Sept. 6, 1949. F. N. JAMES 2,480,932

MERCHANDISE CONTROL GATE FOR VENDING MACHINES

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Fig. 1

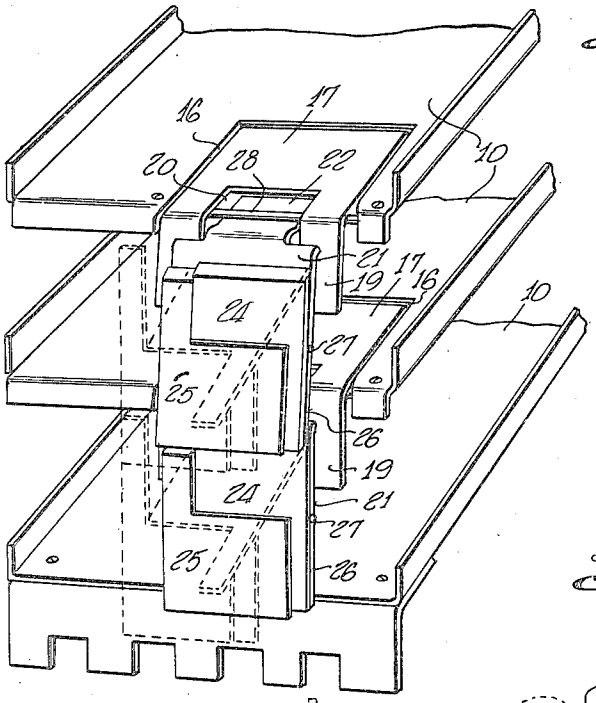


Fig. 2

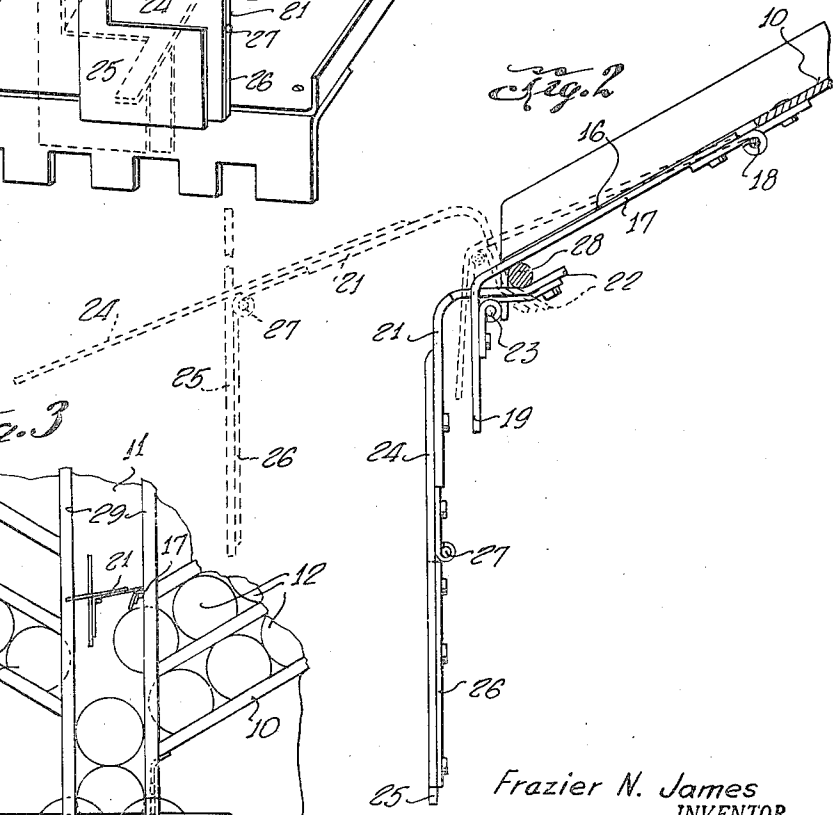
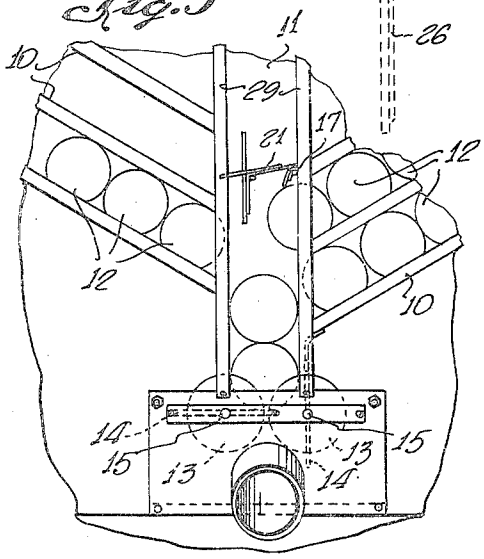


Fig. 3



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MERCHANDISE CONTROL GATE FOR VENDING MACHINES

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5 Claims. (Cl. 312—48)

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This invention relates to machines for vending bottled beverages and it has particular reference to a mechanism for controlling bottles in transit from storage to a point of delivery in a bottle vending machine.

