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2,442,025

ARTICLE DISPENSING CHUTE

Filed Sept. 15, 1943

2 Sheets-Sheet 1

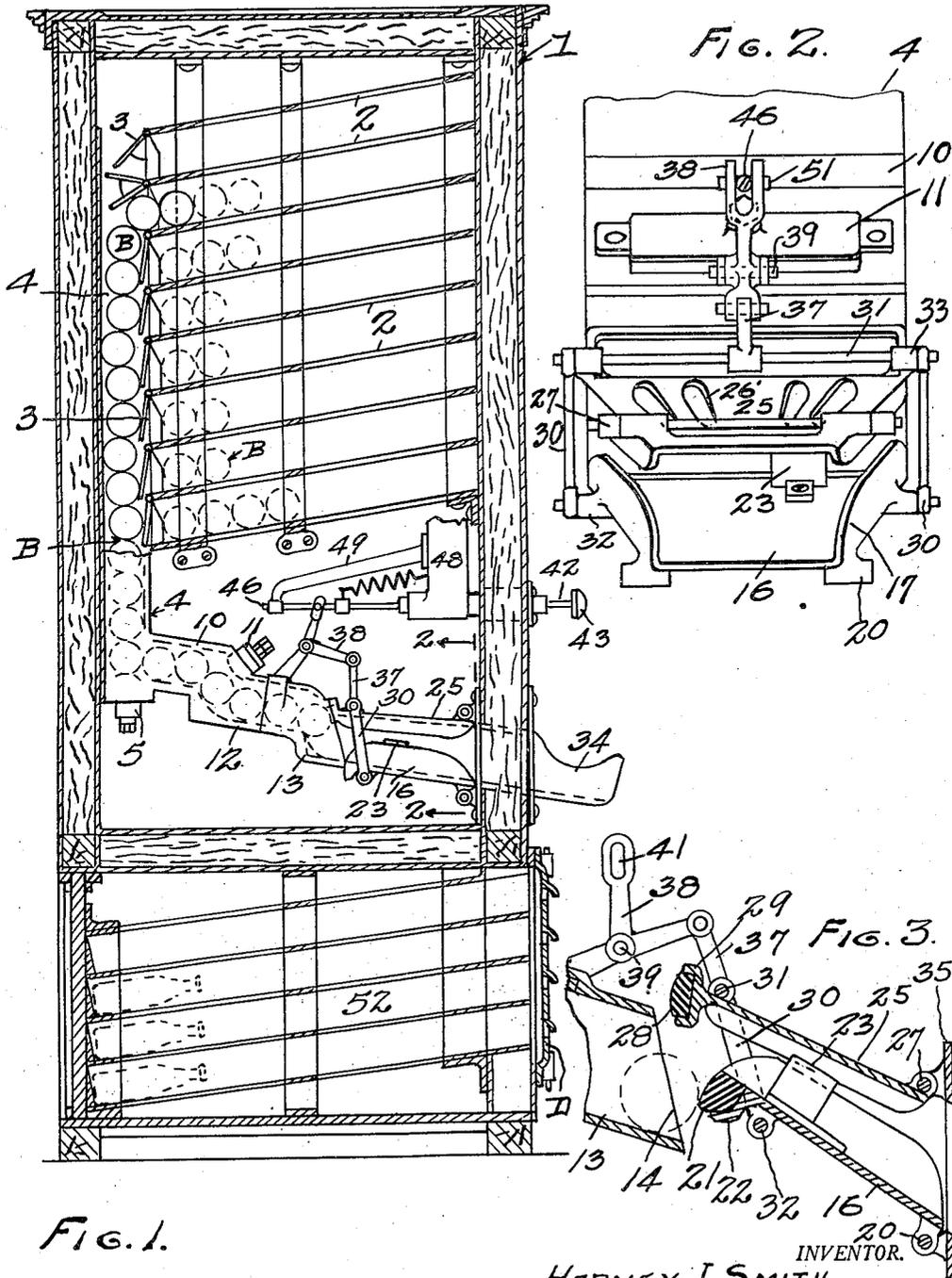


FIG. 1.

