Nov. 8, 1938. O. W. STONE 2,136,089

VENDING MACHINE

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FIG. 1.

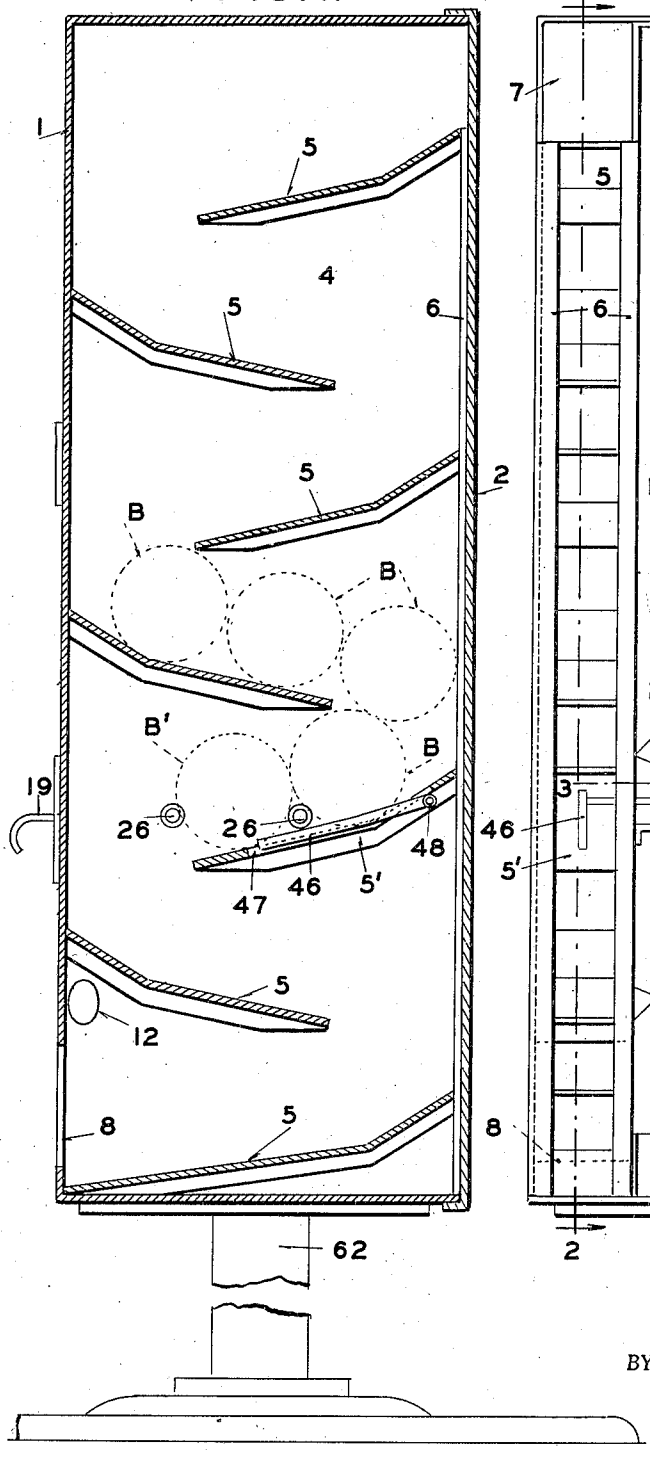
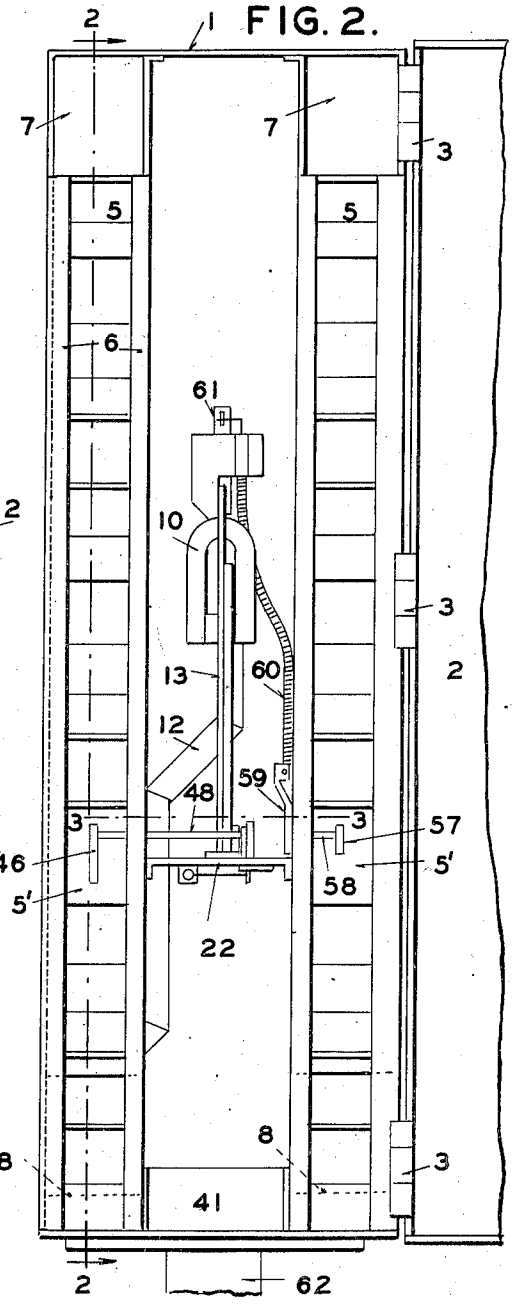


