

March 20, 1945.

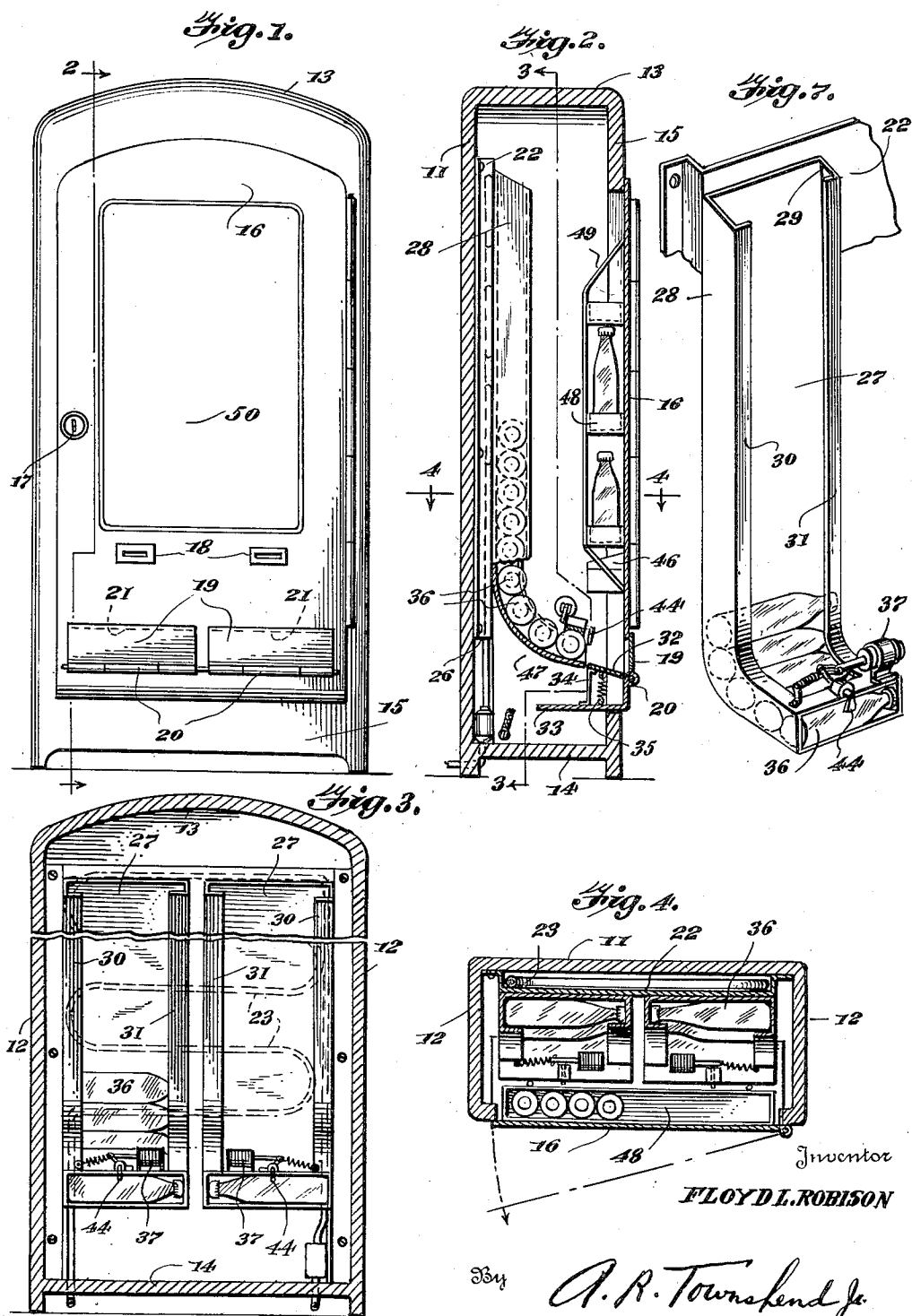
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2,371,845

VENDING APPARATUS

Filed Oct. 22, 1942

2 Sheets-Sheet 1



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Fig. 5.

