June 20, 1944. F. NIEWOEHNER 2,351,779

VENDING MACHINE

Filed July 28, 1941 4 Sheets-Sheet 1

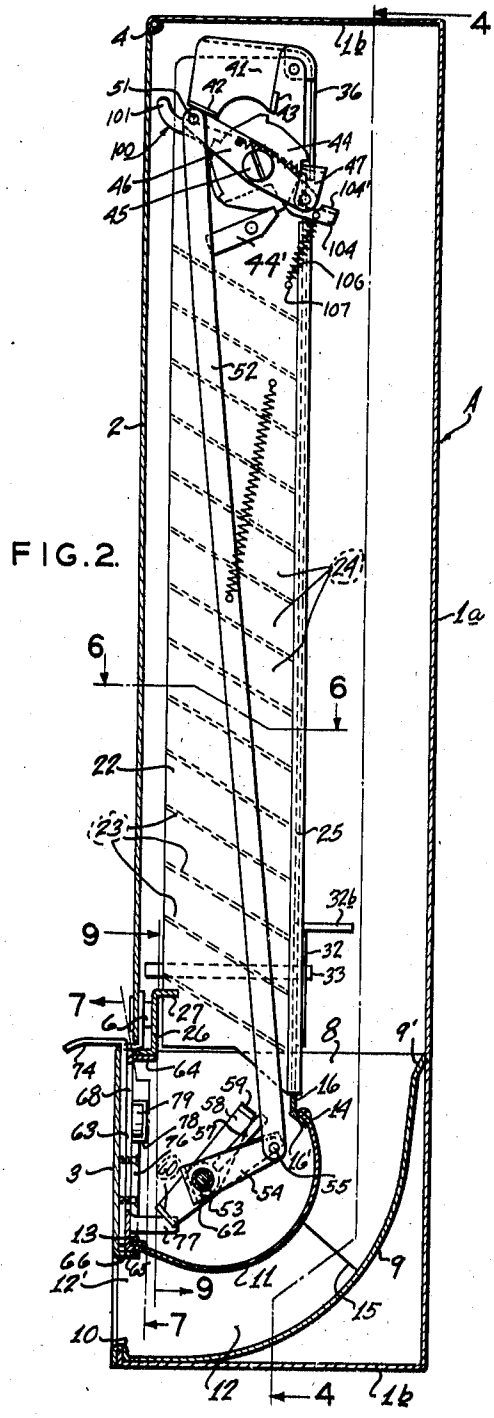


FIG. 2.

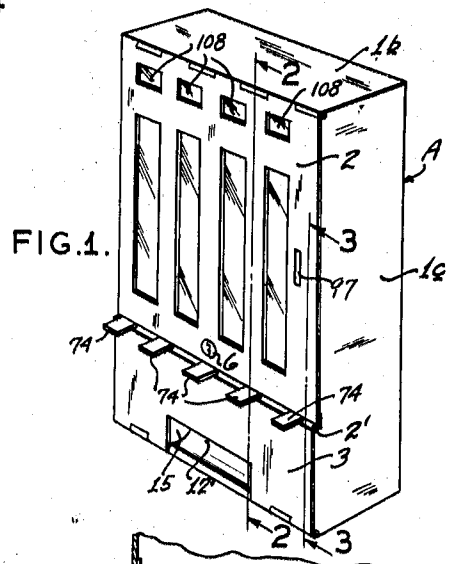


FIG. 1.

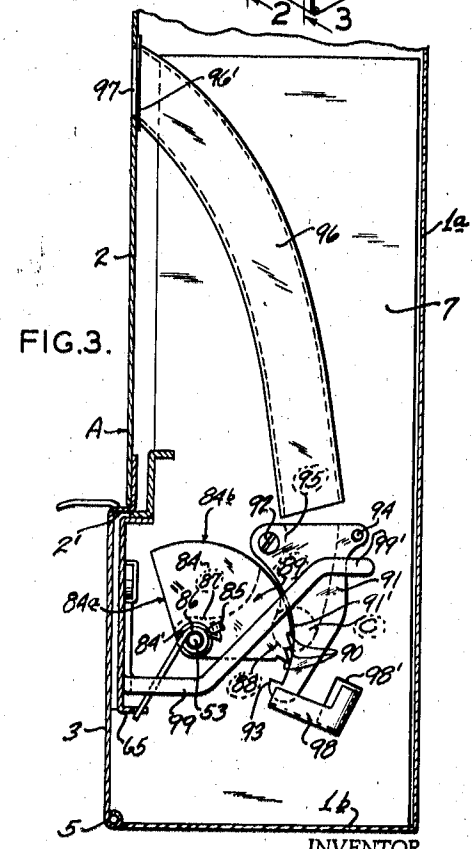


FIG. 3.

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VENDING MACHINE

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FIG. 7.

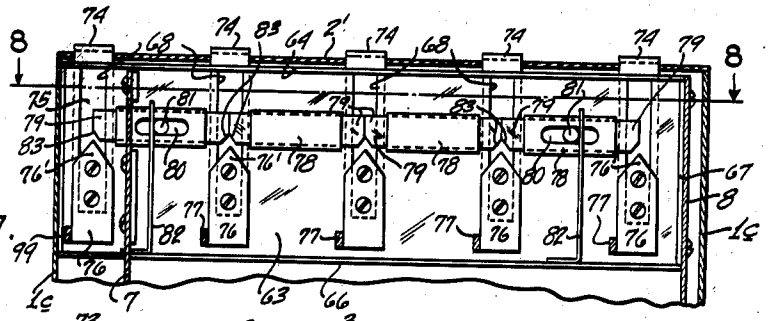


FIG. 8.

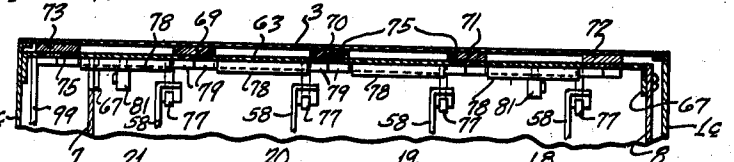
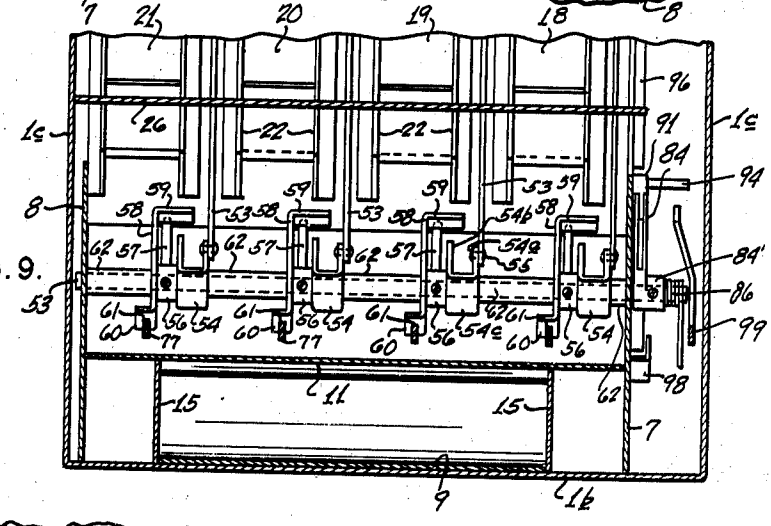


FIG. 9.



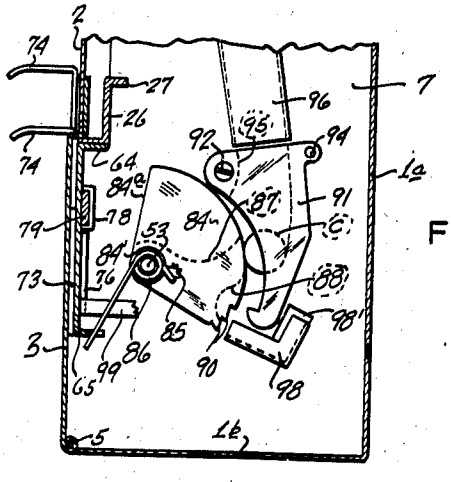


FIG. 10.

