A. D. GROVER.

VENDING MACHINE.

APPLICATION FILED AUG. 10, 1912.

1,235,311.

Patented July 31, 1917.

Fig. 1.

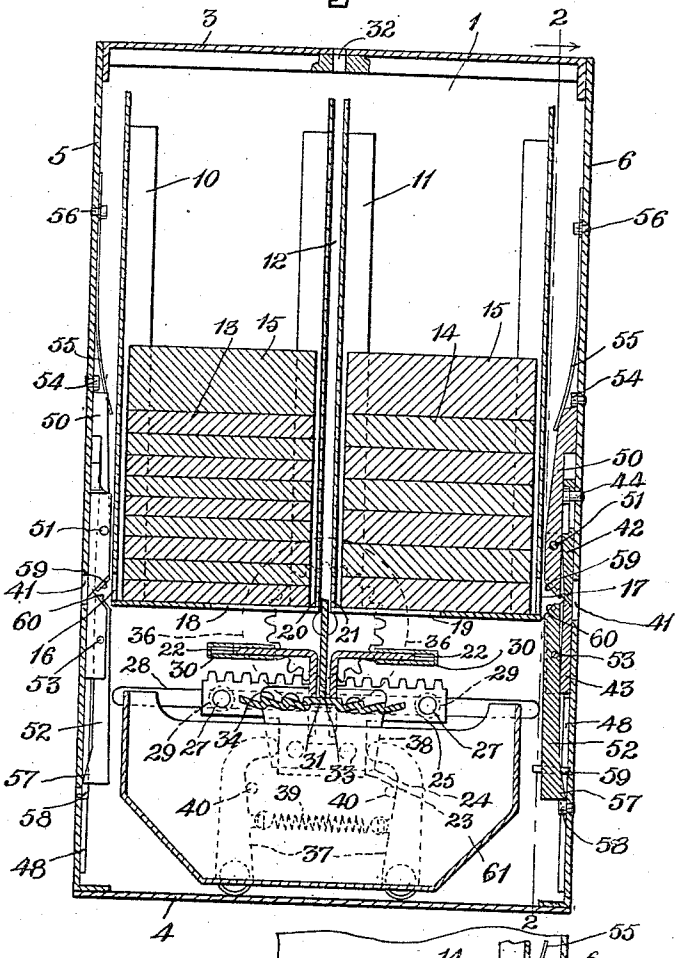


Fig. 2.

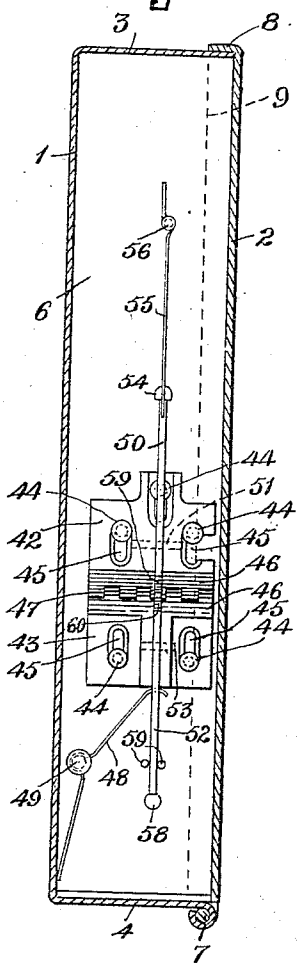
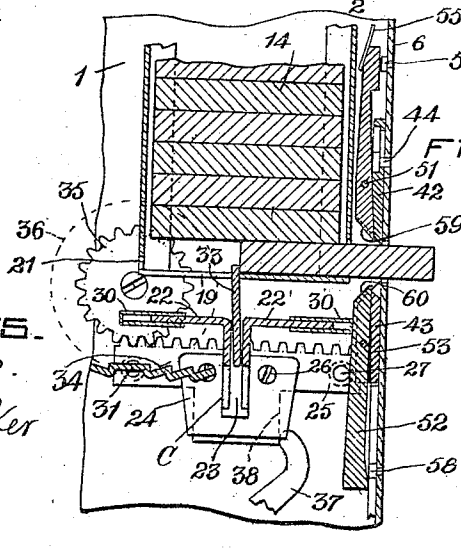


Fig. 3.



WITNESSES.

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ALBERT D. GROVER, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO AUTOSALES GUM AND CHOCOLATE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

VENDING-MACHINE.

1,235,311. Specification of Letters Patent. Patented July 31, 1917.

Application filed August 10, 1912. Serial No. 714,355.

To all whom it may concern:

Be it known that I, ALBERT D. GROVER, a citizen of the United States, and a resident of Malden, county of Middlesex, and State of Massachusetts, have invented a certain new and useful Improvement in Vending-Machines, of which the following is a specification.

