

No. 811,396.

PATENTED JAN. 30, 1906.

J. HEINRICH, J. SCHMIDT & C. L. ETHERIDGE.

MECHANISM FOR FEEDING CIGARS IN VENDING MACHINES.

APPLICATION FILED APR. 3, 1905.

4 SHEETS—SHEET 1.

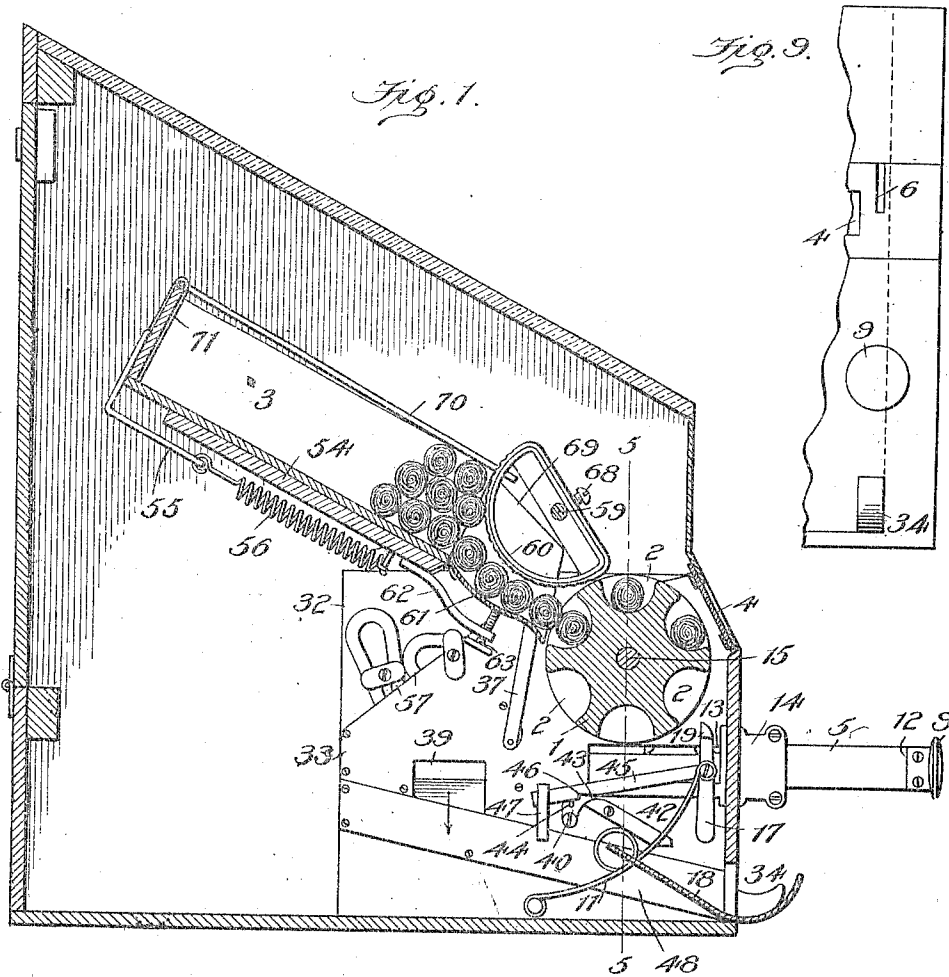


Fig. 9.

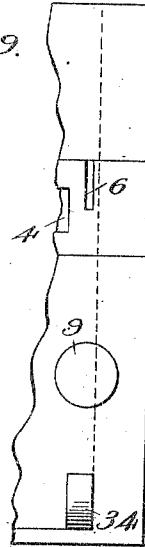


Fig. 1.

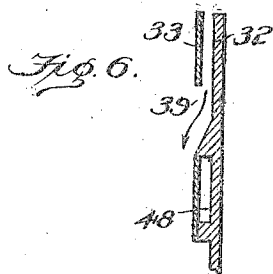


Fig. 6.

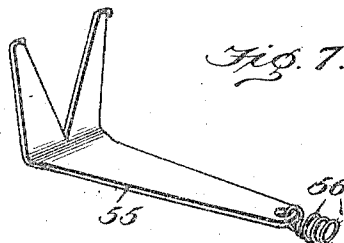


Fig. 7.

