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LE ROY C. VAN BRUNT
VENDING APPARATUS
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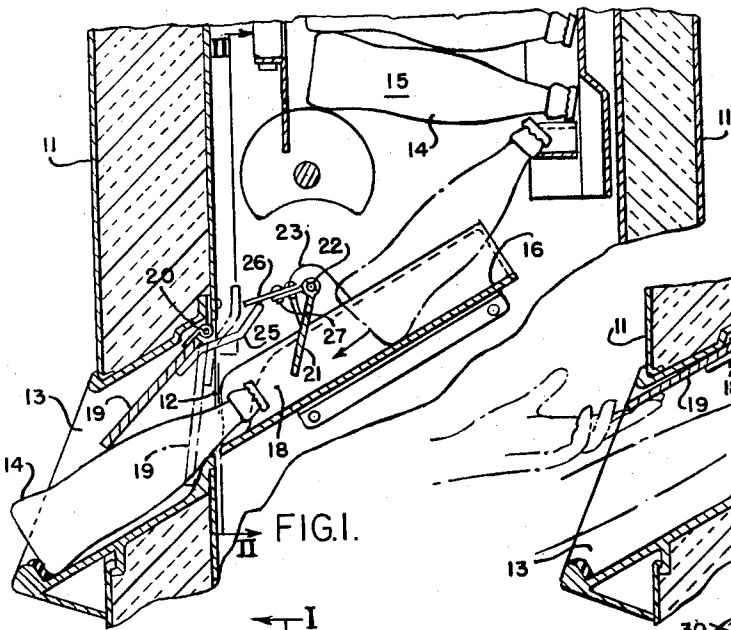


FIG. 1.

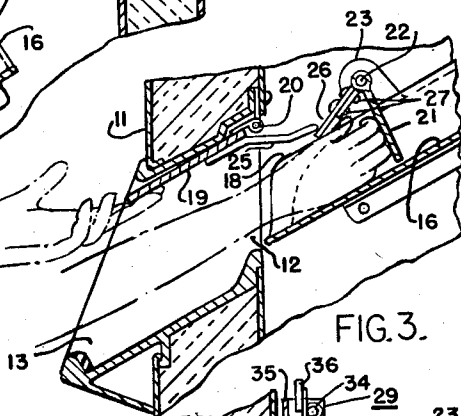


FIG. 3.

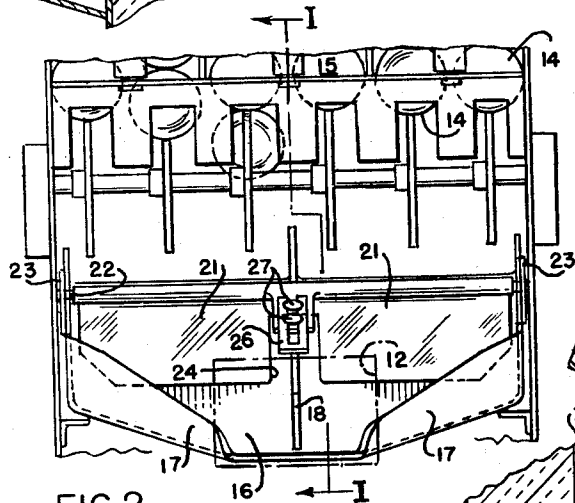


FIG. 2.

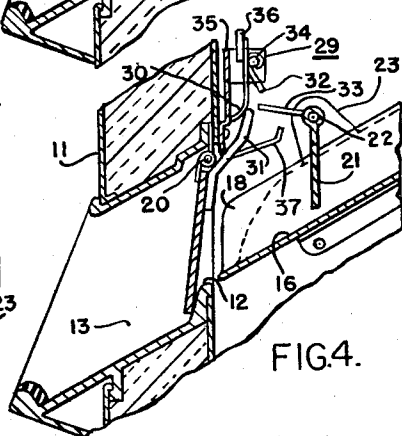


FIG. 4.

