

Sept. 1, 1931.

A. H. DU GRENIER

1,821,501

VENDING MACHINE

Filed July 13, 1929

4 Sheets-Sheet 1

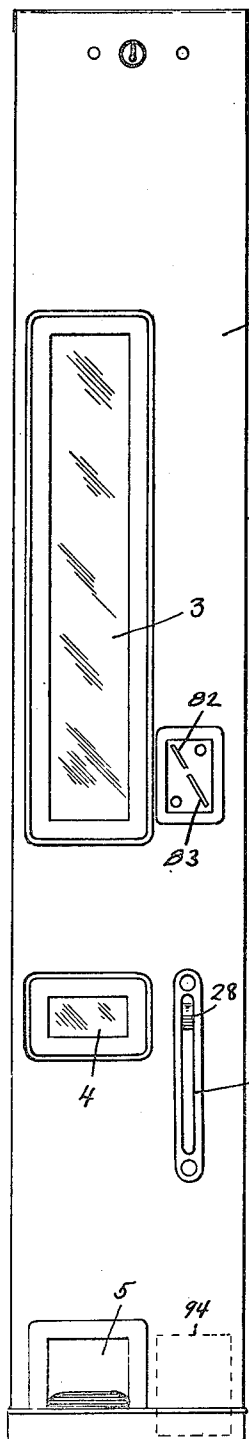


Fig. 1.

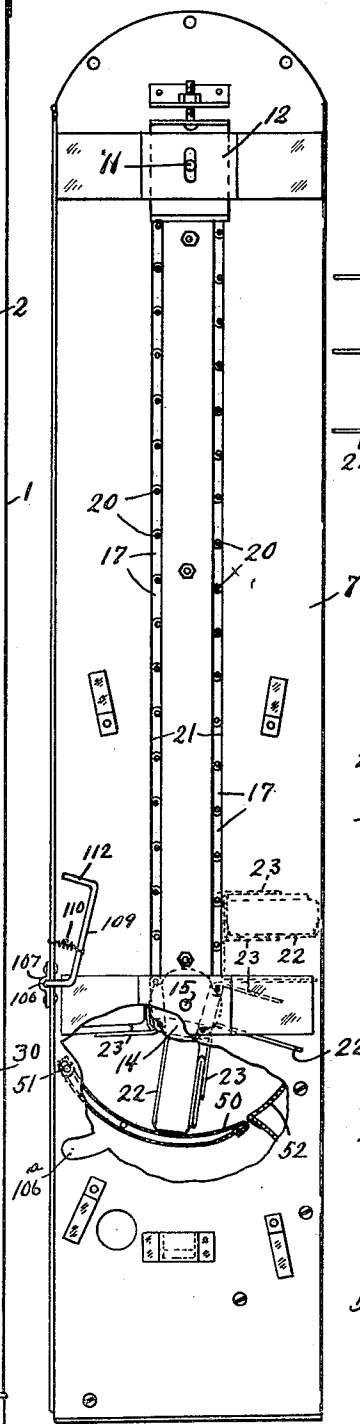


Fig. 2.

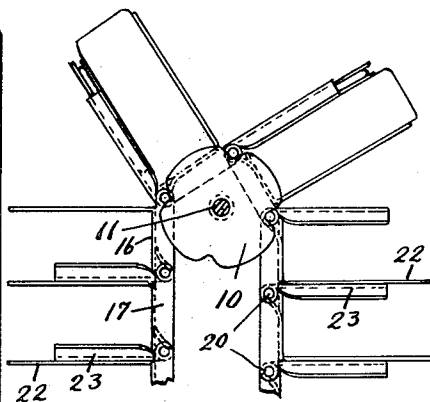


Fig. 3.

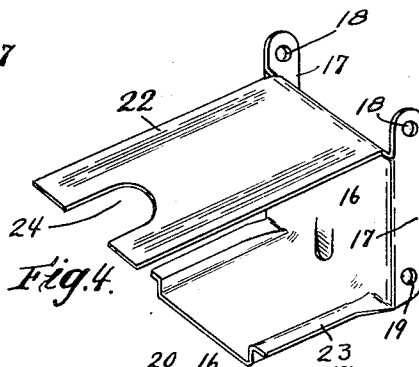


Fig. 4.

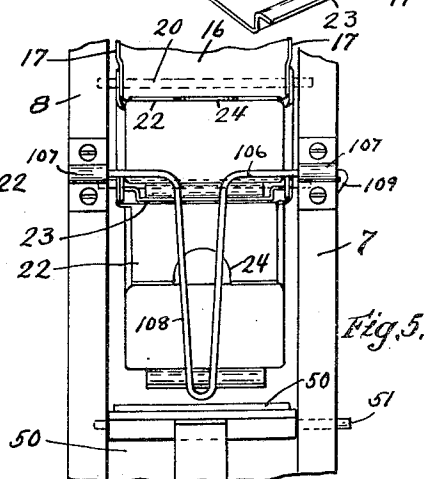


Fig. 5.

Inventor,
Arthur H. Du Grenier
by L. H. Hamman
Att'y.

Sept. 1, 1931.

