(No Model.) 3 Sheets—Sheet 1.

# J. C. AYER.

## VENDING DEVICE.

No. 493,805. Patented Mar. 21, 1893.

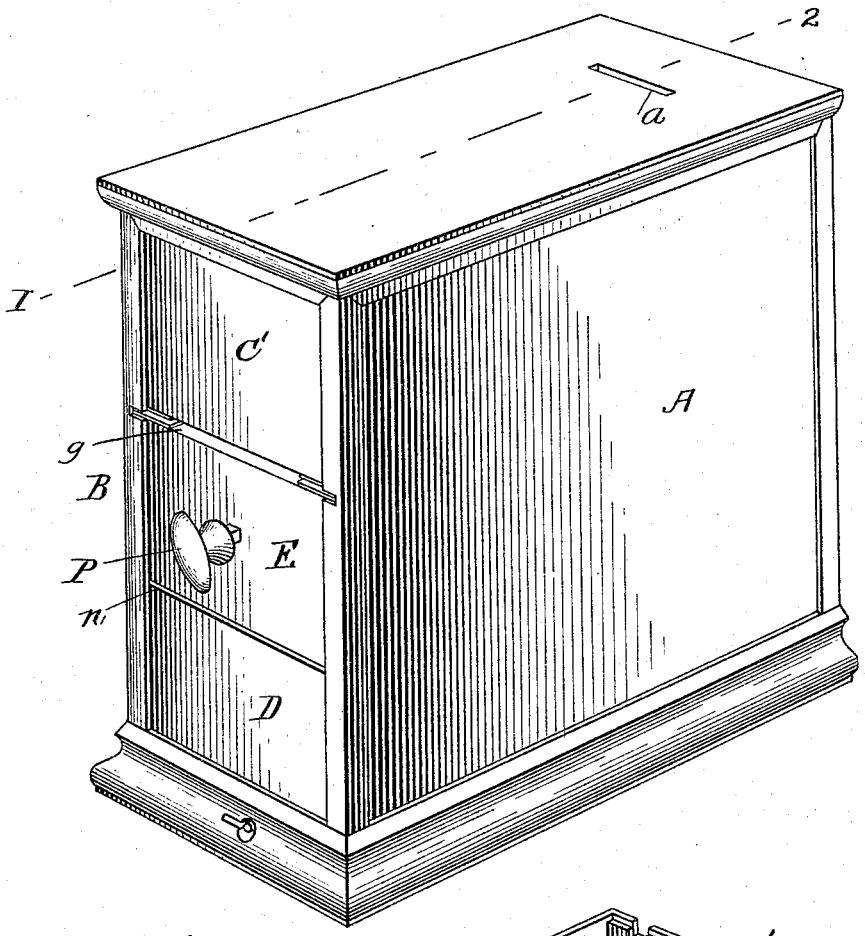


Fig. 1.

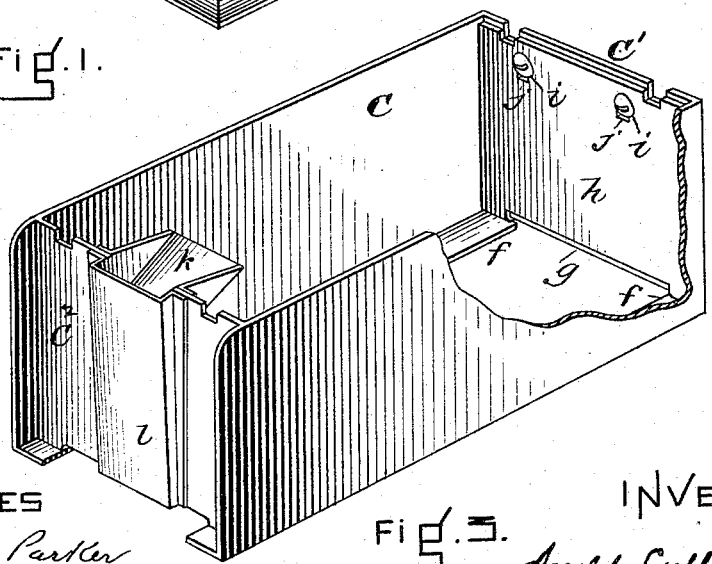


Fig. 3.

