

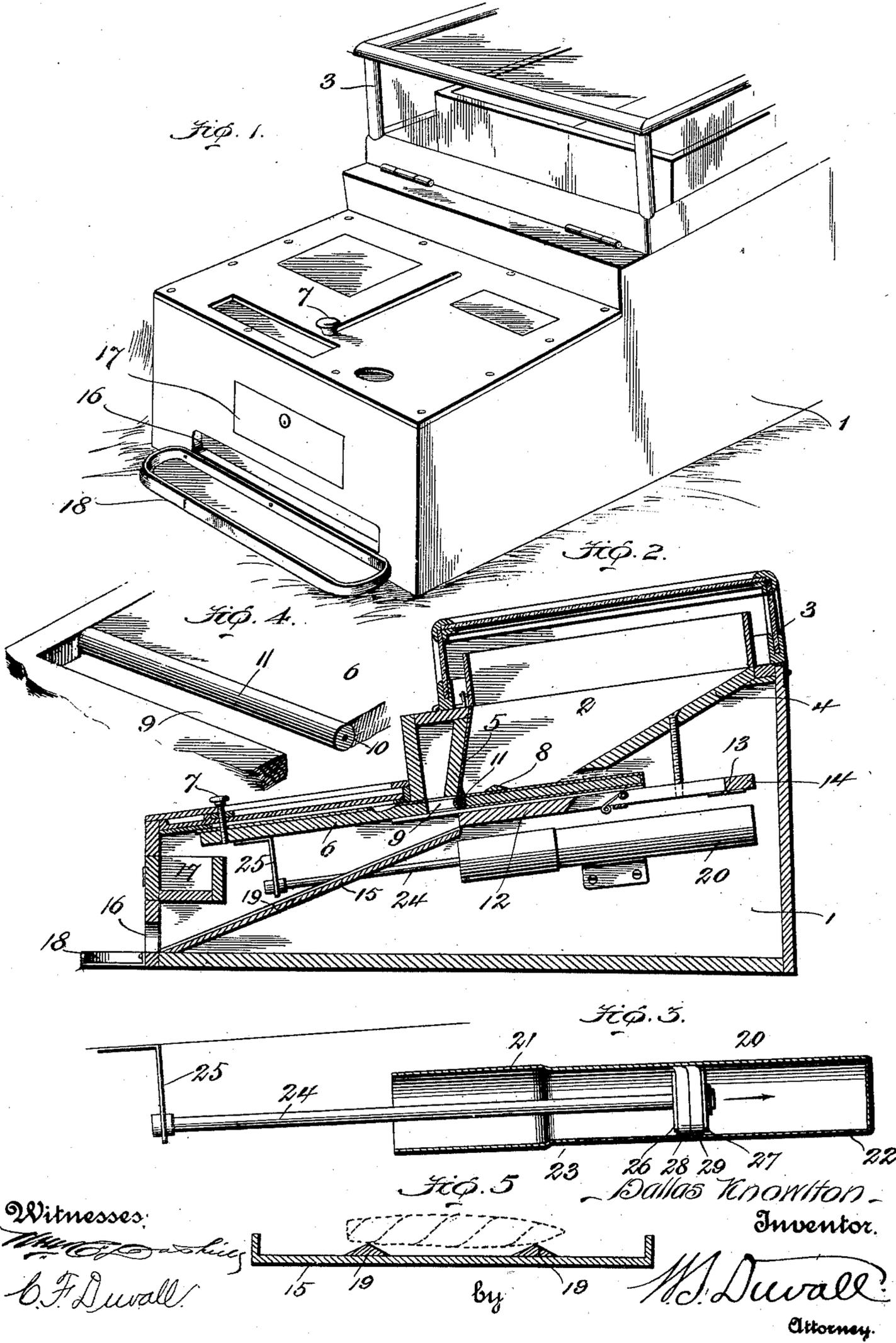
No. 703,138.