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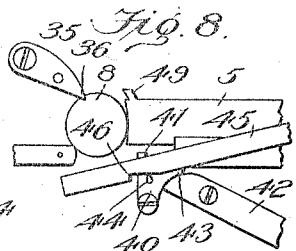
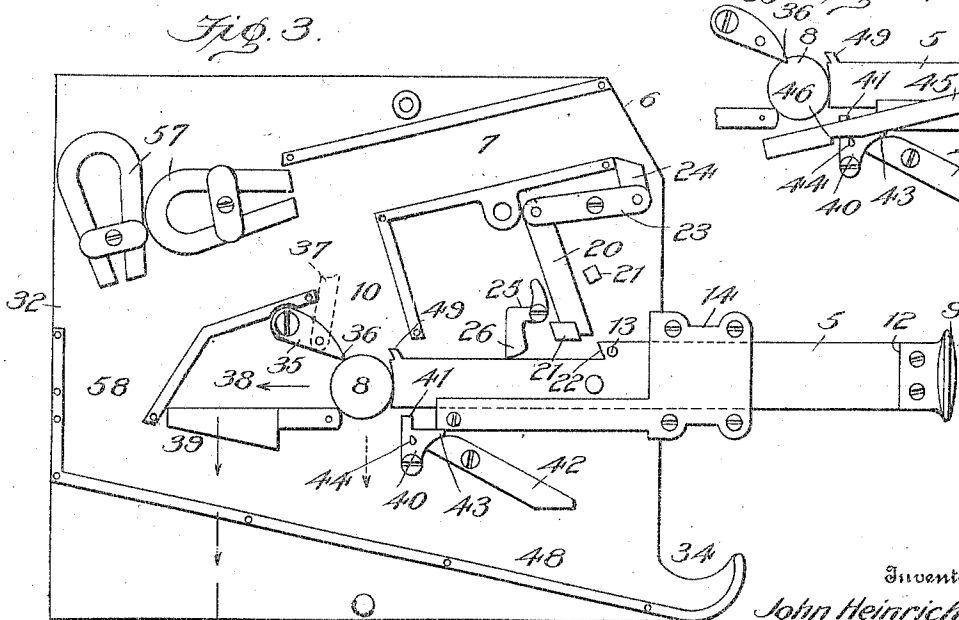
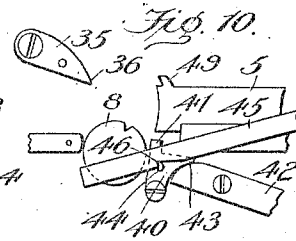
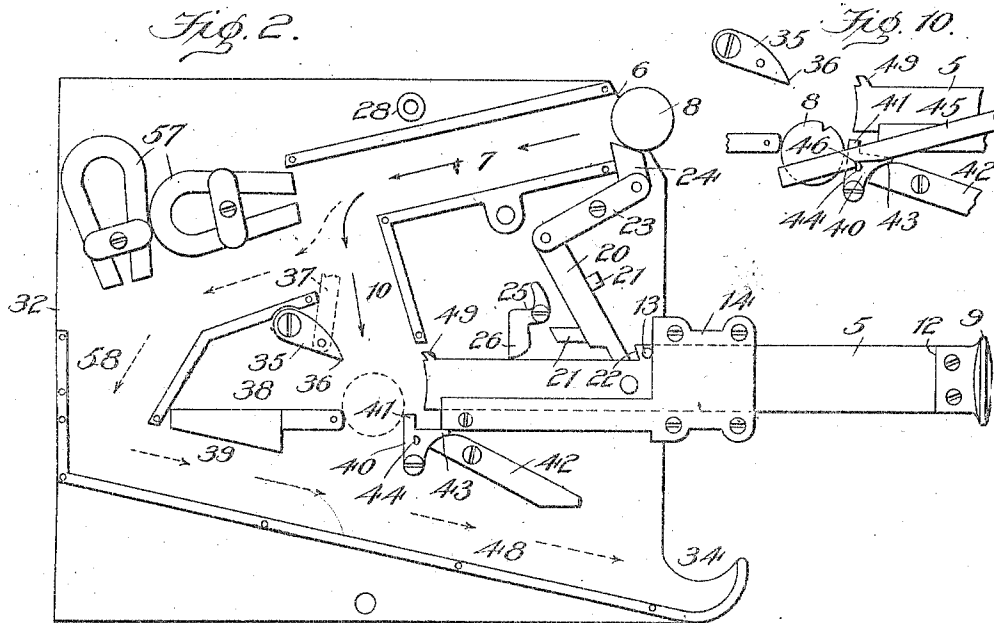
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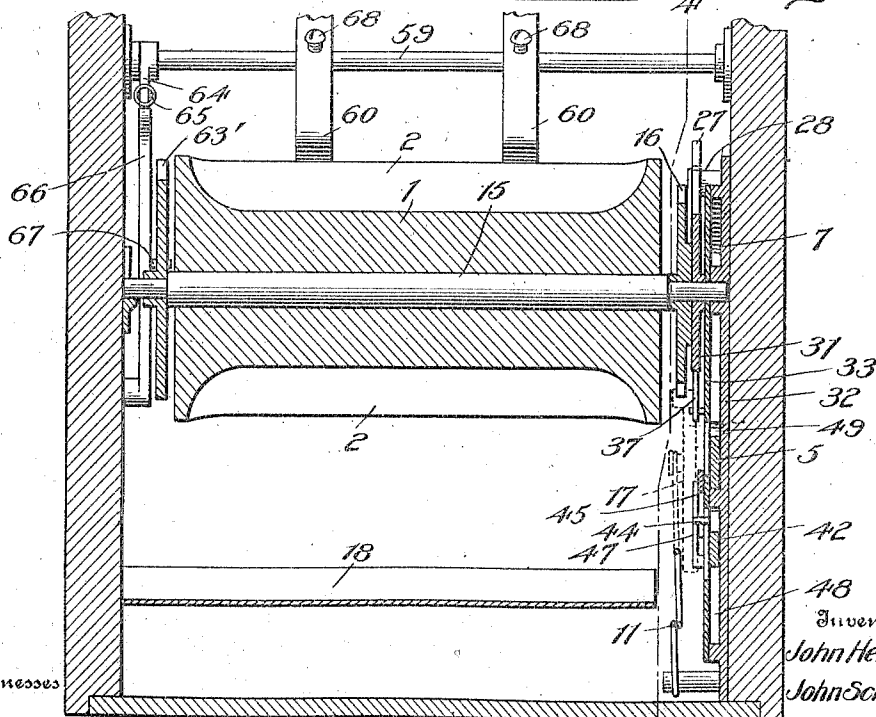