FIG. 2.



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FIG. 3.

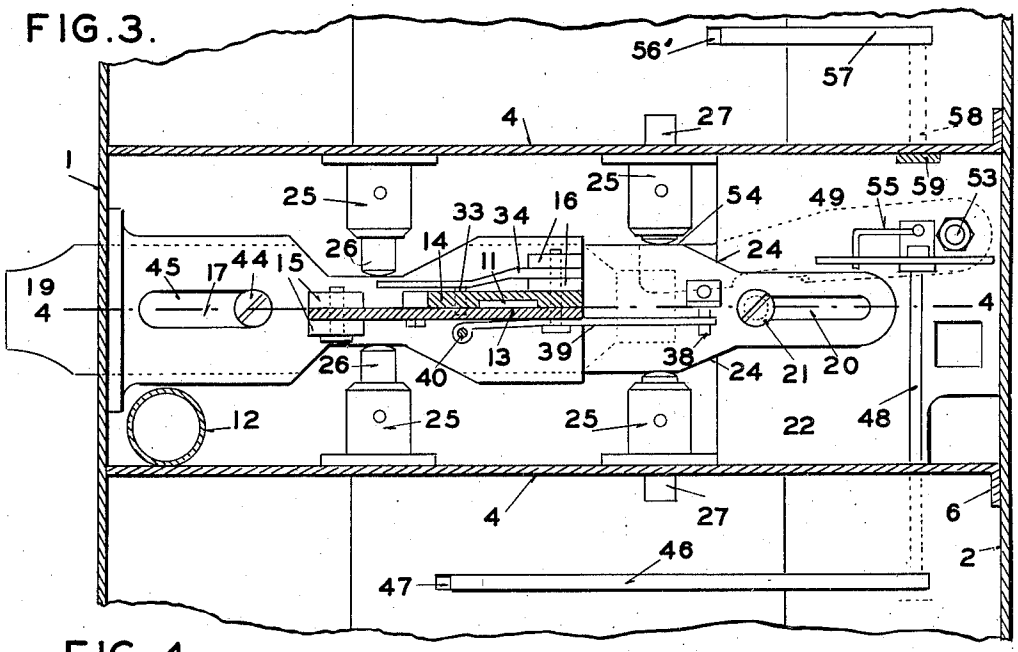


FIG. 4.