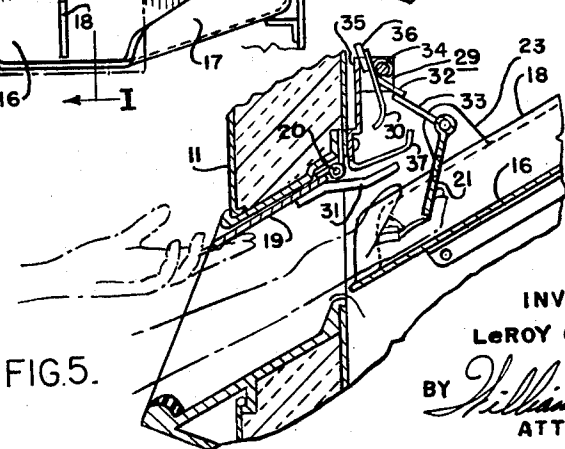


FIG. 5.

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VENDING APPARATUS

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1 Claim. (Cl. 221—154)

This invention relates to vending apparatus and more particularly to an article vending system embodying means for preventing theft of articles stored in the vendor.

While the invention is applicable to devices or machines for vending any kind of article, it is particularly applicable to, and will be described with reference to, a machine for vending bottled beverages. These machines generally comprise a cabinet having an opening in one wall through which a bottle or bottles are delivered to the purchaser following insertion of a coin into the machine. Unscrupulous individuals occasionally attempt to steal bottles from the machine by inserting their hand or arm through the cabinet delivery opening and attempting to dislodge or release bottles disposed in the storage or supply area within the machine.

In accordance with this invention, the conveyor or discharge chute which conveys bottles from the storage area to the delivery opening is equipped with blocking means in the form of a movable curtain. This blocking means is biased to a blocking position with respect to the delivery chute but is readily and freely movable to a non-blocking position in response to the passage of a bottle down the chute toward the delivery opening. The delivery opening is closed by a movable door which is also easily and readily movable to open position in response to the delivery of a bottle from the interior of the machine. Novel means are employed for holding, or latching, the curtain in a chute-blocking position whenever the delivery door is manually opened, as it would be by a person attempting to gain access to the articles through the delivery opening. When thus held, the curtain prevents the hand of the thief from entering the machine a distance sufficient to contact the bottles stored in the machine.

Anti-theft arrangements have been proposed in the past that embodied the idea of moving a blocking member across the delivery area of the machine in response to manual movement of an outer delivery door. These prior arrangements have, however, employed a rigid linkage between the outer door and the blocking member, which linkage caused the blocking member to move whenever the outer door was moved. These arrangements require the outer door and the blocking means to be spaced from one another a distance greater than the length of the article being vended and are unsuitable for certain applications wherein but limited space is available for the anti-theft mechanism. This invention enables the blocking curtain to be located closely adjacent the dispensing door without regard to the length of the article being dispensed. This feature is significant, particularly, in machines for vending bottled beverages, where the bottles are comparatively long and are dispensed from a cabinet that is but little deeper than the bottles being vended, whereby cabinet space is at a premium.

Other features, objects and advantages of the invention will become apparent from the following description of the invention, of which the accompanying drawings form a part and wherein:

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Fig. 1 is a fragmentary, vertical sectional view through a bottle vending machine embodying this invention;

Fig. 2 is an elevational view of the interior of the vending machine shown in Fig. 1 and is taken generally as indicated by the line II—II in Fig. 1;

Fig. 3 is another vertical sectional view of the mechanism shown in Fig. 1 and illustrates the manner in which access to the interior of the vendor cabinet is prevented;

Fig. 4 is a fragmentary sectional view of the delivery area of a vendor employing a modification of the invention; and

Fig. 5 is another view of the apparatus shown in Fig. 4, but illustrating the positions assumed by the components of the invention while preventing access to the interior of the vendor.

Referring to Figs. 1, 2 and 3, the invention is illustrated as applied to a bottle vending machine having a cabinet 11 of which only a fragmentary portion is shown. The cabinet 11 has a delivery opening 12 in one wall thereof which contains a compartment 13 serving as a delivery area for bottles 14 vended by the machine. The bottles 14 are conveyed to the delivery opening 12 from a storage and releasing area, within the cabinet and indicated generally by the numeral 15, by means of a gravity discharge conveyor or chute 16 secured to the interior of the cabinet 11. As shown most clearly in Fig. 2, the delivery chute 16 is provided with converging side walls 17 for channelling and directing bottles 14 supplied thereon into the delivery opening 12. The delivery chute 16 also includes an upstanding partition 18 for preventing the bottles from becoming canted as they slide down the chute.

