No. 868,989. PATENTED OCT. 22, 1907.

L. U. KENT.

AUTOMATIC VENDING MACHINE.

APPLICATION FILED SEPT. 5, 1905.

2 SHEETS—SHEET 1.

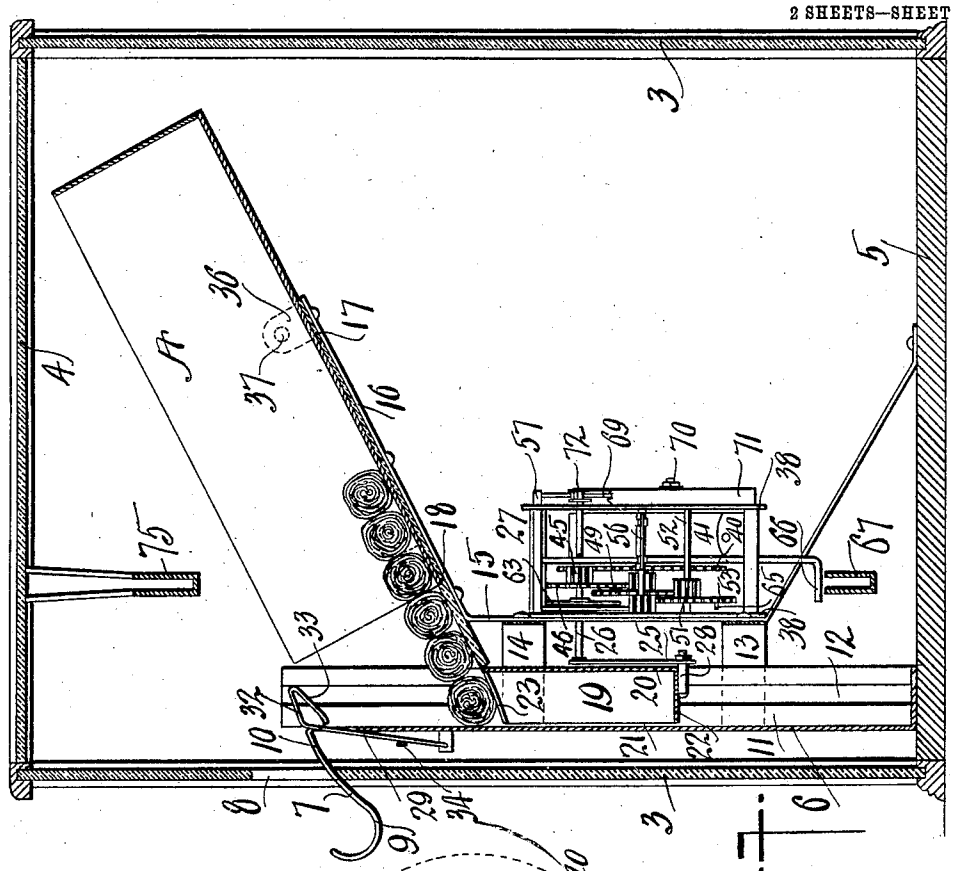


FIG. 1.

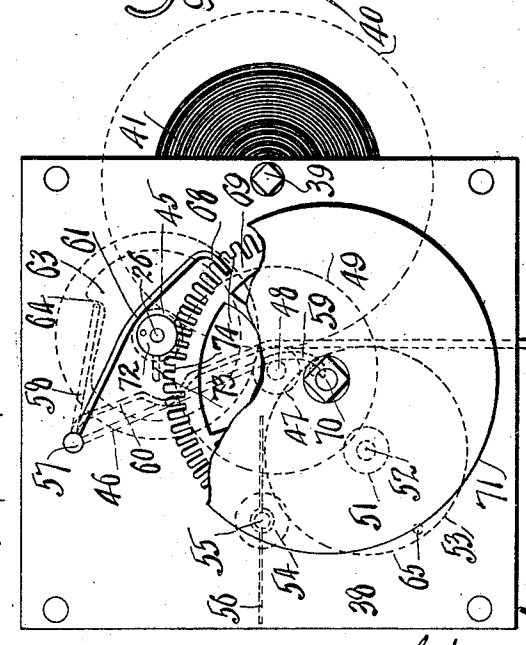


FIG. 2.

Witnesses:-
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A. B. La Porte

Inventor.
Leon U. Kent
By Chas. A. La Porte Atty.

