

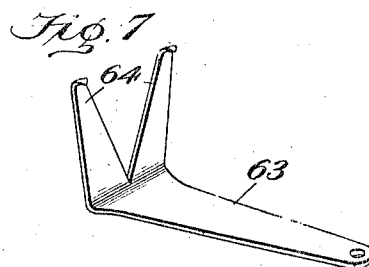
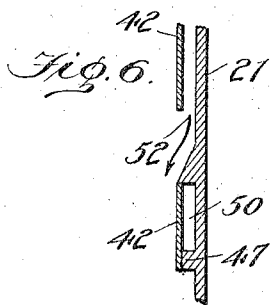
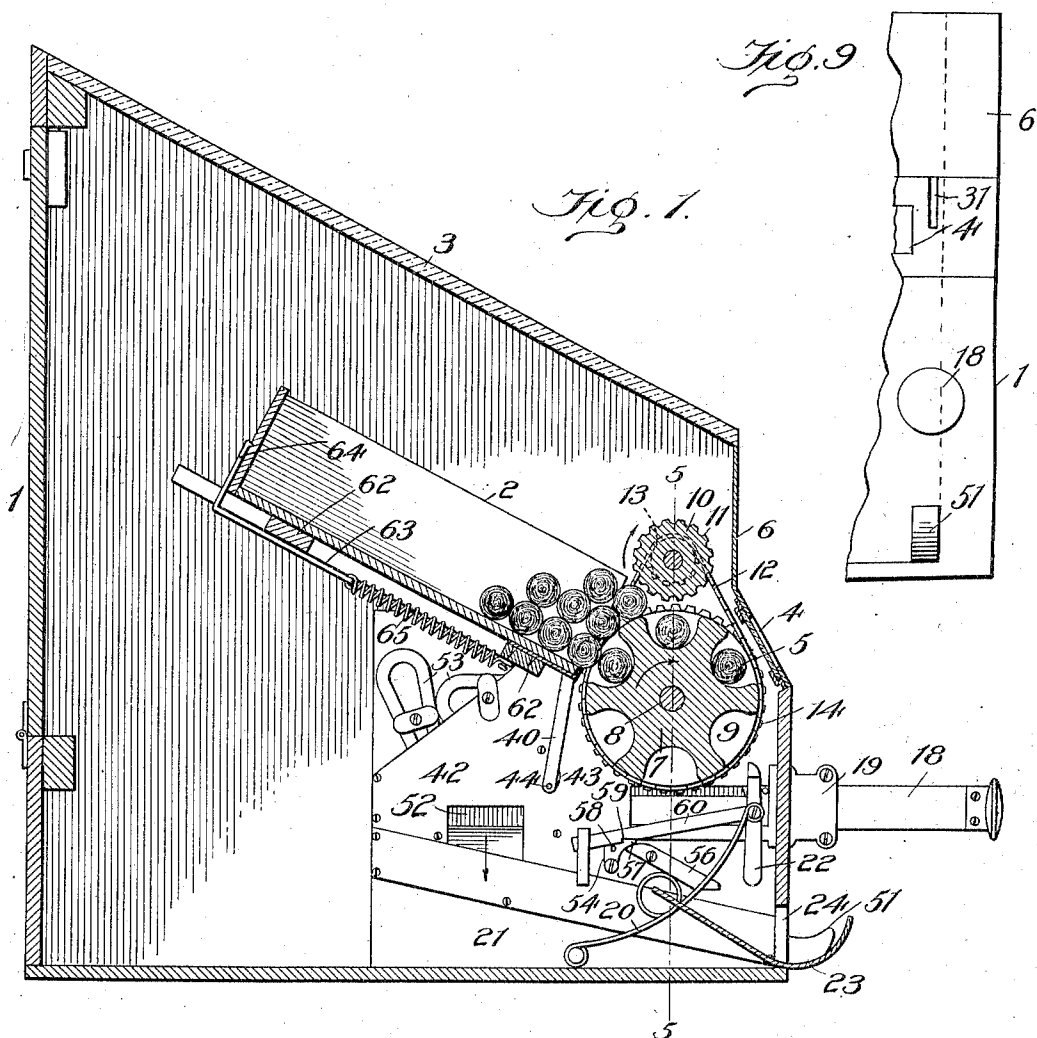
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PATENTED JAN. 30, 1906.

