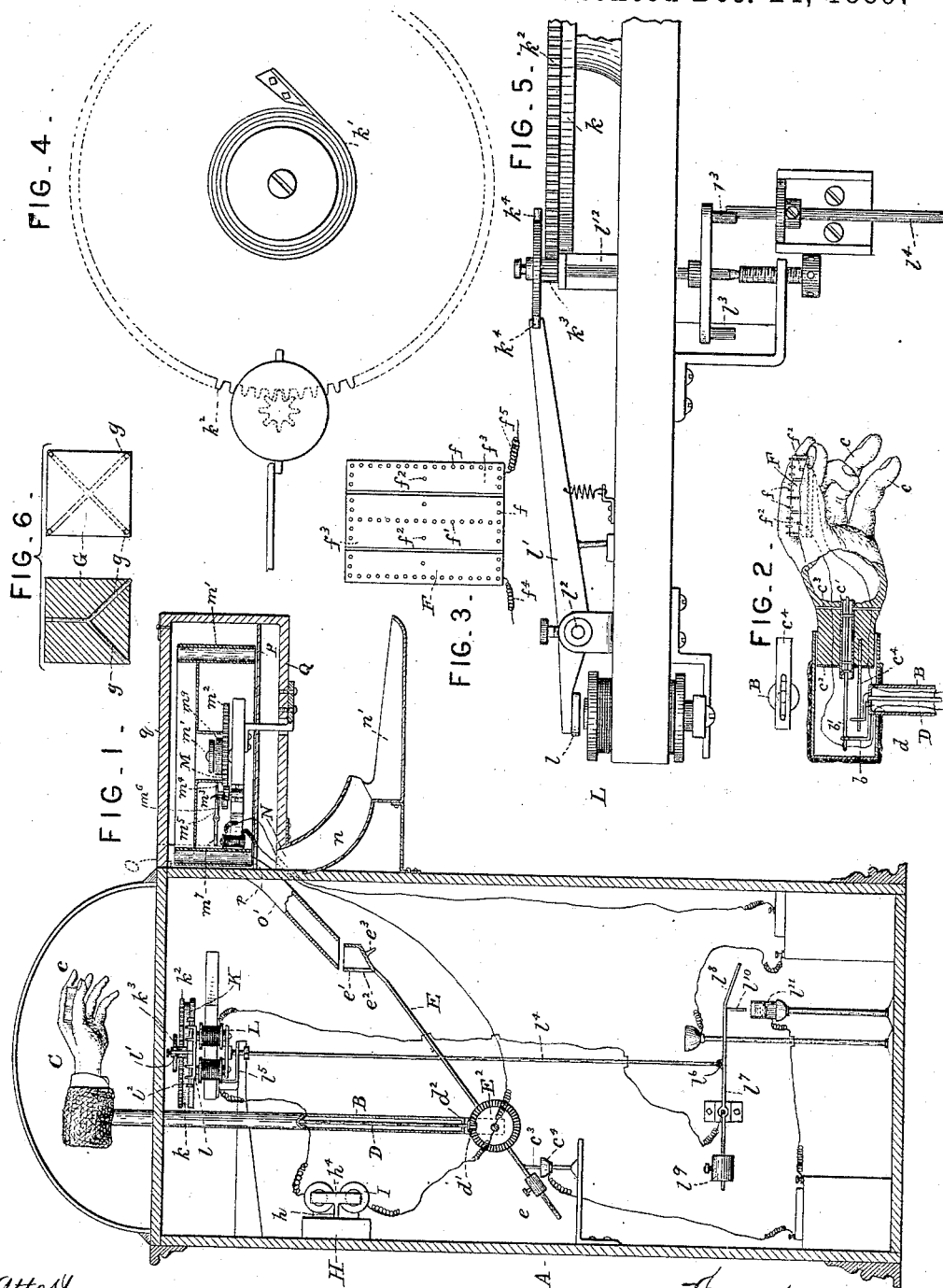


(No Model.)

H. G. ROGERS.  
AUTOMATIC VENDING MACHINE.

No. 418,071.

Patented Dec. 24, 1889.