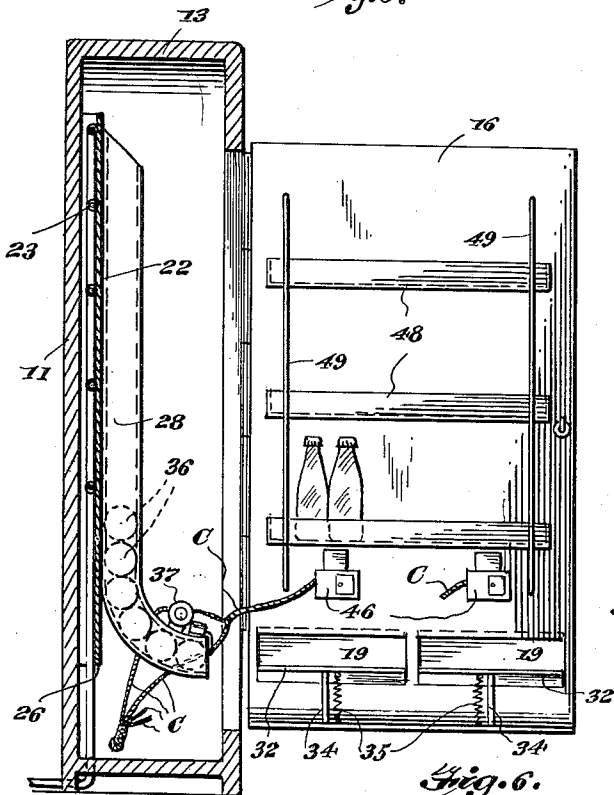


Fig. 8.

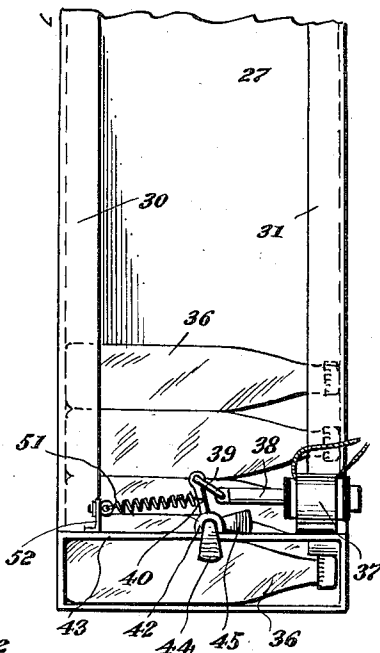


Fig. 6.

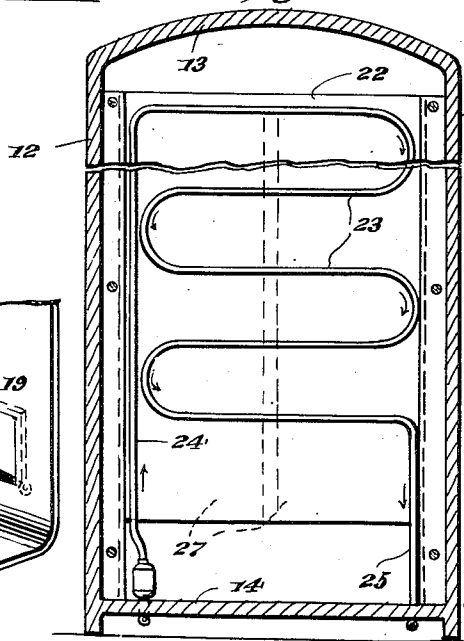


Fig. 9.

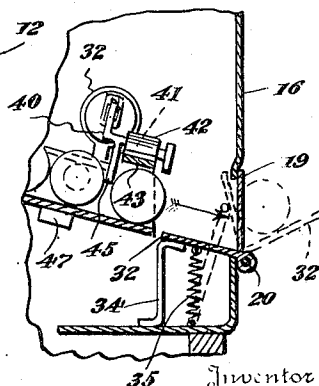
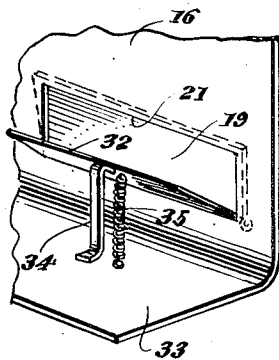


Fig. 10.



