E. S. HAGEN.

COIN ACTUATED MECHANISM.

APPLICATION FILED OCT. 29, 1907.

958,489. **Patented May 17, 1910.**

2 SHEETS—SHEET 1.

Fig. 1.

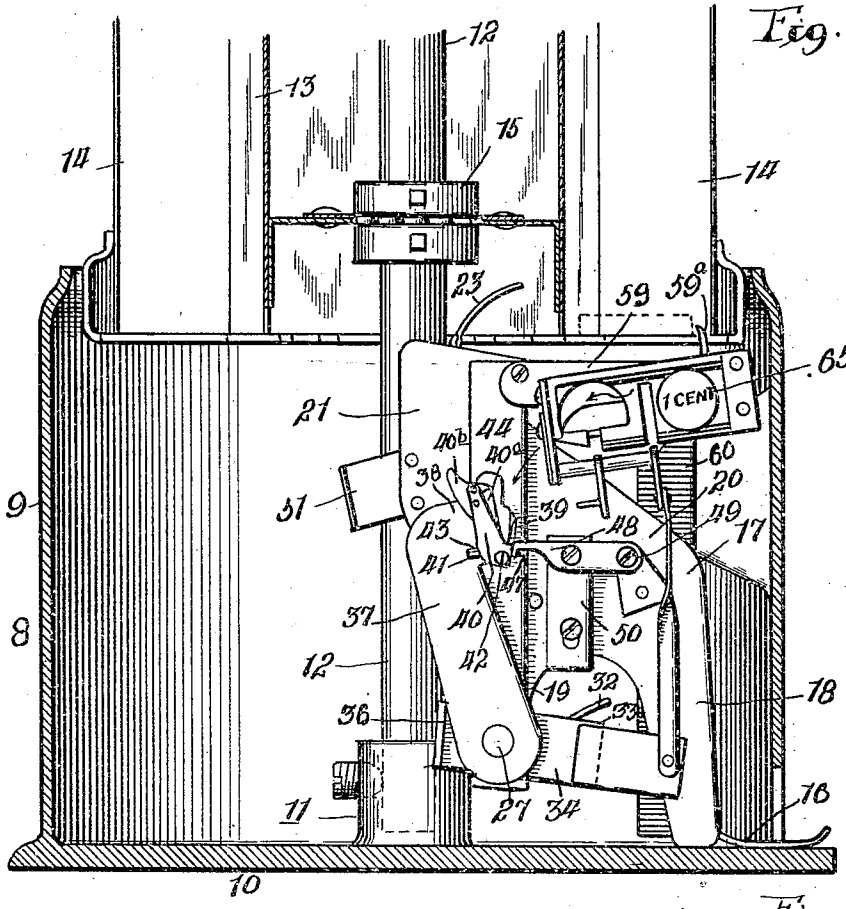
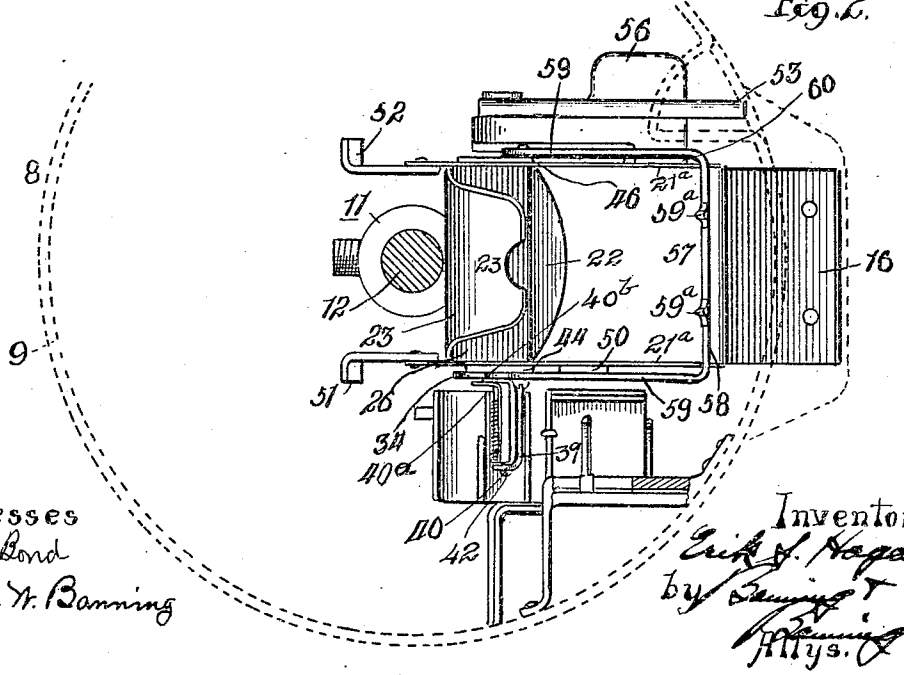


