

No. 835,838.

PATENTED NOV. 13, 1906.

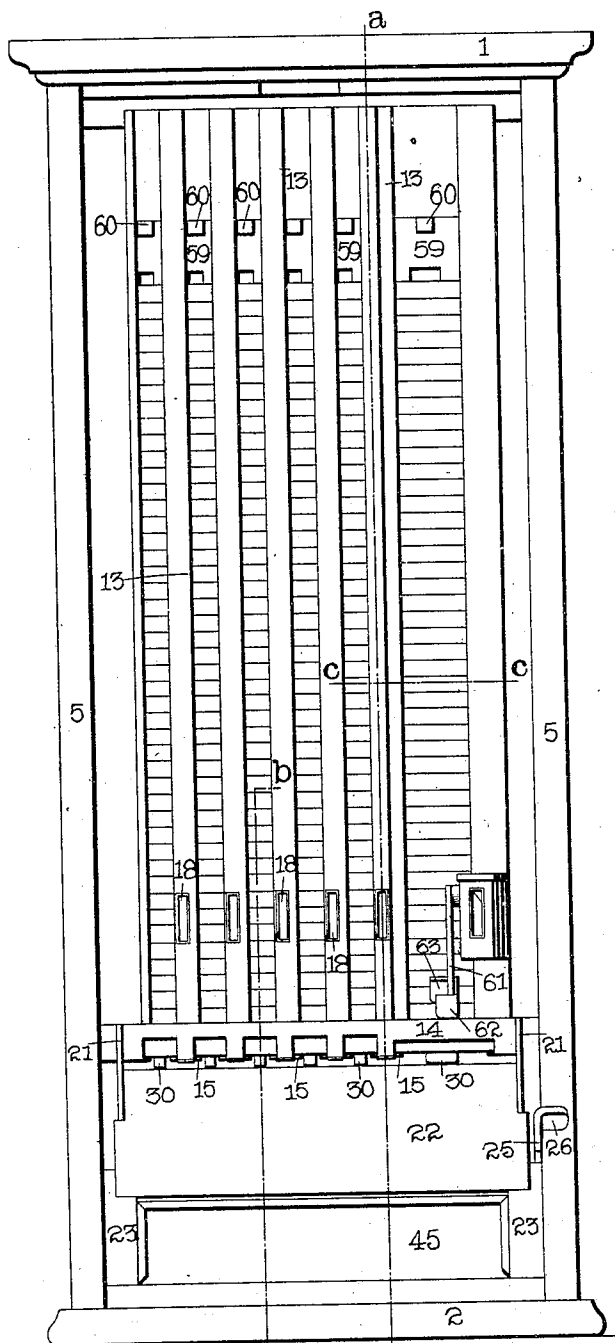
M. E. SHAW.

COIN CONTROLLED VENDING MACHINE.

APPLICATION FILED SEPT. 8, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses.

Harley S. Bradley
Geo. A. Neubauer.

Fig. 2.

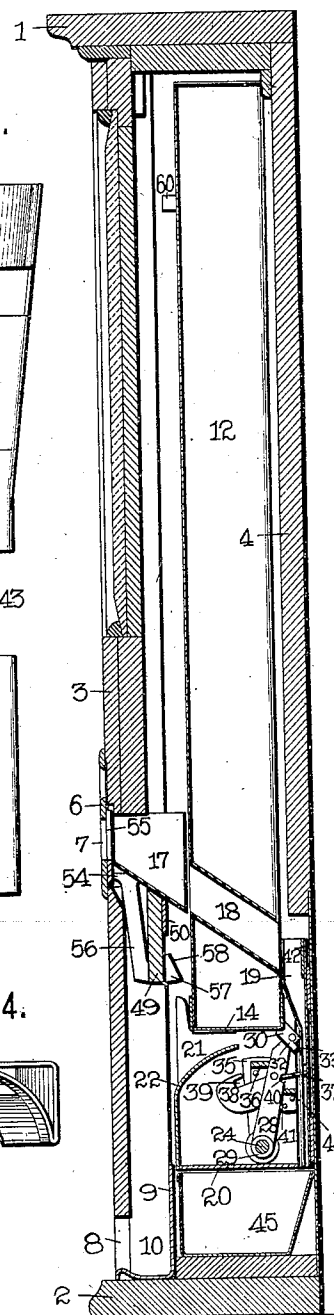


Fig. 3.

