Jan. 15, 1929. 1,699,353

G. P. GRANT

VENDING MACHINE

Filed June 5, 1925 3 Sheets-Sheet 1

Fig. 1.

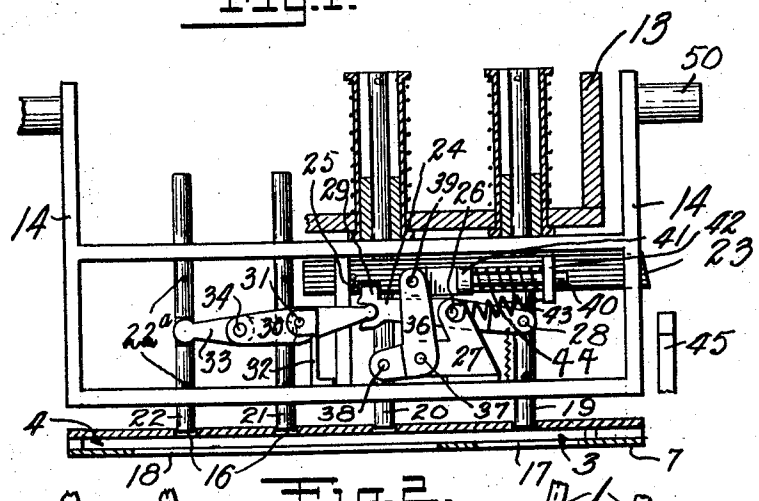


Fig. 9.

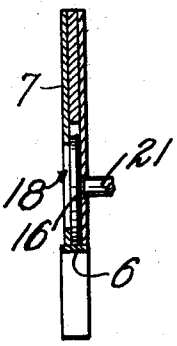


Fig. 2.

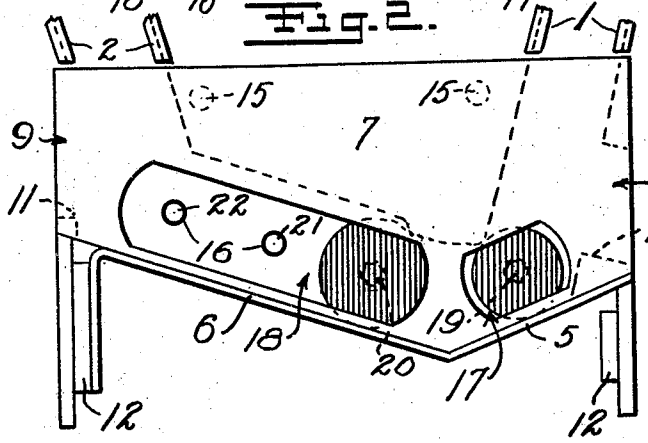


Fig. 10.

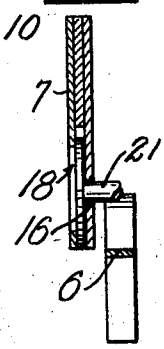


Fig. 11.

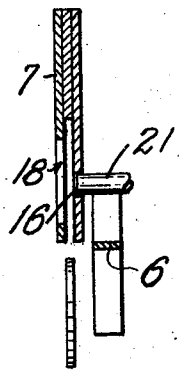
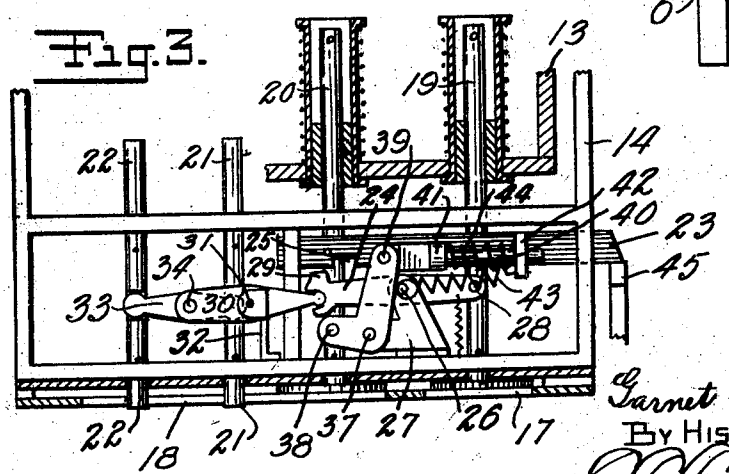


Fig. 3.