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

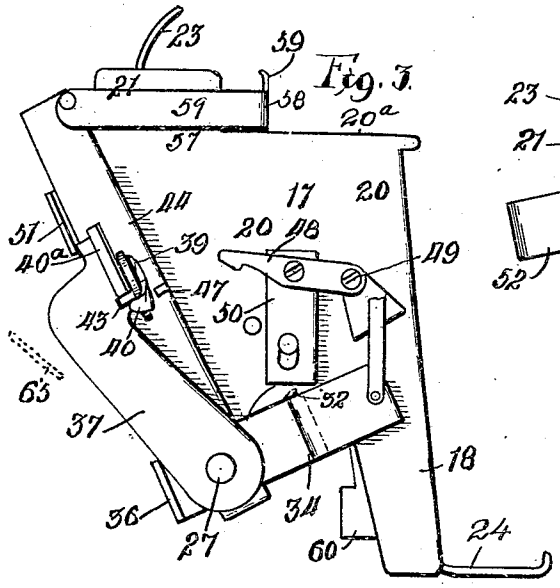


Fig. 4.

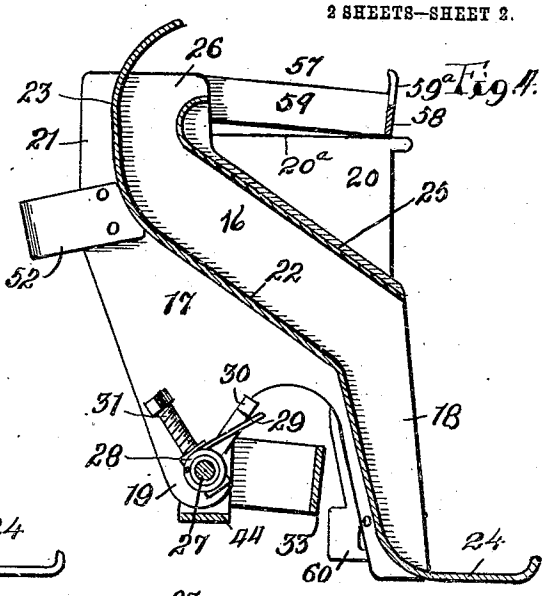


Fig. 5.

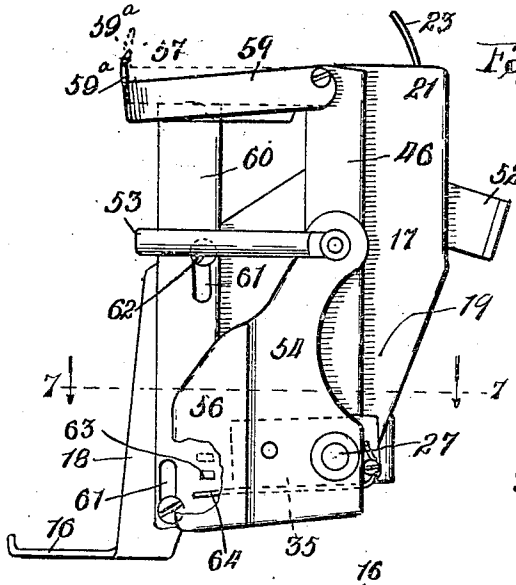


Fig. 6.

