Dec. 13, 1927.

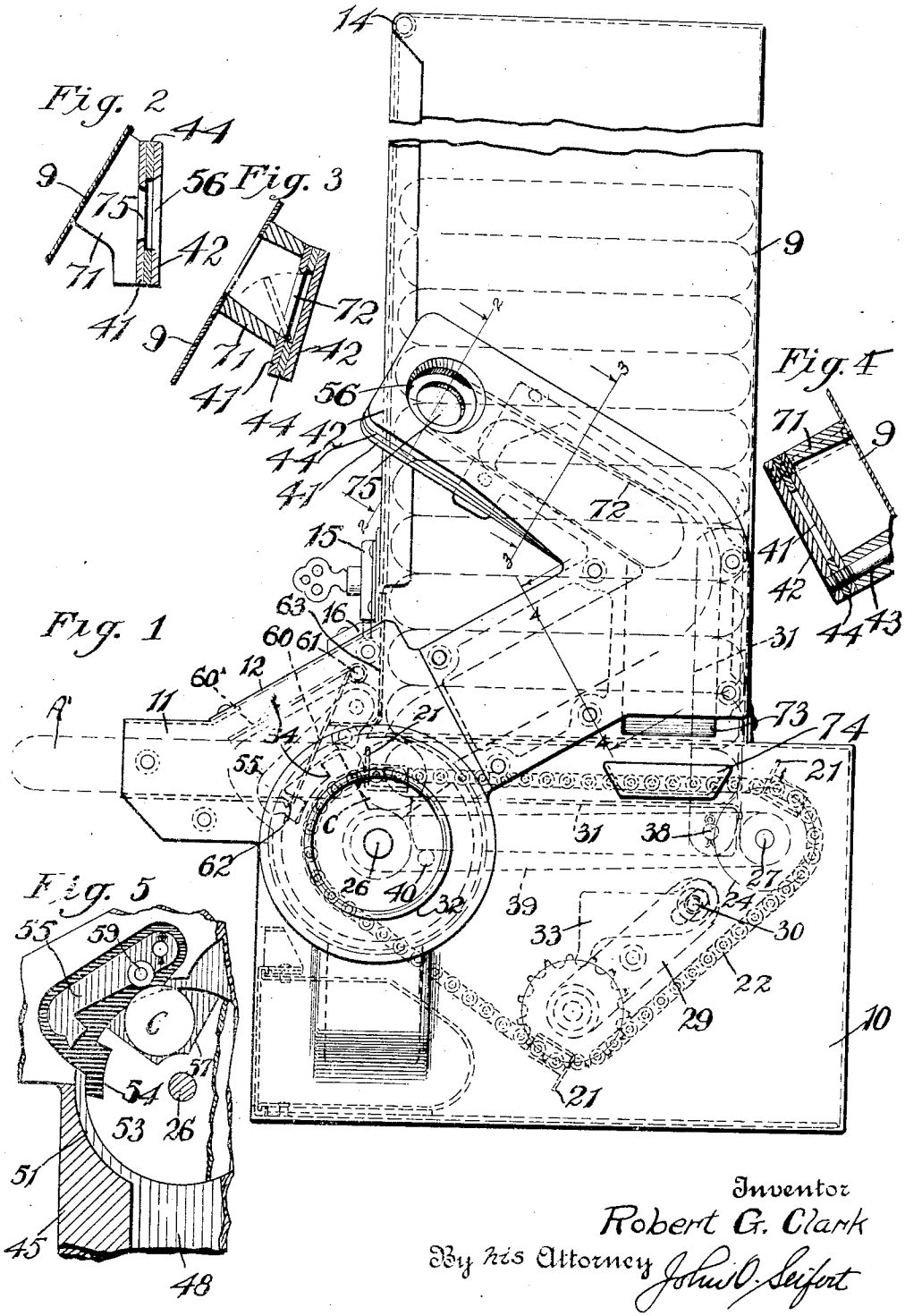
R. G. CLARK

1,652,816

VENDING APPARATUS

Filed Feb. 15, 1926

3 Sheets-Sheet 1



Inventor

Robert G. Clark

By his Attorney John O. Seifert

Dec. 13, 1927.