THE NORRIS PETERS CO., WASHINGTON, D. C.

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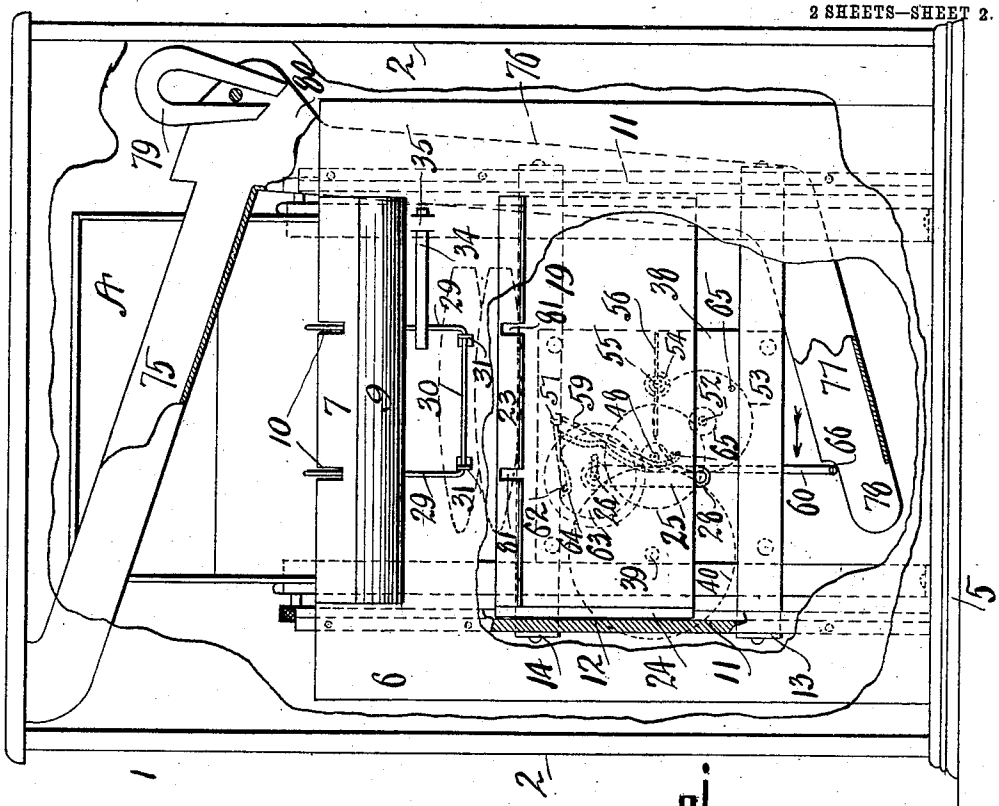


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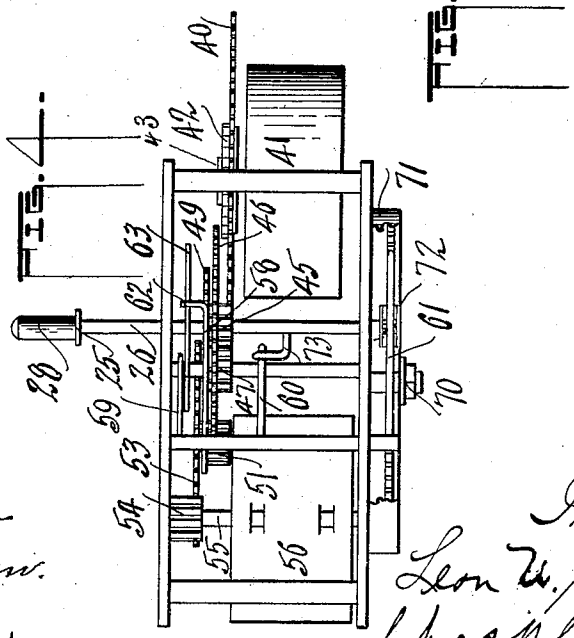


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UNITED STATES PATENT OFFICE.

LEON U. KENT, OF ELMWOOD, ILLINOIS, ASSIGNOR OF ONE-HALF TO JAMES D. PUTNAM, OF ELMWOOD, ILLINOIS.

AUTOMATIC VENDING-MACHINE.

No. 868,989. Specification of Letters Patent. Patented Oct. 22, 1907.

Application filed September 5, 1905. Serial No. 277,000.

