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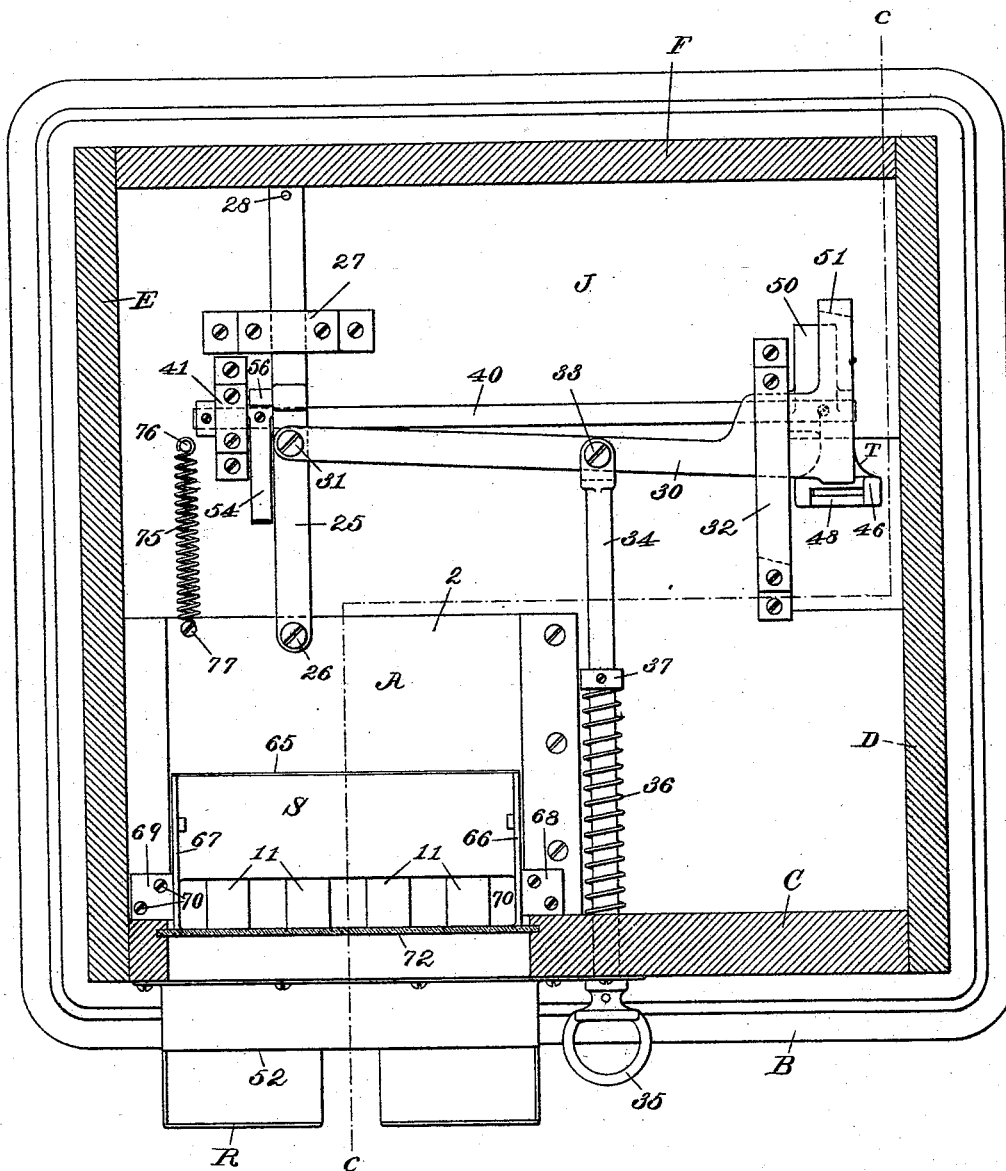
4 Sheets—Sheet 1.

F. H. RICHARDS.  
VENDING MACHINE.

No. 455,496.

Patented July 7, 1891.

*Fig. 1.*



*Witnesses:*

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Thos L. Rickard.