In a certain type of bottle vending machine, such as described in an application for patent, Serial Number 778,893 filed by the applicant, there is provided a vertical delivery magazine, on one or both sides of which is a series of inclined storage magazines in vertically staggered communication with the vertical delivery magazine. In the absence of some preventive means, bottles seeking entrance to the delivery magazine from the inclined storage magazines interfere with each other, thereby retarding if not altogether prohibiting transfer of bottles from storage to the delivery magazine.

It is therefore the principal object of the present invention to provide a control gate at the discharge end of each inclined storage magazine to insure orderly transfer of bottles into the vertical delivery magazine, said control gate consisting of an articulated closure composed of three relatively hinged sections, the uppermost section being hinged to the floor of an inclined magazine for upward displacement while the companion sections are held in a vertical position to close the next lowest inclined magazine by contact therewith by bottles in the vertical delivery magazine. As the column of bottles in the delivery magazine recedes, the hinged gate sections yield to gravity pressure of bottles in the inclined magazines successively and are displaced outwardly and upwardly to release bottles singly from the inclined magazines and by virtue of the hinged relationship of the gate sections, full and adequate performance thereof within the limited space allotted thereto within the confines of the vertical delivery magazine can be effected.

With the foregoing objects in view, the invention has further reference to certain features of accomplishment which will become apparent as the description proceeds, taken in connection with the accompanying drawing wherein:

Figure 1 is a fragmentary perspective view showing a group of inclined storage magazines on which are installed the articulated control gates of the invention, shown displaced in dotted lines.

Figure 2 is a fragmentary view of a single inclined storage magazine shelf showing the invention in closed and open position, the latter being suggested in dotted lines, and

Figure 3 is a fragmentary front elevational view of an assembly of inclined storage magazines flanking a vertical delivery magazine and showing one of the articulated control gates in open position to release bottles from the uppermost active inclined magazine.

This application is a continuation in part of

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application Serial Number 778,893 above mentioned and numeral 10 denotes the shelf of each of several vertically spaced and inclined storage magazines. These magazines may be disposed, as exemplified in Figure 3, on each side of a vertical delivery magazine 11 or, in some cases, on but one side thereof. In the instant case however, the lowest or discharge ends of the inclined magazines are vertically staggered in order that they may be alternately emptied into the vertical delivery magazine 11 from whence bottles 12 are singly discharged at the lower end to a point of accessibility to a purchaser.

The release mechanism by which the bottles 12 are singly removed from the bottom of the column in the vertical delivery magazine 11 consists of a pair of cooperating, rotary elements 13 having plates 14 each provided with a shaft 15 and maintained in right angular relationship and operative to alternately support the column of bottles in the vertical magazine 11 and to alternately release bottles singly from the bottom of the column. This arrangement constitutes a separate invention and forms the subject matter of application Serial Number 88,722.

Returning to the control gates of the present invention, it is pointed out that each of the shelves 10 has an open area 16 extending inwardly from its lowest or discharge edge. Occupying this open area 16 is a plate 17 whose upper end is hinged at 18 to the upper edge of the open area 16, the hinge 18 being affixed to the under surfaces of both the plate 17 and the shelf 10 to prevent interference with bottles supported on the upper surfaces of these elements.

The lower edge 19 of the plate 17 is turned downwardly and an elongated slot 20 is made in the plate at the bend therein as shown in Figure 1. An intermediate plate 21 is provided with an extension 22 at its top which is turned inwardly at right angles to the plate 21 and enters the slot 20 of plate 17. The inner end of the extension 22 is turned slightly upward, as shown in Figure 2 and on the underside of this extension is affixed a hinge 23 by which the plate 21 is joined to the downwardly turned end 19 of the plate 17.

Attached to the plate 21 is a plate 24 which is of substantially inverted L-shape to conform to and lie flush with a companion plate 25 of like formation when the series of plates are in the operative position shown in solid lines in Figure 2. The second L-shaped plate 25 is affixed to a base plate 26 which latter is connected by a hinge 27 to the lower edge of the intermediate plate 21 which serves as the base plate for plate 24 as the plate 26 serves as the base plate for the lowermost plate 25.

Extending transversely across each shelf 10 at its lower edge is a rod 28 against which rests the extension 22 of the intermediate plate 21, as

shown in Figure 2, thus providing a movement limiting means or stop for the assembly of plates whose relative displacement is outward only.

