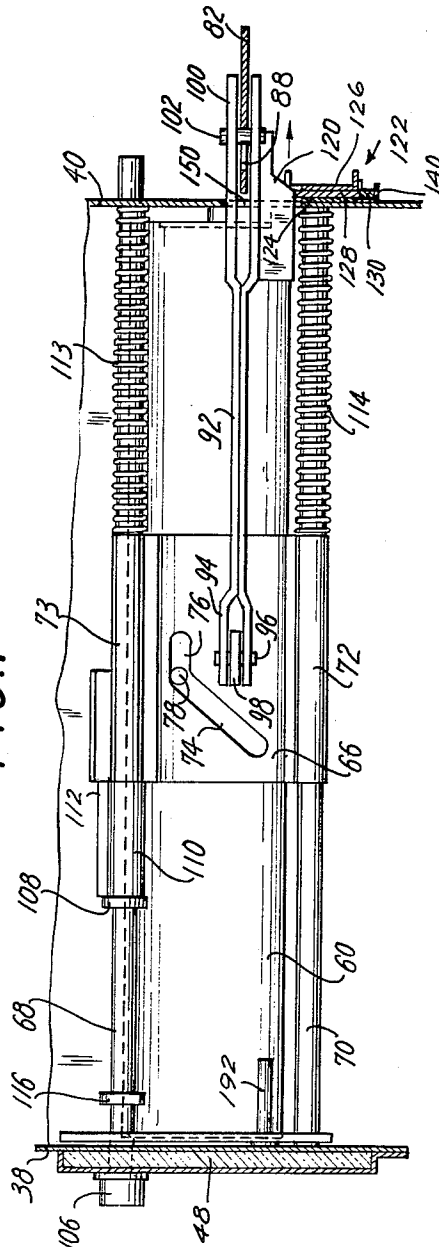


FIG. 7



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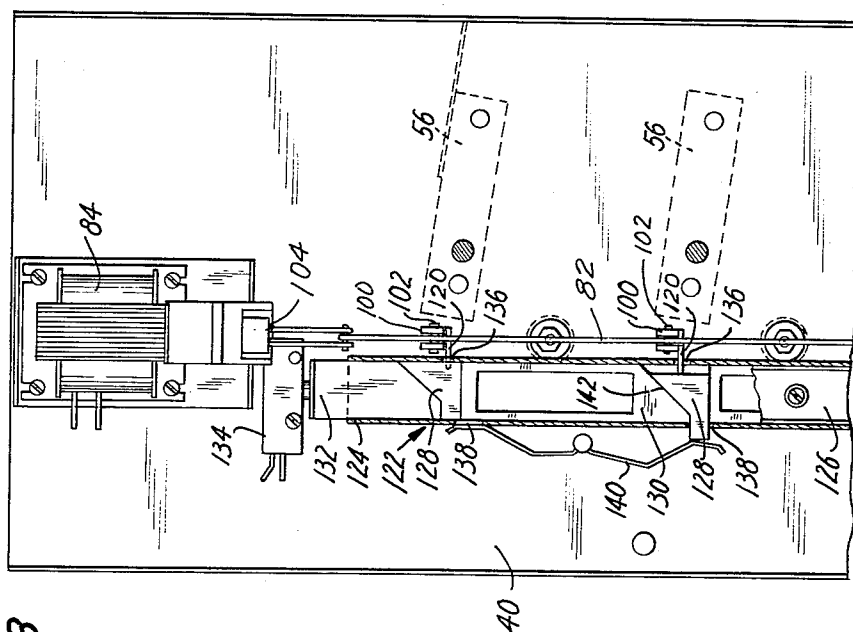
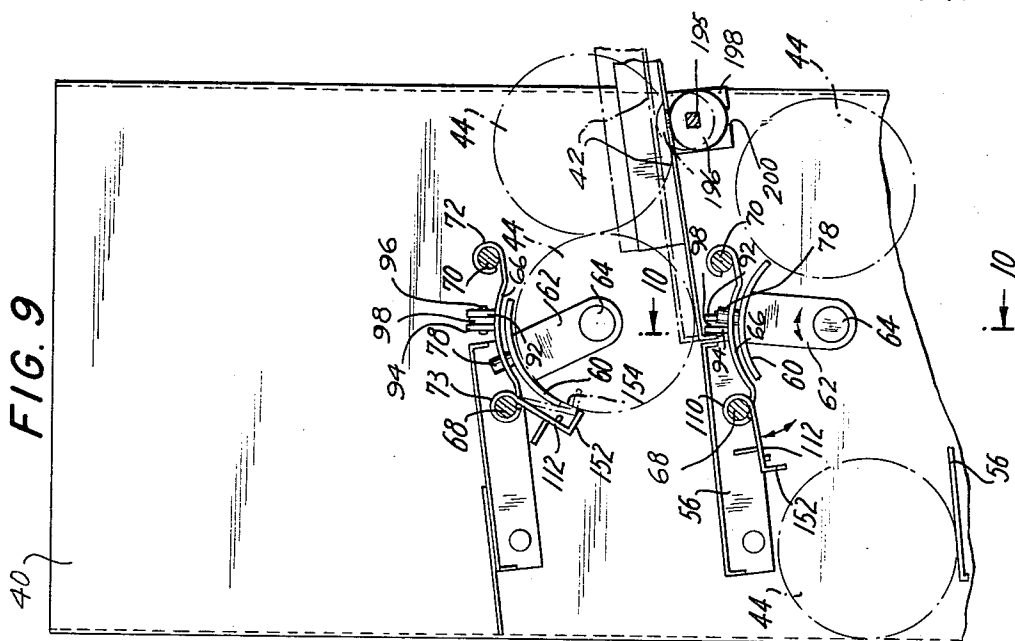
C. E. REBURN

