Jan. 11, 1944. L. O. GARNER 2,338,714

VENDING MACHINE

Filed May 17, 1941 5 Sheets-Sheet 1

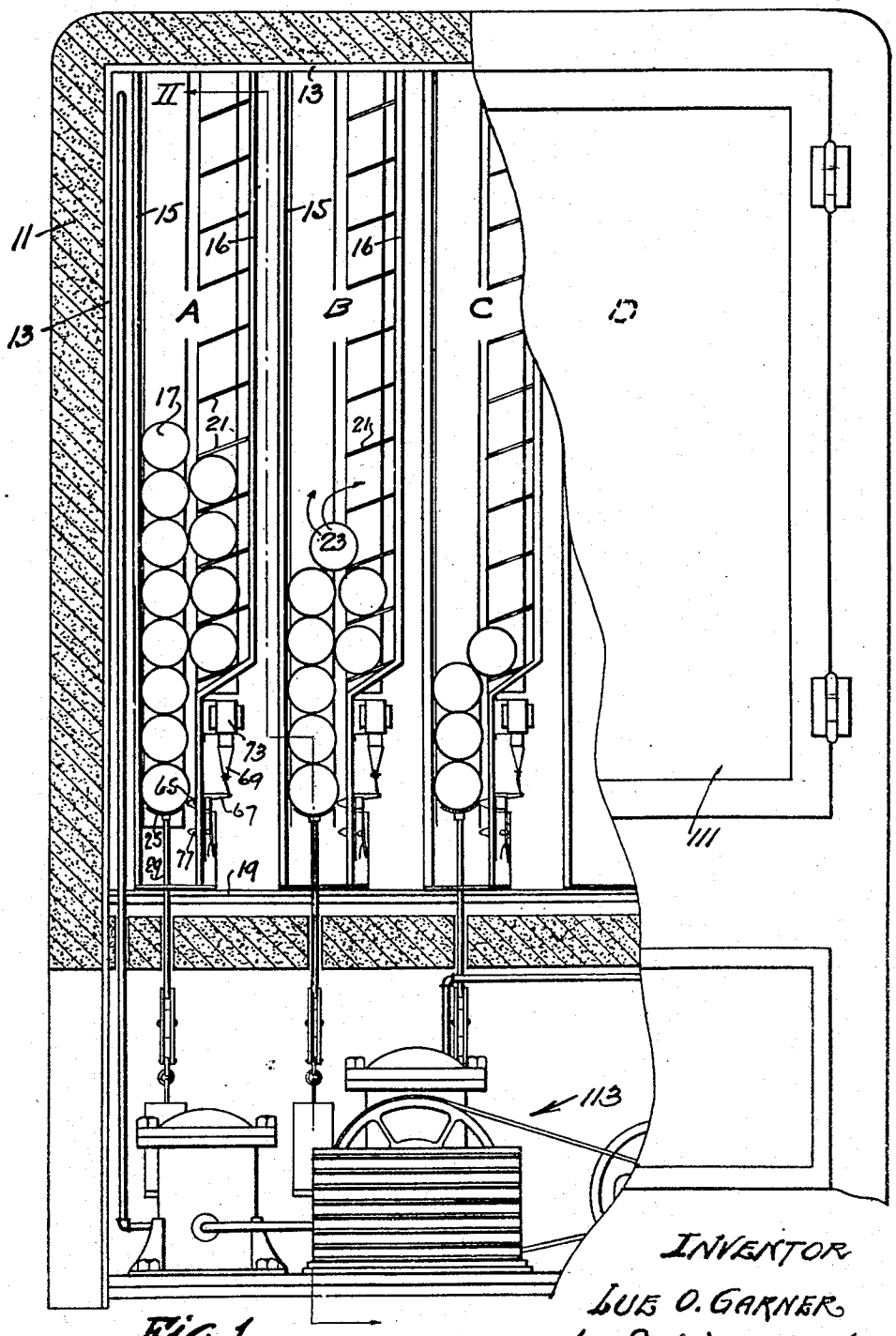


FIG. 1

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