WITNESSES

Frank G. Parker

William H. Parry.

INVENTOR

Joseph Cullen Ayer

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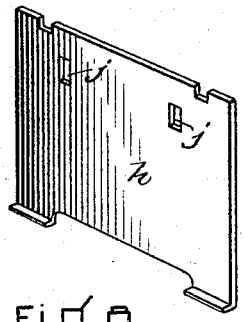


Fig. 8.

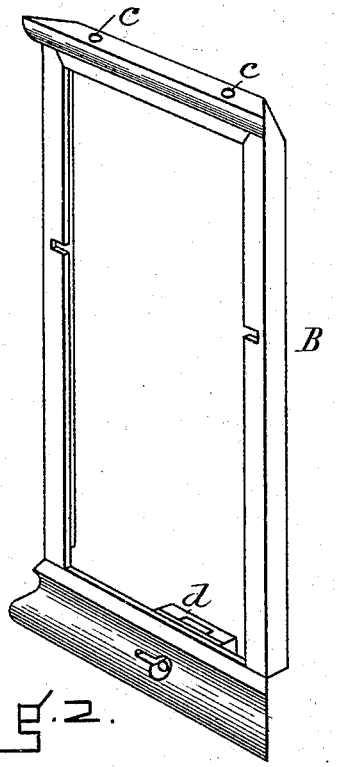


Fig. 2.

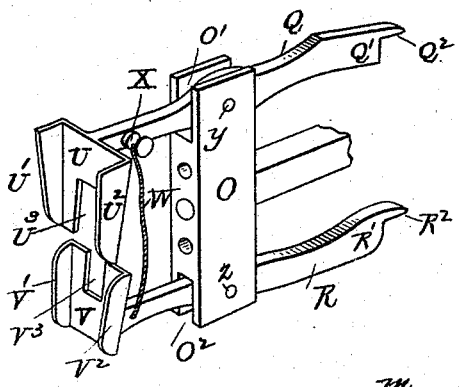


Fig. 7.

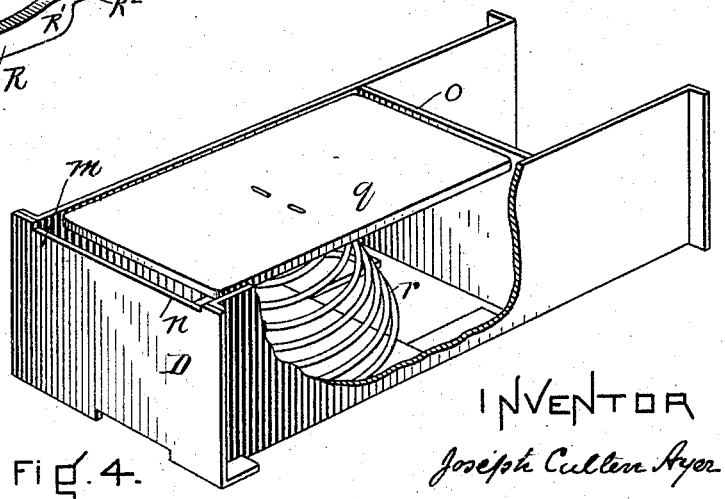


Fig. 4.

WITNESSES.

Frank G. Parker

William A. Berry.