J. HEINRICH, J. SCHMIDT & C. L. ETHERIDGE.
COIN CONTROLLED VENDING MACHINE.

APPLICATION FILED NOV. 23, 1904.

3 SHEETS—SHEET 1.



Witnesses
Edwin L. Bradford
Anne B. Johnson

Inventors
John Heinrich
John Schmidt
Carroll L. Etheridge
By *John L. Johnson*
Attorneys

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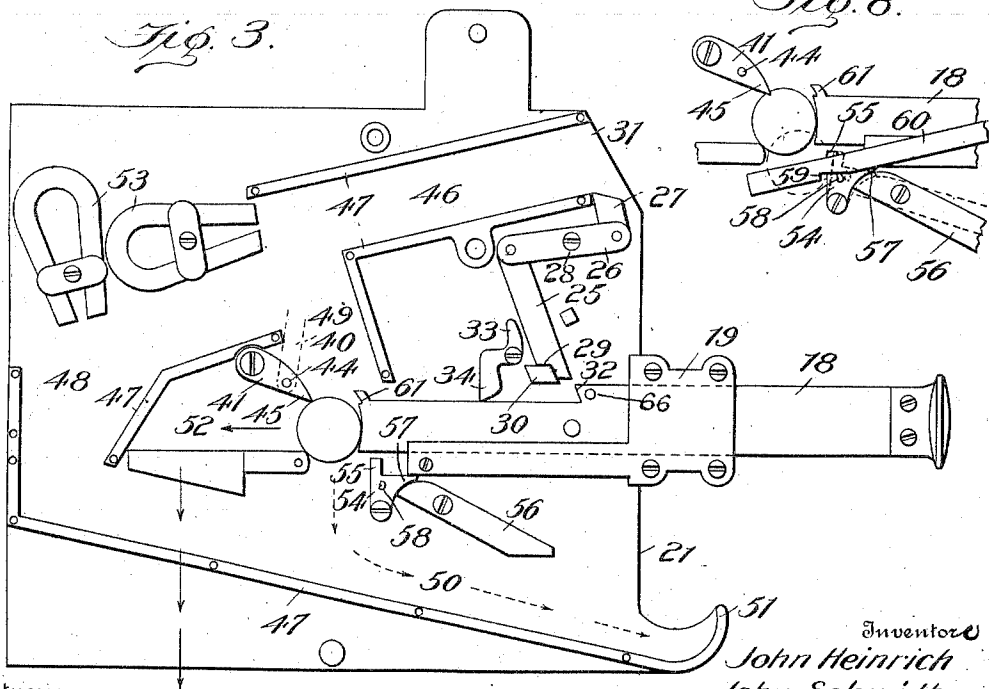
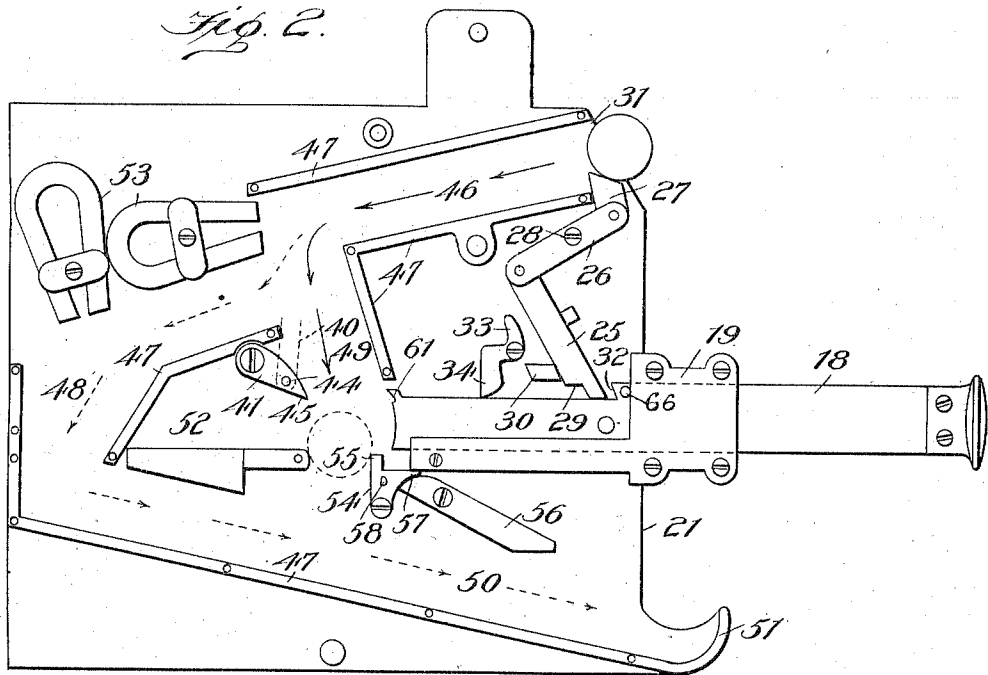
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3 SHEETS—SHEET 2.



