

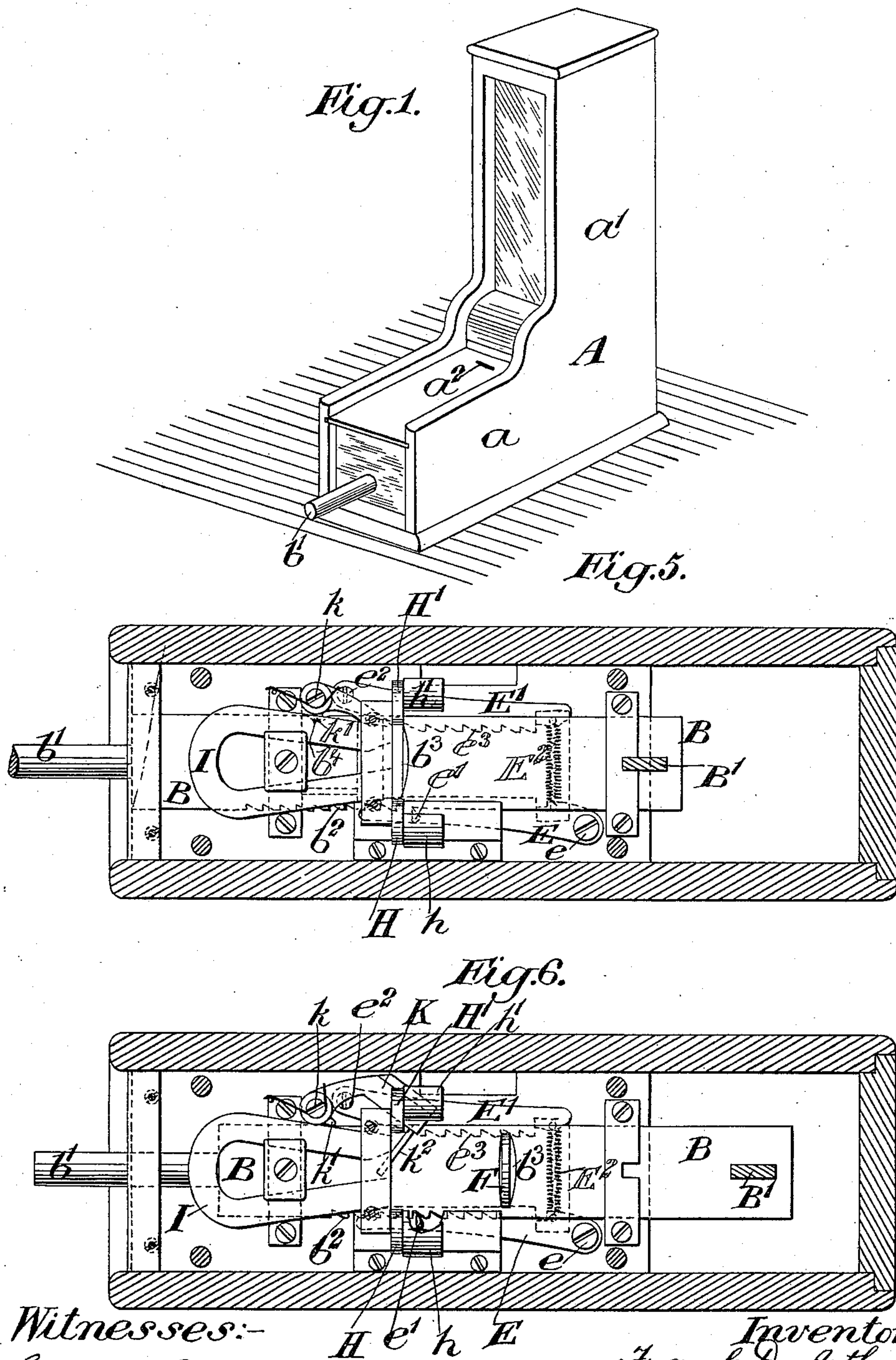
(No Model.)

