April 23, 1946. J. R. DONALDSON 2,399,105

BOTTLE VENDING MACHINE

Filed June 9, 1944

Fig. 1.

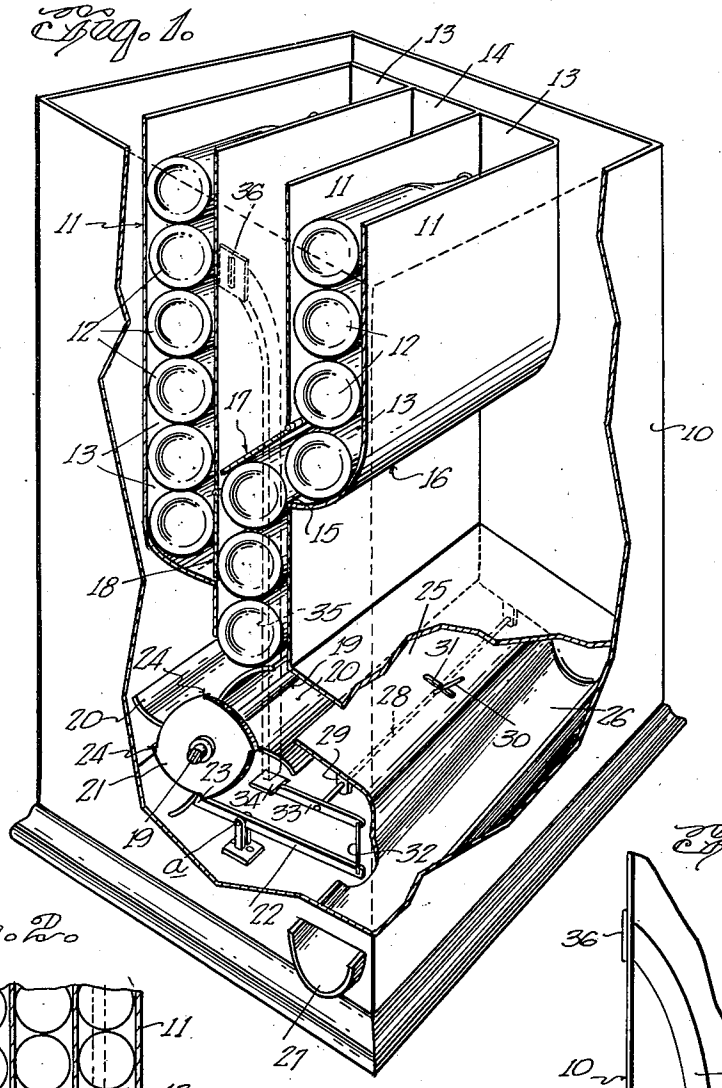


Fig. 3.

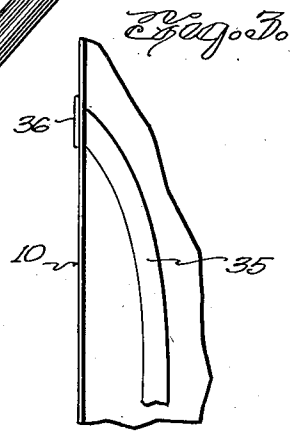
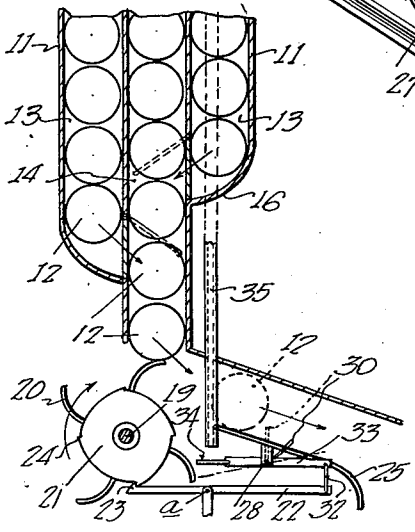


Fig. 2.



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BOTTLE VENDING MACHINE

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5 Claims. (Cl. 312—48)

This invention relates to vending apparatus and it has particular reference to machines for vending bottled beverages.

The principal object of the invention is to provide a simple and inexpensive machine for singly dispensing articles of merchandise, in the present case bottles of beverage, from a plurality of vertically disposed and relatively parallel magazines progressively, the said magazines discharging into a central magazine at their lower ends at different levels. By virtue of hinged doors for the discharge openings of the magazines, held normally closed by the presence of bottles in the magazines, the bottles in a central magazine are successively discharged until depleted or until pressure on the door of the uppermost discharge opening is relieved, whereupon bottles from the magazine attended by this door will begin to pass into the central magazine and so on until all magazines are emptied.