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Fig. 4.

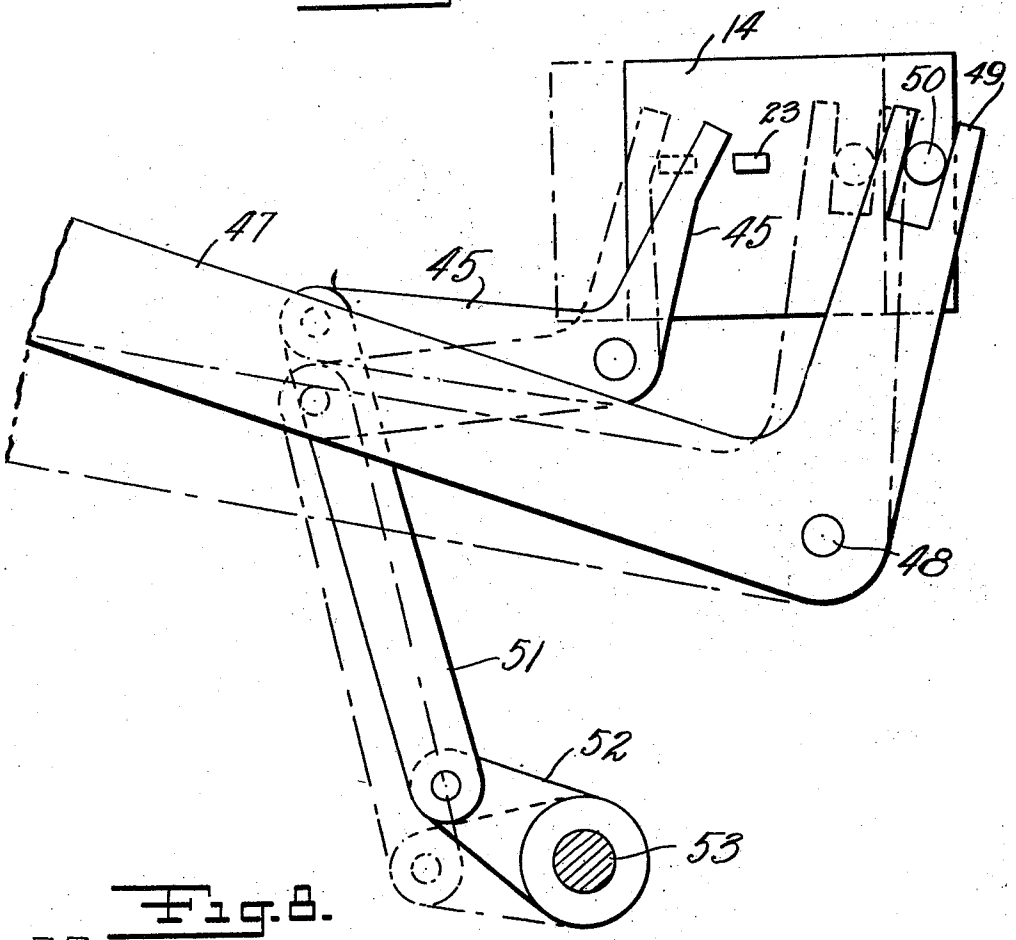
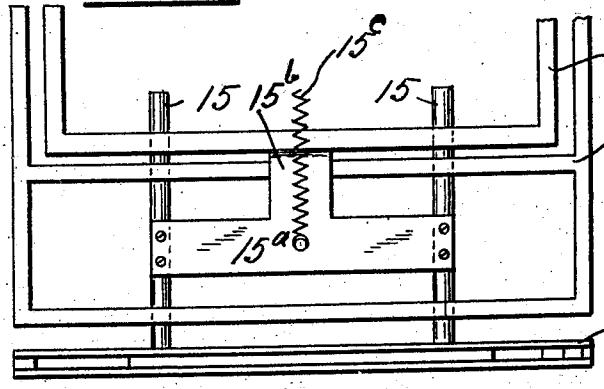


Fig. 8.



