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C. R. HOLCOMB, JR

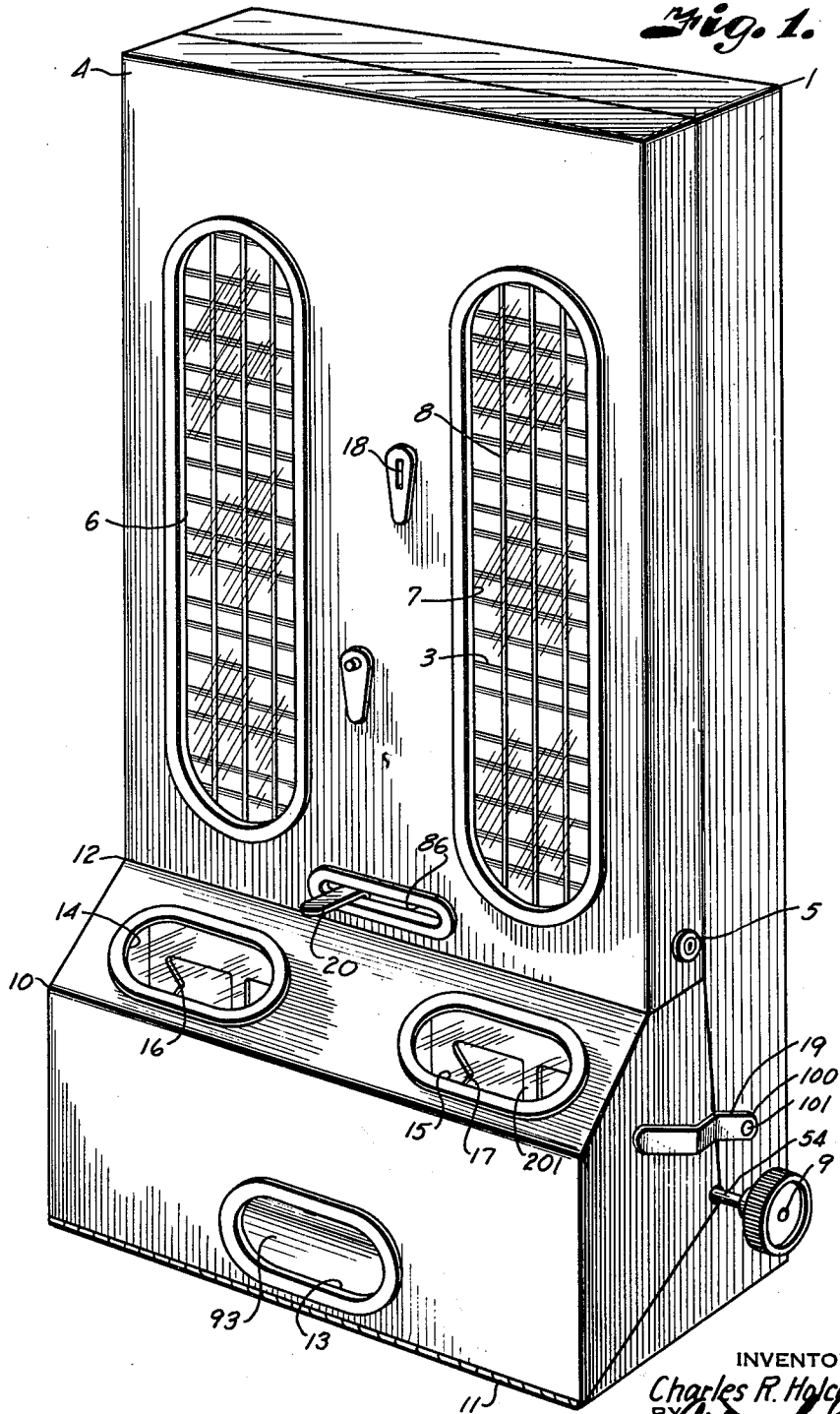
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VENDING MACHINE

Filed Oct. 13, 1938

5 Sheets-Sheet 1

Fig. 1.



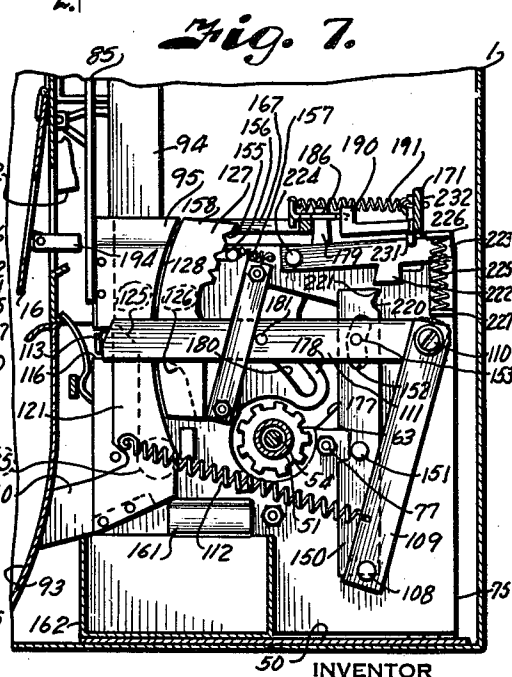
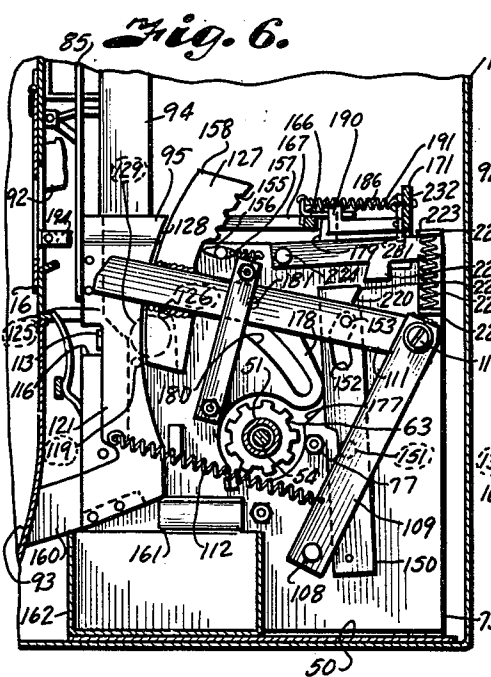
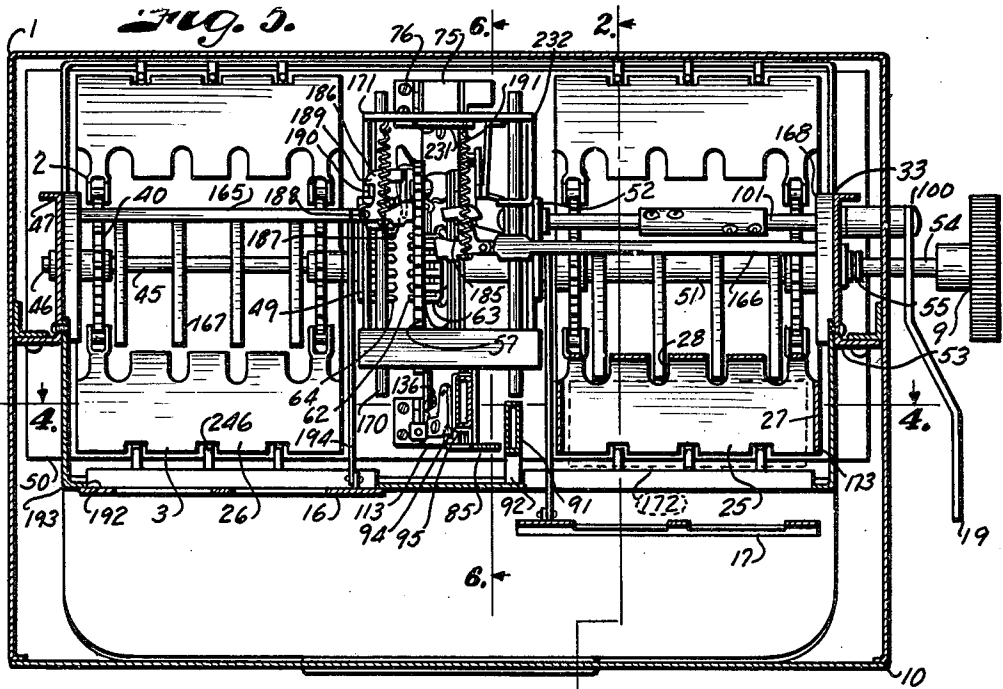
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VENDING MACHINE