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UNITED STATES PATENT OFFICE

2,371,845

VENDING APPARATUS

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6 Claims. (Cl. 312-48)

This invention relates to the art of coin controlled vending machines and deals particularly with apparatus for vending packaged merchandise, specifically bottled soft drink beverages and the like.

An object of the invention is to provide an improved, economical, and highly efficient coin controlled vending machine for storing, refrigerating and dispensing bottled beverages.

Another object is to provide in such an apparatus a novel bottle delivery means and automatic feed therefor. Other objects will be readily apparent to those skilled in the art.

It is to be understood that the herein disclosed embodiment of the invention constitutes an exposition of suitable means by which it is reduced to practice; and that within the scope of the invention as claimed any desired variations may be made in the structural details and arrangement thereof.

In the drawings:

Figure 1 is a front elevation of the apparatus.

Figure 2 is a vertical section therethrough substantially on the line 2-2 of Figure 1.

Figure 3 is a vertical section substantially on the line 3-3 of Figure 2.

Figure 4 is a horizontal section substantially on the line 4-4 of Figure 2.

Figure 5 is a view substantially similar to Figure 2 but with the front door swung to open position.

Figure 6 is a vertical transverse section taken through the rear of the apparatus.

Figure 7 is a perspective view illustrating details of the bottle supply and delivery means.

Figure 8 is a front elevation of the delivery end of the means shown in Figure 7.

Figure 9 is a fragmentary sectional detail view of the bottle delivery control detent means and dispensing door.

Figure 10 is a perspective view illustrating the dispensing door in closed position.

In detail, the apparatus comprises a relative tall and shallow casing of substantially rectangular form having a back wall 11, sides 12, a top 13, and a bottom 14 all of closed construction. The front wall 15 is substantially little more than a frame on which the front door 16 is mounted in hinged relation in the usual manner of refrigerating boxes and the like. The door is provided with a handle lock 17 to prevent unauthorized access to the casing interior. The casing is of suitable heat insulated construction. Coin slots 18 are provided at a suitable location in the front door 16, preferably somewhat above and in ver-

tical registry with bottle dispensing doors 19 that are horizontally hinged as at 20 to the front face of the door 16 to swing outwardly in vertical arcs when opened. Normally the dispensing doors are closed flatly and tightly against the face of the casing door 16, completely covering and sealing the bottle delivery apertures 21 provided in the casing door.

Mounted on the inner face of the planar rear wall 11 is a shallow channel plate 22 of thin sheet metal of good thermal conductivity. This plate is disposed vertically on the wall and extends the full width of the casing, with the bottom of the channel spaced inwardly a short distance from the wall and parallel thereto. A refrigerating coil having its convolutions 23 secured to the channel plate is disposed in the space between the plate and wall, and the inlet and outlet leads 24 and 25, respectively, of the coil pass through the casing bottom for connection in a refrigerating circuit, not shown, by which a refrigerating medium is caused to flow through the coil. The channel is open at both ends and the lower portion is cut away as at 26 to permit free circulation of air within the casing downwardly through the refrigerating coil space and through the open bottom of the channel to rise within the apparatus and recirculate. It will be apparent that the channel plate and assembled refrigerant coil constitute a refrigerating unit carried by the rear wall of the casing.

The front face of the channel plate 22 carries a plurality, here shown as a pair, of vertically arranged bottle magazines 27 disposed in parallel relation. Each magazine consists of a thin sheet metal trough having, over the major portion of its extent, a flat bottom in full face contact with refrigerating unit plate 22. The sides of the trough are parallel and are bent laterally outwardly toward the casing front perpendicular to the trough bottom. One side, 28, extends sufficiently laterally to accommodate the base of a bottle. The opposite side 29 extends sufficiently to span the top of a bottle. The troughs are rigidly secured to the plate 22 by any suitable means, which may be spot welding or the like, and are arranged with their larger sides 28 adjacent the casing side walls and their smaller sides 29 adjacent each other at substantially the center of the casing. Each trough wall 28 is formed with an inwardly and laterally directed bottle confining flange 30, and a similar but oppositely directed flange 31 is formed on each smaller wall 29. These flanges parallel the plate 22 and terminate in relatively widely spaced opposed relation.