Witnesses

Edwin L. Bradford
Anne B. Johnson

384

Inventors
John Heinrich
John Schmidt
Carroll L. Etheridge
John Heinrich
Attorneys

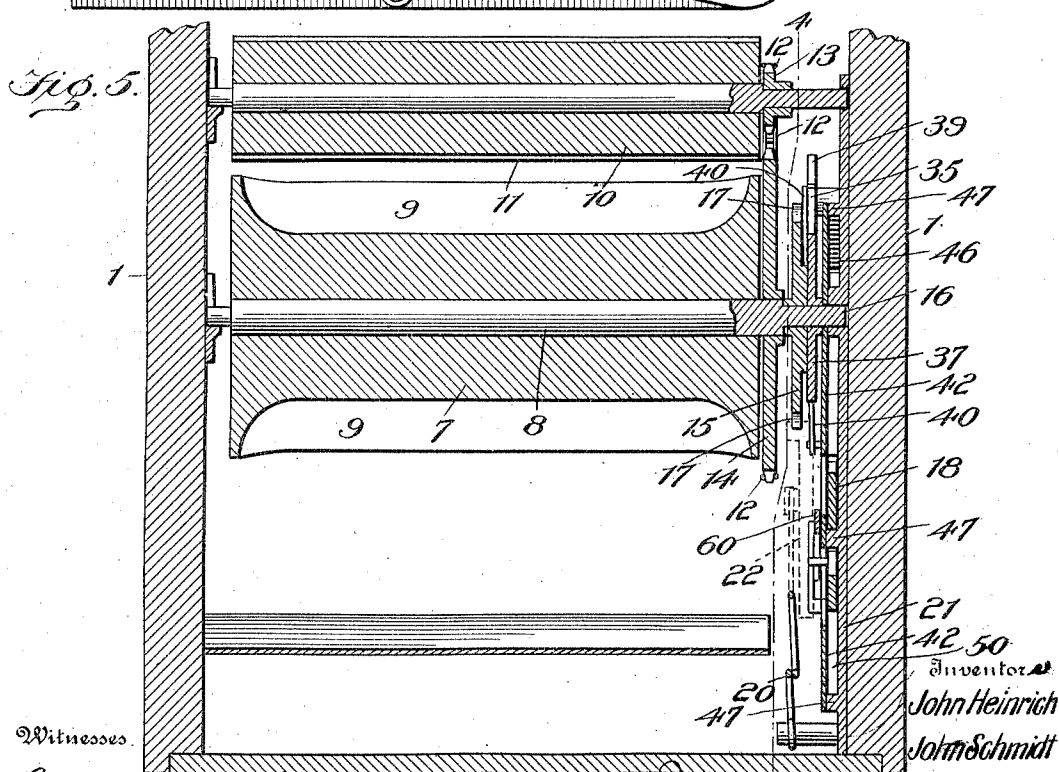
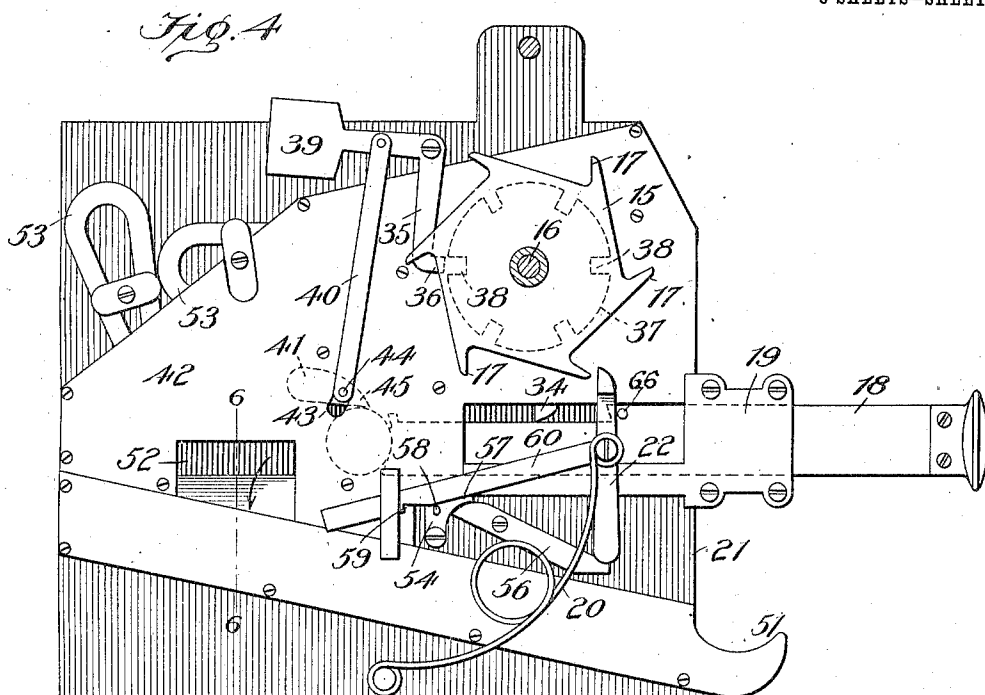
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3 SHEETS—SHEET 3.



