

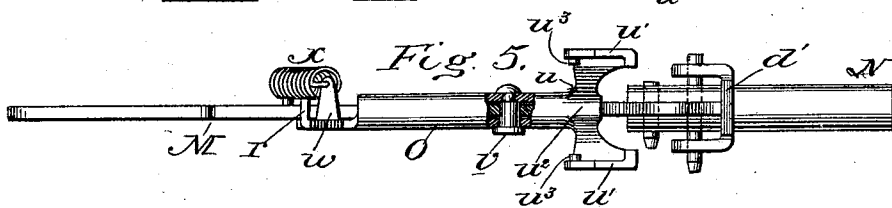
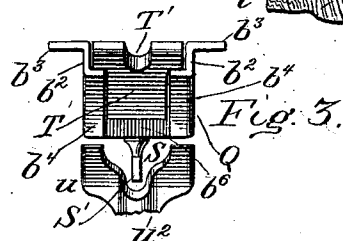
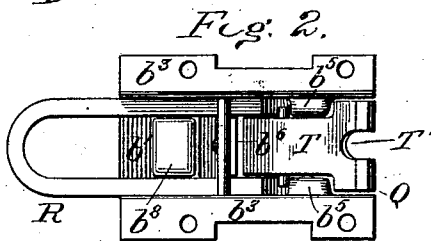
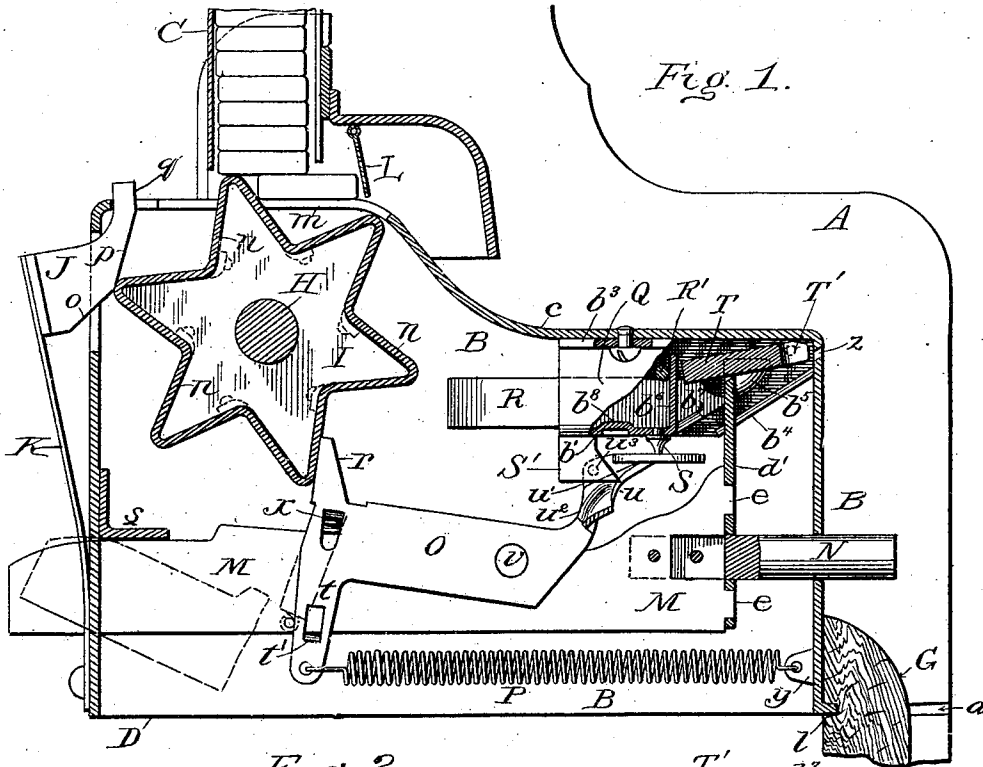
No. 845,284.

PATENTED FEB. 26, 1907.

J. A. WILLIAMS.
VENDING MACHINE.

APPLICATION FILED DEC. 26, 1902.