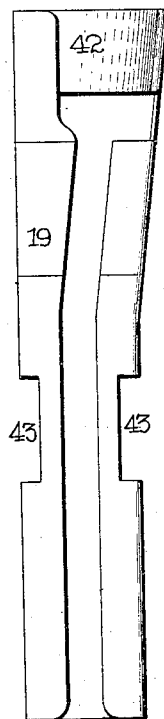
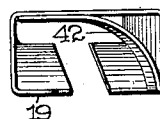


Fig. 4.



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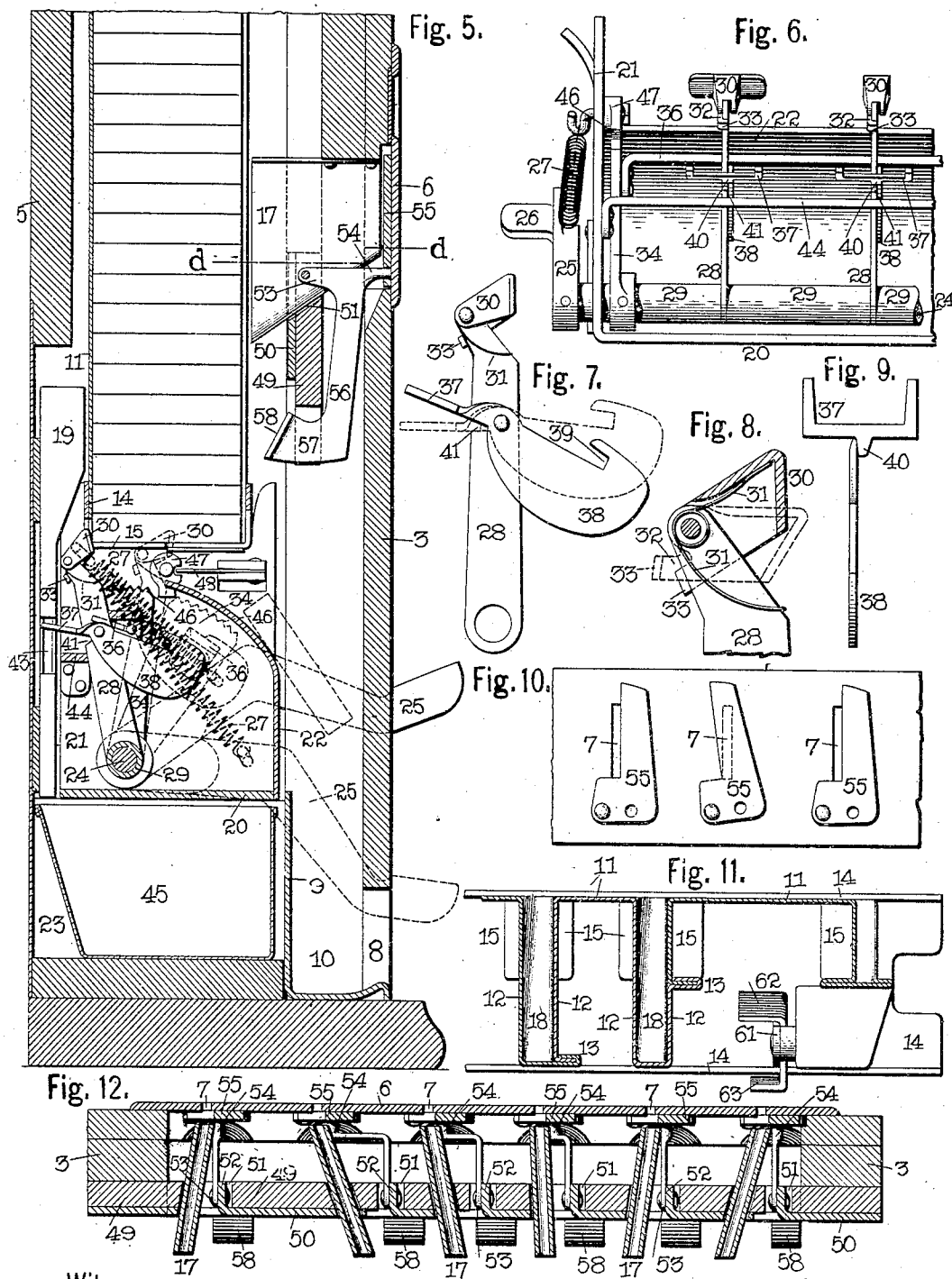
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2 SHEETS—SHEET 2.