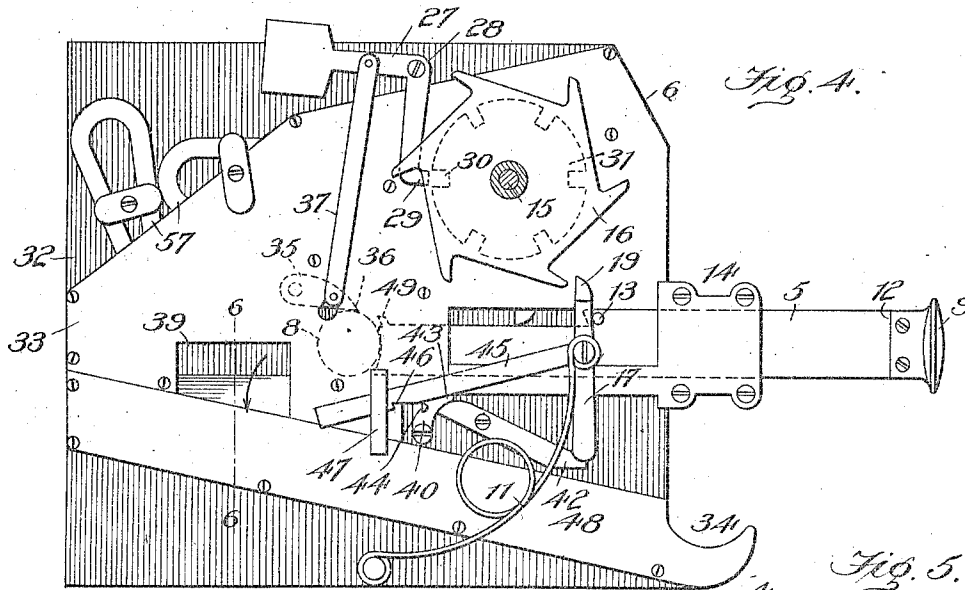
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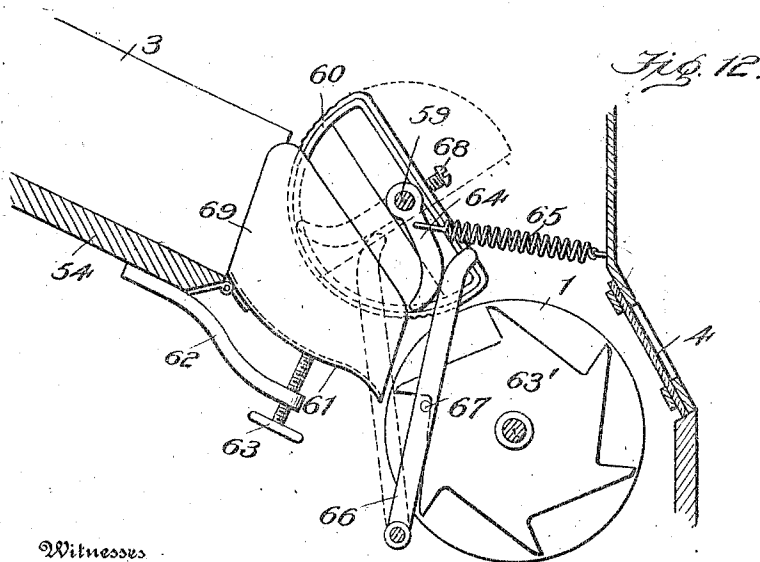
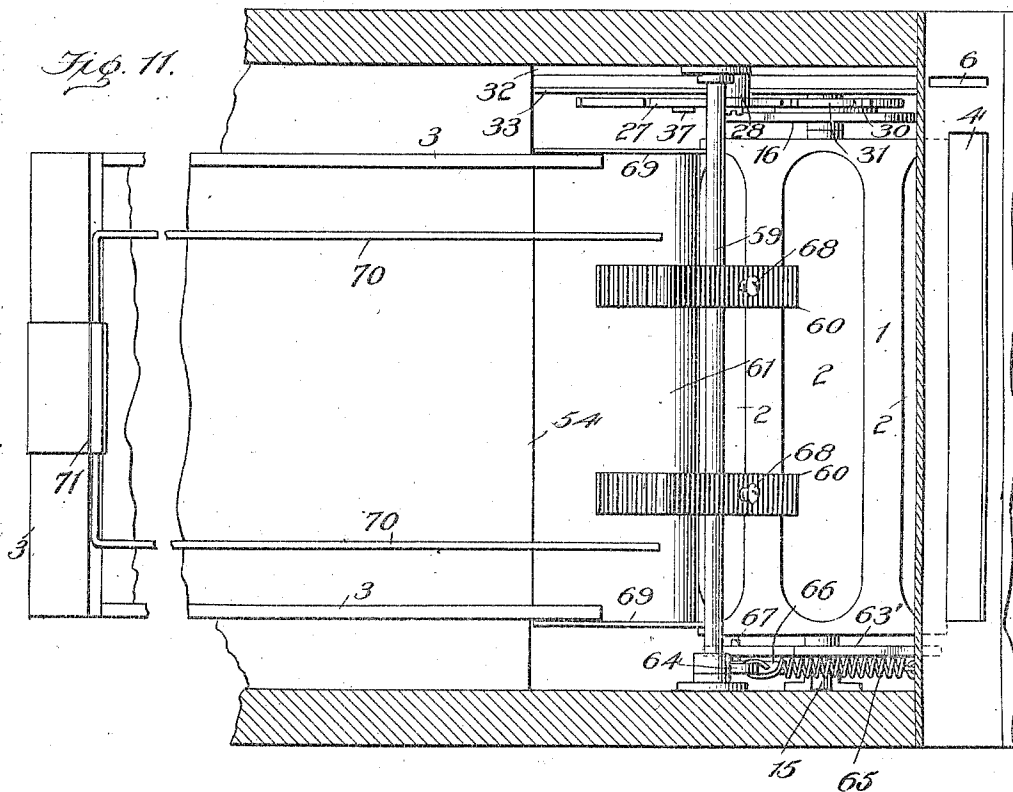
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

