

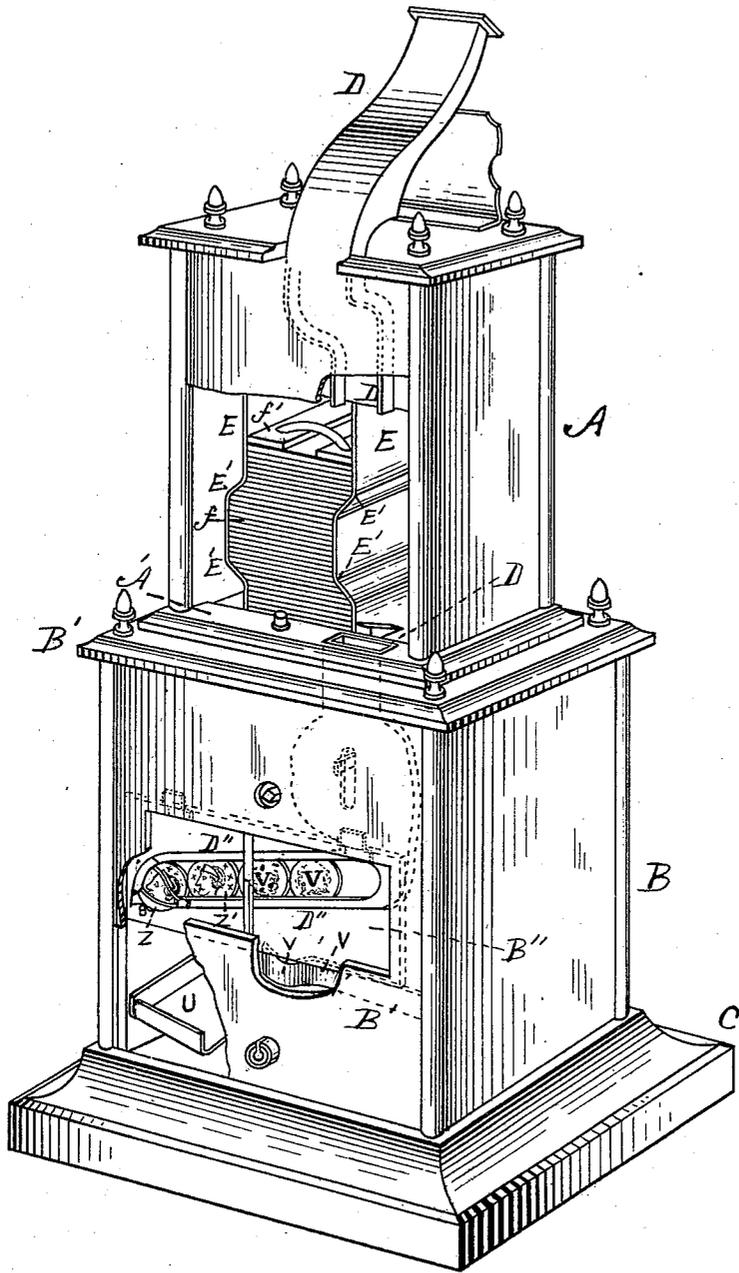
(No Model.)

3 Sheets—Sheet 1

J. P. TIRRELL & J. W. WILLARD.  
COIN CONTROLLED VENDING MACHINE.

No. 523,384.

Patented July 24, 1894.