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2 Sheets-Sheet 2

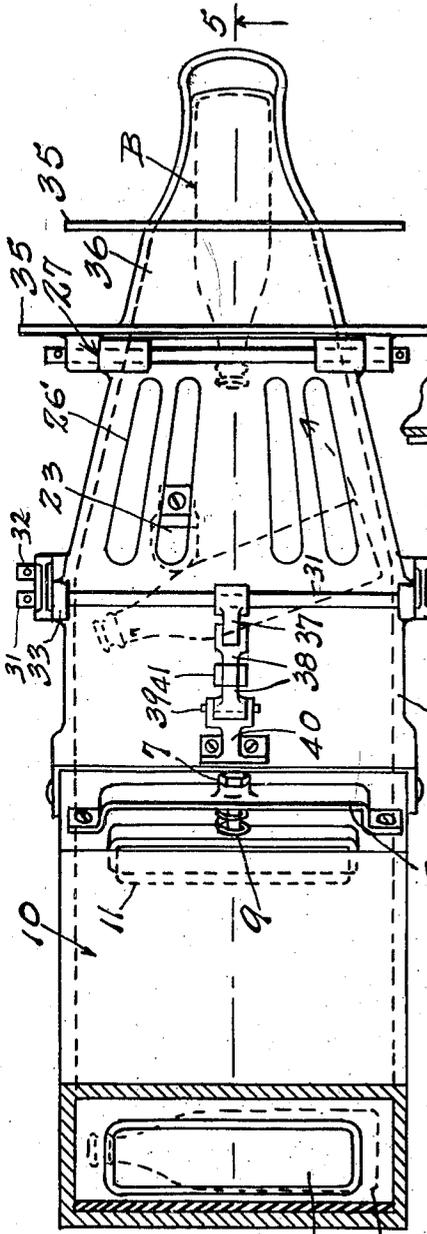


FIG. 4.

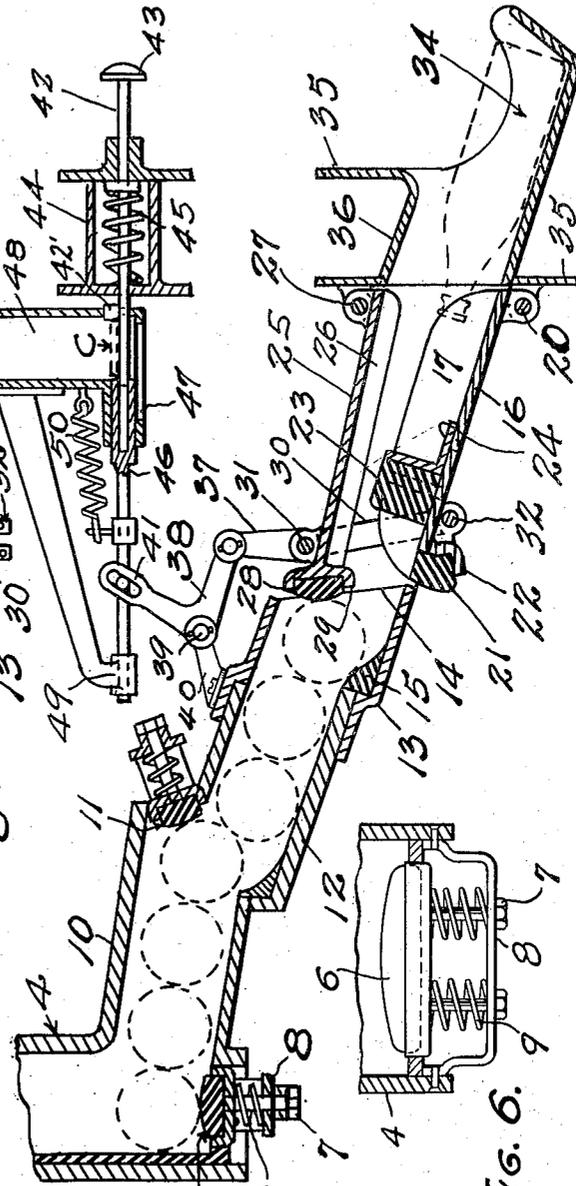


FIG. 5.