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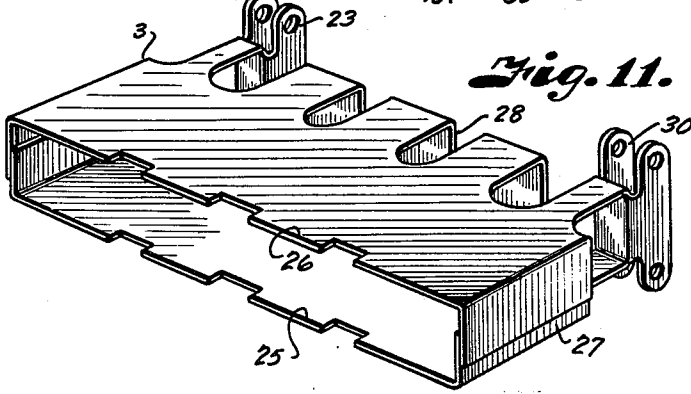
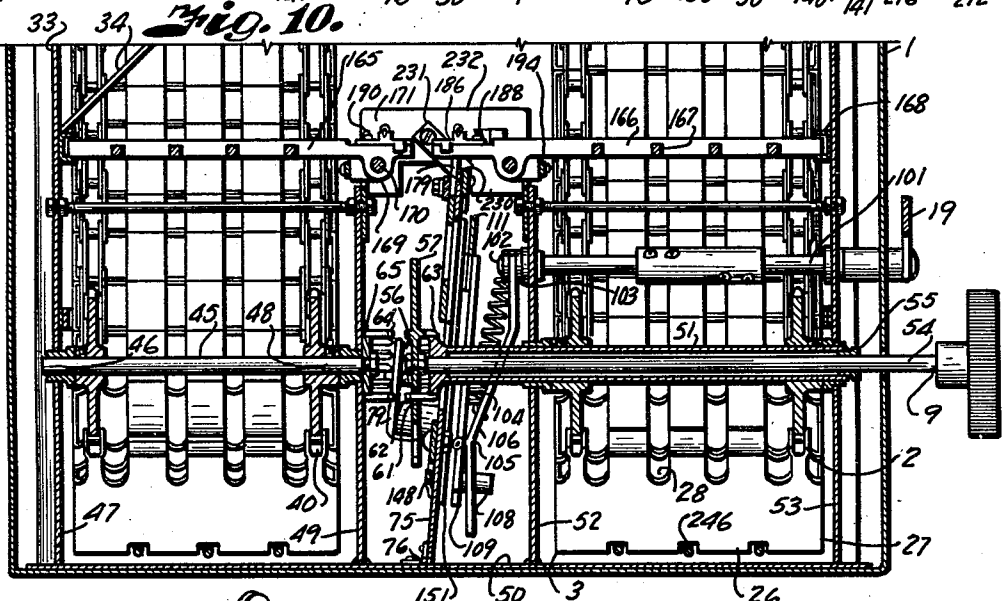
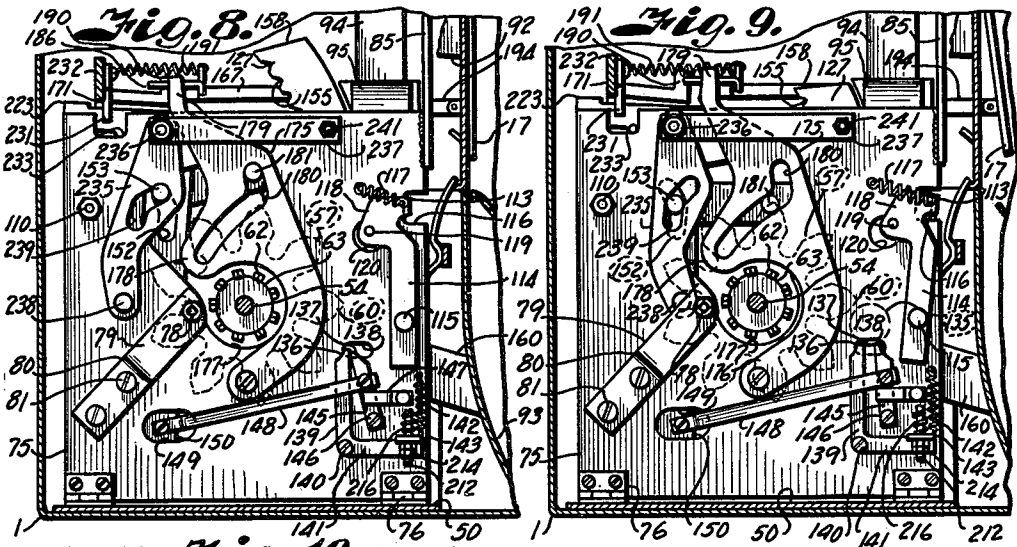


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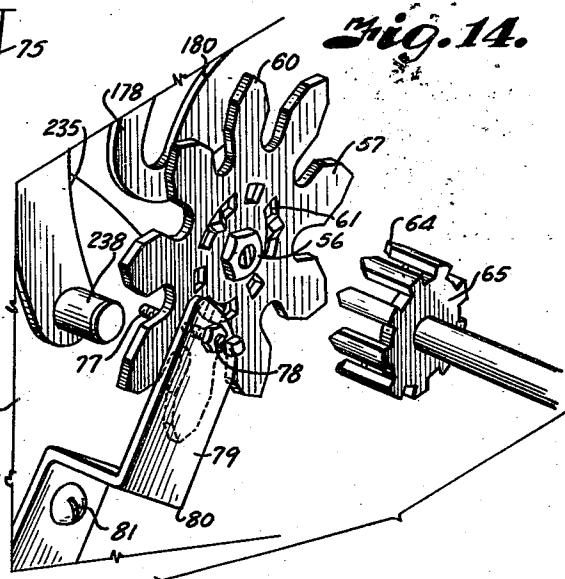
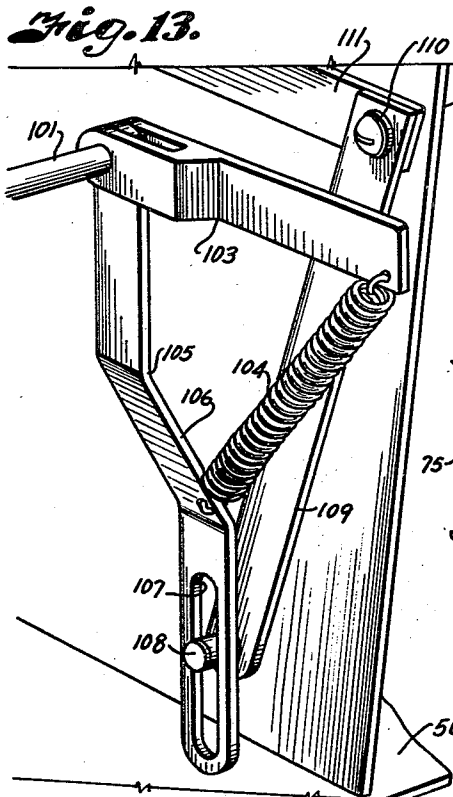
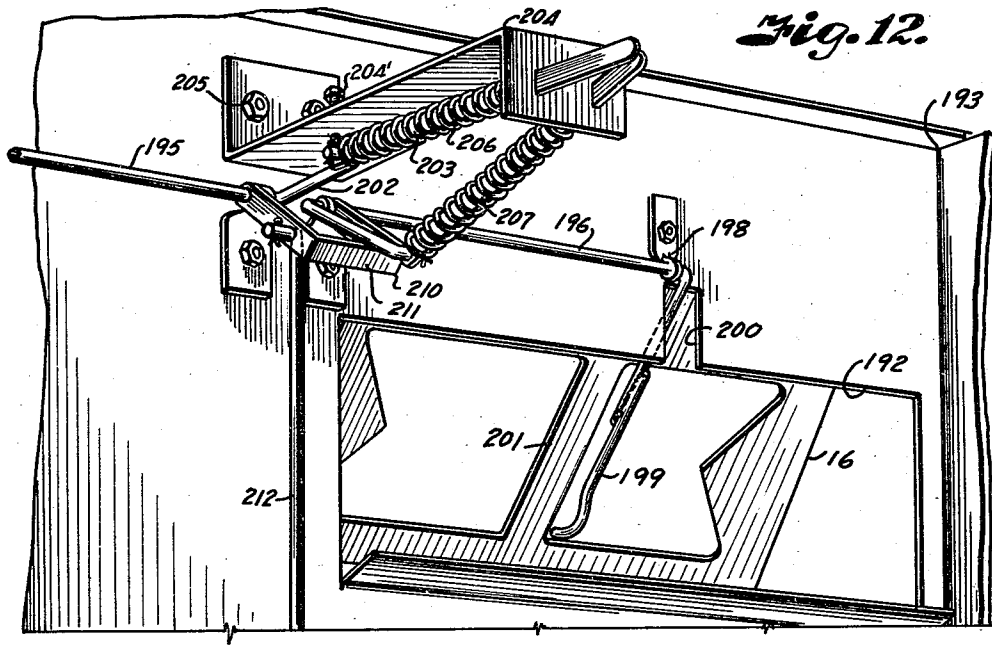
VENDING MACHINE