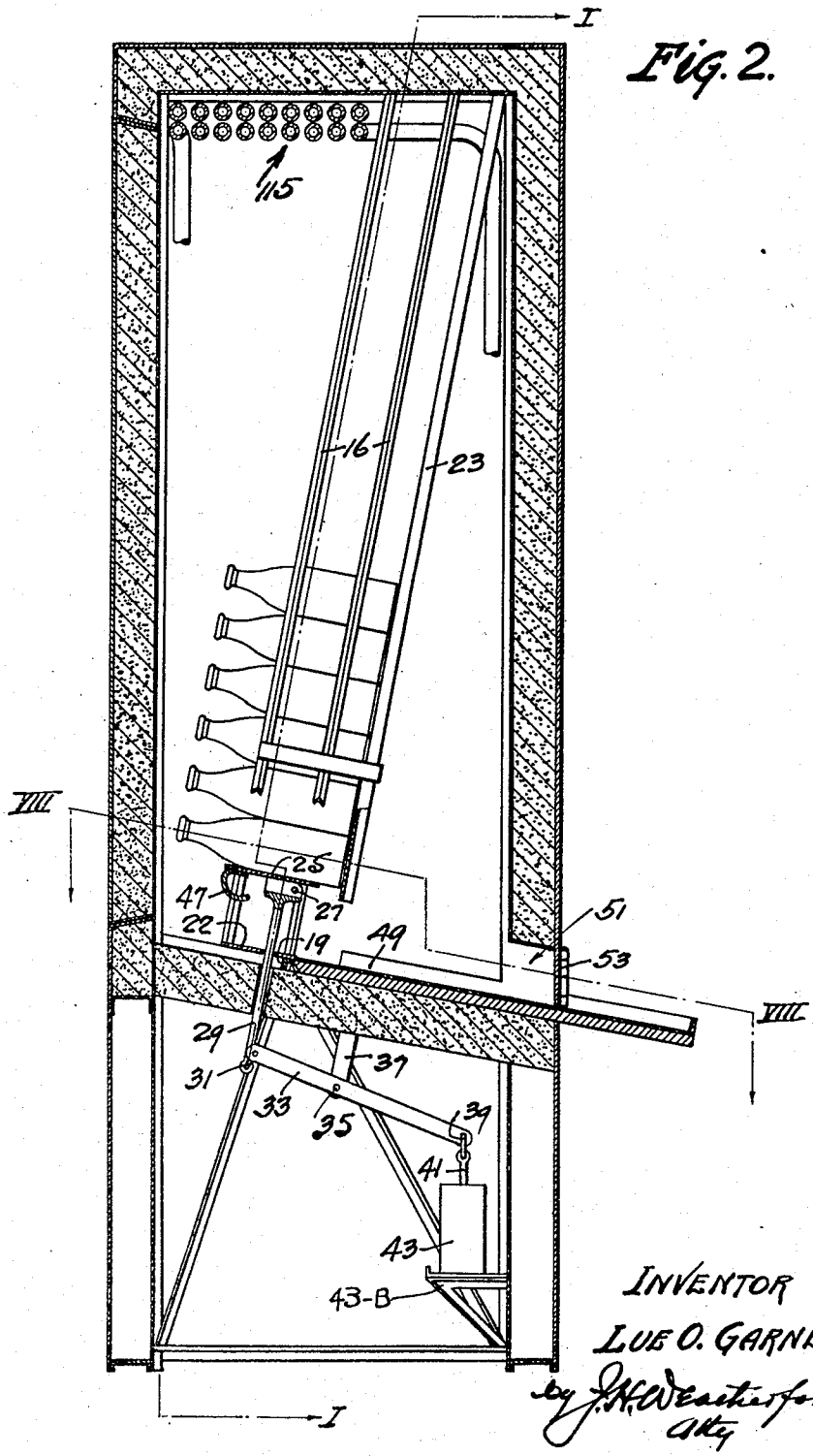


Fig. 2.

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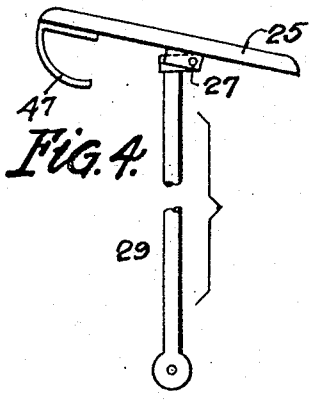


Fig. 4.

