

No. 873,936.

PATENTED DEC. 17, 1907.

C. B. FORD & J. N. WOOD.
VENDING MACHINE.

APPLICATION FILED AUG. 10, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

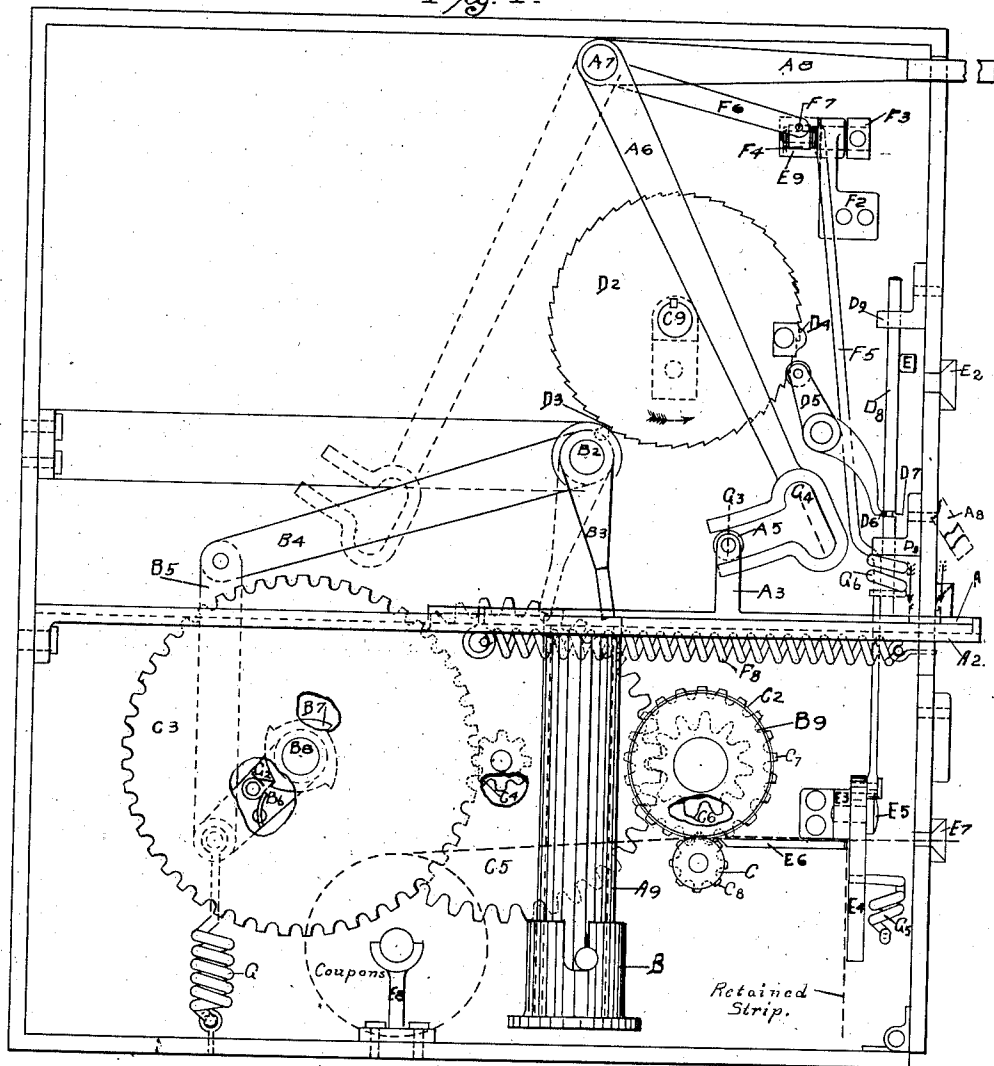
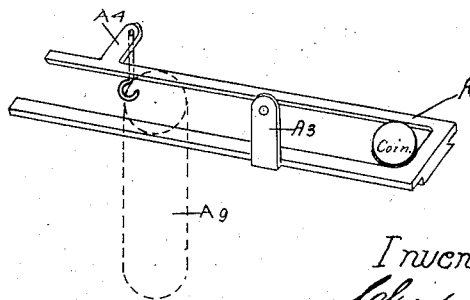


Fig. 2.



Witnesses.
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2 SHEETS—SHEET 2.

Fig. 3.

