

C. FORTH.
VENDING MACHINE.
APPLICATION FILED DEC. 4, 1908.

1,050,267.

Patented Jan. 14, 1913.

3 SHEETS-SHEET 1.

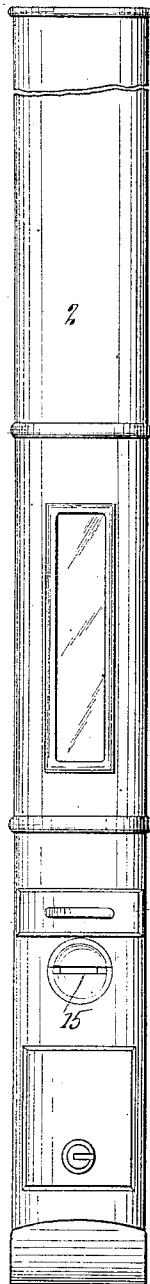


FIG. 1.

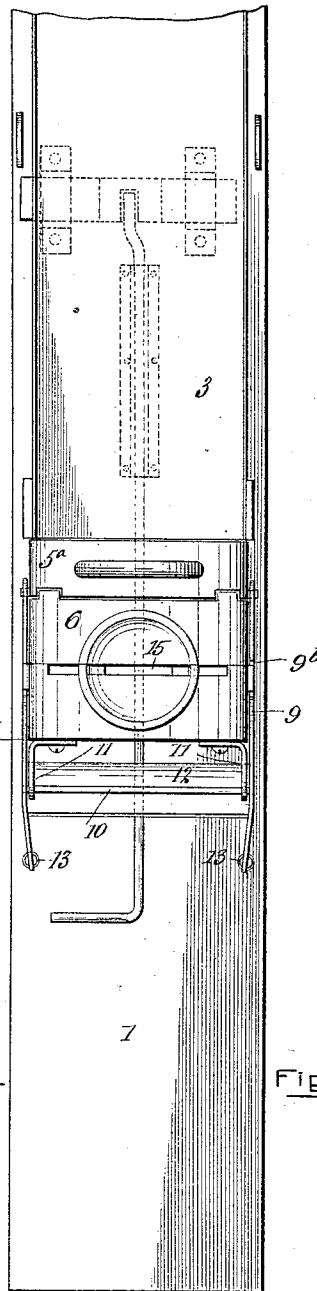


FIG. 2.

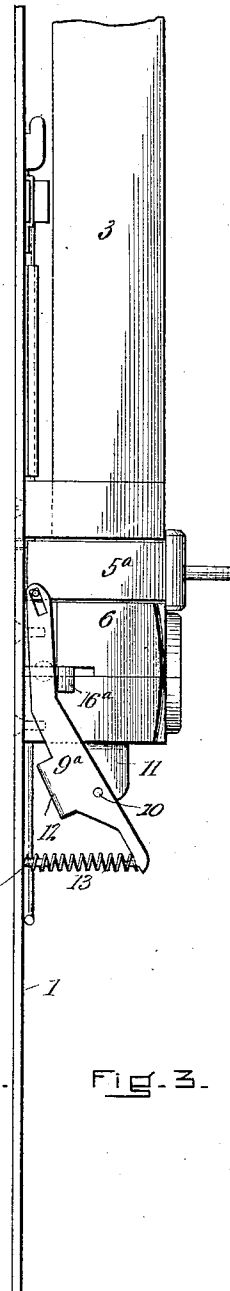


FIG. 3.

WITNESSES=

Philip Luft
W. Hink

INVENTOR=

Charles FORTH
Ray Rogers & Kennedy
Attorneys

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3 SHEETS—SHEET 2.

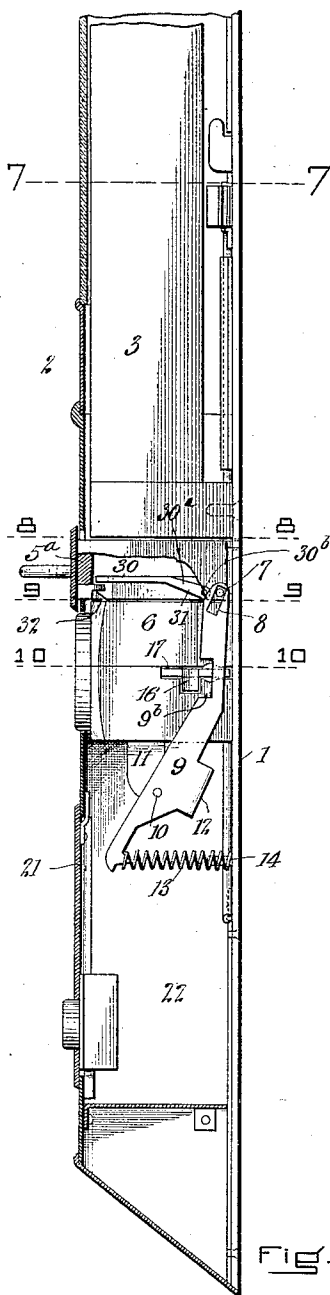


FIG. 4.