A. H. DU GRENIER

1,821,501

VENDING MACHINE

Filed July 13, 1929

4 Sheets-Sheet 2

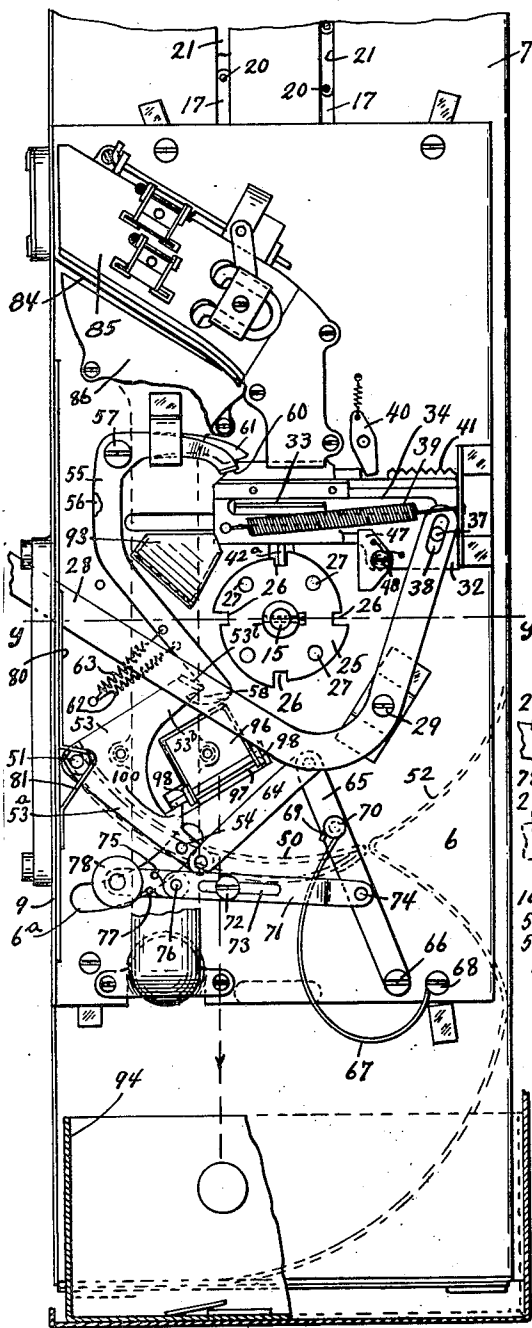


Fig. 6.

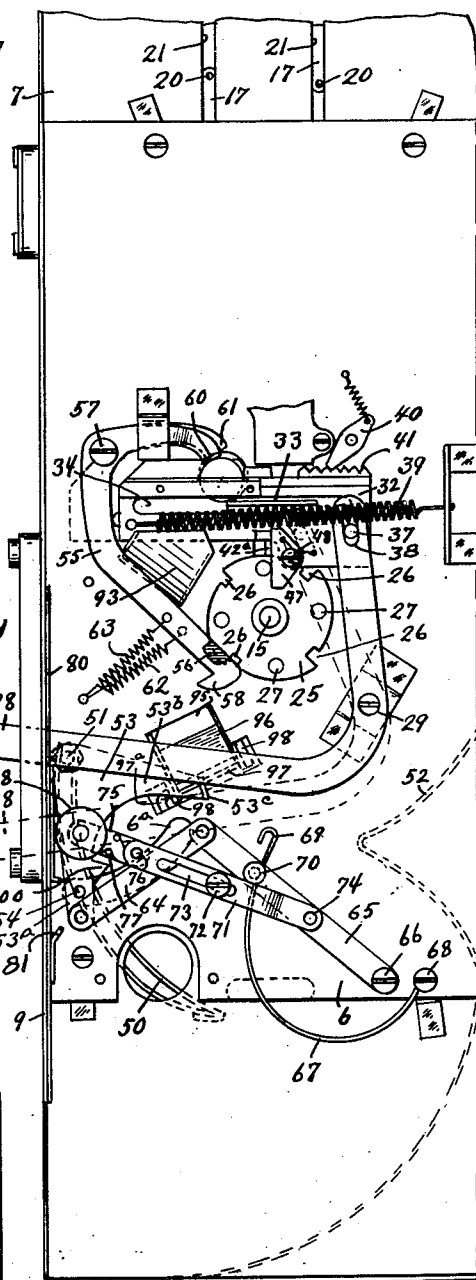


Fig. 7.

Inventor:
Arthur H. DuFrane,
by L. S. Harrison
att'y.

Sept. 1, 1931.

A. H. DU GRENIER

1,821,501

VENDING MACHINE

Filed July 13, 1929

4 Sheets-Sheet 3

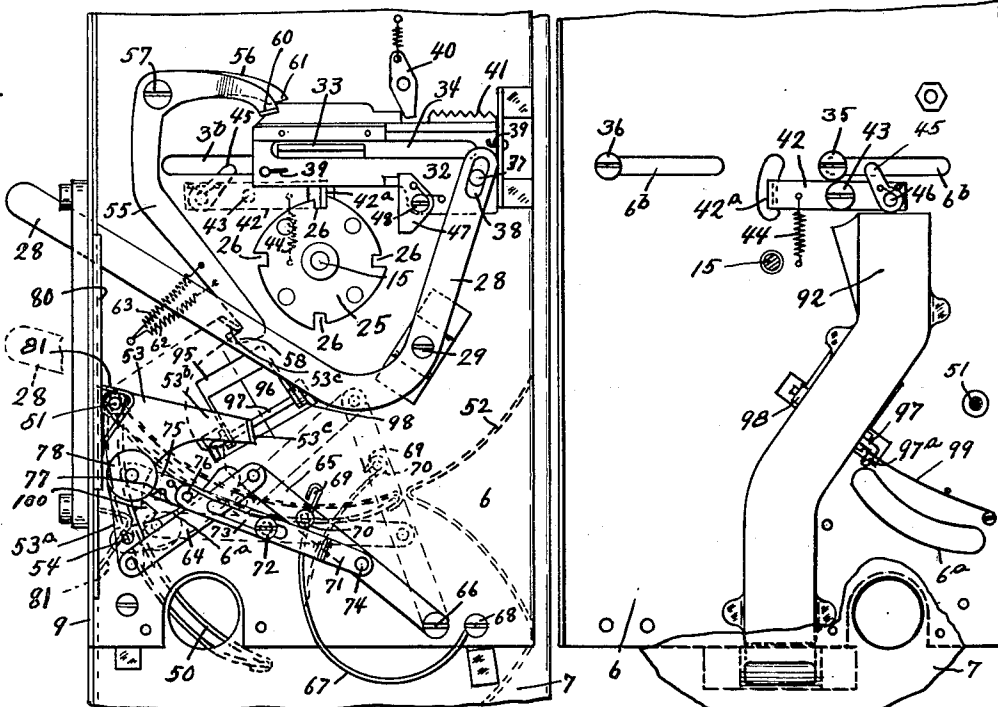


Fig. 8.

Fig. 9.

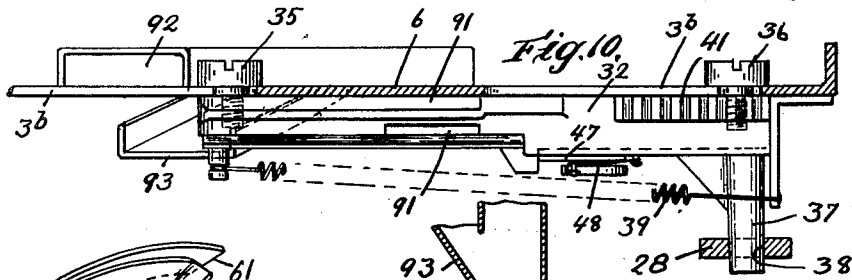


Fig. 10.