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Fig. 5.

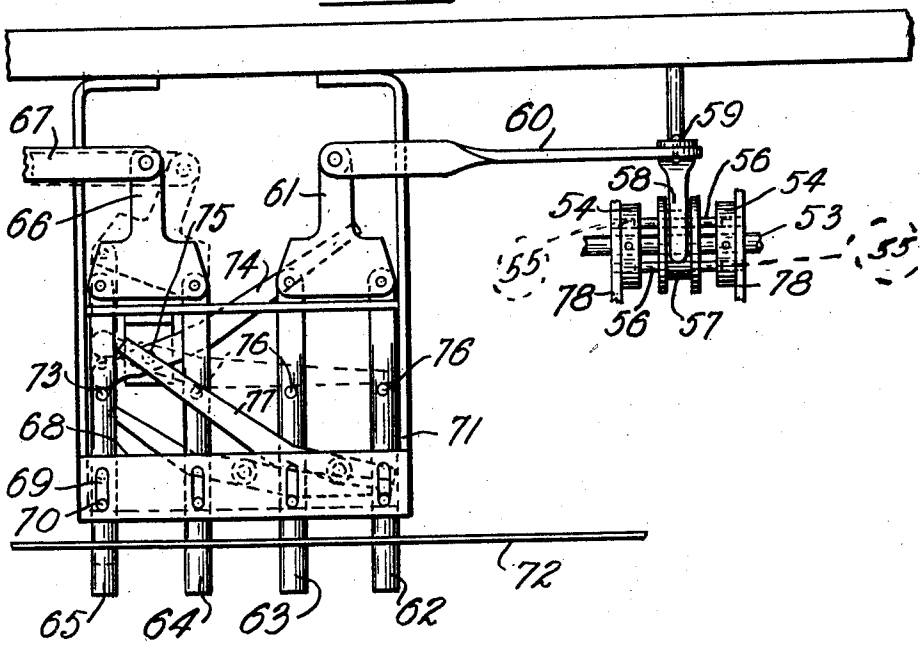


Fig. 6.

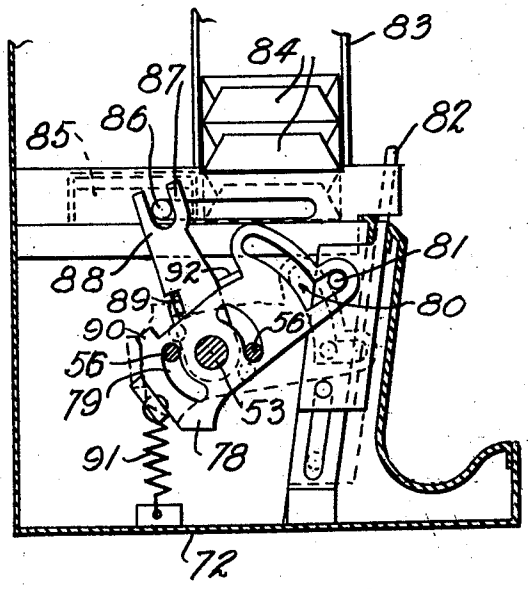
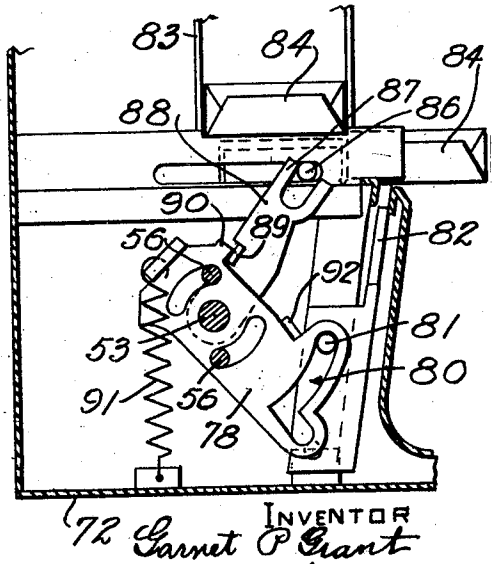