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VENDING MACHINE

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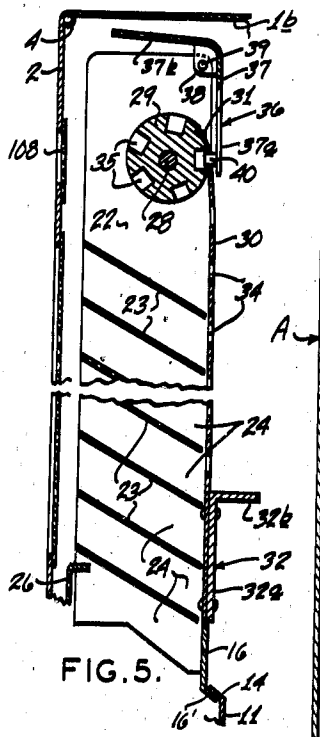


FIG. 5.

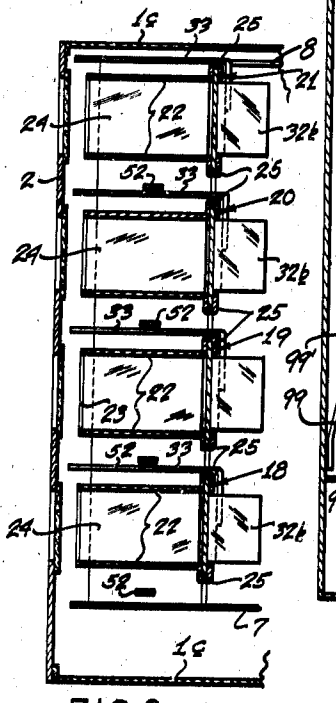


FIG. 6.

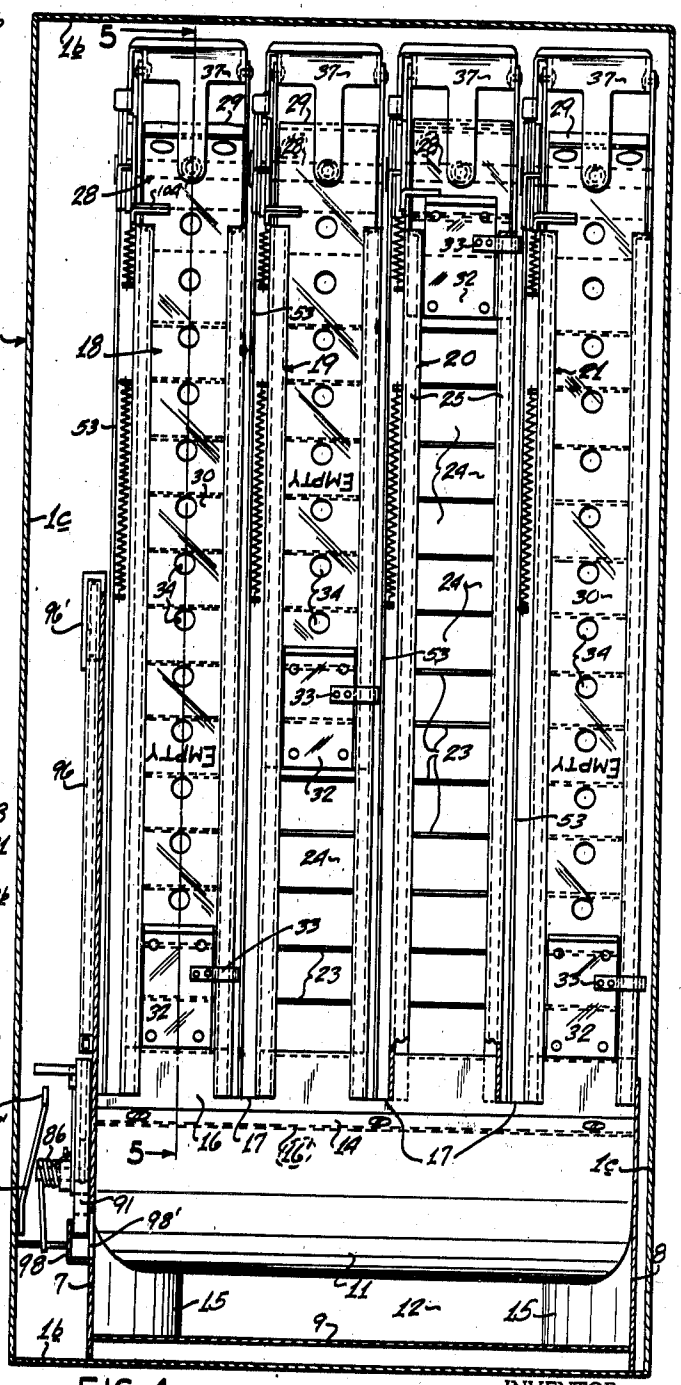


FIG. 4.

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VENDING MACHINE

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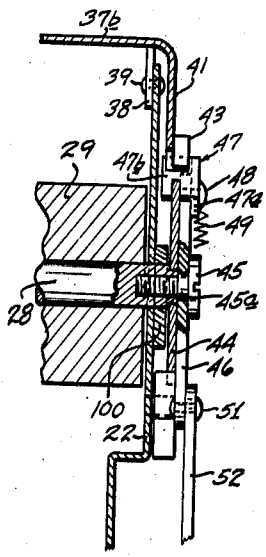


FIG.12.

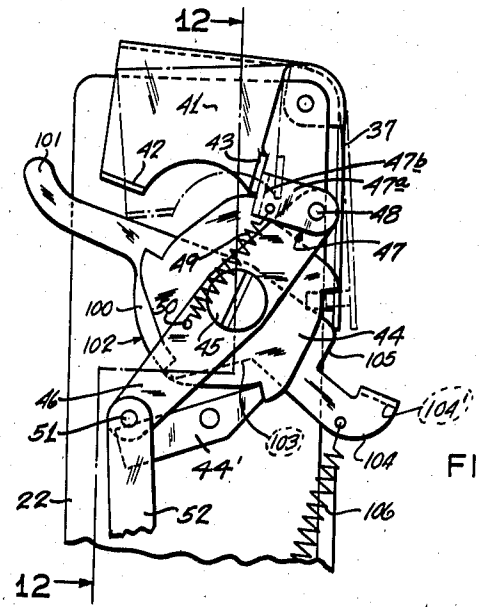


FIG.11.

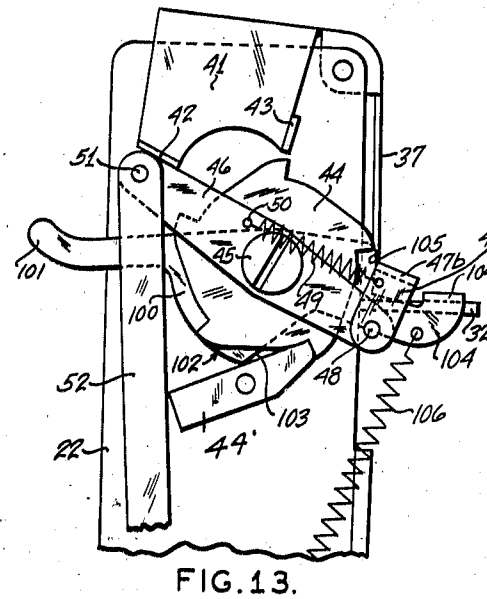


FIG.13.