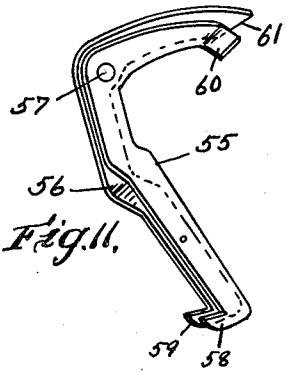


Fig. 11.

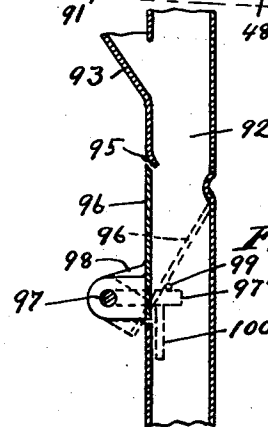


Fig. 12.

Inventor.
Arthur H. Du Grenier
by L. Hamman
Atty.

Sept. 1, 1931.

A. H. DU GRENIER

1,821,501

VENDING MACHINE

Filed July 13, 1929 4 Sheets-Sheet 4

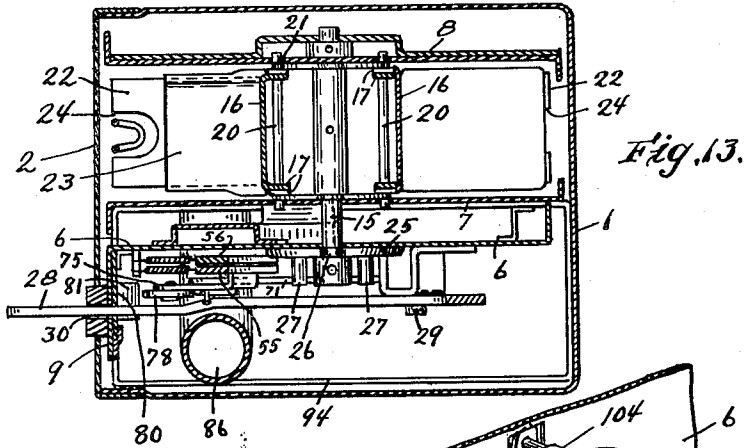


Fig. 13.

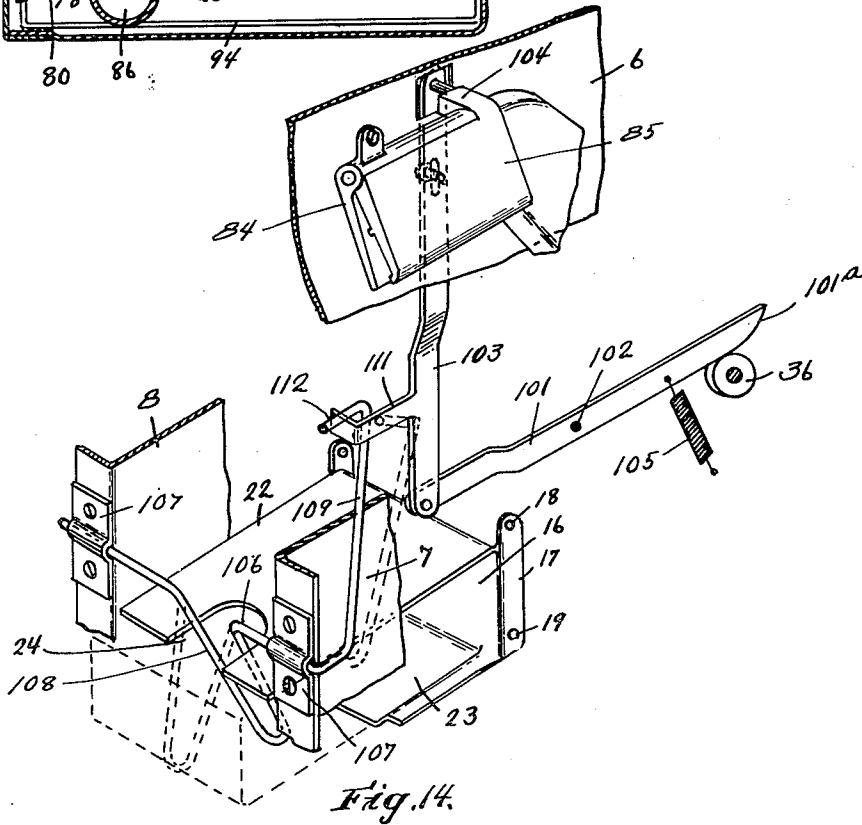


Fig. 14.

Inventor.
Arthur H. Du Grenier
by L. H. Hemmiman
Atty

UNITED STATES PATENT OFFICE

ARTHUR H. DU GRENIER, OF HAVERHILL, MASSACHUSETTS

VENDING MACHINE

Application filed July 13, 1929. Serial No. 377,946.

This invention primarily relates to coin-controlled vending machines of the type adapted to contain different articles, or different brands of similar articles and which permit a customer to select therefrom the particular article which he desires and to secure the delivery thereof, upon the insertion of a coin or coins.

In machines of this character which are designed to permit the customer to select a particular package from a number of different packages, it is often desirable to permit the customer to inspect the particular package which he wishes to secure before it is actually delivered.

Machines of the type which have separate compartments for articles of like character, in which the articles are arranged in columns or stacks and from any one of which a desired article may be secured, on the insertion of one or more coins, are objectionable on account of the space which they occupy on a floor or counter, and for this reason a machine having a single vertical compartment for holding the articles in a single column is usually more desirable than one having a plurality of compartments arranged side by side for holding the articles in a series of columns, even though the height of the single column compartment is much greater than those of the multiple column machine, as space in a store is usually more valuable horizontally than vertically.

The objects of the invention are to provide a machine of the above described character which is adapted to contain a large number of separate articles in a single vertically disposed compartment or column, and from which any one of the articles may be selected and secured after insertion of the necessary coin, or coins.