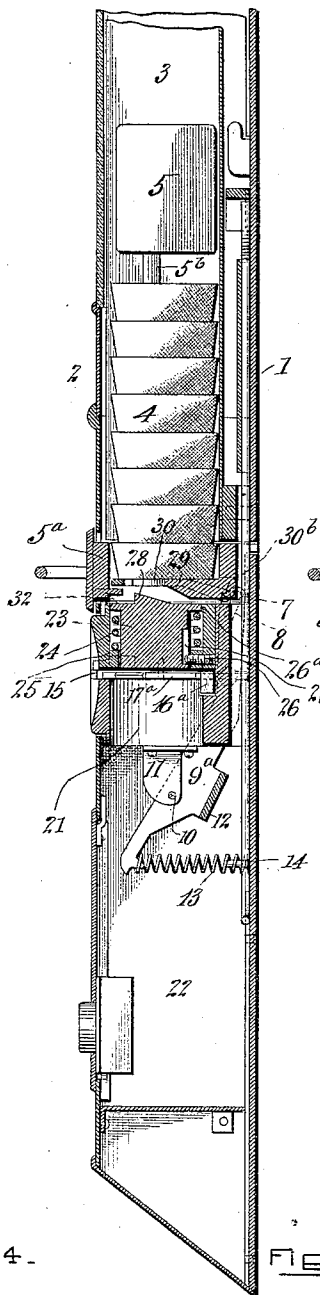


FIG. 5.

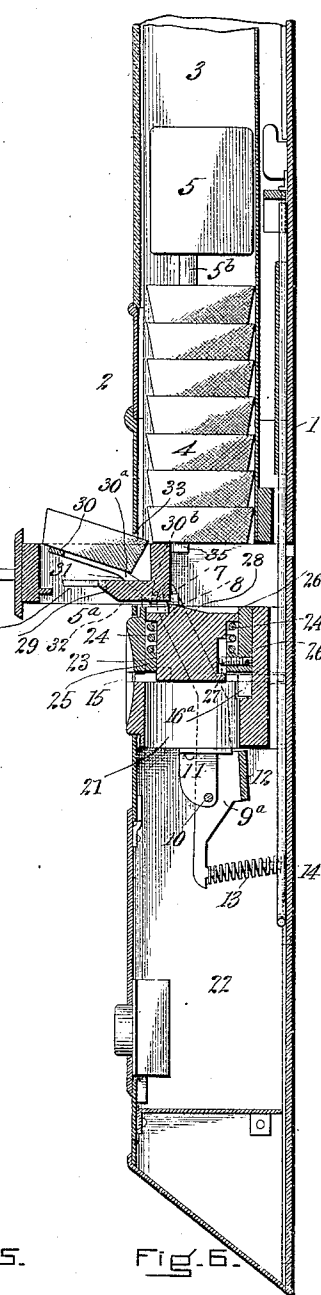


FIG. 6.