Fig. 7.



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UNITED STATES PATENT OFFICE.

GARNET P. GRANT, OF NEW YORK, N. Y.

VENDING MACHINE.

Application filed June 5, 1925. Serial No. 35,236.

This invention relates to coin-controlled vending machines.

The object of the invention is to provide a machine to contain goods in packages of approximately the same size but containing different classes of goods, or goods of the same classes bearing different brands, and to vend the same by the insertion of a plurality of coins of the same or different denominations.

More specifically the object of the invention is to provide a machine which will vend cigarettes, in original packages, and in which machine a charge of different kinds of cigarettes may be placed and a particular kind may be obtained by the customer upon the insertion of a proper coin.

So far as relates to the price of cigarettes in the United States at the time of filing this application, the ordinary price is fifteen cents. The coinage of the country does not permit of the use of a single coin as there is no fifteen cent coin. Therefore, the necessity of using a plurality of coins,—either three nickels or one dime and a nickel.

A further object is to provide means for ejecting the proper package desired by the customer, which means involve a selecting means for the particular class of goods desired.

A further object of the invention is to provide a novel mechanism for preventing the machine from being operated with an improper coin, or the use of imitation coins.

The invention consists of the combination, construction and arrangement of parts, as herein illustrated, described and claimed.

In the accompanying drawings forming part hereof, is illustrated a form of embodiment of the invention, in which drawings, similar reference characters designate corresponding parts, and in which:

Figure 1 is a plan view, partly in section, showing the coin operating mechanism;

Figure 2 is a fragmentary detail in front elevation showing a coin conducting mechanism, adapted to conduct the coin to an operative position in front of the parts shown in Figure 1;

Figure 3 is a plan view, partly in section, showing the same parts as in Figure 1 but in different positions;

Figure 4 is a side elevation, showing the operating lever used for moving the coin-controlling mechanism, and actuating an ejecting mechanism;

Figure 5 is a fragmentary detail in plan view showing the selecting mechanism for the various classes of goods to be vended;

Figure 6 is a side elevation showing the ejecting mechanism after a selection has been made;

Figure 7 is a side elevation of the same parts shown in Figure 6, to wit, a selective mechanism, in a different position;

Figure 8 is a diagrammatic view in plan showing the coin conducting means and its propeller;

Figure 9 is a vertical section, in detail, showing the coin in position in the coin rack;

Figure 10 is a vertical section, in detail, showing the coin in the coin rack with the plunger holding the coin in place; and

Figure 11 is a vertical section, in detail, showing the position of the parts when the coin has been released to enter the coin box.

In all of the foregoing views it will be understood that the mechanism illustrated will be placed in a suitable casing and the parts suitably supported by members extending from one side to the other of the casing.

Referring to the drawings, and specifically the first sheet thereof, 1 designates an entrance coin chute for a coin of higher denomination, say such as a dime, and 2 designates an entrance coin chute for a coin of lower denomination, such as a nickel. Connecting with the entrance coin chute 1 is a conducting chute 3, and connecting with the entrance coin chute 2 is a conducting coin chute 4, which chutes 2 and 3 are formed into converging inclined faces 5 and 6 respectively. These faces are formed integral with or inserted into a suitably formed casing 7.