INVENTOR

Joseph Cullen Ayer

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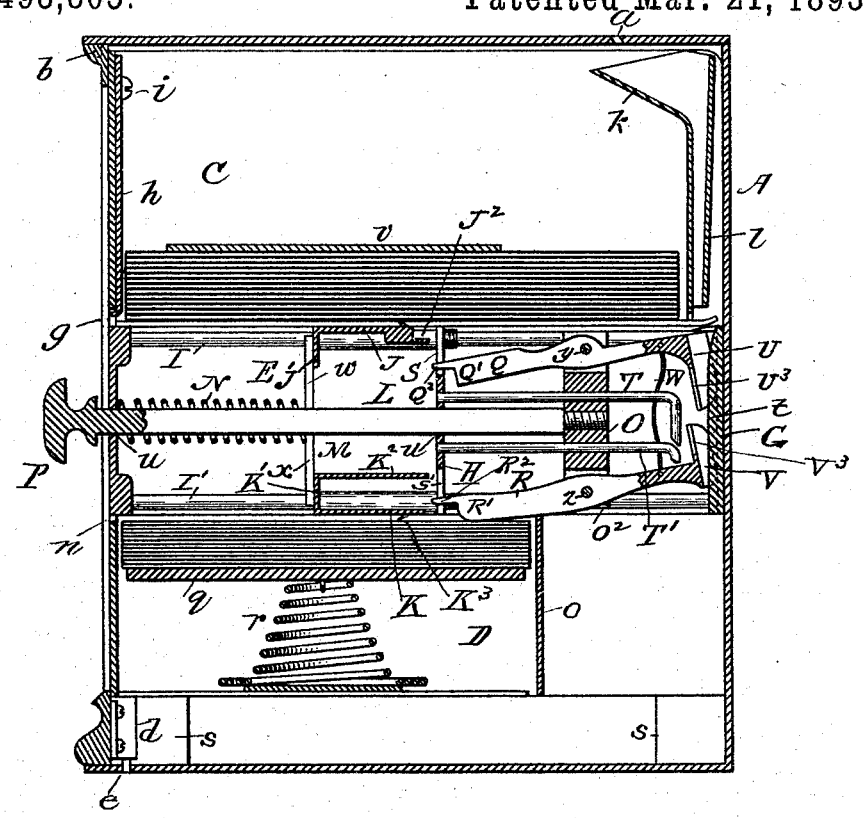

Fig. 6.

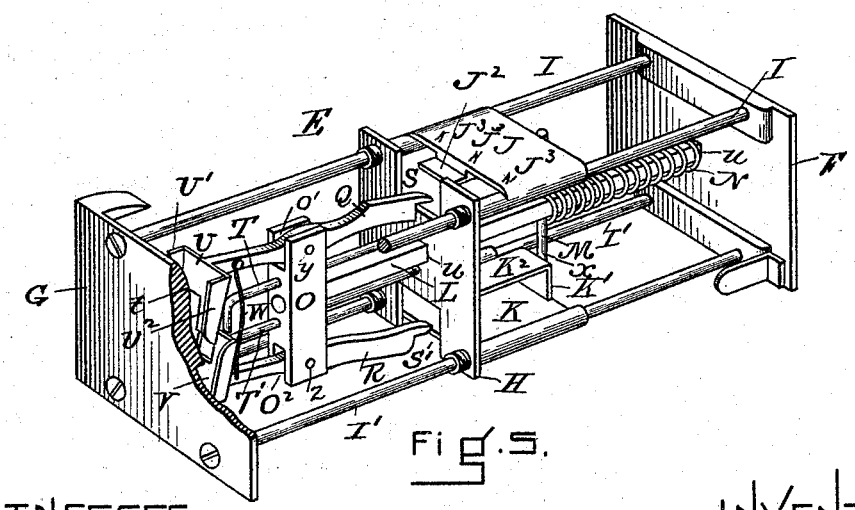

Fig. 5.

WITNESSES

Frank G. Parker.

William H. Parry.

INVENTOR

Joseph Cullen Ayer

# UNITED STATES PATENT OFFICE.

JOSEPH CULLEN AYER, OF BOSTON, MASSACHUSETTS.

## VENDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 493,805, dated March 21, 1893.

Application filed May 31, 1892. Serial No. 434,894. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH CULLEN AYER, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Vending Devices, of which the following is a specification.

My invention relates to that class of apparatus in which articles of known or determinate dimensions, such for example as envelopes, postal cards &c.:—are made capable of delivery by the insertion of a coin in such relation with the mechanism as to cause or permit the ejectment of such articles as the consequence of the insertion of such coin.