Witnesses.

Edwin L. Bradford
Anne B. Johnson

By

John Heinrich
John Schmidt
Carroll L. Etheridge
Attorneys

UNITED STATES PATENT OFFICE.

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

COIN-CONTROLLED VENDING-MACHINE.

No. 811,501.

Specification of Letters Patent.

Patented Jan. 30, 1906.

Application filed November 23, 1904. Serial No. 234,033.

To all whom it may concern:

Be it known that we, JOHN HEINRICH, whose post-office address is 484 North Montgal avenue, and JOHN SCHMIDT, whose post-office address is 475 Prospect avenue, residents of Kansas City, in the county of Jackson, and CARROLL L. ETHERIDGE, whose post-office address is Fourth and Elm streets, in the city of St. Louis and State of Missouri, citizens of the United States, have invented certain new and useful Improvements in Coin-Controlled 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.

Our invention, which relates to coin-actuated vending-machines, has for its purpose vending-machines generally, but which is especially designed for employment in connection with the improved machine hereinafter described and which is particularly adapted for the sale of cigars and like articles, the delivery of which is controlled by mechanism actuated by the coin to effect successively in its travel through the coin-passage the release of the plunger-lock and the release of the delivery-lock.

The following description, read in connection with the accompanying drawings, will enable any person skilled in the art to which our invention relates to understand its nature 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 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 is a vertical section of a vending-machine embodying our invention, the plunger being in its retracted position. Fig. 2 is an elevation of the supporting-plate to which the coin-controlling mechanism is secured, the plunger being shown in its normal locked position. Fig. 3 is a similar elevation with the plunger unlocked and pushed in position to operate upon the coin to allow the delivery mechanism to be actuated. Fig. 4 is a vertical section on the line 4 4 of Fig. 5, showing the mechanism for rotating the delivery-cylin-

der. Fig. 5 is a transverse vertical section of the machine, taken on the line 5 5 of Fig. 1, showing the manner of supporting the operating parts of the machine. Fig. 6 is a detail sectional view on the line 6 6 of Fig. 4, showing the passages for the nickel and the lead coins. Fig. 7 is a perspective view of the clamp employed for holding the cigar-box in proper position within the machine-casing to permit the cigars to feed forward to the delivery-cylinder. Fig. 8 is a detail elevation illustrating the means for preventing the operation of the machine when a lead slug is inserted and for releasing the lead and permitting it to drop into the passage-way provided for it. Fig. 9 shows the coin receiving and delivering slots in the front at the top and bottom and adjacent the side of the casing.

The coin-actuated mechanism is so constructed and relatively arranged as to permit the movement of the delivery-cylinder and the consequent discharge of a cigar from the machine only when a coin of the proper size and material is used as the means for effecting the release of two locks, as we will now describe.

