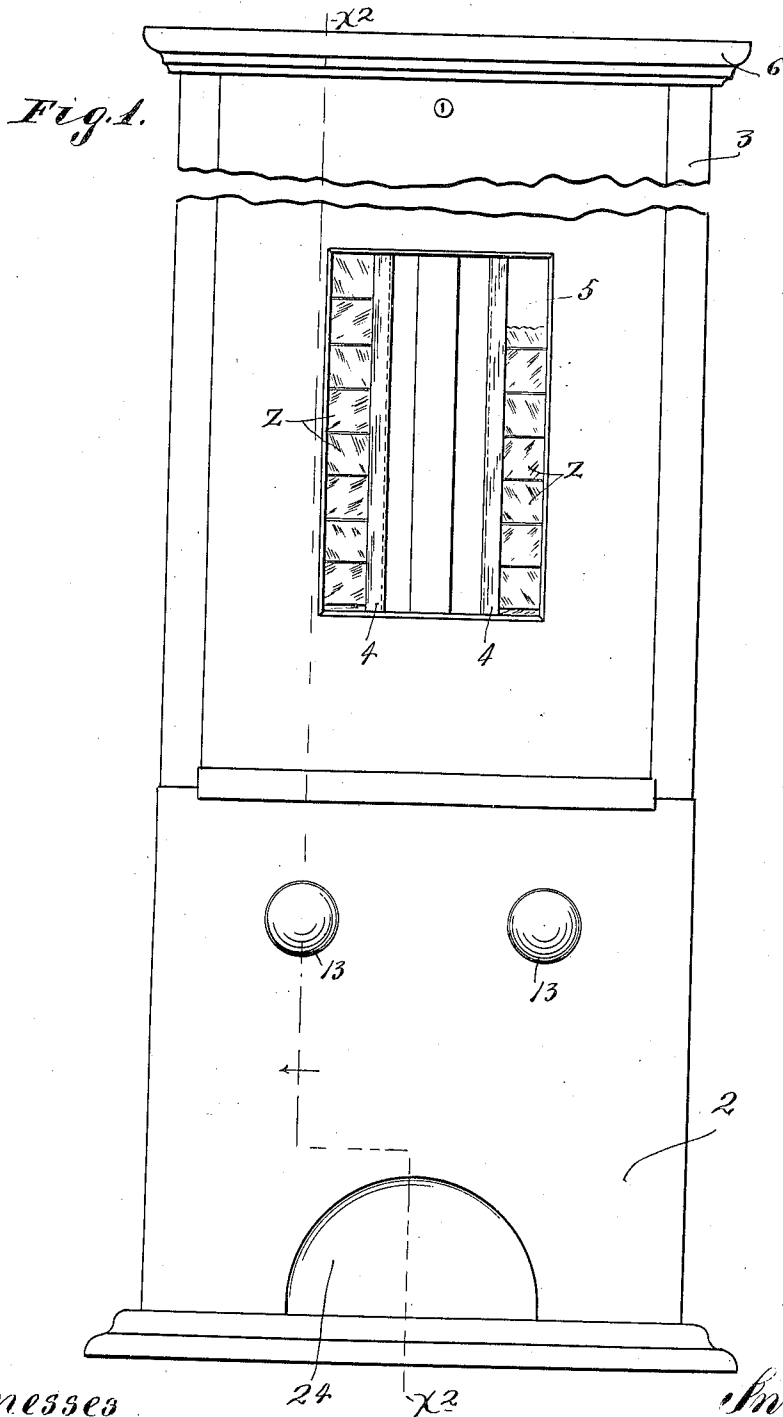


No. 845,045.

E. G. BARNES.
VENDING MACHINE.
APPLICATION FILED APR. 13, 1906.

PATENTED FEB. 26, 1907.

3 SHEETS—SHEET 1.



Witnesses
A. H. Opsahl.
E. W. J. J. J. J.