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5 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

2,285,435

VENDING MACHINE

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Application October 13, 1938, Serial No. 234,767

12 Claims. (Cl. 312-97)

This invention relates to vending machines and more particularly to coin controlled dispensing machines for marketing merchandise such as candy bars, peanuts and similar edible commodities, cigarettes, chewing gum and other packaged articles.

The principal object of the present invention is to provide a coin controlled machine in which a number of different kinds and/or brands of merchandise may be displayed for sale and in which any selected article may be readily brought to dispensing position in the machine by the purchaser.

Other objects of the invention are to provide a machine in which the articles to be vended are carried on a plurality of endless conveyors having an individual pocket for each article; to provide for aligning any selected pocket with the delivery opening of the machine; to provide for locking the particular conveyor from which the article is to be vended during the delivery of the article and for the return of said conveyor and locking mechanism to normal operating condition; to provide for selectively connecting the delivery mechanism of the machine with either of the conveyors; and to provide for ejecting the desired article from the selected pocket of the selected conveyor when brought into delivery position.

Further objects of the invention are to provide for effecting the collection of a genuine coin by delivery of the merchandise, and for the automatic return of the coin when no merchandise is delivered; to provide for automatically maintaining all of the delivery mechanism in locked condition until released by a proper coin; to provide guides for retaining the merchandise in the respective pockets and for preventing damage to the articles or their wrappings; and to provide a lock for the delivery mechanism when in neutral position between the conveyors.

Further objects of the invention are the provision of means for preventing reverse movement of the delivery mechanism after the delivery has started thereby assuring full actuation of the machine; and to provide a shock absorber between the operating lever and the delivery mechanism whereby shocks on the lever do not damage the machine.

Still further objects of the invention are to provide an improved coin controlled machine which is durable, attractive, versatile, efficient and of large capacity yet economical to manufacture, and to provide improved parts and arrangements of parts in the structure of a machine of this character.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

Fig. 1 is a perspective view of a vending machine embodying my invention.

Fig. 2 is a vertical section through one of the conveyors on the line 2-2, Fig. 5.

5 Fig. 3 is a vertical section through the lower portion of the machine similar to Fig. 2, with the exception that the parts are shown in article ejecting position.

10 Fig. 4 is a vertical section on the line 4-4, Fig. 5.

Fig. 5 is a horizontal section through the machine on the line 5-5, Fig. 2.

15 Fig. 6 is a vertical section on the line 6-6, Fig. 5, showing the coin control levers in elevation.

Fig. 7 is a view similar to Fig. 6, the respective parts being moved to start delivery of the merchandise.

20 Fig. 8 is a vertical section showing the side of the coin control lever mechanism opposite that shown in Fig. 6.

Fig. 9 is a view similar to Fig. 8, the levers being moved to correspond to the position of the levers shown in Fig. 7.

25 Fig. 10 is a vertical section through the lower part of the machine taken on the line 10-10, Fig. 2.

Fig. 11 is a detail perspective view of one of the merchandise pockets of the conveyors.

30 Fig. 12 is a detail perspective view of the trip operated by delivery of an article for effecting collection of the coin.

35 Fig. 13 is a detail perspective view of the shock absorber between the operating lever and the delivery mechanism.

Fig. 14 is a detail perspective view of the centering gear wheel showing its relation to the conveyor clutch members and centering wheel lock.

40 Referring more in detail to the drawings:

The invention, in its general aspects, is best illustrated in Fig. 1, wherein it is shown embodied in a housing 1 of suitable conformation, material and finish, which housing is adapted to encase a plurality of endless conveyors preferably of the character indicated at 2, Fig. 2, the endless conveyors preferably being formed of a series of pockets 3, Fig. 11. By so arranging a plurality of the conveyors in the housing, it is apparent that the capacity of the vending machine is increased to an extent, for example when two conveyors are employed as is preferable in the present instance, approximately four times the height of the housing.

55 It is contemplated that the pockets 3 be of varying sizes to accommodate articles of merchandise, such as candy bars, of different length, width and thickness, to the end that a great variety of merchandise may be vended from the machine.

60 The machine is entirely selective and provision is made for selection of merchandise by provid-

ing a cover 4 for suitable engagement with the housing and adapted to be locked thereto by a suitable locking device 5 for cooperating with the housing in enclosing the merchandise filled conveyors. The cover 4 has elongated merchandise viewing panels 6 and 7 for the purpose of permitting a buyer to determine what types of merchandise the machine contains. A suitable grill 8 is mounted behind each panel for the purpose of preventing the panels from becoming soiled, should the candy bars, for example, become soft and tend to smear the panels when they are moved in back of the panels by the conveyors. The grills 8 also tend to prevent the wrappings of the merchandise from becoming damaged during travel, and also prevent theft of articles from the machine, should the panels be broken.

A conveyor actuating mechanism 9 is provided as a part of the machine for turning the conveyors, and an auxiliary cover 10 is provided for covering the conveyor actuating mechanism, as well as completing enclosure of the inner operative parts of the machine, the auxiliary cover 10 preferably being hinged, as at 11, to the housing 1 and being suitably engageable, as indicated at 12, with the cover 4 whereby the casing for the machine, comprising the housing 1, cover 4, and auxiliary cover 10, securely houses the machine and prevents unauthorized entrance thereto.

A dispensing outlet or delivery opening 13 is provided, preferably in the lower forward portion of the auxiliary cover 10, and observation panels 14 and 15 are provided at the upper portion thereof for permitting a customer to determine what brand or type of commodity is in dispensing position in the machine. The dispensing position of articles to be sold is directly in back of each of the doors 16 and 17, which may be viewed through the panels 14 and 15.

This vending machine is coin controlled and a suitable coin slot 18 is therefore provided for feeding the machine to make it operate in response to actuation of an operating lever 19.

It is further intended that only one article is to be vended upon acceptance by the machine of a single genuine coin and, for this reason, provision is made for shifting the dispensing mechanism into operative position relative to one merchandise containing pocket in one conveyor, this positioning of the vending mechanism being carried out by manipulation of the shifting lever 20.

Each article of merchandise is preferably contained in a single pocket 3, Fig. 11, and the pockets 3 are preferably stamped and shaped from a one-piece blank in such a manner as to provide a bottom wall 25, a top wall 26, and end walls 27. The front of the pocket is open to provide for filling the pocket and ejecting an article therefrom, and the rear of the pocket is provided with spaced openings 28 to provide for the passage of article ejecting members, later described. Preferably formed integrally with each of the pockets are spaced pairs of ears 29 and 30 having aligned apertures therethrough for receiving suitable fastening devices as indicated, for example, at 31 and 32 in Fig. 2, for interconnecting a plurality of the pockets to build up each of the endless conveyors 2.

In order to mount the endless conveyors 2 in the housing, the conveyors are each mounted on a framework 33, Fig. 2, adapted to be slid bodily into the housing for enclosure by the same, the framework 33 also supporting and forming a

mounting for the various parts of the vending mechanisms embodying the present invention. The framework 33 comprises suitable uprights interiorly braced relative to each other preferably by a diagonally disposed brace member 34, a laterally disposed brace member 35, diagonally disposed brace members 36, and a horizontally disposed crown member 37. The crown member 37 has mounted thereon a suitable bracket forming a bearing support for the inner end of spaced horizontally aligned shafts 38. A pair of spaced sprockets or the like 39 is rotatably mounted on the shafts 38, the sprockets being provided on their peripheries with configurations adapted to receive the adjacent portions of the ears of the conveyors formed by the merchandise containing pockets in such a manner as to prevent slippage of the conveyors when moved thereover.