2 SHEETS—SHEET 1.



Witnesses
Dudley E. Burdine
Fannie Wade

Inventor:
John A. Williams,
by Dodge & Sons,
Attorneys.

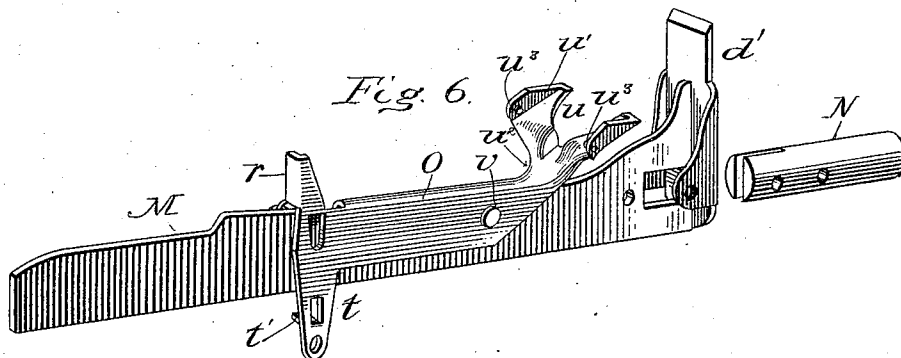
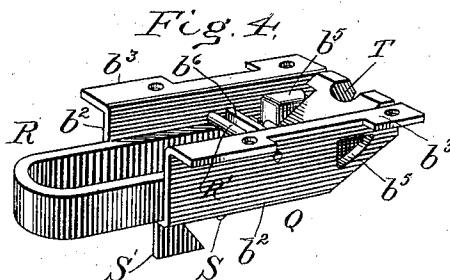
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Witnesses

D. E. Burdick
Fannie Hill

Inventor:

John A. Williams,
by Dodge & Sons
Attorneys

UNITED STATES PATENT OFFICE.

JOHN A. WILLIAMS, OF BROOKLYN, NEW YORK, ASSIGNOR TO UNITED STATES SLOT MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

VENDING-MACHINE.

No. 845,284.

Specification of Letters Patent.

Patented Feb. 26, 1907.

Original application filed February 17, 1896, Serial No. 579,574. Divided and this application filed December 26, 1902.
Serial No. 136,896.

To all whom it may concern:

Be it known that I, JOHN A. WILLIAMS, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention pertains to vending-machines, and is in the nature of an improvement upon that set forth in Letters Patent of the United States granted to me December 4, 1894, and numbered 530,148.

The present application is a division of an earlier application, Serial No. 579,574, filed in my name on the 17th of February, 1896, division being made in compliance with the requirements of the Patent Office and in accordance with its classification and subclassification.

The present application is directed particularly to devices for preventing the fraudulent or unauthorized operation of the machine or the obtaining of goods without depositing the proper coin or coins. The construction of the cabinet or casing within which the apparatus is mounted and various features of construction of the delivery mechanism are omitted from the present application because embodied in the parent application or in another division thereof.

In the accompanying drawings, Figure 1 is a vertical sectional view of the delivery mechanism of a vending-machine embodying my improvements, the parts being shown in the position which they assume during the operation of the machine and when the slide is moved inward about one-half of its travel. Figs. 2, 3, and 4 are detail views of the coin-guide and cut-off, Figs. 2 and 4 showing also the magnet for stopping washers or disks of magnetic metal; Fig. 5, a top plan view of a slide, push-rod, and coin-holder; and Fig. 6, a perspective view of the same with the push-rod detached to illustrate the manner of uniting the parts.

The present invention is the result of observations made in connection with the use of my patented machine above referred to, which, though highly satisfactory, is found susceptible of being made simpler and stronger, as well as more positive and certain in action. So, too, it is found practicable to more perfectly guard against fraudulent manipulation.

The machine as represented in the drawings comprises a case or cabinet A, within which is secured in a manner not necessary here to be described in detail a shell or body B, within which is contained the operative mechanism. A magazine C rests upon the upper level of the shell or casing B, which latter is provided with a slot or slots *m*, one or more, according as there is but one or are several compartments in the magazine. These slots or openings are of less width than the compartment or compartments formed in the magazine for the reception of the goods to be delivered, so that a ledge or support is afforded for the lowermost package or article, which in turn sustains the column above it.