Witnesses.

Harley S. Bradley
Geo. A. Neubauer.

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UNITED STATES PATENT OFFICE.

MELVIN E. SHAW, OF KNOWLESVILLE, NEW YORK, ASSIGNOR TO AUTO DOCTOR COMPANY, OF GENEVA, NEW YORK, A CORPORATION OF NEW YORK.

COIN-CONTROLLED VENDING-MACHINE.

No. 835,838.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed September 8, 1905. Serial No. 227,593.

To all whom it may concern:

Be it known that I, MELVIN E. SHAW, a citizen of the United States, residing at Knowlesville, in the county of Orleans and State of New York, have invented certain new and useful Improvements in Coin-Controlled Vending-Machines, of which the following is a specification.

This invention relates to an improved coin-controlled vending-machine.

One of the features has reference to a novel ejecting mechanism operatively arranged in a single frame which is mounted in the machine so as to be easily removed therefrom.

Another feature has reference to a novel means for automatically closing the coin-chute to prevent the deposit of coins when the compartment controlled by said chute is empty.

Another feature has reference to the novel construction of the compartments for holding the articles or packages to be vended.

Among the principal objects of the invention are to provide for easily dismantling the machine for repair or replacement, to arrange the ejecting mechanism in a single removable frame, and to obviate any chance of a possible purchaser depositing money in a coin-chute when the compartment controlled thereby is empty.

The invention also relates to certain details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of the machine with the cover removed. Fig. 2 is a vertical section on line *a a*, Fig. 1. Figs. 3 and 4 are enlarged detached front and plan views of the portion of the coin-chute attached to the rear wall of the inclosing case. Fig. 5 is an enlarged fragmentary section through the machine on line *b b*, Fig. 1, the ejecting mechanism being shown in its normal position in full lines and in the position for ejecting a package in dotted lines. Fig. 6 is an enlarged detached rear view of a fragment of the ejecting mechanism and its supporting-frame. Fig. 7 is an enlarged detached side elevation of one of the ejecting-arms. Fig. 8 is an enlarged side view of a fragment of one of the ejecting-arms, showing a section through the pivoted ejecting-block. Fig. 9 is an enlarged detached plan view of one of

the coin-operated locking-arms. Fig. 10 is an enlarged fragmentary inside view of the metal plate on the cover, showing the slots through which the coins are introduced and also the pivoted plates for closing said slots. Fig. 11 is an enlarged fragmentary section through the magazine for holding the packages to be vended on or about line *c c*, Fig. 1. Fig. 12 is a transverse section through the cover of the machine on line *d d*, Fig. 5, showing a transverse section through the portion of the coin-chute devices attached thereto and through the devices for closing the coin-slots.

In referring to the drawings for the details of construction like numerals designate like parts.

This improved vending-machine comprises an inclosing case, a plurality of vertical compartments or tubes in said case forming a magazine for holding the articles or packages to be vended, ejecting mechanism arranged in a single removable frame beneath the magazine, and a coin-chute mechanism controlling the ejecting mechanism.