The sprockets 39 on the upper shafts 38 provide an upper run for the endless conveyor, the lower run of each of which is defined by similarly arranged sprockets 40, Fig. 2, spaced apart a distance equal to the distance between the pairs of ears on the container pockets forming the links for the conveyors.

While the sprockets 40 are themselves substantially similar, and while they are mounted in spaced horizontal alignment adjacent the lower end of the framework 33, Figs. 5 and 10, the arrangement for so mounting them is different from the arrangement for mounting the upper sprockets. The left hand pair of lower sprockets, when the vending machine is arranged as shown in Fig. 1, is mounted on a horizontal shaft 45, Figs. 5 and 10, one end 46 of which is rotatably mounted in upright 47 and the other end 48 of which is rotatably mounted in a vertically disposed supporting partition 49 welded or otherwise secured to the bottom 50 of the framework 33.

The lower right hand pair of conveyor receiving sprockets is mounted on a tube 51 which is rotatably mounted in suitable bearings in a vertically disposed supporting partition 52, substantially similar to the partition 49, and in a suitable bearing in the upright 53 opposite the upright 47.

In order to turn the right hand conveyor, as in Fig. 10, a shaft 54 is extended through the tube 51 and is rotatably mounted in the outer end of the tube, as by a gland 55. The inner end of the shaft 54 projects beyond the tube 51, the shaft 54 having fixed thereto as by lock nuts 56, a centering gear wheel 57, particularly illustrated in Fig. 14. The centering gear wheel has radially extending fingers 60 and an annular series of openings 61 for alternately receiving the pointed ends on the teeth 62 of a clutch member 63 preferably formed integrally with the tube 51, as shown in Fig. 10, and the pointed ends of teeth 64 on an oppositely disposed clutch member 65 suitably fixed, as shown in Fig. 14, to the inner end of the shaft 45 supporting the lower left hand pair of aligned sprockets.

The shaft 54 is extended outwardly and to the right, Fig. 10, beyond the housing 1 and terminates in the suitable knob or handle 9 forming the exterior conveyor actuating mechanism.

When, therefore, the machine is in the condition illustrated in Fig. 10, it will be apparent that the centering gear wheel 57 is shifted to the right in such a manner that its openings 61 receive the pointed ends of the tube clutch member 63, and that therefore, rotation of the conveyor ac-

tuating member 9 not only rotates the shaft 54, but through the centering gear wheel 57 and tube clutch member 63, the lower right hand conveyor sprockets are rotated to move said right hand conveyor.

Engagement of such sprockets with the conveyor pockets moves those pockets in the direction of rotation of the actuating member 9, and the articles of merchandise viewed through the panel 7 are moved in such a manner that a customer may position the desired article in back of the door 17 below the panel 15, which is in dispensing position for that particular article.

It may happen, however, that the article the customer desires to purchase is in a pocket in the left hand conveyor. In order, therefore, for the article to be positioned in dispensing position behind the door 16 below the panel 14, an arrangement is provided, of which the shifting lever 20 forms a part, for shifting the conveyor actuating mechanism into engagement with the left hand conveyor for acting on that conveyor independently of the right hand conveyor.

This arrangement is shown in Figs. 4, 5, 8, 9, 10, and a part thereof in Fig. 14, and comprises a substantially vertically arranged supporting partition 75 disposed between the partitions 49 and 52, the lower end thereof being suitably hinged, as at 76, to the bottom member 50 of the framework. A set screw 77, Figs. 6, 7 and 14, is extended through the partition 75 at a point therein in alignment with a solid annular portion on the centering gear wheel 57 in such a manner that movement of the partition 75 to the left, as in Fig. 10, effects engagement between the set screw and the centering wheel to shift the centering wheel to the left out of engagement with the clutch member 63 on the tube 51 and effects engagement of the pointed teeth on the clutch member 65 on the shaft 45 of the left hand conveyor with the openings 61 in the centering gear wheel. Movement of the partition 75 to the right, as in Fig. 10, returns the centering gear wheel 57 to the position shown in Fig. 10 by means of engagement with the centering wheel of a set screw 78 oppositely disposed in relation to the set screw 77 and mounted in the upper offset end 79 of an arm 80 fixed to the partition 75 by suitable fastening devices 81, the offset end of the arm 80 admitting of free rotation of the centering wheel 57 between said arm and one side of the hinged supporting partition 75.

The shifting lever 20 for effecting this movement of the hinged partition 75 and consequent shifting of the conveyor actuating member 9 into engagement with the desired conveyor consists of a rod or bar 85, Fig. 5, suitably fixed preferably to the upper forward corner of the partition 75, the bar 85 extending upwardly behind the cover 4 and between the conveyors to a point in the framework interiorly of the housing above the doors 16 and 17 where said bar is turned laterally outwardly for extension through a suitable slot or the like 86, Fig. 1, to terminate in the shifting lever handle 20.

With the construction thus far described, it is apparent that a customer approaching the machine may view a series of articles to be vended and choose a single article in either conveyor and place the chosen article in position to be dispensed by manipulation of the conveyor actuating member 9 and the conveyor actuating member shifting lever 20.

In order to dispense the article or eject the

chosen article from dispensing position, it is necessary to drop a genuine coin of proper denomination in the slot 18 in the cover 4 of the machine. A conventional coin selector or spurious coin detector 90, Fig. 4, is mounted within the cover 4 immediately in back of the coin slot 18. This coin selector 90 automatically determines whether or not the coin presented to it is of a type required to purchase a single article contained in the machine and, if the coin presented is spurious or of improper denomination, that coin is dropped into the chute 91, Fig. 4, through which it travels to an outlet 92 from whence it is dropped into the trough 93 at the front of the machine adjacent the delivery opening 13 in such a manner that the person presenting the spurious coin may have it returned to him.

If, however, the coin presented is genuine and of proper denomination for which the machine is designed, the selector 90 drops such coin into the chute 94 through which it is delivered to a receiving channel 95, Figs. 6 to 9, substantially at the upper forward corner of the hinged supporting partition 75.

In order to compensate for hinging the partition 75 and still admit a genuine coin to the receiving channel 95 in either of the shifted positions of the partition, the chute 91 is preferably fixed in position by suitable connection with the framework and a bracket 96, Fig. 4, is preferably fixed to the chute 91 and the upper end of the chute 94 is suitably pivotally mounted as indicated at 97, to the bracket 96, the lower end of the chute 94 being in engagement with the receiving channel 95 on the hinged partition. Shifting of the partition 75 is therefore possible without disconnecting the chute 94 from communication therewith.

The proper coin having been presented to the receiving channel 95 and the desired article having been selected and placed in dispensing position, it is then only necessary to actuate the coin controlled dispensing mechanism lever 19 to dispense the desired article.

The numeral 19, while designating the lever generally, may also represent a handle of suitable shape which is fixed at its inner end, as indicated at 100, Fig. 5, to a shaft 101 which has its outer end rotatably mounted in the housing 1 and right hand framework upright 53, as clearly shown in Fig. 10. The inner end of the shaft 101 is rotatably mounted in the right hand vertically disposed supporting partition 52, said end of the shaft being fixed against sliding movement in its support by suitable spacers and a head 102 on the extreme inner end thereof. Fixed to the inner end of the shaft 101 is a forked arm 103, Fig. 13, which extends rearwardly of the shaft 101 and which is normally positioned in horizontal relation to the framework. A spring 104 has one end thereof fixed to the rear end of the arm 103, the other end of the spring 104 being fixed to a lever 105 preferably on the inwardly tapering central portion 106 of the lever 105. The upper end of the lever 105 extends upwardly substantially perpendicularly relative to the shaft 101 and is pivotally mounted on said shaft between the tangs of the forked arm 103. The lower end of the lever 105 extends downwardly in substantially perpendicular relation to the shaft 101 and in inwardly spaced relation thereto relative to the partition 52, this lower portion of the lever 105 having an elongated slot 107 therein for slidably receiving a laterally extending lug 108 fixed to the lower end of a lever

arm 109. The upper end of the lever arm 109 is pivoted, as at 110, in downwardly spaced relation to the upper rear corner of the hinged partition 75, as shown in Figs. 6 and 7, and has fixed thereto a lever arm 111, which extends forwardly relative to the hinged partition 75 to a point adjacent the forward upper corner of the hinged partition 75, as also shown in Figs. 6 and 7.