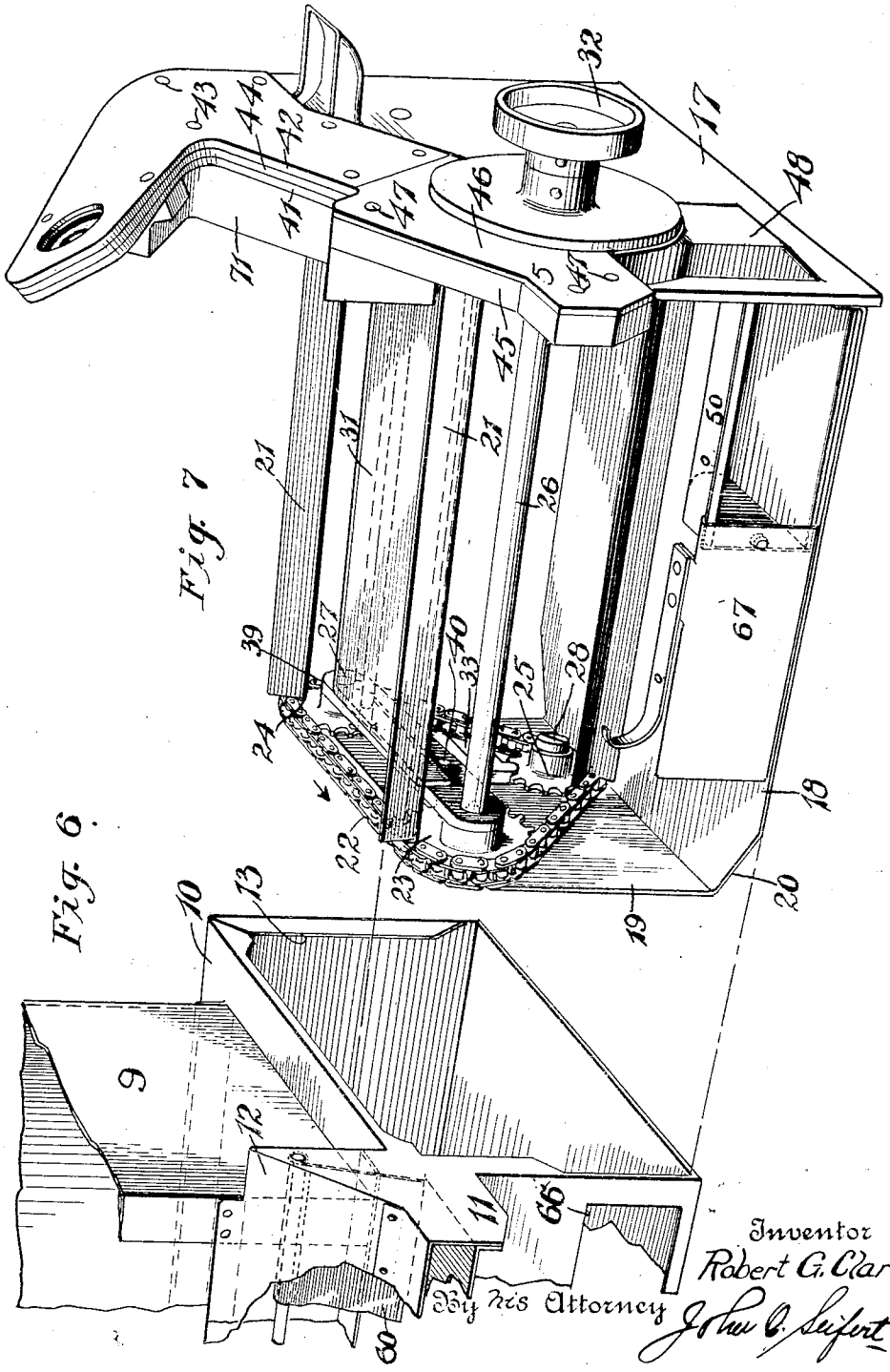
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