Another object of the invention is to obviate much of the complicated and elaborate mechanism employed in a great number of vending machines and to provide a machine which, except for a coin controlled delivery, operates solely by gravity.

With the foregoing objects as paramount, 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 perspective view of a vending machine constructed according to the present invention, with part of the housing broken away.

Figure 2 is a vertical sectional view, and

Figure 3 is a fragmentary view showing the coin drop.

Continuing with a more detailed description of the drawing, reference numeral 10 denotes the housing, which of course may be of any desired form, and is shown as broken away to better illustrate the mechanism of the invention.

The vending mechanism consists of a plurality of vertically disposed and relatively parallel plates or partitions 11 of different lengths but whose widths are equal to each other and to the length of the bottles 12. The particular arrangement of partitions 11 define magazines 13 on each side of a central or intermediate magazine 14 and while only three magazines are shown of limited capacity, it is obvious that the number and capacity of the magazines may be increased, as desired.

In the drawing, the central magazine 14 has a transverse opening 15 on one side to receive bottles 12 emerging from the bottom of the column in the magazine 13 at the right of magazine 14, it being apparent that the inwardly curved bottom 16 of the plate 11 will constrain the lowermost bottle of the column to move, under the influence of gravity, through the opening 15, provided, of course, that there is no counter pressure on a door 17 which is provided to cover this opening. When the bottles in the central magazine have dipped below door 17 the door 17 will yield to the bottles in the magazine 13 but otherwise, those in magazine 14 will prevent delivery from either of the opposing magazines.

The magazine 13 to the left in the drawing is constructed in a manner identical to that on the right of the central magazine 14 except for the fact that it is longer and its delivery opening into magazine 14 is at a point therein lower than that of the magazine at the right, hence the door 18 remains closed until all of the bottles from magazine 13 and all but the lowermost bottle from the central magazine have been discharged.

In support of the bottles in the intermediate or delivery magazine 14, there is provided an element comprised of a shaft 19, on which is mounted a series of curved blades 20, which successively come to rest immediately under the column of bottles in the magazine 14 in the manner shown in Figure 1. By thus supporting the bottles in magazine 14, those in magazines 13 are held against premature release by the doors 17 and 18, which are in turn held in closed position by the bottles in magazine 14 until the latter is depleted or partially so.

Concerning the coin controlled mechanism by which bottles are singly discharged from the machine, it is obvious that many well known types of coin or token operated devices may be readily adapted for use in connection with the present invention but for purposes of illustration, a suggested form is shown which consists of a ratchet wheel 21, mounted on the shaft 19 of the delivery element. The number of teeth on the ratchet wheel 21 equals the number of blades 20 on the delivery element so that movement of the latter to eject or release a bottle may be predetermined.

A lever 22 is pivotally supported intermediate, its ends at *a*, and on one end thereof is formed a dog 23 which is adapted successively, engage the teeth 24 of the ratchet wheel 21 to interrupt rotation of the delivery element in predetermined positions of its blades 20.

As the bottles 12 emerge singly from the inter-

mediate magazine 14, they are deposited by the blades 20 of the delivery element onto an inclined plate 25, whereupon they roll down this plate into a trough or chute 26, which is inclined towards the rear of the cabinet, causing the bottles to slide towards the front and into a suitable receptacle, not shown, through the discharge opening 27.

Disposed below and extending from one side of the plate 25 to the other is a rod 28, journaled in bearings 29 suspended from the plate. Mounted on this rod approximately midway of its ends is an arm 30 which extends upwardly through a slot 31 in the plate 25, and to which reference will be again made presently.

Referring again to the lever 22, it will be noted that while one end thereof is in engagement with the ratchet wheel 21, the opposite end has a link 32 connecting the lever with an arm 33 which, in turn, is affixed intermediate its ends to an extended end of the rod 28. The free end of the arm 33 carries a small plate 34 which is disposed under a coin chute 35, shown in broken lines and which extends upwardly within the housing 10 to communicate with a coin slot 36, in the front of the housing and which is also shown in broken lines.