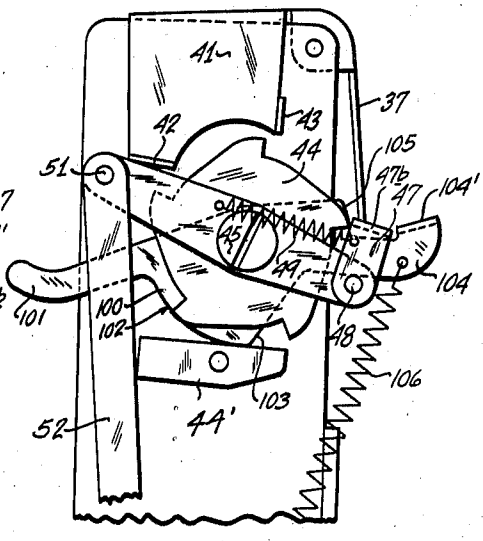


FIG.14.

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Patented June 20, 1944 2,351,779

UNITED STATES PATENT OFFICE

2,351,779

VENDING MACHINE

Fred Niewoehner, New York, N. Y., assignor to Interstate Vending Machine Company of St. Louis, St. Louis, Mo., a corporation of Missouri

Application July 28, 1941, Serial No. 404,358

10 Claims. (Cl. 312—94)

This invention relates generally to vending machines and more specifically to coin-controlled vending machines for vending various articles of merchandise, the predominant object of the invention being to provide an improved vending machine which is of greatly simplified construction and arrangement and which is capable of performing its intended funcitons in an improved and highly efficient manner.

Fig. 1 is a perspective view of the improved vending machine.

Fig. 2 is an enlarged, vertical section of the improved vending machine taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged, fragmentary, vertical section of the machine taken on line 3—3 of Fig. 1.

Fig. 4 is a vertical section taken on line 4—4 of Fig. 2, showing the housing of the machine in section, and illustrating in rear elevation the mechanism and parts of the machine which are located within the housing.

Fig. 5 is a fragmentary, vertical section taken on line 5—5 of Fig. 4.

Fig. 6 is a fragmentary, horizontal section taken on line 6—6 of Fig. 2.

Fig. 7 is a fragmentary, vertical section taken on line 7—7 of Fig. 2.

Fig. 8 is a fragmentary, horizontal section taken on line 8—8 of Fig. 7.

Fig. 9 is a fragmentary, vertical section taken on line 9—9 of Fig. 2.

Fig. 10 is a fragmentary, vertical section of the lower portion of the machine showing the coin receiving mechanism and parts of the machine which are arranged adjacent thereto.

Fig. 11 is a fragmentary, side elevation of an upper portion of the machine showing associated parts of a merchandise delivery mechanism of the machine and with the housing omitted.

Fig. 12 is a fragmentary, vertical section taken on line 12—12 of Fig. 11.

Fig. 13 is a view similar to Fig. 11 but showing parts of the mechanism illustrated therein in moved positions.

Fig. 14 is a view similar to Figs. 11 and 13 but showing parts of the illustrated mechanism in yet other moved positions.

In the drawings, wherein is shown for the purpose of illustration, merely, one embodiment of the invention, A designates the improved vending machine generally. The machine A includes a housing which comprises a back wall *1a*, top and bottom walls, *1b*, and opposed side walls *1c*, all of which are preferably formed integral or suitably connected together to provide a unitary housing structure. The front of the housing of the machine A is closed by an upper closure 2 and a lower closure 3, the upper front closure being hingedly attached to the top wall *1b* of the housing as indicated to the best advantage at 4 in Fig. 2, and the lower, front closure being hingedly attached to the bottom wall *1b* of the housing as indicated to the best advantage at 5 in Fig. 3. As is shown to good advantage in Fig. 3 the lower front closure 3 is provided, at a point adjacent to its upper end, with an inwardly projected offset 2' and the lower portion of the upper, front closure 2 overlaps and engages the inwardly disposed vertical wall portion which provides the upper part of said offset portion. In order to seal the front of the housing of the machine so as to prevent unauthorized access to the interior of the housing a suitable lock 6 (Fig. 1) is provided which is adapted to secure the upper, front closure in its closed position as shown in Fig. 3, and because the lower portion of said upper closure overlaps and engages the upper portion of the lower closure 3, said lower closure is also secured in its closed position. From the foregoing it is plain that the front of the housing may be opened by an authorized person to expose the mechanism within the housing by releasing the lock 6 through the use of a suitable key, whereupon the upper, front closure 2 may be swung outwardly and upwardly on its hinge 4 and the lower, front closure 3 may be swung outwardly and downwardly on its hinge 5.

The interior mechanism of the machine which is located within the housing of the machine is in the form of a unit made up of an assembly of the various parts which produce said interior mechanism, and said unitary structure is suitably supported in place within the housing. The unitary structure includes a pair of spaced apart plates 7 and 8 which rest upon the top surface of the bottom wall *1b* of the housing and extend vertically therefrom. The spaced plates 7 and 8 are shown to good advantage in Figs. 4 and 9, the showing of Fig. 4 indicating that the plate 7 is of substantially greater height than is the companion plate 8. Supported by and between the spaced plates 7 and 8 is a curved wall 9 which extends from one of said spaced plates to the other thereof and with the opposite side edges of said curved wall suitably secured to said spaced plates. As shown in Fig. 2 the curved wall 9 is provided at its upper rear end with an angularly extended portion 9', the upper edge of which contacts with the inner face of the rear wall *1a*

of the housing of the machine. At the lower, forward edge of the curved wall 9 an upstanding bead 10 is formed thereon to provide an abutment which serves a purpose to be hereinafter set forth, said bead embracing an upstanding extension formed on the bottom wall 1b of the housing of the machine.

Arranged in associated relation with respect to the curved wall 9 is a second curved wall 11 which is spaced from the curved wall 9 to provide a curved passageway 12 therebetween as shown to good advantage in Fig. 2. The curved wall 11 is suitably secured at its opposite side edges to the spaced plates 7 and 8, and at the lower and forward end of said curved wall 11 an upwardly offset flange 13 is provided. Also at the upper and rear end of the curved wall 11 an angular portion 14 is provided, this angular portion 14 and the offset flange 13 serving functions to be hereinafter set forth. Disposed within the curved passageway 12 of the machine and secured in place therein, is a pair of oppositely disposed walls 15 which conform in shape to the curved shape of the passageway 12. The rear edges of the walls 15 contact with and are suitably secured to the spaced plates 7 and 8 and from such points of attachment to said spaced plates 7 and 8 the walls 15 converge toward each other as the forward end portions of said walls are approached so as to provide a space between the forward end portions of said walls 15 which is substantially less than the space between the rear end portions of said walls 15. Thus the forward portions of the curved walls 9 and 11 and the forward portions of the walls 15 provide a discharge opening 12' at the lower portion of the front of the machine which is located approximately midway between the opposite sides of the machine and which is relatively narrow when compared with the width of the machine as shown in Fig. 1.

Secured to the angular portion 14 at the upper and rear end of the curved wall 11 is a correspondingly angled portion 16' of an upstanding plate 16, said plate 16 being provided with a plurality of notches 17 as is shown to the best advantage in Fig. 4. The plate 16 aids in the support of the walls of a plurality of merchandise storage structures, there being four of said merchandise storage structures shown in the drawings and designated by the reference characters 18, 19, 20, and 21, although obviously a greater or lesser number of such merchandise structures may be employed in producing vending machines in accordance with this invention. Each of the merchandise compartments 18, 19, 20, and 21, comprises a pair of spaced side walls 22 which are of substantial height and are disposed vertically within the housing of the machine. Supported by and between the spaced, side walls of each merchandise storage structure is a plurality of shelves 23 which are inclined downwardly from the front of the merchandise storage structure to the rear thereof, said shelves being spaced apart in the vertical direction of the merchandise storage structure as shown to good advantage in Figs. 2 and 5 to provide a vertical row of merchandise compartments 24. Each of the merchandise compartments 24 is produced by a pair of the inclined shelves and by portions of the opposed side walls of the merchandise structure, and said merchandise compartments are each open at the front of the merchandise storage structure and at the rear thereof.