To all whom it may concern:

Be it known that I, LEON U. KENT, a citizen of the United States, residing at Elmwood, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Automatic Vending-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to an automatic vending machine, particularly for use in connection with the vending of cigars from the original packages, such as cigar boxes.

The machine has been devised with special reference to the requirements of the Internal Revenue Department of the United States Government, wherein the cigars may be vended from the cigar box in which they are packed, which is supported wihtin a transparent case in such a manner that an inspector when inspecting the machine, can readily see the factory number contained on the cigar box and also the caution notice, which is one of the requirements of the department in approving a machine of this character.

The invention has for its principal object to produce a machine of the type referred to that automatically delivers a cigar or cigars directly from the original package or box containing them, without the use of any force feed conveying means for conveying the cigars from the box to the cigar discharging device; the same consisting of a cigar lift, preferably adapted to have a vertically reciprocating motion imparted to the same by a suitable coin controlled mechanism.

The invention has for its further object, in combination with a cigar lift or suitable cigar discharging device, mechanism for intermittingly actuating the same, which contains a regulating device governing the discharge of the cigars from the machine, which adapts the machine at pre-determined intervals, to discharge successively upon successive operation of such mechanism, one cigar at a time, and again at pre-determined intervals during such successive operations, the regulating device provides for the discharge of a series of cigars at one operation, which may be "two," "three" or "five," or any other number as may be desired, which will be determined when constructing the regulating wheel.

In automatic vending machines of this character, it is a fact that a slug of base metal of the proper size and weight, will operate the machine just as well as the coin for which it is intended. In vending machines, this means the sale of goods for worthless slugs, and one of the objects of this invention is to obviate this difficulty by discriminating between coin and slugs by throwing out the slugs without operating the vending apparatus.

For a further and full description of the invention herein and the merits thereof, also to acquire a knowledge of the details of construction, of the means for effecting the result, reference is had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which:—

Figure 1 is a vertical transverse section through my improved vending machine; Fig. 2 is a front elevation of the same with parts of the case and the apparatus itself broken away to more clearly show the arrangement and operation of the parts; Fig. 3 is an enlarged rear elevation showing the mechanism which I employ for operating the cigar discharging device or lift, with the containing case of the regulating wheel broken away; Fig. 4 is a plan of the device shown in Fig. 3.

Like numerals of reference indicate corresponding parts throughout the figures.

In the drawings, 1 denotes a case having transparent sides 2 and 3 and a transparent top 4 supported by a base 5. No means is here shown, by means of which access may be had to the interior of the case, as any suitable arrangement with locking device may be provided.

At a suitable point in proximity to the side 2 and supported on the base 5, is an upright wall or plate 6, which is provided with the outwardly extended shelf portion 7, passing through a slot 8 cut in the transparent side 2 and provided with the receiving cup 9; and the vertical portion of the wall or plate 6 is provided with the short vertically disposed slots 10, which also extend out a suitable distance into the shelf portion 7, for a purpose which will be described. At or near the opposite ends of the wall or plate 6, the same is secured to the vertical standards 11, each of which are provided with the longitudinal channel or groove 12. And 13 and 14 denote transverse braces which are secured at their opposite ends to the standards 11, and are spaced apart, somewhat as seen in the figures, for the purpose of supporting suitable legs to which is attached a rest for supporting a cigar box or suitable receptacle. The legs referred to are indicated as 15, and in addition to being secured to the braces 13 and 14, are secured at their lower ends to the base 5 of the case 1 and the upper ends of the said legs are bent backwardly and upwardly at a suitable incline, as shown at 16. Secured to the inclined portions 16 of the legs 15, is seen a rest 17 which may be a transparent plate, or a plate sufficiently cut away and yet capable of supporting a receptacle so that a person looking into the case may see the bottom of such receptacle and note anything that may be stamped, impressed or pasted on the bottom thereof. As shown, the rest is cut away to form an off-set as at 18, whereby

the rear and larger surface of the said rest is lower than the forward portion thereof, the purpose of which will be further explained. The forward and lower end of the said rest is positioned with reference to the plate or wall 6, to enable the cigar lift to be carried and vertically movable between the inner face of the wall or plate 6 and the forward end of such rest.

