







(No Model.)

5 Sheets—Sheet 4.

J. W. VAUGHN.  
AUTOMATIC SELLING MACHINE.

No. 407,946.

Patented July 30, 1889.

Fig 4

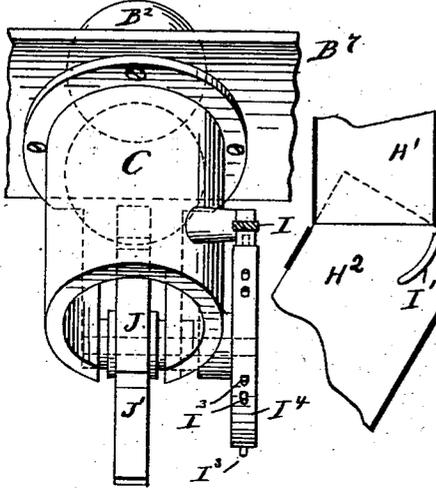


Fig 5

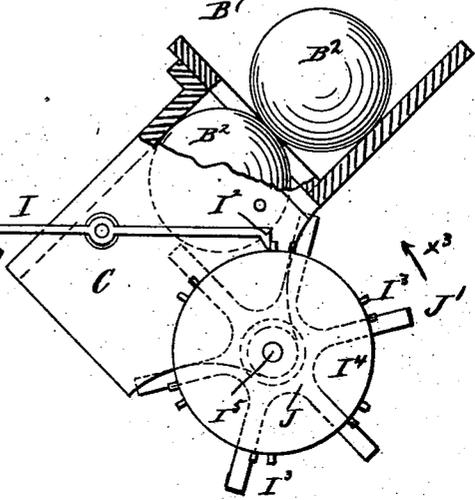


Fig 6

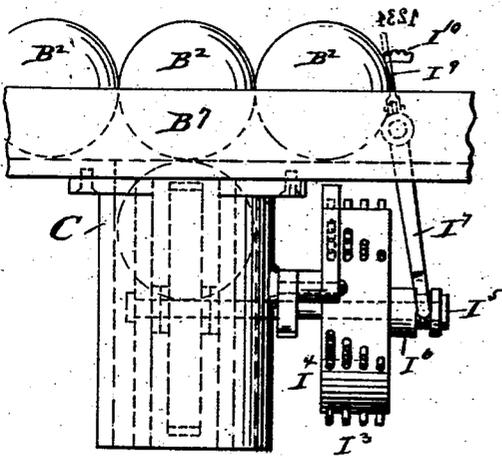
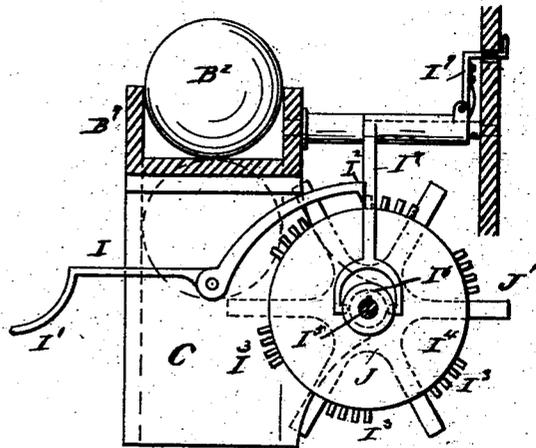


Fig 7



Witnesses:

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*John W. Vaughn*  
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Attorneys.

(No Model.)

5 Sheets—Sheet 5.

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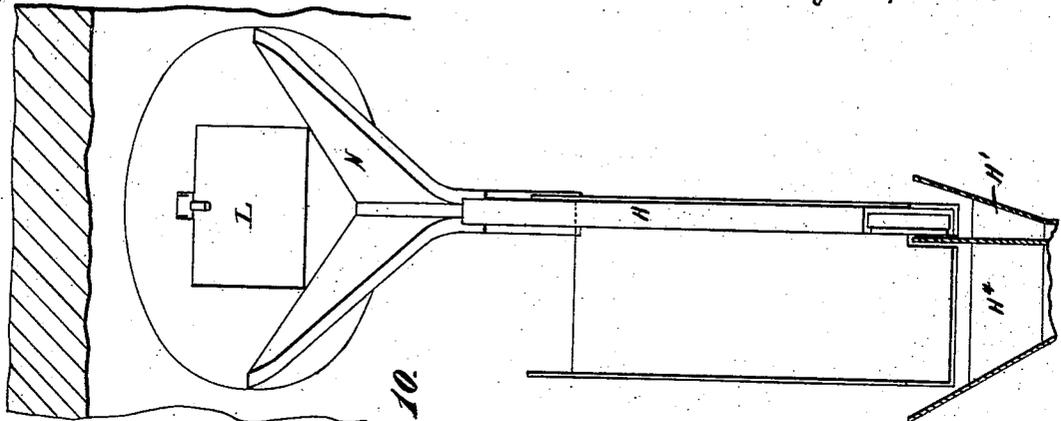