My invention relates to coin-operated vending machines of the so-called magazine type, and has for its object the provision of means for normally closing the delivery opening, in combination with means for normally locking said closing means in closed position,—the arrangement of said locking and closing means being such that the ejected article itself automatically unlocks the closing means and moves the same in open position.

In the broad aspect of my invention, the closing means for the delivery slot or opening may assume various mechanical forms, but in the preferred form of my invention this closing means consists of one or two vertically movable gate members. These members are normally held locked against movement by a locking device which is so arranged that the ejected article engages the same and moves it into releasing position. In the specific embodiment of my invention, this locking device consists of a pivoted dog mounted on the gate member. This dog is normally held in position to positively prevent movement of the gate member. However, with the dog released, the continued movement of the ejected article automatically shifts the gate member or members into open position, so that the article is free to project through the delivery opening to a position for easy removal by the purchaser.

My invention is applicable to machines of various styles and construction, but for the sake of illustration I have shown my invention applied to a vending machine like that set forth in the application of James W. Patterson and John A. Webster, Serial No. 662,644, filed November 27, 1911.

In the accompanying drawing—

Figure 1 shows a longitudinal view in cross-section of a machine provided with a preferred embodiment of my invention.

Fig. 2 is a transverse cross-section on line 2—2 of Fig. 1; and

Fig. 3 is a fragmentary view on an enlarged scale, showing how the ejected article itself unlocks the gates at the delivery opening and moves the same into open position.

The various operative parts of the machine shown in the drawings are housed in a closed casing having the front wall or panel 1, the rear wall or plate 2, the top 3, the bottom 4 and the sides 5 and 6. The casing is preferably formed of sheet metal and is fixed in place in any desired way. The front, top, bottom and sides of the casing may conveniently be formed of one piece, which is hinged to the back plate 2 by means of the pintle 7 carried by said plate. This enables the front part of the casing to be swung into open position to render the interior of the machine readily accessible. The back plate 2 is preferably provided with the top flange 8 and side flanges 9, which surround the upper edge of the pivoted section to seal the same against forcible opening, as by means of a sharp instrument. A suitable lock is provided for locking the movable section of the casing to the back plate.

To the back plate 2 are secured the magazines 10 and 11, which are spaced apart to form between them the coin-chute 12. These magazines may conveniently be formed out of sheet metal and are adapted to hold the vendible articles in vertical stacks, as shown at 13 and 14 in Fig. 1. On each stack of goods rests a suitable weight 15, to insure the downward feeding of the goods. The magazines are at their lower outer ends provided with discharge openings 16 and 17, respectively, sufficiently large to readily permit one package at a time to pass therethrough. At the bottom, the magazines 10 and 11 are provided with slots or cut-away portions 18 and 19, respectively, while at their adjacent lower ends the magazines are cut-away at 20 and 21. The purpose of these cut-away portions will presently appear.

On the front panel of the casing is slidably mounted the coin-carrier indicated as a whole by C. This carrier comprises a pair of oppositely extending wings 22, between which is formed the coin-slot 23. The wings 22 are rigidly connected to the plate 24, which is secured to the rack bar 25 by any suitable means, as by screws 26. The rack bar 25 is slidably supported on the front panel 1, by means of a pair of guide lugs 27, which extend through the transverse slot 28 formed in the front panel 1. The outer ends of the guide lugs 27 are provided with heads

29, which engage the outer face of the front plate above and below the slot 28. In this way the coin-carrier C is slidably mounted on the front panel of the machine casing. On the wings 22 are slidably arranged the extensions 30, which are connected together by a cross piece (not shown), so as to move as one member. The purpose of these slidable extensions will appear later on. On the back plate 2 is fixed the coin-support 31, which extends in opposite directions from the coin-slot 23 on the carrier. As seen from Fig. 1, when the coin-carrier is in normal or central position, the coin-slot 23 is substantially midway of the coin-support 31. When a coin is inserted in the machine through the coin-entrance slot 32, it drops on the coin-support 31 and is retained in operative position by the slot 23, as shown in Fig. 1. The coin-support 31 is provided with transverse corrugations 34, which are so formed as to prevent retrograde movement of the coin-carrier, as long as the coin engages one of the corrugations. The object of this arrangement is to compel the completion of the forward movement of the coin-carrier, before the same can return to normal or central position. The teeth of the rack bar 25 are permanently in mesh with the pinion 35 journaled in the front panel 1 of the casing on the inside thereof. The pinion 35 is rigidly connected with a suitable hand-operated member 36, which is preferably in the form of a knurled knob mounted close to the front panel on the outside of the casing. When the knob 36 is rotated, the coin-carrier C is moved transversely of the casing one way or the other, depending upon the direction of rotation of the knob. The coin-carrier is yieldably held in its normal position by any suitable arrangement—as by means of a pair of pivoted dogs 37, journaled at the bottom of the front panel 1. These dogs extend inwardly at their upper ends into engagement with the opposite sides of the extension 38 formed on the rack bar 25. A contractile spring 39 tends to hold the dogs against the extension 38. A pair of stops 40, carried by the front panel, limits the inward movement of the centering dogs 37. When the coin-carrier is moved from its central position, one or the other of the dogs 37 is forced outwardly, and as soon as the knob 36 is released, the spring 39 draws the operated dog 37, and with it the coin-carrier C, back to normal position.