The numeral 1 designates the machine-casing, the upper portion of which is adapted to contain a box of cigars, the box 2 being supported at such an angle as will permit the cigars to feed forward by gravity through the lower end of the box. The top or cover 3 of the casing is preferably of glass to expose the cigars to view and has a front incline 4 to expose to view one cigar 5, supported upon the delivery-cylinder within the machine. The wall or front plate 6 affords a space to contain printed directions for operating the machine or other matter. A cylinder 7 is mounted upon a shaft 8, supported in suitable bearings secured to the sides of the casing and immediately below the front incline 4. The peripheral surface of the cylinder is formed with a series of parallel equidistant grooves 9, extending longitudinally of the cylinder and being of such shape and depth as to serve as pockets to receive the cigars as they are fed one by one from the box. Above the cylinder 7 is a feed-roller 10, mounted in bearings in the sides of the casing, the periphery 11 of said feed-roller being longitudinally corrugated to facilitate the feed of the cigars and to prevent their being crushed or broken.

The feed-roller is operated by the movement of the delivery-cylinder through the medium of a sprocket-chain 12, which passes around a sprocket-wheel 14, fixed upon the shaft 8 concentric with the cylinder, and a sprocket-wheel 13, fixed to one end of the roller, as best shown in Fig. 1.

15 designates a ratchet-wheel fixed upon an extension 16 of the shaft 8 and having equidistant teeth 17, corresponding in number to the parallel grooves of the delivery-cylinder and adapted to be successively engaged by an arm of the actuating mechanism, which will be presently described.

18 designates a plunger slidably supported within a horizontal guideway 19 at the front of the casing and projecting outward from the front of the machine-casing under the force of a spring 20, one end of which is secured to the plunger, while its opposite end is attached to a supporting-plate 21, secured to one side of the casing. Pivotaly secured to one side of the plunger 18 within the casing is an arm 22, the upper end of which is adapted to engage one tooth of the ratchet-wheel 15 each time the plunger is pressed inward to turn said wheel and the delivery-cylinder a part of a revolution. In the machine here shown there are six grooves in the delivery-cylinder and the same number of teeth in the wheel 15, so that each inward movement of the plunger will cause the actuating-arm 22, Fig. 4, 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 23, located at the base of the machine in a discharge-opening 24 in the front of the casing.

The plunger 18 is normally locked against inward movement by mechanism comprising a bolt 25, which is released by a lever 26, and a key 27, as in Figs. 2 and 3. The bolt is supported by suitable guides in a slight inclined position and is pivotaly secured at its upper end to the inner end of the lever 26, the latter being fulcrumed upon a pivotal support 28, projecting from the wall-plate 21. The rear edge of the bolt 25 is recessed at its lower end to form a shoulder 29, which engages a lug 30, projecting from the plate when the bolt is in elevated position. The key 27 is pivoted to the outer end of the lever 26 and extends upward through a slot in the bottom of the coin track or way, so that it will receive any coin, which can only be inserted into the coin-receiving slot 31 at the front of the machine by the operator pressing the key down. Normally the bolt 25 projects down a sufficient distance to engage a shoulder 32, formed in the upper edge of the plunger, and when the bolt is so engaged the plunger is locked against inward movement. When, however, a coin is inserted into the slot 31, after it is forced over and depresses the key 27, and the latter tilts the lever 26 upon its

fulcrum, thus raising the bolt 25 and releasing the plunger. As soon as the bolt is elevated in the manner just explained it swings rearward by gravity to seek a vertical position, and this movement brings its shoulder 29 into engagement with the fixed lug 30 to hold the bolt in elevated position. The bolt is returned to its lower or normal position by means of a tappet 33, pivotaly secured to the side of the wall-plate 21 and having a weighted arm 34 adapted to be struck by the shoulder 32 of the plunger when the latter is pushed inward. The tappet 33 strikes the rear edge of the bolt and throws the latter forward, disengaging its shoulder 29 from the lug 30 and enabling the bolt to drop behind the shoulder 32 of the plunger to lock it when the plunger is forced outward by its spring.

From the description thus far it will be apparent that the plunger will be released by any coin or slug held in the hand of the operator to depress the key 27 in its guide-opening; but this manipulation of the plunger will not effect 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 bell-crank lever 35, fulcrumed upon a stud projecting from the adjacent side of the plate 21. The forward arm of the lever 35 is provided with a lug or tooth 36, which is adapted to successively enter the notches of a disk 37 to hold the disk and delivery-cylinder against rotary movement, as shown by dotted lines in Fig. 4. This disk 37 is fixed upon the extension 16 of the shaft 8 concentric with the ratchet-wheel 15 and is formed with equidistant peripheral notches 38, said notches corresponding in number to the grooves in the cylinder 7.

