

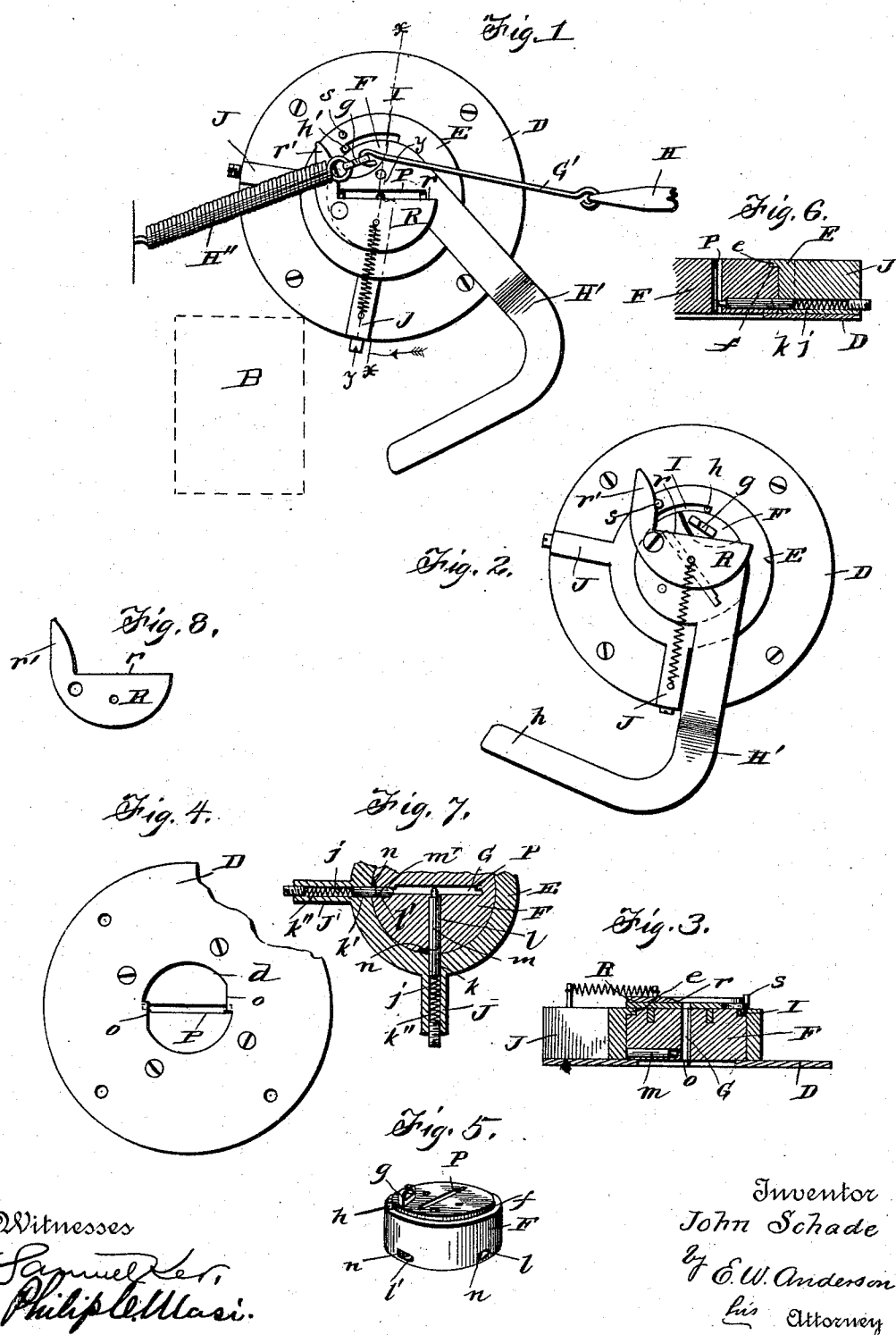
(No Model.)

2 Sheets—Sheet 1.

J. SCHADE.
COIN OPERATED VENDING APPARATUS.

No. 470,508.

Patented Mar. 8, 1892.