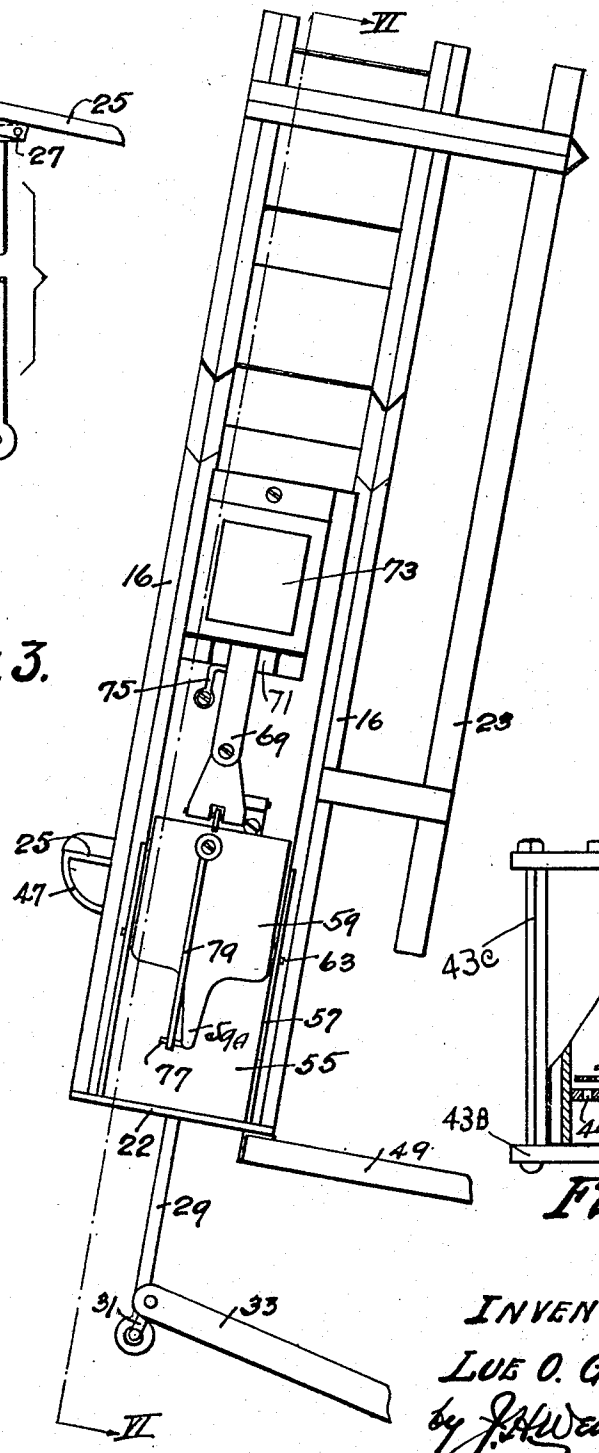


Fig. 3.

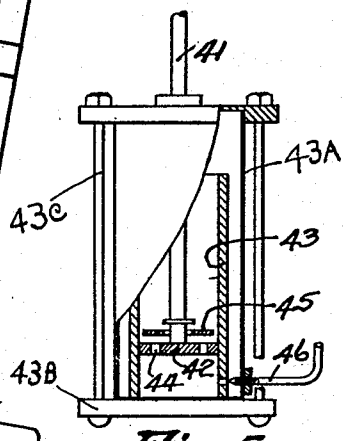


Fig. 5.

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VENDING MACHINE

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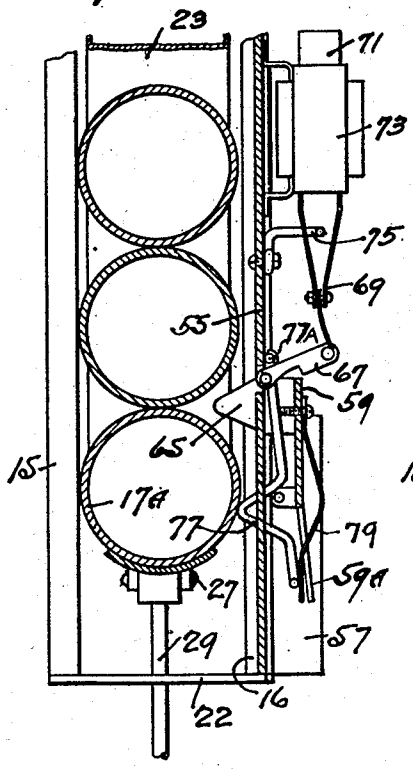


Fig. 7.