2 Sheets—Sheet 1.

F. D. ARTHUR.  
VENDING MACHINE.

No. 572,513.

Patented Dec. 8, 1896.



Witnesses:-  
George Barry Jr.  
R. S. Seward

Inventor:-  
Frank D. Arthur  
by attorneys  
Brown Seward



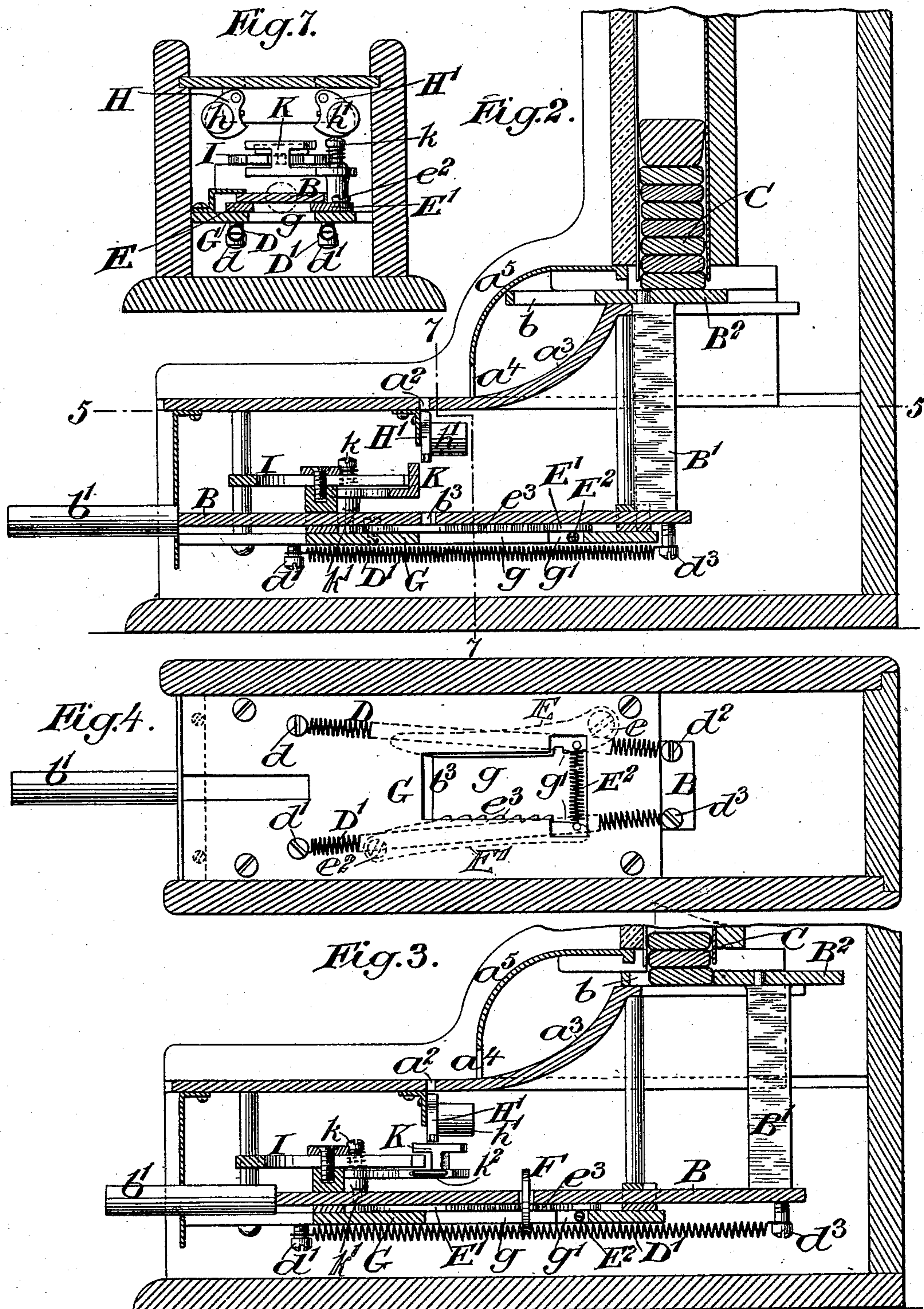
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# UNITED STATES PATENT OFFICE.