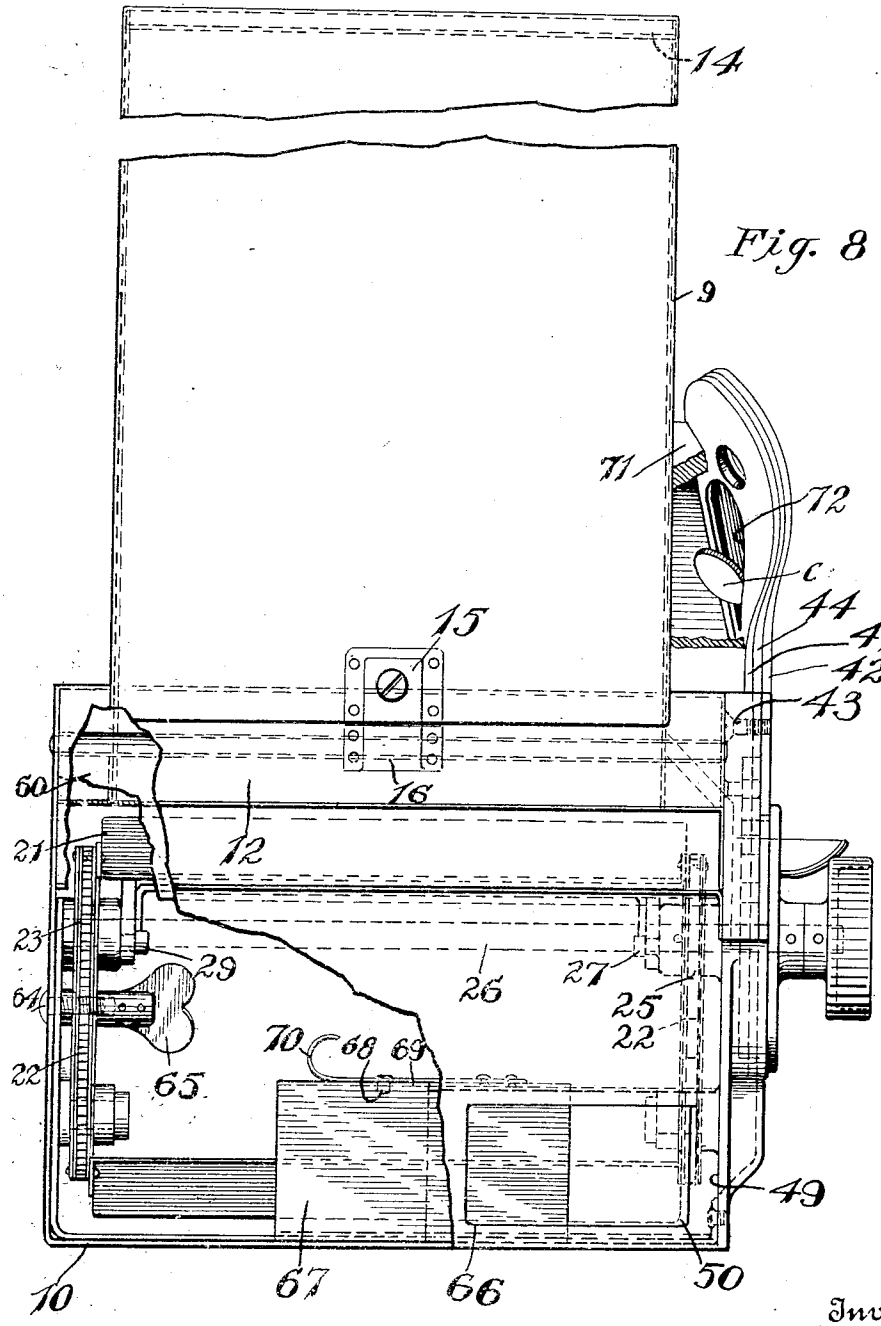