The sides 5 and 6 of the casing are each provided with a delivery opening 41 arranged in horizontal alinement with the discharge openings 16 and 17 of the magazines 10 and 11. These delivery openings are normally closed by mechanism which constitutes the subject matter of my present invention. The mechanism is normally locked against operation from the outside, but is adapted to be automatically unlocked and operated into open position by the ejected article itself. In the specific embodiment of my invention as shown for the sake of illustrations in the drawings, my new slot-closing mechanism includes an upper gate 42 and a lower gate 43. These gates are slidably mounted on the side of the casing by means of studs 44 passing through elongated slots 45 formed in the gates. At their adjacent ends, the gates are formed with oppositely extending beveled surfaces 46, which terminate preferably in teeth 47. The teeth of the gates are arranged in staggered relation, so as to interlock when the gates are closed. The upper gate 42 normally rests in the position shown in Figs. 1 and 2 by gravity, while the lower gate 43 is held in closing position by suitable spring means—such as the spring 48, which is supported on the stud 49 and tends to throw the lower gate upwardly into closing position. As seen from Fig. 1, when the gates are closed, they meet substantially midway of the delivery opening 41. On the upper gate 42 is pivoted a locking dog 50 by means of a pin or stud 51, mounted on the gate. The lower gate 43 has pivoted thereon a similar locking dog 52, by means of the pin 53. Just above the upper end of the locking dog 50 is fixed the locking stud 54, which is mounted on the side of the casing. A suitable spring 55, secured to the side of the casing by the pin 56, bears at its lower end against the upper end of the dog 50, so as to hold the same underneath the locking stud 54. A similar locking arrangement is provided for the dog 52 of the lower gate 43. The lower end of the dog 52 is provided with an extension 57, which normally rests over the stop or stud 58, fixed on the side wall of the casing. The dog 52 hangs by gravity in locking position, so that no additional spring is necessary. If desired, a pair of guide pins 59 may be provided to guide the movement of the dog 52. It will be clear from the above description that the studs 54 and 58 positively lock the gates against opening, until the dogs 50 and 52 are moved away from the locking studs. This releasing of the dogs is automatically accomplished by the ejected article itself. The adjacent ends of the dogs 50 and 52 are provided with oppositely extending beveled surfaces 59 and 60, which are substantially parallel with the beveled surfaces 46 of the gates and are slightly in advance thereof, as clearly shown in Fig. 1.

The operation of the delivery-slot protecting mechanism will now be understood and is as follows:

When a proper coin has been deposited in the machine, it comes to rest on the coin support 31, as shown in Fig. 1. If the purchaser desires a package or piece of goods from compartment 11, he turns the knob 36

counterclockwise (as viewed in Figs. 1 and 3). This movement of the knob shifts the coin-carrier C, and with it the coin 33, toward the right (as viewed in Figs. 1 and 3). At its upper end the coin projects slightly beyond the lower end of the magazine, and as the coin is carried toward the right it will pass through the cut-away portions 21 and 19 into engagement with the inner end of the lowermost package 14, thereby ejecting the same laterally out of the magazine through the discharge opening 17. This is clearly shown in Fig. 3. As soon as the forward end of the ejected package strikes the beveled ends 59 and 60 of the dogs 50 and 52, the latter are rocked away from the locking studs 54 and 58. The continued movement of the ejected package causes the forward end of the same to engage the beveled surfaces 46 of the gates 42 and 43, thereby forcing the upper gate 42 upwardly and the lower gate 43 downwardly into open position. When the coin-carrier has reached the limit of its movement, the ejected package extends partly through the delivery slot 41, as shown in Fig. 3, so that it may be grasped by the purchaser and withdrawn from the machine. As soon as the package is withdrawn the gates 42 and 43 automatically move back into closing position, carrying with them the locking dogs 50 and 52 into normal or locking position. Also, upon withdrawal of the ejected package, the coin 33 drops by gravity through the slot 23 into the cash box 61, suitably mounted in the lower portion of the casing. The purpose of the slidable extensions 30 mounted on the coin-carrier C, is to allow the coin-carrier to continue its travel after the extension has abutted against the sides of the casing. This produces a longer ejection stroke of the coin-carrier without the necessity of widening the casing.

From the foregoing description it will be clear that I have provided an exceedingly simple and efficient closing and locking mechanism for the delivery slot.