Fig. 10.

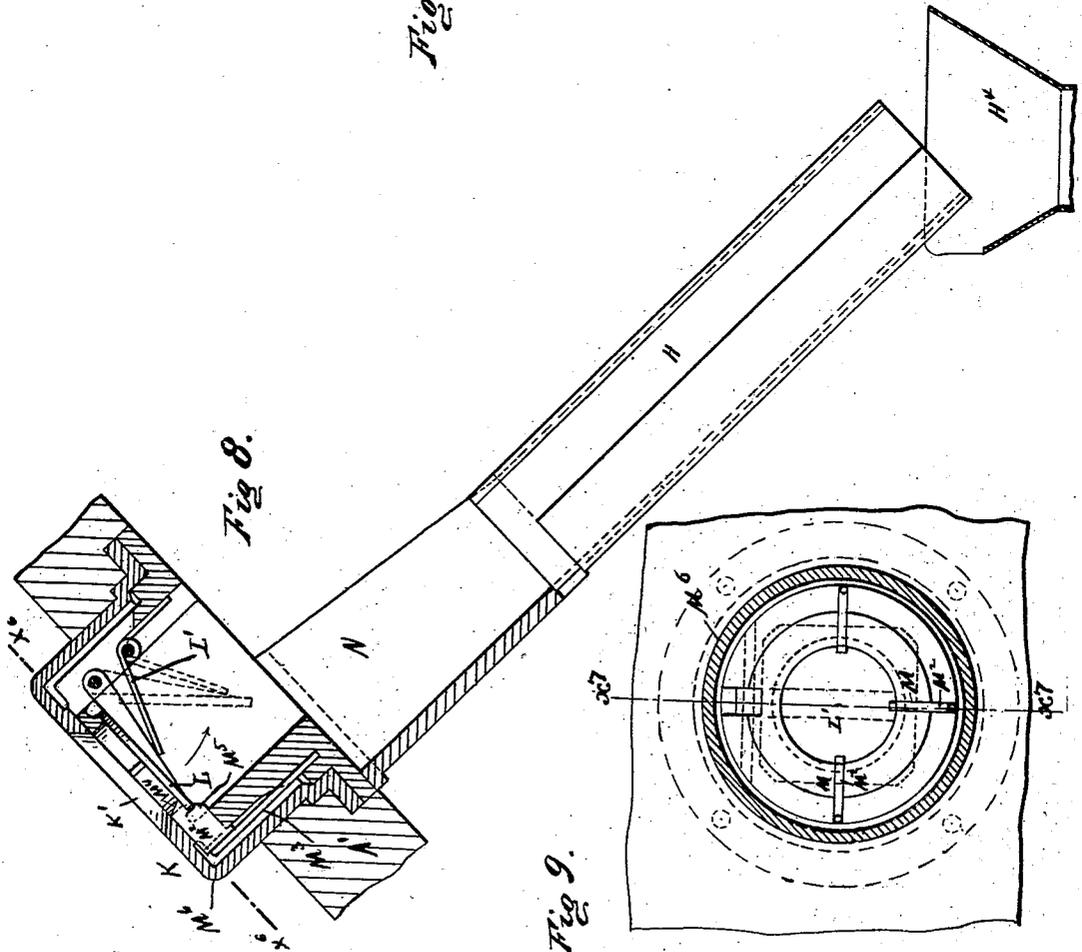


Fig. 8.

Fig. 9.

Witnesses:  
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Carl Kay

Inventor:  
John W. Vaughn  
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# UNITED STATES PATENT OFFICE.