Inventor.
E. G. Barnes.
By his Attorneys
Williamson & Merchant

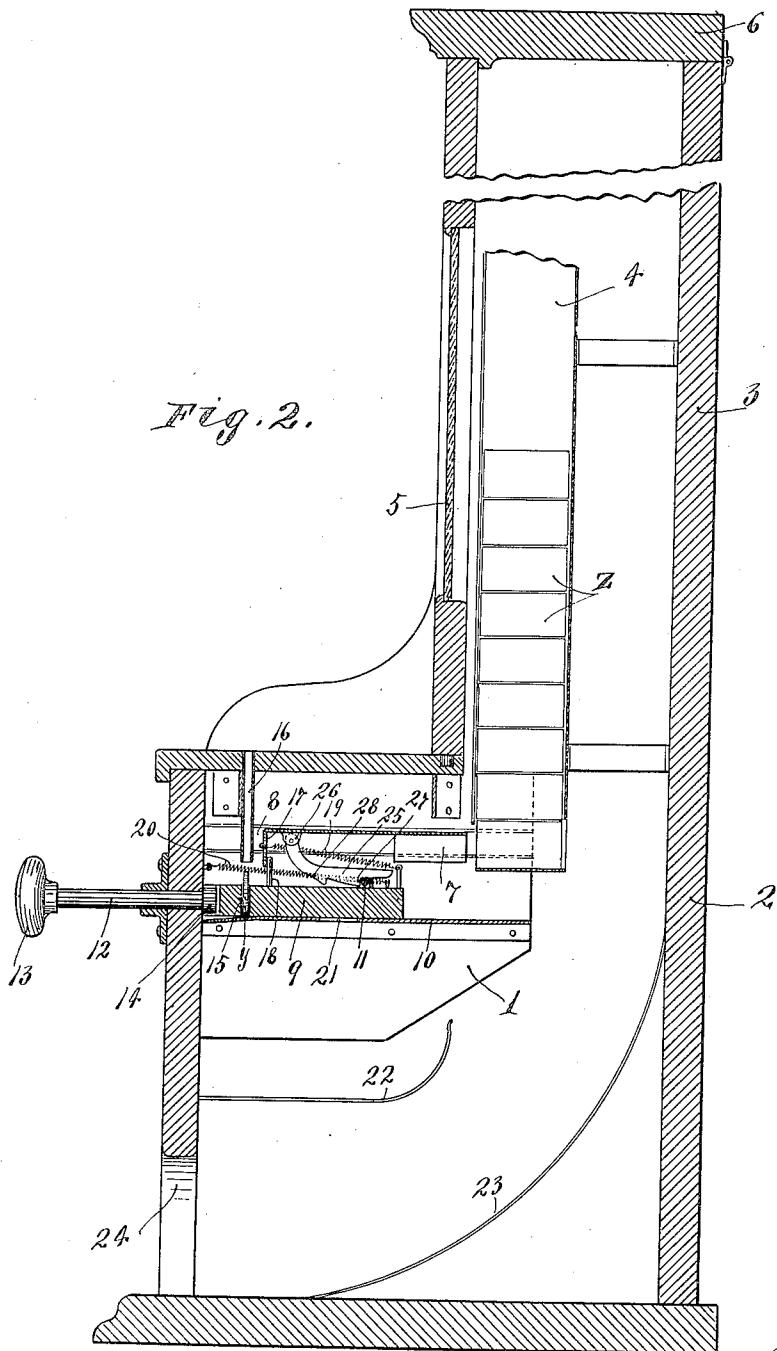
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3 SHEETS—SHEET 2.