3,122,269

VENDING MACHINE

Filed June 9, 1960

7 Sheets-Sheet 6



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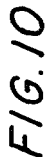
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VENDING MACHINE

7 Sheets-Sheet 7



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1

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VENDING MACHINE

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Filed June 9, 1960, Ser. No. 34,995

12 Claims. (Cl. 221-15)

This invention relates to vending mechanism and more particularly to vending machines for packaged goods such as bottled drinks and the like.

This apparatus being of the type that is unattended must be easy to operate and dispense the vended article in such a way that very little skill is required and at the same time the machine must prevent the pilfering of unvended articles from the machine. This invention has these objectives in view and it is a further object to provide a machine which will dispense a variety of goods of various flavors or brands and which will enable the customer to readily purchase whichever variety he selects while at the same time preventing dispensing of multiple articles on a single vending.

It is a further object of the invention to enable the customer to view the actual article which he is purchasing although he may not be able to handle it before it has been paid for.

Other objects of the invention will be in part obvious and in part pointed out hereinafter.

The drawing illustrates a preferred embodiment of the invention and includes:

FIG. 1, an external perspective view of the housing inclosing the mechanism,

FIG. 2, a perspective rear view of the mechanism for delivering bottled material, and includes the means by which the bottles are conveyed to the position at which they are discharged, portions of the gate mechanism at which they are discharged, the mechanism for actuating the gate, and the inter-lock by which the gate mechanisms are locked out of operation selectively,

FIG. 3 is a side elevation of the mechanism of FIG. 2,

FIG. 4 is a front elevation of the mechanism of FIG. 2,

FIG. 5 is a rear elevation of the mechanism of FIG. 2,

FIG. 6 is a sectional view taken along the line 6-6 of FIG. 3 looking in the direction of the arrows, being a plan view of the gate mechanism and the manually operable means by which its operation is initiated.

FIG. 7 is a plan view similar to that of FIG. 6 showing the gate mechanism in position with the manually operable member in operative position,

FIG. 8 is a rear elevation partially broken away to show the gate actuator and the interlock operating to lock out all but one gate mechanism,

FIG. 9 is a front elevation of a portion of the mechanism partly broken away to show the construction of the gate and its method of operation to release a bottle and bar succeeding bottles, the view being in vertical section parallel with the front of the housing,

FIG. 10 is a horizontal view taken along the line 10-10 of FIG. 9 looking in the direction of the arrows and indicates the operation of the actuator with relation to the gate mechanism,

FIG. 11 is a view taken along the line 11-11 of FIG. 10 looking in the direction of the arrows, and

FIG. 12 is a diagram of so much of the electrical circuit of the mechanism as relates to the invention.