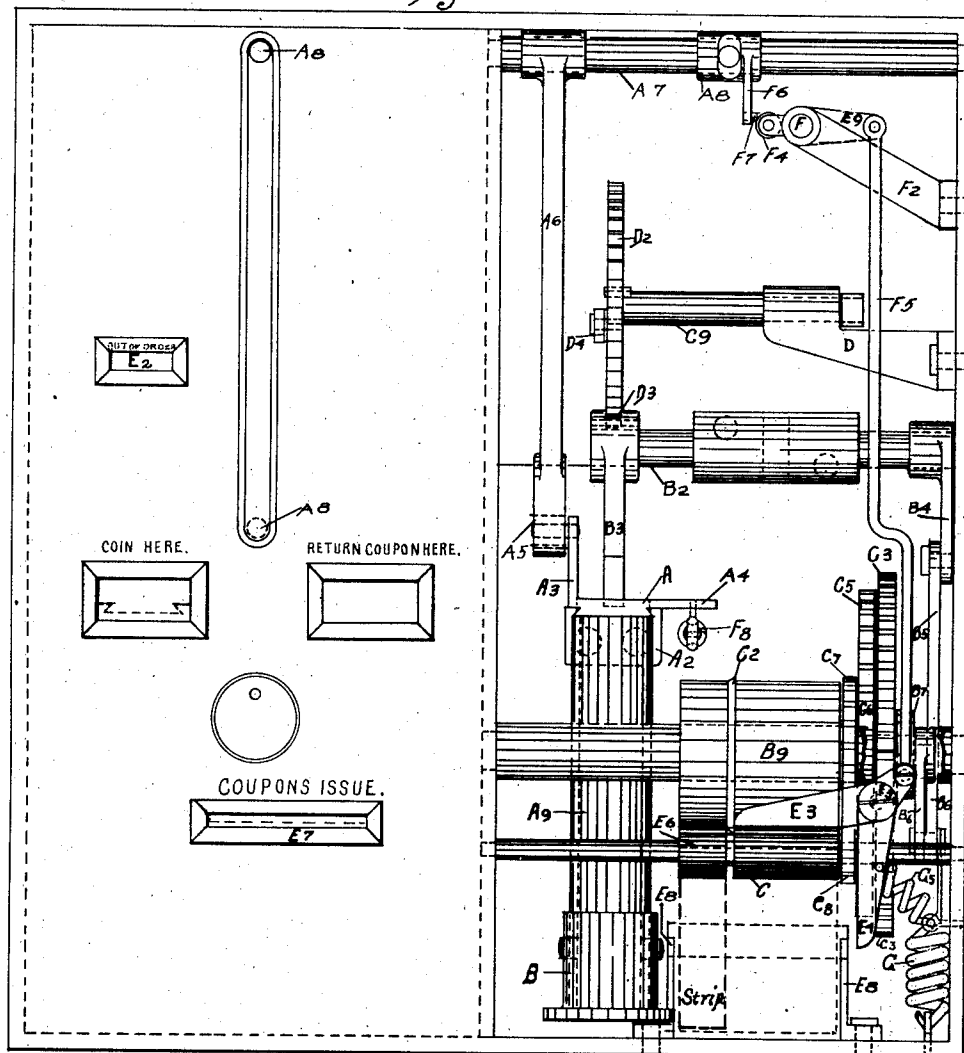
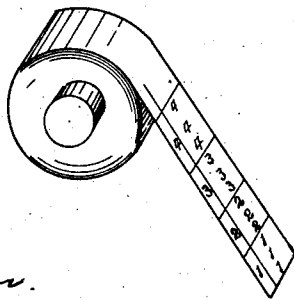


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES BURTON FORD AND JAMES NELSON WOOD, OF RICHMOND, VIRGINIA.

VENDING-MACHINE.

No. 873,936.

Specification of Letters Patent.

Patented Dec. 17, 1907.

Application filed August 10, 1906. Serial No. 330,053.

To all whom it may concern:

Be it known that we, CHARLES BURTON FORD and JAMES NELSON WOOD, citizens of the United States, and residents of the city of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Vending-Machines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to new and useful improvements in that type of vending machines in which the insertion of a coin and the movement of a lever or crank causes a series of mechanical motions to act that not only deliver to the operator the article to be sold, but furnish a receipt to him, as well as retaining one for the owner of the machine; and as all the receipts are numbered serially, a complete record of each transaction is made automatically.