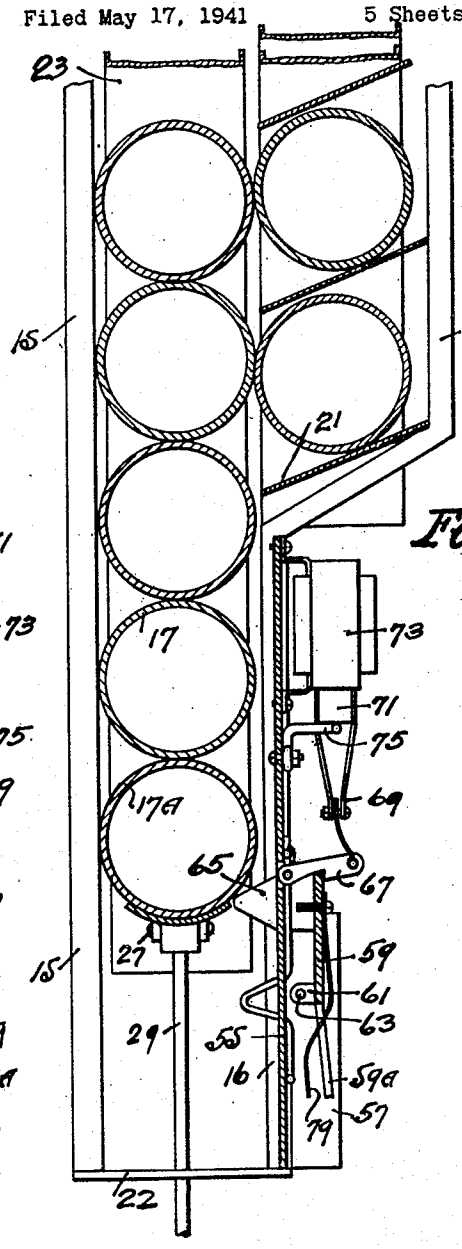


Fig. 6.

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VENDING MACHINE

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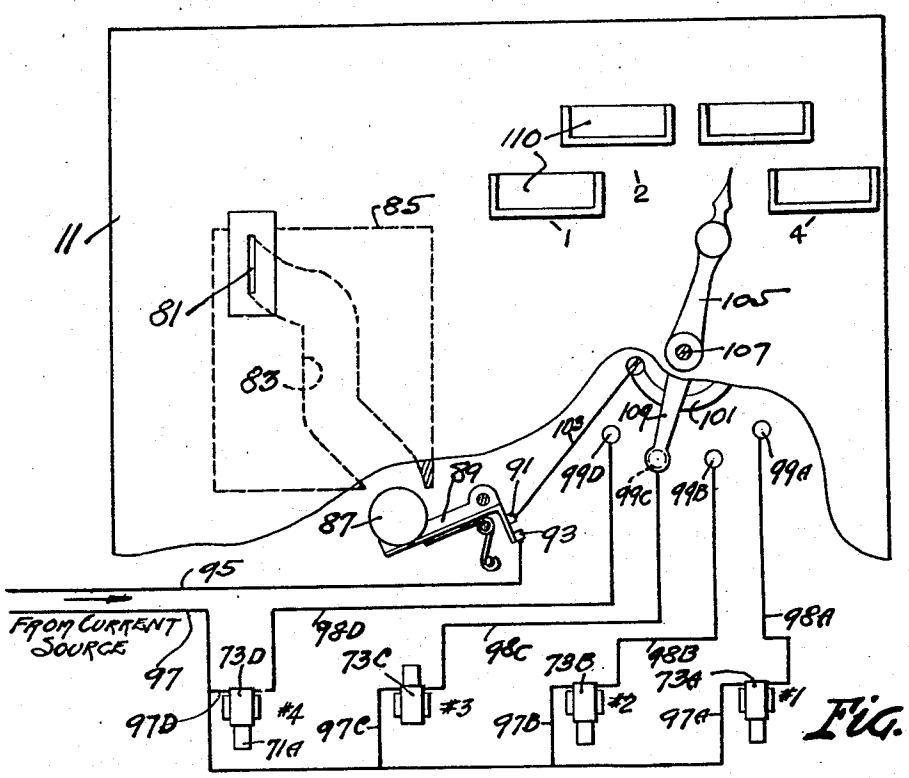


FIG. 9.

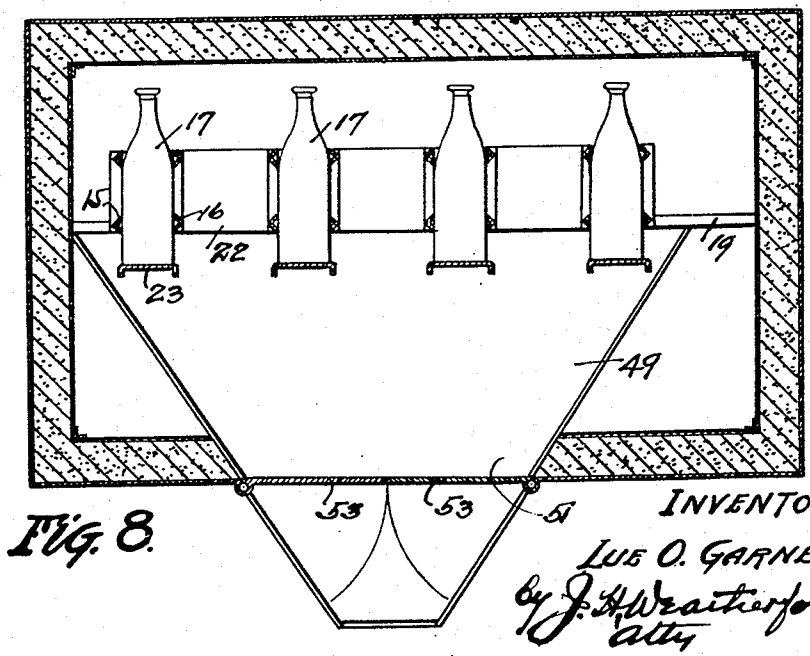


FIG. 8.