JOHN W. VAUGHN, OF JERSEY CITY, NEW JERSEY.

## AUTOMATIC SELLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 407,946, dated July 30, 1889.

Application filed July 13, 1888. Serial No. 279,905. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. VAUGHN, of Jersey City, county of Hudson, State of New Jersey, have invented certain new and useful

Improvements in Automatic Selling-Machines, of which the following is a specification.

This invention relates to improvements in the apparatus known as "automatic selling-machines," and in which goods are automatically delivered in exchange for a coin of certain value placed in the apparatus by the purchaser.

The object of my invention is to provide a new and improved machine or apparatus of this kind, which is so constructed that with a single motor or operating device various kinds of goods or various goods of the same kind, but of different values, will be automatically delivered.

The invention consists in a coin-chute head, in a detector for spurious coins, and in the construction and combination of parts and details, as will be fully described and set forth hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical transverse sectional view of my improved selling-machine on the line  $x^1 x^2$ , Fig. 2. Fig. 2 is a sectional plan view of the same on the line  $w w$ , Fig. 1. Fig. 3 is a vertical longitudinal sectional view on the line  $x x$ , Fig. 1. Fig. 4 is a front elevation of the ball-releasing device, parts being in section. Fig. 5 is a side view of the parts shown in Fig. 4, parts being in section. Fig. 6 is an elevation of a releasing device made adjustable for different numbers of coins. Fig. 7 is a side view of the construction shown in Fig. 6, parts being in section. Fig. 8 is a vertical longitudinal sectional view of the mouth-piece for the coin-chute on the line  $x^7 x^7$ , Fig. 9. Fig. 9 is a sectional view of the same on the line  $x^6 x^6$ , Fig. 8. Fig. 10 is a rear view of the coin-chute, parts being in section.

Similar letters of reference indicate corresponding parts.

On the shaft A, journaled in the rear wall of the case or box A', and in a suitable arm A<sup>2</sup>, the wheel B is mounted rigidly, which is provided in its rim with pockets B' for receiving balls B<sup>2</sup>. A rope-drum A<sup>3</sup> is fixed on the shaft A, on which the rope A<sup>4</sup> is wound,

and from the same is suspended a weight A<sup>5</sup>, and a ratchet and pawl A<sup>12</sup> are provided for rotating the wheel B from the rope-drum, all as is fully described in my application, Serial No. 277,087, filed June 14, 1888, for an automatic selling-machine. The wheel B has parts of its rim surrounded by curved shields B<sup>3</sup> and B<sup>4</sup> for the purpose of preventing the balls from dropping out of the pockets B'. At the lower end of the shield B<sup>4</sup> the chute B<sup>5</sup> is provided, into which the balls pass as soon as their pockets are below the lower end of the shield B<sup>4</sup>.

From the chute B<sup>5</sup> the balls pass into the chute B<sup>6</sup> at right angles to the chute B<sup>5</sup>, and from the lower end of said chute B<sup>6</sup> they pass into the inclined chute B<sup>7</sup>, which is some distance in front of the wheel B, said chute B<sup>7</sup> being provided with a partition B<sup>8</sup> near its lower end to prevent the balls rolling out. From the chute B<sup>7</sup> a series of short guide-tubes C project downward at an inclination, their upper ends being so arranged that the balls, when they arrive at said guide-tubes, can roll down the same and can drop into a box C', of which one is provided below each guide-tube, each box being provided at its bottom with an outlet-tube C<sup>2</sup> for conducting the ball into a chute C<sup>3</sup>, located below the chute B<sup>7</sup> and inclined in opposite direction.

From the lower end of the chute C<sup>3</sup> the balls pass into the chute C<sup>4</sup>, and from the lower end of the same through a chute C<sup>5</sup> into the chute C<sup>6</sup>, the lower end of which is adjacent to the bottom part of the wheel B, so that said balls can pass from the chute C<sup>6</sup> into the pockets B'.