Its object is to provide apparatus of the class mentioned capable of delivering articles of differing dimensions and value by one operating mechanism, which will be positive in its operation, simple and durable in its construction and adapted to a wide range of use of the character indicated. I attain this object by the mechanism illustrated in the accompanying drawings in which

Figure 1 is a view in perspective of the exterior of the case containing the mechanism. Fig. 2 is a view of the door that confines the mechanism in the case, detached therefrom. Fig. 3 is a view of the upper tray or article receptacle, removed from the case, with a part of one side broken away to exhibit parts of its interior. Fig. 4 is a view of the lower tray or article receptacle, removed from the case, with one of its sides partly broken away to show portions of the interior. Fig. 5 is a view in perspective of the mechanism frame or cage, removed from the case, and containing the operating mechanism, having a portion of its rear wall broken away. Fig. 6 is a vertical sectional view of the entire apparatus on the line 1, 2, Fig. 1. Fig. 7 is a detailed view in perspective of the cross head with its levers their coin receivers and their connecting cord. Fig. 8 is a vertical plane view of the adjustable plate by which the size of the opening in the article receptacle is regulated.

Similar letters refer to similar parts throughout the several views.

Made of any suitable material is A the case or shell containing the mechanism having in its top side a single coin slot or opening for the introduction of coins, this coin slot *a* having a longitudinal axis slightly greater than the diameter of the largest coin by which the mechanism is designed to be operated also having a detachable door B capable of being secured to the case, as by the introduction of the pins *b. b* in the case into the recesses *c c* in the top of the door and the bolt of the lock *d* into the slot *e* in the case, at the bottom, so as to securely confine its contents within the case.

In the front of the door B is an opening sufficient in size to admit of the articles sold to be ejected or withdrawn through it as also to permit the operating knob P to be grasped and withdrawn.

C is the upper article receptacle or tray which when in its proper position occupies the upper interior part of the case A. It is open at its top side for the introduction of articles to be sold therefrom, which articles are placed therein one above the other. I place above them a suitable weight as *v* by which they are pressed downward; at its bottom the tray C is provided with the ledges *f f*, which ledges extend forward beneath the front wall C′ of the tray. They support the articles in the tray and serve as guides to direct the bottom article forward to the opening *g* in the tray through which it is ejected or withdrawn; at the bottom of the front wall C′ of the tray is the slot or opening *g* of greater size than the largest article designed to be passed through it; vertically attached to the wall C′ by the set screws *i i* passing through the slots *j j* is the adjustable gage plate *h*, which plate I preferably attach to the inner side of the wall as shown. This plate can be raised or lowered at will to widen or contract the opening *g* to conform it to the dimensions of the article to be ejected or withdrawn through it and can be retained, after adjustment, in position by the set screws *i i*. The lower edge of the plate in connection with the ledges *f f* form lips between which the article sold from the tray passes. Attached to the rear wall $C^2$ of this tray in the coin chute *k l*, of which *k* is the inclined portion lying immediately beneath the coin slot *a* when the tray is in place in the case. *l* is the vertical part of the chute.

D is the lower article receptacle or tray, which when in its proper position, occupies

the lower, interior part of the case A resting upon and supported by the posts *s s s s* attached to the case. In the upper edge of its front wall *m* is the recess *n* of sufficient depth to form in connection with the lower edge of the front wall F of the hereinafter described mechanism cage E a slot or opening to permit the articles sold from this tray to be ejected or withdrawn through it. *o* is its rear wall which may be vertically fixed at any desired point in the tray; within the walls of the tray is the horizontal table or follower *q* attached to the upper end and resting upon the helical spring *r*, which spring for the purpose of economizing space I prefer to make conical in form. The spring *r* rests upon and is supported by the bottom of the tray; the articles to be sold from this tray rest one above the other supported by the table *q* and spring *r*. The upward thrust of the spring on the table causes the articles supported thereby to be elevated in succession as the uppermost article is ejected or withdrawn from the tray. The under side of the cage E confines the articles within the tray, and limits the upward thrust of the spring *r*.