Attest:

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# UNITED STATES PATENT OFFICE.

HENRY GUSTAVE ROGERS, OF WASHINGTON, DISTRICT OF COLUMBIA.

## AUTOMATIC VENDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,071, dated December 24, 1889.

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### *To all whom it may concern:*

Be it known that I, HENRY GUSTAVE ROGERS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Automatic Vending-Machines; and I 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.

The present invention relates to coin-operated devices or apparatus in general, but more particularly to the class of devices known as "automatic vending-machines," which are contrived, upon deposit of a coin of definite value, to deliver to the purchaser an article of small size, such as a cigar, a package of candy or of cigarettes, or the like. All apparatus of this character depend for their commercial value to a greater or less extent upon the novelty and interesting nature of the mechanical actions started by the deposit of the coin. In fact, many such apparatus depend entirely upon the interest created in their operation as an inducement to the public to deposit coins therein. It follows that the more complex, interesting, and seemingly difficult or wonderful the mechanical actions of the machine the more likely is it to find customers for the wares therein contained.

The present invention has for its object to produce a coin-actuated machine, particularly for vending small articles, which may be cheaply and easily made, which will operate with certainty to deliver the article sold thereby, and which in its operation will excite the curiosity and arouse the interest of the public.

According to the present invention, the package-holding and delivery mechanism comprises a disk or ring carrying on its periphery a series of vertically-arranged cylinders or receptacles which are charged with the articles to be sold, the disk or holder being controlled by an escapement adapted to be released by the action of an electro-magnet. A lever is arranged in the case, having a coin-basket on its end, the weight of the coin causing the lever to oscillate on its cen-

ter until a point is reached where the coin falls out of the basket. The lever in its descent closes the circuit of the controlling-magnet above mentioned, causing the package-holder to rotate sufficiently to discharge one of the articles it contains. The motion of the coin-operated lever is also imparted to an oscillatory die-holder or dice-box containing one or more dice, which are exposed to full view and are shaken each time a coin is deposited. The dice are circuit-controllers, carrying on some of their faces metallic bridges adapted to close an electric circuit whose open terminals are in the bottom of the dice box or holder. This circuit includes an electro-magnet, the motion of the armature of which may be utilized to start a music-box into operation or to perform any other desired operation. This portion of the invention is susceptible of infinite variation, the object being to attract attention and gratify curiosity. An electric circuit and a circuit-controller in the form of a die may be applied to any known mechanical die-shaker, of which a number have been heretofore devised and patented.

Inasmuch as there is no visible connection between the dice-holder and the music-box or other apparatus actuated by the electro-magnet, the former being supported on a slender rod outside the case of the machine, and as the dice do not differ in appearance from ordinary dice, the operation of the music-box or other apparatus at such times as certain faces of the dice are exposed, and not otherwise, tends to mystify on-lookers, and affords much gratification and amusement.

The accompanying drawings, which form part of this specification, illustrate the manner in which the invention may be carried into effect.

Figure 1 is a side view of the machine, partly in section, showing the internal arrangement of the different parts. Fig. 2 is a detailed view of the holder or hand, showing its support and means for oscillating it. Fig. 3 is a plan view of the box. Fig. 4 is a plan view of a circuit-breaking arrangement for preventing the running down of the battery. Fig. 5 is a side view of the same. Fig. 6 is a detail showing the dice.

A is the outer casing or stand of the apparatus, which may be provided with a door, for the purpose of internal examination and for collecting the coins dropped into the machine.

5 B is a tube to support the bearings of the holder. (Shown in the drawings as a hand.)  $b$  is a metal head, to which a metal rod  $b'$  is attached, extending from it horizontally.

C is the hand, which comprises also a part 10 of the wrist, and may be constructed of any suitably-light material—such as wax, celluloid, papier-maché—or of a thin skin of copper or other metal deposited on a wax form by electrolysis, which form may be afterward 15 melted out. The fingers  $c$  of the hand are shaped to hold a box or tablet with turned-up edges, and in shape the hand should be made so as to balance itself as well as possible in its bearings.