*Inventor:*

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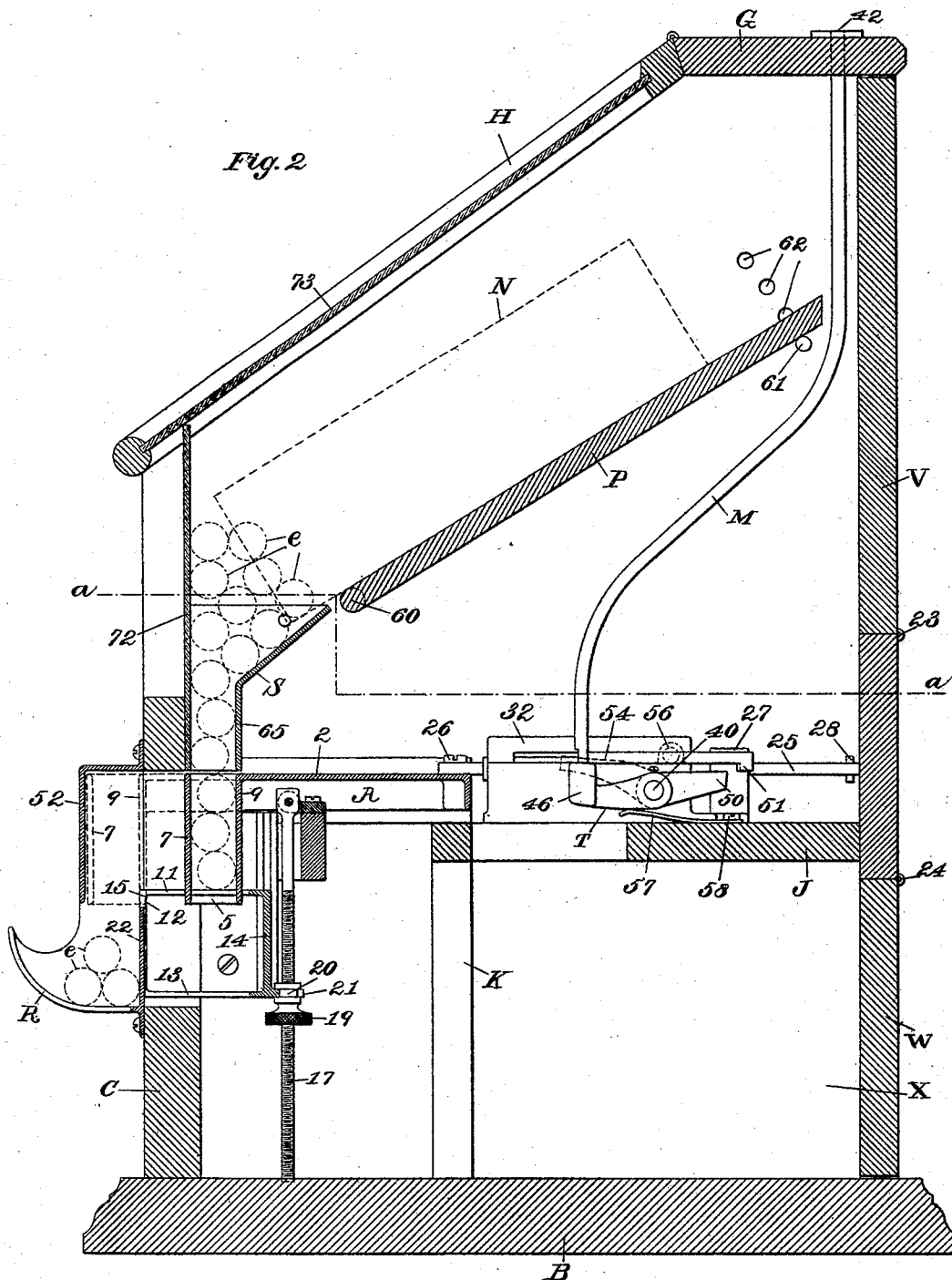
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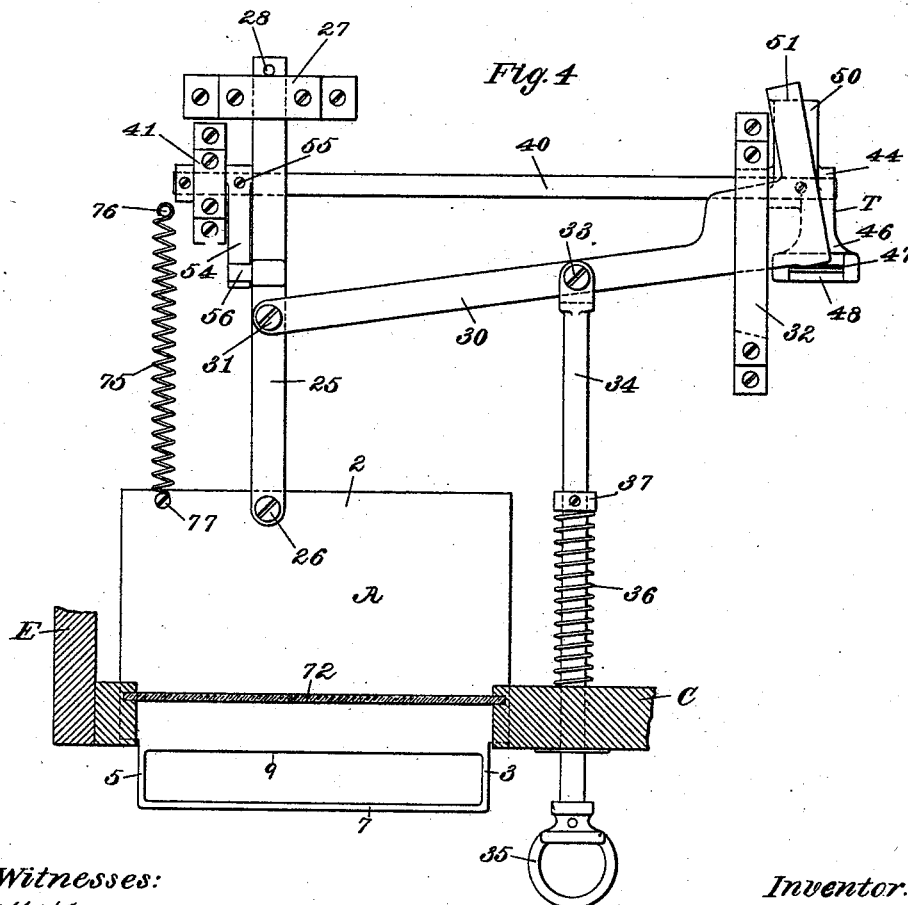
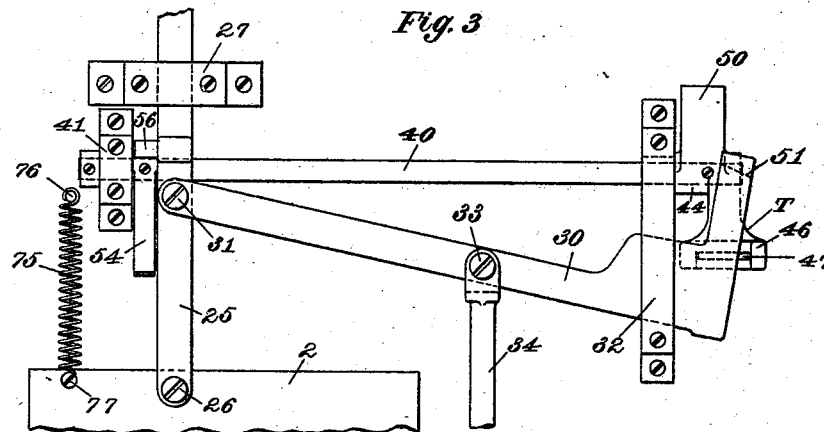
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F. H. RICHARDS.  
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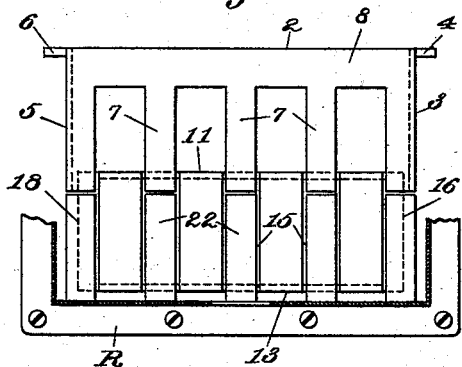
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*Fig. 5*