The delivery opening 12 is closed by a delivery door 19 hingedly supported at 20 in an upper area of the opening 12. The hinged connection 29 for the door 19 permits the door to move from its closed position (indicated by dot and dash lines in Fig. 1) to an open position by swinging outwardly away from opening 12 when contacted by a bottle 14 passing through the delivery opening and entering the delivery compartment 13 (see solid line position of door in Fig. 1).

In accordance with this invention, means are provided for blocking the delivery chute 16 to prevent the insertion of a hand or instrument through the delivery opening 12 from the exterior of the cabinet. This blocking means comprises a curtain member 21 hingedly supported by a shaft 22 disposed above the chute 16. The ends of the shaft 22 are carried by upwardly extending brackets 23 secured to the side walls of the chute 16. The curtain 21 is disposed across the delivery chute 16, i.e., transversely with respect to the path of movement of bottles down the chute 16, and has a cut-out area 24 at its middle to permit the curtain to swing down beyond the upper edge of the partition 18 and assume a near vertical position, blocking the chute 16. The curtain 21 is freely pivoted on the shaft 22 and, while it is biased to this upright, or chute-blocking, position by its own weight, it may be swung clockwise to a nonblocking position when engaged by a bottle 14 moving down the chute 16.

Both the delivery door 19 and the curtain 21 are independently supported and are movable, freely and independently, to non-blocking positions by bottles descending the delivery chute 16. Means are provided, however, for interlocking the curtain 21 with the door 19 in a manner to hold, or latch, the curtain 21 in its chute-blocking position, should an attempt be made to gain access to the interior of the cabinet 11 through the delivery opening 12. This interlocking action is provided by the cooperative engagement of a finger 25, extending upwardly from delivery door 19, with an arm 26 laterally extending from

the curtain 21 toward the delivery opening 12. The curtain arm 26 is preferably mounted on the curtain 21 by means of adjustable fasteners, such as the bolts indicated at 27, to permit its effective length to be adjusted. The path of movement of the free end of the door mounted finger 25 intersects the path of movement of the curtain arm 26 and, should the delivery door 19 be manually opened, as illustrated in Fig. 3, finger 25 engages the upper surface of curtain arm 26 and moves it down against the upper edge of the chute partition 18 which acts as a stop. So long as the door 19 is held open, the curtain 21 is held in the position shown in Fig. 3 to block the delivery chute 16 and prevent movement of a person's hand or an instrument beyond the curtain 21.

The arm 26 is secured to the curtain 21 in a position relative to the door-carried finger 25 such that the arm 26 can swing upwardly past finger 25 whenever the door 19 is in its closed position (the dot and dash position of door 19 in Fig. 1). Thus, with the door 19 closed, as it would normally be prior to delivery of a bottle by the vending machine, the arm 26 swings past and does not engage the door mounted finger 25 as the curtain 21 is engaged and moved to a non-blocking position by a bottle 14 descending the chute 16. This movement of curtain arm 26 permits the door 19 to move freely to its open position when engaged by a bottle 14. Once the bottle 14 passes beyond the curtain 21, the curtain swings downwardly under the action of gravity until its arm 26 comes to rest atop the end of finger 25, as shown in the full line positions of these members in Fig. 1. When the bottle 14 is removed from the delivery compartment 13 by the purchaser, the door 19 swings to its closed position and the finger 25 mounted thereon first lifts the curtain arm 26 slightly, and then moves out of engagement with the arm 26, permitting the curtain 21 to swing freely to its vertical, blocking position.

It will be noted that both the curtain 21 and the door 19 can be in their open or non-blocking positions at the same time, when both are actuated by a bottle being vended. In other words, the curtain 21, unlike the arrangement in certain prior art devices, is not coupled to the door 19, nor is it moved to its blocking position each and every time the door 19 is opened. The advantage of this relationship is that the curtain 21 may be located closely adjacent delivery door 19 and need not, as in the prior art devices, be spaced from the door 19 a distance greater than the length of the bottles 14. The arrangement, nevertheless, assures that the curtain 21 will be held in a blocking position with respect to the chute 16 whenever the delivery door 19 is manually opened from outside the cabinet.