The bell-crank lever 35 is provided with a weight 39, and is connected by a link 40 to a dog 41, pivotaly secured to the plate 21. A housing-plate 42 is secured to the supporting wall-plate 21, and the dog 41, as well as the locking mechanism of the plunger above described, is inclosed between said plates. The housing-plate 42, Fig. 4, is formed with a slot 43, through which extends the pin 44, which connects the dog and the lower end of the link 40, the latter being on the inner side of the housing-plate. The elevation of the dog 41 by a coin in the manner hereinafter described tilts the bell-crank lever 35 through the link connection 40 to withdraw the tooth 36 from the notch of the disk 37 and permit the cylinder to turn one-sixth of a revolution. The weight 39 returns the bell-crank lever to its normal position to engage the next notch of the disk 37 after the dog 41 is released by the passage of the coin beneath and beyond it.

The forward end 45 of the dog 41 is sharp-

ened to adapt it to engage the edge of a lead slug, as will be more fully explained in connection with Fig. 8.

A coin-passage 46, formed by strips 47, secured between the wall-plate 21 and the housing-plate 42, extends downward from the front coin-slot 31, and said coin-passage is provided with two branches 48 and 49, both of which communicate with an inclined passage 50 at the base of the machine through which spurious coins pass to a trough 51 at the front of the machine. 52 designates another coin-passage, located below the dog 41, through which genuine coins are forced by the plunger into a suitable coin-receiver, as in Fig. 6 and indicated by the arrows in Fig. 3.

One or more horseshoe-magnets 53 are arranged at the rear end of the passage 46 for the purpose of attracting iron slugs and directing them into the rear branch 48 of the coin-passage and thence into and through the lower passage 50 to the trough 51.

54 designates a latch-plate pivoted to the wall-plate 21 below the plunger-guideway and formed with a lip 55 to serve as a stop for coins dropping through the passage 49, as shown by dotted lines in Figs. 2 and 8. A weighted dog 56, pivoted to the wall-plate 21, engages below a nose 57, projecting from the latch-plate 54, and serves to support the latch 54 in position to arrest the movement of the coin, as clearly shown in Fig. 2. For the purpose of moving the plate 54 upon its pivot to release a lead slug the plate is provided with a lug 58, adapted to engage a notch 59, formed in the lower edge of an arm 60, pivotally secured to one side of the plunger, as in Fig. 4.

The operation of the mechanism constructed as thus described is as follows: When a genuine nickel is inserted into the coin-slot, to allow such insertion it first depresses the key 27 to pass into the slot, and the plunger is released through the intermediacy of the lever 26 and bolt 25. The coin rolls down the passage 46 and being unaffected by the magnet drops through the passage 49 to the position indicated by dotted lines in Fig. 2. The plunger is then pushed in and its inner end strikes the edge of the coin, forcing the latter rearward under and raising the dog 41. This upward movement of the dog will operate the bell-crank lever 35 and release the cylinder, as has already been described, and the contact of the upper end of the arm 22, carried by the plunger, with the adjacent tooth of the ratchet-wheel 15, effects the partial revolution of the delivery-cylinder to deliver one cigar. After the delivery of the cigar the spring 20 retracts the plunger and the tappet 33 restores the bolt 25 to the position shown in Fig. 2 to again lock the plunger. The cylinder is also again locked by the retraction of the bell-crank lever, as heretofore set forth. If an iron coin or slug is inserted into the coin-slot, it rolls along the passage 46 and is at-

tracted by the magnets and then caused to follow the course indicated by the dotted arrows in Fig. 2 in the passage 48 without, of course, affecting the cylinder-releasing mechanism, and no delivery of the merchandise results. If it is attempted to operate the machine by the use of a lead slug, the latter after passing through the coin-slot takes the course of the genuine nickel, as indicated by the full-line arrows in Fig. 2. When, however, the plunger is pushed in, instead of forcing the slug rearward under the dog 41 it forces the edge of the lead slug against the sharp point of the dog, causing the point to penetrate the soft metal, as in Fig. 8, and bind the slug in the space between the end of the coin-passage 52 and the lip 55 of the latch-plate. Thus the raising of the dog is prevented, and the cylinder-releasing mechanism does not operate. As soon as the plunger is released the latch-plate 54 is drawn forward by the arm 60, and the lead slug is thus released and will drop into the lower coin-passage 50, as illustrated by dotted lines in Fig. 8.