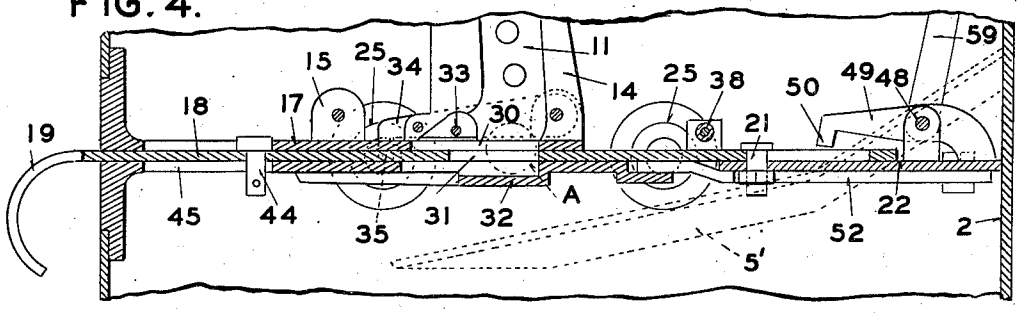


FIG. 5.

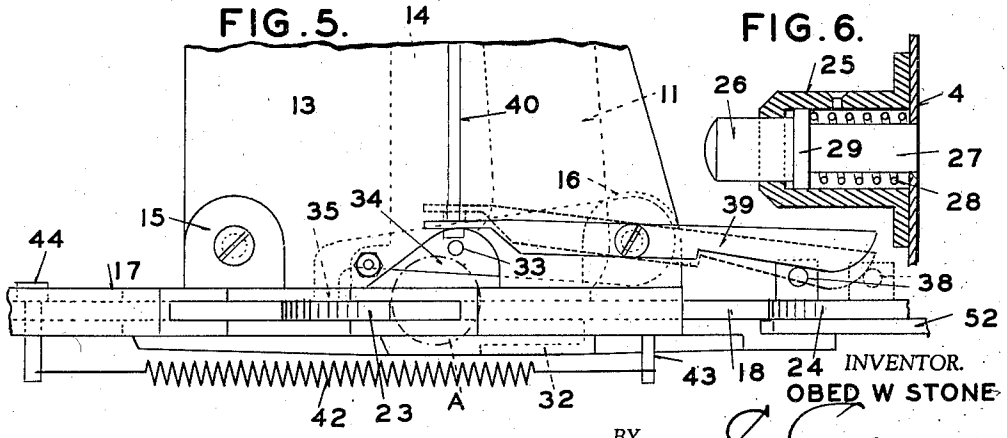


FIG. 6.

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VENDING MACHINE

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FIG. 7.

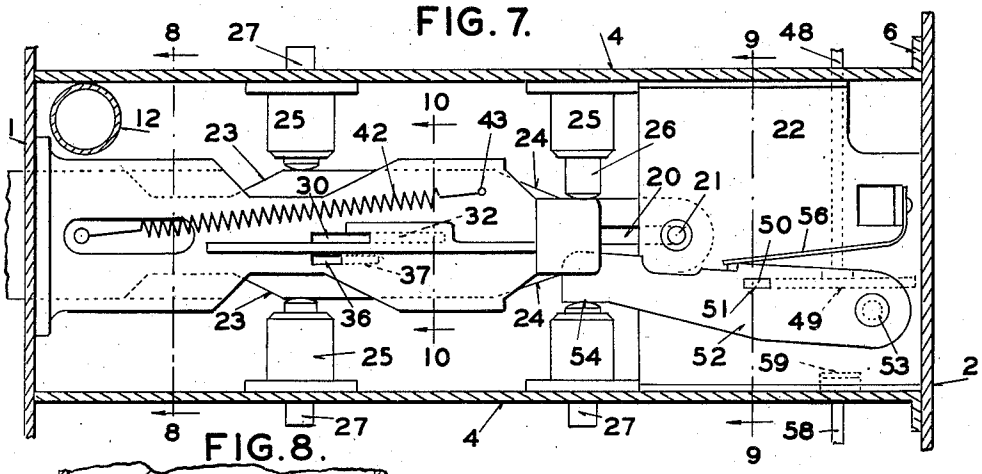


FIG. 8.

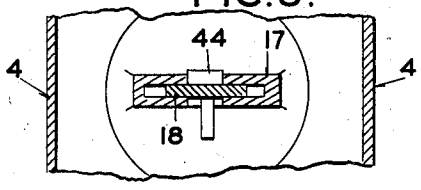


FIG. 9.