Extending through the shell B, parallel with its front and rear walls, is a horizontal shaft H, upon which are mounted ejector or delivery wheels I, of star form, as shown in Fig. 1. These wheels occupy the same position and perform the same function as the delivery-wheel of the aforesaid patent, but differ therefrom in that instead of being composed of two star-shaped disks connected by cylindrical cross-bars each is now formed with a continuous plate or strip of metal *n*, reaching from one star-shaped disk to the other and conforming thereto in outline, as clearly shown in Fig. 1. This modification of the wheel is rendered desirable by the fact that the cross-bars of the former wheels afforded a hold for hooked wires and like devices and enabled dishonest persons to operate the carriers occasionally without first depositing the proper coin.

Under the former construction the delivery-wheel or ejector carried a spring-pawl having a V-shaped nose or spur, which, entering one or another of a series of notches in the shaft or axle about which the wheel turned, served to hold the wheel against accidental rotation and to cause the latter part of its movement to be performed suddenly and with certainty. Owing, however, to the fact that the spring was necessarily of quite limited strength and that the pawl acted near the center of the wheel, the available force for holding the wheel or for completing its throw was not as great as deemed desirable. I have therefore substituted for the pawl a spring-pressed cam-plate J of the form shown in Fig. 1, one for each carrier or ejector-wheel. As shown in said figure, the

cam-plate has three bearing-faces *o*, *p*, and *q*, the first and last of which bear against opposing faces of two proximate arms of the wheel when the latter is at rest, thus holding the wheel quite strongly against rotation.

When power sufficient to turn the wheel is applied, the upper arm of the wheel leaves contact-face *q*, and the succeeding arm rides upward over face *o*, forcing back the cam-plate *J* until said arm passes the angle or meeting point of faces *o* and *p*, whereupon the supporting-spring *K* of the cam-plate, placed under strain by the outward movement of the latter, suddenly forces the cam-plate inward and carries the wheel forward until said plate bears between the succeeding pair of arms of the wheel. This cam-plate, acting at the circumference of the wheel and being carried by a strong but elastic spring, gives a very reliable and efficient action.

It will be observed that when the wheel *I* is at rest one arm stands in front and another in rear of the lowermost package of the column in the magazine, and hence an advance of one space or the distance from one arm to another will cause the rear one of said arms to carry before it said bottom package or article and to eject it through the opening left for the purpose in the lower part of the front wall of the magazine, whence it passes down beneath the guard to the lower level of the table. To further prevent the wheel from being surreptitiously turned, I place in front of each delivery-opening of the magazine and beneath the shield or guard *E* a pendulous gate or guard *L*, which assists in excluding wires or other devices used to turn the delivery-wheel or to withdraw packages.

To actuate the delivery-wheels, I employ for each a sliding bar *M*, provided with a push-rod *N* and with a lever *O*, having a nose or projection *r*, which when the lever is properly rocked or tipped engages with the delivery-wheel and causes it to make a partial revolution in essentially the same manner as in my former machine. The sliding bars *M* are rounded off at their inner ends to facilitate their entrance beneath a retaining and guiding bar or angle-plate *s*, secured to the rear wall of the shell, and their passage through openings in said rear wall, through which they slide as the push-rods or stems are pressed inward or returned.

The lever *O* of each sliding bar is preferably of the form shown in Figs. 1, 5, and 6—that is to say, it is longitudinally folded to straddle the upper edge of the sliding bar *M*, to which it is pivoted and is formed with an upwardly-projecting nose *r* and a depending arm *t* at the inner end and with an upwardly-inclined fork-shaped coin-holder *u* at the forward end.

To pivot the lever to the sliding bar, I employ a shouldered rivet *v*, the shoulder of which prevents the compression or drawing

together of the two walls or leaves of the folded lever, and thus precludes binding of the lever upon the sliding bar, the body of the rivet being tightly driven into its hole in one of the walls. This is found of some considerable importance in practice, as it is essential that all parts work freely.