From the inner end of the plunger projects a lug 61, which serves as a safety-stop, so that in case the plunger is released without pushing a nickel into the coin-slot (as by a wire or other device) the lug 61 will strike the dog 41 when the plunger is pushed in and prevent the operation of the cylinder-releasing mechanism.

While the invention is not restricted to any particular means for supporting the cigar-box within the casing, we have found the device shown in the drawings well adapted for this purpose. The box 2 rests upon cross-bars 62, secured to the sides of the frame, and a clamping-plate 63, having fingers 64 projecting therefrom, engages the rear end of the box, the front end of the plate 63 being connected by means of a spring 65 to the forward cross-bar 62. Thus the cigar-box is maintained in proper relation to the delivery-cylinder under spring-pressure.

It will be observed that the machine not only fails to operate when a spurious coin is inserted, but automatically ejects such coin instead of permitting it to pass to the coin-receptacle, and, further, that two coacting locking devices are provided, one controlling the plunger and the other the rotary movement of the delivery-cylinder, both by the direct action of the plunger, and it will be noted that in the control of the cylinder the weighted arm 22 is in position to engage a tooth of the cylinder ratchet-wheel on the inward movement of the plunger and that a pin 66 on the plunger supports the upper end of said arm in such engagement; but on the outward movement of said plunger the weighted arm will pass freely under the teeth without engaging or turning the wheel. These two separate and distinct locks are released successively by the coin, the first at the entrance of

the coin-slot and the second near its exit-opening. The entrance position of the coin 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 coin, which is caused to depress the key, and thus allow the coin to be inserted. To facilitate the entrance of the coin into the slot, the end of the key is inclined inward and upward, so that pressure on the coin has a wedge action upon the key in depressing it.

We claim—

1. In a coin-actuated vending-machine, a revoluble goods-delivery cylinder, a plunger, a coin-controlled locking means for said plunger and independent coin-controlled locking means for said cylinder, both locking means released successively by the entrance of the coin into the slot and in its passage to its exit from said slot.

2. In a coin-actuated vending-machine, a revoluble goods-delivery cylinder, a plunger having a shoulder, means carried by said plunger for actuating said cylinder, means for locking said plunger consisting of a device of connected members including an upward-standing coin-receiving key and a depending bolt adapted to engage said shoulder to lock the plunger in its withdrawn position, and a pivoted tappet or trip located above the plunger in rear of the bolt and adapted to engage the bolt member and to be engaged by the plunger-shoulder for operation in the way stated, and means for supporting the depending bolt-locking member out of engagement with the plunger.

3. In a coin-actuated vending-machine, a revoluble goods-delivery cylinder, a plunger having a shoulder, means carried by said plunger for actuating said cylinder, means for locking said plunger consisting of a device of connected members including a coin-receiving key at the entrance-slot and a depending bolt adapted to engage said shoulder to lock the plunger in its withdrawn position, a pivoted tappet or trip located above the plunger in rear of the bolt and adapted to engage the bolt member and to be engaged by the plunger-shoulder, means whereby the bolt is maintained in its retracted position, and means for automatically releasing said bolt from its retracted position by the inward movement of the plunger.

4. In a coin-actuated machine, a rotating delivery-cylinder, a plunger having a shoulder, means carried by said plunger for actuating said cylinder to deliver cigars, means for locking said plunger consisting of a device of connected members including a coin-receiving key and a depending bolt adapted to engage said shoulder on said plunger to lock it in its withdrawn position, a lug supporting the bolt in its retracted position and a

weighted arm located above the plunger in rear of the bolt and caused to engage and release said bolt from its retracted position by the inward movement of said plunger.

5. In a coin-actuated vending-machine, the combination with a revoluble delivery-cylinder, and a plunger, of coin-controlled locking means for said plunger, consisting of pivotally-connected members the upper or key member of which projects through a guide-opening at the entrance of the coin-slot to partially close it against the entrance of the coin, a depending bolt member arranged to engage the plunger, and an intermediate member medially pivoted to cause by the weight of the depending bolt member pivotally mounted at one end of said intermediate member to maintain said upper key member partially closing the entrance of the coin-slot in its pivoted position at the other end of said intermediate member, means for supporting the depending bolt member out of engagement with the plunger, means for tripping the depending member from its support, and means pivotally mounted on the plunger adapted to engage and rotate said cylinder on the inward movement of the plunger.