The cigar lift which has been referred to, is indicated as 19, having preferably the rear wall 20, the side walls 21, the bottom portion 22 and the upper slightly concaved cigar rest 23. The side walls 21 are provided with the vertically carried off-set portions 24 which are movable in the channels or grooves 12 of the standards 11. Arranging the lift 19 with the off-sets 24 capable of movement in the grooves of the standards 11, retains the lift in a suitable fixed position relative to any lateral movement and insures a perfect operation of the lift for the purpose of receiving and discharging the cigars. The lift is so arranged that in its normal lower position, the upper end of the rear wall 20 is even with the upper face of the front end of the rest 17 and in close proximity thereto. This rest is adapted to drop or move downwardly, through its own weight, but is elevated, and retarded in its downward movement by means of a crank arm 25 connected at one end to a driven shaft 26 of a coin controlled or clock actuated mechanism, referred to generally as 27. On the lower end of this crank 25, just referred to, is secured a roller 28 on which rests the bottom 22 of the lift 19. Thus it will be seen, that in the actuation of the shaft 26, the arm 25 and its roller 28 will describe a complete circle and in raising, will elevate the lift 19 and in lowering, the lift will drop of its own weight, always keeping in contact with the roller 28, which retards its movement and causes it to travel uniformly in its downward movement with the crank, the same as it does in its upward movement.

29 indicates two spring fingers which are integral with a cross piece 30 pivotally carried in brackets 31 secured to the front face of the wall or plate 6. The spring fingers 29 extend upwardly and pass through the slots 10 in the upper end of the wall or plate 6 and their upper ends are carried inwardly and inclined upwardly at 32 and then turned and inclined downwardly as indicated at 33. The spring fingers are yieldingly held inwardly in the position seen in Fig. 1, by means of a spring plate 34 which is secured at one end to the plate 6, as at 35. A cigar being deposited on the upper edge of the lift 19, and the lift elevated, the cigar engaging with the portions 33 of the fingers 29, will force the same outwardly, and as the lift starts to lower, the fingers will be pressed inwardly by the spring plate 34 and receiving the cigar on the upper inclined portion 32 of the said fingers, will allow the cigar to roll off of the lift on to the shelf 7, and passing through the opening 8 in the case, will drop into the receiving cup 9. The downwardly inclined portions 33 of the fingers 29, also serve to prevent more than one cigar being discharged with one elevation of the lift 19, by either causing the top cigar, if more than one is on the lift, to be thrown backwardly into the box or guarding the cigars as they are raised high enough to move quickly back beneath the top cigar and prevent the discharge of more than one at a time.

In the drawings, A denotes a cigar box which is adapted to be supported on the rest 17 with its lower end engaging the off-set 18, that end of the cigar box from which it is aimed to discharge the cigars, being removed prior to placing the box in the case, and the off-set 18 in the rest, will be in depth to correspond to the thickness of the bottom of the box, so that the cigars, by reason of the incline at which the rest and the box is carried, in rolling out of the box, to seat themselves on the lift 19, will meet with no obstruction or off-set, and further obviates the engagement of the cigars with any off-set or the edge of the box, as they move backwardly or are pushed out of the way as the lift is elevated. The off-set 18 will hold the box against any forward movement and to fix the same against any lateral movement, I provide the ears 36 extending up from the extensions 16 of the legs 15, with which have a threaded connection, adjusting screws 37 adapted to engage the sides of the box and secure it against lateral movement, which will insure a perfect and uniform feed from the box to the lift.

The coin actuated mechanism 27 may be any suitable clock mechanism adapted to the uses of the apparatus herein shown, but for the purpose of showing the manner of operating and controlling the lift through the crank 25, I will describe the mechanism which I have adopted and the manner of controlling the same by means of a coin. 38 indicates front and rear plates suitably connected and supported on the cross braces 13 and 14, and between such plates is revolubly mounted a train of gearing actuated through a spring controlled shaft 39 on which is carried a gear wheel 40 containing the desired number of teeth. The shaft carries the spring 41 and is provided with the usual ratchet wheel 42 engaging a ratchet pawl on the gear wheel 40, so that upon the release of a mechanism for controlling the shaft 39, the spring 41 will unwind, impart a movement to the ratchet wheel 42 which in turn will rotate the wheel 40 through the ratchet pawl 43. The wheel 40 meshes with a pinion 45 carried by the shaft 26, which has heretofore been referred to as the shaft carrying the crank arm 25, which also carries a larger gear wheel 46. The gear wheel 46 meshes with a pinion 47 carried by a shaft 48 which said shaft also carries a larger gear wheel 49 in mesh with the pinion 51 on a shaft 52. And the shaft 52 carries a larger gear wheel 53 in mesh with a pinion 54 on a governor shaft 55 carrying a fan governor thereon, as shown at 56.