E is the before referred to mechanism cage or frame which when in its proper position in the case occupies its central portion resting upon the tray D and itself supporting the tray C.

Of the cage E, F is the front wall, G with its boss *t* constitutes its rear wall; intermediate between F G is rigidly vertically arranged the butment wall H. These walls F, G and H I connect together by the four rods I I, I′ I′; these rods and walls constitute the mechanism cage. I do not confine myself to the use of the rods in connecting the walls F G H as bars, side walls or other suitable devices may be employed.

Central in the wall F. H. are openings *u. u* through which supported by the walls and guided by the sides of the openings slides and is reciprocated the operating rod L. The rod L extends through the front wall F of the cage terminating in a knob or suitable handle as P such as may be readily grasped by the hand of the operator to draw forward the operating rod L; the pin M passes vertically through the rod L at a point intermediate between the walls F, H, its upper limb *w* extending upward in front of the hereinafter described sliding carriage J, its lower limb *x* extending downward in front of the sliding carriage K hereinafter to be described. Between the pin M and the rear of the wall F encircling the operating rod L and retained in position by them is the helical spring N, the backward thrust of which when it has been closed by the drawing out of the operating rod L, against the pin M automatically retracts the rod L; the operating rod L thus being reciprocated together with all the parts of the mechanism attached to it; by power applied to the knob P, and the spring N;—on the rear end of the operating rod L and arranged vertically at right angles to it is the cross head O. This cross-head retains and supports in the longitudinal slot *o′* at its upper end by means of the pin *y* the upper lever, Q the pin *y* acting as the fulcrum of the lever. The cross head *o* supports and retains in the longitudinal slot $O^2$ at its lower end by means of the pin *z* the lower lever R, the pin *z* acting as the fulcrum of the lever. The levers Q R are weighted at their front ends and their extent of tilting movement may be regulated by their form and the depth and form of their respective slots; the butment wall H which limits the forward and backward travel of the operating rod L as hereinafter described is provided with suit-openings S, S′ through which the forward parts of the levers Q R. travel as the operating rod is reciprocated secured to the butment wall H and passing through openings in the cross head O. Projecting toward the rear of the cage are the coin ejecting pins T, T′. These may be of any desired form. I preferably turn their rear ends downward.

Secured to the rear end of the upper lever Q in the path of travel of a coin inserted into the apparatus is the upper coin receiver U constructed of a vertically arranged plate having its two sides turned rearward to form flanges or lips U′ $U^2$. These flanges are farthest apart at the top of the receiver and gradually approach toward each other as they extend downward so that a coin of a known diameter, for which the receiver is designed, when inserted therein will be caught and held between the flanges and all coins of a lesser diameter will fall through the receiver and not be retained therein. The flanges U′ $U^2$ extend rearward along the sides of the boss *t* sufficiently to allow the front of the boss to enter the rear part of the receiver, but not far enough to come in contact with the wall G; the office of the boss *t* is to conduct the coin into the receiver. $U^3$ is an opening in its front of sufficient size to allow the coin ejecting pin T to pass when the apparatus is operated.

Q′ is the weighted front end of the lever Q. When in its normal position it rests below the opening S, in the rear of the butment wall H thereby locking the apparatus and preventing its operation unless the lever is tilted by the proper coin inserted into the coin receivers. The lever is also provided at its front end with the finger $Q^2$.

J is the before mentioned upper sliding carriage. It is supported by, travels upon and is guided by the rods I, I; at its front end is the shoulders J′ projecting downward immediately in rear of the upper limb *w* of the pin M. Its rear end is extended downward and rearward to form the recessed lip $J^2$. On the top side of the carriage are securely arranged one or more spurs or pins $J^3$ $J^3$ $J^3$ in such manner that their points are elevated above the carriage and project forward.