The inclosing case consists of a top 1, bottom 2, front wall or cover 3, rear wall 4, and side walls 5. The front wall or cover 3 is removably locked in place in the remainder of the inclosing case and is cut out at an intermediate point to provide a transverse opening or slot which is closed by a metal plate 6. This plate is fastened to the outside of the cover 3 by screws and has a series of vertical coin-receiving slots 7. The cover 3 is also cut away at its lower end to provide an opening or slot 8, which extends nearly throughout the width of the cover and constitutes a passage for the removal of the articles or packages which are vended. The rear side and the bottom of the slot 8 are partially inclosed by a metal trough 9 to form a receiving-chamber 10, into which the vended article is deposited by the ejecting mechanism and from which it is easily withdrawn by the purchaser.

The magazine for holding the commodity to be vended has a series of separated compartments which extend vertically and are all connected and arranged parallel to each other. The magazine is preferably formed of sheet metal and has a rear wall 11 and a series of vertical side partitions 12, which are separated sufficiently to leave the containing-

compartments between them. Each vertical side partition is constructed with double walls, and flanges 13 are formed at the front edges of said partitions to prevent the commodity in the adjacent compartment from lateral displacement. (See Fig. 11.) The rear wall 11 of the magazine is cut away at the lower end of each compartment, and a metal plate 14 of U shape in cross-section is secured to the bottom of the magazine, as shown in Fig. 5. The horizontal portion and part of the vertical portions of this plate immediately beneath each compartment are cut away, leaving two inwardly-extending horizontal flanges 15, upon which the bottom package of the commodity to be vended is supported. (See Figs. 1 and 11.) The various parts of the magazine are secured together by soldering the joints or in any other well-known manner.

The rear wall 4 of the inclosing case is cut away near its lower end, and a piece of thin sheet metal is substituted therefor.

Each coin-chute consists of three parts, the first of which (numbered 17) is rigidly attached to the cover 3 and registers with one of the slots 7 in the metal plate 6. The second part (numbered 18) is formed in and extends diagonally through the double-wall partition 12, separating two of the vertical compartments for holding the articles or packages, and the third part (numbered 19) is set in the recess formed in the rear wall 4 by removing its lower portion and substituting therefor the piece of thin sheet metal 16 and is fastened to said piece 16. (See Fig. 2.) The purpose of thus dividing the coin-chutes is to enable the machine to be easily dismounted.

The ejecting mechanism is mounted in a removable frame and consists of a rock-shaft journaled in said frame, a lever or arm for rocking the shaft, a series of ejecting-arms equal in number to the compartments in the magazine containing the commodity and loosely mounted on the rock-shaft, a plurality of sleeves on the rock-shaft for separating and retaining the ejecting-arms in their proper positions, a pair of cranks mounted upon and secured to the rock-shaft, a horizontal bar carried by the cranks, and a series of coin-operated locking-arms carried by the ejecting-arms and adapted to lock said ejecting-arms to the horizontal bar, whereby said ejecting-arms are temporarily locked to the rock-shaft. In the preferred form of this mechanism, as illustrated in the accompanying drawings, the removable frame has a horizontal base 20, vertical end portions 21, and a vertical front wall 22, the curved upper portion of which bends inwardly and over the ejecting mechanism and serves not only as a curved shield upon which the articles or packages vended drop and then slide off into a compartment 10, but also as a stop to limit

the forward movement of the ejecting-arms. (See Fig. 5.) This frame is formed of two pieces of sheet metal, the vertical end walls being formed by bending the extremities of the base upward at right angles and the front wall being secured thereto by flanges which bend over the front edges of the vertical end walls and are riveted thereto. (See Fig. 6.) This removable frame is supported within the inclosing case and some distance above the bottom 2 by two blocks 23, (see Fig. 1,) and the magazine for holding the commodity to be vended is in turn supported by the removable frame, the vertical end portions of said frame having vertical ears between which the base of the magazine fits. (See Figs. 1, 2, and 5.)