Also to provide a machine the operation of which may be readily understood from simple instructions, and which requires the operation of a single handle to select the desired articles and to secure its delivery, and will deliver the identical article which was selected.

Also to provide a machine which cannot

be pilfered without breaking open the outer casing and which is of comparatively simple construction and unlikely to get out of order and which is adapted to be manufactured at a reasonable expense.

I accomplish these and other objects of my invention by providing a coin-controlled vending machine which comprises an endless carrying member provided with a series of package holders, each of which is adapted to contain a package to be vended, an actuating handle adapted to drive the carrying member step by step in one direction only, so that, on each actuation of the handle, each package holder is moved a predetermined distance and is eventually brought, first into a position for inspection, and, by the next actuation of the handle, into a position for delivery, said mechanism being associated with coin-controlled mechanism designed to receive the coin when a package holder is in the position for inspection, and to cause the contents thereof to be delivered when the holder is moved into position for delivery, the delivery means which is employed comprising a door which is arranged at the lower portion of the path of the carrier and normally prevents delivery of the package from each holder when moved into delivery position and which, when released, upon the insertion of the predetermined coin or coins, is moved to permit such delivery.

Fig. 1 is a front elevation of the outer casing.

Fig. 2 is a side elevation of the package carrier compartment which is employed.

Fig. 3 is a detail view of a portion of the carrier on an enlarged scale.

Fig. 4 is a detail view in perspective of one of the package holding compartments.

Fig. 5 is detail front view of a portion of the carrier compartment.

Figs. 6, 7 and 8 are side elevations of the coin controlled mechanism showing the parts in different positions.

Fig. 9 is an elevation of the inner side of the partition carrying said mechanism.

Fig. 10 is a detail plan view of the coin actuator.

Fig. 11 is a detail view of the delivery door locking levers.

Fig. 12 is a detail sectional view of one of the coin passages.

Fig. 13 is a sectional view at line $y-y$ of Fig. 6.

Fig. 14 is a detail view in perspective of a portion of the coin returning mechanism.

As shown in the drawings, the outer casing 1 is provided with a removable front side 2 having an elongated window 3, an inspection window 4, and a delivery opening 5. The operating means of the coin controlling mechanism of the machine is principally mounted on a partition 6, which is secured to spacing brackets on the outer side of a carrier compartment having side walls 7, 8, between which the package holding and delivering mechanism is mounted.

The machine illustrated is primarily designed for the sale of articles in package form, in the present instance, cigarettes in the original package, and a form of carrier which will hold the maximum number of packages in a space of but slightly greater width than the space occupied by the package to be vended, is considered to be a vertically disposed endless chain carrier of the type shown, which comprises a top sprocket wheel 10 mounted on a shaft 11, journaled in vertically adjustable bearing plates 12, secured on the walls 7, 8 of the carrier compartment, and a bottom sprocket 14 mounted on a shaft 15, which is journaled in said walls vertically beneath the shaft 11. Both shafts 11 and 15, are disposed transversely of the casing midway between the front and back sides thereof. The endless chain, forming the carrier for holding the articles or packages to be vended, is made up from a series of package holders, one of which illustrated in detail in Fig. 4, which are connected by pivot rods 20. Each package holder is formed from a single piece of sheet metal bent to provide a base portion 16, from the ends of which a pair of ears 17 extend at right angles, said ears having pivot holes 18, 19 at each end adapted to receive the pivot rods 20, the ears of adjacent holders being overlapped and the rods 20 passing through the holes 18, 19 thereof, and being extended beyond the sides of the ears into guiding slots 21 formed in partition 7 and 8. Each package holder further comprises a pair of top and bottom shelves 22 and 23 which extend in parallel relation to each other from opposite portions of the base 16, between and in opposite relation to ears 17. When assembled the outer side of the shelf 22 of one holder is held in as close proximity as possible with the outer side of the shelf 23 of the next adjacent holder, except when they swing into radial positions in passing about the sprockets, as shown in Fig. 2. The shelves 23 are recessed to receive a card

of matches at one side of the package and are somewhat shorter than the shelves 22, which are provided with end notches 24 for a purpose to be explained.

The sprockets 10 and 14 are each provided with four notches in their peripheries arranged 90° apart and adapted to receive the projecting end portions of the pivot rods 20, so that, when any one of the holders is directly beneath the lower sprocket 14, so that it depends perpendicularly, the two adjacent holders will project approximately horizontally in opposite directions, as shown in Fig. 2, in which position the holder which projects at the front side of the machine, at the level of the axis of the wheel 14, will have its open end directly opposite the inspection opening 4, so that the end of a package contained by said holder will be clearly visible thru the glass which closes said opening. Also, a relatively long section of the carrier will be visible through the window 3, so that a prospective purchaser may observe the different brands of packages which are contained by the holders.

Means are provided for actuating the carrier progressively by the distance between each holder, which comprise an actuating wheel 25, on the end of shaft 15, which projects through partition 6, having four notches 26 in its periphery spaced 90° apart and four projecting lugs 27 on one side correspondingly spaced. The main operating lever 28 of the machines is of bell crank form and is mounted on a pivot bolt 29 secured in a bracket on the partition 6, so that the lever swings in a plane parallel to that in which wheel 25 rotates, and is movable up and down in a vertical slot 30 in the front wall of the casing thru which said lever extends and also through a similar slot in a right angularly bent portion 9 at the front edge of partition 6, so that it may be conveniently operated from the front of the machine.

A coin-carrier, or actuator 32 is mounted to slide horizontally forwardly and rearwardly on the outer side of partition 6, being partly guided in its movement by screws 35, 36 which extend through horizontal slots 36 in partition 6, and by a horizontal coin supporting shelf 33, on partition 6, which projects into a slot 34 in said actuator. A cylindrical lug 37 on the actuator extends into a slot 38 in lever 28, so that, when the handle at the outer end of the latter is depressed, the actuator will be moved forwardly. A spring 39 is connected to the actuator and acts to return these parts when they have been moved to front position and a pawl 40 is mounted on partition 6 and is arranged to engage teeth 41 on the actuator and to prevent return movement of the latter before it has been moved to its forward position, so that lever 28 will always have

to be pushed down to its limit before it can return. A locking dog 42 is mounted on a pivot 43 at the inner side of partition 6 and is provided with an angular end portion 42^a, which extends through the partition into position to engage wheel 25 in any one of its notches 26, a spring 44 being attached to said dog to hold it in engaging position, as shown in Figs. 6 and 9. A finger 45 is pivoted at 46 to the opposite end of said dog from its end portion 42^a and is held in position to be engaged by the head of screw 35, which acts as a cylindrical projection on the actuator 32, so that, as the latter is moved forward, the dog 42 will be lifted out of engagement with wheel 25 permitting the latter to rotate. A dog 47 is pivoted at 48 on the actuator 32 and held in position to engage one of the lugs 27 on wheel 25, as the dog 42 becomes disengaged therefrom, so that, during the remainder of the forward movement of the actuator, the wheel will be rotated one quarter of a revolution, causing corresponding movement of the sprocket 14, and the carrier chain, and thus moving a holder or compartment of the carrier from the inspection position opposite the window 4 to the delivery position in which the compartment is positioned nearly vertically with its open end lowermost.