WITNESSES:
Philip Luft
W. Heib

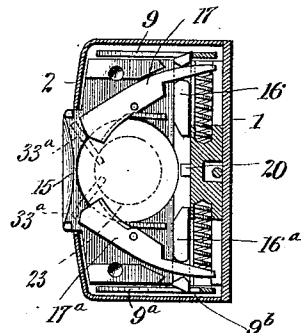
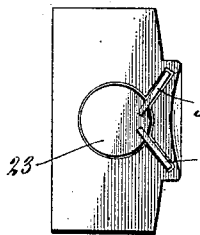
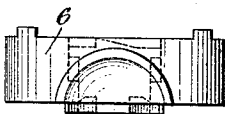
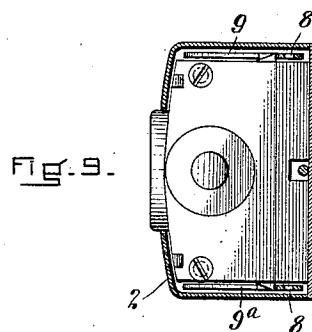
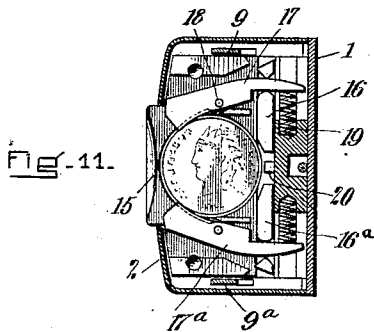
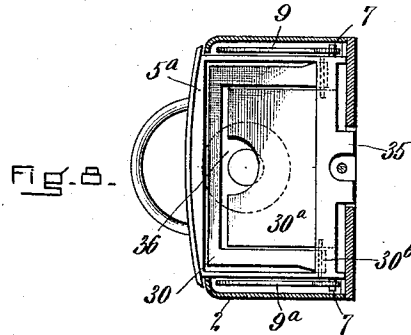
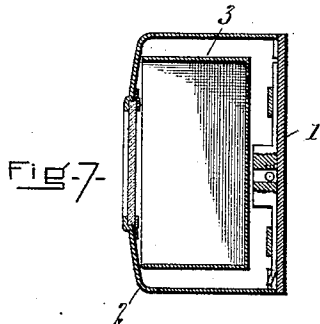
INVENTOR=
Charles Forth
By *Rogers & Kennedy*
Attorneys.

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3 SHEETS-SHEET 3.



WITNESSES:

Frank S. Ober
L. E. Harrison

INVENTOR:

Charles FORTH
By Rogers & Kennedy
Atty.

UNITED STATES PATENT OFFICE.

CHARLES FORTH, OF BOSTON, MASSACHUSETTS.

VENDING-MACHINE.

1,050,267.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed December 4, 1908. Serial No. 465,944.

To all whom it may concern:

Be it known that I, CHARLES FORTH, citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to vending machines of the type in which the articles to be vended are stored in a holder or magazine from which they are discharged by mechanism controlled in its action by the insertion of a coin.

15 The aims of the present invention are to produce a device of this character which will be simple and durable in construction and operation, and which will be compact in form and will occupy little space, so that it may be adapted to localities where the space for such purposes is limited.

20 The invention consists in various improved features of construction and arrangement of parts which will be fully described in the specification, and their novel features pointed out in the claims.

25 In the accompanying drawings: Figure 1 is a front elevation on a reduced scale of my improved vending machine. Fig. 2 is a front elevation on an enlarged scale of the back or sustaining plate and the attached parts, the front inclosing casing being removed. Fig. 3 is a side elevation of the same. Fig. 4 is a similar view from the opposite side. Fig. 5 is a vertical longitudinal sectional elevation of the complete device from front to rear. Fig. 6 is a similar view with the parts in the position they occupy when delivering an article or package. Figs. 7, 8, 9 and 10 are horizontal sectional plan views on the correspondingly numbered lines of Fig. 4. Fig. 11 is a horizontal sectional plan view showing how the inserted coin operates to release the delivery drawer. Fig. 12 is a plan view of a detail. Fig. 13 is a front elevation of another detail.

30 Referring to the drawings: the operative parts of my improved device are inclosed in a casing comprising a back or sustaining plate 1, and a front inclosing portion 2, which parts are preferably separable from

each other in order that access may be had to the interior. In the upper part of the casing is mounted a vertical magazine or holder 3, open at the front, and of the cross-sectional form illustrated in Fig. 7, in which magazine the packages or articles 4 are stored, one upon the other in column, and urged constantly downward by a weight or follower 5, resting on the top of the column. This magazine is fixed by suitable means at its lower end to the back plate 1, and is open at this point so that the articles may pass downward and outward therefrom. Arranged immediately beneath the lower end of the magazine is a delivery or ejecting device 5, in the form of a horizontally sliding drawer mounted between the side walls of the casing to move back and forth through an opening in the front portion of the casing, and suitably supported and guided in its movements by the upper end of a frame or block 6, fixed to the back plate 1, and exposed at its front through an opening in the front portion of the casing.