WITNESSES

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*Fig. 1.*

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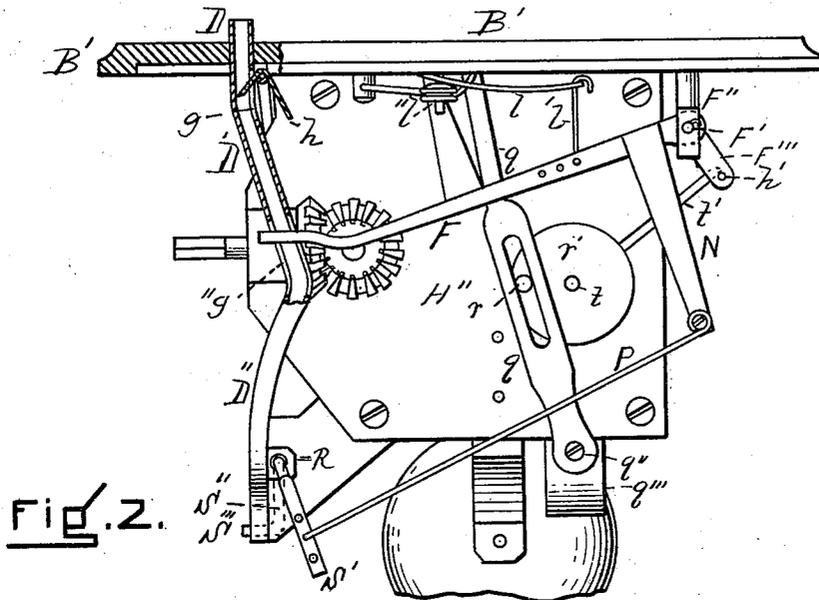


Fig. 2.

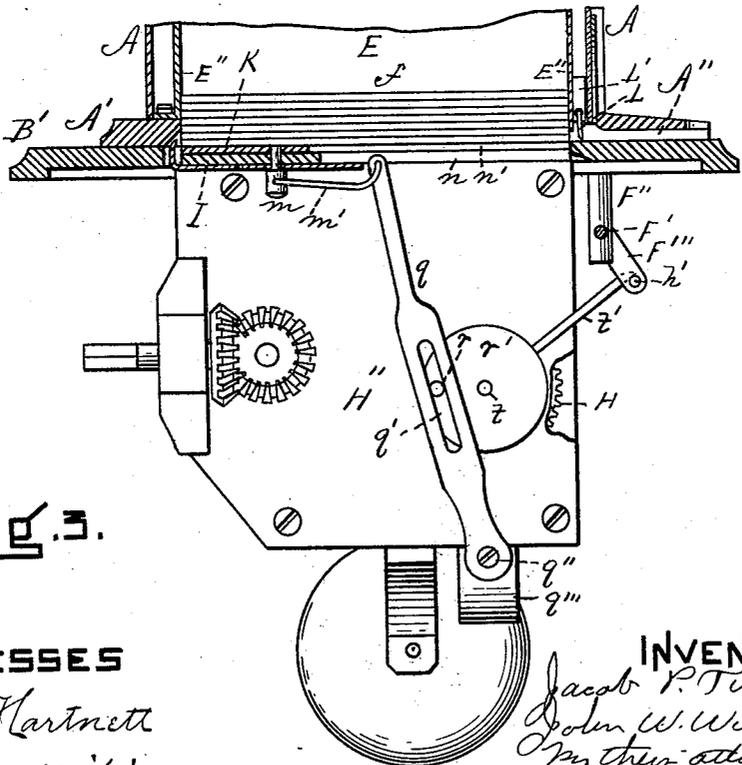


Fig. 3.

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# UNITED STATES PATENT OFFICE.

JACOB P. TIRRELL, OF BOSTON, MASSACHUSETTS, AND JOHN W. WILLARD, OF PITTSFORD, VERMONT, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE COLUMBIAN AUTOMATIC VENDING-MACHINE COMPANY, OF MAINE.

## COIN-CONTROLLED VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,384, dated July 24, 1894.

Application filed July 12, 1893. Serial No. 480,251. (No model.)

*To all whom it may concern:*

Be it known that we, JACOB P. TIRRELL, of Boston, in the county of Suffolk and State of Massachusetts, and JOHN W. WILLARD, of Pittsford, in the county of Rutland and State of Vermont, citizens of the United States, have invented new and useful Improvements in Coin-Controlled Vending-Machines, of which the following is a specification.