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UNITED STATES PATENT OFFICE

2,338,714

VENDING MACHINE

Lue O. Garner, Memphis, Tenn., assignor to Kennon Mott, Columbus, Ga.

Application May 17, 1941, Serial No. 393,866

11 Claims. (Cl. 312—48)

This invention relates to machines for vending bottled goods in single items direct to the customer, and is particularly indicated for the dispensing as of bottled soft drinks which are chilled before delivery.

It will be understood, however, that it is similarly applicable to apparatus for dispensing numerous other types of bottled goods and to dispensing substantially any small articles of circular cross section.

The objects of the invention are:

To provide means for storing a considerable number of units for dispensing.

To provide means for housing a plurality of groups of units.

To provide means for delivering the units of each group individually one at a time.

To provide means for jointly cooling all of the stored units.

To provide coin controlled means each for respectively releasing units of a group, whereby the delivery may be controlled by the customer; and

Generally to improve the design and construction of such devices.

In accomplishing the objects of the invention I provide an insulated casing in which are housed a plurality, here indicated as four, of vertically disposed storage racks, each rack in the instant showing holding twenty-four bottles for dispensing. The casing preferably also houses suitable refrigerating apparatus and chilling coils for cooling the stored bottles. The bottles in each unit are released in succession by suitable releasing apparatus which permits the discharge by gravity of one bottle at each operation. The release is preferably initiated for each operation by the insertion of a suitable coin in payment for the bottle released, and is accomplished by solenoid action effected through the insertion of the coin.

The means by which the foregoing and other objects are accomplished and the method of their accomplishment will readily be understood from the following specification upon reference to the accompanying drawings, in which:

Fig. 1 is a sectional elevation of the device cut away in part, as on the line I—I of Fig. 2, to show three of the bottle racks, the actuating mechanism therefor, and the refrigerating apparatus.

Fig. 2 is a sectional elevation taken as on the line II—II of Fig. 1, with the refrigerating apparatus omitted.

Fig. 3 is a fragmentary side elevation on an enlarged scale of the lower portion of one of the bottle racks empty.

Fig. 4 is a similarly enlarged detail of the bottle lowering cradle.

Fig. 5 is an elevation, partly in section, of a dash-pot for retarding the descent of the bottle lowering cradle.

Fig. 6 is a fragmentary sectional elevation taken as on the line VI—VI of Fig. 3, showing the lower end of one of the bottle racks and the trip mechanism related thereto with the trip in bottle supporting position.

Fig. 7 is a corresponding view showing positioning of the same parts during descent of the bottles.

Fig. 8 is a sectional plan taken as on the line VIII—VIII of Fig. 2; and

Fig. 9 a diagrammatic view showing the electrical circuits used and the coin actuated switch.

Referring now to the drawings in which the various parts are indicated by numerals:

11 is an insulated casing which may have suitable framing 13, in which casing are housed a plurality of bottle racks, four of these, A, B, C, and D, being here indicated. Each rack includes upright frame members 15, 16, spaced apart slightly in excess of two diameters of the bottles 17 which are to be supported in such racks, the members being supported by the framing 13 and transverse members 19 carried thereby, and forming channelways for two rows of bottles.

Extending inward from the frame members 16 are shelves 21 which interrupt one of these channelways. The shelves are downwardly pitched at an angle which will insure discharge of bottles on such shelves and which terminate substantially at the vertical center line of the rack so that they discharge the bottles into the unobstructed channelway when occasion permits. Adjacent their lower ends the frame members 16 are bent toward the opposite frame member 15, substantially to the center line of the rack and are then extended downward parallel with the members 15 to confine bottles below such point to a single row. 22 is a bottom plate which may be individual for each rack, or, as shown in Fig. 8, may extend continuously beneath all.

23 are end guiding members for the bottles, these members extending from top to bottom of the two channelways of each rack, but terminating at least a full bottle diameter above the plate 22 to permit discharge of the bottles therebeneath. The racks are inclined forwardly from bottom to top so that the bottoms of the bottles inherently remain against the guide members of the rack and in properly alined positions.