75 The delivery drawer is provided at its rear end with laterally extending pins 7, extending respectively in slots 8, in the upper ends of two arms 9 and 9^a, pivoted near their lower ends on a horizontal transverse rod 10, sustained by ears 11 depending from the block or frame 6, which arms are connected by a transverse plate 12 to maintain them in fixed relations to each other, and to cause them to move in unison. The lower extremities of these arms are acted on by the forward ends of spiral springs 13, whose rear ends encircle pins 14 extending from the back plate and by their expansion tend to hold the delivery drawer in closed position, as shown in Fig. 5. The arms 9, and 9^a, are locked in their rearward position, to hold the drawer closed, by means of a locking device adapted to be actuated to release the arms and drawer, by the insertion of a coin of the proper dimensions through a coin slot 15 in the front of the block or frame 6. This locking device for the drawer arms is in the form of two horizontally movable locking latches or bolts 16 and 16^a, which, as shown in Figs. 3, 4, 10 and 11, are mounted to slide in guiding openings formed in the block 6 near its

back, the latch 16 being adapted when projected, to extend in front of the drawer arm 9, and the latch 16^a when projected being adapted to extend in front of the drawer arm 9^a, by which means the arms will be prevented from moving forwardly and will consequently prevent the drawer from being pulled out. The latches are engaged and operated by fingers or tumblers 17 and 17^a, which are adapted to cooperate with the inserted coin in such manner that when the latter is pushed into the coin slot, the latches will be retracted and will release the drawer arms. To effect this action, the tumblers are arranged horizontally within a horizontal slot in the block 6 at opposite sides of the coin slot and pivoted each between its ends, on a vertical pivot pin 18, the forward ends of the tumblers being arranged in the path of the incoming coin, while their rear ends are interlocked with the latch bolts by being passed through openings therein. The rear extremities of the tumblers are acted on by the outer ends of spiral springs 19, whose inner ends bear against the block 6, and by their expansion the springs tend to urge the rear ends of the tumblers outwardly, the latch bolts projected, and the front ends of the tumblers in the path of the incoming coin, as shown in Fig. 10. When now a coin is inserted in the slot and pushed back by the finger, the edge of the coin engaging the forward ends of the tumblers, will spread them apart, thereby moving their rear ends inwardly toward each other and retracting the latch bolts from in front of the drawer-arms to the position shown in Fig. 11, the coin in the meantime being held by the tumblers with its rear edge against a stop pin 20, fixed to the block 6, and in vertical alinement over a vertical opening 21 in the block, which opening forms a continuation of the coin slot. The drawer is now free to be drawn outwardly to deliver the lowermost article of the column, which article had been seated in the drawer, as shown in Fig. 5. As the drawer is pulled forwardly it acts to dislodge the coin held by the tumblers and discharges the same into a coin receptacle 22 in the bottom of the casing, which receptacle communicates with the vertical opening 21. This action is effected by means of a cylindrical plunger 23, mounted to move vertically in a vertical guiding opening in the block 6, forming an upward continuation of the opening 21, which plunger is acted on by a spiral spring 24 encircling the same and seated at its lower end against an annular surrounding shoulder 25 on the block 6, and the upper end of the spring bearing against an annular shoulder 26^a on the upper end of the plunger, the upward movement of the plunger under the influence of the spring being limited by a horizontal pin 26, fixed to the

block, and extending inwardly in a vertical slot 27 in the plunger. At its upper end the plunger is provided with a beveled projecting pin 28 extending normally in the path of a beveled shoulder 29 on the under side of the drawer, the arrangement being such that when the drawer is moved forwardly the shoulder thereon will engage the pin, and the beveled surfaces cooperating the continued movement of the drawer will depress the plunger against the upward pressure of its spring and will cause its lower end to engage the coin held between the tumblers and dislodge the same, forcing the coin downwardly into the coin receptacle beneath the opening 21.

On the return of the drawer to its former closed position, which action is effected automatically by the springs 13, the arms 9, 9^a, in moving back past the latch bolts, which had been released by the dislodgment of the coin from between the tumblers, and had been projected by the springs 19, will automatically force said latches inwardly, the outer ends of the bolts being beveled to admit of this action, and as the arms finally pass behind the bolts, the latter are projected by their springs in front of the arms and act to lock them against forward movement.

In order that the drawer may be subjected to a locking action when it is partially closed, so that the delivery of a second article may be prevented by successive actions of the drawer after being once released by a coin, I so arrange the parts that one of the locking latches will come into action before the other and when the drawer is but partially closed. This is preferably effected by forming in one of the arms, in the present instance arm 9^a, a recess 9^b, the effect of which is to dispose the forward end of the arm at this point in a plane rearward of the forward edge of the other arm, with the result that the locking latch acting on arm 9^a will be allowed to be projected in front of it before the other latch will be projected in front of the other arm, the relation of the parts being such that this projection of the latch of arm 9^a will take place before the drawer has returned far enough to allow a package from the column to drop therein. It is seen, therefore, that even if the drawer received a second package from the column before being completely closed, it could not be drawn forward to deliver the package, as such action would be prevented by the projection of the latch in front of arm 9^a, and this arm would be locked against forward motion.