FRANK D. ARTHUR, OF NEW YORK, N. Y.

## VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 572,513, dated December 8, 1896.

Application filed January 25, 1896. Serial No. 576,825. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK D. ARTHUR, of New York city, in the county of Westchester and State of New York, have invented a new and useful Improvement in Vending-Machines, of which the following is a specification.

My invention relates to an improvement in vending-machines in which a coin inserted in the machine is utilized to render the machine operative to discharge a commodity and after so doing to fall into a receptacle out of reach of the operator and subject to removal only by the person holding a key for unlocking the receptacle.

My invention is more particularly directed to an improvement in that type of vending-machines in which the coin itself is utilized to bring the discharge mechanism under the immediate control of the plunger projecting to the exterior of the machine.

In the accompanying drawings, Figure 1 represents a view of one of the machines in perspective as it appears when set up for use. Fig. 2 is a vertical section through the lower portion of the machine and its casing from front to rear, showing the working parts in normal position. Fig. 3 is a similar view showing the parts in the position which they assume just before the package is discharged. Fig. 4 is a bottom plan view, the position of the operating-springs being indicated by dotted lines where they would obstruct the view of the spring-actuated dog. Fig. 5 is a horizontal section through line 5 5 of Fig. 2, showing the parts in normal position. Fig. 6 is a similar section showing the parts in the position which they assume just before the package is ejected, and Fig. 7 is a transverse vertical section through line 7 7 of Fig. 2.

The casing (denoted by A) may be of any suitable size and shape as may be found most desirable, the form which I have at present adopted being that of a narrow horizontal base portion *a* for the reception of the operating mechanism and an upright rear portion *a'*, the upper part of which is utilized for storing a column of packages to be discharged and the lower part of which is devoted to housing the discharging mechanism. The coin for rendering the machine operative is to be inserted through a slide *a<sup>2</sup>* in the top

of the base portion *a*. In the base there is located a longitudinally-reciprocating bar B, connected at its rear end by a standard B' with a sliding plate B<sup>2</sup>, which forms, when the machine is in its normal position, a support for the column C of packages to be discharged, and which also serves to discharge the lowermost of the packages after the latter has been permitted to fall into a recess or opening *b* in the plate by the rearward movement of the plate sufficient to bring the opening *b* in alinement with the column of packages C.

The longitudinally-reciprocating plate or bar B, which operates the discharge, has an operating-rod *b'* projecting from its forward end through the front of the machine, so that it may be pushed rearwardly when unlocked by a coin in the manner to be hereinafter described. The return movement of the bar B is effected by a set of operating-springs D D', connected at one end to studs or screws *d d'* set in the base of the machine and at their opposite ends to studs or screws *d<sup>2</sup> d<sup>3</sup>* set in the bar B. This return movement of the bar B also serves to carry the lowermost package of the column C which has fallen into the opening or pocket *b* in the discharge-plate B<sup>2</sup> forwardly into position to drop down the incline *a<sup>3</sup>* and through the opening *a<sup>4</sup>* in the guard *a<sup>5</sup>* at the front of the machine within reach of the purchaser.

The bar B is held normally against rearward movement by means of a dog E, pivoted to the casing at *e* and carrying on its upper side a tooth *e'*, adapted to engage some one of a series of ratchet-teeth *b<sup>2</sup>* on the side of the bar B. The inner face of the dog E projects normally a short distance within the path which the coin F is intended to traverse when carried rearwardly by the bar B, so that the edge of the coin will, when it is pushed rearwardly, force the dog E back from the bar B far enough to release its tooth *e'* from the teeth *b<sup>2</sup>* on the edge of the bar and permit the latter to slide freely as long as the coin is in position in the operating-bar. On the opposite side of the path of the coin there is located a dog E', pivoted at *e<sup>2</sup>*, and having along its inner edge a series of ratchet-teeth *e<sup>3</sup>*, which project within the path which the coin F traverses when carried by the bar B.