JOHN HEINRICH, JOHN SCHMIDT, AND CARROLL L. ETHERIDGE, OF
KANSAS CITY, MISSOURI.

MECHANISM FOR FEEDING CIGARS IN VENDING-MACHINES.

No. 811,396.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed April 3, 1905. Serial No. 253,415.

To all whom it may concern:

Be it known that we, JOHN HEINRICH, JOHN SCHMIDT, and CARROLL L. ETHERIDGE, citizens of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Mechanism for Feeding Cigars in Vending-Machines; and we 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.

The invention which forms the subject of this patent is directed to the production of a cigar-vending machine in which novel mechanism is provided for feeding cigars one by one from a box in coöperative relation with a coin-controlled revoluble cylinder by which the cigars are received and delivered, and in the claims appended hereto will be pointed out the parts and combinations of parts which constitute our invention.

The following description, read in connection with the accompanying drawings, will enable any one skilled in coin-controlled vending-machines to understand our invention and to practice it in the form in which we prefer to employ it; but it will be understood that our invention is not limited to the precise form and details of construction herein illustrated and described, as various modifications and changes may be made without exceeding the scope of the claims in which our invention is set out.

Referring to the drawings, Figure 1 shows in vertical section a machine organized and adapted for vending cigars in which the delivery mechanism is actuated by a five-cent nickel of United States coinage and embodying novel mechanism whereby the cigars are fed to the delivery-cylinder, the plunger being shown in its normal position. Fig. 2 shows in elevation a plate fixed to the inner side wall of the casing and containing the plunger, the parts actuated by the nickel for locking and unlocking the plunger and the nickel being shown in the position just before being pressed down to unlock the plunger. Fig. 3 is a similar view showing the plunger as having been unlocked and the locking device automatically held in position to be tripped by the plunger to again lock it, the fraud-preventive device being seen as in Fig. 2 in its normal position. Fig. 4 is a

vertical section on the line 4 4 of Fig. 5, showing the mechanism for actuating the fraud-preventive device and for rotating the delivery-cylinder. Fig. 5 is a transverse vertical section on the line 5 5 of Fig. 1, showing the manner of supporting the operating parts of the machine on the inner side wall of the casing. Fig. 6 is a detail sectional view on the line 6 6 of Fig. 4, showing the outlet of the passage indicated by the arrow for the nickel and the base-passage for lead and iron disks. Fig. 7 shows a clamp for holding the cigar-box in proper position against the tension of a spring, as seen in Fig. 1, whereby the box is free to yield inward to prevent binding the cigars. Fig. 8 is a detail side view illustrating the means for preventing the operation of the delivery of a cigar when a lead disk or slug is used and causing it to pass through the machine by the releasing action of the plunger in its retracting movement. Fig. 9 shows the nickel-receiving slot and the delivery-slot for the spurious disks. Fig. 10 is a view like Fig. 8, showing the parts in the position they occupy when the lead disk has been released by the retracting movement of the plunger. Fig. 11 is a top view showing the oscillating feed device. Fig. 12 is a side view showing the means for operating the feed device from the delivery-cylinder and the relation of such feed device to the chute and the supply.