As soon as the wheel 25 has been rotated forwardly far enough to carry its notch 26 beyond the end of dog 42, the screw head 35 will pass over the finger 45, so that the end portion 42^a will be engaged with the periphery of wheel 25, and, at the end of the forward movement of actuator 32, will pass into the next notch 26 and again lock the wheel 25, and consequently the carrier, against movement in either direction, this locking action occurring before the pawl 40 permits the return movement of the actuator and operating lever. On the return movement of the actuator and lever, the finger 45 yields to permit the head 35 to pass thereover and the dog 47 also yields to permit the same to pass over the next lug 27 on the wheel 25, the parts thus being returned to the normal position of Fig. 6.

The mechanism for preventing or permitting delivery of the package from each compartment when it is moved into the delivery position, above referred to, comprises a door 50, which is pivotally mounted at 51 in the sides 7, 8 of the carrier compartment, said door being of a width slightly less than the distance between said sides and extending from its pivot at a point in front of the lower sprocket wheel and close to the path of movement of the package holders, downwardly and rearwardly beneath said wheel, when in closed position, the inner or top side of the door being curved to correspond to said path, so that the ends of the shelves 22 of the holders pass in close proximity to the surface of the door and the door completely closes the delivery passage from the carrier, or the space from the front wall to a bottom partition 52, which extends downwardly and forwardly close to the path of movement of the ends of shelves 22, to form a practically continuous surface with the top side of the door, and then extends obliquely rearward and downward to the back side of the casing and then forwardly and downwardly to the bottom of the delivery opening 5, to form a delivery chute for the package, as shown in dotted outline in Figs. 6 and 7. The door, when in closed position, supports the packages as they are carried beneath the lower sprocket wheel and prevents all possibility of access from the outside to the contents of the carrier, and, when the door is in the open position, down to which it swings, when unlocked, as shown in Fig. 7, the package in the compartment directly beneath the lower sprocket will be free to fall onto the chute portion of the bottom 52, so that it will slide into a position in which it may be readily secured by the purchaser.

The means for locking the door 50 in closed position and for releasing it, to permit it to open, comprises a bell crank lever 53, which is mounted on the pivot 51, of door 50 to swing therewith, one arm 53^a of said lever being engaged by a pin 54, which extends thru a slot 6^a in partition 6, so that the door 50 and lever 53 swing together. The other arm 53^b of lever 53 has a right angularly projection 53^c which is arranged to be engaged, when the door is in closed position, by a pair of locking levers 55, 56, shown in detail in Fig. 11, which are mounted side by side to swing about a pivot 57 fixed in partition 6. Said levers 55, 56 each have a depending arm and a rearwardly extending arm, and each depending arm is provided with a shoulder or hook 58, 59 at its end arranged to engage the projection 53^c of lever 53 and hold the door 50 in closed position, as shown in Figs. 6 and 8. The rearwardly extending arm of said levers have coin engaging faces 60, 61 respectively at their ends, for purposes to be explained. Springs 62, 63 are connected to said levers 55, 56 and tend to swing their depending arms into engagement with the projection 53^c. The arm 53^a is connected by a link 64 to one end of a lever 65, mounted at its opposite end on a pivot 66 and a bow-spring 67 is mounted on a pivot 68 at one end and has a hook 69 at its opposite end arranged for engagement with a pin 70 on lever 65. A lever 71 is mounted on a pivot 72, which extends thru a slot 73 in said lever 71, so that the latter may both swing and slide longitudinally on said pivot 72, and one end of lever

71 is connected by pivot 74 to an intermediate portion of lever 65. A dog 75 is mounted on the opposite end portion of lever 71 and connected thereto by pivot 76, a stop pin 77 in lever 71 limiting the downward swinging movement thereof. A friction roll 78 is mounted in the end of dog 75, and by its gravity, assisted by a spring, holds the dog 75 against the stop pin 77.

A plate 80 is mounted to slide vertically on the inner side of the flange 9 of partition 6, directly in the rear of the lever slot therein and the operating lever 28 extends there-thru, so that the plate 80 slides up and down as the lever is operated and acts to close the slot in flange 9 in all positions of said levers. A projection 81 is mounted on the inner side of plate 80 and has inclined top and bottom sides arranged to be engaged with the friction roll 78 on lever 71. When the door 50 is in open position, the lever 53 being unlocked, the parts will be in the position of Fig. 7, in which position lever 71 will be pushed forward and swung upward at its front end, so that, if lever 28 is depressed while the door 50 is open, projection 81 will engage roll 78, causing lever 71 to be swung downward and pushed rearward, so that lever 65, acting thru link 64, will swing lever 53 and move the door 50 to closed position. If levers 55, 56 are in locking position, the projection 53^c will push said levers aside and then projection 81 will pass roll 78, or become disengaged therefrom, so that, when released, spring 67 will cause lever 53 to swing back and be caught by levers 55, 56 and the parts will be locked in the position of Fig. 6. If, however, the levers 55, 56 should be held out of locking position, in the manner to be explained, then the lever 53 would again swing down so as to permit the door 50 to open. If the parts are in the locked position of Fig. 6 and the operating lever 28 is depressed, the following action will take place. As the slide 80 is forced downward, the front end of lever 71 will be momentarily depressed, causing lever 65 to be thrown rearward and the arm 53^b of lever 53 to be thrown forward so as to move its projection 53^c back out of engagement with the shoulders 58, 59 of levers 55, 56, so that if the latter are, at that instant, thrown rearward out of locking position, as soon as the projection 81 passes out of engagement with the roll 78, releasing lever 71, the spring 67, acting on lever 65 and aided by the gravity of the door 50, and other parts, will cause lever 53 to swing rearward to the position of Fig. 7 and out of a position in which it will be locked by levers 55, 56, when they are returned to normal position. On the up movement of plate 80 the pawl 75 is merely lifted to permit projection 81 to pass.