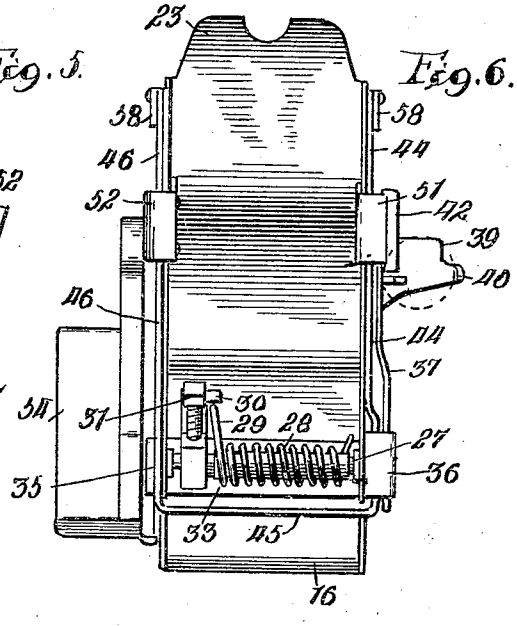
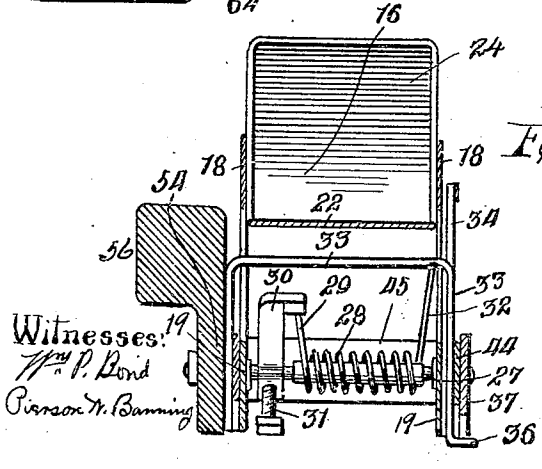


Fig. 7.



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UNITED STATES PATENT OFFICE.

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COIN-ACTUATED MECHANISM.

958,489. Specification of Letters Patent. **Patented May 17, 1910.**

Application filed October 29, 1907. Serial No. 399,704.

To all whom it may concern:

Be it known that I, ERIK S. HAGEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Coin-Actuated Mechanism, of which the following is a specification.

The mechanism of the present invention is intended for the discharging of packages of gum or other similar articles of the kind ordinarily sold in vending machines.

The mechanism is of the plunger actuated variety, and the objects of the invention are to economize space to the greatest possible extent, and to simplify, and thereby cheapen the construction of the discharging mechanism.

A further object of the invention is to provide for a sudden and abrupt discharge of the coin from its engaging position, and thereafter have a release of the mechanism, allowing its return to normal position.

Another object of the invention is to provide a discharge chute which will likewise serve as a mounting or support for the releasing and discharging mechanism which simplifies the structure and renders it compact and symmetrical.

The invention consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings Figure 1 is a sectional elevation of the lower end of a vending machine, showing the discharging mechanism in elevation; Fig. 2 a cross sectional view of the base of a vending machine, showing the discharging mechanism in plan; Fig. 3 a side elevation of the discharging mechanism in released position; Fig. 4 a longitudinal sectional elevation of the discharging mechanism; Fig. 5 a side elevation, showing the side opposite to that illustrated in Fig. 3; Fig. 6 a rear elevation of the same; and Fig. 7 a sectional plan view taken on line 7—7 of Fig. 5.

The mechanism is shown in connection with a vending machine having a cylindrical base chamber 8 comprising a side wall 9 and a floor 10. The floor has in its center a socket 11 adapted to receive the end of a vertical post 12 around which the package carrier 13 is adapted to revolve. The package carrier, which forms no part of the present invention, is, in the present instance, of the revoluble sort, comprising a plurality of chambers or receptacles 14 adapted to receive goods of different character, the several chambers being open at their lower ends for the discharge of goods, and being connected with a hub 15 which revolves around the post as an axis.