The rock-shaft 24 has its ends journaled in bearings in the vertical end portions 21 of the removable frame, and one end of said rock-shaft projects beyond the end portion of the frame and has a rocking lever or arm secured thereto by a pin. (See Fig. 6.) This lever 25 is formed substantially as shown in Fig. 5 and has its outer end projecting through a vertical slot formed by the side wall 5 and a recess in the vertical edge of the cover 3. The outer end of the lever has a horizontal flange 26, which is adapted to be pressed by the thumb of the purchaser to depress the lever and operate the ejecting mechanism. The lever and the rock-shaft are returned to their normal positions by a coiled extension-spring 27. (See Figs. 5 and 6.)

The ejecting-arms 28 are, as heretofore stated, equal in number to the number of compartments in the magazine, and one ejecting-arm is located centrally beneath each compartment. (See Fig. 1.) These arms are loosely mounted upon the rock-shaft 24 and are separated the proper distance from each other by sleeves 29, loosely encircling said rock-shaft.

The ejecting-arms are formed of sheet metal, and each arm has a pivotal ejecting-block 30 pivoted to its upper end by a pin. These ejecting-blocks are also formed of sheet metal, having top, front, and side walls, as shown in Fig. 8, and are retained in their normal position by a torsion-spring 31, which encircles the pivoting-pin and has its ends bearing against the inner surface of the top wall of the ejecting-block and the front edge of the ejecting-arm. (See Fig. 8.)

A stop to limit the upward movement of the ejecting-block is formed by bending the extremity of a strip of metal 32, projecting from one of the side walls of the ejecting-block so as to form a flange 33, which engages with the rear edge of the ejecting-arm. (See Fig. 8.)

Two cranks 34 and 35 are secured to the rock-shaft just within the vertical end portions of the removable frame, said cranks being secured to the shaft by pins, as shown in

Fig. 6. A horizontal bar 36 connects the upper ends of these cranks, being secured thereto by bending its ends at right angles and riveting them to the cranks.

Each of the ejecting-arms 28 is adapted to be temporarily locked to the horizontal bar, so as to be operated by the rocking of the shaft and eject a package by a coin-operated locking-arm. This locking-arm is pivoted to the ejecting-arm by a pin and is formed as shown in Figs. 6, 7, and 9, having a forked rear portion or yoke 37 and a front portion 38. This front portion is made considerably larger and heavier, so as to maintain the forked rear portion in the tilted position shown in Fig. 7, and has a curved bottom edge and a straight top edge which terminates near the front end in a notch 39.

The up-and-down movement of the locking-arms is limited by a teat 40, projecting from about the middle of the transverse portion of the fork or yoke (see Fig. 9) and operating in a notch 41 in the rear edge of the ejecting-arm. (See Figs. 5, 6, and 7.)

The locking-arm is operated to bring it into the position shown in dotted lines in Fig. 7 by a suitable coin passing through the coin-chute and dropping upon the forked rear portion 37 of the arm, which straddles a reduced portion of the part 19 of the coin-chute. (See Fig. 3.) This part of the coin-chute is formed substantially as shown in Figs. 3, 4, and 5, having its lower portion rectangular in cross-section and of just the proper size so as to permit a coin of the proper denomination to slip easily through and its upper portion flaring and provided with a curved plate 42 at its upper end. The coin passes through the parts 17 and 18 of the coin-chute and strikes this curved plate 42 edge on and then is given a quarter-turn by said plate and drops vertically down through the chute. The lower portion of the chute is cut away at an intermediate part, as at 43 in Fig. 3, forming a reduced portion, which is straddled by the forked rear portion or yoke 37 of the locking-arm, as shown in Fig. 5. The edge of the coin as it passes through the chute comes into contact with this yoke portion 37 and brings the arm into the position shown in dotted lines in Fig. 7.

The ejecting-arms are supported when in their normal position by a horizontal bar 44, which has its ends bent at right angles and riveted to the vertical end portions of the removable frame. (See Figs. 5 and 6.)