With the above described construction, if, when lever 28 is depressed, the locking

levers 55, 56 are moved to permit the door 50 to open, as will be hereafter more particularly described, the door will be opened on the downward movement of the lever and will remain open during the return movement, so that, after a package has been delivered, and the lever 28 has been returned to its initial position, the door will remain open, and the parts will be held in the full line position of Fig. 8. When the lever 28 is again depressed, the door will be closed again during the initial portion of the movement of the lever, during which the parts will be moved to the dotted line positions of Fig. 8.

It will be apparent therefore, that when the lever 28 is depressed, if the door is open, it will immediately be closed and if it was closed at the beginning of the depressing movement, it will either immediately be opened again, or will be locked in closed position, or remain so during the latter part of said movement, according to whether the locking levers 55 and 56 have both been moved to unlocked position, or have been held, one or both, in locking position. After operating lever 28 has been operated once while the locking levers are in locking position, continued operation of the operating lever, without moving both locking levers to unlocking position, merely causes the carrier to be propelled by the distance corresponding to space occupied by each compartment, or package holder, this usually being done to bring the desired package into position for delivery.

While the particular means for testing the coins inserted as to their physical characteristics constitute no part of the invention claimed herein, brief reference thereto is necessary.

A projection on the flange 9 of partition 6 extends through the front wall 2 and is provided with a dime slot 82 and a nickle slot 83 arranged one above the other opening to coin passages similarly arranged in a fixed, inclined coin testing member 84 and a swinging coin testing member 85, mounted on partition 6, said members being provided with suitable means for testing the coins as to thickness, diameter and magnetism, so that, if the diameter of the check inserted is not up to standard, it will immediately fall from the coin passage into a coin returning tube 86, which opens to the package delivery passage 5, when it may be retrieved, or if it is over size either in thickness, or diameter, or is magnetic, or has a hole in it, it will lodge between said members and will be returned when the lever 28 is depressed, as will be explained. The coin passages between the members 84, 85 open to separate passages which extend downward and open to coin receiving recesses 90, 91 arranged side by side in the actuator 32, see Fig. 10,

into which the dime and nickle, if up to standard, will fall and be supported on shelf 33. Ordinarily the coins will be inserted when the actuator is in its initial, or retracted position of Figs. 6 and 8, but, in any event they will fall therein when the actuator is returned to this position. The rear ends of said recesses serve as abutments for engaging the coins and forcing them forwardly on shelf 33, as the actuator is advanced, so that when the latter is advanced, the top edges of the dime and nickle carried thereby will be forced, respectively, against the faces 60 and 61 of levers 55, 56, which are normally held in the paths of the coins, causing said faces to be forced upward and said levers to be swung to an inoperative position by the time the coins are forced past said faces, so that the lever 53 may move to its unlocked position and the opening of the door 50 will be permitted as before described.

As soon as the point of greatest diameter of the coins has been moved past the faces 60, 61, or from the shelf 33, they will be carried beyond the end of said shelf and, by the time the actuator has been moved to its extreme front position, the coins will fall from the shelf into the entrance of a coin passage 92, formed on the inner or back side of partition 6, which opens through said partition into a hopper formed by a plate 93 on the front side of said partition. The coin passage 92 extends downward and opens into the delivery passage 5, so that, if for any reason both locking levers 55, 56 are not moved by the coins sufficiently to unlock the door 50, to permit it to open and permit delivery of the package, the coin or coins which have been inserted will be returned to the purchaser. For example, if one coin only is inserted, only one locking lever will be moved, so that the coin which was inserted will be returned.

The space between the partition 6 and the outer casing 1 may, for convenience, be considered as a coin passage, in the bottom of which is a coin receptacle 94, so that any coin which is delivered into this space will fall into said receptacle. For the purpose of causing the coins, which act to move the locking levers so as to permit the door 50 to open and deliver a package, to pass into said space and fall into the coin receiver 94, an opening 95 is formed thru partition 6 into the coin passage 92, and a deflector 96 is mounted on pivot rod 97, supported on lugs 98 on the outer side of partition 6, said deflector consisting of a flat plate adapted and arranged to close the opening 95 when in the full line position of Fig. 12 and to be swung across the passage 92, so that its top edge engages the inner opposite side of said passage, as shown in the dotted line position of Fig. 12, in which position a coin

delivered to the top of said passage will fall onto the deflector and be directed thru the opening 95 into the space between the partition 6 and outer casing, so that it will fall into the coin receiver 94. The pivot rod 97 is bent to provide an arm 97^a at one end, which extends thru partition 6 and is engaged by a spring 99, on the inner side of the partition, as shown in Fig. 9, said spring acting to press the arm 97^a downward and to swing the deflector into the dotted line position of Fig. 12. The arm 53^a of lever 53 is provided with a projection 100, so arranged that when said lever is swung upward, to close the door 50, it will engage the under side of the arm 97^a and swing the deflector into the position to close the opening 95, so that, so long as the door 50 is closed, the deflector will be held by lever 53 in position to permit all coins delivered to the hopper 93, to pass down the passage 92 into the delivery passage, so that they will be returned, but, as soon as the lever 53 is moved to open the door, it will become disengaged from arm 97^a, permitting spring 99 to move the deflector from its coin-rejecting to its coin-receiving position, the timing of these parts with relation to that of the coin actuator 32 being such that if the lever 53 is unlocked at all, it will be unlocked and moved to permit the deflector to move into coin receiving position before the coins fall from the shelf 33. The machine is thus normally set to return the coins and can only be set to retain them when the package is delivered.