The discharging mechanism, which forms the subject matter of the present invention, is mounted upon a centrally located discharge chute 16, which is positioned to receive discharged packages, and comprises side plates 17 suitably spaced to provide a chute for the passage of the packages. The side plates are of similar formation, each having an elongated front leg 18, which rests upon the floor of the base chamber, near the front side thereof, and a shortened rear leg 19, which is elevated above the floor. The body 20 of the side plate has a level upper edge 20ª, and terminates in a neck 21, the rear edge of which occupies a position in substantial alinement with the center post or shaft. The space between the side plates is bridged by a sloping cross wall 22, which terminates at its upper end in a forwardly curved portion 23, and at its lower end in a forwardly extending shelf 24, which projects outwardly from the vending machine and is adapted to deliver the goods to the purchaser. The cross wall 22 bridges the space between the elongated front legs of the side plates and substantially conforms to the slope of the side plates, the curved upper or receiving end 23 being extended above the necks 21 of the side plates, and immediately behind the discharge end of the selected package carrier chute, as shown in Fig. 1. The sloping cross wall serves as a chute or conveyer, and the wall 22 is supplemented by a sloping roof 25, which leaves a mouth or opening 26 for the reception of packages, as best shown in Fig. 4.

The depending rear legs 19 of the side plates serve as a mounting for a rock shaft 27, which is of sufficient length to extend through the mountings provided therefor, and the shaft is encircled by a coil spring 28, the inner end 29 of which bears against a finger 30 which surrounds the shaft and is rigidly secured thereto by means of a set screw 31, and the outer end 32 of which bears against a yoke 33, the cross bar of which is adapted to work up and down in the space between the front and rear legs

of the side plates and beneath the floor plate or wall 22 of the chute, as best shown in Fig. 4. The cross bar of the yoke terminates in inwardly extending arms 34 and 35, each of which is pivotally mounted on the projecting ends of the shaft 27 and outside of the depending rear legs of the side plates. The arm 34 terminates at its rear end in an outwardly turned flange 36 which, when the parts are in their initial or normal position, as shown in Fig. 1, bears against the rear edge of an upwardly extending arm 37 which is rigidly secured to and movable with the rock shaft 27. The arm 37, at its upper end, is provided with a forwardly projecting neck 38, which neck is bent or turned to provide an outwardly projecting finger 39 having, at its outer extremity, an upwardly projecting inwardly turned end plate 40, between which and the neck 38 is a spring controlled swinging trap door 40[a], provided with an inwardly projecting trip finger 40[b]. A set screw 42 is entered through the end plate and serves to regulate the space afforded for the reception of the coin, which is intended to be caught and held between the finger 39 and the trap door, which serve, in conjunction with the neck 38 and with the end plate 40, to provide a pocket for the reception of the coin. The neck, at the point of juncture with the finger, is provided with a slot 41 which has entered therethrough a stud 43 which outwardly extends from a discharging arm 44, which is connected by means of a cross bar 45 with a similar discharging arm 46 on the opposite side of the discharging mechanism. The two discharging arms are loosely mounted upon the projecting ends of the rock shaft on opposite sides of the depending rear legs of the chute, and when the parts are in the initial or normal position the stud 43 will occupy a position immediately below and in alinement with the front edge of the flange 42, so that a coin held within the pocket provided therefor, will simultaneously bear against the stud and flange and serve to lock the loosely mounted discharging arms to the rock shaft by reason of the lock afforded by the coin which unites the discharging arm with the rocking arm 36, so that a movement of the arm 37 will produce a corresponding movement of the discharging arms when a coin is inserted into place.

The discharging arm 44 is further provided with a catch lug 47, which is adapted to coöperate with a latch finger 48, which finger is pivoted to the side plate 20 by means of a screw 49, which allows the latch finger to rise and fall, and the latch finger is connected and movable with a releasing bar 50, the lower end of which extends into the space between the front and rear legs and is adapted to be engaged by the cross bar of the yoke 33 when the latter has been raised to its extreme position, which movement serves to raise the releasing bar and with it the latch finger, thereby releasing the stop lug 47 from engagement, as will more fully appear hereafter. The rearward movement of the arm 37 and discharging arm 44 is limited by a stop flange 51 which is connected with the rear edge of the neck 21, and a similar stop flange 52, on the opposite side of the mechanism serves to limit the movement of the arm 46, which occupies the same relative position as the arm 44.