The casing 7 is provided with an opening 8 at one side and an opening 9 at the other side. A suitable shoulder 10 is disposed adjacent the opening 8, and a shoulder 11 is disposed adjacent the opening 9. The object of the openings 8 and 9 and shoulders 10 and 11 is to provide for the ejection of more than the required number of coins inserted on either side.

A pair of opposite supports 12 are arranged to support a stationary frame 13 and the coin chutes hereinbefore described.

A frame 14 approximately rectangular in shape is movably disposed on the support 12 and the stationary frame 13.

A pair of guide rods 15 have their front ends secured to the rear wall of the casing 7 and extend through the movable frame 14, being freely movable with relation thereto.

The guide rods 15 are secured together by means of a suitable yoke 15[a] having a downturned end 15[b] adapted to abut the front face of a portion of the stationary frame 13 and prevent movement to the rear of the parts connected therewith to a greater extent than is necessary or desirable.

Suitable openings 16 are formed in the rear wall of the casing 7 to permit passage of plungers hereinafter described and in the front wall of the casing 7 there is a smaller opening 17 and adjacent thereto a larger opening 18 permitting the passage of said plungers entirely through the casing 7 under certain conditions.

A plurality of plungers 19, 20, 21 and 22 are disposed through the movable frame 14 so as to have an easily slidable movement with relation thereto. The front ends of these plungers are arranged to pass through the openings 16, described, under certain conditions.

A latch 23 is disposed transversely of the movable frame 14 and arranged to project therethrough, being shown in an inoperative position in Figure 1 and in an operative position in Figure 3 and normally being in an inoperative position.

A pawl 24 is disposed over the plungers 19 and 20 and has a projection on one end adapted to cooperate with a notch 25 in the latch 23. The pawl 24 is pivoted as at 26 to a supporting bracket 27 secured on the movable frame 14. The pawl 24 is further pivoted as at 28 to the plunger 19 and is provided with a bifurcated opposite end 29 adapted to cooperate with a lever 30 which is pivoted as at 31 to a support 32 on the movable frame 14.

A lever 33, having its ends in loose engagement with the plungers 21 and 22 is pivoted as at 34 to the lever 30.

A bell-crank lever 36 is pivoted as at 37 on the support 27 and has its lower arm pivoted as at 38 to the plunger 20. Its upper end is pivoted as at 39 to a finger 40, provided with a shoulder 41 and works through a lug 42 on the latch 23. A suitable cushioning spring 43 is interposed and a suitable return spring 44 is connected to the parts to restore them to normal position.

Suitable coins being inserted in the chutes 1 and 2 and the latch 23 being released it is thrown outside of the plane of the frame 14 so that it may be contacted by a lever 45 (see Figure 4).

The forward movement of the movable frame 14 is produced by means of a hand lever 47 pivoted as at 48 and having a bifurcated upper end 49, cooperating with a pin 50 on the movable frame 14.

A link 51 has its upper end secured to one end of the lever 45 and its lower end pivoted to one end of a crank 52 secured on an operating shaft 53.

A pair of collars 54 are secured to the operating shaft 53 and provided with openings 55 arranged to receive pin 56 on a collar 57 which is slidably disposed on the shaft between the pairs of collars.

A common form of bifurcated member 58 is disposed over the collar 57 and is pivoted adjacent its upper end as at 59 and secured to a rod 60. The rod 60 is connected to a double bell-crank lever 61, pivotally connected with the plungers 62 and 63, which project horizontally from the casing. Similar plungers 64 and 65 are connected respectively to a second bell-crank lever 66 and a rod 67 and the latter is connected to clutches similar to those described.

A cover plate 68 is disposed over the plungers 62 to 65 and provided with slots 69 through which project pins 70, adapted to act as guides and the whole mechanism being enclosed by a suitable frame 71 disposed in a suitable covering casing 72.