The operation of the ejecting mechanism is as follows: A coin of the proper denomination is inserted in the desired slot 7 by the intending purchaser, and said coin rolls down the inclined portions 17 and 18 of the coin-chute, strikes the curved plate 42 at the upper end of the part 19 of the coin-chute, is given a quarter-turn by said curved plate, as heretofore described, and then drops down

the chute and falls upon the forked rear portion 37 of the locking-arm and moves said arm into the position shown in dotted lines in Fig. 7. The purchaser now presses upon the outer end of the rocking lever 25 and moves it into the position shown in dotted lines in Fig. 5, thereby rocking the shaft 24. The beginning of this movement of the rock-shaft has no effect on any of the ejecting-arms, as they are all loosely mounted upon the shaft, as before stated. The movement of the shaft, however, carries forward the two cranks 34 and 35 and with them the horizontal bar 36. As this bar moves forward it passes over the top edge of the front portion 38 of all of the locking-arms with the exception of the one which has been operated by the coin. This arm has been moved into the position shown in dotted lines in Fig. 7, and the bar 36 in its forward movement seats itself in the notch 39 and carries the locking-arm forward. As the locking-arm is attached to the particular ejecting-arm beneath the compartment of the magazine in which is contained the article or package desired by the purchaser, said ejecting-arm is also carried forward, and the ejecting-block 30 at the upper end of said arm engages with the rear end of the package and pushes it out from underneath the pile. The package falls upon the curved shield, as shown in Fig. 5, then slides off and drops into the receiving-chamber 10, whence it is easily removed by the purchaser. The instant the package is pushed from underneath the pile the remainder of the packages drop by gravity until the lowest one rests upon the flanges 15. When this occurs, the lowest package strikes upon the top of the pivotal ejecting-block 30, which then assumes the position shown in dotted lines in Fig. 8. As the locking-arm is carried forward by the horizontal bar 36 the forked rear portion is drawn from beneath the coin, which then drops through the remainder of the chute and into a tray 45. This tray is located beneath the removable frame and is supported upon the base 2 of the inclosing case. (See Fig. 5.) When the package enters the receiving-chamber, the purchaser releases the lever 25, and the various parts of the ejecting mechanism are returned to their normal positions by the coiled spring 27.

An ingenious device is provided to obviate any chance of the purchaser failing to get a package or of losing a coin through neglecting to move the lever 25 the proper distance or through an accident, such as the thumb slipping off the end of the lever. It can readily be seen that without a device for holding the cranks 34 and 35 at any point between the limits of their movement that should the lever 25 be accidentally released after the locking-arm has been carried forward sufficiently to release the coin from the forked portion and still not far enough to

entirely push the package from underneath the pile the purchaser would fail to receive a package in return for the coin he had inserted in the machine. To obviate this, a double-acting ratchet-and-pawl device is provided to hold the ejecting mechanism at any point between the limits of either its forward or its return movement. This device is illustrated in Figs. 5 and 6. The top edge of the crank 34 is notched or serrated, as shown at 46 in Fig. 5, to form a ratchet, which is engaged by a double-acting pawl 47, pivoted to the adjacent vertical end portion of the removable frame. The pawl is maintained in position by a flat spring 48, one end of which is riveted to a projection on the end portion of the removable frame and the other end of which seats in a notch in the edge of the pawl. By referring to Fig. 5 it will be seen that the pawl will hold the crank 34 at any point until said crank has been moved entirely past it, when the pawl tilts in the other direction and permits the crank to return to its normal position.

A novel mechanism is also provided to close the slots as soon as the compartments controlled by said slots are empty, and so prevent the intending purchaser from inserting a coin in a particular slot from which he cannot receive a package in return. This mechanism is illustrated in Figs. 1, 2, 5, 10, and 12, to which figures reference will be had in the following description: A cross-piece 49, of wood, is attached to the interior of the cover 3, so as to leave a space between it and the cover, as shown in Fig. 12, and a metal plate 50 is fastened to this cross-piece. The upper edge of the cross-piece 49 has a number of vertical slots 51, into which flanges 52, projecting from the metal plate 50, extend. A bell-crank is pivoted to each of these flanges 52, said bell-crank having an extension 53 at its upper end, through which the pivot-pin passes, and an oppositely-extending projection or arm 54, the end of which seats in an opening in a closing-plate 55. This closing-plate is pivoted to the metal plate 6, adjacent to each slot 7, as shown in Fig. 10. The other or depending arm 56 of the bell-crank is located in the space between the cover 3 and the cross-piece 49 and has an inwardly-projecting portion 57 formed integral with its lower end, (see Fig. 5,) said projecting portion 57 having its extremity bent at right angles, so as to form a beveled or diagonal surface 58. The portion 57 extends through a vertical slit in the bottom edge of the cross-piece 49, as shown in Fig. 5, so that the beveled portion 58 is directly in front of the magazine. The bell-cranks are equal in number to the number of coin-slots 7 and are hung so that the beveled part 58 of each crank is directly in front of the compartment containing the packages controlled by the coin-slot 7, under which said bell-crank is hung.