To limit the descent of the inner end of lever *O*, so that it shall not bind upon the upper edge of bar *M*, and to constitute a means of attaching a spring, I punch or cut from the body of the lever a tongue *w*, Fig. 5, bending the same at right angles, as indicated. To this spur is or may be attached one end of a coiled spring *x*, the other end of which is attached to the bar *M*, as shown in Fig. 5 and indicated by dotted lines in Fig. 1. To prevent the lever *O* from tipping too far upwardly at its rear end, a lug *t'* is cut out of the arm *t* and bent at right angles thereto, engaging against the under face of the sliding bar *M* when the rear end of said lever *O* is in its highest position.

To the lower end of arm *t* of lever *O* is attached one end of a long and elastic spiral spring *P*, the other end of which is made fast to a perforate tongue *y*, punched from the front wall of shell *B* and turned inward, as shown in Fig. 1. Any other convenient means of attachment may be adopted, though this is simple, cheap, and efficient. The spring *P* serves the double purpose of drawing and holding lever *O* down upon slide or bar *M*, or assisting to do so, and of drawing and holding said bar forward.

The coin-holder *u* at the forward end of lever *O* is formed integral with other parts of said lever and comprises a bifurcated plate with upturned edges or side walls *u'* and a grooved or channeled shank or neck *u''*. Each side wall *u'* is provided with a short inwardly-projecting stud *u'''*, the distance between the inner ends of which is such as to preclude the passage between them of the coin for which the machine is designed. Space is left beneath the studs or between them and the upper face of the coin-holder sufficient to permit coins, tokens, or disks thinner than the proper coin to pass beneath them, but insufficient to permit the passage of one of proper thickness. So, too, coins and the like of proper thickness, but of smaller diameter than the proper coin, will pass between the studs.

The front wall of the shell *B* is provided with a slot or opening *z* for coins in line with each coin-holder *u*, said slots being cut obliquely through the metal, as shown in Fig. 1, for the purposes explained in my prior patent. Within the shell *B* and in alignment with each slot or opening *z* is a coin chute or guide consisting of inwardly-turned lips or flanges *b'*, formed upon the beveled walls of a box-like sheet-metal shell *Q* of the form shown in Figs. 1, 2, 3, and 4. This consists

of a horizontal lower plate or bed b' , side walls b^2 , provided at their upper edges with lateral flanges b^3 , the side walls being beveled, as shown, and provided with inturned flanges b^4 , which constitute the coin-chute proper, and with inwardly-pressed bosses b^5 , the lower faces of which are parallel with, but separated somewhat from, the flanges b^4 , thus leaving a channel or passage-way for the coin between them, but preventing the entrance of the coin otherwise than at the angle of the slot and flanges.

The forward part of the bottom b' of the shell Q is bent upward to form a guard b^6 , Figs. 1, 2, 3, and 4, to prevent wires or other implements being passed back through the shell, two small ears b^7 being also cut from the bottom and turned upward, as shown in Fig. 1, to form abutments over which the hooked or notched ends of a permanent magnet R engage, as shown. The magnet rests upon the bottom b' of shell Q and abuts against the rear walls of the bosses b^5 , so that it cannot move forward. A pin R' , passing over the top of the magnet and through the walls b^2 of the shell, precludes its lifting up, and the ears b^7 prevent its backward withdrawal, so that it is held firmly in place. The forward ends or poles of the magnet-arms under this arrangement form continuations of the upper walls of the coin-channel, and any magnetic disk or article introduced into the coin chute or channel will adhere to said poles.

The ears b^7 , which are of brass or other non-magnetic material not only serve to aid in holding the magnet in place, but they also serve in conjunction with the arm d' as a stripper for magnetic objects inserted in the machine. If, for instance, an iron washer or disk be inserted, it will be held by the magnet, and as the arm d' is pressed inwardly it will force the disk along off the ends of the magnet and onto the ears b^7 , where the disk will drop off or be forced against a stud S' and ride off. Non-magnetic material is necessary to this action of the ears b^7 .