Witnesses
Samuel Ker,
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Inventor
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(No Model.)

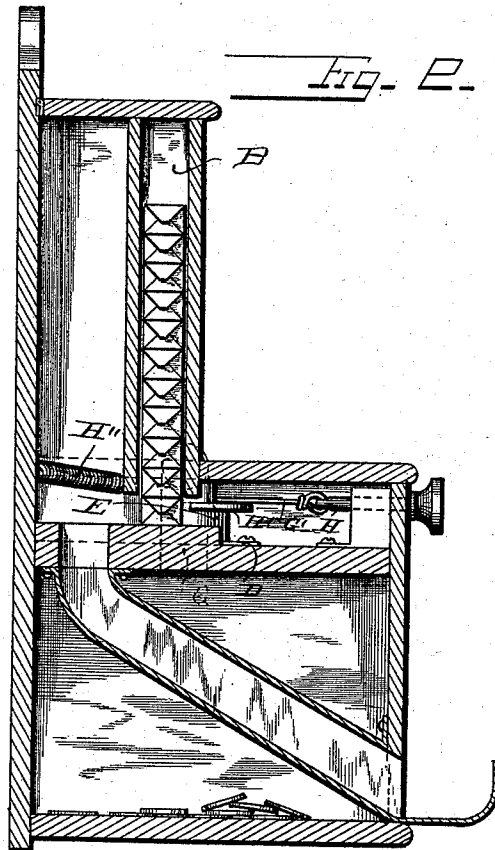
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Patented Mar. 8, 1892.



Witnesses
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Inventor
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by *Edw. A. A. A.*
his Attorney

UNITED STATES PATENT OFFICE.

JOHN SCHADE, OF BROOKLYN, NEW YORK.

COIN-OPERATED VENDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 470,508, dated March 8, 1892.

Application filed October 8, 1891. Serial No. 408,159. (No model.)

To all whom it may concern:

Be it known that I, JOHN SCHADE, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Coin-Operated Vending Apparatus; and I do 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of the invention in plan view, showing the parts in normal position. Fig. 2 is a similar view showing the parts in discharging position. Fig. 3 is a vertical transverse section on the line $x x$, Fig. 1. Fig. 4 is a bottom plan view of the face-plate. Fig. 5 is a detail perspective view. Fig. 6 is a vertical section of a portion of the plug. Fig. 7 is a horizontal section through a portion of the rotary plug and its bearing. Fig. 8 is a detail view of the cutter. Fig. 9 is a sectional view showing the operating mechanism as applied to a conventional form of goods-holder.

This invention has relation to coin-operated vending-machines in which the article purchased cannot be delivered until prepaid by a coin of the size and value denoted by the price of the article; and it consists in the novel construction and combination of parts, as hereinafter specified.

The primary object of the invention is to greatly simplify the construction of the machine and at the same time provide more efficient means for preventing it from being fraudulently operated either by the insertion of a coin of a different denomination than that called for, by the insertion of a coin sufficiently to permit the machine to be operated and subsequently withdrawing it by means of a string or other medium attached to the coin, or by the insertion of any article other than a coin, or in any other improper manner. Other objects of the invention will hereinafter appear.

In the accompanying drawings I have shown and will hereinafter describe a machine of this character which is adapted to be oper-

ated by the insertion of a one-cent piece; but it will be understood that I may adapt the machine for operation by a coin of any other denomination, according to the particular use to which the machine is to be put.

In the drawings I have shown the operating mechanism only, which is designed to be inclosed in any suitable casing or closure provided with a chamber or chute B, (shown in the plan view, Fig. 1, in dotted lines,) in which the articles to be delivered are placed, the delivery-opening of which is designed to be so arranged that no article can be taken therefrom except by the action of the operating mechanism, as hereinafter described.