The usual weight 59 is placed on top of the pile of packages within each compartment, said weight having a teat or lug 60, which is adapted to come into contact with the beveled portion 58 of the bell-crank the instant the last remaining package is ejected from said compartment and moving said bell-crank on its pivot. This movement is imparted to the closing-plate 55, which is moved to close the coin-slot, as shown in Fig. 10. By referring to Figs. 1 and 11 it will be seen that the right-hand compartment of the magazine is arranged so that the packages contained therein will lie at right angles to the others. When this is done, a supplementary swinging arm 61 is pivotally supported from the magazine, said arm 61 having beveled or diagonal portions 62 and 63, which are moved by the teat on the weight 59 and in turn operate the bell-crank.

The operation of the machine will be readily understood from the foregoing specification and the accompanying drawings.

The main advantages of this improved vending-machine reside in the simplicity, compactness, and cheapness of construction, the various mechanisms being mounted so as to be removable without the aid of any tool or implement, the certainty of operation thus insuring the intending purchaser against the loss of a coin without receiving in return the desired package and the safeguard against depositing a coin in a slot when the compartment controlled thereby is empty.

I claim as my invention—

1. In an upright coin-controlled vending-machine, the combination of an inclosing case having a removable side, a magazine removably mounted within the inclosing case for holding the articles to be vended, a sectional coin-chute having a portion attached to the inclosing case and a portion attached to the magazine, ejecting mechanism the operation of which is controlled by the passage of a coin from the coin-chute and a frame beneath the magazine in which the ejecting mechanism is supported and which is separate from the inclosing case, said magazine and frame being adapted to be removed or replaced in the inclosing case without the aid of tools upon the detachment of the removable side from said inclosing case, substantially as set forth.

2. In a coin-controlled vending-machine, the combination of an inclosing case, a magazine for holding the articles to be vended, a sectional coin-chute having a portion attached to the inclosing case and a portion attached to the magazine and ejecting mechanism the operation of which is adapted to be controlled by the passage of the coin from the coin-chute and a frame separate from the inclosing case arranged beneath the magazine in which the ejecting mechanism is supported; the magazine-ejecting mechanism and

frame being bodily removable from the inclosing case.

3. In a coin-controlled vending-machine, the combination of an inclosing case having a removable side, a separate magazine for holding the articles to be vended fitted in the inclosing case and bodily removable therefrom, upon the detachment of the removable side, a coin-chute and ejecting mechanism controlled by the passage of a coin through the coin-chute; the coin-chute being formed in separate sections, one of which is attached to the inclosing case and another of which extends through the magazine, whereby the magazine may be readily removed from the inclosing case, substantially as set forth.

4. In a coin-controlled vending-machine, the combination of an inclosing case consisting in part of a rear wall and a removable front wall or cover, a magazine within the inclosing case, ejecting mechanism beneath the

magazine and a sectional coin-chute having its lower end extending in operative proximity to the ejecting mechanism and one section of said coin-chute being attached to the front wall or cover, another to the rear wall and another extending through the magazine substantially as set forth.

5. In a coin-controlled vending-machine, the combination of an inclosing case having a removable portion, a magazine removably mounted within the inclosing case for holding the articles to be vended, ejecting mechanism, and a coin-chute in separate sections having one section attached to the main portion of the inclosing case, another mounted in the magazine and another attached to the removable portion of the inclosing case.

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Witnesses:

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