The purpose in providing an articulated gate as described is to enable the gate to perform its function within the space limited by the vertical parallel members 29 (Fig. 3) defining the delivery magazine 11 which must be restricted to equal in width the diameter of a bottle. Otherwise, outward displacement of the gate to permit transfer of the bottles from the inclined magazines to the delivery magazine would be prohibited since the outer extremity of the gate would be obstructed by the opposite wall of the delivery magazine.

When the vertical delivery magazine, as well as all inclined magazines has been filled with bottles, release of bottles from the lower end of the column will cause the gates of the inclined magazines to successively open, from the uppermost to the lowermost as the vertical column recedes. The bottles of the column will prohibit outward displacement of the plates 24 and 25 and upward displacement of plate 17 of all assemblies except that controlling bottles in the inclined magazine next above the top bottle of the column. When this bottle recedes below the bottom of plate 25, pressure of bottles in the inclined magazine against the downwardly turned end 19 of plate 17 will urge the latter upwardly and thus swing the plate 24 outwardly, with the rod 26 serving as the fulcrum. The first bottle in the inclined magazine will then roll onto the top bottle in the vertical column, followed by other bottles in the magazine in successive order until depleted. This operation is repeated as the inclined magazines are alternately emptied of bottles.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. In a bottle vending machine having a vertical bottle delivery magazine and a plurality of inclined bottle storage magazines, an articulated gate for each of said storage magazines for controlling the transfer of bottles from said storage magazines progressively into said delivery magazine, said gates each comprising a plate hinged at one end to the floor of an inclined storage magazine and whose opposite end is turned downwardly at the lower end of said floor, said plate having an opening adjacent said downwardly turned end, a second and inverted L-shaped plate having an extension entering the opening in said first plate and hinged to the underside of said first plate, a third and substantially L-shaped plate conforming to said second plate and hinged at its midsection to the midsection of said second plate, said second and third plates being adapted to restrain bottles in one inclined storage magazine under pressure imposed by bottles in said delivery magazine and displaceable to an inoperative position by pressure of bottles in an inclined storage magazine on the downwardly turned end of said first plate when the column of bottles in said delivery magazine recedes below said inclined storage magazine.

2. In a bottle vending machine having a vertical bottle delivery magazine and a series of inclined storage magazines in communication therewith at their lower ends, an articulated gate for the discharge end of each inclined storage magazine, said gates each comprising an upper plate hinged at one end to the floor of an inclined storage magazine and lying normally flush therewith, said plate having a slotted and downwardly turned lower end overhanging the lower end of said floor, a second plate hinged to the underside of said first plate and having an extension entering the slot in the downwardly turned end of said first plate, a third plate hinged to said second plate, said second and third plates normally closing the discharge end of an inclined storage magazine and displaceable outwardly to open said storage magazine by pressure of bottles therein on the downwardly turned end of first plate when pressure is relieved on said second and third plates by bottles in said delivery magazine.

3. In a bottle vending machine having a vertical bottle delivery magazine and a series of inclined storage magazines in communication therewith at their discharge ends, a gate at the discharge end of each of said inclined storage magazines, said gates each comprising a series of relatively hinged plates the uppermost plate being hinged to the floor of an inclined magazine at a point spaced upwardly from its discharge end and having a slotted lower end turned downwardly over the lower end of said magazine floor, an extension on the next adjacent plate entering the slot in said downwardly turned end, a fulcrum rod overlying said extension under said magazine floor, said plates with the exception of said uppermost plate being adapted to normally close the discharge end of the next lowest inclined magazine by pressure of bottles in said delivery magazine and yielding to pressure of bottles in said inclined magazine on the downwardly turned end of said uppermost plate when the column of bottles in said delivery magazine recedes below said plates.

4. In a bottle vending machine having a vertical bottle delivery magazine and a series of communicating inclined bottle storage magazines, a gate at the discharge end of each of said inclined storage magazines, said gates each comprising a series of relatively hinged plates, the uppermost plate being hinged to the floor of an inclined storage magazine, the companion plates being suspended and adapted to close the discharge end of the next lowest inclined magazine by pressure of bottles in said delivery magazine thereon and means on said uppermost plate adapted to be engaged by bottles in said inclined magazine to displace all of said plates when pressure on said suspended plates is relieved.

5. In a bottle vending machine having a vertical bottle delivery magazine and a plurality of communicating inclined bottle storage magazines, an articulated gate for the discharge end of each of said inclined storage magazines, said gates each comprising a series of plates hinged together, the uppermost plate being slotted and hinged to the floor of an inclined magazine, the companion plates being suspended to close the next lowest inclined magazine, an extension on the plate next adjacent to said uppermost plate entering the slot in the latter, a fulcrum rod under said magazine floor and overlying said extension and means on said uppermost plate engageable by bottles in said inclined magazine to collectively displace said plates upwardly and outwardly when the column of bottles in said delivery magazine recedes below said suspended plates.

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No references cited.