20  $c'$  is a metal tube firmly attached to the hand at  $c^2$  and at  $c^3$ , and extending beyond the wrist, as shown. A bushing may be placed in it at either end and a round aperture formed in the bushing to permit of the hand 25 being swung on the rod  $b'$  with as little friction as possible. To attach the tube  $c'$  to the wrist part of the hand, a thin plate of hard rubber may be made use of. To this plate is fastened a wire loop  $c^4$ , by means of which 30 the hand will be oscillated.

D is a rod located within the tube and adapted to rotate. At its upper end is provided a bent pin or crank  $d$ , which engages with the slotted plate  $c^4$ . At its lower end the 35 rod has keyed or screwed to it a beveled pinion  $d'$  and is set in a socket or bearing  $d^2$ .

E is a coin-actuated lever journaled between points to diminish the friction of its bearings, and has at one end the adjustable 40 counterbalance-weight  $e$  and at the other the coin-basket  $e'$ , which is constructed with an opening or slot  $e^2$ , of a size sufficient to allow the passage of a coin of smaller dimensions than the one necessary to depress the 45 lever without influencing the latter.

$e^3$  is a platinum wire attached to the under side of the coin-basket. The position of the bearings of the lever E should be about one-sixth from the weighted end, and the value 50 of the weight  $e$  must be such that a coin of predetermined weight introduced into the basket  $e'$  shall depress that end and at the same time have sufficient weight to rotate the rod D through the beveled gear-wheel 55  $E^2$ , centered in the bearings and attached to the lever E and engaging with the pinion  $d'$ .

At a point somewhere between the pivotal point of the lever E and the weighted end is a platinum wire  $c^3$ , projecting downward a 60 distance of three-quarters of an inch or more and adjusted to descend into a mercury-cup  $c^4$ . In making up the connections the circuit is carried through the platinum wire and the mercury-cup when the lever is in 65 normal condition—i. e., with the weighted end down—and it is broken at this point when the other end of the coin-lever is down, the pur-

pose being to remove any chance of the cubes momentarily closing the circuit as they are in the act of shaking.

70 F is a box made of any light non-conducting material—such as ivory, hard rubber, celluloid, or well-seasoned wood—and is in the form of a tablet having a series of pins  $f$ , placed vertically along its edges and corresponding to 75 the sides of a box to prevent the dice falling off.

When it is desired to use two dice, it is necessary to place a partition  $f$  in the box, which divides it into two compartments. The 80 partition  $f'$  may be formed of vertical pins, and as the dice are thrown against them by the oscillation of the box they are thereby caused to turn around, and a greater variety of combinations will ensue. Points  $f^2$ , pro- 85 truding upward from the bottom of the box, will also assist in causing the dice to turn over as they move from side to side. In the bottom of the box are metal terminal strips  $f^3$ , which are connected to the battery and 90 make an open circuit through the wires  $f^4$  and  $f^5$ .

G represents one of the cubes constructed with an electrical conducting-piece. The 95 conducting-piece may be formed of copper or silver wires  $g$ , let into the body of the cube, as shown in Fig. 6, and forming a metallic bridge from one side of the face of the cube to the other side of the same face. In this 100 manner, when any other face but the one opposite the bridged side falls uppermost, the circuit will not be closed, while, when the right face is displayed, the electric current will pass through the conducting-wires 105 and close the circuit. Instead of metal wires being used, the channels in the cubes may be filled with amalgam, such as is used by dentists. This method of constructing the cubes may be preferable, and as the amalgam presents a somewhat rough surface the electric 110 connection will be more easily secured. The faces of the cubes should be colored or stained of different tints, so that when the faces opposite those having the metallic bridge are displayed uppermost they may be readily ob- 115 served.

H is the musical box, of ordinary form, having a detent  $h$ , the end of which is adapted to arrest the spindle of the music-box and prevent it from playing. At the other end 120 of the detent is an armature  $h^4$ , and attached to the casing of the apparatus is a magnet I, which is arranged to draw the armature of the detent and thereby allow the musical box to play when the circuit is closed through the 125 cubes in the hand.