*Fig. 6*

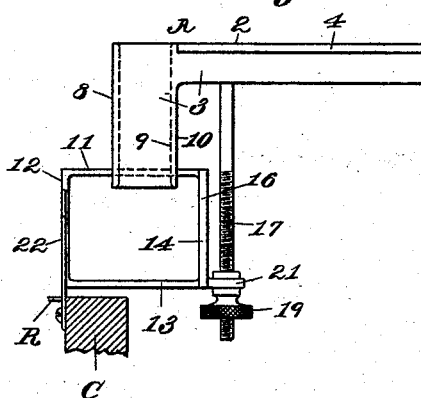


Fig. 7

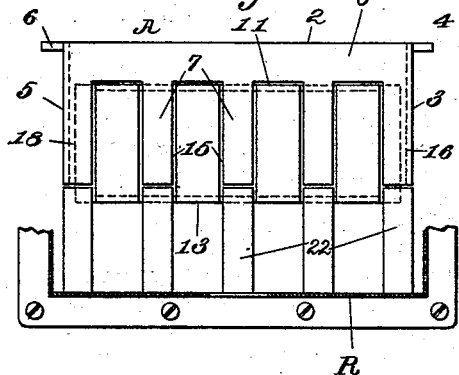
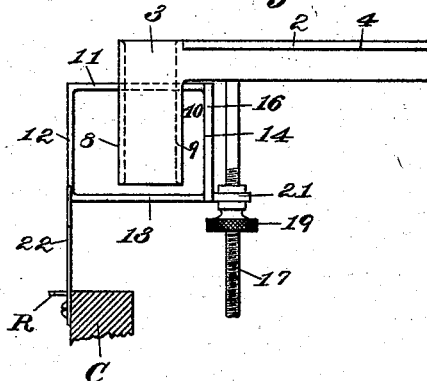
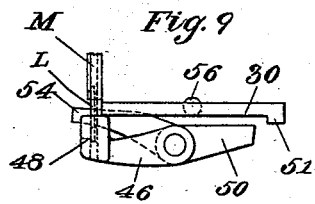


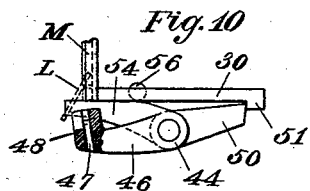
Fig. 8



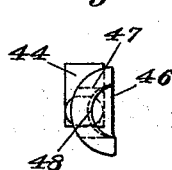
*Fig. 9*



*Fig. 10*



*Fig. 11*



*Fig. 12*

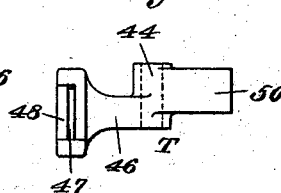
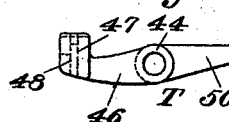


Fig. 13



**Witnesses:**

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# UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO JOHN G. RICH, OF AUBURN, NEW YORK.

## VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 455,496, dated July 7, 1891.

Application filed April 2, 1891. Serial No. 387,380. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Vending-Machines, of which the following is a specification.

This invention relates to automatic vending-machines, in which articles of merchandise are exchanged for coins.

The object and nature of the invention are set forth in the following description.

In the drawings accompanying and forming a part of this specification, Figure 1 is a horizontal section of the casing of the machine in line *a a* of Fig. 2, showing the operative parts of the machine in plan view below said line. Fig. 2 is a vertical section of the machine, the view being taken in line *c c* of Fig. 1 and showing the parts at the left hand of said line. Figs. 3 and 4 are views similar to a part of Fig. 1, illustrative of the operation of the machine. Figs. 5 and 6 are respectively the front and side views of the goods-carrier and the adjustable floor therefor, and Figs. 7 and 8 are two similar views showing said parts in different relative positions. Figs. 9 and 10 are views similar to a portion of Fig. 2, illustrating the operation of the lock mechanism. Figs. 11, 12, and 13 are respectively an end view, a plan, and a side view of the coin-carrier of the lock mechanism.

Similar characters designate like parts in all the figures.

The casing or cabinet, which contains the operative parts of my improved vending-machine, consists or may consist of the base B, the front wall C, the side walls D and E, the back wall F, the top G, the cover H, the floor J, carrying the operative parts, and the partition K, supporting said floor. The front wall usually has the glass panel 72, through which to see the goods, while the cover H has a similar panel 73 for a like purpose. The panel 72 constitutes the front wall of the delivery-hopper S.