At the rear portions of the side walls of each of the merchandise structures 18, 19, 20, and 21 the material of which said side walls are formed are shaped and formed so as to be provided with guideways 25. These guideways are shaped in cross-section as shown to the best advantage in Fig. 6 and are formed by bending portions of the opposite side walls of each merchandise structure outwardly, then rearwardly, and then inwardly. The guideways 25 extend vertically of the merchandise structures from the lower ends of the side walls thereof to a point spaced downwardly from the upper ends of said side walls, as shown in Fig. 4, and said guideways are open at their inner sides. The plate 16 aids in the support of the merchandise structures 18, 19, 20, and 21 by having the opposed side edge portions of the parts of said plate 16 which are located between the notches 17 of said plate, disposed in the lower portions of the guideways 25. The portions of the plate 16 which are received in the lower portions of the guideways 25 are of such thickness relative to the width of the openings of said guideways that said plate portions are frictionally gripped by the guideways to aid in the support of the merchandise structures by the plate 16. The merchandise structures 18, 19, 20, and 21 are additionally supported by an angle bar 26 (Fig. 2) which is supported adjacent to its opposite ends by portions of the spaced plates 7 and 8 and is suitably secured in place, said angle bar extending transversely of the front portion of the machine and having an outwardly extended lower horizontal portion that rests on parts of said spaced plates 7 and 8, a vertical portion that extends upwardly from the inner edge of said lower horizontal portion, and an upper, inwardly extended portion which is extended into notches 27 formed in forward portions of the side walls of the merchandise structures 18, 19, 20, and 21.

The side walls 22 of each of the merchandise structures 18, 19, 20 and 21, support at a point adjacent to their upper ends a shaft 28 which is supported for rotation in bearing openings formed in said side walls, and fixedly mounted on the shaft of each merchandise structure is a roller 29 whose length is substantially the same as the space between said side walls. The roller 29 of each merchandise structure has associated therewith a strip 30 of flexible material, said strip of material being secured at one of its ends by suitable fastening means 31 (Fig. 5) to the roller and being extended downwardly therefrom. The opposite side edge portions of each strip of material are disposed in and are guided by the guideways 25 of the associated merchandise structure, and at the lower end portion of each strip 30 an angular element 32 is suitably secured thereto, each angular element comprising a vertically disposed portion 32a which contacts with the associated strip of material and a horizontally extended portion 32b which extends outwardly from the upper portion of said vertically disposed portion 32a. The angular element 32 of the strip of material 30 of each merchandise structure 18, 19, 20, and 21, has fixed thereto an arm 33 which extends transversely of the associated merchandise structure to a point beyond a side thereof, and then is projected forwardly of the merchandise structure to a point slightly in advance of the forward portion thereof (Fig. 6), these arms 33 being adapted to perform a function to be hereinafter set forth.

The strip of material 30 of each merchandise structure 18, 19, 20, and 21, has formed therethrough a vertically arranged row of spaced aper-

tures 34. Also the roller 29 of each merchandise structure is provided with a plurality of circumferentially spaced cavities 35 (Fig. 5) which are open at the circumferential face of the roller. As will be hereinafter explained when the operation of the machine is described the rollers 29 are adapted to be intermittently rotated so as to roll the associated strips of material 30 on said rollers, and the apertures 34 of the strips of material and the cavities 35 of the rollers are so spaced that when the strips of material are rolled on the rollers the apertures of the strips register with the cavities of the rollers and apertures of various turns of the strips of material arranged about the rollers register with each other as well as with the cavities of the rollers.

In order to lock the strips of material 30 in various positions to which they are moved during operation of the machine by being rolled on the rollers 29, each merchandise structure 18, 19, 20, and 21 supports at its upper end a locking device 36. Each locking device 36 comprises an angular member 37 having a vertical plate portion 37a which is disposed at the rear of the associated merchandise structure and a plate portion 37b which is an angular continuation of the plate portion 37a and overhangs the associated merchandise structure. At the intersection of the plate portions 37a and 37b the angular member 37 of each locking device 36 is provided with opposed inturned ears 38, and pivot pins 39 extend through said ears and through parts of the side walls of the associated merchandise structure to pivotally attach said angular member 37 to said side walls of the merchandise structure. Adjacent to the lower end of the plate portion 37a of each locking device 36 a locking pin 40 (Fig. 5) is fixedly mounted thereon, and this locking pin is adapted during operation of the machine, to move into and out of apertures of the associated strip of material 30 to lock and release said strip of material and thereby prevent or permit movement thereof.

The strip of material 30 of each merchandise structure 18, 19, 20, and 21, is locked as each aperture 34 of the strip reaches the location of the locking pin 40 of the associated locking device 36 and as this position is reached by an aperture of the strip of material a cavity of the associated roller 29 is in registration with said aperture. This permits the locking pin to pass entirely through the properly positioned aperture and into the registering cavity of the roller so as to securely lock the strip of material against movement. The angular member 37 of the locking device of each merchandise structure 18, 19, 20, and 21 includes an integral side extension 41 which is disposed vertically adjacent to a side wall of the associated merchandise structure. This side extension is provided with an outstanding ear 42 and an outstanding ear 43 which are contacted by operating parts of the machine, as will be hereinafter fully described, to activate the locking device 36 to positions where the associated strip of material 30 is locked thereby or released therefrom.

Fixedly mounted on the shaft 38 at the upper portion of each of the merchandise storage structures 18, 19, 20, and 21, is a ratchet wheel 44. The ratchet wheel is preferably provided with a centrally located noncircular opening which receives a correspondingly shaped end portion of the shaft 28 (Fig. 12) so that rotation of the ratchet wheel will impart like rotation to the associated shaft. The ratchet wheel 44 of each merchandise storage structure is attached in place by a screw 45 which as shown in Fig. 12 includes a screw-threaded shank portion that is screwed into a screw-threaded opening formed at an end of the associated shaft 28. The screw 45 includes also an enlarged smooth-surfaced portion 45a which is interposed between the screwthreaded shank portion and the head of the screw, and mounted for oscillatory movement on said enlarged portion 45a is an arm 46, the arm 46 being provided with an opening formed therethrough through which the enlarged portion of the screw extends. The opening through which the enlarged portion 45a of the screw 45 extends is located intermediate the ends of the arm 46 and at one end of said arm a pawl 47 is pivoted to said arm by a pivot element 48. The pawl 47 is in the form of an angular structure, said pawl including a straight arm portion 47a which is pivoted to the arm 46 by the pivot element 48, and an extension 47b which projects from the free end of the arm portion 47a at an approximate right angle with respect thereto. The pawl 47 has attached thereto one end of a coil spring 49, the opposite end of the said spring being fixed to a pin 50 extended from the arm 46.

Pivotally attached to the opposite end of the arm 46 associated with each merchandise storage structure, by means of a pivot element 51, is an elongated bar 52 which extends downwardly from the end of the arm 46, to which it is attached toward the lower portion of the machine. The bar 52 is adapted to be moved downwardly by mechanism which will be hereinafter described to oscillate the arm 46 about the enlarged portion 45a of the screw 45, the portion 47b of the pawl 47 being adapted to engage one of the teeth of the ratchet wheel 44 during each such movement of the arm 46 to rotate the ratchet wheel, the shaft 28, and the roller 29 a portion of a revolution. The ratchet wheel 44 of each merchandise storage structure also has associated therewith a detent pawl 44' which engages teeth of the ratchet wheel and prevents retrograde movement thereof.