S indicates a stud, preferably made of iron or steel, projecting downward from the bottom b' of shell Q near the forward end of the latter and in such position as to engage any coin, token, or disk held by the coin-holder as the latter moves inward.

To preclude the insertion of a coin when the slide and coin-holder are moved inward, I provide a gravitating gate or cut-off T, which is hinged or pivoted in the forward ends of the side walls of shell Q, as shown in Figs. 1, 2, 3, and 4, and I provide the sliding bar M with an upright arm d' , which as the slide moves inward rides beneath the rear end of said gate or cut-off, thereby elevating it and depressing the front end, causing the latter to swing across the coin-slot and to close it, as in Fig. 1. The arm d' also serves

the further purpose of carrying from the magnet-poles anything that may adhere to them; but the relative positions of the coin-holder and the arm d' are such that the coin-holder will move out of the way of the detached article and permit it to drop into the coin-receptacle.

In Figs. 1, 5, and 6 I have illustrated a simple and preferred way of connecting the sliding bar M, push-rod N, and arm d' . As shown, bar M is provided with tenons e' to enter mortises in the body of plate or arm d' . It is also provided with an opening to receive the inner end of rod N, which latter is slotted to straddle bar M and is passed through an opening in plate or arm d' . When the parts are duly assembled, as in Figs. 1 and 5, two pins or rivets are passed through the rod and the bar, one of which passes also through ears of plate d' , as in Fig. 5, thus binding all together. The manner of introducing the sliding bars M is indicated by dotted lines in Fig. 1. Being too long to enter directly, they are started at an angle and afterward raised to proper level, as shown. It will be noted that the cam-plate J enters the shell B through an opening in the rear wall of the latter and that its upper extremity projects through an opening in the top of said shell, the end of which opening limits the rearward movement of the cam-plate. Sliding rod M is provided with a stop to limit its movement and prevent straining of spring P.

The operation of the apparatus is as follows: If a proper coin be passed through the coin-slot, it will glide down the flanges of ways b^4 and into the coin-holder u , descending therein until its edges are arrested by the studs. The push-rod N is then pressed inward, and the coin coming into contact with stud S causes lever O to rock upon its pivot, thus throwing its inner end upward and causing its nose r to engage with an arm of wheel I and to partially rotate said wheel. As the coin-holder moves beneath the stud S the support of the coin passes beyond the stud, which consequently rocks the coin upon the edge of the holder and effects its discharge therefrom. Before this occurs, however, the arm of wheel I, which at the outset bore against face o of cam-plate J, rides off said face and passes the angle or meeting point of faces o and p , whereupon the cam throws the wheel quickly forward, ejecting the lowermost package or article quickly and certainly. If a magnetic disk instead of a coin be inserted, it is first caught by the poles of the magnet and later swept therefrom into the coin-receptacle, and the same is true of a magnetic washer. If a washer of non-magnetic material and of due thickness be introduced, it will be withdrawn from the coin-holder by the stud S, which enters its central opening, and consequently presents no bearing-surface between the end

of said stud and the end of lever *u*. Disks or washers thinner than the proper coin and not magnetic will pass beneath the studs *u*³ and fall into the coin-receptacle without causing the engagement of the actuating slide and ejecting-wheel. Disks of lead, paper, glass, and other materials not possessing the necessary stiffness and strength will be bent, broken, or indented by the stud *S* and drawn out of the holder, so that it will be impracticable to operate the device without using a proper coin or a metal disk of practically equal or greater intrinsic value, as brass, copper, or the like.

Upon reference to Figs. 3 and 4 it will be seen that the box or shell *Q* is provided on its under face *b'* at its rear end with an arm or clearer *S'*, extending downwardly therefrom, its front face being beveled, as shown in Fig.