Modification

A modification of the invention is illustrated in Figs. 4 and 5, wherein like reference numerals are employed to denote elements shown therein which are similar to elements employed in the previously described embodiment. This modification employs a somewhat different arrangement for locking the curtain means 21 in a blocking position in response to manual movement of the delivery door 19 to open position. This locking means comprises a latch member 29 mounted on the inside of the cabinet 11 adjacent the delivery opening 12 and having an actuating finger 30, engageable by a door mounted finger 31, and a locking finger 32, movable into the path of an arm 33 forming a part of the curtain means 21. The latch fingers 30 and 32 are rigidly mounted with respect to one another and are supported for pivotal movement by a hinge pin 34 on a support bracket 35. A weight 36 secured to the upper end of latch finger 30 functions as a biasing means to bias the latch member 29 in a counterclockwise direction about pin 34.

With the delivery door 19 in its closed position (see Fig. 4), door mounted finger 31 engages latch finger 30 and holds it against support bracket 35, placing the latch member in a first, or non-locking, position. In this latch

position, the latch finger 32 is outside the path of movement of the curtain arm 33 and the curtain 21 can be freely moved to a non-blocking position by a bottle moving down delivery chute 16. In the event the delivery door 19 is manually opened, the latch member 29 moves to a second, or locking, position, shown in Fig. 5. In this figure, door finger 31 has moved out of engagement with latch finger 30, and weight 36 has moved latch member 29 to a position in which latch finger 32 is in the path of movement of curtain arm 33, preventing clockwise rotation of the curtain out of the path of the delivery chute 16. Counterclockwise movement of the curtain 21 is limited by engagement of the curtain arm 33 with the upper edge of the chute partition 18. Consequently, with door 19 held open as illustrated in Fig. 5, the curtain 21 cannot be moved out of blocking relationship to the chute 16 and access to the bottle storage area of the cabinet is prevented.

The blocking means of Figs. 4 and 5 also, preferably, includes one or more guard fingers 37 projecting from the support bracket 35 adjacent the door mounted finger 31 to prevent a person seeking access to the interior of the cabinet from manually releasing the latch member 29 by moving the fingers 30 and 32.

It will be noted that it is possible, during delivery of a bottle down chute 16 and into delivery compartment 13, for both the curtain 21 and the door 19 to concurrently occupy non-blocking positions with respect to the path of bottle travel. During delivery of a bottle from the vendor, the curtain is first engaged and moved by the descending bottle and the curtain arm 33 is moved upwardly beyond the latch finger 32 before the bottle engages the delivery door and actuates the latch 29. Thus, as in the previously described embodiment of the invention, the curtain 21 and door 19 can be spaced apart a distance less than the length of the bottles being dispensed and the entire mechanism made to occupy but a small amount of space within the vendor cabinet. When the bottle being delivered comes to rest in delivery compartment 13, the curtain 21 returns to its vertical blocking position and is prevented from moving to a non-blocking position by the latch member 29 until the door 19 is closed. The weight of the curtain 21 is sufficient to move its arm 33 downwardly over the weight-biased latch finger 32 which thereafter moves back into the path of movement of the arm 33 under the influence of weight 36.

From the foregoing it will be apparent that this invention provides an effective arrangement for preventing theft of articles from a vending machine.

While the invention has been shown in several forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications without departing from the spirit thereof.

What is claimed is:

The combination with an article vending machine including a cabinet having a delivery opening in one wall thereof, said cabinet having an article delivery chute therein extending to said delivery opening and a movable delivery door mounted on said cabinet for closing said delivery opening, of means for preventing unauthorized access through said delivery opening to articles stored in said cabinet, said means comprising movable curtain means disposed in said chute and normally occupying a position in blocking relationship to the chute, a latch member movable between first and second positions, said latch member in its first position permitting movement of said curtain means away from its blocking position, said latch member in its second position being engageable by said curtain means for preventing movement of the curtain means away from its blocking position, means biasing said latch member to its said second position, and a finger movable with said door and engageable with said latch

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member for moving said latch member to its first position when said door is closed.

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