It is necessary that the wheel B shall be rotated the distance of one pocket every time a ball drops into the chute C<sup>6</sup>, the weight acting on the rope-drum on the shaft A of the wheel B' furnishing the necessary power for rotating said wheel and elevating the balls. As the balls pass through the chute C<sup>5</sup>, they act upon the arms of the spider-wheel C<sup>7</sup>, projecting into said chute, which spider-wheel C<sup>7</sup> is connected with the wheel C<sup>8</sup>, having pins C<sup>9</sup>, that act on the lower end of the pawl C<sup>10</sup>, the upper end of which engages teeth of a ratchet-wheel C<sup>11</sup> on the rim of the wheel B', so that every time a ball passes through the chute C<sup>5</sup> the pawl C<sup>10</sup> will be dis-

engaged from one tooth of the ratchet-wheel C<sup>11</sup> and permit the wheel B to rotate the distance of one pocket, there being as many teeth in the ratchet-wheel C<sup>11</sup> as there are pockets B' in the wheel B.

I have shown three guide-tubes C connected with the chute B<sup>7</sup>; but, if desired, only one such guide-tube, or two, or more than three, may be provided, according to the various different kinds of articles to be sold by the machine, or according to the various goods of the same kind of article to be sold by the machine. For each outlet-tube C on the chute B<sup>7</sup>, I provide a coin-chute and ball-releasing device operated by the coin passing through the coin-chute, and for each outlet-tube C a separate delivery-chain is to be provided, only one of which is shown, each of which chains is operated by a separate weight mechanism whenever a coin has been dropped or placed into the corresponding coin-chute, and also a separate outlet for the article delivered by each chain. As all the chains are alike and each chain is provided with a coin-chute-releasing device, &c., I will describe one only. The chain D and its connecting-band D<sup>8</sup> are passed over a series of polygonal sprocket-rollers D' in different parts of the casing, as shown in Fig. 1.

The sprocket-rollers D' at the front of the boxes are each provided with a drum E, upon which a rope E' is coiled and passed over guide-pulleys E<sup>3</sup>, a weight E<sup>4</sup> being suspended from the lower end of said ropes, and said weight serving to operate or drive the corresponding box-link delivery-chain.

On the outer surface of one polygonal end disk of each front sprocket-roller D' an escapement-wheel F is secured, with the teeth of which the escapement-fork F' can engage, that is mounted to rock on the shaft F<sup>2</sup> behind said wheel D'. Said escapement-fork F' has a bent arm F<sup>3</sup>, the lower end of which projects through a slot into the bottom part of the box C', so that the balls dropping into said box can depress the lower end of said arm F<sup>3</sup>, thereby operating the escapement-fork. To insure the quick and rapid operation of the escapement, one shank of the fork is provided with a weight F<sup>4</sup>. Diagonally below and in front of the front guide-roller D' the inclined chute G is provided, down which the article delivered slides and is dropped into a trough G' on the front of the casing, from which trough it can readily be taken by the purchaser. The coins placed into the mouth-piece of the coin-chute (that will be described hereinafter) pass through the coin-chute H and drop into the funnel H', from which a chute H<sup>2</sup> leads to the money drawer or tray H<sup>3</sup>. In case the coins deposited by the purchaser—for example, if a cent is deposited in place of a five-cent nickel it drops from the chute H into the chute H<sup>4</sup>, and from the same slides through the chute H<sup>5</sup> into the trough G', the chute H being inclined laterally and provided with a longitudinal slot in its side, as described in

my application Serial No. 277,087, filed June 14, 1888.

A lever I is pivoted on each guide-tube C and has one end I' curved and projected into the upper end of the chute H<sup>2</sup>, the curved end of said lever having about the same radius as the coin that has to be deposited. On the opposite end of said lever I a toe I<sup>2</sup> is provided that can engage a pin I<sup>3</sup> on the rim of a disk I<sup>4</sup>, mounted on a shaft I<sup>5</sup>, journaled in brackets on the under side of the guide-tube C. On said shaft I<sup>5</sup> a spider-wheel J is fixed, which has as many arms J' as there are pins I<sup>3</sup> on the rim of the disk I<sup>4</sup>, or in some cases as many arms as there are groups of pins on the rim of said disk I<sup>4</sup>. In case the articles are to cost but a single coin—for instance, a five-cent nickel—the pins I<sup>3</sup> are arranged singly on the rim of the disk I<sup>4</sup>; but where the article is to cost two or three nickels the pins are arranged in groups of two or three nickels, and so on. The arms J' project through a longitudinal slot in the bottom of the guide-tube C into said guide-tube. In some cases it is desirable to have the machine adjustable, so that it can be made to work for one, two, three, or more nickels. This construction is shown in Figs. 6 and 7, in which four circumferential rows of pins I<sup>3</sup> are provided on the disk I<sup>4</sup>. In one circumferential row the pins are arranged singly, in the next in groups of two, in the next in groups of threes, in the next in groups of fours, and so on.