D designates a face-plate, which is usually secured to the bottom plate or piece near the bottom of the inclosing case, forming the upper wall of the coin receptacle or drawer; said face-plate having an aperture d , designed to be located over an aperture in said wall. Secured to this face-plate is a hub or sleeve E, having a circular chamber extending there-through, in which bears a plug or cylinder F. The upper portion of the sleeve E has an inward flange e , against which fits a shoulder f , formed by the reduced diameter of the upper portion of the plug; said flange and shoulder forming an additional bearing. Through this plug F is a vertical transverse slot G, the end walls of which terminate short of the circumferential edge thereof. On the upper end of said plug is a lug or ear g , to which is connected one end of a link G' , the opposite end being connected to an operating knob or button H. To the upper end of said plug is also connected an arm H' , provided at its free end with a short arm h , the forward end of which normally lies just at the rear of the lower portion of the chute B, and which is adapted under the movement of the plug to project into said chute and to engage and throw out at the delivery an article or package therein.

H'' is a spring connected to the plug and designed to return it to its normal position after operation. The rotary movement of said plug in the sleeve is limited by the stud or pin projection h' , carried by the shoulder f and engaging at opposite limits of movement the end walls of a slot I, formed by a cut-away portion of the flange e of the sleeve E.

The lock for the purpose of preventing the

plug from turning to actuate the push-arm H' to cause the delivery of an article or package from the chute except by the insertion of a coin of the proper size and denomination in the slot G will now be described.

Connected to the sleeve E are the arms or lugs J and J', having therein each a horizontal longitudinal aperture or bore *j*, extending through the inner periphery of the sleeve, and in these lugs are respectively seated pins or tumblers *k* *k'*, which under the action of springs *k''* are designed to be thrown into engagement, respectively, with apertures *l* *l'* in the plug F and prevent said plug from turning in its sleeve or bearing. The aperture *l* extends through the plug to the slot G and communicates therewith centrally of its length, while the aperture *l'* communicates with said slot at one end thereof. Working loosely in these apertures *l* and *l'* are pins *m* and *m'*, respectively, and when the position of the plug is such that said apertures are in alignment with the pins or tumblers *k* and *k'* said tumblers will act against the pins *m* *m'* to project them slightly into the slot G. Said apertures *l* *l'* where they enter the circumferential edge of the plug are provided each at one side with a bevel or run-out *n*. When the plug is in its normal position, the tumblers or pins *k* and *k'* are in engagement with these run-outs and do not contact with the pins *m* and *m'* to project them into the slot G, and the plug has a play or lost movement equal to the diameter of the apertures *l* or *l'* and the length of the run-out.

The operation is as follows: The coin is placed in the slot G through a suitable chute or slide in the closure communicating with said slot and falls therein by its own weight. The operating knob or handle is pulled outwardly, causing the plug to turn in its sleeve, and as it turns the apertures *l* and *l'* are brought into alignment with the pins or tumblers *k* and *k'*, which consequently are forced by their respective springs into contact with the pins *m* and *m'*. The position of the coin, however, prevents said pins from projecting into the slot G, and they are therefore caused by said coin to react against the tumblers sufficiently to force them back out of engagement with the plug, which is then free to turn sufficiently to operate the delivery-arm H. As the tumblers *k* *k'* do not normally contact with the pins *m* *m'*, the insertion of the coin easily forces said pins backwardly, their ends being usually slightly beveled to facilitate this operation. To insure the coin being retained in operative position sufficiently long to successfully operate the machine (it sometimes happening that the plug is let go before the plug has been turned sufficiently to cause delivery of the article or package and a second pull being therefore necessary) the edge of the aperture *d* of the face-plate D is provided with the cams or inward offsets *o*, which are located at diametrically-opposite points and project over the end portions of the slot G sufficiently

to prevent the complete passage of the coin therethrough until the plug has been turned the correct distance, when said slot will have been carried away from said projections and the coin allowed to fall through. Said projections also serve to prevent the coin from being again drawn up into and through the slot by a string or other medium after it has once been used. When the article or package has been delivered, the spring retracts the plug and push-arm to their normal positions. To prevent the operating-knob being successively operated after the plug has once been unlocked by the coin and the consequent delivery of a successive number of articles, which might be done by preventing the plug from coming back quite far enough to be locked by the tumblers, the chute B is set back sufficiently far so that after an article has been delivered by the action of the arm H the subsequent article, instead of falling in front of said arm, will fall thereon and will be retained there until the arm has been retracted to the point where the tumblers will act to effect the lock. Then as the tumblers come into engagement with the run-outs the arm is still further retracted, and the package falls in front of it in position to be delivered by the subsequent complete operation.