Mounted at the lower part of the open chan-

nelway part of each rack respectively, are lowering cradles 25, each of which is arcuately curved in cross section to conformingly receive and support each lower bottle successively. The cradle 25 of each rack, as shown in Figs. 2 and 4, is tiltably mounted, as through a pin 27, on a reciprocable rod 29. The rod 29 is connected at its lower end through a link 31 to one end of a lever 33 pivoted intermediate its length as by a pin 35, to a depending post 37. The opposite end of the lever 33 is connected as through a link 39 and rod 41 to the piston 42, of a dash-pot 43. The dashpot 43 is preferably enclosed (Fig. 5) in a casing 43—A which is supported as by a shelf 43—B, and held down thereon as by bolts 43—C. The dashpot 43 is of less heighth than the casing and on the upstroke of the piston air overflows into the casing. The piston 42 has openings 44 therethrough and a superposed valve plate 45, displaceable to permit quick downward movement, but seating on upward movement, to close the openings 44 in the piston, the speed of such upward movement being regulated by inflow through a needle valve 46, which controls flow from the casing into the dashpot. The weight of the piston is preferably sufficient to raise the cradle after each bottle discharge. The cradle is provided at its outer end with a tilt member 47 which engages the plate 22 as the cradle descends and tips the cradle sufficiently to discharge the bottles into a delivery chute 49 through which the bottles are delivered into position accessible to the customer. 51 is an opening in the front wall of the casing which is closed by hinged doors 53 which are pushed open by the bottle as it discharges.

Extending along the restricted lower portion of each rack, where the rack has been restricted to a single channelway and carried by the lower portion of the rack members 16, is a plate 55 on whch is mounted bottle supporting and trip mechanism. This mechanism includes flanges 57 extending rearwardly from the plate, between which flanges a dog carrier 59 is disposed. This carrier has ears 61 which are pivotally mounted, as on pins 63 carried by the flanges 57. Side portions 65 of the carrier 59 are inwardly extended through suitable openings in the plate 55 to form dogs which project into the path of the bottles 17 and are held in such projecting position by a latch 67 engaging the upper edge of the member 59, such holding and projection being shown in Fig. 6, in which view the bottle 17—A and the superposed bottles are supported by the dogs 65.

The latch 67 is connected through suitable linkage 69 with the plunger or core 71 of a solenoid 73. 75 is a stop limiting downward movement of the solenoid core. The solenoid 73, when energized, as later described, raises the core and latch 67, releasing the member 59 and permitting the weight of the bottles to displace the dogs 65 so that the bottle 17—A may descend, as shown in Fig. 7, toward discharge point, the speed of this descent being regulated by the cradle 23 and controlling dashpot 43. Disposed below the dogs 65 is a dog control 77 which is pivotally connected as by a pin 77—A to the back of the plate 55. This control extends also into the path of the descending bottles and as the bottle 17—A, in Fig. 7, descends after release by displacement of the dogs 65, is forced out into engagement with the tail 59—A of the dog carrier 59, definitely moving the carrier into position for engagement by the latch 67, and the dogs 65 into holding position in the path of the next superposed bottle. The control 77 may directly engage the tail 59—A of the carrier 59, but engagement preferably is made first through a spring 79 and subsequently by solid engagement.

In Fig. 9 the solenoids 73—A, 73—B, 73—C and 73—D, controlling the four racks A, B, C, and D, are shown together with the wiring diagram therefor.

81 is a coin slot in the front of the casing 11. 83 indicates diagrammatically a channelway from this coin slot through a coin selector 85 which may be of any of numerous types now purchasable in the open market and which in its detail forms no part of the present invention.

87 is a coin which has been inserted in the slot 81 and has passed through the passageway 83 onto a depressible switch member 89, here shown depressed by the weight of the coin into bridging engagement with contacts 91, 93.

95 and 97 are leads from a source of electric current, the lead 95 extending to the contact 93 and the lead 97 through the branches 97—D, 97—C, 97—B, and 97—A to the solenoids 73—D, 73—C, 73—B, and 73—A, respectively, and thence through continued leads 98—D, 98—C, 98—B, and 98—A, to contacts 99—D, 99—C, 99—B, and 9—A.

101 is an arcuately curved bus bar which is connected through a lead 103 to the contact 91. 105 is an indicator exterior to the casing 11, which may be set on any one of four indicia points numbered 1, 2, 3 and 4 corresponding to the four racks A, B, C, and D. This indicator is connected through a post 107 with an arm 109 to accomplish movement of the arm in conformity with movement of the indicator. The arm 109 is in bridging contact with the bus bar 101, and such one of the contacts 99—A, 99—B, 99—C, or 99—D as may have been selected by positioning of the exterior of the casing.