As shown more particularly in FIG. 1, the vending mechanism is provided with a housing 20 within which is inclosed the vending mechanism and suitable associated apparatus such as a refrigerator (not shown). Housing 20, in this instance, has a front door 22 suitably hinged to the main box portion 24 as at 26.

This invention is particularly adapted for use in ma-

2

chines for dispensing packaged goods which include a container with consumable material. In this instance the machine has been designed for delivering such articles as bottled soft drinks. The bottles indicated at 44 in FIG. 1 are adapted to be transferred within housing 20, first to positions where they may be viewed through window apertures 32, and then to position in alignment with larger dispensing apertures 34 at a suitable panel 36 on door 22.

As shown in FIG. 2, a delivery mechanism within housing 20 has a supporting structure consisting of a front plate 38 and a rear plate 40 substantially parallel to each other and spaced apart. Supported between them are a plurality of sloping shelves 42 upon which are adapted to lie in parallel arrangement a plurality of bottles 44, and having flanges 46 at the front and back which, with shelves 42, form chutes down which bottles 44 are adapted to roll into position successively before apertures 48 and 50 corresponding to window aperture 32 and dispensing aperture 34, respectively, in panel 36 of housing 20. The effective width of shelves 42 can be regulated to correspond to the height of bottles 44 by means of an adjustable flange 52 held in place by thumb nut and screw as shown at 54.

Upon vending, bottles 44 are adapted to be delivered to receivers which in this instance are in the form of shelves 56 positioned behind each dispensing aperture 50.

Bottles 44 as they are dispensed from the chutes 42 are adapted to roll down into position in front of window aperture 48 where they are engageable by a gate mechanism which is adapted to be actuated to pass the bottles one at a time to shelves 56. The gate, part of which is shown in end view in FIG. 9, has a release bar 60, preferably arcuate in section and mounted on an arm 62 extending radially from a central pivot 64 so that bar 60 is swingable as indicated by the arrows.

As shown in FIG. 9, bar 60 partly encircles the foremost bottle 44 to stop it from rolling onto shelf 56. Swung backwardly, bar 60 abuts the rearward bottle 44 and releases the front bottle to roll onto shelf 56 and be dispensed. Subsequent swinging forward allows bottle 44 to enter the gate for engagement with bar 60 at its forward side where it is held until repetition of the action above described.

Bar 60 is a relatively long plate extending substantially the length of a bottle 44, and embraces the bottle so that it cannot be forcibly withdrawn onto shelf 56. Its swinging motion is effected by a cam 66 forming part of the gate mechanism and in this instance is a plate overlying bar 60 and generally conforming to the curvature thereof, and slidably mounted on a pair of rods 68 and 70 parallel to each other and extending from rear plate 40 to front plate 38. One edge of cam plate 66 is bent as at 72 to encircle rod 70 and the other edge of plate 66 is bent as at 73 to encircle rod 68. An inclined slot 74 having a short straight portion 76 is adapted to engage a pin 78 mounted on bar 60. Reciprocation of cam plate 66 causes swinging motion in bar 60.

For moving cam plate 66 the invention provides an actuator 80 details of which are shown in FIG. 2 and FIG. 3 and which consists mainly of a vertically reciprocable cam plate 82 adapted to be lifted by a solenoid 84 and returned in a downward direction by a spring 85 engaging the lower end of plate 82 and anchored at a bracket 86 on rear plate 40. Plate 82 is provided with a series of slots corresponding to cam plates 66, the slots being in two sections, one section being a vertical cut 88 and another a slanting cut 90 joining cut 88. Actuator 80 cooperates with cam plates 66 by a connector consisting of a link 92 terminating in a yoke 94 provided with a transverse pin 96 engaging in an upright lug 98 mounted on cam plate 66. At the other end of link 92 is provided

a yoke 100 provided with a transverse pin 102. As shown in FIG. 6 and FIG. 7 the yoke 100 at the end of link 92 is adapted to straddle cam bar 82 and pin 102 normally lies at the apex formed by slots 88 and 90.