The coins deposited being retained in the order of their insertion, and this order being the same as that of the serial numbers of the receipts, it is possible to identify the depositor of a counterfeit or imperfect coin, for should he present his receipt to the owner or operator of the machine and claim the privileges agreed upon on the face of the tickets issued by the machine, it could be shown that he had failed to deposit legal tender coin and that therefore his claim was not valid.

Our invention applies particularly to machines that vend tickets, accident insurance policies and similar certificates of value, and it is therefore of great importance that positive means be provided for checking all attempts to use the device unlawfully.

In the accompanying drawings we show, in detail, the construction of one of our improved vending machines.

Figure 1 is a right elevation of the machine, the side casing being removed to show the working parts; Fig. 2 is a perspective view of the coin inserting slide; Fig. 3 is a front elevation of a double machine in which the casing has been removed from one section while retained on the other, in order to show the openings necessary on the casing for the operating lever, coin slide and coupon issuing and receiving openings; Fig. 4 is a

view of a roll of coupons showing the strip and an arrangement of duplicate coupons. 55

In Fig. 1 is shown a slide A, working in a guide A². The guide A² acts as a rest for the coin, which is supported by it while the slide pushes it forward, but at the point where the receiving channel A³ touches this guide it is cut away sufficiently to permit the coin to drop readily into the channel A³. The slide A receives the coin at the point shown between arrows (Fig. 1) and is made, preferably, of metal, cut out enough to admit a coin as shown in Fig. 2, and has two projections or lugs, A³, A⁴. A³ carries a roller A⁵, (shown in Figs. 1, 3). The slide is held in position by a spiral spring running from A⁴ to a pin in the casing. The roller A⁵ engages with the slot in an arm A⁶, hung in the shaft A⁷. On the same shaft is a lever A⁸ that passes through the casing as shown in Figs. 1, 3. The slide A passes over a circular channel with a diameter slightly in excess of that of the coin which the machine is designed to receive. This tube or channel A⁹, is closed at the bottom by a receiver or till B, that is supported on the tube A⁹ by pins, as shown in Figs. 1, 3. 80

Directly over the channel A⁹ is a shaft B² on which is an arm B³ that occupies the position shown in Figs. 1, 3. This arm fits midway of the channel and is just long enough to have the coin push against it when the slide enters, on the operation of the machine. 85

From the shaft B² is hung a crank B⁴, that connects with a link B⁵ which transmits the motion of the shaft B² to the ratchet wheel B⁷. This ratchet moves the shaft B⁸, on which is a gear C³. The gear C³ forms one of a train of gearing that transmit the motion of the ratchet shaft to the pair of rolls B⁹ C, and cutter C² (Fig. 3). The gear train consisting of C³, C⁴, C⁵, C⁶ multiplies the ratchet motion for the purpose to be hereinafter described. 95

On a shaft C⁹, Figs. 1, 3, supported by the bracket D, is a ratchet wheel D², that moves in the direction of arrow when actuated by the pawl D³. This pawl is set in the hub of the crank or arm B³. A cam plate D⁴ that projects beyond the periphery is fastened to the ratchet wheel, as shown in Figs. 1, 3. The rotation of the wheel D² gradually moves the cam plate D⁴ until it trips a bell crank D⁵. 100 105

This bell crank is shown in Fig. 1, where its operation can be clearly understood. It would confuse the view shown in Fig. 3, and for that reason is omitted.

5 On the end of the bell crank is a tooth, D⁶, that falls into a groove D⁷, in the rod D⁸. This rod moves in guides D⁹. On its lower end is a spiral spring, arranged to draw it down when the tooth, D⁶, is pulled out of the
10 groove D⁷. This rod we call a lock pin. In the position shown in Fig. 1, it clears the slide A. When released, it falls in the path of the slide and prevents the latter from bringing a coin inside the machine. This
15 rod carries a sign E, that becomes visible from the outside when the said rod falls.

In front of the feed rolls B⁹, C, is a cutter or shear consisting of the stationary edge E³ and the moving blade E⁴, pivoted on the stud
20 pin E⁵. Between the shears and the feed rolls is a guide, preferably of metal, E⁶ (Fig. 1). This furnishes a path for the coupons in their passage from the rolls to the casing slot E⁷. The strip of coupons comes from a roll
25 in the back of the machine and is mounted on a reel swung in the centers E⁸, E⁹. The shear blade E⁴ is operated by a bell crank E⁹ (Figs. 1, 3) and a shaft F. This shaft is supported by a bracket F². It is held in position by a collar F³ (Fig. 1). On one end the
30 crank has an anti-friction roller, F⁴. A connecting rod F⁵ connects the bell crank E⁹ with the moving cutter blade E⁴. From the shaft A⁷ an arm F⁶ is hung carrying a pin F⁷.