4. The toe or point of the beveled portion extends beneath a rounded or upwardly-extending recess *b*⁸, formed in the shell *Q*. This recess provides a greater clearance-space for the coin when tipped than would be the case were the under face extended straight across. The toe and beveled face of arm *S'* clear the fork *u* as it is pushed rearwardly of any paper which may be inserted therein, which is oftentimes done. When paper is inserted in the machine, it tends to elevate the rear end of the gate *T*, and consequently close the slot *z*, and to provide for its withdrawal said gate is formed with a recess *T'* to permit the insertion of a wire or rod by which it can be picked out. The arm *d'* passes between the poles of the magnet every time the machine is operated and acts when in such position as a keeper for the magnet. This feature of the machine is of the greatest importance, for, as is well known, if a magnet be left without its keeper it will soon lose its magnetic action. The bar *M* and the arm *d'* are of course formed of magnetic material.

In Fig. 1 I have shown in dotted lines a construction of the delivery-wheel *I*, made up in sections, the different sections being riveted together to form the wheel.

It is obvious that details may be varied more or less within the scope of my invention, as by using castings or forgings for parts here described, as of sheet metal bent to shape, or by proportioning the ejector-wheel to handle articles of a different character, form, or size by making the same solid or by connecting the slide and push-rod in a different manner, &c. I do not, therefore, mean to limit myself strictly to details herein shown and described.

Having thus described my invention, what I claim is—

1. In a vending-machine, the combination of a casing having a wall provided with a coin-slot; a shell *Q* within said casing, pro-

vided with upright walls *b*² at opposite ends of the coin-slot, with inclined guides or flanges *b*⁴ extending downward obliquely from the wall in which the coin-slot is made, and with bosses *b*⁵ projecting inward above said flanges; and a magnet *R* having its poles fashioned and arranged to form continuations of the lower faces of said bosses, the bosses and magnet-poles being substantially parallel with said flanges.

2. In combination with the shell or casing of a vending-machine, having a substantially horizontal coin-slot; a shell *Q* within said casing, provided with a substantially horizontal bottom *b'*, upright side walls *b*², fastening-flanges *b*³, guiding-flanges *b*⁴ extending obliquely downward from the coin-slot and projecting inward from the walls *b*² and bosses *b*⁵ projecting inward from the walls *b*², above the flanges *b*⁴; and a magnet *R* secured in said shell *Q*, and having its poles carried into close proximity to the flanges *b*⁴ and substantially parallel therewith.

3. In a vending-machine, the combination of a shell *Q* provided with flanges *b*⁴ to support and guide a coin, bosses *b*⁵ to prevent said coin from lifting, and ears *b*⁷; a magnet having its poles adapted to fit over or engage with said ears and to abut against the bosses; and a pin passing through the walls of the shell and over the magnet, substantially as shown and described.

4. In a vending-machine, the combination of an inclined coin-chute having on its lower side coin-supporting flanges; a magnet having its poles arranged above said flanges and substantially parallel therewith; and ears *b*⁷, of non-magnetic material, adjacent to said poles and forming a continuation of the walls or faces formed by said poles, substantially as and for the purpose set forth.

5. In a vending-machine, the combination of a coin-chute; a magnet having its poles arranged in proximity thereto and in position to attract and hold magnetic substances passing through or over said chute; a slide for actuating the delivery mechanism; and a magnetic arm or member movable with said slide and serving when the slide is operated, to pass between the poles of the magnet and act as a keeper therefor to maintain its proper magnetization.

6. In a vending-machine, the combination of a containing shell or casing provided with a coin slot or opening; a shell *Q* within said casing provided with a coin way or chute, and with non-magnetic ears *b*⁷; a magnet *R* mounted within said shell *Q* and having its poles arranged in proximity to the coin chute or way and forming a continuation of the non-magnetic ears *b*⁷; a slide for actuating the delivery mechanism of the vending-machine; and an arm *d'* of magnetic material adapted to pass between the magnet-poles

and between the ears b' , substantially as set forth, whereby it is adapted to remove from the magnet-poles any body adhering thereto, to carry the same to the non-magnetic ears
5 where it cannot be held by magnetic attraction, and to pass between the poles of the magnet and thus act as a keeper for the magnet to preserve its proper magnetization.

In testimony whereof I have signed my name to this specification in the presence of 10 two subscribing witnesses.

JOHN A. WILLIAMS.

Witnesses:

H. C. RAWLEY,
F. J. MASTERSON.