Arranged on the rear end of the lower lever R in the path of travel of a coin falling through the coin receiver U is the lower coin

receiver V designed to receive and hold a coin of lesser diameter than the coin for which the upper coin receiver U is designed. It is provided with the flanges or lips V′ V² and the opening V³ and is constructed substantially in form as the receiver U except that it is smaller and that a direct line drawn at any point between the flanges V′ and V² would be less in length than any direct line drawn at any point between the flanges U′ and U² of the upper receiver.

R′ is the weighted front end of the lever R and is provided with the finger R².

K is the before mentioned lower sliding carriage supported by, traveling upon and guided by the rods I′ I′ having at its front end the shoulder K′ projecting upward immediately in rear of the limb *x* of the pin M. It is bent backward to form the arm K² which arm extends to the rear of the carriage parallel with and sufficiently apart from the upper side of the carriage to allow the front end of the lever R to travel beneath it when the operating rod L is reciprocated and the lever R is not in operation; on the face or lower side of the carriage K are securely arranged one or more pins or spurs K³, K³, K³ in such manner that their points drop below the carriage and project forward.

The levers Q and R are connected each to the other at their rear ends by the cord W one end of which is attached to the set screw X in the lever Q. The other end of the cord is attached to the lever R. Any suitable material of proper form may constitute this connection. It may be a jointed or rocking rod or a chain. I prefer however to carry out this feature of my invention by means of a flexible silken cord which cord may be adjusted in length by means of the set screw X and thereby the levers Q and R with the coin receivers U and V located and retained in position, and also that when a coin is inserted into and held by the coin receiver V its weight will overbalance the levers Q and R and by means of the cord W tilt conjointly the levers, thus raising the front end Q′ of the lever Q above the butment wall H and opposite the opening S and unlocking the mechanism and rendering it capable of operation.

The operation of the apparatus is as follows and is best shown in Fig. 6;—A coin of a known diameter and for which the apparatus is designed, as a five cent nickel coin of the United States is dropped through the coin slot *a* in the case A. It falls upon the inclined part *k* of the coin chute down which it slides into and drops through the vertical part *l* of the coin chute, and is by the boss *t* guided into the coin receiver U. The coin being of greater diameter than the width of the receiver it is caught and held therein between the flanges U′ and U²;—the weight of the coin over balances the lever Q to which the receiver is attached, depressing the receiver end and tilting upward its front end Q′ above the butment wall H opposite the opening S, thus unlocking the mechanism, and raising the finger Q² above the plane of the carriage J behind the recessed lip J²,—power as the hand now applied to the knob P contracting the spring N draws forward the operating rod L the cross head O the levers Q R and coin receivers together with the coin held in the receiver U. until the coin is prevented from further advancing by its coming in contact with the rear end of the coin ejecting pin T. The further withdrawal of the operating rod L causes the receiver to be drawn away from the coin, when the coin drops into the bottom of the case to be removed therefrom at will. When the coin drops out of the receiver the finger Q² drops into the recess of the lip J² of the carriage J resting upon the lip and preventing the weighted front end of the lever falling farther, and the front end Q′ is in contact with the rear end of the lip and the pins J³. J³. J³ engage the underside of the lowermost article in the tray C resting on the flanges *f. f.* A further withdrawal of the rod L causes the lever Q retained in the cross head O by the pin *y* to press against and push forward the carriage J, sliding on the rods I, I, and the spurs J³ J³ J³ push forward guided by the flanges *f, f* the article to be ejected or withdrawn from the apparatus sufficiently through the opening *g* to permit of the article being grasped and fully withdrawn from the apparatus; the rod L may be withdrawn until the cross head O comes in contact with the butment wall H when it is prevented from further withdrawal;—the power being removed from the knob P the operating rod L with the parts attached thereto is at first sufficiently retracted by the opening of the spring N pressing against the pin M to disengage the finger Q² from the lip J² and allow the lever Q to drop below the carriage, when the lever is supported by and rides upon the bottom of the opening S in the butment wall H. The upper limb *w* of the pin M then comes in contact with the shoulder J′ at the front of the carriage J, the continued opening of the spring pushes backward the rod L and the parts attached thereto, and the carriage J until the rear end of the carriage comes in contact with the butment wall H preventing the further backward movement of the pin M and the rod L, and the front end of the lever Q having repassed through the opening S it falls by its gravity behind the butment H locking the apparatus and preventing its further operation until another coin is introduced into it; during the movement above described the free front end of the lever R has remained together with the carriage K inoperative, the lever R having its front end reciprocated by the movement of the rod L between the arm K² and the carriage K. When a coin of lesser diameter than that of a coin for which the upper coin receiver is designed, and for which the lower coin receiver V is designed;—as the present one cent coin of the United States, is dropped through the