Patented June 24, 1902.

D. KNOWLTON.
VENDING MACHINE.

(Application filed Jan. 20, 1902.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

DALLAS KNOWLTON, OF WASHINGTON, DISTRICT OF COLUMBIA.

VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 703,138, dated June 24, 1902.

Application filed January 20, 1902. Serial No. 90,502. (No model.)

To all whom it may concern:

Be it known that I, DALLAS KNOWLTON, a citizen of the United States, residing at Washington, District of Columbia, have invented new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention relates to improvements in that class of vending-machines employed to vend cigars, although certain features of the invention will be found applicable to machines employed for vending other articles.

Certain features of construction herein shown and not claimed constitute the subject-matter of other pending applications—to wit, No. 61,099, filed May 20, 1901, and No. 90,503, filed January 20, 1902.

The objects of the present invention are (a) to adapt the machine to deliver the cigar or other article to be vended at the front of the machine, whereby a series of machines thus constructed may be arranged side by side in close proximity; (b) to provide an efficient governor or controller whereby the speed of the movement of the sliding cut-off is regulated and cannot be exceeded, thus always insuring the delivery of a cigar and preventing rough handling of the same and consequent breakage; (c) to adapt such governor or controller to permit of a more rapid movement before and after the cigar-discharge opening in the hopper has been reached, whereby the machine is adapted to vend expeditiously; (d) to so construct the sliding cut-off as to obviate positively any tendency of the cigars toward bridging and consequent failure of discharge, and (e) to so construct said sliding cut-off as will absolutely insure a gentle handling of the cigars and obviate all possibility of the latter being caught by the opening in the cut-off when already occupied and torn by coming in contact with the opposing edge of the hopper or stationary cut-off.

With these objects in view the invention consists in certain features of construction hereinafter referred to, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective view of the front portion or discharge end of my vending-machine. Fig. 2 is a longitudinal sectional view of the same. Fig. 3

is a longitudinal sectional view in detail of the governor or controller. Fig. 4 is a sectional perspective of a portion of the sliding cut-off hereinafter referred to. Fig. 5 is a transverse sectional view of the discharge-chute, illustrating a cigar in the act of passing down the same.

Similar numerals of reference indicate similar parts throughout the drawings.

The outer case 1 is surmounted at its rear end by the usual hopper 2, the same preferably having a removable show-case 3 located thereon. In rear of the hopper is located the inclined bottom 4, declining toward and stopping short of the front wall thereof. The front wall may support the fixed cut-off 5, the lower edge of which combines with the adjacent edge of the bottom 4 to form the discharge-opening of the hopper. The fixed cut-off, it will be observed, is curved, so that the cigars are lifted and caused to roll gently over as the sliding cut-off, hereinafter described, is moved forward to discharge a cigar.

Arranged to slide in suitable supports immediately below the discharge-opening of the hopper is the sliding cut-off 6, the same extending forward toward the front of the case 1 and being operated by a knob 7 after being unlocked by any suitable coin-controlled mechanism. (Not herein shown.)

One of the principal difficulties found in machines of this class intended for the vending of cigars is the tendency of the latter to bridge or span the discharge-opening in the hopper, in which case, of course, though said cut-off be moved or operated and the proper coin inserted no cigar is vended. For the purpose, therefore, of breaking this bridging or spanning of the cigars it has been customary to provide corrugations on the upper face of the sliding cut-off; but these are highly objectionable and impracticable, for the reason that it unduly agitates the cigars and breaks their wrappers, which latter is also caused sometimes by catching and compressing a cigar between one of such corrugations and the rear edge of the discharge-opening in the hopper. What is necessary is merely a very slight and gentle undulating movement, preferably a slightly-rolling motion, and such I attain by employing a cross-strip 8 upon the upper side of the sliding cut-off a short dis-

tance back of the discharge-opening 9 thereof. This strip 8 is somewhat triangular in cross-section, and therefore comprises opposite reversely-inclined surfaces, said inclines being exceedingly gradual, so that cigars against which either of said surfaces may come are caused to lightly roll in ascending the same and cannot possibly be caught between it and the stationary cut-off or the bottom of the hopper.