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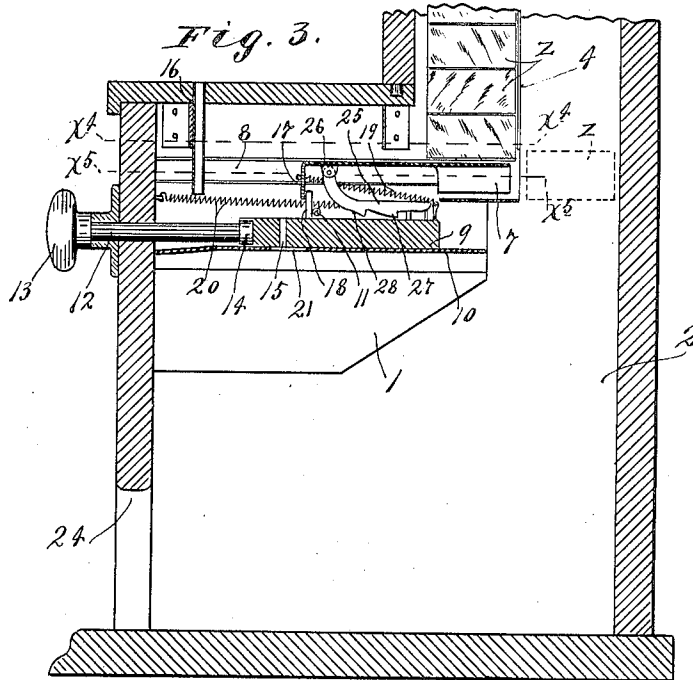
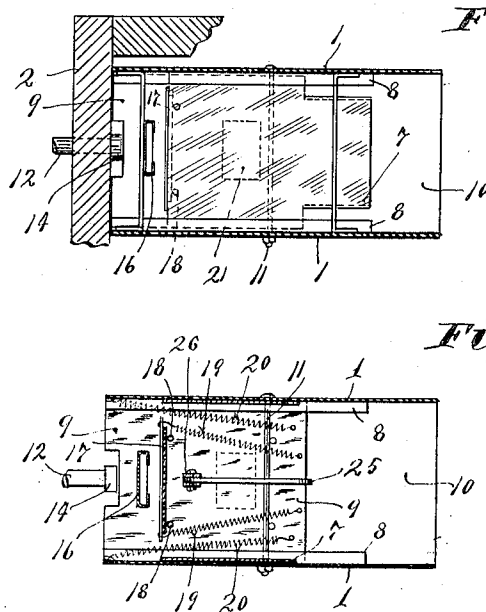
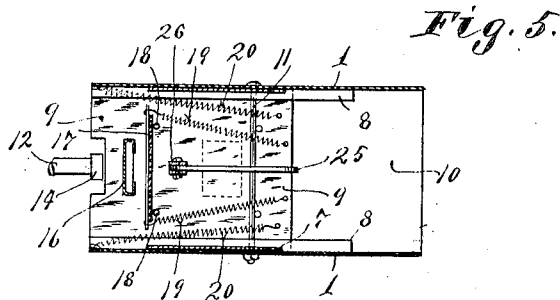
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3 SHEETS—SHEET 3.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN G. BARNES, OF OAKES, NORTH DAKOTA.

VENDING-MACHINE.

No. 845,045.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Application filed April 13, 1906. Serial No. 311,500.

To all whom it may concern:

Be it known that I, EDWIN G. BARNES, a citizen of the United States, residing at Oakes, in the county of Dickey and State of North Dakota, have invented certain new and useful Improvements in Vending-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to coin-controlled vending-machines, and has for its especial object to provide improved coin-controlled vending devices for controlling the delivery or discharge from the machine of small boxes containing matches or other articles.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

Referring to the drawings, which illustrate my invention, like characters indicate like parts throughout the several views.

Figure 1 is a view in front elevation showing the improved machine. Fig. 2 is a vertical section taken from the front to the rear of the machine on the line $x^2 x^2$ of Fig. 1. Fig. 3 is a view taken on the same line as Fig. 2, but with some parts broken away and with certain other parts in different positions than those shown in Fig. 2. Fig. 4 is a horizontal section taken on the line $x^4 x^4$ of Fig. 3, and Fig. 5 is a horizontal section taken on the line $x^5 x^5$ of Fig. 3.

The coin-controlled delivery-plungers and associated devices are mounted within an approximately rectangular metal framework 1, which in turn is rigidly secured within a box-like casing 2, having a vertical extension 3. Within the vertical extension 3 is a vertically-extending magazine 4, that is adapted to contain a stack of match-boxes or similar articles, (indicated by the character z.) The magazine 4 is open both at its bottom and top; but immediately above its bottom at the front and rear the said magazine is provided with openings of sufficient size to permit the lowermost box z to be forced endwise out of the magazine by means which will presently be described. In the front wall of the casing extension 3 there is preferably a glass window 5, which permits a person from the outside to see whether or not there are any boxes within the magazine. At its top the extension 3 is preferably pro-

vided with a hinged cover 6, which when raised affords ready access to the upper end of the magazine for the purpose of filling the same.