This machine is intended particularly, but not necessarily exclusively, to automatically supply postage stamps to a purchaser upon the introduction of a coin, usually a five cent piece; and our invention has for its principal objects to prevent and detect pilfering from, and cheating the machine, and to render its operation generally more efficient, exact, and certain.

In the accompanying drawings, in which similar letters of reference indicate corresponding parts, Figure 1 is a perspective view of a coin controlled vending machine embodying our invention, portions of the rear walls of the upper and lower cases being represented as broken out. Fig. 2 is a vertical section on a line running a short distance from the rear toward the front, taken through a portion of the top plate of the lower case, and through a portion of the coin chute; and an elevation of the mechanism in the lower chamber. Fig. 3 is a vertical section on a line running from front to rear, taken through the plates dividing the upper from the lower chamber, and showing, partly in elevation, and partly in section, portions of the upper chamber and of the mechanism in the lower chamber. Fig. 4 is a rear elevation of the mechanism in the lower case. Fig. 5 is a perspective view of the spring carrier for delivering the commodity. Fig. 6 is a transverse vertical section taken through the upper portion of the chute. Fig. 7 is a section on line *x*, Fig. 6, looking down. Fig. 8 is a section on line *y*, Fig. 6, looking up. Fig. 9 is an enlarged vertical section of a part of the lower portion of the lower case, showing the position of the distributing pan.

A is the upper case, B the lower case con-

taining the actuating mechanism, and C the base.

D is the coin-chute,—see Figs. 1, 6, 7, and 8. The general construction of this coin-chute is similar to that shown in United States Letters Patent granted July 19, 1892, to Virgil A. Krepps, and numbered 479,005, a slot *d*, (Fig. 6) being provided in the under side of our coin-chute to receive a coin of a too small denomination, and drop it outside of the machine.

*a* represents a lip secured to the upper edge of the upper wall of the coin-chute, and extending inward, that is, partially across the mouth,—the inner edge of said lip being made concave at *a'* and describing an arc of a circle corresponding with the periphery of a five cent piece. See Figs. 6 and 8. The inner surface of the upper wall of the coin-chute is provided also with a projection or semi-partition *b* extending transversely into the passage, and preferably furnished with a concave inner edge *b'*, see Figs. 6 and 7. This projection is set at a distance from the lip *a* which is equal to a line drawn through a five cent piece centrally and diagonally from the corner of one edge to the opposite corner of the opposite edge of the coin.

*e* is a lip secured to the upper edge of the under wall of the chute and extending inward, that is, partially across the mouth, and being made integral or rigid with an extension *e'* along the inner side of the under wall, as shown in Figs. 6 and 8. The inner surfaces of the lip and extension *e e'* are made concave at *e''*. A coin of proper diameter, in this instance a five cent piece, when deposited in the chute, slips between the lips *a e*, and extends for nearly the distance from the lip *a* to the projection *b*, then, being supported by the part *e'*, its upper edge tips up and its lower edge down, accommodated by the concavities *a' b'*, and it has just room enough to drop by the shelf *b* into and through the chute. Now if a coin or dummy should be inserted which is of proper width but a trifle too long, (as would be the case with a two cent piece filed on opposite edges,) the coin could

not get between the lip *a* and projection *b*, but would extend through the mouth and hence could not turn to pass down into the chute. It is understood that the width of this chute is just sufficient to accommodate the coin.

The commodity case, for holding the pile of envelopes *f* containing the stamps and surmounted by the weight *f'*, comprises besides its end walls *E''*, two side walls *E E*, each of which has one or more horizontal bends *E'*, the bends in the two walls corresponding in height and being in the same direction, see Fig. 1. By means of this construction the bends in the walls support the weight of the envelopes above them while the weight of the pile pressing against the lowest envelope is not much more than that of the envelopes below the lowest bend. Thus, when there is a high pile the pressure is diminished and at all times it is practically equalized, *i. e.*, it is always not much more than that produced by the weight of the envelopes below the lowest bends. Hence, the delivery of the commodity against the friction produced by the weight of the pile, is always within the capacity of the spring in the actuating mechanism, however nearly unwound it may be.