At the front of and within a suitable casing is mounted a rotatable cylinder 1, into peripheral pockets 2 of which the cigars are fed one at a time and from which they are delivered, and for this purpose the surface of the cylinder is formed with a plurality of parallel equidistant grooves of a depth and shape to serve as pockets to receive and hold the cigars as they are fed from a box 3, supported in the casing in an upward-inclined position, so that the cigars will be fed by gravity from its open end against the rear side and upper portion of the cylinder, so that the latter, in effect, forms a rotating closure for the open end of the box. At its front the casing has an inclined part 4, of glass, to expose the cigar to view as it is being delivered by the rotation of the cylinder. The top of the casing may also be of glass to expose the cigars in the box, the top of which is open. The device whereby the cigars are fed one at a time from the box into the cylinder-pockets and which

forms the subject of this patent is arranged above the cylinder and is actuated by its rotation, as will hereinafter be described.

The coin-actuated mechanism, including the coin passages or runways and the plunger or push-bar 5, are preferably arranged upon and at the inner wall of one side of the casing, and the coin-slot 6 is thereby conveniently located at the side of that part of the casing at which the cigar is presented to view and which is at the upper portion of the cylinder. From this coin-slot extends on a slightly-downward incline the runway or passage 7 for the nickel or other disk 8, while beneath the cylinder and in vertical alinement with said coin-passage is the horizontal plunger 5, slidably supported within a guideway on the casing-wall, and has its hand-actuated end 9 projecting at the front of the machine. The path of the plunger intersects a vertical branch 10 of the nickel-passage, and at such intersection the plunger has a pushing and displacing action upon the nickel. A spring 11, having one end connected to the plunger and the other end to the casing, serves to retract and hold the plunger in its normal position, as in Fig. 4. A shoulder 12 at the handle end of the plunger serves to limit its inward movement, while a stop 13 on the plunger, adapted to engage its guide 14, serves to limit the outward movement of the plunger. The inward movement of the plunger causes the rotation of the delivery-cylinder always in the same direction, and the means for effecting this rotation will now be stated. The shaft 15 of the cylinder is mounted in the side walls of the casing, and between the latter and the end of the cylinder a ratchet-wheel 16 is fixed on the shaft, having teeth corresponding in number to the grooves of the delivery-cylinder.

Pivotaly mounted on the plunger within the casing is an arm 17, which extends above the plunger and is adapted to engage one tooth of the ratchet-wheel each time the plunger is pushed inward to turn said wheel and the delivery-cylinder a part of a revolution. In the illustration there are six grooves or pockets in the delivery-cylinder and the same number of teeth in the ratchet-wheel, so that each inward movement of the plunger will cause the said arm 17 to move the cylinder one-sixth of a revolution, and at each of said movements of the cylinder a cigar will be released and drop to a receiving-trough 18 and pass out a front opening to the purchaser. The normal position of the pivoted arm 17 is vertical, and so normally maintained by its lower weighted end, while the pushing action of the upper end 19 of said arm to rotate said wheel is sustained by a stop 13 on the plunger. The upper end of said arm 17 is beveled to allow it to pass freely under the teeth of the wheel on the retracting movement of the plunger. The

plunger is normally locked against inward movement by mechanism comprising a bolt 20, supported by wall-guides 21, with its lower end adapted to engage by gravity a shoulder 22 on the upper edge of the plunger, as in Fig. 2, to lock it. At its upper end the bolt is connected to one end of a lever 23, pivoted to the wall and having at its other end a pivoted key 24, which stands within an opening in the bottom of the nickel-passage, and in its normal or raised position partially closes the entrance to the nickel-slot, as in Fig. 2.

We prefer to hang and support the bolt 20 in a slightly-inclined position, so that its lower end will stand in advance of its upper end, and thereby cause its lower end to fall back by gravity in the raised position of the bolt to hold it up out of engagement with the plunger, and for this purpose the lower end of the bolt has a recess or shoulder by which it is adapted to fall into engagement with a lug 21 of the bolt-guide, as in Fig. 3.

In the locked position of the plunger the nickel-actuated key is lifted by the weight of the bolt members and held in position, partially closing the entrance to the coin-slot, so that the key will receive the coin or other disk and be pressed down by the act of inserting it, forcing thereby the key down out of the slot to allow the coin to be put into the passage. This depression of the key actuates the bolt members, so as to cause the bolt to be raised and release its engagement with the plunger. In this lifting of the bolt its lower end is free to swing back by gravity, and this movement brings its shoulder into engagement with the fixed guide-lug 21 and holds the bolt in its unlocked position. The bolt is returned to its normal or lower locked position by means of a tappet 25, pivoted on the side wall at the rear of the bolt and having a weighted arm 26, adapted to be struck by the locking-shoulder 22 of the plunger when the latter is pushed inward. In this engagement of the plunger with the hanging arm of the tappet its upper arm 25 is caused to strike the rear edge of the bolt, and thereby throw or push the latter forward, disengaging its shoulder from the lug and allowing the bolt to drop on the plunger behind its shoulder 22 to lock it when the plunger is forced outward by its spring. In this way the plunger will be released from its locked position by a five-cent nickel or any similar disk held in the hand of the operator to depress the key and allow the plunger to be pushed inward; but this manipulation of the plunger will not cause the movement of the delivery-cylinder, since the latter is provided with locking mechanism which can only be released by a coin of the required character. This cylinder-locking mechanism comprises a lever 27, preferably of bell-crank form, fulcrumed upon a wall-stud 28 at the rear side

of the delivery-cylinder. The hanging arm of this lever terminates in a tooth 29, which is adapted to successively enter peripheral notches 30 of a disk 31, fixed on the cylinder-shaft to hold the cylinder from rotary movement. The notches of this disk are equidistant and correspond with the grooves in the cylinder, so that the lock is effected for each movement of the latter to deliver a cigar. A weighted arm 27 of the lever insures the engagement of its tooth with the notches of the disk at each movement of the cylinder.