Journaled in the plates 38 at a suitable point therein, is a rock shaft 57 to which is attached the rods 58, 59, 60 and 61, the latter carried on the outside of the rear end of the said rod. The rod 58 has a lateral extension 62 at its end, which is adapted to ride on a cam wheel 63 and at intervals, drop into a depression or cam seat 64 therein. The rod 59 has its lower end positioned so as to engage pins 65 carried by the wheel 53. The rod 60 extends down through the mechanism and has its lower end provided with the lateral extension 66, overlying the lower end of a coin chute, runway or trough 67, and the rod 61 is provided on its outer end with a finger 68 adapted to engage with the teeth of a wheel 69, suitably journaled at 70 on the rear plate 38 and is preferably carried within a case 71 which is provided with a slot, not shown, to adapt the finger 68 of the rod 61 to drop through the same to engage the teeth of the wheel 69. Adapted to mesh with the teeth of

this last mentioned wheel, is a one toothed pinion 72 carried on the shaft 26, the rotation of such shaft being so timed that with every revolution thereof, the wheel 69 will be moved the distance of one tooth.

The inoperative position of the parts is substantially as shown in the drawings, with the rod 58 in the cam depression of the cam wheel 63, with the lower end of the rod 59 engaging one of the pins 65 to lock the position of the wheel 53 and the finger 68 of the rod 61, as shown, engaging a tooth of the wheel 69. To release these parts just described, which will set into motion the gearing referred to and thereby rotate the crank 25 and raise the cigar lift, the lower end of the rod 60 must be moved in the direction indicated by the arrow in Figs. 2 and 3, which will raise the rod 58 from the cam wheel, release the rod 59 from the pin 65 on the wheel 53 and disengage the finger 68 of the rod 61 from the tooth of the wheel 69, when the spring driving shaft 39 will impart motion through the train of gearing described and rotate the shaft 26 one complete turn, when the finger 68 of the rod 61 will drop into a tooth on the wheel 69 and synchronously therewith the rod 58 will ride off of the off-set of the cam wheel 63 and the rod 59 will be moved into a position to be engaged by one of the pins 65. The rod 61, and in fact those coöperating therewith, which are attached to the rocking shaft 57, are so positioned that through their own weight, the tendency is for the same to drop downwardly so that when the off-set of the cam coincides with the extension 62 of the rod 58, the extension will drop into the same; but to assist in such movement, I have provided a short arm 73 carried by the shaft 26, which, when the shaft makes its complete revolution, will engage with the rod 60 and force it back to its original position, which will in turn rock the rock shaft and assist in causing the parts to assume an inoperative position when the finger 68 of the rod 61 will drop into a tooth of the wheel 69.

The wheel 69 is a regulating wheel, that is to say, with the movement of the rod 60, the rod 61 will be elevated and adapt the pinion 72 to move the wheel 69 the distance of one tooth and in so doing, the shaft 26 which carries the pinion 72, will elevate the cigar lift 19 to discharge one cigar. However, I have provided at intervals on the wheel 69, one or more short teeth 74, and which is to provide for the continued operation of the train of gearing for the purpose of elevating the lift 19 one or more times in succession, for the purpose of discharging one or more cigars at one operation of the train of gearing by a single coin. It is necessary for the finger 68 of the rod 61 to drop into a long tooth of the wheel 69 to allow the coöperating rods on the rock shaft 57 to place the mechanism in an inoperative position. Thus it will be seen, that when a short tooth of the wheel 69 coincides with the finger 68, it prevents the finger 68 from dropping its full depth, which in turn will prevent the full operation of the rock shaft 57 to position the rods 58 and 59 to lock the parts heretofore referred to, with which they engage for the purpose of placing the gearing in inoperative position; and thus allow one or more cigars to be discharged at one operation of the train of gearing.