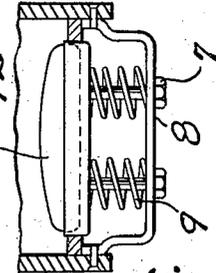


FIG. 6.

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ARTICLE DISPENSING CHUTE

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4 Claims. (Cl. 193-43)

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My present invention relates particularly to a coin-controlled dispensing mechanism for a vending machine, and while the invention is adapted in connection with the vending of other articles, the physical embodiment exemplified herein is especially designed for vending bottles of beverages from the machine.

The primary object of the invention is to provide a compactly arranged coin-controlled dispensing mechanism which is simple in construction and reliable in operation for controlling the gravity movement of a column or row of bottled goods, as soft drinks within the enclosing cabinet of the machine, and dispensing the bottles, singly, to a purchaser.

In carrying out my invention, means are provided for controlling the movement of the bottles from successive interior storage chutes to a gravity feed chute for a column of bottles, thence to an arrester chute, a feed chute, a bottle controlling discharge chute, all within the cabinet, and finally the bottles are dispensed, singly, to an exterior delivery trough readily accessible to the purchaser. By the utilization of a duplex, two-step, or dual discharge chute in combination with the feed chute and arrester chute, the movement of the bottles is positively controlled and jamming is prevented, and the singly dispensed bottles are changed from transverse, broadside, rolling position within the cabinet, to longitudinal sliding position for delivery to the exterior dispensing trough.

In the exemplifying drawings I have illustrated one complete example of the physical embodiment of my invention wherein the parts are constructed and arranged according to one mode for the practical application of the principles of my invention. It will be understood that various changes and alterations may be made in the structures of the drawings, in adapting the invention to different conditions for use, within the scope of my claims without departing from the principles of the invention.

In the accompanying drawings:

Figure 1 is a vertical sectional view of a vending machine in which the dispensing mechanism of my invention has been embodied, some parts of the cabinet being omitted for convenience of illustration.

Figure 2 is an enlarged, detail, front elevation of the dispensing mechanism, as at line 2-2 of Figure 1 and looking in the direction of the arrows.

Figure 3 is a fragmentary, detail sectional view of part of the discharge chute, showing by dot-

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ted lines a bottle in position to be released, by the second step of the dual control, from the feed chute into and through the discharge chute.

Figure 4 is a top plan view of the dispensing chutes showing by dotted lines three positions of a bottle, as it is gravity conveyed to the delivery trough exterior of the cabinet.

Figure 5 is a sectional detail view, as at line 5-5 of Figure 4 with the discharge chute in position for free rolling of the bottle, but with the bottle detained by the detent of the complementary cover of the chute.

Figure 6 is a detail view of the resilient bottle-cushion at the lower end of the vertical feed chute.

Within the interior of the insulated cabinet 1, I arrange a suitable frame or structure including a vertical series of inclined shelves or storage chutes indicated as 2 having slotted bottoms to facilitate circulation of a coolant. These shelves or chutes, if will be understood, are filled or "loaded" with rows of bottles B, which rows extend from one wall of the cabinet down the declining chutes to automatically opened valves or hinged gates 3. These gates at the lower ends of the storage chutes control the rolling movement of the rows of bottles from their storage chutes into an upright or vertical feed chute 4, which also is filled with a column of bottles of the beverage. The vertical column of bottles holds the vertical row of automatically opening gates in closed position to retain the bottles in their storage chutes, and as the height of the column diminishes the successive gates are automatically opened thereby permitting the successive rows of bottles to roll from their storage chutes into the vertical feed chute. However, it will be understood that the bottles in the vertical chute are the first to roll therefrom, then the bottles from the successive storage chutes from the bottom down follow the column of bottles down the vertical feed chute.

To prevent cracking or breaking of the bottles, suitable pads or cushions may be employed, one of which is indicated as a whole by the numeral 5 in Figure 1. This cushion is located at the bottom of the vertical feed chute 4, as detailed in Figures 5 and 6, and it includes a resilient, interior pad 6 mounted by means of bolts 7 together with a holder 8, and coiled spring 9, to absorb and cushion the fall or drop of the lowermost bottle B in the column.