In order that as the drawer is pulled outwardly to effect the delivery of the article therein, the latter may be conveniently removed by the purchaser, I provide means whereby the article will be partially lifted

from the drawer, as shown in Fig. 6. This is preferably effected by providing in the bottom of the drawer, a tilting tray or frame 30 of U form, as represented in Fig. 8, with its rearwardly extending limbs 30^a pivoted at their rear ends by horizontal pivot pins 30^b to the bottom of the drawer at its rear end, so that the opposite end of the tray may swing upwardly, the form and relation of the tray to the drawer being such that the package within the drawer will rest on and be supported by the tray. The side limbs of the tray are inclined or beveled on their under sides, as at 31, Fig. 4, which beveled surfaces are adapted, as the drawer is pulled out, to engage fixed pins 32, extending upwardly from the upper surface of the block 6 at its front, the result being that the continued movement of the drawer will tilt the tray upwardly and elevate the article sustained thereby to the position shown in Fig. 8, with its forward portion above the top of the drawer, where it may be conveniently grasped by the fingers of the purchaser and readily removed.

The parts are so related and arranged that when the drawer is in its outward position with the article partially elevated, as shown, the upper edge of the article at its rear will stand close under the upper edge 33 of the opening in the front of the casing, and the lower forward corner of the article will extend close to the upper forward edge of the drawer. As a result of this relation of the parts, if the purchaser releases the drawer before removing the article therefrom, the sudden inward movement of the drawer under the influence of the springs 13 will act to carry the upper surface of the article against the edge 33 of the casing, before the article has had time to descend with the tray free of said edge, the result being that the tilted article will be pushed slightly forward on the tray and over the forward edge of the drawer, and as the inward movement of the drawer continues the article will be wedged in between the forward edge of the drawer and the upper edge 33 of the casing opening, and in this manner will form an obstruction to the further closing movement of the drawer. The amount of inward movement permitted before the article obstructs the drawer is not sufficient to bring the locking latch of the arm 9^a into action, so that the purchaser may again pull the drawer out and remove the article.

In order that the use of an instrument, such as a knife blade, or the like, to separate the tumblers and thereby release the delivery drawer may be prevented from becoming effective, I propose to provide means which will cooperate with the blade or other instrument in such manner as to prevent the drawer from being pulled out far enough to

deliver an article. This device is preferably in the form of two fingers or plates 33^a, Fig. 12, fixed at their rear ends to the front of the plunger and diverging forward and outward therefrom, and adapted as the plunger moves vertically, to move with it in vertical guideways or slots in the block 6. The forward lower edges of these plates, when the plunger is in its elevated position, as shown in Fig. 5, will just clear the upper wall of the coin slot, so as not to interfere with the insertion of a coin, but when the plunger descends these plates will be projected downwardly across the coin slot immediately in advance of the forward ends of the tumblers, as shown in Fig. 10, thereby obstructing the coin slot. As a result of this construction if a blade or other instrument be inserted in the slot and engaged with the tumblers so as to spread them apart sufficiently to retract the locking latches and release the drawer, any attempt to pull the drawer outwardly would result in the engagement of the beveled shoulder on the drawer with the beveled pin on the plunger, and would tend to depress the plunger, but the descent of the plunger would be prevented by the engagement of the two diverging plates 33^a with the blade or instrument in the coin slot, and under these conditions the beveled pin on the plunger, remaining in the path of the beveled shoulder on the drawer, would act as an obstruction and form in effect a lock to prevent the drawer from being withdrawn far enough to deliver an article.

In the outward movement of the drawer to deliver the article therein, the lowermost article in the column, that next to be delivered, rests on and is sustained by the sides of the drawer, and in order that when this support is removed as the drawer reaches the extreme outward limit of its movement, the package may be prevented from dropping down behind the same, the drawer is provided on its rear end with a horizontal lip 35, Fig. 6, adapted when the drawer is fully open to extend a sufficient distance rearwardly beneath the column of articles to support the same and prevent the lower one from falling.