Supported by the spaced plates 7 and 8 is a shaft 53 which is mounted for rotation in openings formed in said spaced plates. The shaft 53 has mounted thereon a plurality of arm structures 54, there being one of said arm structures for each merchandise storage structure 18, 19, 20, and 21 and the elongated bar 52 of each merchandise storage structure being pivotally attached, by a pivot element 55, to the arm structure 54 related to said merchandise storage structure. The arm structures 54 are loosely supported by the shaft for rotary movement with respect thereto, and each arm structure is of U-shaped formation, as shown in Fig. 9. In other words each arm structure comprises a pair of spaced, parallel arm portions 54a and 54b which are joined by a bridge portion 54c, the shaft being extended through alined apertures formed through the spaced, parallel arm portions and the associated elongated bar 52 being pivotally attached by the pivot element 55 to the outer portion of the arm portion 54a.

Supported by the shaft 53 and rigidly fixed thereto is a plurality of collars 56 (Fig. 9), each of which has fixed thereto and extended therefrom a rod 57. The collars 56 correspond in number to the number of the arm structures 54, and each of said collars is arranged in contact with a side face of one of said arm structures. Also supported by the shaft 53 is a plurality of levers 58, said levers, like the arm structures 54,

being loosely mounted on said shaft 53 for rotary movement with respect thereto. The levers 58 correspond in number to the number of the collars and rod structures 56—57 and the arm structures 54, each of said levers being arranged to contact with a side face of one of the collars 56. Also each of the levers 58 is provided at its upper end, as viewed in Figs. 2 and 9, with a rectangularly projected extension 59 which overhangs the adjacent rod 57 and the arm portion 54b of the adjacent arm structure 54. Additionally, at its opposite end, each lever 58 is provided with a rectangularly projected extension 60 which extends in the opposite direction to the extension 59 and has formed therein at its lower portion a notch 61. The loosely supported arm structures 54 and levers 58 are maintained in their proper spaced relation with respect to each other and with respect to the spaced plates 7 and 8 by spacers 62 in the form of tubular elements that embrace the shaft 53.

Supported at the front of the lower portion of the machine A is a plate 63 which extends from side to side of the machine and is of substantial height, said plate having a horizontal, inwardly extended flange 64 formed at its upper end, and being provided with a corresponding, though narrower, flange 65 at its lower end. The upper flange 64 of the plate 63 is suitably secured to the lower, outwardly extended flange of the angle bar 26, and the lower flange 65 of said plate 63 is secured to the flange portion 13 at the forward end of the curved wall 11 (Fig. 2). Additionally, the lower, front closure 3 is provided at the upper edge of the discharge opening 12' with an inwardly extended, horizontally disposed flange 66 which contacts with the lower face of the lower flange 65 of the plate 63. Also the plate 63 is provided with inwardly extended side flanges 67 which are secured to the spaced plates 7 and 8.

The plate 63 has formed therein a plurality of vertically disposed slots 68 which are open at the top of the plate and terminate at their lower ends at points spaced upwardly from the lower end of said plate. Associated with the plate 63 is a plurality of operating elements 69, 70, 71, 72, and 73, which are supported for vertical sliding movement with respect to the plate 63 and each of which is provided at its upper end with an outwardly extended finger grip 74. Each of the operating elements 69, 70, 71, 72, and 73, contacts with the forward face of the plate 63 and is provided with a vertically elongated, guiding portion 75 which is disposed in the corresponding slot 68. The guiding portion of each operating element may be formed integral with the operating element or may be fixed thereto as desired, and said guiding portion is of the approximate width of the slot in which it is disposed so that the opposite side edges of the guiding portion contact with the opposed side walls of the slot. The operating elements 69, 70, 71, 72, and 73, are wider than the slots 68 and than the guiding portions 75 so that portions of said operating elements overlap portions of the forward face of the plate 63 adjacent to the opposite sides of the slots 68. Also at the rear face of the plate 63 the guiding elements 69, 70, 71, 72, and 73, have secured thereto members 76 which are likewise of greater width than the slots 68 so that they overlap portions of the rear face of the plate 63 adjacent to opposite sides of the slots 68.

From the foregoing it is plain that the operating elements 69, 70, 71, 72, and 73 are supported by the plate 63 for guided vertical movement, the guiding portions 75 of said operating elements moving with the operating elements through the slots 68 with their opposite side edges in contact with the opposed side walls of the slots, and portions of the operating elements and of the members 76 moving in sliding engagement with portions of the forward and rear faces of the plate 63. It is to be noted also that downward movement of the operating elements is limited by contact of the lower edges of the guiding portions 75 with the bottom walls of the slots 68, and upward movement of said operating elements is limited by contact of the upper ends of the members 76 with the lower face of the upper flange 64 of the plate 63.

The members 76 of the operating elements 69, 70, 71, and 72, have formed thereon extensions 77 which are projected rearwardly therefrom, there being one of such extensions formed on each of said members 76. The rear portions of the extensions 77 are disposed in the notches 61 formed in the lower portions 60 of the levers 58 so that under certain circumstances in the operating of the machine any one of said operating elements 69, 70, 71, and 72, may be drawn upwardly to rotate the corresponding lever 58 about the shaft 53. Attention is directed to the fact that the operating element 73 includes no extension resembling the extensions 77 associated with the operating elements 69, 70, 71, and 72, and the reason for this situation will be hereinafter pointed out.

It is important in the operation of the machine A that only one of the operating elements 69, 70, 71, 72, and 73, be capable of operation during a single operation of the machine and therefore the plate 63 has fixed to its inner face a plurality of guide structures 78 (Figs. 7 and 8). Each of the guide structures supports for sliding movement an element 79, said elements being longer than the guide structures so that each element 79 normally extends outwardly beyond the opposite ends of the guide structure by which it is supported. The elements 79 contact with each other at ends thereof, as shown to the best advantage in Fig. 7, the outermost guide structure having slots 80 formed in their rear walls through which pins 81, which are supported by the elements 79 supported by said outermost guide structures, extend. Also, leaf springs 82, which are anchored to the lower flange 65 of the plate 63 contact at their upper end portions with the pins 81 and tend to move the outermost elements 79 inwardly whereby the elements 79 are maintained in contact with each other at ends thereof and the entire group of elements are maintained in their effective positions. The members 76 associated with the operating elements 69, 70, 71, 72, and 73 are provided with pointed upper ends the inclined edges of which serve as cam faces, and the elements 79 are provided with cam faces 83 at opposite ends thereof which are adapted to be engaged by the cam faces of the members 76.

The slots 80 formed in the outermost guide members 78 are of such length that the pins 81 are limited to such movement that the elements 79 may move sufficiently to allow only one of the members 76 to pass the positions of said elements 79 during a single operation of the machine. In other words, when a proper coin is introduced into the machine and one of the operating elements 69, 70, 71, 72, and 73 is moved upwardly, a cam face of the member 76 of either of the end

operating elements, or the cam faces of the member 76 of one of the intermediate operating elements, will engage a cam face or cam faces of one or more of the elements 79. Such engagement between said cam faces will shift the elements 79 allowing the member 76 of the operating element being moved to pass upwardly beyond the position of the elements 79 to operate the machine as will be hereinafter explained. Such shifting of the elements 79 will move the cam faces of the other elements 79 out of the lines of movement of the cam faces of the members 76 of the other, unmoved operating elements, with the result any attempted upward movement of one of said other operating elements, while the one moved operating element is in its raised position, will result in the upper end of the member 76 of the second operating element engaging a straight portion of the lower edge of an element 79 and thus prevent such attempted movement of said second operating element. Likewise if an attempt is made to move two of the operating elements 69, 70, 71, 72, and 73, upwardly simultaneously the cam faces of the members 76 of the two operating elements movement of which is attempted will tend to move the element or elements 79 located between said two operating elements in opposite directions simultaneously. This being impossible both of the operating elements movement of which is attempted will be positively locked against upward movement.