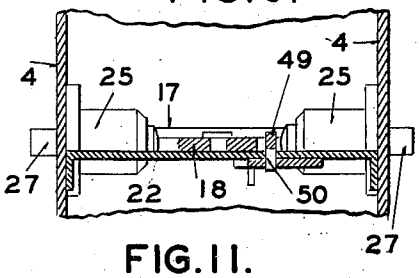


FIG. 10.

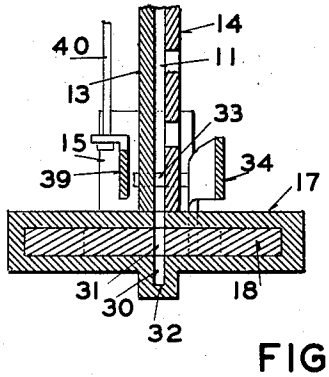


FIG. 11.

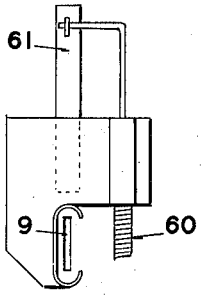
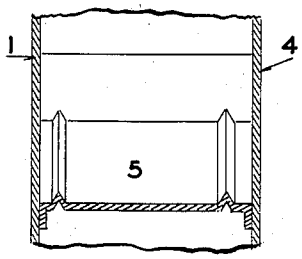


FIG. 12.



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UNITED STATES PATENT OFFICE

2,136,089

VENDING MACHINE

Obed W. Stone, St. Louis, Mo.

Application May 15, 1937, Serial No. 142,744

5 Claims. (Cl. 312—48)

My invention relates to a vending machine and particularly to one adapted to dispense cylindrical articles, such, for example, as soap packed in round cans.

The object of my invention is to provide a machine of the type referred to which will be both strong and compact and which will be reliable in operation. In the preferred form of my device, the articles are arranged to roll down along oppositely inclined guides or runways. In order to secure a compact machine which will hold the desired number of articles, I arrange these runways in two or more banks. One of the specific objects of my invention is, therefore, to provide automatic means for shifting the operation of the delivery mechanism from an empty bank to one which is full, or at least partially full of articles. Another object of my invention is to automatically block the coin chute when all the article-containing banks are empty. My invention also relates to various other novel features and details of construction, all of which are described in the accompanying specification and pointed out in the claims annexed thereto.

In the drawings which illustrate one form of vending machine made in accordance with my invention Figure 1 is a vertical section taken on the line 2—2 of Figure 2; Figure 2 is a rear view, the door being open; Figure 3 is a section taken on the line 3—3 of Figure 2; Figure 4 is a section taken on the line 4—4 of Figure 3; Figure 5 is an enlarged side view of the operating slide mechanism; Figure 6 is an enlarged sectional view of one of the can detents; Figure 7 is a bottom plan view of the parts shown in Figure 3; Figure 8 is a section taken on the line 8—8 of Figure 7; Figure 9 is a section taken on the line 9—9 of Figure 7; Figure 10 is an enlarged section taken on the line 10—10 of Figure 7; Figure 11 is a detail view of the means for closing the coin slot; and Figure 12 is a cross section of one of the can guides.

Referring first to Figures 1 and 2, the body of the machine comprises a rectangular casing 1 preferably formed of sheet metal. The rear of this casing is closed by a door 2 pivoted to the body by hinges 3. Any suitable means may be employed to lock this door to prevent access to the interior of the casing except by authorized persons. The interior of the casing is divided by vertical partitions 4 into a central and two lateral compartments. The central compartment contains the delivery controlling mechanism while the lateral compartments are each provided with oppositely inclined guides 5 to form two banks of runways for the articles which in the specific form of machine shown are cylindrical tin cans. The rear sides of these runways are partially uncovered when the door is open to permit inspection of the contents. The cans are, however, prevented from escaping by lips 6 on the partitions and on the side walls of the casing. These lips extend only to the upper guide 5 so that each runway is provided at its upper end with an opening 7 (Figure 2) through which the cans may be introduced into the runway when the door is open. The cans are removed from the lower part of the casing through one or the other of a pair of openings 8 formed in the front wall of the casing. To prevent the possibility of unreleased cans being reached through these openings 8, the can-retaining mechanism is located above the lower end of the casing so that a rearwardly inclined guide 5 is interposed between the lowest forwardly inclined guide and the supporting guide 5' which is positioned adjacent the can releasing means.