A pin 73 is disposed on the plunger 65 so as to contact one end of a lever 74 which is pivoted as at 75 and arranged to strike in its movement guidepins 76 on the plungers 62 and 63 respectively (dotted lines Fig. 5). A corresponding lever 77 is suitably pivoted and arranged to cooperate with the plungers 62 and 63.

The object of the lever 74 and guidepins 76 is to return the unoperated plungers to normal position and retract them from the operation of the described clutch mechanism.

On each side of the collars 54 of the clutch mechanism described, are disposed loosely on the shaft 53 actuating members 78. In the construction described, designed for the purpose of selling four kinds of goods, there are four of said actuating members 78 respectively thrown into action by the action of the plungers 62 to 65 as described.

The actuating members 78 each are provided with openings 79 adapted to receive the projecting ends of the pins 56 as they are actuated beyond the surface of the collars 54.

The free ends of the actuating members 78 are each provided with a slot 80 adapted to receive a pin 81 which is secured on a slidable gate or covering 82 adapted to normally cover the egress of a magazine 83 adapted to contain vendible commodities 84.

A discharge plug or plunger 85 is arranged to reciprocate beneath the magazine 83 and to remove one package 84 at each forward reciprocation. The plug 85 has a projecting pin 86 arranged to be embraced by the bi-

furcated end 87 of a crank 88 loosely disposed on the shaft 53. A lug 89 is disposed on the crank in the path of movement of the shoulder 90 formed on the actuating member 78. Therefore rotation of the actuation member selected will cause the withdrawal of the gate 82 and the reciprocation of the plunger 85 and one package will be removed and the parts will be returned to their normal position by means of a return spring 91. A lug 92 is disposed on the actuating member 78 so as to draw the crank 88 back to the normal position shown in Figure 6.

In order to limit the backward and forward movement of the plungers 19, 20, 21 and 22 with relation to the movable frame 14, which slidably supports the plungers, pins 22^a are inserted in the plungers adjacent the cross members of the frame 14 and intermediate thereof. The rear pin 22^a prevents the plungers from being forced too far to the rear when the frame 14 is brought forward as described and the pin 22^a adjacent the front end of the plungers contact with the rear wall of the front cross piece of the frame 14 so that when the latter is retracted the plungers are carried therewith.

The operation of the apparatus is as follows:

In operative position.—Without insertion of coins or tokens and the parts being in the position shown in Figure 1, full lines of Figure 4 and Figures 5 and 6, if the operating lever 47 is depressed the movable frame 14 is forced forward by the bifurcation 49 and the pin 50. There being no coins in the path of movement of the plungers 19 to 21, they pass freely through the openings 16 and 17 and 18 (Figure 1). As the plungers 19 to 21 meet no obstruction the levers 30, 33 and 36 and pawl 24 are not disturbed and as a consequence the latch 23 is retained outside of the plane of the lever 45, so that the latter is not rocked by movement of the lever 47 and as a consequence the shaft 53 is not rocked and no packages of goods 84 are ejected by the mechanism controlled by the action of the shaft 53.

Coin selection.—If a proper coin,—say a dime, is put into the chute 1 it drops to the position shown in Figure 2, in front of the path of movement of the plunger 19 and pressure on the lever 47 carries the frame 14 (on which the plunger 19 is mounted) forward where the forward end of the plunger 19 contacts with the dime and is held against further movement. However, the frame 14 is moved forward so that the pawl 24 is rocked on its pivot 26 and disengaged from the notch 25, releasing the locking action of the pawl 24 on the latch 23.

However, unless a second coin, say a nickel, has been placed in the chute 2 and drops in front of the plunger 20, the latch 23 is not operated because the plunger 20 passes freely through the opening 16 and slot 18 and as a consequence does not rock the bell-crank lever 36 to the right hand; as a consequence the latch 23 is not contacted by the lever 45, and the shaft 53 is not rocked and ejection of the goods 84 does not take place.