The chute *D* extends down through the chamber *A*, and through the base *A'*, of said chamber and top *B'* of the lower chamber into said lower chamber where it broadens at *D'* into substantially the shape shown in Fig. 4 and in broken lines in Fig. 1. This broad portion is provided with openings *g g'*, through which a wire or other instrument can be thrust to relieve any clogging which may occur. Near the openings *g*, a trap, *h*, is set, which is not new however in this invention. At the lower end of the portion *D*, the chute extends into an inclined way, consisting essentially of opposite connected grooves *D''*, (Figs. 1 and 4,) set at a suitable distance apart to allow the coin to roll down the lower groove and be sustained in a vertical position by the upper groove. This way is set near to, and faces the rear wall *B'* of the lower case, and said wall is provided at that point with a window *B''* through which the way *D''* and its contents are visible from the outside. The walls of the portion *D'* of the chute are provided with coincident vertical slots *g''* through which extends and in which plays the free end of the trip lever *F* (Figs. 2 and 4), whose opposite end is fast on the shaft *F'*, having bearings in the hangers *F''*, said trip being held normally up by the hook *l'* and spring *l*. Fast in the same shaft is the release lever or detent *F'''*, which is provided with a suitable pin *h'*, which releases by means of the mechanism described below, the clockwork mechanism *H* provided with a spring *H'* and sustained by the plate *H''*, see Figs. 2, 3, and 4.

The trip lever, release lever, and clockwork actuating mechanism or wheel train *H*, are

not new in this invention, and need no further detailed description.

*l'* is a trip or arm whose outer end lies normally on the pin *h'*. This trip extends from the hub of the crank wheel *r'* fast on the shaft *t* extending from and actuated by the wheel train *H* and provided with the roll *r*. This roll on the face of the crank wheel *r'* extends into the longitudinal slot *q'*, in the lever *q*, whose lower end is pivoted at *q''* to the bracket *q'''* secured in the lower chamber *B*.

*I* is a spring delivering carrier (see Figs. 3 and 5), and consists of the main portion lettered *I* which constitutes a spring, the portion *I'* provided with a suitable perforation *I''* produced by means of the *U* shaped cut *J'* and the upturned lip *J*, all substantially shown in Fig. 5. The function of this carrier is to deliver the lowest envelope by engaging it at the rear by means of the lip *J* and pushing it out through the passage *A''*. The spring carrier is secured by means of a bolt *m* to the slide *K* sliding horizontally from rear to front in the slots *n n'* in the top *B'* and base *A'* respectively. The spring carrier is so secured to the slide that its lip *J* sets normally a little to the rear of the rear edge of the lowest envelope *f*, thus leaving a small space between said lip and envelope for a start. The post or bolt *m* is connected by a link *m'* with the upper end of the lever *q*. When the trip lever *F* is struck by the descending coin, its free end drops, partially rotating the shaft *F'* which swings up the release lever *F'''*, thus moving the pin *h* up from under the outer end of the trip *l'*. The action of the wheel train causes the crank wheel *r'* and consequently the trip *l'* to make one revolution before the spring *l* is able to pull up the lever *F*, and hence swing down the release or detent *F'''* into its normal position, in which, as above stated, the pin *h'* lies under the outer end of the trip *l'*. The rotation of the crank wheel *r'* throws the upper end of the lever *q* forward, and hence, by means of the link *m'*, moves the slide *K* and carrier *I* forward, the lip *J* of the latter pushing the lowest envelope *f* forward and delivering it through the space *A''*. The envelope next above is of course then immediately forced down by the pile, and the lip *J*, in its return rearward, yields, by means of the spring of the carrier *I*. A suitable tension device *l''* is applied to the spring *l* so as to regulate with exactness the amount of resistance of the lever to the descending coin. Pivotaly hung from suitable brackets *L'* (Fig. 3), between the front walls of the commodity chamber and the chamber *A*, is a gate *L*. This gate is of length to extend a little forward from a vertical line, and hence cannot be forced rearward. The envelope being delivered lifts the gate as it passes into the space *A''*, and the gate then drops by gravity into the position shown in Fig. 3, so that a wire or hook cannot be inserted through the passage *A''*, and an en-