A discharge-plunger 7, which, as shown, is of metal bent into channel form, is mounted to move horizontally from front toward the rear of the machine, and vice versa, in channeled guides 8, that are rigidly secured to the sides of the internal frame 1. The rear end of this discharge-plunger 7 is narrower than the body portion thereof and is of such width and so positioned that it is adapted to engage the front end of the lowermost box z, contained in the magazine 4 and to force such box rearward out of the magazine when the said plunger 7 is forced rearward.

Arranged below the plunger 7 for movements parallel therewith is a so-called "operating-plunger" 9, which is mounted to slide horizontally upon a bearing-plate 10 of the frame 1. A rod 11, which is secured at its ends in the sides of the frame 1, extends over the top of the operating-plunger 9, and in addition to another important function, presently to be noted, serves to hold the operating-plunger 9 down upon the bearing-plate 10. The operating-plunger 9 has a detached or loose operating-stem 12, that works through a suitable bearing in the front wall of the case 2, is provided at its outer end with an operating-knob 13, and is, as shown, provided at its inner end with a head 14, that is adapted to bear against the forward end of said operating-plunger 9. This so-called "operating-plunger" 9 is preferably in the form of a flat block, and near its rear central portion it is provided with a vertical coin-receiving slot 15, that is adapted to receive a coin y, as shown in Fig. 2. Extending through and depending from the top of the case 2 is a vertical coin-delivery spout 16, the lower end of which terminates in position to discharge the coin y into the coin-receiving slot 15 of the plunger 9.

At its rear end the discharge-plunger 7 is provided with a depending flange 17, that is normally engaged by one or more push-pins 18, carried by the operating-plunger 9. One or more (as shown two) coiled springs 19 connect the rear portion of the operating-plunger 9 to the forward portion of the discharge-plunger 7, also one or more coiled springs 20 (as shown two) connect the rear portion of the operating-plunger 9 to the front wall of the case 2.

In the bearing-plate 10 a considerable distance forward of the vertical line of the spout 16 is a perforation 21, that is more than large enough to pass the coin therethrough. Secured to the case 2 below the frame 1 and in position to catch any coins dropped through the perforation 21 is a coin-receptacle 22, of any suitable form. Boxes discharged rearward from the lower end of the magazine 4 will drop onto a downwardly and forwardly curved bottom portion 23 of the case 2 and will thereby be delivered and discharged through a large opening 24 in the lower portion of the front wall of the case 2.

Normally the discharge-plunger 7 is locked so that it will not move rearward when the operating-plunger is moved rearward, and means is provided whereby when a coin is deposited in the receiving-slot 15 of said operating-plunger and the said operating-plunger is then moved rearward the said discharge-plunger will be released and thrust rearward, thereby ejecting from the magazine the lowermost box or article contained therein. This mechanism in simple and efficient form comprises a curved or bent lock-dog 25, which at its upper end is pivoted to a lug 26 on the front portion of the operating-plunger 7 and which at its free end is provided with a lock-tooth 27, that normally engages the fixed rod 11, and thereby positively locks the operating-plunger 7 against rearward movement. On the lock-dog 25 forward of the lock-tooth 27 is a cam-surface 28, with which the coin *y* when positioned within the slot 15 of the operating-plunger 9 and when moved rearward will engage to lift the free end of the lock-dog out of engagement with the rod 11, thereby releasing the said discharge-plunger.