The coin runway or passage, the plunger, the fraud-preventive mechanism, and the cylinder-locking mechanism are arranged, supported, and housed between plates 32 and 33, secured to the casing, and looking at Figs. 2 and 3 it will be seen that the coin-passage which has the coin-slot extends from the slot to the rear of the casing and is intersected at the rear of the cylinder by a vertical branch 10, which terminates in the path of the plunger and extends a short distance rearward in said path.

The following description will show the cooperating function of the plunger in its operation of the delivery-cylinder in effecting the release of the cylinder-locking mechanism only through the instrumentality of the required or proper coin. At a point about the upper rear corner of the intersection of the vertical with the terminal coin-passage and between the said housing-plates is pivoted a dog 35, which stands toward the inner end of the plunger and terminates in a sharp point 36, which hangs in the path of the coin as it drops in the path of the plunger for a purpose presently stated. A link 37 connects the free end of this dog with the weighted arm 27 of the bell-crank lever, so that the lifting of the sharp point of the dog by the passage thereunder by the coin in the manner herein-after described will cause the said weighted arm to be raised by its connected link 37, and thereby cause the toothed arm 29 of said lever to be withdrawn from its engagement with the notch in the cylinder-disk to permit the cylinder to be turned. The lever is returned by its weighted arm to its normal position against the cylinder to engage the next notch of the disk after the impaling-dog is released. The coin-passage 38 in rear of the dog terminates in a bottom outlet 39, through which the proper coin drops into a coin-receiver, and for this purpose this drop-opening 39 is outside of and independent of other passages, through which spurious coins or disks pass. The machine organized as described can only be operated by genuine nickels, because the nickel having been forced into the nickel-slot and dropped through the vertical passage 10 is arrested in the path of the plunger and supported upon a latch device 40, in which position the plunger is then caused to strike and move the

coin beneath the sharp point of the dog, and the nickel being of hard metal will not be pierced or impaled by the point of the dog, but will therefore be forced under it and out of the drop-passage 39, lifting the dog in passing beneath it and by such lifting release the lever-lock of the delivery-cylinder. In this ejection of the genuine nickel the dog rides over it and unlocks the cylinder by the direct action of the plunger, while the coin-actuated bolt device releases the lock of the plunger in advance of the release of the cylinder-lock to allow the plunger-arm 17 to engage a tooth of the ratchet-wheel 16 to turn the delivery-cylinder one-sixth of a revolution to deliver a cigar. In this operation the latch device 40 serves no other purpose than to support the nickel in the path of the plunger, and so long as genuine nickels are used the operation of the machine is unchanged. We have, however, made provision for preventing fraud in operating the machine with lead disks, and thus prevent the delivery of the goods, and for this purpose we utilize this latch device, as will now be described. This latch is pivoted to the wall-plate at an opening in the bottom of the plunger-guideway and has a lip 41, which stands up and forms a stop on which the lead disk is dropped from the vertical passage and supported, as shown by dotted lines in Fig. 2. A weighted dog 42, pivoted to said wall-plate in front of the latch, engages a nose projection 43 of the latch and serves to support it in position to hold the lead disk in the path of the plunger, as in Fig. 2.

To move the latch from its lead-disk-supporting position by turning it on its pivot toward the front to allow the lead disk to drop through said opening, the latch is provided with a pin 44, with which an arm 45, having a notch 46, is caused to engage, so as to pull the latch forward by the retracting movement of the plunger, and for this purpose said arm 45 is pivotally connected to the plunger, as in Fig. 4, and acts by gravity to engage the latch. To render this engagement of the arm 45 with the latch-pin 44 certain, the notched end of said arm rests and rides upon said pin, and this end of the arm is held by its weight and a guide-loop 47 upon the pin, so that as this arm is drawn out by the plunger the notch in said arm drops over the pin, and thus pulls the latch from under the lead disk.

It will thus be seen that a genuine nickel and a lead disk take the same course as indicated by the arrows in full lines in Fig. 2 and both are arrested by the latch. When, however, the plunger is pushed in instead of forcing the slug or lead disk rearward under the dog, the plunger will force the lead disk against the sharp point of the dog, causing it thereby to penetrate the soft metal, as in Fig. 8, and bind the lead disk in the opening or

space between its edge and the lip of the notch. This prevents the raising of the dog, and the cylinder-releasing mechanism does not operate, so there can be no delivery of the cigar. The pushing force of the plunger being at its limit, on its retracting movement the notched arm 45 is thereby drawn into engagement with the pin of the latch, and the latter is thereby drawn forward and the lead disk or slug is released from its support and will drop into the base-passage 48 and pass to the front 34 of said passage.