The disk and wheel J are fixed on a sliding sleeve I<sup>6</sup>, mounted to turn on its shaft and connected with a pivoted shifting-lever I', the upper end of which is provided with a handle I<sup>9</sup>, that can be adjusted on a scale I<sup>10</sup>, (marked 1, 2, 3, 4, &c.,) so that by shifting the upper end of said lever the disk I<sup>4</sup> can be so adjusted that the toe I<sup>2</sup> on the inner end of the lever I will be in the path of the circumferential row of pins, having single pins or groups of two or three, as may be desired.

It very frequently occurs that attempts are made to force banana-peels, pieces of paper, and like materials into the coin-chutes; and to prevent this I have devised a mouth-piece (shown in Figs. 8 and 9) for the coin-chute. The top plate K of said mouth-piece is provided with an opening K', the inner edge of which is of the size of a five-cent nickel and the outer part of which is flared. To the inner side of said topplate K a gate L is hinged, which is pressed outward and against the inner surface of the top plate by a suitable spring L'. Said top plate is provided with three or more radial slots or notches M, in which sliding steel jaws M<sup>2</sup> are pressed against the rim of the gate by springs M<sup>3</sup>, secured in the shell or casing M<sup>6</sup> of the mouth-piece. Said jaws are also provided with bevels M<sup>4</sup> above the outer surface of the mouth-piece and projecting beyond the inner edge of the opening K'. As the sliding jaws M<sup>2</sup> engage the edges of the gate, they keep said gate

closed and prevent its being pressed inward. When the coin is placed into the opening K' of the top plate K and pressed toward the upper surface of the gate L, the edges of said coin, acting on the bevels M<sup>4</sup> of the jaws M<sup>2</sup>, press said jaws simultaneously in the direction from the center of the mouth-piece, whereby the edges of the gate are disengaged from said jaws, thus permitting the gate to be swung inward. The coin then slips off the gate and drops into the V-shaped guide-chute N, by which it is placed on edge, and slides from the same to the coin-chute H. The spring L', which must have more power than the springs M<sup>3</sup>, forces the gate outward and presses its edges against the bottom bevels M<sup>5</sup> of the jaws M<sup>2</sup>, whereby said jaws are pushed back sufficiently to permit them to lock the gate L in place.

The operation is as follows: The box-links D<sup>2</sup> of the chain D are filled, for example, with cigars, a cigar or a package of two, three, or more cigars being placed in each box-link, according as a single cigar or a package of cigars is to be delivered each time a coin is deposited. In case there are three different chains, five-cent cigars could be placed in the box-links of the first chain, ten-cent cigars in the box-links of the second chain, and a package of five-cent or ten-cent cigars in the box-links of the third chain, and so on. While successively filling the box-links in a chain said chain is moved in the direction of the arrow  $\alpha^2$ , Fig. 1, whereby the ropes E' are wound upon the drums E, and the weights E<sup>4</sup> are thus raised. All the pockets of the wheel B are filled with balls, with the exception of those between the bottom of the shield B<sup>4</sup> and the point at which the balls pass from the chute C<sup>6</sup> into the pockets. The chutes B<sup>6</sup> and B<sup>7</sup> are filled with balls, as shown, and a ball is contained within each guide-tube C and rests on one of the arms J' of the spider-wheel J, as shown in Fig. 5. One box-link D projects from the front side of the front guide-roller D' and contains a cigar. The coin deposited slides down the coin-chute H, drops into the funnel H', and strikes upon the curved end I' of the lever I, whereby said curved end of the lever is depressed, permitting the coin to pass and slide down the chute H H<sup>2</sup> into the coin-drawer H<sup>3</sup>. As the curved end I' of the lever I descends under the action of the weight of the coin, the toe I<sup>2</sup> on the opposite end is raised, whereby the toe I<sup>2</sup> is disengaged from a pin I<sup>3</sup>, permitting the weight of the ball in the upper end of the guide-tube C to rotate the spider-wheel J in the direction of the arrow  $\alpha^3$ , Fig. 5. The inner end of the lever I immediately drops, catches on another pin I<sup>3</sup>, thus preventing further rotation of said spider-wheel and disk in the direction of the arrow  $\alpha^3$ , and thus permitting only that ball that was in the upper end of the guide-tube C from passing down said guide-tube. A ball then immediately drops from the chute B<sup>7</sup> into the guide-tube C, in which it is held by