35 Having given the mechanical parts required to properly carry out the motions necessary to the operation of our machine, we will now describe their order of working. A coin of a predetermined denomination is inserted in the slide A, at the point indicated
40 by small arrows, Fig. 1. The arm A⁸ is then drawn down as far as it will go, as shown by dotted lines in Fig. 3. The slide is drawn forward by the slotted crank A⁶ until it
45 stops at the point indicated by dotted lines in Fig. 1. This carries the coin inside the machine, where it is moved forward until it touches the end of the trip-arm B³. This arm is forced back to the position shown in
50 dotted lines, Fig. 1. The movement of the trip-arm draws the ratchet B⁶ upward, the pawl in this arm slipping over the teeth, this being the negative side of the stroke. The crank A⁶, trip-arm B³ and slide A, are now in
55 their extreme positions, and the coin has been brought directly over the tube or channel A⁹ into which it falls, the supporting guide being cut away here to permit the coin to drop. The operating arm A⁸ is now forced
60 up to its original position. The slide returns, drawn by the spring F⁸, but the coin has dropped into the tube A⁹, thence falling into the receiver or till B. As the trip-arm

returns, drawn by the spring G, the ratchet B⁶ returns to its first position. The pawl G² 65 causes the ratchet wheel B⁷ to make a partial revolution. This actuates the train of gears C³, C⁴, C⁵, C⁶, C⁷, C⁸, and rotates the coupon feed rolls B⁹, C, and cutter C². A strip of coupon is fed forward beyond the shears E³,
70 E⁴, through an opening in the front casing of the machine. In passing between the rolls, however, the rotary cutter C² severs the coupon strip as shown in Fig. 3. It is the intention that whenever a new roll of coupons is
75 put in the machine, it shall be started through the feed rolls until the narrow severed strip is long enough to be diverted from passing under the shear, and instead, be made to follow the path shown in Figs. 1, 3. The coupon is
80 now projecting from the machine and a narrow strip numbered the same as that which has passed out is inside the machine. These motions follow each other in sequence while the slotted crank A⁶ is going back to its first
85 position. An inspection of Fig. 1 will show that the slide A stops before the crank A⁶ completes its stroke, and the ratchet B⁶ has moved the gear train and feed rolls while the slide is returning to its original position. The
90 coupon has therefore been fed and severed into two strips, one wide and printed in duplicate or triplicate as desired, and the other a narrow strip bearing numbers to correspond with those on the wide coupon. It is now
95 necessary to cut the coupon in order that the purchaser may receive it without having to tear or mutilate it. We accomplish this by utilizing the additional motion required to bring the arm A⁸ to its extreme first position.
100 In moving from G³ to G⁴ the arm A⁶ no longer acts on the slide, but the arm F⁶ carrying the pin F⁷, reaches the anti-friction roller F⁴ causing the bell crank E⁹ to be tripped. This motion, working through the connecting rod
105 F⁵ to the moving shear blade E⁴, causes the blade to close against the stationary cutting edge E³, and the coupon is cut off. The narrow strip is not cut, for the reason that the shear is purposely made too short to do so.
110 The blade E⁴ is then drawn back by the spring G⁵ and the machine is ready to receive another coin.

At each complete operation the pawl D³ in the hub of the trip-arm B³ actuates the
115 ratchet D² one tooth. The number of teeth in this wheel should correspond with the number of coins the machine is able to receive. When the ratchet wheel D² has made a revolution the cam plate D⁴ has
120 finally forced back the bell crank D⁵, causing the tooth D⁶ to slip from the groove D⁷ in the lock pin D⁸, and this falls by the action of the spring G⁶. Until this rod is lifted to its original position by someone having access
125 to the machine, no more coins can be re-

ceived. In order to warn intending purchasers of this we place a small sign E on the lock pin D⁸ which bears any significant legend such as "machine full", "out of order". This becomes visible from outside through the slot E² when the lock pin falls, as shown in Fig. 3.