In the back wall F of the cabinet are two doors, the upper door V being hinged at 23 and giving access to the upper portions of the

case. The lower door W, hinged at 24, gives access to the lower space X, wherein the coin-box is to be placed. In practice of course each of the doors V, W, and H should be provided with suitable locks for securing the cabinet from unauthorized entrance.

The machine shown in the drawings is constructed and arranged for vending cigars, these being indicated in Fig. 2 by the several dotted circles *e e*. The machine consists of the cabinet, a delivery-hopper from which the cigars are delivered to the goods-carrier, a reciprocable goods-carrier, an adjustable floor for regulating the capacity of the goods-carrier, and goods-carrier-actuating mechanism operating through the medium of a coin to move forward said carrier and deliver the cigars to a receptacle, from which they may be taken by the customer.

The delivery-hopper (designated in a general way by S) may be a metal casting, or it may be formed of sheet metal or other suitable material, as wood or earthenware. It consists of the back wall 65, the front wall 72, the end walls 66 and 67, having the feet 68 and 69 formed thereon, respectively, whereby to secure the hopper in place by the aid of screws 70 to some part of the casing.

For supporting the cigar-box N (shown in dotted lines in Fig. 2) an inclined shelf P is provided, pivoted at 60 to the side walls D and E of the casing and otherwise supported, as by pins 61, made to fit the holes 62, formed in the said side walls. There being a series of said holes, the inclination of the shelf P may be regulated by shifting the pin 61 to another one of said pin-holes. This feature, however, is not of my invention.

The goods-carrier, which is designated in a general way by A, and is preferably cast integral, consists of the plate or slide 2, having the projecting edges 4 and 6, forming guides for supporting the goods-carrier in its ways, the depending sides 3 and 5, forming the closed ends of the cigar-receiver, and the front and back plates 8 and 10, respectively, of said receiver. Said plates 8 and 10 are notched, as is best shown in Figs. 5 and 7, thus forming the corresponding series of depending fingers 7 and 9. The floor of the receiver consists of a box-shaped casting, whose top 11

and front wall 12 are notched, as at 15, to receive the aforesaid fingers 7 and 9, the bottom plate 13, and the back wall 14. The projecting edges 16 and 18 of the said wall 14 form guides, which fit in corresponding grooves formed in the casing and prevent lateral movement of said bottom piece, but allow of free vertical movement of said piece. A threaded rod or elevating-screw 17 is carried, fixed in the casing, and is provided with a nut 19, having a reduced part 20, Fig. 2, which engages the notched ear or projection 21, that is formed on said back wall 14. By means of this device the floor of the receiver may be raised or lowered to vary the capacity of said receiver. In Figs. 2, 5, and 6 the receiver-floor is shown lowered to permit three cigars 4 to enter the receiver, while in Figs. 7 and 8 said floor is raised to reduce the capacity of the receiver to one cigar.

A suitable receptacle, as R, is fixed to the front wall C of the casing to receive the cigars discharged from the goods-carrier. A series of fingers or guard-plates 22 rise from the back of said receptacle and stand immediately below the path of said fingers 7 and 9 and in the notches or spaces 15 in the front wall 12 of the receiver-bottom for preventing access to the goods-carrier through said slots 15, and thus prevent tampering with cigars lying in the receiver. The usual guard-plate 52 is provided to prevent access to the front of the goods-carrier.

As a means for sliding the goods-carrier this is suitably connected, as by the screw 26, to a rod 25, which extends rearwardly and is fitted to slide freely in a bearing 27, that is fixed in the floor J of the casing, a pin 28 being provided, fixed in the rearward end of said rod to limit the forward movement thereof. The slide-actuating lever 30 is at one end thereof pivotally attached at 31 to the rod 25. The opposite end of said lever is fitted to move freely in a guide-bearing 32, which is fixed by screws or otherwise to the floor J. The lever has pivotally attached thereto at 33 a pull-rod 34, whereby said lever may be operated by hand. The rod 34 has some suitably-shaped handle, as 35, by means of which the operator may draw the rod and lever forward, a spring 36, carried on the rod 34 between the front wall C of the casing and a stop-collar 37 on said rod, being provided for the purpose of retracting the rod and lever when the handle is released by the operator. A carrier-retracting spring 75 is connected at one end to the goods-carrier by a pin 77 and is connected at the other end thereof to the pin 76, which is fixed in the floor J. This spring serves to retract the carrier on the release of the pull-rod 34. A rock-shaft 40 is journaled in a bearing 41 near the left-hand end thereof and near its right-hand end in the lower part of the aforesaid guide-bearing 32 for the lever 30. On said shaft 40 the coin-carrier or "lock" T is rigidly fixed by its hub 44. This lock has two arms 46 and