The mechanism is actuated by means of a plunger 53, properly positioned to be operated by the purchaser, which plunger is pivoted to the upper end of an arm 54 which is pivoted on the rock shaft 27 and is rigidly secured to the adjacent arm 35 of the yoke 33 with which it is movable. The arm 54 is provided with a weight 56 at its forward end which serves to bring the parts back to normal position. The discharging arms 44 and 46 have pivoted thereto, at their upper ends, a bracket 57, which comprises a front cross bar 58 and rearward arms 59, which latter are pivoted to the ends of the discharging arms. The cross bar 58 is provided with upwardly extending fingers 59[a] which are adapted to engage the lowermost package of a column of goods located in the selected compartment of the package carrier. When the parts are in initial or normal position, the arms of bars 59 rest upon the level edges of the side plates, and one of the arms is directly over the bar 60 provided with slots 61, through which are entered guide pins 62 which position the bar with respect to the side plate of the discharge chute. The bar 60 is provided, near its lower end, with an outwardly extending finger 63, which is adapted to be engaged by a resilient finger 64 of spring wire, which is connected to the arm 35 of the yoke 33, and rises and falls therewith when the arm 54 is thrown forward by the movement of the plunger. The coins are delivered to the pocket through a chute or runway 65 which, however, forms no part of the present invention and need not be described in detail.

In use, with the parts in normal position, as shown in Fig. 1, the coin is deposited in the track or chute 65 and rolls down the chute and is delivered into the pocket afforded by the outwardly extending finger 39, trap door 40[a] and the wall of the neck 38. Within this pocket the coin is lightly held in position to bear against the lug 41 which extends outwardly from the discharging arm 44. It will thus be seen that the coin serves to lock together the actuating arm 37, which is rigidly secured to the rock shaft 27, and the discharging arm 44, and parts connected therewith, which are pivotally hinged or mounted on said

shaft, so that with the coin in place all of the parts above mentioned, are, in effect, rigidly secured to the shaft and movable therewith. As the plunger is driven inwardly, after the depositing of the coin, the yoke 33, which is connected with the weight arm 54, will be swung upon the shaft 27 as an axis, and the shaft will be held stationary, during the swinging of the yoke, by reason of the lock afforded by the latch 48, and this movement of the yoke, in opposition to the stationary shaft, serves to tighten the coiled spring 28 by reason of the engagement of the yoke with the end 32 of the spring. The spring will thus be put under considerable tension, which increases until the cross bar of the yoke 33 is raised sufficiently to bear against and lift the releasing bar 50, which raises the latch and releases the discharging arm 44, the arm 37 and the discharging yoke 57, all of which parts are violently thrown forward by the action of the spring. This inward movement of the parts causes the points or teeth 59 on the discharging yoke 57 to engage with the lowermost package of the column of goods, and the package thus engaged is suddenly pushed or forced inwardly and thrown into the mouth 26 of the discharge chute, from which it is delivered to the purchaser.

After the discharge of the package, in the manner indicated, the rearward movement of the actuating arm and the discharging arms is suddenly arrested by the stop flanges 51 and 52, against which the parts strike as they are thrown backward by the action of the spring. The movement thus violently arrested serves to thrust forward the trip finger 40^b which swings the trap door away from the finger 39, and this opening of the trap door in conjunction with the abrupt jolt or jar serves to dislodge the coin from the pocket, as indicated by dotted lines in Fig. 3, and the coin is thrown out into the chamber in the base of the vending machine. After the release of the coin, the parts will be returned to normal position by the action of the weight 56 on the forward side of the arm 54, which return movement of the parts throws back the teeth or points on the discharging yoke into position to engage the next package of the column of goods.