The bottom end portion of each trough 27 is gradually curved laterally away from the channel plate 22 in the direction of the front of the casing and terminates inwardly of the front door in registry with one of the bottle delivery apertures 21 which, as previously stated, are normally closed by the doors 19. Each bottle discharge door 19 has integral therewith a track panel 32 extending inwardly of the casing. When the doors 19 are closed, the track panels 32 extend on an incline upwardly and rearwardly to meet the bottom ends of the troughs 27 and form continuations of the trough bottoms, as best seen in Figures 2 and 9. The front door 16 is provided at its bottom edge with an inwardly extending foot flange 33 which mounts an upright bracket 34 that supports the track panel 32 in alignment with its associated trough bottom. A retractile spring 35 connected to the track panel and foot flange serves to hold the depressed track panel against its support bracket 34, and to return the panel to this position with the door 19 closed following bottle delivery.

Each magazine trough 27 is loaded with a supply of bottles 36 to be dispensed. The bottles are loaded into the magazine from its open upper end and are stacked one upon another horizontally with their necks toward the center. In this position they slide by gravity down the length of the trough into position for delivery onto the track panel 32.

Detention and release means are mounted at the discharge end of each trough. Each such means comprises a solenoid 37 having a retractile core 38 which at its free end has a link connection 39 with a rocker arm 40 fixed on the inner end of a rock shaft 41 that is adapted to oscillate in a bearing 42 carried by a horizontal bracket 43 that extends between the extreme lower ends of the bottle confining flanges 30 and 31.

As shown best in Figures 8 and 9, the shaft 41 has fixed thereon at its opposite ends a pair of radially projecting detent lugs 44 and 45 spaced apart a distance corresponding approximately to the external diameter of a bottle. The lugs are offset relative to one another at an angle of approximately ninety degrees, so that when one lug is engaged by a bottle the other will be swung clear of bottle engagement. The solenoids are included in electric circuits, the wires of which are generally designated as at C and which enter the casing through a suitable conduit near its bottom. These operating circuits for the solenoids are controlled by coin operated switches 46 of any suitable known construction. At a suitable location adjacent the discharge end of the magazine trough, bottle weight controlled indicator means 47 is provided in the trough bottom to give warning that the magazine needs refilling when no bottle is engaged therewith. This means may be a pressure switch, of which there are many known types, and it is, therefore unnecessary to illustrate it in detail, nor the signal circuit controlled thereby.

The interior of the casing also is utilized for storage and refrigeration of additional bottles stored on shelves 48 fixed to the inner face of the front door 16 by supporting brackets 49. When the front door is closed these shelves project conveniently into the space above the curved lower ends of the magazines. It is apparent that a supply of bottles may be precooled on the storage shelves prior to placement in the magazines in which they are further and directly refrigerated

by contact with the refrigerating unit. A suitable ornamentation and display panel 50 may be provided on the front door 16; with indicia designating the different kinds of beverages in the various magazines, and with directions for operation, etc.

When a purchaser desires to procure a bottle he inserts a coin in the particular slot 18 appropriate to his selection. The switch 46 behind that slot is operated by passage of the coin to close the circuit of its particular solenoid 37. During the period the solenoid is deenergized, a retractile spring 51 connected at one end to the rocker arm 40 and at its other end to a bracket 52 on the cross bracket 43 holds the core 38 fully projected and holds the rock shaft 41 in such position that the outer detent lug 44 is directed downwardly to engage against the lowermost bottle 36 and hold it against delivery onto the track panel 32. When the solenoid is energized by the closing of its operating circuit, its core 38 is shifted axially within the coil and the rock shaft is rotated through a quarter turn. This action simultaneously swings the lug 44 to horizontal position, clearing the lowermost bottle and permitting it to roll down onto the track panel 32, and swings the inner lug 45 downwardly in a vertical position to engage and retain the next following bottle against downward movement, as shown in Figure 9.