In the relative positions of the parts as shown in FIG. 3, solenoid 84, pulling up cam bar 82 through the medium of link 104, causes slots 88 to engage pins 102 which would prevent any movement of any of the connectors 92. All cam plates 66 would be locked thereby in their inoperative positions.

To initiate motion of any cam plate 66, manual means is provided which consists of the rods 68 which are slidable in front and rear plates 38 and 40, respectively, and are adapted to be pushed longitudinally by push buttons 106 at their ends where they protrude through plate 38. To this end a collar 108 is provided on each rod 68 abutting the collar 110 of a locking member 112 pivotally mounted on rod 68 adjacent the bearing edge 73 of plate 66. As shown in FIG. 7 depressing button 106 pushes rod 68 and its collar 108 to move cam plate 66 against the force of compression springs 113 and 114 about rods 68 and 70 respectively for a limited distance at which pin 78 is advanced the length of the straight portion 76 of the slot in cam plate 66.

This endwise motion of cam plate 66 pushes pin 102 over into the inclined slot 90 of cam bar 82 so that upward motion of cam bar 82 pulls cam plate 66 longitudinally on rods 68 and 70, thus causing the gate to open as above described. Upon reversed motion of cam bar 82 compression of spring 113 and spring 114 about rods 68 and 70 respectively pushes cam plate 66 back until the bottom of straight portion 76 of the slot engages pin 78. Removal of rod 68 is prevented by a collar 116 adjacent push button 106.

To prevent two push buttons 106 from being depressed simultaneously which would cause two gates to open at once, an interlock is provided operable by the gates. To this end each link 92 is provided with a cam-shaped flange 120 each adapted to operate the interlock mechanism for the purpose of blocking movement of each other link 92. The interlock is indicated at 122.

Interlock 122 consists of a channel 124 and cover 126 between which are disposed a plurality of flat wedge-shaped cam members 128, one corresponding to each link 92, and having mating bars 130 interposed between them to transfer longitudinal motion and incidentally to extend the length of the assembly with respect to channel 124 so that the top bar 132 will cause operation of a suitable electric switch 134.

In the normal inoperative position all members 128, 130 and member 132 lie within channel 124 so that all are free to move longitudinally thereof. At intervals in the side wall of channel 124 are provided slots 136 adjacent each cam 120 whereby the wedge cams 128 are adapted to be engaged. Each wedge cam 128 is in the form of a triangle over a rectangle, the rectangular part of the member 128 being normally opposite a slot 138 in the wall of channel 124 opposite slots 136. Thus in the normal positions of wedge cams 128 any such member can be moved laterally against the force of suitable leaf spring 140 to protrude through its slot 138 but having so moved it is locked in that position against lengthwise motion. All members below are likewise unable to move longitudinally, which will include member 128 as well as the mating bars 130. Those mating bars 130 above such an actuated wedge cam 128, however, are movable longitudinally since they have cam faces 142 to correspond with cams 128 and on moving longitudinally the remaining wedge cams 128 above, are unable to move laterally since their rectangular tongues are out of registry with the corresponding slots 138. The top mating bar 132 is caused to move longitudinally to actuate switch 134.

It is thus seen that when one wedge cam 128 has been actuated laterally by its corresponding cam 120, all the

remaining wedge cams are unable to act as cams until the first actuated cam has been restored to its normal position.

Thus interlock 122 operates to lock out all but one first actuated gate as well as to operate the electric switch 134 to energize solenoid 84 which as above described opens the gate corresponding to the actuated wedge cam 128 and its associated link bar 92, cam plate 66 and bar member 60. Link bar 92 is guided in its longitudinal movement by slots 150 cut in the rear plate 40.

Member 112 which is journaled as at 110 on rod 68 is a latch for stopping longitudinal movement of rod 68 when there is no bottle 44 within the gate to be engaged by the arcuate member or bar 60. For this purpose member 112 is provided with a hook-like projection 152 adapted to enter a notch 154 in the forward edge of member 60, as shown dotted in FIG. 9. The latch is disengaged by a bottle 44 in position within member 60. With no bottle in place the latch effectively prevents sliding of the bearing portion 110 due to engagement of the flange 108. Thus, the button 106 cannot be depressed to actuate cam plate 66.