Referring now to the coin-controlled mechanism for permitting operation of the machine attention is directed to Figs. 3, 4, and 10 of the drawings. This mechanism includes a member 84 of segmental shape which is rigidly fixed to an end portion of the shaft 53, said segmental member 84 being provided with a hub portion 84' from which an extension 85 is projected. The shaft 53 projects outwardly beyond the outer face of the hub portion of the member 84 and wound about this extended end portion of the shaft is a torsional coil spring 86, one end portion of said coil spring being attached to the extension 85 and the opposite end portion thereof extending downwardly and contacting with the lower flange 65 of the plate 63 so that said torsional coil spring tends to move the segmental member 84 in the direction indicated by the arrow in Fig. 3. The segmental member 84 has formed therein a cavity 87, said cavity being closed at its opposite sides by portions of the segmental member 84, and being open at the straight, forward edge 84*a* of said segmental member and at the arcuate edge 84*b* thereof, and its base being shaped as indicated by the irregular dotted line in Figs. 3 and 10. The segmental member 84 is provided with a second cavity 88 which is closed at its opposite sides by portions of said segmental member and is open at the arcuate face of said segmental member, said second cavity having a base shaped as shown by dotted lines in Figs. 3 and 10. Between the cavities 87 and 88 the segmental member 84 is provided with a solid portion 89 which is provided with an outer edge that conforms to the curvature of the arcuate edge 84*b* of said segmental member. The segmental member 84 is provided also with a plurality of teeth 90 which are formed at the lower portion of the arcuate edge thereof.

Arranged adjacent to the segmental member 84, and in alinement therewith is a coin-receiving element 91 which is of the approximate thickness of said segmental member 84 and is pivoted to the spaced plate 7 by a pivot element 92. The coin-receiving element 91 is shaped in side elevation as shown in Figs. 3 and 10; that is to say it is wider at its upper end and is provided at its lower, narrower end with an outstanding tooth 93 which, as will presently appear herein is adapted to be engaged by the teeth 90 of the segmental member 84. The coin-receiving element 91 is provided with an arcuate edge 91' which corresponds with the arcuate edge of the segmental member 84, and at the upper end of said coin-receiving element in spaced relation with respect to the location of the pivot element 92 a pin 94 is projected outwardly from said coin-receiving element. The coin-receiving element 91 has a cavity 95 formed therein which is closed at its sides and at its forward and rear edges by portions of the element, said cavity 95 being open at the top edge of the coin-receiving element and at the arcuate face 91' thereof.

Associated with the coin-receiving element 91 is a coin chute 96 which is provided with a flange 96' at its upper end that contacts with the inner face of the upper, front closure 2 of the machine, said upper, front closure having a coin slot 97 formed therein (Fig. 3) which registers with the upper portion of the passageway of the coin chute 96. The coin chute 96 is suitably secured to the spaced plate 7 and it terminates at its lower end immediately above the coin-receiving element 91 so that a coin introduced into the coin chute through the coin slot 97 will be conducted downwardly by the coin chute and will be discharged from the lower end thereof into the cavity 95 of the coin-receiving element 91. Also associated with the coin-receiving element 91 at its lower end is an inclined coin-discharge chute 98 which is secured to the spaced plate 7. The coin-discharge chute is of angular formation as shown in Figs. 3 and 10 and it cooperates with a portion of the spaced plate 7 to provide an angularly shaped trough, as shown in Fig. 9, which under certain circumstances receives a coin from the coin mechanism provided by the segmental member 84 and the coin-receiving element 91, the spaced plate 7 being provided with an opening 98' through which a coin may pass from said coin chute 98 into the passageway 12 of the machine.

As has been previously stated herein the members 76 of only the operating members 69, 70, 71, and 72 are provided with extensions 77 which engage the lower portions 60 of the levers 58, the member 76 of the operating element 73 being provided with no such extension 77. However, the member 76 of the operating element 73 does have extended therefrom an arm 99 which is shaped as shown in Fig. 3; that is to say, said arm is extended rearwardly and upwardly from the member 67 of the operating element 73 and at its rear end is provided with a horizontal portion 99' which is disposed immediately beneath the pin 94 of the coin-receiving element 91. As will presently appear herein the operating element 73 may be raised to cause the rear portion 99' of the arm 99 to contact with and elevate the pin 94 and move the coin-receiving element 91 about its pivot 92. This will release a coin supported by the element 91 and permit it to fall into the coin chute 98 for passage through the opening 98' into the passageway 12 of the machine.

Mounted for rotary movement on the shaft 28 of each merchandise storage structure 18, 19, 20, and 21, immediately adjacent to the ratchet wheel 44 of said shaft, is a cam member 100 which is provided with a forwardly projected operating

portion 101. The cam member is provided with an arcuate cam face 102 which joins a straight face portion 103, and extended rearwardly from this straight face is a rearwardly extended curved portion 104 of said cam member which includes a laterally projected flange portion 104'. The cam member 100 includes also a cam face 105 which joins the top edge of the cam member 100 with the top edge of the rearwardly extended portion 104 thereof. The cam member 100 is retained in its normal position as shown in Fig. 2 by a coil spring 106 which is attached at one of its ends to the rearwardly extended portion of said cam member and at its opposite end to a pin 107 fixed to a side wall of the associated merchandise storage structure.

In the operation of the improved vending machine disclosed herein a proper coin is introduced into the coin slot 97 and said coin passes downwardly through the coin chute 96 and falls into the cavity 95 of the coin-receiving element 91, said coin finally reaching the position in which it is shown in Fig. 3, wherein it is designated by the reference character C. The forwardly extended finger grip of the operating element 69, 70, 71, or 72 associated with the particular merchandise storage structure 18, 19, 20, or 21, from which an article of merchandise is to be withdrawn by the operation of the machine, is then moved upwardly by the operator of the machine. Such upward movement of the selected operating element causes the extension 77 associated with said operating element to move the lower end portion of the associated lever 58 upwardly thereby rotating the upper portion of the lever downwardly and rearwardly about the shaft 53 and subjecting said shaft 53 to rotary movement because of the contact between the extension 59 of the lever and the associated rod 57 which is carried by a collar 56 fixed to the shaft 53. Upon such rotary movement of the shaft 53 the segmental member 84, which is fixed to said shaft, rotates with respect to the associated coin-receiving element 91, and the base of the cavity 88 of the segmental member 84 and the outer edge of the solid portion 89 of said segmental member serve as a continuous cam face which cams the coin to the right, as shown in Fig. 10, to move the coin-receiving element 91 about its pivot 92 and remove the tooth 93 at the lower end of said coin-receiving element out of the path of movement of the teeth 90 of the rotating segmental member. Continuation of the rotation of the lever 58 by the upwardly moving operating element 69, 70, 71, or 72, causes the extension 59 on said lever to contact with the arm portion 54b of the associated arm structure 54 and move the rear portion of said arm structure downwardly about the shaft 53, with the result that the associated elongated bar 52, which is pivotally attached to said arm structure is drawn downwardly. Downward movement of the elongated bar 52 moves the forward end of the associated arm 46 downwardly and the rear end thereof upwardly, and the pawl 47, pivotally attached to said rear portion of said arm 46, engages one of the teeth of the ratchet wheel of the associated shaft 28 to rotate said shaft and the roller mounted thereon.