It will be noted that the nose of the latch and the end of the weighted dog have a curved bearing engagement, so that as the latch is pulled back it slides on the end of the dog and depresses said end, so that as the plunger is moved forward the arm 45 is thereby disengaged, and the weighted dog returns to its normal position of rest. At the inner end of the plunger rises a lug 49, which serves as a safety-stop, so that if from any cause the plunger should be released from its lock without forcing a genuine nickel in the slot to actuate the plunger-lock (as by a wire or other device) the plunger-lug will strike the dog, but will not lift it, when the plunger is pushed in, and thus prevent the operation of the cylinder-releasing mechanism and the rotation of the cylinder, so that there can be no delivery.

It is important to note that in the operation of the machine it not only fails to operate when a lead disk is used, but automatically ejects such disk instead of permitting it to pass to the genuine-coin receptacle, and that the two coacting locking devices are provided one for controlling the operation of the plunger or push-bar and the other for controlling the rotary movement of the delivery-cylinder both by the direct action of the plunger. These two separate and distinct locks are released successively by a five-cent nickel, the first at the entrance of the nickel-slot and the second near the exit-opening of the nickel. The nickel is seen in Fig. 2 as having been placed by the operator upon the upper inclined end of the key, which partially closes its entrance, so that the operator presses upon the nickel, which thereby causes the depression of the key, and thus allows the nickel to be inserted. To facilitate the entrance of the nickel into the slot, the end of the key is inclined inward and upward, so that pressure on the nickel has a wedge action upon the key in depressing it.

We will now describe the mechanism whereby the cigars are fed into the pockets of the delivery-cylinder. Above the cylinder, and preferably vertically in line with its rear side, is mounted a shaft 59, on which is fixed an oscillating or rocking feed device, preferably of a pair of heads or arcs 60, having convex peripheries, so that their acting peripheries or sides will overhang the chute and pro-

ject a little within the open end of the box and near each side, so that the cigars will by gravity be caused to rest against said heads or arcs.

The downward movement of the arcs serve to roll and feed the cigars from the box, while the upward movement of the arcs serve to roll and agitate the cigars upward to keep them loose and free to roll down on the downward movement of the arc feeders to deliver them one by one in succession into a groove or pocket in the delivery-cylinder as it is rotated, carrying the cigars up and over and delivering them at the front side of the cylinder. For this purpose a chute 61 is arranged to form an extension of the box-support standing downward about on the same incline with the bottom of the box and terminating at the circumference of the cylinder about on a horizontal line with its axis, so that as the cylinder is turned its rear side moves upward, bringing each pocket to the edge of the chute from which the cigars are rolled into the pockets by the arcs. Preferably this chute is hinged to the lower edge of the box-support and is sustained by a mediate arm 62, having a screw 63 at its end, whereby the free edge of the concave may be adjusted vertically to set its edge so that it will deliver a cigar into a pocket at each intermittent movement of the cylinder. For this purpose the concavity of the chute will correspond substantially to the circumference of the feed heads or arcs, and as the cylinder is caused to move one-sixth of a revolution the feed device will be caused to move about one-fourth of a revolution with the cigars between them. To effect this relative movement, the cylinder-shaft has a ratchet-wheel 63' at one end, the teeth of which correspond to the pockets of the cylinder, and to effect this regularity in the movements of the cylinder and the feed device the latter has an arm 64 standing downward from its shaft and has connected to it a spring 65, which constantly tends to pull said arm frontward. At the rear side of the cylinder a ratchet-arm 66 is pivoted in the casing-walls, standing upward and having a tooth 67, adapted to engage the teeth of the cylinder ratchet-wheel and engaging the depending end of the arm 64 of the feed device, so that said arm will constantly tend to maintain the ratchet-arm 66 in engagement with the teeth of the ratchet-wheel of the cylinder. The engagement of the ratchet-arm with the teeth of the ratchet-wheel and the engagement of the ratchet-arm with the arm of the feed device are such that the turning of the cylinder toward the front will cause the teeth of the ratchet-wheel of the cylinder to act as cams upon the tooth of the ratchet-arm and force it rearward each movement of the cylinder, and thereby cause the arm of the feed device to be moved rearward, thereby causing the rear sides of the

feed heads or arcs to move upward. It is this upward movement of the feed-arcs that causes them to act on the cigars with an upward rolling agitation to keep them free and loose, while the tooth of the ratchet-arm moving suddenly off the sharp apex of the tooth of the ratchet-wheel allows the spring-actuated feed-arm to be suddenly pulled forward, and thereby cause the feed-arcs to be suddenly moved downward, rolling a cigar from the concave chute into the cylinder-pocket. This feed movement of the arc-heads is limited by the extent of the movement of the ratchet-arm. The feed arcs or heads are secured upon their shaft by clamp-screws 68, whereby the heads may be adjusted to suit the rocking movements of their shaft and their relation to the chute. The arc-heads are preferably of rubber with corrugated peripheries the better to take hold of the cigars and prevent slipping. The concave chute has end guards 69 to keep the cigars in proper endwise relation to the cylinder-pockets.