In order to prevent anyone from rotating the gate member 60 by hand, slot 90 of bar 82 is provided with a notch 160 providing a flat face to engage pin 102 thereby preventing actuation of cam plate 66 in a longitudinal direction.

It is intended that this apparatus shall not be operable until a suitable coin has been inserted in a slot as shown in 162 in the front of housing 20. The deposit of a coin in a slot is intended to condition a suitable circuit for the operation of solenoid 84, which may be called the vend solenoid, upon operation of switch 134 which will be referred to as the "select switch."

Coin operated mechanisms are a well developed art and any suitable form of such mechanism may be employed to operate a vend switch 170 (FIG. 12). As will be understood vend switch 170 is operated by the coin operated mechanism (not shown) and thereafter when a suitable button 106 is pushed by the operator select switch 134 is closed in manner above described. A suitable source of current is provided as indicated at L1 and L2 in FIG. 12. Closing vend switch 170 closes the circuit from L1 through vend relay 172, by way of conductor 174 and 176 both leading to the armature contact 178. Operation of vend relay 172 closes contacts 180 and also closes the contacts associated with armature 178 as shown at 182. Vend relay 172 will remain closed since a circuit is established between L1, armature and its normally closed contact of delay relay 184 and by way of contacts 182 of the vend relay and the winding of relay 172 to L2. Additionally, vend relay by closing of the contacts at 180 establishes a circuit including select switch 134 and vend solenoid 84 by way of contacts 180 and the normally closed armature and its contact of the delay relay 184, and thence to the other side of the line L1. Thus upon closing of select switch 134, solenoid 84 energizes the gate actuator 80 in the manner above described.

As long as a button 106 remains pushed the vend solenoid 84 tends to stay actuated but this is avoided after a suitable delay by the use of the delay relay 184 shunted across vend solenoid 84. After a suitable delay within the control of the delay relay design that relay operates to open contact of its armature and its contact thus opening all of the circuits including that of vend relay 172 and vend solenoid 84. The apparatus is restored to its normal condition awaiting the insertion of another coin.

As has been said above, this apparatus is intended to handle bottles of various sizes. For bottles of smaller diameter, the inclined shelves or chutes are adjustable vertically for this purpose, as indicated in FIG. 4, by suitable adjusting knobs 190. In this connection, gauge pins 192 are utilized in conjunction with the adjusting knobs 190 and project to the rear from the front plate 38.

5

When the base of a bottle is placed under a pin 192, the proper shelf height is obtained when the adjusting knob 190 is turned until the pin 192 touches the highest point of the bottle diameter. A split pin 194 is initially pulled from the adjusting knob 190 to enable the knob to be rotated to raise or lower the shelf, as the case may be, until the gauge pin 192 makes the desired contact with the highest point. Each of the shelves 42 may include downwardly depending tongues 198 and 199 along peripheral side edges. These tongues 198 and 199 are formed, respectively, with slots 200 and 201 which embrace the shaft or rod 195 and permit the relative displacement of the associated shelf 42. Under such circumstances, the adjusting knob 190 is mounted on shaft 195, which also serves to support a pair of eccentrics 196 and 197 which, in turn, support the associated shelf end. The split pin 194 is then inserted through the holes in the adjusting knob 190 and front plate 38 to maintain the desired adjustment.

It will be obvious that any number of such chutes 42 may be provided within reason. It is also to be understood that this apparatus can be used to vend canned material such as beer or with obvious modifications packaged material of other descriptions and form.

Thus, by the above construction are accomplished, among others, the objects hereinbefore referred to.

I claim:

1. Vending mechanism for containers comprising: a housing; a plurality of normally-empty receivers for vended containers accessible through open dispensing apertures in said housing to permit free removal therefrom; a chute corresponding to each receiver for conveying said containers to position adjacent said receivers; a gate for each chute to normally retain said containers in said chutes and away from said receivers and to release them singly to said receivers; a gate actuator common to all of said gates for operating selected gates individually; a series of actuating members, one for each gate, to control said actuator; and an interlock operable by each of said members to stop simultaneous operation of said members and to actuate the said actuator.