Movement of the lever arm 109 is normally in opposition to a spring 112 which is suitably fixed, as particularly shown in Figs. 6 and 7, to the lower end of the arm 109 and to the hinged partition 75.

Actuation of the lever handle 19 in the intended downward direction rotates the shaft 101 in an anticlockwise direction to pivot the forked arm 103 upwardly, as shown in Fig. 13, and the slotted lever 105 substantially to the right, as shown in Fig. 13. Movement of the slotted lever 105 to the right pivots the lever arm 109 to the right to effect pivoting of the lever arm 111 in a downward direction, the arm 111 being free to move downwardly from the position shown in Fig. 6 into engagement with a stop lug 113. This stop 113 consists of a laterally turned flange on the upper end of a lever 114, Figs. 8 and 9, the lower end of which lever is pivoted, as at 115, to the forward portion of the hinged partition plate 75 on the side thereof opposite the arm 111. The stop 113 is adapted for movement, in an arc of a circle having substantially the radius of the length of the lever 114, in response to pivoting of the partition plate 75 but is normally retained in retracted position in the recess by the spring 117 which is suitably fixed to the lever 114 and to the hinged partition 75. The lever 114 has a rearwardly extending boss 118 adjacent the stop 113, which boss is provided with an inwardly extending lug 119, the rear end of which is shown in full lines, Figs. 8 and 9, and the front end of which is shown in dotted lines in Fig. 6. The lug 119 is adapted for limited movement in an opening 120 formed in the hinged partition 75, the lug 119 frictionally engaging the inner face of a plate 121 which forms a downward extension of one wall of the coin receiving channel 95, which plate 121 is suitably spaced from the adjacent side of the hinged partition 75 to provide adequate space for the passage of a coin, such as a nickel, therebetween.

Assuming that the lever handle 19 has been actuated to move the arm 111 downwardly into engagement with the stop 113, and assuming that the stop is in its normal retracted position, further downward movement of the arm 111 is prevented. It may happen that the operator of a machine is impatient or careless and an attempt might therefore be made to force the lever handle 19 further downwardly. This is permitted to a limited extent by movement of the forked arm 103 in an upward direction against tension of the spring 104, the spring 104 being of substantial strength and forming a shock absorber for protecting the machine against misuse before it is prepared for dispensing merchandise therefrom.

When, however, a coin, such as a nickel, is dropped in the coin slot 18 and is accepted by the coin selector, the coin drops to the channel 95 and is deflected laterally rearwardly by a boss 125, Fig. 6, which boss is utilized for spacing the plate 121 of the coin channel to provide space through which the coin may travel. Deflection of the coin brings it into engagement

with the inner face of a tapered boss 126 fixed to the inner side of an arcuate cam 127 mounted adjacent the forward end of the arm 111 and traveling when the arm 111 is pivoted downwardly in a path formed by the inner arcuately shaped surface 128 of the coin channel plate 121. The tapered boss 126 spaces the cam 127 from the partition 75 in such a manner that the cam 127 forms an outer wall to cover the coin and maintain it in its proper downward path.

Travel of the coin in a downward direction is also limited by the lug 119 which cooperates with the tapered boss 126 in temporarily confining the coin. The coin, however, being in the position indicated at 129 in Fig. 6, and continued pressure in a downward direction being applied to the arm 111, the tapered boss 126 engages the coin and tends to force it downwardly and the coin therefore forces the lug 119 outwardly. Outward movement of the lug 119 forces the stop 113 outwardly out of retracted position since movement of the lug causes the lever 114 to pivot outwardly against tension of the spring 117, the result of which is to remove the stop 113 from stopping engagement with the arm 111, thus permitting the arm 111 to continue its downward movement to force the coin further downwardly, the coin then dropping to the position indicated at 135 in Fig. 9. This position of the coin is maintained by lodgment of the coin on a pair of inwardly turned stop members 136 and 137.

The stop member 136 consists of an inwardly turned flange passing through an opening 138 in the partition 75, which flange is reciprocable in the opening 138 in response to pivoting of the arm 139, of which it forms a part, about the pivot point 140, such pivoting being effected by downward pressure on the arm 141 against rotation of the spring 142 which is suitably fixed to a laterally turned shelf 143 formed on the arm 141 of the stop member 136.

The stop member 137 comprises an inturned flange on a lever 145 which is pivotally mounted, as at 146, on the hinged partition 75 and which reciprocates within a guide 147 suitably fixed to the partition 75. Reciprocation of the lever 145 is effected by actuation of the arm 148, the rear end of which is offset inwardly into an opening 149 in the partition 75, said end of the arm 148 being fixed to the bar 150 on the other side of the partition, as shown in Figs. 6 and 7. The bar 150 is pivotally mounted on the partition 75 by a pin or the like 151, the upper end of the bar 150 having an arcuate slot 152 therein for receiving an inwardly extending lug 153 adjacent the rear end of the arm 111.

With this construction, it is apparent that downward movement of the lever handle 19, while moving the arm 111 downwardly, also pivots the upper end of the bar 150 rearwardly and the lower end thereof forwardly to move the arm 148 on the other side of the partition forward and also move the stop member 37 forwardly to securely retain the coin in the position illustrated in Fig. 9, assuming that the stop member 136 is in its normal rearward position in the opening 138 which is occasioned by normal action of the spring 142.

It is desirable that, once actuation of the machine has been started, such actuation should be completed before admitting of another actuation or attempted actuation of the machine. To this end, the rear face of the arcuate cam 127 is pro-

vided with a series of ratchet teeth 155 adapted to receive one end of a dog 156 pivoted to the hinged partition 75 in alignment with the ratchet teeth 155 and held in operative position relative thereto by the spring 157 secured to the dog and to the partition 75. The manner of employing this arrangement is illustrated in Fig. 7, wherein the arm 111 is shown in down position and the dog in engagement with one of the teeth of the cam 127 for preventing upward movement thereof without fully completing downward movement of the arm 111.

Upon such completion of downward movement of the cam 127, the dog rides over the top 158 of the cam 127 whereupon it is free to pivot upwardly and permit upward movement of the cam 127 on the arm 111 to repeat actuation of the arm. However, after upward movement is started the dog engages the teeth to prevent downward movement until after the lug 113 has returned to normal locking position.

It was stated earlier in this specification that one of the features of this invention is to provide for collection of the coin only upon delivery of merchandise from the machine and that the coin is returned to the operator when no merchandise is in the pocket in dispensing position relative to the delivery outlet of the machine.

When, therefore, no merchandise is in a dispensing pocket, the stop member 136 remaining in the position shown in Figs. 8 and 9 and forward movement of the arm 148 moving the stop member 137 to the position shown in Fig. 9, rearward movement thereof in response to raising of the operating lever handle 19, moves the arm 148 rearwardly and the stop 137 rearwardly to the position thereof shown in Fig. 8. Such an arrangement forms an incline for the coin and permits it to roll by gravity down the forwardly directed channel 160 and out into the dispensing outlet in the auxiliary cover 10 of the machine for return to the operator.

On the other hand, when a merchandise containing pocket is arranged in dispensing position, and the proper coin is in the position shown in Fig. 9, the stop member 136 should be in the position shown in Fig. 9 and the stop member 137 should be moved to the right, relative to Figs. 9, in oppositely disposed relation to the arrangement shown in Fig. 8 to the end that an incline may be formed to permit the coin to roll rearwardly relative to the machine and to the left relative to Fig. 9 for engagement upon the deflecting member 161, Figs. 6 and 7, for subsequent passage into the coin box 162.