From the lower portion of the vertical feed chute, the bottle rolls broadside, or transversely of the chute, into an arrester chute or section 10 of

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the gravity dispensing chute. This fixed arrester chute section, which is suitably supported, declines laterally at an angle from the lower end of the vertical feed chute and is of ample capacity to accommodate a number of bottles arranged side by side, and the row of bottles intermittently rolls toward a second resilient bumper 11 mounted in the end wall of the arrester chute section. In this arrester chute the short row of bottles is retained against the downward pressure of the weight of the column of bottles, but the bottles are permitted to drop, one by one, into the lower end 12 of the arrester chute, which terminates in a feed chute 13 having an open mouth or port 14, and bottom guide pad or cushion 15.

From the port of the feed chute, the bottles roll, singly and by gravity into a declining gravity discharge chute having one end pivotally supported on the interior wall of the cabinet and its other, free end, supported at and opening to the open port 14 of the feed chute 13.

The movable discharge chute has its free end aligned with the port 14, and it has two abutments, spaced in vertical planes, which alternately are moved into the path of a rolling bottle as it tends to roll through port 14, and the discharge chute is first lifted to release an upper abutment from the bottle and place a lower abutment in the path of the bottle, and then the discharge chute, or its free end, is permitted to fall thereby releasing the lower abutment from the bottle and permitting the bottle to roll into the discharge chute. Simultaneously, the upper abutment of the discharge chute drops into the pathway of another or second bottle tending to roll from the port, and this second bottle is retained in place until the free end of the discharge chute is again lifted.

The discharge chute includes in its structure a lower tray 16 having side flanges 17 to guide the rolling bottle B, and at its end remote from port 14 the underside of the tray is hinged or pivoted at 20 to the inner face of the cabinet wall. At its free end adjoining the port 14 the tray is provided with a resilient abutment 21 fixed in a holder 22, and the abutment is movable with the tray into and out of the path of a bottle rolling from the feed port 14 into the discharge chute.

When free to do so, the bottle rolls, transversely of the chute into the discharge chute, but after the bottle rolls into the discharge chute, its head portion or neck encounters a turning block 23, fixed by its holder 24 to the upper face of the tray and located in the path of movement of the rolling bottle. The turning block retards the neck portion while the heavier, body portion of the bottle swings around through an angle of ninety degrees into a sliding longitudinal position with reference to the tray, and the converging side flanges of the tray guide it to delivery position, butt end first, as it slides through the tray.

The discharge chute also includes a hinged cover 25 with side flanges 26 complementary to the side flanges 17 of the tray 16, and this cover may be provided with slots 26' to economize in material and reduce the weight of the cover.

At its end remote from the port 14, the cover is hinged or pivoted at 27 to the inner face of the wall of the cabinet as a support, and the plane of the pivot or hinge is parallel with the hinge 20 of the tray 16. The cover is vertically spaced above the tray to accommodate a bottle, and its free end adjoining the port 14 is provided with a detent 28 retained in a holder 29 adapted to occupy a position in the path of a bottle tending to roll through the port 14.

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For jointly lifting the free ends of the tray and cover of the discharge chute which adjoin the port, and swinging the chute in a vertical plane on its hinges 20 and 27, these free ends are pivotally and loosely connected by two side links 30, 30 spaced exterior of the chute and loosely mounted on a fixed cross bar 31 disposed on the upper side of the chute. At their upper ends the links are pivoted to the chute at 33, and their lower ends are pivoted to the chute at 32, sufficient play being allowed at the several pivotal points to permit a swinging movement of the chute on a vertical plane with hinges 20 and 27 as centers of movement.

After being turned to longitudinal sliding position the bottle slides through the discharge chute into a delivery trough 34 mounted exterior of the cabinet, and cut away at its sides to facilitate access to the bottle for removal from the trough. The trough is shown as having spaced flanges 35 fastened at the exterior and interior faces of the wall of the cabinet, and the inner flanges provide hinge supports for the discharge chute as shown. The trough is also fashioned with a tubular portion 36 integrally joining the flanges, and this tubular portion forms a channel through the wall of the cabinet for passage of the sliding bottle as it is delivered to the trough.