In operation, a coin deposited into the chute 35 through slot 36 will fall onto the plate 34, rocking the arm 33 sufficiently to impart a similar movement to the lever 22 therebelow, by virtue of the connection therebetween by link 32. This action causes the dog 23 to become disengaged from the tooth of the ratchet wheel 21 and due to the weight of the merchandise on the operative blade 19 of the delivery element, the latter will make one quarter revolution, depositing the lowermost bottle onto the plate 25. In the meantime, however, the next succeeding blade will move to operative position to forestall delivery of another bottle by coming to rest immediately under the next higher bottle. In this position, the next succeeding tooth of the ratchet wheel 21 will have come into engagement with the dog 23 which has now returned to a position to engage the periphery of the ratchet wheel in a manner which shall now be explained.

As the discharged bottle rolls down the inclined plate 25, it passes over the pin 30, which is at the time in upraised position, having been thus disposed by the coin which rocked the arm 33, causing rod 28 to rotate slightly. As the pin 30 is depressed by the bottle in passing into chute 26, the rod 28 is returned to its original position to reset the arm 33 and lever 22 for renewed operation.

It is at once apparent from the foregoing that with the delivery magazine 14 and companion magazines 13 fully charged, bottles will be singly dispensed from the magazine 14 until the uppermost bottle lies below the lower edge of the trap door 17. The weight of the lowermost bottle in the right hand column will then move the door 17 outwardly into the magazine 14 since there remains no bottles therein to resist this action. Obviously, this operation is quite noiseless since there is no agitation or dropping of bottles one against the other as they remain always in contiguous relationship throughout the entire dispensing operation until all bottles are discharged from the machine.

The drawing shows the intermediate magazine as having been depleted from door 17 up and the magazine at the right as being active. As soon as the uppermost bottle in this magazine enters the magazine 14 and moves to a position below the lower edge of trap door 18 closing off the opposite magazine 13, this door will open under the weight of the lowermost bottle of the column and, given impetus by the inwardly and downwardly curved bottom of the magazine, the bottle, followed by the remaining bottles of the column, will emerge into the intermediate magazine 14 and the bottles will be delivered singly in the manner of the preceding bottles, as hereinbefore described.

While the foregoing description deals with specific embodiments, it is manifest that in practice, no limitation is intended as to specific details herein stated and any practical modifications may be resorted to from time to time as may be considered within the scope of the invention as defined in the appended claims.

What is claimed is:

1. An apparatus for dispensing bottled merchandise including a plurality of vertically disposed and relatively parallel magazines of unequal lengths on opposite sides of an intermediate delivery magazine and whose lower ends are in communication at different levels with said intermediate delivery magazine, doors in control of the communicating openings held closed by the merchandise in said magazines and adapted to yield to pressure of merchandise in one magazine as the merchandise in the communicating magazine recedes thereblow, a rotary delivery element disposed below the delivery magazine and adapted, upon releasing an article of merchandise from said delivery magazine, to check the fall of succeeding articles of the column and means for controlling the movements of such delivery element.

2. In a vending machine for bottled beverages, a dispensing magazine and a pair of storage magazines, one on each side of said dispensing magazines whose lower ends are curved inwardly towards and discharge into said dispensing magazine at different positions in its length whereby bottles from the magazine having the highest discharge will deposit its contents singly into said dispensing magazine subsequent to depletion of the latter to a point below said discharge, to be followed by the contents of the companion magazine in a similar manner.

3. A merchandise dispensing machine including a series of vertically disposed and relatively parallel merchandise magazines of unequal lengths and a correspondingly related intermediate magazine with which the lower extremities of said first magazines communicate, at different levels, means in control of the communicating openings between said magazines and yielding to pressure of merchandise to permit transfer of articles of merchandise singly from one magazine to said intermediate magazine until the outer magazines have been progressively depleted, rotary means for singly dispensing articles from said intermediate magazine and coin actuated means for controlling said latter means.

4. An article dispensing machine including vertically disposed and relatively parallel merchandise magazines and an intermediate dispensing magazine communicating with the first magazines at different levels and into which articles from said first magazines are discharged singly from the bottoms by gravity, means resisting release of articles from one magazine until a juxtapositioned magazine is depleted to effect progressive emptying of said magazines and means rotatably disposed below said dispensing magazine

operative to release an article therefrom and to restrain the remaining articles therein.

5. In a machine for vending bottled beverages, a plurality of storage magazines and an intermediate dispensing magazine communicating with said storage magazines at different levels and into which said storage magazines automatically deposit their contents singly, means to release bottles in said storage magazines in sequence as the bottles in the dispensing magazines fall below said releasing means and means below said dispensing magazine for singly releasing bottles therefrom and for simultaneously supporting remaining bottles therein preparatory to their release.

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