If a second coin, say a nickel, is disposed in the chute 2 and drops to a position in front of the plunger 20 (as shown in Figures 2 and 3), the plunger 20 is held against forward movement and as the frame 14 is carried forward the bell-crank lever 36 is rocked towards the right on its pivot 37 forcing the latch 23 to the right and into the path of the upper part of lever 45. In the meantime the plungers 21 and 22 perform no function.

Again, if three coins of lower denomination, say nickels, are disposed in the chute 2 and drop into the path of the plungers 20, 21 and 22, the plungers 21 and 22, acting through the lever 31 rock the lever 30 so that it rocks the pawl 24 and releases the latch 23, so that it is acted upon by the bell-crank lever 36 as described.

It will be apparent that only two nickels would not operate the device as the plunger 22 may be projected through the opening 16 and slot 18 while the plungers 20 and 21 are retarded, without rocking the lever 30, because of the pivotal connection 34, so that the pawl 24 is not retracted from the notch 25 in the latch 23.

After the operation of the ejection mechanism the frame 14 is retracted by its spring 15^c and the coins drop into any common form of receptacle below the casing or chute 7.

In the event of more than one dime being placed in chute 1, the second dime contacts with the first and the shoulder 10 so that it either falls or may easily be taken out. In the event of more than three nickels being placed in the chute 2, the fourth contacts with the third and the shoulder 11 and may be removed in a similar manner.

In Figure 3 the parts are shown in the relative position they assume when the proper coins of different denominations are inserted and the lever 47 depressed to the dotted line position of Figure 4 of the drawings.

To prevent the retraction of the frame 14 beyond a desired point, its downturned portion 15^b is arranged to contact the forward portion of the fixed frame 13 and the backward movement of the frame and the tension of the springs 43 and 44 restores the parts to a normal or set position.

Selection of goods.—The packages of goods 84 are arranged in piles in magazines or racks 83 corresponding in number to the number of selecting plungers 62 to 65. Egress of packages is normally obstructed by the vertically movable gates 82, there being one of such gates in front of each magazine 83.

When the goods in the magazine 83 corresponding to the plunger 65 are desired and

the coin selection has taken place as described, the plunger 65 is pressed inward, rocking the bell-crank lever 66 and moving connecting rod 67 to the right hand or dotted line position of Figure 5. Through the corresponding collars 58 and 57 the pin 56 passes through the corresponding collar 54 and actuating member 78, so that latch 23 contacting with lever 45 causes the corresponding ejection elements to operate.

The locking levers 74 and 77 cooperating with the pins 73 and 76 maintain the other plungers 64, 63 and 62 against inward movement so that only one package 84 can be ejected at one time.

Ejection of goods.—The coin selection operation and the goods selection operation, as described being performed, the forward movement of the frame 14, under the influence of the lever 47 causes the now projecting latch 23 to contact the upper end of lever 45 and to rock it to the dotted line position of Figure 4. This causes the crank 52 to be rocked downward rocking the shaft 53. The pins 56 being at this stage (by action of the goods selection means) in the slots 79 of the selected member 78 such member is rocked toward the right (Figure 6 shows the normal and Figure 7 the rocked or operating position). The wall of the slot 80 of the selected member 78 contacting the pin 81 on the corresponding gate 82, the movement of the member 78 moves the gate 82 downward and uncovers the opening at the bottom of the corresponding magazine 83.

While the above-described movement of the member 78 is taking place, the shoulder 90 thereon contacts the lug 89 on the arm 88, so that its bifurcated end 87 strikes the pin 86 of the plunger 85 and forces it to the right hand (Figure 7) forcing out a package 84. The parts are returned to normal position under the tension of the spring 91 so far as the goods ejection elements are involved.

Having thus fully described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a vending apparatus, a coin chute, a plurality of plungers arranged to project through the chute, means for moving the plungers, and locking means arranged to be unlocked by the movement of the plungers.

2. In a vending apparatus, a coin chute, a plurality of plungers arranged to project through the chute, means for moving the plungers, locking means arranged to be unlocked by the movement of the plungers, a goods selecting element and a goods ejecting element.