coin slot *a* into the apparatus it travels the path described of the larger coin but being of a lesser diameter than the coin for which the coin receiver U is designed, guided by the boss *t*, it falls through the receiver U into the coin receiver V where it is caught and held by and between the flanges V′ and V². The weight of the coin so held depresses the rear end of the lever R and overbalances the front ends of both the levers Q and R tilting upward their front ends, the lever Q being tilted by means of the cord W connecting the rear end of the levers, the front end Q′ of the lever Q is raised upward through the instrumentality of the cord W only a distance sufficient to raise it above the bottom of the opening S to unlock the mechanism and permit it to be operated, while the front end R′ of the lower lever R is tilted upward above the end of the arm K² of the carriage K. Power as the hand now applied to the knob P,—contracting the spring N draws forward the operating rod L and the parts attached thereto as also the coin in the coin receiver V until the coin is prevented from further advancing by its contact with the rear end of the coin ejecting pin T′. The further withdrawal of the rod L causes the receiver V to be drawn away from the coin held in it, which is forced out of the receiver by the fixed pin T′ and drops into the bottom of the case;—when the coin drops out of the receiver the front end R′ of the lever R falls until the finger R² rests upon the arm K² preventing its further fall, and its end R′ is immediately behind the arm K². The further withdrawal of the rod L causes the lever R to push forward by means of the arm the carriage K. when the pins or spurs K³. K³. K³ engage the upper-side of the upper most article in the tray D and pushes the article forward through the slot or opening *u* sufficiently to permit of the article being grasped and fully withdrawn from the apparatus. The power being removed from the knob P the operating rod L with the parts attached thereto is at first sufficiently retracted by the opening of the spring N pressing against the pin M to disengage the finger R² from the arm K² when the end of the lever R′ falls and the lower limb *x* of the the pin M is in contact with the shoulder K′ at the front of the carriage K. The continued opening of the spring N pushes backward the rod L and the parts attached thereto and the carriage K, until the rear end of the carriage K. comes in contact with the butment wall H preventing the further backward movement of the pin M and the rod L; and the front end of the lever Q having repassed through the opening S, it falls by its weight behind the butment wall. H. locking the apparatus. During this last described operation, the free front end of the lever Q and the carriage J have remained inoperative.

The guiding devices and also the contour of the levers Q, R, and the carriages J, K may be modified within wide limits so long as their construction is such as to permit or insure the requisite movements of the parts with reference to the contents of the trays C and D.

It may be observed, in an apparatus constructed according to my invention any desired number of similar combinations of the upper and lower trays and intermediate mechanism cage may be placed in a suitable case, one series above the other and all operated by coins of varying diameter introduced into the case through a single coin slot when the interior diameters of their coin receivers is graded downward, the interior diameter of each receiver between its flanges being greater than that of the receiver immediately below it.

I am aware that prior to my invention vending machines have been made with carriages capable of being reciprocated and provided with pins or spurs; I therefore do not claim such a combination broadly but

What I do claim, and desire to secure by Letters Patent, is—

1. In a vending machine adapted to vend articles of differing value or value and form, the combination of a shell or case having one coin slot for the insertion of coins of differing diameters and denominations, each coin of the same denomination so inserted permitting the operation of a different and distinct portion of the mechanism with a door or frame detachable from the case and capable of being securely attached thereto by pins inserted into recesses in the case and the bolt of a lock attached to the door shot into a recess in the case, the door confining in the interior of the case independent movable under and upper article trays and mechanism cage with its contained mechanism, the door having an opening in its face sufficient in size to permit the whole or partial ejectment of the articles vended through it and also the reciprocation of an operating rod, substantially as described.