This collection of the coin is accomplished by the arrangement for ejecting the merchandise from the pocket in cooperation with the dispensing doors of the machine. The article ejecting mechanism is particularly illustrated in Figs. 5 and 10, wherein 165 and 166 each designate ejecting members having forwardly directed fingers 167 projecting therefrom, which are engageable within the openings 28 of a merchandise containing pocket on either of the conveyors when that pocket is aligned with the ejecting member in front of one of the doors 16 or 17 of the machine. The outer end of each ejecting member is slidably mounted in a track 168 mounted on the inner faces of the respectively uprights 47 and 53. The inner ends of both the ejecting members are provided with a boss 169, Fig. 10, having fixed thereto in transverse relation to the ejecting members and in parallel relation to the fingers thereof, a rod 170. This rod

170 on both ejecting members is slidably guided in a bracket 171 and is adapted for reciprocation forwardly and rearwardly in said bracket when the ejecting members are reciprocated in a similar manner to force the fingers thereof forwardly to dislodge an article indicated by dotted lines 172, Fig. 5, from one of the pockets which, in this instance, may be designated 173.

In order to move the ejecting members an arrangement is provided which is particularly illustrated in Figs. 8 and 9. This arrangement consists of an actuating plate 175, which has a lower arm 176 pivoted to the hinged partition 75 below a substantially central, upwardly extending opening 177 in the hinged partition. The arm 176 of the plate curves forwardly and then rearwardly around the shaft 54 extending through the hinged partition, as shown in Fig. 10, one side of which arm terminates in a boss 178, and the other end of which arm extends upwardly to terminate in an upstanding ear 179 which is formed by extending the boss 178 upwardly to cooperate in forming the ear 179. The boss 178 and the upper portion of the arm 176 bound a slot 180 in the plate 175, said slot extending diagonally upwardly from the boss 178, then terminating in a substantially vertically disposed end. This slot 180 is adapted to receive a lug 181 on the inner face of the arm 111, which lug passes through the hinged partition 75 and through the plate 175. The normal position of the arm 111 being in up condition, as shown in Fig. 6, the lug 181 thereon is in position relative to the plate 175, as shown in Fig. 8, that is in the upper end of the slot 180. Under such conditions, the plate is in retracted rearward position, shown in Fig. 5, that is, in engagement with the left hand merchandise ejecting member 166.

Movement of the lever handle 19, therefore, in a downward direction, moves the arm 111 in a downward direction and pivots the plate 175 from the position shown in Fig. 8 to that shown in Fig. 9, the lug 181 on the arm 111 riding down the slot 180 in the plate 175 and forcing the plate 175 forwardly. The ear 179 on the plate 175 is adapted for engagement with the rear face of the inner end of each of the ejecting members 165 and 166, such engagement being shown at the point 185 in Fig. 5.

Depending upon the position of the hinged partition 75, therefore, actuation of the lever handle 19 moves one of the ejecting members 165 and 166 forwardly in the track 168 and the bracket 171 to eject an article of merchandise from out of a pocket on the conveyor aligned therewith.

In order to provide for ejecting the merchandise only in response to actuation of the lever handle 19, a lock is provided for each of the ejecting members which is actuated by the ear 179 on the plate 175 only when the plate is moved in response to actuation of the lever handle 19. These locks are duplicate in character and each of them consists of a pair of arms 186 and 187, Fig. 5, which are pivoted at their juncture 188 to the inner end of each of the ejecting members 165 and 166. The arm 186 of each of the locking members has a dog 189 extending laterally therefrom and adapted for engagement with an upstanding ear 190 on one side of the bracket 171. The arm 187 of each of the locking members extends laterally of the pivot 188 into the path of the ear 179 on the plate 175, engagement of the ear 179 pivoting the arm 187 forwardly to remove the dog 189 from engagement

with the ear 190 for permitting the ejecting members to move forwardly in response to actuation by the plate. These locking members are each normally retained in locking position by a spring 191 which tends to hold the locking members in the condition shown for the left hand ejector mechanism in Fig. 5. The spring is prevented from pivoting the locking member beyond the position shown by a downwardly extending ear on the arm 187 on the locking member which is engageable with the forward face of the ejecting member.

It will thus be seen that should an attempt be made to move the ejecting members forwardly, for example, by attempting to actuate the same without manipulation of the lever arm 19, the ejecting members will be locked against such movement.

As was above pointed out, one of the features of this machine is to collect the coin only when merchandise is delivered, thus providing a fair machine for both purchaser and vendor. This arrangement is illustrated in Figs. 4 and 12 wherein the doors 16 and 17 are illustrated, such doors being shown to be hinged over each of a pair of outlet openings 192, which openings are cut in a bracket 193 having its ends suitably fixed to the framework uprights, the bracket 193 extending forwardly of the conveyors and the remainder of the coin controlled mechanisms.

The doors are opened and closed by rods 194, Fig. 5, fixed thereto and to the ejecting members 165 and 166 respectively, i. e. in response to actuation of the lever handle 19, the doors are opened to permit an article in a pocket aligned therewith to be ejected when the ejecting members are moved forwardly, the doors again being closed when the ejecting members are moved rearwardly.

In order, therefore, to collect the coin immediately upon opening of either of the doors 16 or 17, a pair of rods 195 and 196 are provided, which rods are rotatably mounted in bearing members 197 and 198 on the bracket 193 above each of the doors. The arrangement is substantially the same for each door and the rod 195, for example, has one end 199, Fig. 2, thereof turned downwardly and adapted to be pivotally moved in response to rotation of the rod through a slot 200 in the bracket aligned with a center partition 201 in each of the panels of the doors 16 and 17. The end 199 of the rod 195 extends downwardly substantially to the bottom of the door and therefore lies in the path of an article of merchandise being ejected from a pocket in back of that particular door. The rod 195 is therefore rotated when an article of merchandise engages the end 199 thereof and pivots the same in response to pressure applied by the ejecting members. The other end 202 of the rod 195 is turned inwardly relative to the machine and has fixed to the inner end thereof a link 203 which extends through one of a pair of aligned openings in a bracket 204 fixed as at 205 to the inner face of the bracket 193. The link 203 is pivoted to the end 202 of the rod 195 and a spring 206 is mounted on the link which tends to force the end 202 downwardly when the link is off the dead center position as shown for the companion link 207 in Fig. 12. The bracket 204 has a set screw 204' threaded therethrough to adjustably engage the end of the rod 195 to prevent the mechanism from stopping on dead center.

A yoke 210 is pivotally mounted on the adja-

cent ends of the rods 195 and 196, said yoke preferably being of U-shape to provide a base 211 adapted to be engaged by the ends 202 of the rods and to be pivoted downwardly in response to the pressure exerted by the springs 206 and 207. An arm 212 is pivotally mounted, as indicated at 213, on the yoke 210 substantially at the outer end of the yoke and adjacent the base 211 thereof for providing the arm 212 with a substantial vertical reciprocation in response to pivotal movement of the yoke. The lower end of the rod 212 is illustrated in Figs. 4, 8 and 9 and is seen to be engaged with the shelf 143 on the stop member 136, as by fastening devices 214. A stop 215, Fig. 4, is mounted on the arm 212 and a spring 216 is interposed between the stop 215 and the shelf 143 for normally urging the arm 212 upwardly in such a manner that downwardly pivoted movement of the yoke in response to action thereof by the merchandise moved ends of the rods 195 moves the arm 212 downwardly against tension of the spring 216.

It is here pointed out that the spring 216 is of greater strength than the adjacent spring 142 to the end that a snap action is provided for moving the stop member 137 into coin collecting position as soon as merchandise ejected by the ejecting members pivots the downturned end 199 of the rod 195, thus causing the spring pressed end 202 of the rod 195 to engage the base of the yoke 210 for moving the arm 212 downwardly in cooperation with the spring 216.

Another feature provided for in the present invention is an arrangement for locking the vending machine when the shifting mechanism thereof is in neutral position, that is, when the upstanding ear 179 on the ejecting member actuating plate 175 is positioned between the inner ends of the ejecting members. Such a neutral position is effected when the shifting lever 20 is substantially midway its length of travel in the slot 86 in the cover 4 of the vending machine.

In accomplishing the lock for the shifting mechanism when in neutral position, the bar 150, Figs. 6 and 7, is provided at its upper end with a recess 220 terminating at the upper end thereof in a tooth 221 engageable with a cooperating tooth 222 on a lever 223 pivoted as at 224 to the hinged partition 75. The lever 223 is normally maintained in upwardly raised condition out of engagement with the bar 150 by a spring 225, one end of which bears upwardly against an ear 226 on the bar, and the other end of which bears against a flange 227 of an angle bracket, the other flange of which is fixed to the hinged partition 75. The movement of the lever 223 is limited in a downward direction by engagement of the ear 226 with the bottom of a recess formed by striking the securing flange connected with the flange 227 of the lower angle bracket outwardly from the partition 75 to provide a space therebetween for slidably receiving the outer end of the lever 223 therein.