The means whereby the coins or checks which are inserted are returned when they are not permitted to pass to the coin actuator, or when the compartment which will next be moved into delivering position is empty, is illustrated in Fig. 14. This means comprises a lever 101, which is mounted on a pivot 102 on the inner side of partition 6 and is pivotally connected at its front end to a bar 103, which is engaged with an inwardly extending arm 104 on the swinging coin testing member 85. The rear end of lever 101 is normally drawn downward by a spring 105, and has an inclined face 101^a arranged to be engaged by the rear screw head or projection 36 on the actuator 32, so that when the latter is advanced, the bar 103 will immediately be pulled down, causing member 85 to be swung away from member 84, so that any coins which have become lodged therebetween will fall into tube 86 and be returned, and member 85 will be held in this position by the actuator until the latter has been returned to its normal, or retracted position, so that, if a coin should be inserted while the operating lever is partly depressed, the coin will immediately be returned. A rod 106 is pivoted in bearings 107 on the front edges of the sides 7, 130

8 and is provided with a finger 108, which is arranged to be engaged with the outer end of the package in each compartment, as such compartment is moved into position for inspection thru the opening 4. An arm 109 is also extended from rod 106 and a spring 110 is connected thereto in position to swing the finger 108 into engagement with the package, as shown in Fig. 5, or into the notch 24 in the shelf 22 of the compartment which is in the position for inspection opposite opening 4. The bar 103 has a forwardly projecting arm 111 which is extended right angularly at its end in position to be engaged by a right angularly extending end portion 112, so arranged that, when the finger 108 swings from its normal dotted line position of Fig. 14 into the notch 24, the end portion 112 will pass over the end portion of arm 111, and prevent the bar 103 from being lifted, so as to prevent member 85 from returning to normal position. Consequently, if the compartment above the one which is in position for inspection is empty, when the carrier is actuated, so that the empty compartment is moved into position for inspection, the member 85, which will have been swung upward by the actuating movement, will not be permitted to return to normal, and, if a coin is then inserted, it will immediately be returned thru tube 86.

With the above described construction, the single operating lever 28 is oscillated to move the carrier to a position in which the desired package therein will be delivered on the next operation of the lever, after the necessary coins have been inserted, so that both the selecting and delivering operations are controlled by a single operating device, which is merely oscillated to perform both operations. In all instances the coins or checks inserted will be returned if the package is not delivered and will only be retained in the machine when the package is delivered. Also, the delivery of the package is secured only when coins of the required denomination and number are inserted.

The package selected is held close to a window in the front side of the machine, in which position one of its sides may be easily inspected so that the purchaser may be sure that the package thus exhibited is the one desired, and then, when the machine is operated, the compartment in which the package is held is moved from a horizontal to a vertical position, so that the package may readily fall therefrom. The door which normally supports the packages, as they are carried about the bottom sprocket swings away from the carrier, so that the package is free to fall from the compartment in which it was held, into the delivery passage, and the door remains open until the next time the operating lever is pushed down,

so that, if the package, for any reason, should fail to fall from the compartment, the purchaser may readily reach it and remove it through the delivery opening. At the same time, it is, however, impossible to remove the packages from either of the two adjacent compartments, which will be held in horizontal positions with their open ends closed by the adjacent casings.

The door is held in locked position by a plurality of locking devices corresponding to the number of coins which are to be inserted, each of which engage the same door holding means and each of which must be moved to an inoperative position before the door is opened.

I claim:

1. In a vending machine an endless carrier having a series of compartments opening at their outer ends, and movable in a vertical plane successively to carry each compartment into a delivery position in which its open end is directed downward, to permit an article therein to pass therefrom by its gravity, a door movable between a closed position in which it will support the article in each compartment when in said delivery position and an open position in which delivery thereof is permitted, locking means for holding said door in closed position and controlling means for said locking means operable to permit said door to be opened.

2. In a vending machine an endless carrier having a series of compartments opening at their outer ends, and movable in a vertical plane successively to carry each compartment into a delivery position in which its open end is directed downward, to permit an article therein to pass therefrom by its gravity, a door having one side thereof formed to correspond to the path of movement of the outer ends of the sides of said compartments when adjacent or in said delivering position, and pivotally mounted to swing upwardly to bring said side into approximate coincidence with said portion of said path, to support the articles in the compartments as they are moved into, and while in delivery position, and to swing downwardly to permit delivery thereof, a locking device for normally holding said door in raised position and controlling means for moving said device to an inoperative position.

3. In a vending machine a carrier comprising an endless chain, a pair of wheels arranged one above the other about which said chain travels in a vertical plane, a series of shelves extending from said chain at its outer side providing a series of open compartments arranged to permit delivery at their outer ends, an operating device movable to and from an operating position to drive said carrier in one direction and move

each compartment into the position occupied by the next compartment in advance thereof on each movement of said device to said position and so arranged, that at the end of each driving movement, one of said compartments is held in a delivering position in which it opens directly downward beneath the lower most of said wheels, a door movable between a position in which it closes the open end of each compartment when in delivering position and a position in which it permits the delivery of an article therefrom, means for normally holding said door in closed position, and controlling means arranged for temporary connection with said operating device, to permit actuation thereof by said device as it is moved to operating position to permit said door to be opened.

4. In a vending machine, an endless carrier having a series of regularly spaced article receiving compartments, and operating means for driving it intermittently in one direction, a casing enclosing said carrier having an inspection opening and a delivery passage arranged to permit inspection of an article in one compartment when the next compartment in advance thereof is in position to deliver an article to said passage, means normally preventing delivery of the article to said passage and controlling means arranged to permit the delivery of an article to said passage from a compartment held in position for inspection when it is moved into position for delivery.

5. In a vending machine, an endless carrier having a series of regularly spaced, outwardly opening article-receiving compartments, an operating device movable to and from an operating position to actuate said carrier intermittently in one direction and move each compartment into the position of the next compartment in advance thereof on each of its operative movements, a casing for said carrier having an opening arranged to permit inspection of the article in one compartment and a delivery passage arranged to receive the article from the next compartment in advance thereof, means normally preventing delivery from each compartment when moved into said position for delivery, and normally inoperative means arranged for temporary connection with said operating device, to permit actuation thereof by said device when moved operatively, thereby to permit delivery from the compartment held in position for inspection when moved into the position for delivery.

6. In a vending machine, an endless carrier having a series of regularly spaced, outwardly opening article-receiving compartments, an operating device movable to and from an operating position to actuate said carrier intermittently in one direction

and move each compartment into the position of the next compartment in advance thereof on each of its operative movements, a casing for said carrier having an opening arranged to permit inspection of the article in one compartment and a delivery passage arranged to receive the article from the next compartment in advance thereof, a door for closing said delivery passage, means for normally holding said door in closed position when said operating device is moved to its operating position, and means for opening said door to permit delivery from a compartment held in position for inspection as it is moved into the position for delivery.