the next fixed arm J' of the spider-wheel J in the position shown in Fig. 5. As said ball passes from the chute B<sup>7</sup> into the guide-tube C, all the remaining balls in the chutes B<sup>6</sup> and B<sup>7</sup> slide forward the distance of one ball. The ball that has been released from its position in the upper end of the tube C drops into the box C' and strikes the lower end of the arm F<sup>3</sup>, whereby the upper shank of the escapement-fork F' is disengaged from its tooth on the escapement-wheel F. At the same time the lower shank engages the tooth of the escapement-wheel. The ball then slides off the lower end of the arm F<sup>3</sup>, and the weight F<sup>4</sup> draws down the shanks of the escapement-wheel, whereby the lower shank is disengaged from the escapement-wheel and the upper shank engages another tooth of said escapement-wheel. The escapement-wheel and the sprocket-roller D' have meanwhile been permitted to rotate the distance of one tooth of the escapement-wheel, which is equivalent to the distance of one side of the sprocket-roller. Thereby that box D<sup>2</sup> of the chain D that has projected horizontally from the front of the roller D' is brought in such position as to project downward diagonally from said roller, permitting the cigar to slide out of said box into the chute G, and from the same into the trough G'. The ball that has dropped into the box C', after it has acted upon the arm F<sup>3</sup>, rolls through the tube C<sup>2</sup> into the chute C<sup>3</sup>, down the same through the chutes C<sup>4</sup> and C<sup>5</sup>, strikes the arms of the spider-wheels C<sup>7</sup>, and causing the wheel C<sup>8</sup> to move, whose pins C<sup>9</sup> strike the pawl C<sup>10</sup>, whereby the wheel B is released and rotated a distance of one pocket B' in the direction of the arrow  $\alpha^9$ , Fig. 3, whereby a ball is released and passes into the chutes B<sup>6</sup> and B<sup>7</sup>, and at the same time a fresh ball passes into one of the bottom pockets of the wheel B'. Every time a nickel is dropped or deposited a ball passes out of one of the pockets of the wheel, operates the device for releasing a chain, and then passes back into one of the pockets, it being immaterial whether said coin was dropped in the first, second, or third coin-chute. If the coin is dropped in the first coin-chute only, the balls in that part of the chutes B<sup>6</sup> and B<sup>7</sup> between the wheel B and the first guide-tube C will roll forward. In case the coin is dropped in the second coin-chute, all the balls in the chutes B<sup>6</sup> and B<sup>7</sup> between the second guide-tube C and the wheel B move forward, and in case the coin is dropped in the third coin-chute all the balls in the chutes B<sup>6</sup> and B<sup>7</sup> between the third guide-tube C and the wheel B move forward. As stated, the lever I descends after a coin has passed the curved end I' of said lever, and thus locks the disk I<sup>4</sup> in place after the same and the spider-wheel J have turned sufficiently to permit one ball to pass out of the guide-tube C. This holds good when the pins I<sup>8</sup> are arranged singly on the rim of the disk I<sup>4</sup>, but not when they are arranged in groups of two, three, or

more. For example, if the pins were arranged in groups of two, the descending coin would disengage the toe I<sup>2</sup> from the first pin, but said toe would immediately engage the following pin, and thus also the disk I<sup>4</sup>, the spider-wheel J thereby locking them before the ball in the tube C is released. For releasing said ball, two coins must be dropped successively into the coin-chute, so that the lever I will be operated twice and the toe I<sup>2</sup> also disengaged from the second pin, when the wheel J can rotate sufficiently to release the ball in the tube C. In case the pins on the disk I<sup>4</sup> are arranged in groups of three, three coins must be dropped successively, and so on.