The machine will not be operative without a coin, either false or genuine, and this coin will have to be of a diameter sufficient to give the trip-arm B³ its full motion; otherwise the pawl G² will fail to catch the tooth of the ratchet wheel B⁷, and no coupon strip will be fed. Should a counterfeit coin be used the machine will operate and receive it; but as the coins fall in order, one upon the other, a particular coin can be identified by the numbered strip, and the duplicate numbered coupon received by the depositor can be invalidated.

The coupon that issues to the purchaser may be printed in duplicate or triplicate as hereinbefore mentioned, and it may prove desirable sometimes to have one of these returned to the machine by the purchaser, with his signature and address. In Fig. 3 we show an opening in the casing that is intended for such duplicate coupons.

The machine can be opened by a door swinging down and held by a lock, as indicated in Figs. 1, 3, or by any convenient device.

The foregoing description covers all the details of a practical working machine but it is evident that many of the parts may be modified without departing from the invention. We do not wish to be limited to the exact construction shown.

What we claim as novel and ask to have protected by Letters Patent, is:

1. In a coin actuated machine, a coin receiving slide, a lug and anti-friction roller on said slide, an exteriorly operating arm for operating said slide, a guide in which the slide moves, a tube and receiving cup attached thereto said cup being removable from the tube, an arm the end of which traverses a plane common to that of the slide, a shaft above said slide from which the before described arm is suspended, a pawl in the hub of the arm whereby it causes a ratchet wheel to move forward for a fractional part of its circumference at each movement of the said arm, a ratchet wheel carrying a cam lug, the said wheel receiving motion from the before described arm and pawl, a lock-pin arranged to close the coin slide, and a device actuated by the cam lug on the ratchet wheel for permitting the said lock pin to fall within the slot in the reciprocating slide, to prevent the introduction of more coins, as herein described.

2. In a coin actuated machine, a coin receiving slide having a reciprocating move-

ment, a lug and anti-friction roller on said slide, a tube and cup attached thereto for receiving the coins, a stationary guide in which the slide moves, an exteriorly operating arm for operating said slide, a shaft from which said arm is suspended, an arm the end of which traverses a plane common to that of the slide, a shaft above said slide from which the said arm is suspended, and a locking device to prevent the introduction of more coins, consisting of a ratchet wheel and cam lug thereon, a bell-crank operated by said ratchet and cam lug, a lock pin moving in guides, and having a groove in which a tooth in the end of the bell-crank fits to hold it in a position where it cannot affect the movement of the coin slide, and means for causing said tooth on the bell-crank to be withdrawn from the groove in the lock pin, permitting it to fall into a position that prevents the further operation of the coin-slide, as herein described.

3. In a coin actuated machine, a coin receiving slide, a stationary guide in which the coin slide moves, means for operating said slide consisting of an exteriorly operating arm hung on a shaft, an arm suspended from said shaft, a roller on the aforesaid slide with which the said suspended arm engages, a shaft above said slide and at right angles thereto, an arm suspended from a shaft, a pawl on said arm, a ratchet wheel with which said pawl engages, a cam lug on said ratchet wheel, a bell-crank, a lock pin having a groove in which one end of said bell-crank engages, and means for attaching a sign or warning device to said lock pin, whereby its motion when it drops in the path of the coin slide may be utilized to make known outside of the machine that the said machine is no longer operative, as herein described.

4. In a coin actuated machine, a coin receiving device, consisting of a slide, a lug and anti-friction roller attached thereto, a stationary guide, and an exteriorly operating arm for operating the slide, a shaft from which said arm is suspended, an arm on the same shaft that carries the operating arm engaging with the aforesaid roller on said slide, a shaft above said slide, an arm hung therefrom, the end of said arm traversing a path common to that of the slide and arranged to operate a locking device after a prearranged number of operations, a warning device visible from outside the machine attached to, and forming a part of, said locking device, and a coin receiving cup attached to the coin receiving device and removable therefrom, as herein described.

5. In a coin actuated machine, a coin receiving device consisting of a slide carrying a lug and anti-friction roller, a stationary guide in which the slide moves, a shaft, an

exteriorly operating arm and an interiorly
mounted arm, both suspended from the said
shaft, for operating said slide, a removable
coin depository attached to said stationary
5 guide, an arm and pawl hung to traverse a
plane common to that of said slide, and a
combined locking and exteriorly visible
warning device operated by the coin receiv-

ing device after the receipt of a prearranged
number of coins, as herein described.

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Witnesses:

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