7. In a vending machine an endless carrier arranged to be driven circularly in a vertical plane and having a series of regularly spaced, radially disposed shelves providing outwardly opening article-receiving compartments arranged to permit delivery radially thereof, an operating device movable to and from an operating position to move the carrier in one direction by the distance between said shelves, a casing enclosing said carrier having an inspection opening and a delivery passage so arranged that the outer end of one compartment will be opposite said opening in position for inspection and the next compartment in advance will be in a depending position to permit the article therein to pass therefrom into said delivery passage by its gravity, a door normally held in position to close the outer end of each compartment when in said depending position and controlling means for releasing said door to permit delivery to said passage from a compartment held in position for inspection as it is moved into position for delivery.

8. In a vending machine an endless carrier comprising a series of pivotally connected links each having an article receiving compartment thereon open at its outer end, means for moving said carrier in a vertical plane including a wheel about which the carrier is moved at the lowest point in its travel, said wheel being so arranged with relation to said carrier that when one compartment is in a position in which it extends directly downward beneath the wheel the next adjacent compartments extend approximately horizontally in opposite directions, a casing enclosing said carrier having an inspection opening with which each compartment is held in register when moved into one of said horizontally extending positions and a delivery passage opening to each compartment when moved into said downwardly extending position, operating means for moving said carrier to bring each compartment into register with said opening and means normally preventing the delivery of an article to said passage when a compartment is moved into said downwardly extend-

ing position and having controlling means permitting the delivery thereof.

9. In a vending machine, a casing having a vertically extending chamber and having an inspection opening in its front side and a delivery passage extending from the bottom portion of said chamber, a pair of carrier wheels in the upper and lower portions respectively of said chamber, an endless chain carrier mounted on said wheels having a series of regularly spaced article supporting shelves extending outwardly therefrom and arranged to deliver articles thereon into said passage when in a depending position directly beneath the lower carrier wheel and to support an article on one shelf in position for inspection through said opening when another shelf is in position to deliver to said passage, an operating device arranged to drive said carrier intermittently and to move the shelf which is in position for inspection to the position for delivery on each operative movement thereof, a door normally closed to prevent delivery to said passage and movable to an open position to permit such delivery, and controlling means for permitting said door to open during the operative movement of said operating device.

10. In a vending machine, an endless carrier having a regularly spaced series of article receiving compartments, an oscillatory operating device operatively movable from an initial to an advanced position to drive the carrier, and, by successive operations, to move each compartment successively into a delivering position, a door having means including a locking device for holding it in closed position, to prevent delivery of an article from each compartment when moved into delivering position, normally inoperative controlling means for said locking device arranged to be actuated to permit said door to move to an open position and permit such delivery during the movement of said operating device to its advanced position and to remain in open position during the return movement of said operating device and means arranged to be actuated by said operating device on the next operative movement thereof to move said door to closed position during the initial portion of said movement and to lock it in such position when said controlling means is not actuated to permit it to open.

11. In a vending machine, an endless carrier having article receiving compartments successively movable into a delivery position to permit the discharge of an article therefrom, a door movable between closed position in which it prevents the discharge of the article from a compartment when in said delivery position and an open position in which it permits the discharge therefrom, an operating device operatively movable to advance said carrier intermittently and

bring said compartments into delivery position successively, means arranged to be actuated by said operating device to move said door into closed position during an initial portion of the operative movement thereof to actuate said carrier, locking means normally actuated to lock said door when it is moved to closed position and controlling means for holding said locking means in position to permit the door to open again during a latter portion of said operative movement.

12. In a vending machine, an endless carrier having a series of regularly spaced compartments, an operating device operatively movable from an initial to an advanced position to actuate said carrier in one direction and by successive operations to move each compartment into a delivery position successively, means to hold said carrier against retraction on the return movement of said device to initial position, a door movable between a closed position in which it prevents delivery from each compartment when in delivery position and an open position in which it permits delivery therefrom, means arranged to be actuated by said operating device during an initial portion of its operative movement, to move said door to closed position, locking means automatically operative to lock said door when moved into closed position and normally inoperative controlling means arranged for temporary connection with said operating device during the latter portion of its operative movement, to permit actuation thereof to move said locking device to an inoperative position, thereby to permit said door to open.

13. In a vending machine, a carrier having a series of article-holding compartments, an operating device for moving said carrier to a series of predetermined positions in all of which one of said compartments will be held in a delivery position, dispensing means normally preventing delivery of an article from each compartment when moved to said delivery position, and means for temporarily establishing an operative connection between said dispensing means and said operating device, to permit said device when operated to actuate the carrier, to operate said dispensing means to deliver the article.

14. In a vending machine, an endless carrier having a series of article-holding compartments, an operating device movable to and from an operating position to advance said carrier to a series of predetermined positions in all of which one of said compartments will be held in a delivery position, dispensing means normally preventing delivery of an article from each compartment when moved to said delivery position, and means for temporarily establishing an operative connection between said dispensing means and said operating device, to per-

mit said device, when operated to actuate the carrier, to operate said dispensing means to deliver the article.

15. In a vending machine of the character described, a carrier having a series of article receiving compartments, an operating device arranged to move said carrier to bring any one of said compartments into a position for delivery of the article therein and dispensing means normally acting to prevent delivery of an article in all positions of the carrier and having means for temporarily establishing operative connection between the same and said operating device, to permit said device when operated to operate said dispensing means to deliver an article.

16. In a vending machine of the selective type, a carrier having a series of article receiving compartments, an operating device, arranged on each operative movement thereof to move said carrier progressively to bring each compartment successively into a position for inspection and on the next operation to bring such compartment into a position for delivery, dispensing means normally acting to prevent delivery of the article from each compartment when moved into delivery position and normally free from operative connection with said operating device, and means for temporarily establishing an operative connection between said dispensing means and said operating device, to permit said device during the next operative movement thereof to operate said dispensing means to deliver the article.

In testimony whereof, I have signed my name to this specification.

ARTHUR H. DU GRENIER.

40

45

50

55

60

65