3. In a vending apparatus, a coin chute, a plurality of plungers arranged to project through the chute, means for moving the plungers, locking means arranged to be unlocked by the movement of the plungers, a goods selecting element and a goods ejecting element operable when the locking means is unlocked.

4. In a vending apparatus, a coin chute, a plurality of plungers arranged to project through the chute, means for moving the plungers, and locking means arranged to be unlocked by the movement of a plurality only of the plungers.

5. In a vending apparatus, a perforate coin chute, a plurality of plungers in alinement with perforations of the chute, means for interlocking the plungers arranged to be unlocked by coins in the chute and a movable part arranged to be projected by movement of the plungers.

6. In a vending apparatus a perforate coin chute, a plurality of plungers in alinement with perforations of the chute, means for interlocking the plungers arranged to be unlocked by coins in the chute, a movable part arranged to be projected by movement of the plungers, a goods selecting element, and a goods ejecting element operable when the movable part is projected.

7. In a vending apparatus, a coin chute provided with perforations, a plurality of plungers arranged in alinement with the perforations, a movable support on which the plungers are movably disposed, means for moving the movable support and a projectible member normally locked arranged to be operated by movement of the plungers.

8. In a vending apparatus, a coin chute provided with perforations, a plurality of plungers arranged in alinement with the perforations, a movable support on which the plungers are movably disposed, means for moving the movable support, a projectible member normally locked arranged to be operated by movement of the plungers, and means for interlocking the plungers to cause movement of some of the plungers when another plunger is moved.

9. In a vending apparatus, a coin chute provided with perforations, a plurality of plungers arranged in alinement with the perforations, a movable support on which the plungers are movably disposed, means for moving the movable support, a projectible member normally locked arranged to be operated by movement of the plungers, a goods selecting element, and a goods ejecting element operable when the projectible member is unlocked and operated.

10. In a vending apparatus, a coin chute provided with perforations, a movable support disposed adjacent the chute, a plurality of plungers movable with relation to the frame, means for limiting the movement of the plungers with relation to the support, means for moving the support, a pawl pivoted to one plunger, levers pivoted to the other plungers and arranged to co-operate with the pawl, and a latch arranged to co-operate with the pawl.

11. In a vending apparatus, a coin chute provided with perforations, a movable support disposed adjacent the chute, a plurality of plungers movable with relation to the frame, means for limiting the movement of the plungers with relation to the support, means for moving the support, a pawl pivoted to one plunger, levers pivoted to the other plungers and arranged to co-operate with the pawl, a latch arranged to co-operate with the pawl, and means for limiting the movement of the support.

12. In a vending apparatus, a coin chute provided with perforations, a movable support disposed adjacent the chute, a plurality of plungers movable with relation to the frame, means for limiting the movement of the plungers with relation to the support, means for moving the support, a pawl pivoted to one plunger, levers pivoted to the other plungers and arranged to co-operate with the pawl, a latch arranged to co-operate with the pawl, and means for returning the movable support to normal position.

13. In a vending apparatus, a coin chute provided with perforations, a movable support disposed adjacent the chute, a plurality of plungers movable with relation to the frame, means for limiting the movement of the plungers with relation to the support, means for moving the support, a pawl pivoted to one plunger, levers pivoted to the other plungers and arranged to co-operate with the pawl, a latch arranged to co-operate with the pawl, and means for returning the latch to normal locked position.

14. In a vending apparatus, a coin chute provided with perforations, a movable support disposed adjacent the chute, a plurality of plungers movable with relation to the frame, means for limiting the movement of the plungers with relation to the support, means for moving the support, a pawl pivoted to one plunger, levers pivoted to the other plungers and arranged to co-operate with the pawl, a latch arranged to co-operate with the pawl, a goods selecting element and a goods ejecting element operable when the latch is operated.

Signed at New York in the county of New York and State of New York this 3rd day of June, A. D. 1925.

GARNET P. GRANT.