Upward movement of the lever 223 is limited by engagement of the upper edge of said lever within the forked end 230 of a control bar 231, Fig. 10, which is pivoted at its upper end to an upstanding plate 232 suitably fixed and extending upwardly from the bracket 171 for slidably receiving the rods 170 of the ejecting members 165 and 166. The control bar 231 is normally positioned at an angle when the partition 75 is hinged in either of its ejecting member contact-

ing positions, one of which positions is shown in Figs. 5 and 10. Since the control bar in the condition illustrated contacts the lever 223 when the partition is moved to the left from its position shown in Fig. 10, the control bar, being pivoted, must travel in an arcuate path and when it reaches a vertical position relative to its angular position illustrated in Fig. 10, the lever 223 is necessarily depressed in opposition to action of the spring 225. Such depression of the lever 223 moves the tooth 222 thereon downwardly into the rearward path of travel of the bar 150 in such a manner that rearward movement of the bar 150 in response to actuation of the lever handle 19 effects engagement of the teeth 221 and 222 thereby locking the machine against further movement of the lever handle 19 until such time as the control member 231 has passed its vertical position and is pivoted upwardly to the left relative to Fig. 10 to permit the lever 223 to raise in response to action of the spring 225 thereby effecting disengagement of the teeth 221 and 222 and permitting effective actuation of the lever handle 19 in dispensing merchandise from the machine.

The upper rear edge of the hinged partition 75 is provided with a notch 233 to permit the locking bar 231 to actuate the lock 223 without becoming bound or interfering with hinging movement of the hinged partition 75.

It is desirable, when the conveyors are so positioned that a pocket thereof containing the desired article is placed in dispensing position in back of one of the door openings 16 and 17 depending upon the shifted condition of the hinged partition 75, that the conveyor and pocket thereof containing that article be maintained in stationary condition during the time the article is being ejected from the pocket. To this end, a stop plate 235 is provided as shown in Figs. 8 and 9, the upper end of which stop plate is pivoted as at 236 between one end of a bar 237 and the upper edge of the hinged partition 75 preferably to the rear of the plate 175. The lower end of the stop plate 235 has an outwardly projecting lug 238 thereon which is engageable between the adjacent pairs of teeth of the centering gear wheel 57, it being apparent that when the lug 238 is between a pair of said teeth on the gear wheel that the wheel is retained against rotation in either direction. In order to move the stop plate 235 in coordinated timing with the remainder of the vending machine, it is provided with a slot 239 for receiving the lug 153 mounted on the inner face of the arm 111, which lug extends through the hinged partition and engages the plate 235. The slot 239 is arranged in such a manner relative to the lug 153 that when the lever handle 19 is actuated to move the arm 111 downwardly the lug 153 rides down the slot 239 on the plate 235 and forces the same forwardly in between a pair of the teeth on the centering gear wheel 57.

The bar 237 on which the plate 235 is mounted also cooperates with the hinged plate 75 in providing a runway for the plate 175 and particularly the upstanding ear 179 thereof for limiting forward movement of the ear 179 by engagement thereof against the cross bar formed by the pin 241 connecting the front end of the bar 237 to the hinged plate 75.

As a protection against tearing the wrappers from articles in the machine, and further to prevent smearing of the interior of the machine, should those wrappers become disarranged on

the articles of merchandise, the grills 8 are provided which preferable comprise spaced rods 246 of substantially U-shape and following the contour of the bottom run of the conveyors, the rods 246 underlying the open ends of the conveyor pockets in such a manner as to retain articles of merchandise therein when the conveyor pockets are turned substantially downwardly as illustrated in Figs. 2 and 3. The ends of the rods 246 are suitably fixed to a bracket 247 which bracket is in turn suitably fixed to the uprights of the framework for the actuating mechanisms of the machine.

As a precaution against tampering with the machine, which might be attempted by a person with an implement extended through the delivery opening 13, a shield 248, Fig. 3, is provided which is positioned below each of the doors 16 and 17 behind the auxiliary cover 10 for the housing of the machine, the shields 248 preventing engagement of an implement with the downturned ends 199 of the coin controlling mechanism actuating rods 195 whereby the machine can be actuated only with the deposit of a genuine coin.

The operation of a vending machine constructed as described is as follows:

Assuming the machine to be assembled and in the condition illustrated in Fig. 1, a customer approaching the machine views the merchandise on display and intended for sale through the panels 6 and 7. A particular article of merchandise having been chosen, the selecting mechanism is actuated by actuation of the handle 9 to move the conveyors. If the article of merchandise is in the conveyor positioned behind the panel 6, the handle 9 is turned to position that article of merchandise in back of the door 16 below the panel 14. If, however, the article of merchandise is in the conveyor behind the panel 7, the shifting mechanism 20 is actuated and moved to the right away from its position shown in Fig. 1, whereupon the handle 9 is actuated to position the chosen article of merchandise behind the door 17 below the panel 15.

The article of merchandise having been placed in dispensing position, a coin, such as a nickel, is applied to the coin slot 18 of the machine. Should the coin be spurious the coin selector 90, Fig. 4, drops the coin into the chute 91 to a point 92 in the chute for ejection onto the delivery tray 93 in back of the delivery opening 13 so that the operator may have his coin returned to him. If, however, the coin is genuine, and of proper denomination, the selector 90 drops the coin into the chute 94 where it is delivered to the coin receiving channel 95, Fig. 6. The coin then drops to the position shown in dotted lines at 129, Fig. 6, and it is then time to move the lever handle 19 downwardly. Downward movement of the lever handle 19 rocks the shaft 101, Fig. 13, in an anticlockwise direction to rock the lever arm 109 in an anticlockwise position on its pivot 110, Fig. 13, by means of the lever 105 fixed to the shaft 110.

Prior to deposit of a coin in the coin slot, the stop member 113 prevents downward movement of the arm 111, Figs. 6 and 7, in response to actuation of the lever arm 109 and lever handle 19, continued downward movement of the lever handle being against tension of the spring 104, Fig. 13, in such a manner as to protect the machine against violent misuse.

When, however, the coin has been properly applied and is in the position illustrated in Fig. 6, downward movement of the arm 111 forces the

coin downwardly by means of the cam 127, the coin at this time engaging the lug 119 to pivot the stop 113 outwardly as illustrated in Fig. 9. The cam 127 is then permitted to force the coin downwardly to the position illustrated in Fig. 9, where it lodges upon the stop members 136 and 137.

Downward movement of the lever handle 19 and consequently the arm 111 effects forward movement of the plate 175 from the position illustrated in Fig. 8 to that illustrated in Fig. 9, this forward movement of the plate causing the upstanding ear 179 thereon to engage with one of the ejecting members 165 and 166, Fig. 10, for moving that ejecting member forwardly in such a manner that the fingers 167 thereof enter a pocket aligned therewith through the openings 28 in the rear wall of the pocket to force merchandise in the pocket forwardly out of the pocket as particularly shown in Fig. 5. In this instance, the merchandise is forced out of the pocket and it engages the downturned end of the rod 195, which is similar to the downturned end 199 of the rod 196 shown in Fig. 12, to pivot the rod 195 clockwise and permit the yoke 210 to be forced downwardly by the end 202 of the rod 195 under expanding pressure of the spring 206, the rod 212 also moving downwardly. The rod 212 is cushioned in its downward movement by the spring 216, Fig. 4, yet pivots the arms 141 and 139, Figs. 8 and 9, of the stop member 136 in a clockwise direction in such a manner that the stop member 136 is positioned to the right, Fig. 9, of the coin to permit it to drop by gravity onto the deflector 161, Fig. 6, for deposit in the coin box 162.

Should there happen to be no merchandise in the pocket aligned with the actuated ejecting member, the rod 195 will not be pivoted and as a consequence thereof, the stop member 136 will not be moved. Therefore, when the lever handle 19 is permitted to move upwardly, the arm 111 moves upwardly and the bar 150 moves to the right, as in Fig. 6, in response to engagement thereof by the lug 153 with the slot 152 in the bar 150. The arm 148 on the stop member 137 being in engagement with the bar 150, rearward movement of the bar 150 moves the stop member 137 rearwardly to underlie the coin at a position shown in Fig. 8 in such a manner that the coin is permitted to roll by gravity into the chute 160 for delivery to the delivery opening 13 of the machine.