In order that the teeth may not interfere with the rotary movement of the package carrier, the teeth normally lie below the level of the discharge ends of the package chambers, as indicated in full lines in Fig. 1. When the parts are in the initial or normal position the vertical bar 60 will lie in its lowermost position, but as the plunger is thrust inward and the weight 56 on the arm 54 is raised, the resilient finger 64 on the weighted arm will engage the lug 63 on the vertical bar and raise the bar and with it the discharging yoke out of its normal or lowered position, into a position which brings the teeth into line with the lowermost package of the column of goods, so that as the parts are released in the manner heretofore described, the teeth will be in position to drive out the lowermost package.

It will be seen from the foregoing description that the discharging mechanism of the present invention is of extremely simple formation, the discharge chute serving as a base or support for the actuating mechanism, and this combining of the chute and the actuating mechanism into one structure results in economy of space, and a resulting simplicity of the device as a whole. The size and shape of the coin pocket is such that slugs or tokens, if any such should be allowed to roll down the coin chute without detection, will, in most cases, be dropped through the pocket or otherwise discarded. In like manner, if lead slugs, or slugs of other soft metal, by an accident should find their way into the pocket, they will be bent or twisted by the spring tension brought to bear against them while acting as an interlock between the actuating and discharging arms. The violent release of the parts and the abrupt cessation of movement, serves to dislodge and throw out the coins of proper denomination after the delivery of the package of goods to the purchaser. It will furthermore be noted that the discharging yoke will be raised to discharging position and not actuated until the final release of the discharging mechanism, which gives ample opportunity for the bending and detection of a lead or other soft slug when subjected to the tension of the spring.

The invention is one which is adapted for use either with rotary package carriers, or stationary carriers, although it possesses distinct advantages of use in connection with the former styles of vending machines.

What I claim as new and desire to secure by Letters Patent is:

1. In coin actuated mechanism, the combination of an actuating arm provided with a pocket adapted to receive and hold a coin, an abutment, and a spring adapted to throw the actuating arm into violent contact with the abutment to dislodge the coin, substantially as described.

2. In coin actuated mechanism, the combination of an actuating arm provided with a pocket adapted to receive and hold a coin, discharging mechanism adjacent to the actuating arm and adapted to be locked thereto by the insertion of a coin, a spring adapted to create a tension on the actuating arms, releasing mechanism adapted to be actuated at a predetermined time, and a stop or abutment for abruptly limiting the movement of the actuating arm, and thereby dislodging the coin, substantially as described.

3. In coin actuated mechanism, the combination of a rock shaft, an actuating arm rigidly secured to the shaft, discharging mechanism pivoted to the shaft, a spring adapted to exert a tension on the shaft, means for actuating the spring, a coin pocket on the actuating arm adapted to enable the coin to lock the actuating arm with the discharging mechanism, an abutment for limiting the movement of the parts, and releasing mechanism for releasing the parts from spring tension, substantially as described.

4. In coin actuated mechanism, the combination of a rock shaft, a yoke journaled to the rock shaft, discharging mechanism journaled to the rock shaft, a spring connection between the yoke and the shaft for creating a tension on the shaft by the movement of the yoke, a plunger for moving the yoke, an actuating arm rigidly secured to the shaft, a coin pocket on the actuating arm adapted to return a coin in position to lock said arm with the discharging mechanism, an abutment for limiting the movement of the arm and discharging mechanism, and releasing mechanism actuated by the movement of the yoke, substantially as described.

5. In coin actuated mechanism, the combination of a rock shaft, a yoke journaled to the rock shaft, discharging mechanism journaled to the rock shaft, a spring connection between the yoke and the shaft for creating a tension on the shaft by the movement of the yoke, a plunger for moving the yoke, an actuating arm rigidly secured to the shaft, a coin pocket on the actuating arm adapted to return a coin in position to lock said arm with the discharging mechanism, an abutment for limiting the movement of the arm and discharging mechanism, and a locking latch adapted to engage the discharging mechanism and adapted to be released by the movement of the yoke, substantially as described.

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