If the different articles in the box-links of the different chains are to be sold for the same amount—that is, a single coin of a certain value—the pins I<sup>3</sup> on all the disks I<sup>4</sup> can be arranged singly; but if the articles in the box-links of a certain chain are to be sold for two coins the pins I<sup>3</sup> on the corresponding disk I<sup>4</sup> must be arranged in groups of two.

In place of cigars, packages of cigarettes, chewing-gum, candies, chocolate, ferry-tickets, fruits, or various articles can be placed into the box-links, which must have corresponding sizes.

Having thus described my invention, I claim as new and desired to secure by Letters Patent—

1. In an automatic selling-machine, the combination, with a ball-elevator and a motor for operating the same, of one or more independent box-link chains for receiving the articles to be delivered by the machine, motors for moving said box-link chains, and retaining devices for the said motors of the box-link chains, which retaining devices are to be operated by the balls raised by the ball-elevator, substantially as herein shown and described.

2. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a box-link chain for receiving the articles to be delivered by the machine, a motor for moving said chain, a retaining device for said motor, and a coin-operated ball-retainer, substantially as herein shown and described.

3. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a chute into which the balls can pass from the ball-elevator, a ball-outlet tube on said chute, a coin-operated ball-retainer, a box-link chain for receiving the articles to be delivered by the machine, a motor for said chain, and a chain-motor retainer operated by the balls released by the coin-operated ball-retainer, substantially as herein shown and described.

4. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a chute into which the balls pass from the ball-elevator, an outlet-tube for the balls on said chute, a coin-operated ball-retainer at said outlet-tube, a box below said outlet-tube, a box-link chain for receiving the

articles to be delivered by the machine, a motor for said chain, and a retaining-lever for said motor, the ends of said retaining-lever projecting into the box below the ball-outlet tube on the above-mentioned chute, substantially as herein shown and described.

5. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a chute into which the balls can pass from the ball-elevator, a box-link chain for receiving the articles to be delivered by the machine, a motor for said chain, a retaining-lever for said motor, which lever is in the path of the dropping balls, and a chute for conveying the dropped balls back to the ball-elevator, substantially as herein shown and described.

6. In an automatic selling-machine, the combination, with a box-link chain for receiving the articles to be delivered by the machine, of a series of sprocket-wheels over which said chain passes, a rope-drum on one sprocket-wheel, a rope and weight connected with said drum, an escapement-wheel on said sprocket-wheel, an escapement-fork engaged with said escapement-wheel, and a ball-elevator for elevating balls to operate said escapement-lever, substantially as herein shown and described.

7. In an automatic selling-machine, the combination, with a ball-elevator and a motor for the same, of a chute into which the balls can pass, a series of ball-outlet tubes on said chute, a spider-wheel at each outlet-tube, levers for locking the spider-wheels, coin-chutes into which said levers project, box-link chains for receiving the articles to be delivered, motors for operating the chains, and retaining-levers for said motors, which retaining-levers are operated by the balls as they drop from the guide-tubes of the chute, substantially as herein shown and described.

8. In an automatic selling-machine, the combination, with a chute, of an outlet-tube, a spider-wheel projecting into the outlet-tube, a disk on the same shaft with the spider-wheel with pins arranged singly or in groups, and a coin-actuated lever engaging said pins, substantially as herein shown and described.

9. In an automatic selling-machine, the combination, with a ball-chute, of an outlet-tube on the same, a spider-wheel projecting through a slot of said outlet-tube, a disk secured on a sleeve mounted to slide on and turn with the shaft of the spider-wheel and having pins arranged singly and in groups in different circumferential rows on its rim, and a coin-actuated lever engaging said pins, substantially as herein shown and described.

10. In an automatic selling-machine, a mouth-piece for a coin-chute constructed with a casing having an opening in its top plate, sliding spring-actuated jaws in said top plate, and a spring-actuated gate hinged below said top plate, substantially as herein shown and described.

11. In an automatic selling-machine, a

mouth-piece for a coin-chute constructed with a casing having an opening in its top plate, beveled sliding springs, actuated jaws in the edges of said plate, which jaws have bevels  
5 on their top and bottom edges, and a spring-actuated gate below said top plate, substantially as herein shown and described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOHN W. VAUGHN.

Witnesses:

OSCAR F. GUNZ,  
CARL KARP.