Cigars when pressed in a box are of very irregular shape in cross-section, and in some where the pressing is very great there is absolutely no uniformity whatever. In other constructions of cigar-vending machines which have come under my observation and which use a sliding cut-off there will once in a while during the operation of the machine chance to come together two very flat or very angular cigars. The first or foremost falling to the discharge-opening of the sliding cut-off will but partially fill the same, and thereafter the next irregular cigar will get one corner or angle within the remainder or unoccupied portion of said discharge-opening. The inevitable result of this is a smash of the uppermost cigar against the stationary cut-off or edge of the discharge-opening of the hopper. Therefore it is obvious that some means must be provided for gently removing such cigar from all danger of being caught and crushed. This I provide for by making the discharge-opening of the sliding cut-off slightly wider than usual and concaving the rear edge of the same, as at 10, and journaling in the opening and so as to fill the concavity a loose roller 11. The diameter of this roller is the same as the width of the sliding cut-off. The effect of this arrangement of a freely-rotating roller is that the cigar following one caught by the discharge-opening of the sliding cut-off is gently rolled out of such discharge-opening, such rolling being continued by the fixed cut-off when the said cigar arrives in contact therewith.

In order to regulate the depth of the discharge-opening in the sliding cut-off, I may employ a false bottom 12 to said opening, hinging said bottom at its rear end, as at 13, to a cross-piece 14. An adjusting-screw may be threaded in the bottom 4 of the hopper and at its lower end in the false bottom, whereby the latter may be raised and lowered.

Immediately in advance of the discharge end of the false bottom and therefore below the discharge-opening in the sliding cut-off, is the upper end of an inclined delivery-chute 15, the lower end of which occurs at a transverse opening 16, formed in the front wall of the case 1, preferably immediately below the money-drawer 17. Experience has taught that cigars being irregular in shape when dropped upon an incline plate or chute and permitted to gravitate down the same will assume various positions, some traveling down tip first and others butt first, while yet

others will roll over and over and travel down all the way at a right angle to their disposition. There being no uniformity, however, it becomes necessary to provide some means whereby the cigar will roll gently and without turning to the discharge-opening 16 and be delivered in the awaiting delivery-tray 18, located in advance of the same and secured to the front wall of the case 1. This I readily accomplish by providing the surface of the inclined chute with a pair of skids 19. These skids are simply two strips, preferably triangular in cross-section, (see Fig. 5,) and support the cigar so that its greatest diameter being out of contact with the inclined chute cannot act as a pivot upon which the cigar will turn or twist in its descent. Practical experience has demonstrated the practicability of this arrangement, the cigars gently rolling without any tendency to turn whatever.

Below the sliding cut-off and preferably secured to a convenient side wall of the case 1 is a cylinder 20, the rear end of which is closed and the front end of which is open. The diameter of the cylinder is slightly increased from a point near to its front end, and the closed end of the cylinder is provided with a minute perforation 22. At about the point where the increase of diameter of the cylinder begins a second and preferably larger perforation 23 is formed. In the cylinder thus constructed is arranged a piston-rod 24, the same being connected at its outer end by an arm 25 with the sliding cut-off 6, with which it is therefore adapted to move, said arm and rod being in line with the cylinder 20, and therefore to one side of the chute 15. A pair of metal disks 26 and 27 are arranged on the inner end of the piston, and between the two is a pair of leather disks 28 and 29. The metal disks are slightly smaller than the internal bore of the cylinder, while the leather disk about accords therewith. The result of this construction is a double-acting pump, as will be obvious. As a sliding cut-off is moved rearward to engage a cigar the pump-head travels in the direction of the arrow and air is forced in a fine jet from the cylinder through the small perforation 22. As the cut-off returns, the air is drawn through this perforation. The speed of the piston, and therefore the cut-off, will be regulated by the size of the perforation 22. By the time the cut-off has received the cigar and passed from under the delivery-opening of the hopper the pump-head will have reached the increased diameter of the cylinder, whereby the head is permitted to move more rapidly, such speed being accelerated by the opening 23, so that both the beginning and end of the movement of the sliding cut-off is faster than that portion thereof where the discharge-opening of the cut-off is under the hopper. This insures, as will be obvious, a very careful deposit of the cigar in the cut-off and a