Referring again to the coin chute, runway or trough 67, the same consists of the inclined upper portion 75 which communicates with an opening in the top of the case, not shown, and also with a vertically forwardly inclined hollow portion 76 which merges into the lower horizontally inclined portion 77. The coin dropped into the portion 75 will find its way to the portion 76 and thence to the portion 77, and in its movement will engage with the lower end of the rod 60 for rocking the shaft 57 in the manner described; the coin, upon the operation or moving away of the rod 60, will pass out of the open end 78 of the portion 77 and drop onto the base of the case. As was intimated in the fore part of the specification, I have provided means for discriminating between a coin and a slug, when one or the other is dropped into the runway or chute 67, which consists in supporting a magnet 79 in an open slotted end 80 at the junction of the portions 75 and 76 of the chute or runway. With this arrangement, if a metal slug, such as an iron washer, is dropped into the portion 75, in its downward movement towards the portion 76, it will strike the magnet 79 which holds it from dropping into the upright hollow portion 76, when the slug will roll under the magnet and out through the slotted opening 80, its own momentum causing it to drop from the magnet on to the base of the casing without causing the operation of the mechanism, as has been described, for elevating the cigar lift.

It is to be understood that the apparatus as here shown may be supported in any suitable case and of any design and the case may be large enough to contain one or more such devices as shown in the figures, for vending different brands of cigars and cigars that will retail at five cents (5c.) and upward; also, that while the cigar box herein shown is minus a lid, the case may be of such a height that the lid may be swung up and allowed to remain in such position; also that the arrangement of the coin chute or runway may be modified and positioned in any other suitable manner, so long as the same results are obtained as herein provided.

For the purpose of allowing a free movement of the upper ends of the fingers 29 when the lift 19 has reached its extreme upper position, I have provided the slots 81 in the lift which will enable the fingers to return to their innermost positions beneath a cigar when the same is discharged by entering the slots 81 of the lift and at the same time not interfere with the return or downward movements of the said lift.

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

1. In a vending machine, the combination of an inclined receptacle support, a lift vertically reciprocable in advance of the support and having a rest at its upper end, which, when the lift is in its lowermost position has its upper face in a plane with the support, grooved standards in which said lift is mounted to reciprocate, an upright plate in front of the lift, an outwardly extending slotted shelf carried by said plate, spring fingers also carried by said plate and projecting into the slots of said shelf, and mechanism for raising said lift embodying a driven shaft, a crank arm on said shaft and a roller on said arm upon which the lift rests.

2. In a vending machine, the combination of a means for supporting a cigar box in an inclined position, a lift arranged to reciprocate vertically in advance of the cigar box adapted to be mechanically elevated, and to lower by gravity, said lift embodying a cigar rest upon its upper end, adapted, when the lift is in the lowered position to lie in a plane with the support for the cigar box, means arranged at opposite sides of the lift for guiding the same

in its vertical movement and holding the same against lateral movement, an inclined slotted shelf arranged above the lift and projecting forwardly therefrom, spring fingers also arranged above the lift and projecting into the slots of said shelf with their ends bent inwardly and lying over the upper end of the lift, and mechanism for raising said lift.

3. In a vending machine, the combination of a support arranged at an incline for supporting a cigar box at an incline, a lift arranged to reciprocate vertically in advance of the inclined support and having a cigar rest at its upper end lying normally in a plane with the said support, and means for operating said lift comprising a driven shaft, an arm carried thereby, and a roller carried by said arm on which the lift rests.

4. In a vending machine, the combination of an inclined support, a lift arranged to reciprocate vertically in advance of the support, and adapted to be mechanically raised and to lower by gravity, grooved standards in which said lift reciprocates, a plate arranged in front of said standards, a slotted shelf carried by said plate and projecting forwardly therefrom, spring fingers carried by the plate and projecting through the slots in said shelf with their inner ends turned inwardly to lie normally above the upper end of the lift and means for raising said lift comprising a driven shaft, and a crank arm thereon from which the lift is supported.

5. In a vending machine, the combination of an inclined support, a lift arranged to reciprocate vertically in advance of said support and having a cigar rest at its upper end which when the lift is in its lowermost position is in a plane with the said support, means for guiding said lift in its vertical movement, means arranged above the lift and controlling the discharge of goods therefrom, and means for operating said lift comprising a driven shaft, a crank arm carried thereby, and a roller carried by the crank arm on which the lift is supported and with which it engages at all times during its vertical movement or while at rest in its lowermost position.

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

LEON U. KENT.

Witnesses:
ALICE GILLIAM.
CHAS. W. LA PORTE.