No special device is required to unlock the mechanism, this being done by the ejected article itself, and as soon as the article is withdrawn, the mechanism automatically moves back into closed and locked position, in which it remains until the next article is ejected. Although I have herein shown and described a specific form of my invention, it will be understood that I do not intend to be limited to the details set forth, as it is obvious that the principle of my invention may be mechanically carried out by those skilled in the art in other ways than that shown and described.

Having thus 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 provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a vertically reciprocable slide for closing said opening, said slide being arranged to be engaged by the ejected article itself and shifted into open position, and means adapted to normally lock said slide in closed position and arranged to be automatically operated into releasing position by the ejected article, so that further movement of the article automatically opens the slide.

2. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a vertically reciprocable slide for normally closing said opening, and a dog consisting of a single upright member pivoted to said slide for normally locking the same in closed position, said dog being arranged to be engaged by the ejected article and thereby rocked into releasing position, so that further movement of the article automatically opens the slide.

3. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a vertically reciprocable slide for normally closing said opening, and means for normally locking said slide in closed position, said locking means and said slide being so arranged that the ejected article first operates the locking means into releasing position and then automatically operates the slide into open position.

4. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a vertically reciprocable slide for normally closing said opening, and means carried by said slide for normally locking the latter in closed position, said locking means and said slide being so arranged that the ejected article first operates the locking means into releasing position and then automatically operates the slide into open position.

5. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a pair of oppositely movable gates for normally closing said opening, and a locking device mounted on each gate for normally locking the same in closed position, said locking devices and said gates having oppositely beveled portions arranged in the path of movement of the ejected article, so that the latter first operates the locking devices into releasing position and then automatically opens the unlocked gates.

6. In a vending machine, a closed outer casing provided with a delivery opening, mechanism for ejecting the vendible articles through said opening, a slide for normally closing said opening, means for mounting said slide within the casing on the outer wall thereof for vertical reciprocation in

close proximity to said wall, said slide being arranged for engagement by the ejected article itself and thereby be shifted into open position, and means adapted to normally lock said slide in closed position and arranged to be automatically operated into releasing position by the ejected article, so that further movement of the article automatically opens the slide.

7. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a normally closed gate for said delivery opening, and a dog pivoted on said gate for normally locking the same in closed position and adapted to be operated into releasing position by the ejected article itself.

8. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a movable gate for normally closing said opening, and means adapted to normally lock said gate in closed position, said gate and said locking means having each a beveled portion arranged in the path of movement of the ejected article, so that the latter first operates the locking means into releasing position and then automatically opens the unlocked gate.

9. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a vertically reciprocable slide for normally closing said opening, a dog consisting of a single upright member pivoted on said slide, and a fixed stop which said dog normally engages to lock the slide against movement, said dog having a portion arranged to be engaged by the ejected article, whereby the dog is automatically operated to release the slide.

10. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a pair of oppositely movable gates for normally closing said opening, a locking device mounted on each gate for normally locking the same in closed position, and a fixed stop associated with each locking device for normally locking the gates against movement, said locking devices and said gates having oppositely beveled portions arranged in the path of movement of the ejected articles, so that the latter first operates the locking devices out of engagement with said stops and then automatically opens the unlocked gates.

11. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible article therethrough, a vertically slidable member for normally closing said opening, and a pivoted member for normally locking said slidable member in closed position, said members being adapted to be operated by the ejected article itself.

12. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a vertically slidable flat plate for normally closing said opening, said plate having a beveled portion in the path of movement of the ejected article, whereby the latter moves the plate into open position, and means for normally locking said plate in closed position, said locking means being adapted to be actuated into releasing position by the ejected article itself.

13. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a pair of oppositely movable gates for normally closing said opening, the adjacent ends of said gates being arranged for engagement by the ejected article itself and thereby separated into open position, and a locking member mounted on each gate for normally locking the same in closed position, the adjacent ends of said locking members being in the path of movement of the ejected article, so that the latter first operates the locking members into releasing position and then automatically opens the unlocked gates.

14. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a pair of oppositely movable gates for normally closing said opening, the adjacent ends of said gates being arranged for engagement by the ejected article itself and thereby separated into open position, and a locking member associated with each gate for normally locking the same in closed position, the adjacent ends of said locking members being in the path of movement of the ejected article, so that the latter first operates the locking members into releasing position and then automatically opens the unlocked gates.

15. In a vending machine provided with a delivery opening and with mechanism for ejecting the vendible articles therethrough, a pair of oppositely reciprocable slides for normally closing said delivery opening, and a pair of locking devices for said slides adapted to be simultaneously operated into unlocking position by the ejected article itself.

In witness whereof, I hereunto subscribe my name this 31st day of July, A. D., 1912.

ALBERT D. GROVER.

Witnesses:

B. P. RHOADES,

JOSEPH KUTZ.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."