The bottle released by lifting of the detent lug 44 rolls sharply down the inclined track panel 32 and strikes against the delivery door 19. The door thereupon tilts outwardly on its hinge pivot, assuming the dotted line position of Figure 9, and presents the released bottle externally of the front door. The inner end of the track panel 32 impinges against the upper inner edge of the discharge aperture 21 and provides a stop means limiting outward and downward movement of the door 19. When the dispensed bottle is removed by the purchaser, the spring 35 returns the track panel and door 19 to initial position.

Upon deenergization of the solenoid, which follows opening of its operating circuit at the switch 46, the spring 51 draws the rocker arm 40 back to its initial position, which rocks the shaft 41 reversely to lift the inner detent 45 clear of the following bottle and at the same time lower the outer detent 44 to bottle retaining position. When detent 45 is swung clear, the next following bottle rolls down the trough bottom into contact with the outer detent 44, by which it is held until the solenoid is next energized.

While this embodiment illustrates a casing accommodating but two magazines, it is obvious that the casing may be widened to accommodate as many more as may be desired; also that the coin drops may be disposed otherwise than as shown.

I claim:

1. A bottled beverage vending machine comprising a casing having a hinged closure therefor, a bottle magazine in said casing having a bottle discharge portion directed toward said closure, said closure having a delivery aperture in registry with the magazine discharge, a delivery door hinged to said closure and normally closing said aperture, an inclined panel fixed to said door and extending inwardly to the bottle discharge portion of the magazine, bottle retaining means on said magazine, and said retaining means being operative to release bottles one at a time for deposit on said inclined panel whereby to roll against and open said delivery door.

2. In a coin operated bottle vending machine, a

gravity feed bottle magazine comprising a vertically disposed sheet metal trough adapted to receive a plurality of bottles in stacked horizontal relation one upon another, a rock shaft journaled at the lower end of the magazine, a pair of axially spaced bottle detents extending radially from said shaft at a mutual offset of approximately ninety degrees, said detents being spaced sufficiently to receive a bottle therebetween, a solenoid on the magazine, a coin operated switch in series in an operating circuit with said solenoid, a shiftable core in the solenoid, a positive connection between said core and the shaft for rotating the shaft in one direction on energization of the solenoid, and spring means for reversely rotating said shaft upon deenergization of the solenoid.

3. A vending machine for dispensing bottled beverages, comprising a casing, a front door hinged thereon, a thin sheet metal channel plate on the inner rear wall of the casing with the channel bottom spaced therefrom, said channel being vertically disposed and open at its ends for air circulation, a bottle holding magazine of thin sheet metal attached to said plate, said magazine being arranged to deliver bottles therefrom by gravity, electrically operable means for serially releasing bottles from the magazine, a coin operated switch controlling said electrically operable means, said front door having a discharge aperture therein, a tiltable bottle holder in the front door for receiving bottles delivered from the magazine, and the lower end of said magazine being laterally curved into registry with the discharge aperture.

4. In a vending machine for bottled goods, a refrigerated casing having a hinged closure, a

gravity feed bottle magazine in the casing and having a discharge end, coin operated means for releasing bottles serially from said discharge end, said closure having a bottle delivery aperture in line with the magazine discharge end, a tiltable door hinged to said closure and externally covering said aperture, a track panel fixed to said door inwardly of the casing in position to receive a bottle discharged from the magazine, said panel being inclined whereby to cause rolling of a bottle downwardly into contact with said door to tilt the same outwardly for presentation of the bottle externally of the casing, and means for returning said track panel and door to initial position on removal of the dispensed bottle from the door and panel.

5. The structure of claim 4, and bracket means on said closure for supporting said track panel in bottle receiving position.

6. A vending apparatus for dispensing bottled goods, comprising a casing, a hinged closure therefor, a gravity feed bottle magazine supported in said casing, said magazine having a discharge portion, releasable detent means on said discharge portion for holding bottles in the magazine and releasing them serially to be dispensed, means for operating said detent means from the casing exterior, said closure having a bottle discharge aperture therein, bottle receiving means carried by said closure and pivoted in said aperture for passing bottles through the closure to its exterior, said receiving means being automatically operable by weight of a bottle thereon into dispensing position, and means for returning said receiving means to initial position following dispensing.

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