The operation briefly summarized is as follows: The springs 20, normally holding the operating-plunger 9 drawn forward, and the pins 18, by their engagement with the flange 17, also hold the operating-plunger 7 drawn forward or in the normal position. (Shown in Fig. 2.) When no coin is deposited in the receiving-pocket 15 of the operating-plunger, the said operating-plunger by rearward and forward movements of the operating-stem 12 may be repeatedly moved back and forth or from rear to front of the machine and return without any action whatever upon the discharge-plunger. When, however, the coin is deposited in the receiving-slot 15 and the operating-plunger is then moved rearward, its rearward movement will first put the springs 19 under increased tension, tending to throw the discharge-plunger 7 rearward. Then after the said springs 19 have been put under tension the coin while acting upon the cam-surface 28, as before described, raises the lock-dog 25, and thereby releases the discharge-plunger. When the discharge-plunger is thus suddenly released,

after the springs 19 have been put under tension, the said springs will throw the said discharge-plunger rearwardly with a quick movement, thereby causing the same to discharge the lowermost box *y* from the magazine with a very quick action or very much as if struck a sharp blow by a hammer. This quick blow or sudden discharge movement makes the discharge of the box from the magazine much more certain and positive. Fig. 3 shows the positions of the two plungers 7 and 9, after the coin has acted upon the lock-dog 25, after the said discharge-plunger 7 has been thrown rearward and discharged the box *z*, and after the operating-plunger 9 has been moved rearward far enough to permit the coin to drop through the perforation 21 into the coin-receptacle 22. The lock-dog 25 is, as shown, a gravity-actuated dog, and its tooth 27 will reengage with the lock-rod 11 when the two plungers are returned to normal position. The return of the operating-plunger to normal position is accomplished by the springs 20, and the return of the discharge-plunger 7 to normal position is caused by the same springs and by the engagement of the push-pins 18 of said plunger 9 with the depending flange 17 of said plunger 7.

I claim as my invention—

1. In a vending-machine, the combination with an operating-plunger and a discharge-plunger, of yielding means connecting said two plungers, for imparting operating movements to said discharge-plunger, means for causing said operating-plunger to positively impart return movements to said discharge-plunger, a latch normally holding said discharge-plunger against operating movement, and which operating-plunger is constructed to receive a deposited coin, and which latch is arranged to be released by a coin carried by said operating-plunger, substantially as described.

2. In a vending-machine, the combination with a magazine adapted to contain a stack of boxes or similar articles, of an operating-plunger and a discharge-plunger, one or more springs connecting said two plungers and serving to put said discharge-plunger under tension to move, when said operating-plunger is moved, means for causing said operating-plunger to return said discharge-plunger to normal position, a fixed lock-rod between the two plungers, and a lock-dog normally engaging said lock-rod and holding the said discharge-plunger against operating movement, and which operating-plunger is provided with a coin-receiving pocket, and which lock-dog is provided with a cam-surface adapted to be engaged to release said dog under the action of a coin deposited in the slot of said operating-plunger, substantially as described.

3. In a vending-machine, the combination

with a case and a magazine contained therein, of an operating-plunger and a discharge-plunger within said casing, a spring tending to hold said operating-plunger in normal position, a spring yieldingly connecting said two plungers for common movement in a direction to impart operating movement to said discharge-plunger, engaging parts on the two plungers whereby said operating-plunger will return said discharge-plunger to normal position, a fixed lock-rod extending between said two plungers, and a lock-dog pivoted to said discharge-plunger and normally engaging said lock-rod, and which operating-plunger is provided with a coin-receiving slot, and which lock-dog is provided with a cam-surface adapted to be engaged by a coin carried by said operating-plunger, substantially as described.

4. In a vending-machine, the combination with a case and a magazine therein, of an operating-plunger and a discharge-plunger

mounted in said case for parallel reciprocatory movements, a perforated bearing-plate over which said operating-plunger works, said operating-plunger having a coin-receiving slot, a coin-delivery spout supported by the case in position to deliver the coin into the slot of said operating-plunger when the latter is in normal position, a spring connecting said two plungers, a latch normally holding said discharge-plunger against operative movement but adapted to be released by a coin held in the slot of said operating-plunger, and an operating-stem disconnected from but arranged to act upon said operating-plunger, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN G. BARNES.

Witnesses:

H. D. KILGORE,
F. D. MERCHANT.