Fig. 8

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UNITED STATES PATENT OFFICE.

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VENDING APPARATUS.

Application filed February 15, 1926. Serial No. 88,283.

This invention relates to coin controlled vending or dispensing apparatus, and it is the primary object of the invention to provide an improved constructed simplified and efficient apparatus of this character wherein the merchandise ejecting mechanism is normally locked against movement and adapted to be released by the depositing of a coin of proper denomination and which is again automatically locked against movement when an article has been ejected, and to provide apparatus wherein the ejecting mechanism serves as a means when locked against movement and the apparatus is in its inoperative condition to substantially close the ejector opening and prevent the surreptitious removal of the merchandise.

A further object of the invention relates to closure means for the ejector opening constructed and arranged to be moved to open position by the merchandise as it is being ejected and automatically assuming a position to close the ejector opening when a piece of merchandise has been ejected in position to prevent moving of the same to open position and tampering with the mechanism in an endeavor to surreptitiously remove the merchandise.

It is another object of the invention to provide improved coin sorting means whereby the apparatus can only be operated by the insertion into a coin slot of a coin of the proper denomination, in the present instance a five cent piece, and such coins as may be deposited in the coin slot, such as a ten cent piece or a penny will be directed into an auxiliary chute and delivered to a receiver therefor upon the exterior of the apparatus.

In apparatus of this character it is customary to provide a cabinet with merchandise carrying means and build the ejecting mechanism into said cabinet and should the ejecting or dispensing mechanism or the means controlled by a coin to set the same in operation become inoperative and require repairing or replacing it is necessary to remove the entire apparatus, and it is a further object of the invention to provide ejecting mechanism in apparatus of this character as a unit separate and distinct from the merchandise carrying cabinet, and the cabinet arranged for the removable mounting of the ejecting mechanism therein and when mounted in said cabinet operating as an integral unit therewith.

Other objects and advantages will hereinafter appear.

In the drawings accompanying and forming a part of this specification I have shown a vending apparatus embodying my invention wherein Figure 1 is a side elevation, the ejecting mechanism being shown in dotted lines.

Figures 2, 3 and 4 are cross sectional views of the coin chute taken on the lines 2—2, 3—3 and 4—4 of Figure 1 looking in the direction of the arrows to show the manner of sorting coins deposited in the coin slot and ejecting coins deposited other than those for which the apparatus is designed.

Figure 5 is a detail view of the releasable locking means for the ejecting mechanism and showing the same as being released by a deposited coin.

Figure 6 is a perspective view of the lower right hand end portion of the cabinet to show the arrangement of the cabinet for the removable mounting of the ejector mechanism therein in relation to the merchandise carrying portion of the cabinet.

Figure 7 is a perspective view of the ejector mechanism and showing the same in relation to the opening in the portion of the cabinet shown in Figure 6 wherein the ejector mechanism is mounted, and

Figure 8 is a front elevation of the vending apparatus with the front wall of the cabinet partly broken away to show the arrangement of the ejector mechanism therein.

In carrying out the embodiment of the invention illustrated in the drawings there is provided a cabinet comprising an article or merchandise enclosing portion 9, in the present instance of rectangular shape, and a rectangular casing or base of greater cross sectional area than the portion 9 and in the top of which base the article carrying portion is mounted, said casing having an ejector opening in a portion 11 projecting forward from the front thereof with the top wall inclined downward from the front of the cabinet, as at 12. One end 13 of the casing is open as shown in Figure 6 for a purpose to be hereinafter described. The front wall of the article carrying portion of the cabinet is pivotally or hingedly supported to be swung away from the front for the purpose of supplying merchandise to the apparatus in stacked formation to be vended or dispensed therefrom, this front wall in

the present instance being pivotally connected at the top, as at 14 in Figure 1, with the opposite longitudinal marginal portions flanged to extend about the sides of the cabinet when in closed position, the closure wall being releasably secured in closed position by a key operated lock 15 fixed to said front and the bolt of which lock co-operates with a keeper fixed to the inclined top wall of the projection 11, as shown at 16.

The article ejecting mechanism is arranged as a unit, as shown in Figure 7, to be removably mounted in the casing 10, and adapted to be inserted into the casing and removed therefrom through the opening 13 in the one end, the ejector mechanism being arranged to serve as a closure for said opening. The ejector mechanism is mounted on and carried by a frame comprising an end plate 17 which is preferably a casting since it is also arranged as a part of a coin chute, and to which end is connected a plate 18 to constitute the bottom and having the end bent at a right angle thereto to form an end wall 19 opposite to the end plate 17, the juncture of said end portion with the bottom being at an angle 20 to facilitate the inserting of the same into the opening 13 in the casing 10.