The coin for releasing the cans is inserted through a slot 9 in the front of the casing and passes through a selecting device indicated by the numeral 10. This is a well known device and forms no part of the present invention except in combination with the other parts of the machine. Its object is to permit the passage of proper coins through a coin chute 11 to the can releasing mechanism but to reject slugs or excessively worn coins through a discharge pipe 12. Such slugs or coins are delivered to the bottom of the casing adjacent one of the openings 8 through which it may be recovered. The selecting device includes a pair of plates 13 and 14 between which the coin chute 11 is formed. Plates 13 and 14 are secured to two pairs of lugs 15 and 16, respectively, on the upper face of casting 17 secured to the front wall of the casing 1. This casting is provided with a longitudinal passage through which extends an operating slide 18 the front end of which extends beyond the front of the casing and is provided with a handle 19. The rear end of the slide is provided with a slot 20 through which a bolt 21 extends into a supporting plate 22 positioned between the partitions 4. Formed on the edges of the slide 18 are a pair of front cam faces 23 and a pair of rear cam faces 24. The purpose of these cam faces is to actuate the can controlling devices of which four are employed. These devices, one of which is shown in detail in Figure 6, each comprises a cylindrical casting 25 secured to the partition 4, and a sliding pin 26

having a rounded inner end for contact with the cooperating cam face and a reduced outer end 27 adapted to be projected into the path of the can. The end 27 is surrounded by a coil spring 28 acting on a collar 29 to bias the pin toward its retracted position.

Formed in the casting 17 is a slot 30 for the reception of the coin A (Figure 4) which is delivered through the coin chute 11. A slot 31 in the slide 18 is in register with slot 30, when the slide is in normal position, permitting the coin to rest on a ledge 32. This ledge is so positioned that the upper edge of the coin will project slightly above a pin 33 carried by a lever 34 pivoted between the lugs 16. The forward end of this lever is provided with a detent 35 which projects through a slot 36 in the casting 17 into a slot 37 in the slide 18 to limit the movement of the latter. This slot is sufficiently elongated, as shown in Figure 7, to permit appreciable initial movement. This initial movement is necessary to permit the coin to be brought into contact with pin 33 and thus free the slide for complete movement. Further, this initial movement also permits of the movement of a roller 38 carried by the slide a sufficient distance to actuate a lever 39 connected by rod 40 to the scavenging gate (not shown) of the coin selector. This is necessary when certain types of slugs are inserted in the machine, which types are not immediately discharged but require the operation of the gate for their rejection. In the event a coin is in position on ledge 32, it is discharged through the forward end of slot 30 after detent 35 has been passed by slot 37 and is thus free to ride on the top face of the slide. The proportions of the parts should be such that the discharge of the coin takes place before the completion of the movement of the slide, otherwise it might be possible to release more than one can by the use of a single coin. The coin drops into the bottom of the central compartment and may be received in a coin tray 41 (Figure 2). The slide is returned to its normal position after operation by a coil spring 42 secured at one end to a pin 43 on casting 17 and at the other end to a screw 44 in the slide. The casting is provided with a slot 45 to permit the movement of the screw.