6. In a coin-actuated vending-machine, the combination with a revoluble delivery-cylinder and a plunger having a shoulder, of coin-controlled locking means for said plunger consisting of a lever having a bolt freely depending from one end thereof and a coin-actuated key rising from the other end of said lever and terminating within and partially closing the entrance of the coin-slot, said bolt caused to automatically engage a shoulder of said plunger and to maintain the key in position to be depressed, a lug automatically engaged by said bolt to hold it in elevated position, and a weighted tappet-arm adapted to be struck by the inward movement of the plunger-shoulder to cause said tappet-arm to engage and release the bolt thereby causing it to fall to its normal position, and means actuated by said plunger to rotate said cylinder.

7. In a coin-actuated vending-machine, the combination of a rotating delivering-cylinder and a plunger having a shoulder, of coin-controlled locking means for said plunger consisting of a lever device of connected members including a coin-actuated key normally standing within and partially closing the entrance of the coin-slot, and a bolt member depending in position to automatically engage said plunger-shoulder, a lug to engage and hold the bolt up, and a tappet device arranged behind the bolt and depending in the path of the plunger-shoulder to release said bolt, and means actuated by said plunger to rotate said cylinder.

8. In a coin-actuated vending-machine, a goods-delivery cylinder, a plunger, a device

for locking and for releasing said cylinder, a ratchet-wheel carried by the cylinder, a weighted arm pivotally mounted on said plunger and adapted to engage the teeth of the said ratchet-wheel, a stop on the plunger supporting said pivoted arm in its engagement with said ratchet-wheel to rotate said cylinder on the inward movement of the plunger, the outward movement of the plunger carrying said pivoted arm free of engagement with said ratchet-wheel.

9. In a coin-actuated vending-machine, delivery mechanism for the goods, a plunger, mechanism for locking and for releasing said plunger, mechanism for locking and for releasing said delivery mechanism and means whereby both said mechanisms are operated by the direct action of said plunger and the latter having at its coin-engaging end a strike or tooth for engaging a member of the delivery mechanism as described and for the purpose specified.

10. In a coin-controlled vending-machine, a plunger, mechanism for locking said plunger, mechanism actuated by said coin for releasing the plunger, goods-delivery mechanism, a device carried by said plunger, and a device operative in the path of said coin and in the path of said plunger whereby the delivery mechanism is actuated by the conjoint action of said coin and the plunger and both by the inward movement of said plunger.

11. In a coin-actuated vending-machine, a plunger, mechanism actuated by the coin to allow the inward movement of said plunger, and goods-delivery mechanism actuated by the conjoint movement of said coin and of said plunger, whereby the said coin is caused to have a lock-releasing function in two positions in its travel through the machine.

12. In a coin-actuated vending-machine, a plunger, means for locking it in its retracted position, a delivery-cylinder means for locking it, a lever carried by said plunger means carried by the latter for operating said cylinder, a dog in the path of the coin, the plunger-lock and the delivery-lock released by the

same coin, at the entrance of the coin-passage and at the exit of said passage.

13. In a coin-actuated vending-machine and in combination, delivery mechanism for the goods, a plunger, and means for actuating the delivery mechanism consisting of means carried by said plunger and cooperating means in the path of said plunger, and coin-controlled locking mechanism for said plunger comprising pivotally-connected members one of which normally stands within a guide-opening at the entrance of the coin-slot and another member normally engaging the plunger, the coin acting through said connected members on entering the coin-slot to release the plunger and said coin on leaving the coin-slot actuating the release of the delivery mechanism.

14. In a coin-actuated vending-machine, and in combination, a goods-delivery cylinder, means carried by said plunger for actuating the cylinder, coin-controlled locking and releasing mechanism for said plunger comprising a vertically-slidable bolt, a lever to which said bolt is pivoted and a key pivoted to said lever and passing through the bottom of the coin-passage, and means automatically engaging said bolt for supporting it in its released position.

15. In a coin-actuated vending-machine, and in combination, delivery mechanism for the goods, a plunger, cooperating devices for locking the plunger and the delivery mechanism both devices actuated by gravity, and cooperating means for successively releasing the lock of each device, the release of the plunger being in advance of the release of the delivery mechanism.

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:

W. L. PRATT,
J. E. ROCKWELL.