For the purpose of obstructing the coin slot when all the articles have been delivered from the magazine, so that no more coins may be inserted until the supply of articles has been replenished, I provide means whereby the fingers 33^a will be automatically projected across the coin slot when the last article leaves the magazine. This may be effected by means of the follower 5, which for this purpose is provided on its bottom with a pin 5^b, resting on the top of the column, and adapted when the last article passes from the magazine, to extend through an opening 36 in the bottom of the drawer and engage with the upper end of the bev-

eled pin on the plunger, thereby depressing the plunger and causing the diverging fingers 33^a to descend and project across the coin slot.

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

1. In a vending machine, the combination of a casing adapted to hold the articles to be vended and provided with a coin slot, a delivery device, a swinging arm sustained by the casing and connected with the delivery device so as to be swung when the delivery device is operated, retractable means acting directly on said arm and serving to lock the same against movement and thereby prevent the action of the delivery device, and means arranged adjacent the coin slot in the path of the coin, said means being adapted by the insertion of a coin to be actuated to release the arm-locking means.

2. In a vending machine, the combination of a casing adapted to hold the articles to be vended and provided with a coin slot, a delivery device, swinging arms pivoted to the casing and adapted to be swung by the movement of the delivery device, retractable locking latches adapted to directly engage with the arms and lock them against movement and thereby prevent the action of the delivery device, and means arranged adjacent the coin slot in the path of the coin, said means acting on the locking latches and adapted by the insertion of a coin to be moved thereby and release the latches.

3. In a vending machine, the combination of a casing adapted to hold the articles to be vended and provided with a coin slot, a delivery device, swinging arms mounted on the casing and adapted to be swung by the operation of the delivery device, retractable locking bolts coöperating with said arms to lock them against action, and movable tumblers arranged adjacent the coin slot in the path of the incoming coin, said tumblers engaging the locking bolts and moved by the coin to retract the bolts and release the arms.

4. In a vending machine the combination of a casing, a magazine therein for the articles to be vended, a delivery device mounted in the casing beneath the magazine, the said casing being provided below the delivery device with a coin slot, and a member interposed between the delivery device and coin slot and adapted to be actuated by the movement of the delivery device to dislodge the inserted coin.

5. In a vending machine the combination of a casing provided with a coin slot, a magazine therein for holding the articles to be vended in column, a horizontally movable delivery device mounted in the casing beneath the magazine, and a vertically mov-

able plunger mounted in the casing between the delivery device and coin slot, and adapted by the movements of the delivery device to be depressed and to dislodge the inserted coin.

6. In a vending machine, the combination of a casing for storing the articles to be vended, and provided with a coin slot, a delivery mechanism movable to discharge the articles and retractable to receive the next article, a locking device adapted to come into action and lock the delivery mechanism when the same has been partially retracted, and means arranged adjacent the coin slot and adapted to be operated by the inserted coin for releasing the locking device.

7. In a vending machine, the combination of a casing to hold the articles to be vended, and provided with a coin slot, a delivery mechanism movable to discharge the articles and retractable to receive the next one to be delivered, two locking devices adapted to become active in succession as the delivery mechanism is retracted, one of said locking devices arranged to lock the delivery mechanism when partially retracted, and the other arranged to lock the delivery mechanism when wholly retracted, and means arranged adjacent the coin slot and adapted by the insertion of a coin to be actuated to release the locking devices.

8. In a vending machine, the combination of a casing provided with a coin slot, means in the casing for holding the articles to be vended, a delivery device movable to deliver the articles, a movable member normally disconnected from and adapted to be engaged by the delivery device and projected into the coin slot, and means arranged in the path of the incoming coin and adapted to be operated by the inserted coin for controlling the action of the delivery device.

9. In a vending machine the combination with a casing provided with a coin slot, of means in the casing for holding the articles, a delivery device movable to deliver the articles, a movable plunger arranged in the path of the delivery device and adapted to be moved by the action of the delivery device, a depending plate carried by the plunger and adapted when the latter is moved to project into the coin slot, and means arranged adjacent the coin slot and operated by the inserted coin for controlling the action of the delivery device.

10. In a vending machine the combination of a casing provided with a coin slot, means in the casing for holding the articles to be vended in column, a follower adapted to rest on the column and acting to urge the articles constantly downward, a delivery device movable from the position beneath the column to deliver the articles therefrom, a member situated between the delivery de-

vice and coin slot and movable across said slot, means carried by the follower and adapted to act through the delivery device to move said member across the coin slot to
5 obstruct the same, and means operated by the inserted coin for controlling the action of the delivery device.

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

CHARLES FORTH.

Witnesses:

FRANK G. PARKER,
JOHN BUCKLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."