While the apparatus is adapted to dispense various articles it has been particularly designed for the dispensing of sanitary napkins and to similar articles, the ejecting mechanism comprising slats 21 preferably of metal pivotally mounted at the ends upon endless flexible carriers in predetermined equidistant spaced relation, there being three of these ejector slats in the present instance, the slat carriers being in the form of sprocket chains 22 passed around sprocket wheels 23, 24 and idler sprocket wheels 25. The sprocket wheels 23 are fixed on a shaft 26 journaled in the frame ends 17, 19, while the sprocket wheels 24 are rotatably mounted on studs also fixed in said frame ends, as at 26, the sprocket wheels 25 being rotatably mounted on studs 28 fixed in arms 29 mounted for adjustment on the frame ends 17, 19, as at 30. The ejectors are moved in the direction of the arrow shown in Figure 7 in an orbit about a table or shelf 31 with the upper stretches of the chains moving from the rear to the front of said shelf in a plane parallel with and above said shelf, this movement being imparted to the ejectors by an actuator exterior of the cabinet, in the present instance in the form of a knob 32 fixed to the end of the shaft 26 extended from the frame end 17, and the ejectors being held against retrograde movement by pivotally supported detent pawls 33 (Figures 1 and 7) co-operating with the idler sprocket wheels 25 and adapted to engage with the tooth spaces of said wheels by gravity. The shelf 31 is adapted to support the articles A to be vended in stacked formation, as shown in dash lines in Figure 1, the shelf being pivotally supported at the rear end on a rod 38 mounted at opposite ends in links 39 mounted at opposite ends upon the supporting studs 27 for the sprocket wheels 24 and shaft 26, the forward end of the shelf being supported upon pins 40. The shelf is adapted to be swung upon its pivot support against the back of the article carrying portion of the cabinet, as shown in Figure 1, for a purpose to be hereinafter described.

It will be obvious that by rotating the knob 32 to move the ejectors forward over the shelf that an ejector slat will engage in back of the lowermost article on said shelf moving the same forward into the ejector opening in the projecting portion 11 of the casing to the position A′ shown in Figure 1 when it may be grasped by the fingers and withdrawn.

As stated it is an object of the invention to provide a coin controlled vending apparatus wherein an article is adapted to be vended upon the deposit of a coin of predetermined denomination, in the present instance a five cent piece. For this purpose means are provided to releasably lock the ejector mechanism against actuation, which means is adapted to be released upon the depositing of a coin and the actuation of the hand knob 32. The coin chute comprises a pair of juxtaposed plates 41, 42 secured together by screws 43 with spacers 44 interposed between said plates to form a passageway between said plates of the desired depth and width, said passageway communicating with a casing in a part 45 of the frame end 17 having the outer side open and closed by a plate 46 secured thereto by screws 47 in a manner similar to securing the chute plates together, the casing having an extended part 48 forming a continuation of the coin passageway having an outlet 49 (Figure 8) leading to a box 50 mounted upon the bottom 18 of the frame. The casing has a circular chamber or portion 51 arranged therein which is interposed in the coin passageway formed by the plates 41, 42 and the part 48 the outer end of which is open and closed by a disk 52 fixed to the shaft 26. A disk 53 fixed to the shaft 26 is rotatable in the chamber 51, said disk having a notch 54 in the periphery in which a nose of a latch 55 pivotally supported in the casing 45 is adapted to engage by gravity and thereby hold the shaft and ejector mechanism against actuation by the actuator 32, the latch being adapted to be released by a coin deposited in an opening or slot 56 leading to the coin chute, the coin C passing through the chute to engage in a recess or seat 57 in the periphery of the disk 53 following the notch 54. The disk in the normal inoperative position of the

apparatus is positioned with the nose of the locking latch 55 engaging in the disk notch 54, as shown in dotted lines in Figure 1, and the disk recess 57 positioned in line with the passageway between the plates 41, 42. As the shaft 26 is rotated by the knob 32 with a coin seated in the recess 57 the coin will project slightly beyond the periphery of the disk 53 and the projecting portion of the coin will engage a roller 59 (Figure 5) carried by the latch and move the latch nose out of the disk notch 54, the notch being slightly elongated to permit of this movement of the disk. As the rotation of the shaft is continued and the coin passes out of engagement with the latch roller 59 the latch will fall by gravity and ride along the periphery of the disk, and as the coin comes opposite the coin passageway in the part 48 it will drop from the disk recess 57 and be guided into the coin receiving box 50. The rotation of the shaft may be continued until the disk notch comes opposite the latch 55 when the latch nose will be engaged in the disk notch and hold the same against rotation until a further coin is deposited. The parts are so proportioned and the movement timed so that when a complete rotation is given to the shaft 26 upon the deposit of each coin, an ejector slat 21 during this rotation of the shaft will be moved from a position substantially above the supports of the sprocket wheels 24 to position above the sprocket wheels 24, as shown in Figure 1, and a successive ejector slat will be positioned over the sprocket wheel 24 in position to engage the next article upon the shelf 31 upon the successive actuation of the shaft 26.