The slot G is made of exactly the proper diameter and width to receive a one-cent piece, and to prevent the use of a disk of softer material of exactly the same thickness and diameter the wall of said slot opposite the pin *m* is provided with the offset P. Suppose a disk of soft material is inserted in the slot and the knob pulled. The tumblers will throw the pin *m* against said disk, forcing it into said offset, and said disk, owing to its soft character, will not react against the pin sufficiently to throw the tumblers back out of engagement with the plug and the machine will still remain locked.

If instead of a soft disk it is attempted to use a washer, the pin *m* will be projected through the central cut-away portion thereof and the machine will still remain locked. A coin of a thickness or diameter a little less than a cent-piece will fall directly through the plug and will not remain in position to operate, and a larger coin will not enter the slot at all. Suppose, however, that a coin or disk is used which is of the same diameter as a cent-piece, but which fails to have quite the same thickness. In this case a reaction would be given the pin *m'* and the tumbler *k'* would be thrown back out of engagement with the plug, but the pin *m* would not operate and the machine remains locked. If the reverse is the case and the thickness the same, but the diameter not equal, the pin *m'* would not be operated. It is of course obvious that a rigid disk corresponding exactly in thickness and diameter to a cent-piece will operate the machine, and in some instances this may be desirable. To prevent the pin *m* from being projected by the tumblers or drivers far enough

into the slot G to prevent the coin from passing through, the bore or aperture *l* is offset inward or reduced in diameter near where it communicates with said slot, the pin being correspondingly shouldered for engagement therewith.

If the cam-edge of the face-plate aperture is not a sufficient guard against a coin being used with a string secured thereto, a knife or cutter R may be provided, which as the plug is turned will be in position to sever the spring. This cutter, as shown, may consist of an approximately semicircular plate secured to the rotary plug. Said plate is cut away so that its edge *r* extends along one edge of the slot G and is formed with an arm or point *r'*, which is designed to come into engagement with a pin or stud *s*, rigidly secured to the sleeve or shell. When the plug is turned, the point *r'* is forced against the pin *s*, causing the knife-plate to move in the opposite direction to the movement of the plug and to cover the mouth of the slot, which will cut away any medium which may be attached to the coin. The knife-plate is retracted by the spring S.

By placing the run-outs on the opposite side of the apertures *l l'* the device may be operated by a push instead of a pull movement.

The coin falls into operating position entirely by gravity and does not require to be pushed into the slot.

It will be understood that I do not wish to limit myself to any particular form or style of the case or closure nor to the exact arrangement of minor parts, as described.

Having described this invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a coin-operated vending-machine having a rotary plug actuating the delivery mechanism and having a passage therethrough for the coin, a reciprocating tumbler-lock operated by the coin and holding and releasing said plug, substantially as specified.

2. A coin-operated vending-machine having a rotary plug actuating the delivery mechanism and reciprocating tumblers in engagement with said plug and forming a lock therefor until released by the action of the coin, whereby said tumblers are slid from engagement with said plug, substantially as specified.

3. In a coin-operated machine, the combination, with a rotary plug and a delivery-arm secured thereto, of a bearing for said plug, said plug and bearing having a tumbler-lock, and means in said plug whereby the passage of a coin therethrough releases said lock and permits the rotation of the plug, substantially as specified.

4. In a coin-operated machine, the combination, with the rotary plug having the coin-receiving slot therein and the delivery-arm carried thereby, of the bearing provided with spring-actuated tumblers adapted to engage said plug and means for effecting the engage-

ment and disengagement of said tumblers by the insertion of a coin in said plug, substantially as specified.

5. The combination, with a rotary plug having the coin-receiving slot therethrough, of a delivering-arm secured thereto, a retracting-spring therefor, and a tumbler-lock actuated by the passage of a coin through said slot, substantially as specified.