The dogs E and E' are actuated by a common spring E<sup>2</sup>, connected with the free end of the dog E' and with the dog E a short distance from its pivotal point *e*. The bar B is provided with a slot *b*<sup>3</sup>, arranged transversely across it and of sufficient size to permit the coin for which the machine is adapted, in the present instance a cent, to loosely pass through the bar with an easy sliding fit, and the coin is held at first from passing through the slot *b*<sup>3</sup> in the bar B by means of an under plate G, (see Fig. 4,) provided with an opening therein having a neck *g* of somewhat less than the diameter of the coin and a wider portion *g'* to the rear of sufficient width to permit the cent to drop through the plate when it has been carried to such wider portion by the bar B.

As thus far described the machine may be operated as follows: The slot *b*<sup>3</sup> in the bar B is normally located in alinement with the slit *a*<sup>2</sup> in the top of the base *a* of the casing, so that when the coin is passed through the slit *a*<sup>2</sup> it will drop down into the slot *b*<sup>3</sup> and be held in said slot by its edges resting against the opposite edges of the contracted portion *g* of the opening in the plate G. The bar B is permitted a short rearward movement before the tooth *e'* of the spring-actuated dog E comes into engagement with the teeth *b*<sup>2</sup> on its edge, and said preliminary rearward movement of the bar B will crowd the coin against the free end of the dog E and force the latter outwardly far enough to throw its tooth *e'* out of position to engage the teeth *b*<sup>2</sup> on the edge of the bar B, and hence will permit the bar B to be slid rearwardly until the coin reaches the wider portion *g'* of the opening in the under plate G, at which moment it will also pass out of engagement with the face of the dog E and will be permitted to fall into the bottom of the casing. As the bar B with the coin therein is forced rearwardly the edge of the coin will crowd successively past the teeth on the inner edge of the dog E', and after the manner of a pawl will lock the bar against return movement until the coin has been pushed past the last tooth on the edge of the dog E', which will be at the moment the coin reaches the position to be discharged through the bottom plate G. It will be observed that the coin itself while carried along by the bar B both releases the bar B to permit it to move rearwardly and at the same time serves as a locking-pawl to prevent it from moving forwardly, and that when carried to the rear far enough to escape engagement with the faces of the dogs it will be free to drop through the bar B and through the widened portion of the bottom plate G, and in so doing immediately permit the bar B to return under the tension of the operating-springs D D'.

The rearward movement of the bar B, carrying with it the standard B' and discharge-plate B<sup>2</sup>, carries the plate B<sup>2</sup> into the position shown in Fig. 3 before the cent is discharged, and hence permits the lowermost of the pack-

ages to fall into the opening or pocket *b*, so that when the bar B returns under the tension of the springs D D' it will carry the lowermost package, which has fallen into the opening or pocket *b*, forwardly and leave it free to drop down the incline *a*<sup>3</sup> and out within reach of the purchaser.

It is obvious from the above description that a disk of less diameter than the coin intended would not release the machine, and if it were considerably less in diameter it would fall immediately through the part *g* of the opening in the lower plate G and out of the way. If the disk employed were thin, so as to readily bend, or were of metal—such, for example, as lead—it would also be liable to fail to hold the dog E back far enough to release the bar B after it had been slid a short distance along the face of the dog and along the faces of the teeth on the dog E', which would have a tendency to cut or wear it away.

To further provide against the working of the machine by disks of hard metal and of the necessary diameter, but lighter than copper or the material of which the intended operating-coin is made, and to provide against the working of the machine by disks of iron, I have provided, in connection with the operating mechanism hereinabove described, a set of scales for holding back the former class of disks and a permanent magnet for holding the iron disks out of operative position.