When the slide is in its normal position, as shown in Figure 3, the two front pins 26 will be in retracted position while both rear pins will project into the path of the cans. When the parts are in this position, the lowest can B, shown in dotted lines in Figure 1, will rest against the rear pin 26. Upon the forward movement of the slide, the front pin will be projected and the rear one retracted, allowing the lowest can B to roll down into the position V' where it will be retained until the slide is returned to normal position, when it will be discharged into the bottom of the casing where it may be removed through the opening 8 by the purchaser. As long as any cans remain in this compartment, which will be termed the left-hand compartment, (looking from the rear) a lever 46 positioned in slot 47 in the guide 5' adjacent the pins 26, and projecting slightly above said guide, will be depressed by the weight of the can resting thereon. This will actuate a rock shaft 48 to depress lever 49 having on its forward end a detent 50 adapted to extend through an opening in plate 22 and engage with a slot 51 in lever 52 pivoted to plate 22 by a bolt 53. The forward end of lever 52 is provided with a face 54 which engages with the end of the rear pin 26 projecting into the right-hand compartment. Therefore, as long as there are any cans in the left-hand compartment the rear pin of the right-hand compartment will be locked against retraction and no cans will be discharged from this compartment notwithstanding the fact that the front pin is projected into and retracted from this compartment. After all cans have been discharged from the left-hand compartment, lever 46 rises under the action of spring 55 and releases detent 50 from lever 52 so that further action of the slide discharges cans from the right-hand compartment. A spring 56 insures the proper positioning of lever 52 to engage detent 50.

In the guide 5' of the right-hand compartment is a slot 56' in which is a lever 57 similar to lever 46 but preferably shorter. This lever actuates a rock shaft 58 carrying an arm 59. The upper end of this arm communicates, through a connection 60, preferably of the flexible type, with a gate 61 controlling the coin slot. As long as a can rests on lever 57, the gate 61 will be raised to leave the slot free for the insertion of a coin. When the last can has been discharged from the machine the gate is permitted to drop and thus block the slot so that coins cannot be deposited in the empty machine.

The casing may be supported in any suitable way, such as by a stand 62 of such height as to render it readily accessible by the user.

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

1. In a vending machine, a housing, a pair of spaced article-containing compartments in said housing, an operating slide supported in said housing between said compartments and provided with cam faces, and a pair of pins for each compartment, said pins being slidably supported by the housing and cooperating with the slide, spring means biasing the pins toward retracted position, the cam faces of the slide acting on each pair of pins to alternately project them against the action of the spring means to successively release articles contained in the compartments.

2. In a vending machine, a housing, a pair of spaced article-containing compartments in said housing, an operating slide supported in said housing between said compartments and provided with cam faces, a pair of pins for each compartment, said pins being slidably supported by the housing and cooperating with the slide, spring means biasing the pins toward retracted position, the came faces of the slide acting on each pair of pins to alternately project them against the action of the spring means to successively release articles contained in the compartments, and means for locking one of said pins in projected position.

3. In a vending machine, a housing, a pair of spaced article-containing compartments in said housing, an operating slide supported in said housing between said compartments and provided with cam faces, a pair of pins for each compartment, said pins being slidably supported by the housing and cooperating with the slide, spring means biasing the pins toward retracted position, the cam faces of the slide acting on each pair of pins to alternately project them against the action of the spring means to successively release articles contained in the compartment, means for locking one of said pins in one compartment in projected position, a movable member located in the other compartment in the path of articles

moving therein, and a connection between said movable member and said pin locking means to control the latter.

4. In a vending machine, a housing comprising a front wall and a pair of partition walls dividing the housing into a central compartment and two spaced article-containing compartments, a guide member carried on the front housing wall and extending into the central compartment, an operating slide moving in said guide member and provided with cam faces, a pair of pins for each compartment slidably mounted on its partition wall and cooperating with the slide, spring means biasing the pins toward retracted position, the cam faces of the slide acting on each pair of pins to alternately project them against the action of the spring means to successively release articles contained in the compartments, and means for locking one of said pins against withdrawal by its spring.

5. In a vending machine, a housing comprising a front wall and a pair of partition walls dividing the housing into a central compartment and two spaced article-containing compartments, a guide member carried on the front housing wall and extending into the central compartment, an operating slide moving in said guide member and provided with cam faces, a pair of pins for each compartment slidably mounted on its partition wall and cooperating with the slide, spring means biasing the pins toward retracted position, the cam faces of the slide acting on each pair of pins to alternately project them against the action of the spring means to successively release articles contained in the compartments, a movable member in one of the article compartments located in the path of articles moving therein, means locking one of the pins in the other compartment in projected position, and connections between said movable member and locking means.

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