50, of which the former constitutes the coin-carrier proper. Said arm 46 has a slot or opening 47 formed therein, through which a coin smaller than the one which should be used may freely pass. Immediately forward of said slot a coin-retaining rim 48 is formed to engage the lower edge of the coin L, while the upper edge of said coin stands within and engages the lower end of the coin-chute M, as shown in Fig. 9. The rearwardly-extending arm 50 constitutes a detent-catch or retaining-arm for engaging at the proper time the catch 51, which is formed on the under side of the right-hand end of the lever 30 for locking or retaining the said lever in its position. (Shown in Fig. 4.) Another rocker-arm 54 is secured to the shaft 40 adjacent to the bearing 41 by means of a set-screw 55 or otherwise. A pin 56 on rod 25 engages and bears down said arm 54, and thereby turns forward the shaft 40 on the extreme forward movement of the rod 25. A spring 57, Fig. 2, (fixed to the floor J by a screw 58,) bears on the under side of the arm 46, and thus acts to reset the rock-shaft 40 in its position shown in Figs. 2 and 9 on the backward or return movement of the lever 30.

The coin L, Fig. 9, constitutes the fulcrum against which the lever 30 reacts to actuate the goods-carrier, and when there is no coin present in the lock the pivot 31 is the fulcrum of said lever, whose broadened right-hand end (see Figs. 3 and 4) moves forward underneath the coin-chute, thereby preventing any coin from entering the lock except when the lever is retracted, as shown in Fig. 1.

The means actuating the lock from the goods-carrier or from some part (as the rod 25) connected thereto, consists of the pin 56, acting upon the cam-shaped arm 54; but this arrangement may be reversed, the pin being placed upon said arm, while the cam-face may be on the rod 25, after a well-known manner.

The general operation of the machine is as follows: The delivery-hopper S being suitably supplied with goods and the adjustable floor being properly set to secure the required capacity of the goods-receiver, the customer drops the required coin at 42, Fig. 2, into the coin-chute M, which delivers the coin to the lock T, where it stands engaging the lower end of the chute and the edge or lip 48 of the lock, being supported on the lock at the ends of the slot 47, as indicated in Fig. 9. Next the pull-rod 34 is drawn forward, bringing the free end, which is at the right hand in Figs. 3 and 4, against the back side of the coin, as indicated in Figs. 4 and 9. At this time the coin serves as the fulcrum of the lever, so that on the continued drawing forward of the rod 34 the left-hand end of the lever is drawn forward, and through its connection with the goods-carrier slides said carrier forward from the position shown in Figs. 1, 2, and 3 to the position shown in Fig. 4, and indicated by dotted lines in Fig. 2, when

the goods drop out of the goods-receiver into the receptacle R. When the goods-carrier starts forward a little distance, the pin 56, engaging the arm 54 of the rocker 40, actuates the movable lock T to release the coin, at the same time throwing the arm 50 of said lock into engagement with the hook 51 of the free end of the lever, as will be understood by comparison of Figs. 9 and 10. On the shifting of the lock from its position in Fig. 9, where it is shown holding the coin in place, to its position in Fig. 10 the lever moves forward a short distance, sufficient to throw the coin L out of the lock. This will be understood from the dotted lines in Fig. 10, showing the coin leaving the lock. After the release of the coin the lock-arm 50 constitutes the fulcrum of the lever during the remainder of the forward stroke of the goods-carrier. The goods having been delivered, the customer releases the rod 34, which is retracted to its original position in Fig. 4 by means of the spring 36, that also operates to return the goods-carrier to its original position shown in Figs. 1 and 3. On drawing forward the rod 34 when there is no coin in the lock to serve as a fulcrum for the lever, the right-hand or free end of the lever is drawn forward, as in Fig. 3, between the lower end of the coin-chute and the lock, the goods-carrier being in the meantime lightly held retracted by the spring 75. In this case, on releasing, as before, the rod 34, the spring 36 returns said rod and the lever 30 to their positions shown in Fig. 4, ready for another operation.