2. Vending mechanism for containers comprising: a housing; a plurality of normally-empty receivers for vended containers accessible through open dispensing apertures in said housing to permit free removal therefrom; a chute corresponding to each receiver for conveying said containers to position adjacent said receivers; a swingable gate for each chute to normally retain said containers in said chutes and away from said receivers and to release them singly to said receivers and having a cam associated therewith for effecting such gate swinging; an actuator for the cams common to all of said gates for operating selected gates individually; a series of actuating members, one for each gate, to control said actuator; and an interlock operable by each of said members to stop simultaneous operation of said members and to actuate the said actuator.

3. Vending mechanism for containers comprising: a housing; a plurality of receivers for vended containers accessible through said housing to permit free removal therefrom; a chute corresponding to each receiver for conveying said containers to position adjacent said receivers; a swingable gate for each chute to retain said containers in said chutes and to release them singly to said receivers and having a pivoted container engaging portion and a cam cooperative therewith to effect such swinging; a connector link affixed to each cam; a gate actuator common to all of said gates engageable with the connector links to operate and lock individual connector links and gates selectively; a cam actuating member for each gate to initiate operation of said cam to move the connector links into position to be operated by said actuator; and an interlock operable by each of the connector links to stop simultaneous operation of said members and to actuate the said gate actuator.

4. Vending mechanism for containers comprising: a

6

housing; a plurality of receivers for vended containers accessible through said housing to permit free removal therefrom; a chute corresponding to each receiver for conveying said containers to position adjacent said receivers; a swingable gate for each chute to retain said containers in said chutes and to release them singly to said receivers and having a pivoted container engaging portion; a series of cams, each one of which is cooperative with a gate to effect such swinging; a connector link affixed to each cam; a gate actuator common to all of said gates for operating selected gates individually including a power moved member having cam slots and locking slots for engaging the connector links selectively; a cam actuating member for each gate to initiate operation of said cam to move each connector link into position to be engaged by one of said cam slots; and an interlock operable by each of the connector links to stop simultaneous operation of said members and to actuate the said power moved member such that a selected connector link corresponding to a selected cam actuating member is engaged by one of said locking slots thereby to activate the corresponding cam to effect the swinging movement of the gate associated therewith.

5. Vending mechanism for containers comprising: a housing; a plurality of receivers for vended containers accessible through said housing to permit free removal therefrom; a chute corresponding to each receiver for conveying said containers to position adjacent said receivers; a gate for each chute having an arcuate portion to embrace a container and centrally pivoted to swing to a position for releasing a given container and for blocking the advance of succeeding containers; a cam for each gate for effecting such swinging; a connector link affixed to each cam; a gate actuator common to all of said gates engageable with the connector links to operate and lock individual connector links and gates selectively; a cam actuating member for each gate to initiate operation of its corresponding cam to move the associated connector link into position to be operated by said actuator; and an interlock operable by each of the connector links to stop simultaneous operation of said members and to actuate the said gate actuator.

6. Vending mechanism for containers comprising a rack for receiving a vended container, a chute directed at the rack and adapted to feed containers thereto, a container engaging member at an end of said chute pivotally mounted to disengage such container and to bar the succeeding container, a cam transversely slidable with respect to said chute and mounted adjacent said member, a cam follower on said container engaging member and cooperative with said cam to be moved thereby in order to pivot the said container engaging member, means to actuate said cam and arranged to be set in operation thereby, a cam actuating member to transmit limited motion to said cam to initiate operation of said means, whereby the said cam is actuated for additional motion, and an enclosing housing for all of the preceding elements and having an opening adjacent said rack to provide access thereto for container removal.

7. Vending mechanism for containers comprising a rack for receiving a vended container, a chute directed at the rack and adapted to feed containers thereto, a container engaging member at an end of said chute pivotally mounted to disengage such container and bar the succeeding container, a pair of rods extending across said chute adjacent said member, a cam transversely slidable on said rods and spring biased to its normal inoperative position, a cam follower on said member cooperative with said cam to effect rotational movement of said member, means to actuate said cam and arranged to be set in operation thereby, one of said rods being manually movable and engageable with said cam to transmit limited motion thereto to initiate operation of said means, and an enclosing housing for all of the preceding elements and having an opening adjacent said rack to provide access thereto for container removal.