In Fig. 9 the indicator is shown set on the number 3, and the arm 109 as bridging between the bus bar 101 and the contact 99—C with the solenoid 73—C energized.

Preferably contiguous to each indicia point is a card holder, as the holder 110, in which a card may be placed to indicate the kind of drink dispensed, or other suitable legend may be used to accomplish such designation.

In Fig. 1, 111 is a suitably hinged door permitting access to the back of the casing for filling the racks. 113 diagrammatically illustrates refrigerating apparatus, and 115, in Fig. 2, cooling coils.

In using the device the door 111 is opened and the bottles 17 placed in the rack, the lower bottle in each case being placed in the cradle 25 and being supported by the dogs 65, and thereafter additional bottles being placed in the single row portion of the rack until the double row portion is reached, after which filling of both portions proceeds concurrently, the racks each preferably being made to hold a full case of two dozen bottles.

All of the racks may be filled with one type of drink, or each may be filled with a different type. In such latter event cards are placed in the card holders 110 corresponding to the four indicia points 1, 2, 3 and 4 on the front of the casing, or otherwise proper indication is made of the kind of drink which will be dispensed. After filling the refrigerating apparatus is turned on

and the bottles thoroughly chilled, placing the device ready for customer service.

The customer moves the pointer 105 to the indicia points 1, 2, 3, or 4 indicating the drink which he desires, in the instant case the selection being shown as of type 3. The customer then inserts his coin in the slot 81 and if the coin be not rejected by the coin selector it passes through the passageway 83 therein and drops on the switch 89, depressing this switch to bridge the contacts 91, 93 momentarily and almost immediately drops from the switch into such receptacle as may be provided therefor, permitting the switch to reopen.

Bridging of the contacts 91, 93 establishes circuit from the current source through lead 95, lead 103, bus bar 101, bridging arm 109, contact 99—C, lead 98—C, solenoid 73—C, and leads 97—C and 97 back to the source. Actuation of the solenoid 73—C, as shown in Fig. 7, raises the latch 67 and releases the dog carrier 59, permitting the weight of the bottles to displace the dogs 65 and the bottles to descend, the speed of this descent being governed by the dashpot 43. In this descent the lower bottle engages the dog control 77 forcing the dogs 65 into supporting position beneath the next superposed bottle, and the dog carrier into position for engagement by the latch 67, the dogs supporting the superposed bottle row. As the lower bottle approaches discharge position the cradle tilt member 47 strikes the plate 22 and the cradle 25 is tilted to discharging angle, the bottle sliding off the cradle into and outward through the delivery chute 49, and through the doors 53 into accessible position for the customer.

The load released cradle 25 moves upward into engagement with the dog supported bottle and the device is ready for the next customer.

It will be understood that numerous changes especially in construction detail may be made without departing from the spirit of my invention.

It will be particularly noted that the bottle racks disclosed are shown as distinct units, but it will readily be seen that the sides or member 15 of one rack may form the shelf carrying side or member 16 of a second rack or vice versa, or even that the member 16 of one rack may carry oppositely projecting shelves for an adjacent rack.

I claim:

1. In a gravity feed bottle vending machine which includes means for releasing said bottles successively; bottle discharging means including a bottle receiving cradle, a post supporting said cradle, said cradle and post being depressible under bottle load, a lever, means pivotally mounting said lever intermediate its ends in said machine, means supportably connecting the lower end of said post to one end of said lever, means biasing said lever to raise said post and cradle into bottle engaging position, including dashpot means carried by said machine, and means connecting said dashpot means to the opposite end of said lever, said dashpot means being adapted to effect retarding upward movement of the lever end connected thereto.

2. In a gravity feed bottle vending machine, which includes means for releasing said bottles successively; bottle discharging means including a bottle receiving cradle, a post tiltably supporting said cradle, said cradle and post being depressible under bottle load, a lever, means pivotally mounting said lever intermediate its ends in said machine, means supportably connecting the lower end of said post to one end of said lever, means biasing said lever to raise said post and cradle into bottle engaging position, including dashpot means carried by said machine connected to the opposite end of said lever, and adapted to effect delayed upward movement of said end, and means cooperating with one end of said cradle to tilt same to discharging position as said cradle approaches completion of downward movement.

3. In a gravity feed bottle vending machine which includes means for releasing said bottles successively; bottle discharging means including a bottle receiving cradle, means tiltably supporting said cradle, said cradle and supporting means being depressible under bottle load, means engaging and tilting said cradle to discharge position on depression thereof, and means biased to raise said supporting means and cradle, subsequent to bottle discharge, to bottle engaging position.