K is a circuit-breaker introduced into the apparatus for the purpose of preventing the battery running down, Figs. 1, 4, and 5, and its function is to break the circuit after 130 the musical box has been set in operation. It consists of a disk  $k$ , provided with a spring  $k'$ , one end of which is attached to the disk and the other to the arbor on which the disk

rotates. A number of teeth  $k^2$  are on the tread or face of the disk, gearing into a pinion  $k^3$ , having two detents  $k^4$ , located above and adapted to swing so as to clear the disk  $k$ .

5 L is a magnet.  $l$  is its armature attached to a pivoted arm  $l'$ , journaled between centers  $l^2$ . The length of  $l'$  is such as to engage the detents  $k^4$ , but swung in such a manner that when the magnet attracts its armature  
10 the end of the swinging arm  $l'$  will clear one of the detents and allow it to rotate with the pinion. The latter is placed on a rod  $l^{12}$ , which near its lower part is provided with two downwardly-projecting detents  $l^3$ , located  
15 below the upper detent  $k^4$ . Directly under one of the lower detents  $l^3$  is a rod  $l^4$ , passing through a guide  $l^5$  and extending downward until it reaches and is loosely attached at  $l^6$  to a lever  $l^7$ . This lever is provided at one  
20 end with a flat piece  $l^8$ , which is located directly in the path of the coin-basket  $e'$ . The other end of the lever  $l^7$  may be provided with a weight  $l^9$  to counterbalance the weight at the other end of the lever, and adjusted in  
25 such a manner as to keep the flattened ends tending upwardly. On the under side of the flat end of the lever is a downwardly-projecting platinum wire  $l^{10}$ , which will descend into the mercury-cup  $l^{11}$  when the actuating-coin  
30 falls upon the end of the lever.

The operation of the circuit-breaker rod  $l^4$  is such that its upper end will arrest the revolution of the pinion by rising and coming in contact with one of the downwardly-projecting  
35 detents  $l^3$ . As it does so the circuit will be broken by the platinum wire  $l^{10}$  leaving the mercury-cup  $l^{11}$ . When the lower lever  $l^7$  is again depressed by a coin falling onto it, the circuit-breaker rod  $l^4$  will descend, and  
40 one of the downwardly-projecting detents  $l^3$  will immediately pass over it and remain upon it, because the upper detent  $k^4$  will be arrested by the end of the pivoted arm  $l'$ , which has been allowed to rise by the circuit  
45 being broken at the mercury-cup  $l^{11}$ .

The device for carrying the articles for sale is shown in Fig. 1, and consists of a plate M, having a number of cylindrical chambers  $m'$  arranged in a circle around it and connected  
50 to it near its center, so as to leave the tread of the plate free. As herein shown, the device is more particularly adapted to hold cigars, or other articles of a like shape. The device is somewhat similar to the circuit-  
55 breaker K, but necessarily lacks the rod  $l^4$  and the detent under the pinion. The plate M is provided with a driving-spring  $m^9$ , one end of which is attached to the arbor  $m'$ , on which the plate rotates, and the other to the  
60 plate itself.

A stationary plate P is placed beneath the rotating package-holder M, and prevents the articles in tubes  $m$  from falling out. This plate is cut away at  $p$ , making an opening  
65 which communicates with passage  $n$ .

The case Q, which incloses the package-holder M, may be provided with a hinged lid

q, (secured, of course, by a lock,) for the purpose of recharging when the receptacles are empty.

70 On the tread of the plate M is a rack  $m^2$ , engaging a pinion  $m^3$ , having two detents  $m^4$ , similar to the detents  $k^4$ . Two swinging pieces  $m^5$  and  $m^6$ , journaled in centers, are arranged to engage the detent  $m^4$  at one end as  
75 an escapement, and have an armature  $m^7$  at the other end. When the armature is attracted to the magnet, the piece  $m^5$  rises and allows one of the detents  $m^4$  to pass, while the next detent is arrested by the piece  $m^6$ .  
80 When the circuit is broken and the armature leaves the magnet, the piece  $m^6$  will descend and the piece  $m^5$  arrest the same detent, thus allowing the pinion to make one-half of a  
85 revolution. The number of teeth on the pinion and on the rack on the tread of the plate M must be such that the section of plate allowed to move will be the width of one of the chambers.