8. Vending mechanism for containers comprising a rack for receiving a vended container, a chute directed at the rack and adapted to feed containers thereto, a container engaging member at an end of said chute pivotally mounted to disengage such container and to bar the succeeding container, a cam transversely slidable with respect to said chute and mounted adjacent said member, a cam follower on said container engaging member and cooperative with said cam to be moved thereby, in order to pivot the said container engaging member, a locking element mounted on said cam and engageable with said member to prevent relative movement therebetween, said locking element being adapted to be disengaged from said member by contact with a container engaged by said member, means to actuate said cam and arranged to be set in operation thereby, a cam actuating member to transmit limited motion to said cam to initiate the operation of said means, whereby the said cam is actuated for additional motion, and an enclosing housing for all of the preceding elements and having an opening adjacent said rack to provide access thereto for container removal.

9. Vending mechanism for containers comprising a rack for receiving a vended container, a chute directed at the rack and adapted to feed containers thereto, a container engaging member at an end of said chute pivotally mounted to disengage such container and bar the succeeding container, a pair of rods extending across said chute adjacent said member, a cam transversely slidable on said rods and spring biased to a normal inoperative position, a cam follower on said member cooperative with said cam to effect rotational movement of said member, a locking element mounted on said rod and engageable with said member to prevent relative movement therebetween, said locking element being adapted to be disengaged from said member by contact with a container engaged by said member, means to actuate said cam and arranged to be set in operation thereby, one of said rods being manually movable and engageable with said cam to transmit limited motion thereto to initiate operation of said means, and an enclosing housing for all of the preceding elements and having an opening adjacent said rack to provide access thereto for container removal.

10. Vending mechanism for containers comprising: a housing; a plurality of receivers for vended containers accessible through said housing to permit free removal therefrom; a chute corresponding to each receiver for conveying said containers to position adjacent said receivers; a gate for each chute to retain said containers in said chutes and to release them singly to said receivers; a gate actuator common to all of said gates for operating selected gates individually; a manually operable member for each gate to control said actuator; an interlock

operable by each of said gates to stop simultaneous operation of said members; an actuating link for each gate movable by said manually operable member to engaging position by said actuator; said interlock having corresponding members interposed to block every other said link and its corresponding manual member against actuation; an electric switch closable by said interposed actuated member; and electric means controlled by said switch to set said actuator in motion.

11. Vending mechanism comprising: a housing; a plurality of receivers for vended containers accessible through said housing to permit free removal therefrom; a chute corresponding to each receiver for conveying said containers to position adjacent said receivers; a gate for each chute to retain said containers in said chutes and to release them singly to said receivers; a gate actuator common to all of said gates; a manually operable member for each gate to control said actuator; an interlock operable by each of said gates to stop simultaneous operation of said members; electric motive means for said actuator; a switch for said motive means controlled by said manual member; and an electric circuit including said motive means, said switch, and a source of current, and a time delay device in series with said current source to interrupt said circuit.

12. Vending mechanism for containers comprising: a housing; a plurality of receivers for vended containers accessible through said housing to permit free removal therefrom; a chute corresponding to each receiver for conveying said containers to position adjacent said receivers; a gate for each chute to retain said containers in said chutes and to release them singly to said receivers; a gate actuator common to all of said gates; a manually operable member for each gate to control said actuator; an interlock operable by each of said gates to stop simultaneous operation of said members and to actuate the said actuator; and means operatively connected to each of the chutes for adjustment of the chutes to correspond to the size of the containers so that the containers are substantially embraced while on the chutes.

References Cited in the file of this patent

UNITED STATES PATENTS

2,302,166	Anthony	Nov. 17, 1942
2,316,897	Smith	Apr. 20, 1943
2,727,654	Childers et al.	Dec. 20, 1955
2,875,922	Hsu et al.	Mar. 3, 1959

FOREIGN PATENTS

366,607	Great Britain	Feb. 11, 1932
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