velope thus engaged and withdrawn. An arm N has its upper end rigidly secured to the trip lever F, while its lower end is connected by a wire or link P (Figs. 2 and 4), with a bent wire or rod of the shape shown in full lines in Fig. 2 and broken lines in Fig. 4. This wire consists of the horizontal portion S which operates as a shaft having a bearing at R, which is practically a box secured to the coin chute, and at R', which is a perforation in one of the plates H'' supporting the wheel train; the downwardly bent portion S' by means of which it engages with the link P, and with a downwardly bent portion S'', whose end S''' is bent horizontally so as to extend normally across the outer and lower end of the inclined portion D'' of the chute.

It will be noticed, on reference to Figs. 1 and 4, that the upper grooved portion of the way D'' of the chute is curved downward at its outer end, and that certain wires or straps M extend across the mouth or outlet.

The movement of the coins after they have struck the trip lever F is as follows: They roll off either side, edgewise, and are guided by the narrowing chute into the inclined passage formed by the opposite grooves D''. The first coin is usually deposited in the chute by the proprietor of the machine, and lies in the position of the coin Z, in which it rests on the bent end S''' and is prevented from any sidewise movement by the wires M. After this coin has been placed in position, the proprietor may if he chooses, deposit one or more in line behind it as shown. These coins are all in plain sight of the custodian, in whose charge the proprietor places the machine, by reason of the window B'' above described in the rear wall. Now should a person deposit a dummy coin sufficiently successful in weight and size to pass into the chute, it would roll down into the way D'' after tripping the mechanism, and rest against the last coin in plain sight—not of the customer, who would be in front of the machine, but of the custodian, who could see the rear. The tripping of the lever F, caused by the dummy coin, would swing up the arm N, which, by means of the link P, would pull up the portion S' of the wire shaft S, and hence the portion S'' of said shaft, thus swinging the bent end S''' from its position in front of the lowest coin Z, allowing such coin to drop, and the next coin Z' to roll down and take its place. The result of such an operation would be that while the dummy coin might actuate the machine, the custodian would have absolute evidence of the fraud and could proceed legally against the operator. Even should the custodian not see the dummy actually drop into the position, he could testify to the fraud if he knew how many coins showed in the way D'' through the window, before the machine was operated by the dummy. An important feature of this

part of the device is that the coin is exhibited after it has operated the machine, that is to say, after the theft has been committed, instead of before, so that it is an actual theft, not an attempt at theft, which can be testified to by the custodian. The coin, when it drops from the way, falls upon a spring pan, U, (Figs. 1 and 9) which is sustained at one end by the bracket U' secured in the lower chamber. By reason of this single support and the material of which the pan is constructed, it has a decided spring, so that as the coins fall upon it, they do not pile up, but fly off in various directions upon the floor of the chamber. Thus all danger of clogging under the outlet of the way is avoided.

The window pane, B'', (Figs. 1 and 9) is held up by a spring V of substantially the shape shown, provided with the bend V', on which the pane rests, said spring being secured to the inner side of the case B. In case of clogging, the case is unlocked and the hand passed up to press in the spring and allow the pane B'' to drop, when the inside can be easily reached. When the pane is pushed up again by the spring, the latter flies into the position shown.

Having thus fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a coin controlled vending machine, a coin chute or coin conduit, D, provided with a projection or shelf, *b*, extending from one of the walls into the passage and situated at a distance from the mouth or entrance which is substantially equal to the diameter of the coin adapted to operate the machine, substantially as set forth.