Normally the strip of flexible material 30 is locked against movement by the disposition of the pin 40 of the associated locking device 36 in one of the openings 34 of said strip of material, but as the forward end of the arm 46 and the upper end of the elongated bar 52 are moved downwardly by the rotating lever 58 the weight of the side extension 41 of the locking device, from which support has been removed by downward movement of the bar 52 and the forward end of the arm 46, causes the forward end of said locking device to drop downwardly and the rear portion thereof to swing outwardly thereby withdrawing the pin 40 of the locking device from the opening 34 in the associated strip of material 30 in which it had been disposed. The continued downward movement of the bar 52 and the consequent upward movement of the rear portion of the arm 46, with the pawl 47 in engagement with a tooth of the associated ratchet wheel 44 subjects the shaft 28 and the roller 29 mounted thereon to a predetermined amount of rotary motion.

The strip of flexible material 30 associated with each of the merchandise storage structures 18, 19, 20, and 21 serves to close the lower, rear ends of the merchandise compartments 24 of the merchandise structure, and each merchandise compartment so closed by the strip of flexible material has an article of merchandise disposed therein which is retained within the compartment by the strip of flexible material 30. However, when a shaft 28 and its associated roller are rotated as described upon introduction of a proper coin in the machine such rotation is sufficient to wind on the roller the required amount of the associated strip of material 30 to raise the lower end of said strip of material the proper distance to expose the rear, lower end of the lowermost compartment 24 which prior to the operation of the machine was closed at its lower end by the strip of material and which contains an article of merchandise. As the lower end of the strip of material 30 is moved upwardly to expose the lower, rear end of the lowermost loaded compartment 24 on operation of the machine as described, the article of merchandise contained in said compartment slides from the rear end thereof and drops into the curved passageway 12 wherein said article of merchandise is conducted by the curved bottom wall of said passageway and is guided by the walls 15 thereof to the forward portion of the passageway 12 where its motion is arrested by the bead 10. The operator of the machine may then reach into the discharge opening 12' and remove the article of merchandise purchased by him.

From the foregoing it is plain that when the machine is fully serviced an article of merchandise is in each compartment of each of the merchandise storage structures 18, 19, 20, and 21 and the strips of material 30 associated with the respective merchandise storage structures are drawn downwardly so that their lowermost end portions close the lowermost compartments 24 of the merchandise storage structures and all of the compartments thereabove. An operator of the machine need only to introduce a proper coin into the coin slot 97 of the machine and raise the operating element 69, 70, 71, or 72 associated with the particular merchandise storage structurn in which articles of the kind that he desires to purchase are stored. The machine will then follow through its sequence of operations to raise the lower portion of the strip of material associated with the operating element actuated and one of the desired articles of merchandise will be delivered to the discharge opening 12' of the machine. Likewise on each subsequent operation of the machine the strip of material 30 associated with the merchandise storage structure be-

ing operated is wound on its associated roller sufficiently to expose the rear end of the lowermost compartment in which an article of merchandise is contained and the article in that lowermost compartment is discharged into the curved passageway 12 for delivery to the purchaser. When articles of merchandise have been discharged from all of the compartments of any one of the merchandise storage structures by repeated operations of the machine the word "Empty" (see Fig. 4), which is applied to the strip of material 30 of the exhausted merchandise structure appears at the window 108 associated with that merchandise storage structure, thus notifying prospective operators of the machine that no articles of merchandise remain in that particular merchandise storage structure.

It has been stated herein that when the machine is at rest, as shown in Fig. 2, the strips of material 30 of the merchandise storage structures 18, 19, 20, and 21 are locked by disposition of the pins 40 of the locking devices 36 in openings 34 of said strips of material, and that on commencement of downward movement of the bar 52 and the forward end of the arm 46 associated with a merchandise storage structure, the side extension 41 of the locking device of that storage structure moves downwardly thereby moving the pin 40 out of the opening of the strip of material in which it was disposed to release the strip of material for movement. The strip of material 30 of an operated merchandise storage structure is also locked by the pin 40 of the associated locking device 36 when the bar 52 reaches the limit of its downward movement and when the lower end portion of the associated strip of material has been raised to release an article of merchandise from the lowermost compartment 24 containing an article of merchandise. This is accomplished by the pawl 47 engaging the ear 43 of the associated locking device 36 during the final portion of the upward and forward movement of the rear portion of the associated arm 46 whereby the locking device is actuated to cause the pin 40 thereof to move into an appropriate opening 34 of the strip of material 30 (see Fig. 11). By so locking the strips of material when they have completed the action of uncovering the lowermost loaded compartments of the merchandise structures all likelihood that overrunning or bouncing of the strips of material which would uncover more than one merchandise compartment is prevented.

When the mechanism at the upper end of an operated merchandise structure reaches the phase of its operation as illustrated in Fig. 11 and as just described, the operated operating element 69, 70, 71, or 72, is in its uppermost position, and as the operator of the machine releases said operating element the torsional coil spring 86 returns the operated mechanism of the machine to the condition in which it is shown in Fig. 2. During such movement the pawl 47 moves away from the ear 43 of the locking device allowing the weight of the side extension thereof to move the pin 40 outwardly out of the opening 34 of the strip of material in which it was disposed, and the associated strip of material is free from engagement by the locking device until the upper end of the bar 52 and the forward end of the arm 46 again engage and raise the ear 42 of the locking device to again introduce the pin 40 of the locking device into the opening of the strip of material 30. It is obvious that when the bar 52 is being moved from the lowered position in which it is shown in Fig. 11 to the elevated position in which it is shown in Fig. 2, the associated strip of material 30 is stationary, though unlocked, because at this time said strip of material is subjected to no force which would tend to move it.

As the strip of material 30 of any one of the merchandise storage structures 18, 19, 20, or 21, starts its upward movement to uncover the uppermost merchandise compartment of the merchandise storage structure, the horizontal portion 32b of the angular element 32 of that strip of material engages the lateral flange portion 104' of the rearwardly extended portion 104 of the associated cam member 100 and moves said rearwardly extended portion upwardly therewith. This subjects the cam member 100 to limited rotary movement about the associated shaft 28 which brings the cam face 105 of said cam member to the position in which it is shown in Fig. 13 where it cams the pawl 47 outwardly and prevents it from moving beneath and engaging a tooth of the associated ratchet wheel 44. Thus any attempted additional operation of the shaft 28, roller 29, and strip of material 30 of a merchandise storage structure after the stock of merchandise has been exhausted therefrom is prevented, as any additional operations of the bar 52 and the arm 46 will result merely in the pawl 47 sliding idly along the cam face 105 without engaging a tooth of the ratchet wheel 44.

When one or more of the merchandise storage structures have been exhausted of merchandise articles and an attendant desires to reload the compartment or compartments, he unlocks the front of the machine and raises the upper, front closure 2. With one hand the attendant depresses the operating portion 101 of the cam member 100 whereby the cam face 102 of said cam member cams the detent pawl 44' out of the path of travel of the teeth of the ratchet wheel 44, the cam face 105 of said cam member continuing to hold the pawl 47 out of engagement with the teeth of the ratchet wheel 44. He then grasps the appropriate arm 33 and draws the strip of material 30 downwardly to its lowermost position unwinding said strip from the roller of the freely rotating shaft 28. The cam member is then released to permit the spring 106 to return it to its normal position and the attendant may then introduce articles of merchandise into the empty compartments.

Returning now to the coin-controlled mechanism shown in Figs. 3 and 10, the normal operation of the machine which results in an article of merchandise being delivered to a purchaser causes the segmental member 84 to be rotated to the right in Fig. 10 to a sufficient degree to permit the coin C to pass into the cavity 87 of said segmental member, and when said segmental member is returned to its position of rest as the operation of the machine is completed, as shown in Fig. 3, the coin drops from said cavity into the bottom of the machine from which it may be removed by displacement of the lower, front closure 3. However, if, for any reason, an operator of the machine introduces a coin into the machine, and before operating the machine to receive an article of merchandise, desires the return of the coin, he may elevate the operating element 73 to cause the rear end portion of the arm 99 to contact with the pin 94 of the coin-receiving element 91 and move said coin-receiving element about its pivot 92 and thereby swing the lower portion of said coin-receiving element rearward-

ly. This will release the coin and permit it to drop in the chute 98 and pass through the opening 98' in the spaced plate 7 into the passageway 12, said opening 98' being above the rear end of the adjacent wall 15.