2. In a vending machine the combination of a shell or case containing independent, unattached, movable upper and under article trays in which and from which articles are stored and vended with an independent, unattached movable mechanism cage containing the operative mechanism inserted within the case immediately above the under article tray and below the upper article tray, substantially as described.

3. In a vending machine adapted to vend articles of differing value and controlled by coins of differing diameters and denomination a case or shell to contain the complete operating mechanism and articles to be vended therefrom, having therein a single coin slot or opening, for the insertion of coins of differing diameters and denomination, each coin of the same denomination so inserted permitting a distinct portion of the mechanism to be operated and each coin of another denomination permitting another and different distinct portion of the mechanism to be operated, the

slot having a longitudinal axis greater than that of the largest coin for which the machine is designed, substantially as described.

4. The combination in a vending machine of an operating rod capable of being reciprocated provided with the cross head O, the levers Q R their fulcra, *y*, *z* their coin receivers U, V, and the fingers $Q^2$ $R^2$ with the carriages J and K provided with pins or spurs and the butment wall H having the openings *u* S. S′. and the coin ejecting pins T. T′ substantially as described.

5. In a vending machine the combination of an operating rod L, the cross head O the lever Q having the fulcrum *y*. the coin receiver U and the finger $Q^2$ with the carriage J provided with the shoulder J′ the recessed lip $J^2$ and the pins or spurs $J^3$ substantially as described.

6. In a vending machine the combination of an operating rod, L, the cross head O the lever R with its fulcrum Z coin receiver V and finger $R^2$. with the carriage K provided with the shoulder K′ the arm $K^2$ and the pins or spurs $K^3$ substantially as described.

7. In a vending machine the combination of a mechanism cage having connected by suitable rods or bars a front wall with the opening *u*, a rear wall provided with the boss *t*, and the intermediate fixed butment wall H having the openings *u*. S. S′ and coin ejecting pins T. T′. with an operating rod capable of being reciprocated provided with a retracting spring and the pin M and having vertically arranged at its rear extremity a cross head supporting two levers each provided with a coin receiver substantially as described.

8. In a vending machine adapted to vend articles of differing value having its mechanism controlled by coins of differing diameters and denomination inserted in a single coin slot or opening in its case or shell an independent mechanism cage containing the operative mechanism placed within the case immediately above an under article tray and below an upper article tray, the upper edge of the front wall of the under tray forming with the lower edge of the front wall of the mechanism cage a slot or opening for the whole or partial ejection through the opening of articles vended from the under tray and the upper edge of the front wall of the mechanism cage forming with the lower edge of the front wall of the upper article tray a slot or opening for the whole or partial ejection through the opening of articles vended from the upper article tray—substantially as described.

9. In a vending machine adapted to vend articles of differing value controlled by coins of differing diameters and denomination the combination of a case or shell having a single slot for the insertion of such coins, with a single operating rod provided with a retracting spring and the pin M and having at its rear end a vertically arranged cross head supporting two levers each lever provided with a coin receiver, substantially as described.

10. In a vending machine adapted to vend articles of differing value controlled by coins of differing diameters inserted in a single coin slot. in its case or shell, two levers each. having its own fulcrum and each provided with a coin receiver connected together by a cord whereby both levers are simultaneously tilted by the introduction and holding of a coin in one of the coin receivers, whereby the mechanism is unlocked and made capable of operation substantially as described.

11. In a vending machine two coin receivers each terminating a lever one receiver having a greater interior diameter than the other and so placed one above the other in the path of travel of coins inserted into the machine that a coin of lesser diameter than the interior diameter of the upper receiver will drop through it and be caught and held by the lower smaller receiver, whereby. a distinct portion of the mechanism is made capable of operation substantially as described.

JOSEPH CULLEN AYER.

Witnesses:

BLANCHE I. BRACKETT,

CHAS. HALL ADAMS.