N is an opening formed under the device  
90 carrying the articles for sale, through which they will fall one by one as the peripheral chambers are consecutively brought over it and register with it. The opening N leads by a channel  $n$  to a trough or ledge  $n'$ , placed  
95 on the outside of the apparatus, and into which the article sold will be exposed to view.

O is a coin-slot through which the actuating-coin may be introduced.

o is a channel leading the coin to the coin-  
100 basket.

A coin being introduced into the coin-slot o, it finds its way through the channel o' and falls into the coin-basket. If the coin is of the correct value, its weight will depress the  
105 lever, and in so doing will rotate the rod in the tube, which in turn will oscillate the hand. When the end of the lever carrying the coin-basket descends far enough, the coin will roll out of it by its own weight, and at the same  
110 time the circuit will be closed through the magnet operating the device for discharging one of the cigars, and the counter-balance at the end of the lever will bring the latter to its normal position. The weight of the counter-  
115 balance must necessarily be adjusted not only in relation to the weight of the coin to bring the lever back to normal position when the coin has left the basket, but must also allow for the inertia of the hand and the weight of  
120 the cubes in the box. Although no difficulty is experienced in causing the coin, when falling, to actuate the hand, some little adjustment is requisite for the coin to carry the counter-balance upward, and at the same  
125 time to have sufficient power to rotate the rod and oscillate the hand. As the coin leaves the coin-basket it will strike the flat end of the lower lever, which will necessarily be depressed and carry the platinum wire into the  
130 mercury-cup. As the lever and the mercury-cup are included in the circuit, when the cubes display the combination of faces predetermined it will be evident that the circuit will

be closed through the electro-magnet of the musical box. The armature of the latter will therefore be attracted to it and allow the pinion-disk to make a half-revolution. While it is doing this, however, the circuit will be broken and remain in that condition until another coin is introduced into the apparatus, when the hand will be set in motion once more. The time during which the circuit is closed is sufficiently long to enable the musical box to be set in motion, and immediately after that takes place the box will continue to play until the detent again stops it.

The reason for providing a circuit-closer is to give time to the cubes to stop after being shaken and assume the position which they would ultimately take before the circuit is closed; otherwise it is evident that the cubes might cause the circuit to be closed and then turn over and display some other face than the one desired. Whenever the predetermined faces are displayed, the musical box will commence playing and afford amusement. This, with the curiosity inspired by the oscillation of the hand and the cubes, will add an interest which a simple vending-machine does not usually possess. Whether this takes place or not, after the hand has stopped oscillating, the apparatus will be ready to receive another coin and the whole operation be repeated. The angle at which the coin-lever remains when in normal position should be practically the same as that at which the coin-channel leading to it is sloped, so that the coin will roll to the aperture in the back of the coin-basket. This will prevent any coin of less size than the right one from remaining in the basket, for the undesirable coin will roll through the aperture and fall to the bottom of the inclosing-casing without affecting the mechanism.

I do not claim herein any matter described and claimed in my prior application, filed September 27, 1888, Serial No. 286,507, or in the joint application of myself and Andrew M. Coyle, filed October 31, 1888, Serial No. 289,594.

Having now fully explained the principle of the said invention, and the manner in which the same may be practically embodied, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a package-holder, of a coin-operated lever and intermediate connections for operating the same to discharge one of the articles contained therein each time a coin of determined value is deposited, and an oscillatory die-holder, also connected with said lever, substantially as described.

2. The combination of a package-holder, an electrically-controlled escapement therefor, an electric circuit, a coin-actuated lever adapted to close the circuit at each reciprocation, and an oscillatory die-holder exposed to view on the outside of the apparatus and connected with said lever, substantially as described.

3. The combination of a package-holder, a coin-operated lever and intermediate connections for actuating the same, an oscillatory die-shaker connected therewith, an electric circuit having open terminals in the bottom of said shaker, and a die carrying a metal contact-piece adapted to close said circuit, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

HENRY GUSTAVE ROGERS.

Witnesses:

PHILIP MAURO,  
A. M. COYLE.