When it is desired to shift the coin collecting and article dispensing mechanisms into coordinating relation to a conveyor other than that with which said mechanisms were first connected, the shifting lever 20 is moved in the only direction of movement left for it, which lever being connected to the hinged partition moves said partition in the direction of movement of the lever 20. If, therefore, the right hand conveyor were operatively engaged with the coin collecting and article dispensing mechanisms, movement of the shifting lever 20 to the left causes the hinged partition to move the centering gear wheel to the left by means of its engagement with the set screw 77, the centering gear wheel moving into engagement with the pointed ends of the teeth on the clutch 65, Fig. 14.

Shifting movement of the hinged partition moves the central bar 231, Fig. 10, to a substantially vertical position and causes the lever 223, Fig. 6, to be forced downwardly into the path

of travel of the bar 150 to prevent its rearward movement. Since the bar 150 cannot move rearwardly, the arm 111 cannot move downwardly because of its connection with the bar 150 and the cam 127 therefore cannot be moved downwardly and the coin is held in the position illustrated in Fig. 6 without dislodging the stop 113. When, however, the central bar 231 has passed its center vertical position, the coin collecting mechanism is free to operate in its normal manner and the coin is therefore collected and the article of merchandise dispensed.

It is also believed apparent that whichever conveyor having a pocket containing a desired article aligned in dispensing position behind one of the doors 16 and 17 is maintained in that position during dispensing of the article by reason of the fact that the lug 238 on the plate 235, Fig. 14, is lodged between a pair of the centering gear wheel teeth and since the centering gear wheel is engaged with the shaft on which the conveyor sprockets are mounted, the conveyor is maintained in the chosen position during dispensing of an article from the machine.

Certain of the more important advantages of a vending machine constructed in accordance with the present invention are that the conveyors may be locked in desired position; that the coin collecting mechanism is operative regardless of which of the conveyors is being acted upon to dispense an article in a pocket therein; that a great variety of merchandise may be contained in the machine, which articles may be of different size, shape, and of a number approximately equivalent in height to four times the height of the machine; that the dispensing mechanism is locked when neither of the conveyors is properly engaged thereby; that a coin is collected only upon actual delivery of merchandise to an operator and this only when a genuine coin is presented to the machine; that the shock absorber adequately protects the machine from violent misuse; that an attractive display of large capacity is provided; and that the machine embodying the present invention is simply operated and is efficient and substantially foolproof in such operation.

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

1. In a vending machine of the character described, a plurality of movable conveyors each having a plurality of pockets adapted to contain articles to be dispensed therefrom, an article dispensing mechanism, means for shifting said article dispensing mechanism into alignment with said conveyors respectively, means for moving said conveyors to align a desired pocket thereof with said article dispensing mechanism, and means for actuating said mechanism to dispense an article from the desired pocket of the conveyor aligned with said dispensing mechanism.

2. In a vending machine of the character described, a plurality of movable conveyors each adapted to contain articles to be dispensed therefrom, an article dispensing mechanism, means for shifting said article dispensing mechanism into operative engagement with said conveyors respectively for dispensing articles therefrom, and means for locking said article dispensing mechanism against actuation when in neutral position between and out of operative engagement with said conveyors.

3. In a vending machine of the character de-

scribed, a framework, endless conveyors movably mounted on said framework, means engageable with said conveyors for ejecting articles therefrom, a clutch member operatively engageable with all of said conveyors respectively, and means for actuating said clutch member to actuate one of said conveyors at a time relative to said ejecting means for selecting articles to be dispensed from the machine.

4. In a vending machine, a plurality of conveyors each adapted to be moved in opposite directions and to contain a plurality of articles of merchandise, a housing for said conveyors having outlet openings therein through which said articles of merchandise may be dispensed, and a single article dispensing mechanism comprising separate ejecting members mounted in said housing in alignment with said outlet openings, said dispensing mechanism being engageable with said ejecting members respectively and adapted to actuate the same for positively moving said articles from portions of said conveyors aligned with said openings.

5. In a vending machine, a plurality of conveyors each adapted to contain a plurality of articles of merchandise, a housing for said conveyors having outlet openings therein through which said articles of merchandise may be dispensed, an article dispensing mechanism, ejecting members movably mounted in said housing in alignment with said outlet openings, and shiftable means for operatively respectively connecting said ejecting members with said article dispensing mechanism for actuating said ejecting members respectively in response to actuation of said mechanism.

6. In a vending machine, a plurality of conveyors each adapted to contain a plurality of articles of merchandise, a housing for said conveyors having outlet openings therein through which said articles of merchandise may be dispensed, an article dispensing mechanism, ejecting members slidably mounted in said housing in alignment with said outlet openings, shiftable means for operatively respectively connecting said ejecting members with said article dispensing mechanism for actuating said ejecting members respectively in response to actuation of said mechanism, and means normally locking said ejecting members against sliding movement.

7. In a vending machine, a conveyor mounted for movement in opposite directions and adapted to contain a plurality of articles of merchandise, a housing for said conveyor having an outlet opening through which said articles of merchandise may be dispensed, an article dispensing mechanism, an ejecting member slidably mounted in said housing in alignment with said outlet opening, and means operatively connecting said ejecting member with said article dispensing mechanism for actuating said ejecting member in response to actuation of said mechanism.

8. In a vending machine, a conveyor mounted for movement in opposite directions and adapted to contain a plurality of articles of merchandise, a housing for said conveyor having an outlet opening through which said articles of merchandise may be dispensed, an article dispensing mechanism, an ejecting member slidably mounted in said housing in alignment with said outlet opening, means operatively connecting said ejecting member with said article dispensing mechanism for actuating said ejecting member in response to actuation of said mechanism, and

means normally locking said ejecting member against sliding movement.

9. In a vending machine of the character described, a framework having a pair of uprights, a pair of spaced endless conveyors movably mounted on said uprights, said conveyors including a plurality of interconnected merchandise containing pockets, a housing for said framework and conveyors, a cover for said housing having a pair of elongated panels overlying a substantial portion of each of said conveyors, an auxiliary cover having a pair of panels aligned with said cover panels, said auxiliary cover having an outlet opening therein, a pair of doors pivotally mounted on said framework below said auxiliary cover panels and overlying a portion of each of said conveyors, single means engageable with and adapted to move said conveyors respectively for aligning a selected pocket of one of said conveyors with one of said doors, and means for ejecting an article in said aligned pocket through said door into said outlet opening.

10. In a vending machine of the character described, a framework having a pair of uprights, a pair of spaced endless conveyors movably mounted on said uprights each having a plurality of pockets, a housing for said framework and conveyors, a cover for said housing having an outlet opening therein, a pair of doors pivotally mounted on said framework overlying a portion of each of said conveyors, means for aligning a selected pocket of one of said conveyors with one of said doors, means for ejecting an article in said aligned pocket through said door into said outlet opening, a partition movably mounted on said framework, a clutch member operatively engageable with either of said conveyors, means on the partition engaged with the clutch member for moving same when the partition is hinged, means for hinging the partition to effect engagement of the clutch member with one of said conveyors, and means for actuating said clutch member to actuate one of said conveyors.

11. In a vending machine of the character described, a framework, endless conveyors movably mounted on said framework, a housing for said framework and conveyors having an outlet opening therein, means for ejecting articles from said conveyors respectively to said outlet opening, a clutch member operatively engageable with said conveyors respectively, a partition engageable with the clutch member for moving same when the partition is hinged, means for hinging the partition to effect engagement of the clutch member with one of said conveyors, and means for actuating said clutch member to actuate the conveyor with which the clutch member is engaged.

12. In a vending machine, an endless vertically arranged conveyor movable in opposite directions and having pockets provided with openings in ends thereof each adapted to contain articles of merchandise, a housing for said conveyor having an outlet opening therein through which said articles of merchandise may be dispensed, an article dispensing mechanism comprising a horizontally arranged slidable ejecting member mounted in said housing in alignment with said outlet opening, and means for actuating said ejecting member to move the same into a pocket aligned therewith for moving an article to said outlet opening.

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