2. In a coin controlled vending machine, a coin chute or coin conduit, D, provided with the lip *a* extending inwardly from one side of its mouth, the extended lip *e e'* projecting inwardly from the opposite side of its mouth, and the projection or shelf *b* extending into the passage from one of the walls of the chute at a distance from the lip *a* which is substantially equal to the diameter of the coin, substantially as described.

3. In a coin controlled vending machine, a coin chute or coin conduit, D, provided with the lip *a* extending inwardly from one side of its mouth and provided on its inner edge with the concavity *a'*, and the extended lip *e e'* projecting inwardly from the opposite side of its mouth substantially as set forth.

4. In a coin controlled vending machine, a coin chute or coin conduit, D, provided with the lip *a* extending inwardly from one side of its mouth and provided on its inner edge with the concavity *a'*, the extended lip *e e'* projecting inwardly from the opposite side of the mouth and provided with the concavity *e''*, and the projection or shelf *b* extending into the passage from one of the walls of the chute at a distance from the lip *a* which is sub-

stantially equal to the diameter of the coin and provided with the concavity  $b'$ , substantially as described.

5 5. The combination with the trip lever, of the coin conduit comprising the upper narrow portion D, the enlarged broad portion D' located at the lower end of said narrow portion, and centrally provided with slots through which the trip lever extends and in which it  
10 plays, whereby the coins can roll freely off the trip lever on opposite sides without danger of clogging, and the inclined way D'' extending from the lower end of the enlarged portion of the coin conduit, the grade of said  
15 inclination being slight but sufficient to allow the coins to roll down on their edges, substantially as set forth.

6. In a coin-controlled vending machine, in combination, the casing provided with a narrow and substantially horizontal window, said  
20 window being movable so as to allow access to the interior of the casing, the coin chute provided at its lower terminus with a nearly horizontal inclined way located so as to be  
25 accessible and visible from the window, and a trip lever playing in the coin chute and receiving the impact of the coin, said coin chute being provided in the immediate vicinity of the trip lever with access holes, said holes being  
30 accessible through the movable window, substantially as described.

7. In combination, the coin chute provided with the inclined way D'', the bent rotative wire or rod S having one end S''' bent into  
35 position to normally prevent the lowest coin in the chute from dropping into the chamber, connecting rod P, and trip lever F provided with the arm N, whereby the movement of the trip lever simultaneously releases the lowest  
40 coin from the chute, substantially as set forth.

8. In a coin controlled vending machine, a delivering device comprising the carrier I provided with the upturned lip J for pushing the commodity, said lip being bent up vertically  
45 from the body of the carrier and having its upper edge or end turned inwardly and approximately horizontally for the purpose of

overlapping or clamping the edge of the commodity to be delivered, substantially as described. 50

9. The delivering carrier consisting essentially of the spring plate I provided with the lip J and the U shaped slit J', whereby the portion I' between the arms of the slit is adapted to be secured to the slide, substantially as described. 55

10. In combination with the parts A' B' grooved at  $n' n$ , respectively, the slide K reciprocating in said grooves, and spring carrier I I' J, said carrier being secured to and  
60 located under the under side of the slide and with its lip extending up at the rear of and above said slide, said carrier possessing an inherent spring, and mechanism for actuating the slide, substantially as described. 65

11. The commodity receptacle E, provided with a bend E' extending for a short distance into the space between the lines of the main or vertical portions of the walls of the chamber but not beyond or entirely across said  
70 space, substantially as set forth.

12. The commodity receptacle E, its side walls being provided with corresponding bends E', one of which extends inwardly for a short distance into the space between the  
75 lines of the vertical portions of the side walls, and the other extends correspondingly outwardly, thus providing diagonally opposite corners on which the commodity rests, said corners being produced by the upper portion  
80 of the inward bend and the lower portion of the outward bend, substantially as described.

13. In a coin controlled vending machine, a spring pan, U, situated under the outlet of the chute and adapted to receive the impact of  
85 the coins, and by means of its inherent spring to distribute them over the floor of the case, substantially as described.

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Witnesses:

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