For lifting and lowering the swinging discharge chute I have illustrated a center link 37 pivotally connected with the cross bar 31 and also pivotally connected to one arm of a bell crank lever 38 which lever is conveniently pivoted at 39 in a bracket 40 mounted on the feed chute adjacent the port 14.

The other arm of the bell crank lever is slotted as at 41 for connection with suitable coin controlled mechanism through which the discharge chute is operated as described.

As herein illustrated a simple coin-controlled mechanism includes a horizontally disposed non-rotary push rod 42 having a push pin 42' and provided with an exterior push button or knob 43, and the rod is slidable in a box or sleeve 44 mounted in the wall of the cabinet, which sleeve forms a housing for the spring 45 that retracts the push rod when the latter is released. The push rod projects into the interior of the cabinet and its inner end is provided with a telescoping extension or section 46 which slides in a bearing 47 at the bottom of an upright coin tube 48 suitably mounted within the interior of the cabinet and adapted to receive the coin deposited by a purchaser prior to pressing the knob or button of the push rod. The coin falls upon push rod 42 in position to be engaged and pushed by the pin or lug 42', and the coin thus forms a coupling between rod 42 and its extension 46. The telescopic extension of the push rod is also slidable in a bearing bracket 49, which has a suitable support, and an additional spring 50 may be employed between the extension and a fixed anchor for the spring to retract the extension and resiliently hold it in operative position for coaction with the coin indicated as C.

The extension is fashioned with lateral trunnions or a cross pin as 51 for loose pivotal connection with the slotted arm of the bell crank lever, and it will be apparent that, in the presence of the coin C, the push rod and its telescopic extension are operatively coupled so that a push on the knob 43 actuates the coin-controlled mechanism to operate the chute control mechanism. When the pressure on the knob is released, the springs and the action of gravity co-

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operate in restoring the discharge chute to operative position for the performance of another dispensing operation.

By the utilization of the telescoping feature of the push rod a simple arrangement is provided to prevent fraudulent operation of the mechanism, as it is apparent the two sections of the push rod co-act only in the presence of the coin C.

As indicated in Figure 1, the cabinet is provided with a lower or bottom compartment containing a bottle rack 52 into which the empty bottles may be temporarily stored as the beverage is consumed on the premises, and a door D of the cabinet permits ready access to the rack.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a dispensing mechanism for a vending machine the combination with a fixed feed chute having an open port, of a pivoted discharge chute alined with the port and movable to obstruct passage of a bottle therefrom, a hinged detent also adjoining the port, single means for jointly withdrawing said detent and elevating the discharge chute to obstructing position, and said means being automatically releasable to permit passage of a bottle from the feed chute to the discharge chute and return the detent to obstructing position.

2. In a dispensing mechanism for a vending machine the combination with a fixed feed chute having an open port, of a pivoted discharge chute alined with the port and movable to stop passage of a bottle therefrom, a hinged detent also adjoining the port, means for jointly withdrawing said detent and elevating the discharge chute to obstructing position, said means being automatically releasable to permit a bottle to roll

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broadside from the feed chute to the discharge chute and return the detent to obstructing position, and means in the path of the broadside rolling bottle for turning the bottle to longitudinal sliding position in the discharge chute.

3. In a dispensing mechanism, the combination with a fixed chute having an open port, of a gravity discharge chute including a hinged tray, a complementary hinged cover, and pivotal connections therebetween, said tray and cover each having an abutment at its free end to alternately detain an article in said port, and operating means for jointly withdrawing the cover-abutment from detaining position and moving the tray-abutment to obstructing position.

4. In a dispensing mechanism, the combination with a fixed chute having an open port, of a gravity discharge chute including a hinged tray, a complementary hinged cover, links connecting the free ends of said cover and tray, said tray and cover each having an abutment at its free end to alternately detain an article in said port, a bell-crank lever mounted on the fixed chute and operating means therefor, and a link operatively connecting the bell-crank lever with the gravity discharge chute.

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