4. In a bottle vending machine, a bottle rack adapted to laterally confine a column of superposed horizontally disposed bottles, dog means adjacent the bottom of said rack and carried thereby, adapted to support said column of bottles, means for latching said dog means in supporting position, a dog control carried by said rack extending into the path of a bottle released by said dog and displaceable by descent of said bottle, said control on displacement operably engaging said dog means, to effect forcing said dog into bottle supporting position and latch engagement, a cradle, depressible under bottle weight, means supporting said cradle in engagement with said supported bottle, means regulating downward movement of said cradle under load of a released said bottle, and means for disengaging said latching means to effect bottle release.

5. In a bottle vending machine, a bottle rack adapted to laterally confine a column of superposed horizontally disposed bottles, a dog carrier oscillatably mounted on said rack adjacent the bottom thereof and a dog carried thereby, said dog being movable with said carrier into position to support said column of bottles, means for latching said carrier to hold said dog in supporting position, a dog control below said dog, carried by said rack and engaging said carrier, and moved by said carrier into the path of the bottle released by said dog and displaceable by descent of said bottle, said control on displacement restoring said dog and carrier into bottle supporting and latch engaging position, a cradle, depressible under bottle weight, means supporting said cradle in engagement with said supported bottle, means regulating downward movement of said cradle under load of a released said bottle, and means for disengaging said latching means to effect bottle release.

6. In a gravity feed bottle vending machine which includes means for releasing said bottles successively; bottle discharging means including a bottle receiving cradle, a post supporting said cradle, said cradle and post being depressible under bottle load, a lever, means pivotally mounting said lever intermediate its ends in said machine, means supportably connecting the lower end of said post to one end of said lever, and means biasing said lever to raise said post and cradle into bottle engaging position.

7. In a gravity feed bottle vending machine, which includes means for releasing said bottles successively; bottle discharging means including a bottle receiving cradle, a post tiltably supporting said cradle, said cradle and post being depressible under bottle load, a lever, means

pivotally mounting said lever intermediate its ends in said machine, means supportably connecting the lower end of said post to one end of said lever, means biasing said lever to raise said post and cradle into bottle engaging position, and means cooperating with one end of said cradle to tilt same to discharging position as said cradle approaches completion of downward movement.

8. In a bottle vending machine, a bottle rack adapted to laterally confine a column of superposed horizontally disposed bottles, dog means adjacent the bottom of said rack and carried thereby, adapted to support said column of bottles, means for latching said dog means in supporting position, a dog control carried by said rack, extending into the path of a bottle released by said dog and displaceable by descent of said bottle, said control on displacement operably engaging said dog means to effect forcing said dog into bottle supporting position and latch engagement, a cradle, depressible under bottle weight, means biasing said cradle into engagement with said supported bottle, and means for disengaging said latching means to effect bottle release.

9. In a bottle vending machine, a bottle rack adapted to laterally confine a column of superposed horizontally disposed bottles, dog means adjacent the bottom of said rack and carried thereby, adapted to support said column of bottles, means for latching said dog means in supporting position, a dog control carried by said rack, extending into the path of a bottle released by said dog and displaceable by descent of said bottle, said control on displacement operably engaging said dog means to effect forcing said dog into bottle supporting position and latch engagement, means depressible under bottle weight for lowering and discharging released bottles and means for disengaging said latching means to effect bottle release.

10. In a bottle vending machine, a bottle rack adapted to laterally confine a column of superposed horizontally disposed bottles, a dog carrier oscillatably mounted on said rack adjacent the bottom thereof and a dog carried thereby, said dog being movable with said carrier into position to support said column of bottles, means for latching said carrier to hold said dog in supporting position, a dog control below said dog, carried by said rack and engaging said carrier, and moved by said carrier into the path of the bottle released by said dog and displaceable by descent of said bottle, said control on displacement restoring said dog and carrier into bottle supporting and latch engaging position, a cradle, depressible under bottle weight, means supporting said cradle in engagement with said supported bottle, and means for disengaging said latching means to effect bottle release.

11. In a bottle vending machine, a bottle rack adapted to laterally confine a column of superposed horizontally disposed bottles, a dog carrier oscillatably mounted on said rack adjacent the bottom thereof and a dog carried thereby, said dog being movable with said carrier into position to support said column of bottles, means for latching said carrier to hold said dog in supporting position, a dog control below said dog, carried by said rack and engaging said carrier, moved by said carrier into the path of the bottle released by said dog and displaceable by descent of said bottle, said control on displacement restoring said dog and carrier into bottle supporting and latch engaging position, means biased into bottle engagement, and depressible under bottle weight for lowering and discharging each said bottle successively, and means for disengaging said latching means to effect bottle release.

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