delivery of the same to the chute, as well as a gentle rolling agitation of the cigars in the hopper.

Having described my invention, what I claim is—

1. The combination, in a vending-machine, of a hopper having a discharge-opening and an inclined bottom terminating above the plane of the opening, a sliding cut-off arranged for movement under the opening and provided with a corresponding discharge-opening, and a transverse rib arranged on the sliding cut-off between the opening and rear end of the slide and extending above the surface of the cut-off and adapted to pass under the said inclined bottom, said rib having oppositely-inclined faces.

2. The combination, in a vending-machine, of a hopper having a discharge-opening, a sliding cut-off arranged for movement under the opening and provided with a discharge, and a roller loosely journaled and located at one edge of said opening of the discharge of the sliding cut-off, and having its periphery in the same plane as the upper surface of said cut-off.

3. The combination, in a vending-machine, of a hopper having a discharge-opening, a fixed auxiliary cut-off located at the front edge of said opening, a sliding cut-off arranged below the hopper and having a discharge, and a roller loosely mounted for free rotation adjacent to the rear edge of said opening in the cut-off and having its periphery in the same plane as the upper surface of said cut-off.

4. The combination, in a vending-machine, of a hopper provided with a discharge-opening, a cut-off located at the front edge of said opening and having its lower end curved, a sliding cut-off located below the hopper and provided with a discharge-opening, and a loose roller located at the rear edge of the latter opening and within the same.

5. The combination, in a vending-machine, of a hopper provided with a discharge and a rear inclined bottom terminating above the plane of the opening, the fixed curved cut-off at the front edge of said opening and depending below the inclined bottom of the hopper and in a plane with said opening, a slid-

ing cut-off provided with a discharge, a loose roller journaled in the discharge of the cut-off adjacent to the rear edge of the discharge, and a transverse rib seated on the sliding cut-off and having oppositely-inclined faces and adapted to pass under said inclined bottom of the hopper.

6. The combination, in a vending-machine, of a hopper provided with a discharge-opening, a fixed auxiliary cut-off arranged at the front end of the same, a sliding cut-off arranged below the opening and having a corresponding discharge-opening, the rear edge of which latter opening is concaved, a roller loosely journaled in the concavity of said opening free to rotate and of a diameter substantially agreeing with the width of said sliding cut-off, and a transverse rib seated on the sliding cut-off in rear of the opening therein and having oppositely-inclined faces.

7. The combination, in a vending-machine, of a movable discharge and a superimposed hopper having a discharge, and means for decreasing the speed of the discharge at the time the same is receiving the article from the hopper.

8. The combination, in a vending-machine, of a movable discharge and a superimposed hopper having an opening, and means for causing the movable discharge to move at an accelerated speed before and after receiving the article to be vended from the hopper.

9. The combination, in a vending-machine, of a hopper having a discharge, a movable discharge arranged thereunder and adapted to take therefrom during its said movement, the cylinder having its front end open and enlarged and near its opposite end having the perforation 22, the piston-head, the rod, and connection between the latter and the movable discharge whereby it is permissible for said movable discharge to move at a greater rate of speed at the beginning and ending of its travel.

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

DALLAS KNOWLTON.

Witnesses:

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