In agitating the cigars by upward rolling movements they are liable to become out of parallel relation, to rise at the ends, and to roll over the top of the feed device, and to prevent this a plurality of fingers or wires are attached to the upper end of the box, so as to extend down and freely lie upon and across the ends of the cigars at the feed end of the box, keeping them down level and preventing them from piling up against the feeders. For this purpose the wires are preferably loosely attached to the upper end of the box and are of sufficient weight to keep the cigars smooth and allow the wires free play upon the cigars as they roll down in the box at each jarring movement of the plunger. These wires may be attached by a clamp 71 to the upper end of the box.

The cigar-box may be supported by any suitable means. As shown, it is supported upon a shelf 54, secured to the sides of the casing, and to hold the box in proper relation to the delivery-cylinder, so that the cigars may be properly fed therefrom, a clamp-plate 55 engages the upper closed end of said box and extending beneath it is connected by a spring 56 to the shelf 54, so that the box is held in proper relation to the delivery-cylinder by spring-pressure, allowing thereby the box to yield to prevent crushing the cigars at the feed end of the box.

As stated, the runway or coin-passage leading from the nickel-slot extends to the rear of the casing and crosses the vertical passage, and at the junction of these passages and in the rear portion thereof is arranged, preferably, a pair of magnets 57, having their poles placed so as to attract a steel or iron slug or disk and directing it into a drop branch 58 and thence into the same base-passage into which the lead disk is dropped and passes to

the front receptacle. This diversion of a steel or iron slug or disk from the path of the required nickel prevents the operation of the delivery-cylinder and no delivery of a cigar results. It will be understood that the several passages for the nickel and for the slugs are narrow channels, through which the nickels and slugs roll edgewise.

Except for the purposes of the combinations hereinafter set forth in the claims we do not in the Letters Patent to be issued on this application claim the inventions in the coin-actuated mechanisms for vending articles and described and shown herein, as such matters are shown, described, and made the subject of claim in an application filed by us of date November 24, 1904, under Serial No. 234,033, the claims of this patent being solely directed to the mechanism for feeding cigars from a box and delivering them by a rotating cylinder.

We claim—

1. In a vending-machine, a grooved delivery-cylinder, a supply-receptacle, a chute for the articles, a cylindrical feed device arranged above the chute and overhanging the grooved cylinder, means for causing said cylinder to rotate in one direction only, and means for causing the feed device to have movements in reverse directions upon the cigars above the cylinder.

2. In a vending-machine, a grooved delivery-cylinder, a supply-receptacle, a chute for the articles, a feed device arranged above the chute and overhanging the grooved cylinder and comprising a pair of heads or arcs each having a yielding feeding-surface, means for causing said cylinder to rotate in one direction only, and means for causing the feed device to have movements in reverse directions upon the cigars above the cylinder.

3. In a vending-machine, a revoluble delivery-cylinder having a plurality of longitudinal grooves, a supply-receptacle, for the articles, a concave chute for delivering the articles into said grooves, a shaft mounted above and in vertical line with the front of said cylinder, a pair of heads or arcs mounted on said shaft, forming feeding-surfaces and overhanging said chute, means actuated by said cylinder for causing said heads to have an upward rolling movement upon the cigars, and means for causing said heads to have a sudden and positive reverse or downward feed movement to place a cigar in a groove.

4. In a vending-machine, a revoluble delivery-cylinder having a plurality of longitudinal grooves, a supply-receptacle for the articles, a chute for delivering the articles into said grooves, a shaft mounted above the cylinder, a pair of heads or arcs mounted on said shaft and forming feeding-surfaces, means actuated by said cylinder for causing said heads to have an up-and-down rolling feed movement upon the cigars in their delivery

to said cylinder, means whereby the down movement is positively controlled to place a cigar in a groove, and means for slidably adjusting said heads toward and from each other on said shaft.

5 5. In a vending-machine, a supply-receptacle for the articles, a revoluble delivery-cylinder having a plurality of longitudinal grooves, a feeder device mounted above the
10 cylinder, and means for oscillating or rocking said feed device consisting of a ratchet-wheel carried by said cylinder, a ratchet-arm engaging the teeth of said wheel, an arm fixed to said rocking-feeder device engaging the
15 ratchet-arm, and a spring connecting the feeder-arm for maintaining it in contact with said ratchet-arm and the latter in contact with said ratchet-wheel, whereby the rotation of
20 the cylinder causes the oscillating or rocking movement of the feeder device to feed the

articles into the grooves and to agitate the supply.

6. In a vending-machine and in combination with a revoluble cylinder having a plurality of longitudinal grooves, a supply-receptacle for the articles, a chute for delivering the articles to said grooves, an oscillating or rocking feed device mounted above the chute and the cylinder, and a plurality of
25 fingers or wires mounted on the box and lying upon the articles for the purpose stated. 30

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN HEINRICH.

JOHN SCHMIDT.

CARROLL L. ETHERIDGE.

Witnesses:

F. W. FRANKLIN,

CARRIE E. CARDWELL.