Having thus described my invention, I claim—

1. In a vending-machine, the combination, with the reciprocable goods-carrier, of the carrier-actuating lever movable at both ends and connected at one end to said carrier, and a lock located at the free end of the lever and holding a coin forward of the lever when this is retracted, the coin when in the lock being the actuating-lever fulcrum, and said lever passing free of the lock in the absence of a coin, substantially as described.

2. In a vending-machine, the combination, with the reciprocable goods-carrier, of the carrier-actuating lever connected at one end to said goods-carrier and normally free at the other end, a lock, substantially as described, located at the free end of said lever and holding a coin forward of the lever when this is retracted, a rocker carrying said lock, and means, substantially as described, actuating the rocker to release the coin from the lock on the forward stroke of the goods-carrier, substantially as described.

3. In a vending-machine, the combination, with the reciprocable goods-carrier, of the carrier-actuating lever connected at one end to said goods-carrier and normally free at the other end, a movable lock, substantially as described, located at the free end of said lever, the coin-chute leading to said lock and coacting with the lock to hold the coin forward

of the lever when this is retracted, and a coin-releaser operating the lock to release the coin during the forward stroke of the lever, substantially as described.

4. In a vending-machine, the combination, with the reciprocable goods-carrier, of the carrier-actuating lever connected at one end to said goods-carrier and normally free at the other end, said lever having at its free end the detent-hook, and a movable lock constructed to support a coin forward of the lever when this is retracted and having a detent-arm engaging said hook on the release of the coin, substantially as described.

5. In a vending-machine, the combination, with the goods-carrier actuating-lever having a detent-hook, of the rocking lock constructed at one end to hold a coin forward of the lever when this is retracted to engage said hook on the movement of the lock to release the coin, substantially as described.

6. In a vending-machine, the combination, with the reciprocable goods-carrier, of the carrier-actuating lever connected at one end to said goods-carrier and normally free at the other end, a lock, substantially as described, located at the free end of said lever and holding a coin forward of the lever when this is retracted, a rocker carrying said lock and having a detent-arm engaging the lever on the movement of the lock to release the coin, a cam-arm on said rocker, and a cam-arm actuator connected with the goods-carrier and set to actuate said arm to release the coin during the forward movement of the goods-carrier, substantially as described.

7. In a vending-machine, the combination, with the reciprocable goods-carrier, of the rod 25, connected to said carrier and having a pin 56, the lever 30, connected to said rod and having a hook 51, the movable lock T, supporting the coin and constructed to engage said lever-hook on the release of the coin, and means actuating the lock from said pin 56 to release the coin, substantially as described.

8. In a vending-machine, the combination, with the lever 30, connected to actuate the goods-carrier and having the hook 51, of the coin-chute above the free end of the lever, the lock T, having the slot 47 below said chute and having the coin-catch 48, said coin-chute and lock coacting to support the coin forward of the lever when this is retracted, and a detent on the lock engaging said lever-hook on the release of the coin, substantially as described.

9. In a vending-machine, the combination, with the reciprocable goods-carrier, of the spring retracting said carrier, the carrier-actuating lever connected at one end to said goods-carrier and normally free at the other end, the pull-rod 34, connected to the lever intermediate of the length thereof, the spring retracting said pull-rod and lever independently of the movement of the goods-carrier, the rocker carrying the lock below the free

end of the lever, a spring normally holding the lock in position for retaining a coin forward of the free end of the lever when this is retracted, and means actuating the rocker 5 from the goods-carrier to release the coin, substantially as described.

10 10. In a vending-machine, the combination, with the delivery-hopper and with the reciprocatable goods-carrier having the goods-receiver, of the depending fingers on the front and back walls of said receiver, and the vertically-adjustable floor extending between said fingers, whereby the capacity of the goods-receiver may be regulated, substantially as 15 described.

11. In a vending-machine, the combination, with the reciprocatable goods-carrier having the depending fingers, of the slotted floor ver-

tically adjustable, substantially as described, and the guard-plates standing in the forward 20 slots of said floor below the path of said fingers, substantially as described.

12. In a vending-machine, the combination, with the reciprocatable goods-carrier having the depending fingers on the walls of the 25 goods-receiver, of the vertically-adjustable floor slotted, substantially as described, a screw parallel to the line of movement of said floor, and a nut on said screw engaging the adjustable floor for elevating and lowering 30 the same between said depending fingers, substantially as described.

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