The scales for retaining disks lighter than the intended coin consists of a pair of pivoted hangers H H', (see Fig. 7,) located upon opposite sides of the path along which the coin will travel when inserted within the slide *a*<sup>2</sup> and so weighted as to swing their faces nearer together than the diameter of the coin. The weights *h* *h'* on the hangers are so adjusted that the weight of the intended coin will press the hangers H H' apart far enough to permit it to pass through and down into the slot B, while the lighter disks will remain suspended. In order to provide against pushing the latter down from the outside of the casing, I intend to provide a curved chute (not shown herein) of any well-known or approved form for directing the coin to the slide *a*<sup>2</sup>.

If the disk be of iron and heavy enough to pass through the scales, it will still have to pass in front of the poles of a permanent magnet I, and the latter will draw it out of the path to the slot in the bar B and retain it in position to be ejected by mechanism provided for that purpose, as follows: A spring-actuated arm K (see particularly Figs. 5 and 6) is pivoted at *k* and rests normally with its free end back of the vertical plane of the scales and poles of the magnet. The arm K has fixed to rock therewith an operating-nose *k'*, which rests normally in a notch *b*<sup>4</sup> in the edge of the bar B, and when the bar B first begins its rearward movement and before it is interrupted by the tooth *e'* on the dog E it will rock the bar K, throwing its free end rearwardly and clearing away any disk which may



have lodged in the scales or at the end of the magnet. This ejector is located above the position which the coin occupies when it is in position in the slot in the bar B to operate the machine. The ejector K also carries a pin or projection K<sup>2</sup> on its free end, which serves as a stop to the return swing of the ejector, and also, when the ejector is in its thrown position, as represented in Fig. 6, prevents the passage of a subsequently-inserted coin or disk down into engagement with the working parts until they shall have been returned to their normal positions.

What I claim is—

1. A suitable casing, a reciprocating bar extending from within to the exterior of the casing and provided with an opening for the reception of a coin, means for directing the coin to the opening in the bar, a support for the coin beneath the bar arranged to hold the coin in the opening in the reciprocating bar during a predetermined length of movement of the bar, a dog for holding the bar locked and under the control of the coin carried by the bar to be released, a ratchet-toothed dog in position to engage the edge of the coin and thereby prevent a return movement of the reciprocating bar until the coin has been discharged and a discharge mechanism under the control of the bar, substantially as set forth.

2. A suitable casing, a reciprocating bar extending from within to the exterior of the casing and provided with an opening for the reception of a coin, means for directing a coin from the exterior of the casing to said opening in the reciprocating bar, discharge mechanism under the control of the bar, a stationary plate beneath the bar provided with an opening having a contracted portion of such width as to prevent a coin of the proper size from passing through and thereby retaining it in the opening in the said reciprocating bar and with an enlarged portion of such width as to permit the coin to fall through, a spring-actuated dog for holding the reciprocating bar normally locked and under the control of the coin carried by the bar to release the dog and a spring-actuated ratchet-toothed dog in position to engage the coin carried by the reciprocating bar to prevent the return movement of the reciprocating bar until the coin has been discharged, substantially as set forth.

3. The combination with a coin-controlled operating-bar, a discharging mechanism, and means for directing a coin to the bar, of scales interposed in the passage-way of the coin for controlling the passage of coins with respect to the weight and a permanent magnet located at the side of the passage-way for obstructing the passage of coins with respect to substance, substantially as set forth.

4. The combination with a coin-controlled operating-bar, a discharge mechanism and means for locking the bar normally against movement sufficient to operate the discharge mechanism while permitting it a limited movement, of means for obstructing coins other than those intended to pass to the coin-controlled bar and an ejecting mechanism under the control of the operating-bar during its preliminary movement to throw the obstructed coin out of the passage-way of a subsequent coin, substantially as set forth.

5. The combination with a coin-controlled operating-bar, a discharge mechanism and means for directing a coin to the bar, of scales interposed in the passage-way of the coin for controlling the passage of coins with respect to the weight, a permanent magnet located at the side of the passage-way for obstructing the passage of coins with respect to substance and ejecting mechanism under the control of the operating-bar for ejecting any coins which may be retained by the magnet or scales, substantially as set forth.

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Witnesses:

FREDK. HAYNES,  
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