6. The combination, with the rotary plug having a slot therethrough of exact size to receive a coin of a given denomination and the lock operated by the coin, of the face-plate below said plug having the cam-edged aperture arranged to prevent the passage of the coin therethrough until the plug has been operated sufficiently to insure delivery, substantially as specified.

7. The combination, with a rotary plug having a coin-slot therein and a delivery-arm and retracting-spring secured thereto, of a bearing-sleeve which said plug turns, said delivery-arm being adapted to move through a feed-chute set immediately in front of the locking position of the arm, substantially as specified.

8. The combination, with the rotary plug having the coin-slot therein and the pins adapted to project into said slot, of the bearing-sleeve in which said plug turns and the tumbler-pins therein adapted to lock said plug, substantially as specified.

9. The combination, with the plug having the coin-slot therein and the apertures communicating with said slot, said apertures where they enter said plug having the run-outs at one side thereof, and the pins working loosely in said apertures, of the bearing-sleeve having the spring-actuated tumblers normally engaging said run-outs and adapted to contact with said pins, substantially as specified.

10. The combination of a rotary plug having a coin-slot therethrough, one wall of said slot having an offset therein, an operating knob or handle connected to said plug, a delivery-arm also secured to said plug, and a retracting-spring therefor, substantially as specified.

11. The combination, with the sleeve having the tumblers therein, of the rotary plug bearing in said sleeve and provided with the coin-slot therein and with apertures communicating with said slot, the pins working loosely in said apertures and adapted to be projected into said slot, one at the end and the other at the side, substantially as specified.

12. The combination, with the rotary plug having the coin-slot therein, the operating-knob and the delivery-arm secured to said plug, and the coin-operated tumbler-lock for said plug, of means in said slot for preventing a disk of a diameter or thickness different from that of the proper coin from operating said tumblers, substantially as specified.

13. The combination, with the plug having the coin-slot therein and the tumbler-lock therefor, of an offset in said slot opposite a

pin actuated by said tumblers in said slot for preventing said tumblers from being operated by a soft disk of a diameter and size equal to that of the indicated coin, substantially as specified.

14. The combination, with the plug and its coin-operated tumbler-lock, of the knife or cutter pivotally secured to said plug, substantially as specified.

15. The combination, with the bearing-sleeve and the rotary plug therein, of the pin carried by said plug and engaging the walls of a slot cut in said sleeve to limit the movement of said plug, and a delivery-arm secured to said plug, substantially as specified.

16. The combination, with the face-plate having the cam-aperture therein and the bearing-sleeve secured thereto, said sleeve having the spring-actuated tumblers, of the cylindric plug in said sleeve and having apertures therein adapted to be engaged by said tumblers, the pins working loosely in said apertures, the coin-slot in said plug having the offset in one wall thereof, said pins adapted to be projected into said slot, the knob or handle connected to said plug, the stop therefor, and the retracting-spring, substantially as specified.

17. The combination of the bearing-sleeve, the rotary plug therein, a tumbler-lock for normally permitting the rotation of said plug, a passage through said plug adapted to admit the passage therethrough of a coin of exactly the proper size and denomination to re-

lease said lock, and means in said slot whereby the insertion of a flexible disk or coin of any other size or diameter will fail to release said lock, substantially as specified.

18. The combination, with the bearing, the tumblers carried thereby, and the slotted plug bearing in said sleeve and locked by said tumblers, of the pins working loosely in said plug and adapted to be projected into the slot by said tumblers and means whereby said tumblers are normally kept from contact with said pins, substantially as specified.

19. The combination, with the plug having the coin-slot therein and actuating the delivery mechanism, of the tumbler-actuated pin arranged to project through the side wall of said slot and means for limiting such projection, substantially as specified.

20. The combination, with the bearing-sleeve having the spring-pressed tumblers, of the plug actuating the delivery mechanism and provided with the coin-slot, a pin actuated by one of said tumblers and adapted to project slightly into said slot, said pin having a shoulder adapted to engage an offset in the aperture in which it slides to limit its projection, substantially as specified.

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

JOHN SCHADE.

Witnesses:

JOHN REYDEL,
EGBERT S. MOTT.