To prevent tampering with the ejector mechanism through the ejector opening and also the surreptitious removal of articles through the ejector opening when the ejector mechanism is locked, means are provided to automatically close the ejector opening after an article has been ejected. This closure means is in the form of a plate 60 pivotally supported upon a rod 61 at one longitudinal edge portion, the plate normally assuming a position by gravity with the free end to engage slightly below the bottom wall of the projection 11, as shown at 62 in Figure 1, and raised from said position to the dotted line position 60′ shown in said figure by an article as it is being ejected. To further guard against the surreptitious removal of the articles the ejector slats are so arranged that in the inoperative locking position of the ejector mechanism an ejector slat 31 will be positioned in front of the article supported upon the shelf 31, as shown in Figure 1, and an angle plate 63 is secured to the inner end wall of that portion of the ejector opening formed by the inclined plate 12 thus leaving a space between the ejector slat and said angle plate 63 of so small a size that an article cannot be passed therethrough.

As stated the ejector mechanism is adapted to be inserted as a unit into the opening 13, and to releasably secure the same therein a threaded stud 64 (Figure 8) is passed through an opening in the end of the casing 10 and the frame end 19 from the exterior to the interior and a wing nut 65 threaded thereon, which may be readily effected by moving the shelf 31 to position against the back of the cabinet as shown in Figure 1.

To facilitate the removal of the coins from the coin box 50 it is arranged with an open side, as shown in Figure 7, which is adapted to register with an opening 66 in the front wall of the casing 10 when the ejector mechanism is inserted therein. Closure means is provided for these openings comprising a plate 67 slidably mounted upon the box to have sliding movement in interposed relation to the box and casing openings the plate being locked in closed position by a detent pin 68 carried by a member 69 of resilient material, which pin is adapted to be engaged in a perforation in the wall of the coin box through the inherent tension of the material of said member. The detent carrying member 68 is fixed at one end to the plate and arranged with a fingerpiece 70 at the free end to move the locking pin out of its perforation and also to facilitate the sliding of the closure plate. Access is had to the closure plate to adjust the plate by moving the shelf 31 upward as hereinbefore described.

To permit of the actuation of the ejecting mechanism only by a coin of proper size coin sorting means are provided. For this purpose an auxiliary coin chute is arranged in juxtaposed relation to the coin chute formed by the plates 41, 42 and being arranged in a casing 71 open at both sides and interposed between the plate 41 and the side wall of the cabinet, which plate and wall form the side walls for said passageway. Communication between the passageway formed by plates 41, 42 is by way of a slot 72 of a width slightly less than the depth of the passageway between said plates, whereby as a coin, such as a ten cent piece or a penny, is inserted into the slot or opening 56, which coins are of a diameter less than the diameter of the coin for which the apparatus is designed, a five cent piece in the present instance, will fall laterally through said slot into the passageway in casing 71. The ejecting of said coin through said slot is facilitated by arranging the passageway in the lower portion of the plates 41, 42 so that the depth thereof will extend in a vertical plane and arranging the upper portion of such plates so that the passageway will be inclined at an angle to the vertical and incline toward the passageway in the casing 71, as shown in Figure 3. The coins ejected

into the casing 71 are directed to an outlet 73, (Figure 1) and delivered from said outlet to a pan 74. The opening 56 is of circular form and slightly larger than a five cent piece and the coin passageway communicating therewith, and should an oversize coin or slug be inserted into said opening and not pass into the passageway, to remove such a coin or slug an opening 75 of reduced sized is arranged in the plate 41 opposite to the opening 56 for the insertion of a finger to eject such coin or slug.

Having thus described my invention, I claim:

1. In vending apparatus, a cabinet arranged with an ejector opening, a shelf arranged in relation to the ejector opening, said shelf forming the sole support for the articles being vended, and ejectors to extend longitudinally of the shelf and have movement in an orbit about the shelf in a direction from the rear to the front of the shelf when moved above the shelf and arranged whereby an ejector in its movement above the shelf is adapted to engage an article thereon and eject it from the ejector opening.

2. Vending apparatus as claimed in claim 1, wherein the ejectors comprise slats mounted at the ends upon endless carriers, and means to actuate said carriers from the exterior of the cabinet.