It has been previously pointed out herein that the elements 79 (Fig. 7) permit only one of the operating elements 69, 70, 71, 72, and 73 to be operated during a single operation of the machine, and therefore it is not possible for an operator of the machine to receive more than one article of merchandise on introduction of a single coin in the machine. Likewise, because the elements 79 permit only one operating element to be operated at a time it is not possible for an operator of the machine to raise the operating element 73 so as to remove the tooth and the lower end of the coin-receiving element 91 out of the path of movement of the teeth 90 and then operate another operating element to cause the machine to deliver an article of merchandise. Obviously, the tooth 93 at the lower end of the coin-receiving element 91 engages one of the teeth 90 of the segmental member 84 to prevent operation of the machine to deliver an article of merchandise when no coin is introduced into the machine, as it is through the coin that movement is transmitted to the coin-receiving element to remove its tooth 93 from the path of travel of the teeth 90 of the segmental member 84 and thereby permit the shaft 53 to be rotated. Such release of the shaft 53 for rotary movement allows the portion 59 of the lever 58 associated with the operated operating element to move the associated rod 57 so that said portion 59 may engage and rotate the arm structure 54 to which the bar 52 of the operated mechanism is pivotally attached, said rod 57 preventing engagement of the arm structure by the portion 59 of the lever 58 when the shaft 53 is locked. Also a plurality of teeth 90 are employed to make sure that a tooth of the segmental member will be present for engagement with the tooth 93 of the coin-receiving element 91 even though the segmental member should not be in its fully retracted position.

I claim:

1. A vending machine including a merchandise storage structure provided with a vertical row of mechandise compartments having mechandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the locations of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of mechandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, and means for locking said strip of material against unintended movement, said strip of material being provided with spaced apertures and said locking means comprising an element provided with a portion which is movable into a properly positioned one of said apertures to lock said strip of material.

2. A vending machine including a merchandise storage structure provided with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the locations of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, and means for locking said strip of material against unintended movement, said strip of material being provided with spaced apertures and said locking means comprising an element supported for pivotal movement and provided with a portion which is movable into a properly positioned one of said apertures to lock said strip of material.

3. A vending machine including a merchandise storage structure provided with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the location of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, said means for rotating said roller comprising a ratchet wheel associated with said roller, and an arm supported for rocking movement and provided with a pawl adapted to engage successive teeth of said ratchet wheel and subject said ratchet wheel and said roller to intermittent rotary movement, and means for locking said strip of material against unintended movement, said strip of material being provided with spaced apertures and said locking means comprising an element supported for pivotal movement and provided with a portion which is movable into a properly positioned one of said apertures to lock said strip of material upon pivotal movement of said pivotally supported element as a result of contact therewith of said rock arm.

4. A vending machine including a merchandise storage structure provided with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the location of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said

merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, said means for rotating said roller comprising a ratchet wheel associated with said roller, and an arm supported for rocking movement and provided with a pawl adapted to engage successive teeth of said ratchet wheel and subject said ratchet wheel and said roller to intermittent rotary movement, and means for locking said strip of material against unintended movement, said strip of material being provided with spaced apertures and said roller being provided with circumferentially spaced cavities into alined relation with which the apertures of said strip of material are movable, said locking means comprising an element supported for pivotal movement and provided with a portion which is movable into a properly positioned one of said apertures and into the cavity of the roller alined therewith to lock said strip of material upon pivotal movement of said pivotally supported element as a result of contact therewith of said rock arm.

5. A vending machine including a merchandise storage structure provided with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the location of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, said means for rotating said roller comprising a ratchet wheel associated with said roller, and an arm supported for rocking movement and provided with a pawl adapted to engage successive teeth of said ratchet wheel and subject said ratchet wheel and said roller to intermittent rotary movement, and means for locking said strip of material against unintended movement, said strip of material being provided with spaced apertures and said roller being provided with circumferentially spaced cavities into alined relation with which the apertures of said strip of material are movable, said locking means comprising an element supported for pivotal movement and provided with a portion which is movable into a properly positioned one of said apertures and into the cavity of the roller alined therewith to lock said strip of material upon pivotal movement of said pivotally supported element as a result of contact therewith of said rock arm in one position of the rock arm and of contact therewith of said pawl in another position of said rock arm.

6. A vending machine including a merchandise storage structure provided with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the locations of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material upwardly with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, said means for rotating said roller comprising a ratchet wheel associated with said roller, and an arm supported for rocking movement and provided with a pawl adapted to engage successive teeth of said ratchet wheel and subject said ratchet wheel and said roller to intermittent movement, and means operated when the strip of material has uncovered the uppermost merchandise compartment for preventing engagement of said pawl with teeth of said ratchet wheel.

7. A vending machine including a merchandise storage structure providing with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the locations of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material upwardly with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, said means for rotating said roller comprising a ratchet wheel associated with said roller, and an arm supported for rocking movement and provided with a pawl adapted to engage successive teeth of said ratchet wheel and subject said ratchet wheel and said roller to intermittent movement, and means operated when the strip of material has uncovered the uppermost merchandise compartment for preventing engagement of said pawl with teeth of said ratchet wheel, said strip of material being provided with an abutment and said means for preventing engagement of the pawl with teeth of the ratchet wheel comprising a rotary member having a cam face which blocks engagement of said pawl with teeth of said ratchet wheel upon movement of

said rotary member by said abutment of said strip of material.

8. A vending machine including a merchandise storage structure provided with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the locations of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material upwardly with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, said means for rotating said roller comprising a ratchet wheel associated with said roller, an arm supported for rocking movement and provided with a pawl adapted to engage successive teeth of said ratchet wheel and subject said ratchet wheel and said roller to intermittent movement, and a second pawl adapted to engage teeth of said ratchet wheel and prevent retrograde rotation thereof, and manually operable means provided with an operating portion at the front of the machine for simultaneously disengaging both of said pawls from the teeth of said ratchet wheel to permit the strip of material to be unwound from said roller.

9. A vending machine including a merchandise storage structure provided with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the locations of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material upwardly with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, said means for rotating said roller comprising a ratchet wheel associated with said roller, an arm supported for rocking movement and provided with a pawl adapted to engage successive teeth of said ratchet wheel and subject said ratchet wheel and said roller to intermittent movement, and a second pawl adapted to engage teeth of said ratchet wheel and prevent retrograde rotation thereof, and manually operable means for disengaging said pawls from the teeth of said ratchet wheel to permit the strip of material to be unwound from said roller, said manually operable means comprising a rotary member having cam faces which engage said pawls and move them out of engagement with the teeth of said ratchet wheel.

10. A vending machine including a merchandise storage structure provided with a vertical row of merchandise compartments having merchandise supports which incline downwardly to provide said merchandise compartments with discharge ends at the locations of the lowermost portions of said inclined merchandise supports, a strip of material disposed at the discharge ends of said merchandise compartments for normally retaining articles of merchandise within said merchandise compartments, a roller on which said strip of material is adapted to be rolled so as to move said strip of material upwardly with respect to said merchandise storage structure and relative to the discharge ends of the merchandise compartments thereof, means for subjecting said roller to intermittent rotary movement so as to roll said strip of material thereon and move a portion of the strip of material out of merchandise-retaining relation with respect to successive merchandise compartments to permit discharge of merchandise therefrom, and means operated by an element carried by said strip of material when said strip of material has uncovered the uppermost merchandise compartment for rendering said roller rotating means ineffective.

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