3. Vending apparatus as claimed in claim 1, wherein the ejectors are in the form of slats, sprocket chains to which the ejector slats are connected at opposite ends, sprocket wheels about which the chains are engaged and arranged whereby a stretch of the chains is moved in a plane parallel and above the shelf, and means operative from the exterior of the cabinet to actuate certain of said sprocket wheels for the purpose specified.

4. Vending apparatus as claimed in claim 1, wherein the ejectors are in the form of slats, sprocket chains to which the ejector slats are connected at opposite ends, a rotatable shaft extending longitudinally and arranged forwardly of the shelf, sprocket wheels fixed to said shaft at opposite ends of the shelf, sprocket wheels rotatably mounted at the rear and opposite ends of the shelf, said ejector slat carrying chains engaging about said wheels with a stretch of the chains arranged in a plane parallel with and above the shelf, and means connected to an end of the sprocket carrying shaft extending to the exterior of the cabinet for rotating said shaft and thereby actuating the ejectors.

5. Vending apparatus as claimed in claim 1, wherein the ejectors are in the form of slats, sprocket chains to which the ejector slats are connected at opposite ends, a rotatable shaft extending longitudinally and arranged forwardly of the shelf, sprocket wheels fixed to said shaft at opposite ends of the shelf, sprocket wheels rotatably mounted at the rear and opposite ends of the shelf, said ejector slat carrying chains engaging about said wheels with a stretch of the chains arranged in a plane parallel with and above the shelf, and means connected to an end of the sprocket carrying shaft extending to the exterior of the cabinet for rotating said shaft and thereby actuating the ejectors, said ejector mechanism being constructed and arranged as a unit and for removably mounting in the cabinet.

6. In vending apparatus, a cabinet having an ejector opening in the front thereof, a rotatable shaft extending transversely of the front of the cabinet below the ejector opening, sprocket wheels fixed to opposite ends of said shaft; sprocket wheels mounted at the rear of the cabinet to rotate on axes parallel with the shaft, an article carrying shelf arranged between said sprocket wheels in a plane with the ejector opening, sprocket chains passing around said sprocket wheels with a stretch of the chains extending in a plane parallel to and above the shelf, slats connected at opposite ends to said chains in predetermined spaced relation operative by the movement of the chains to engage an article on the shelf and eject it from the ejector opening, and means connected to the wheel carrying shaft at the exterior of the cabinet to rotate said shaft.

7. Vending apparatus as claimed in claim 6, wherein the article carrying shelf is pivotally mounted at the rear upon links and said links mounted at one end upon the sprocket wheel carrying shaft and at the opposite ends upon the supports of the rear sprocket wheels, and pins extending laterally from the links for supporting the forward end of the shaft.

8. In a vending apparatus, a cabinet having an ejector opening, an article supporting shelf arranged in rear of said opening, endless chains mounted in the cabinet immediately beyond the respective ends of the shelf, said chains being simultaneously operable from beyond the cabinet, slats connected to the respective chains and movable across the shelf in succession in the operation of the chains, that slat in rear of the article being moved serving to block access to a subsequent article on the shelf through the ejector opening following an ejector operation.

9. In a vending apparatus, a cabinet having an article receiving space and formed with an ejector opening, an article supporting shelf underlying said space and adapted to receive and support the lowermost article, endless chains operative at the respective ends of the shelf and having an upper path above and in parallelism with the shelf, slats connected to the respective chains and movable across the shelf in the operation of the chains to move an article from the shelf

through the ejector opening, the slats being spaced apart lengthwise the chains in substantial correspondence with the width of the article being vended, and means for manually operating the chains, the spacing of the slats causing the operative slat for ejecting a single article to substantially block the ejector opening against access to the succeeding article through said opening.

10. In a vending apparatus, a cabinet formed with an ejector opening, a shelf for supporting articles to be vended, a series of slats movable in succession across said opening, the adjacent slats being spaced apart to receive an article between them, whereby to eject such article in the movement of the slats, a plate mounted for swinging movement to normally close the ejector opening, said plate being displaceable by an advancing article movable by the slats, a particular operative slat following an article ejection remaining substantially in line with the ejector opening and in advance of the next succeeding article, to thereby prevent unauthorized access to such succeeding article through the ejector opening.

Signed at the city of New York, in the county of New York and State of New York, this 6th day of February, 1926.

ROBERT G. CLARK.