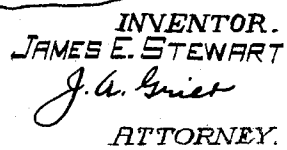


**2,513,595**

4 Sheets--Sheet 1



July 4, 1950

J. E. STEWART  
VENDING MACHINE

2,513,595

Filed Oct. 4, 1944

4 Sheets-Sheet 2

FIG. 3.

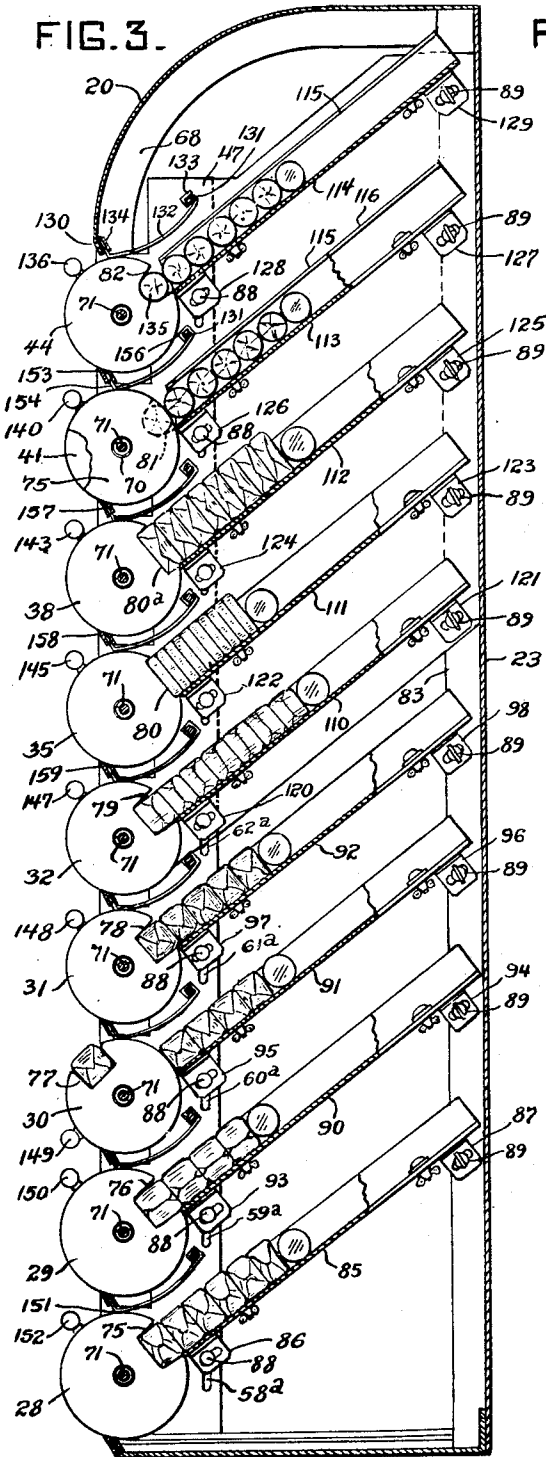
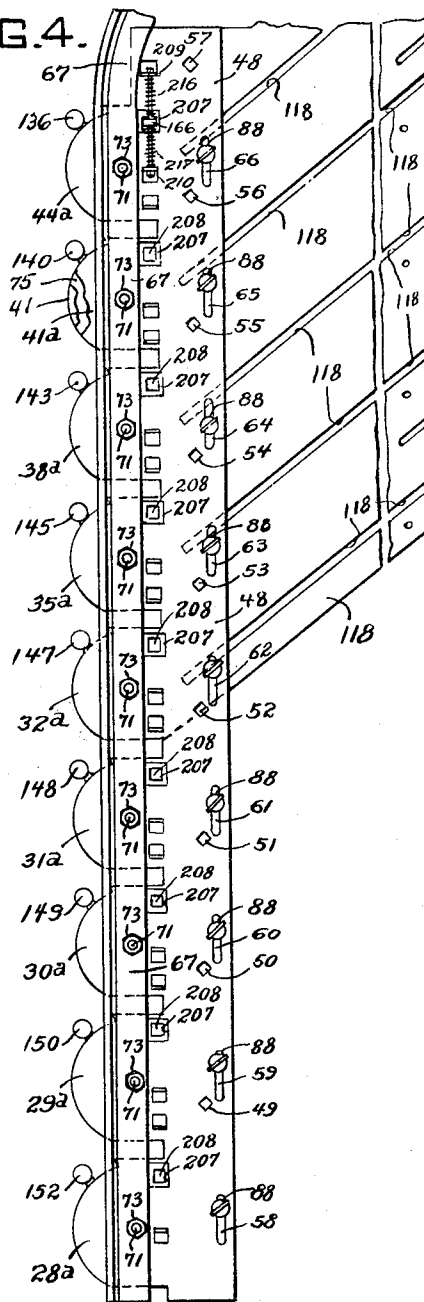


FIG. 4.



INVENTOR.  
JAMES E. STEWART

BY

J. C. Grier

ATTORNEY.

July 4, 1950

J. E. STEWART  
VENDING MACHINE

2,513,595

Filed Oct. 4, 1944

4 Sheets-Sheet 3

FIG. 5.

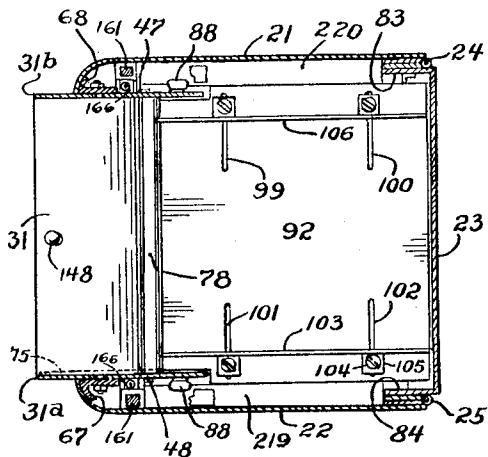


FIG. 6.

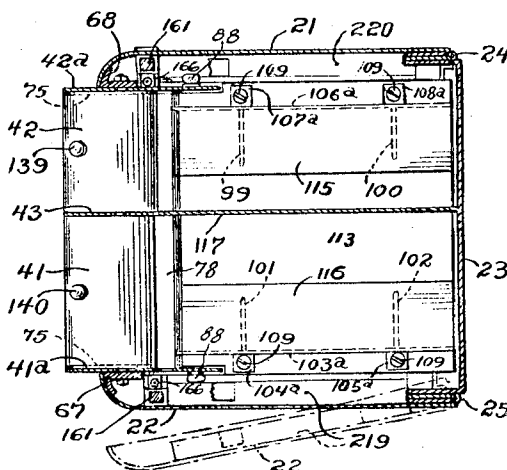


FIG. 7.

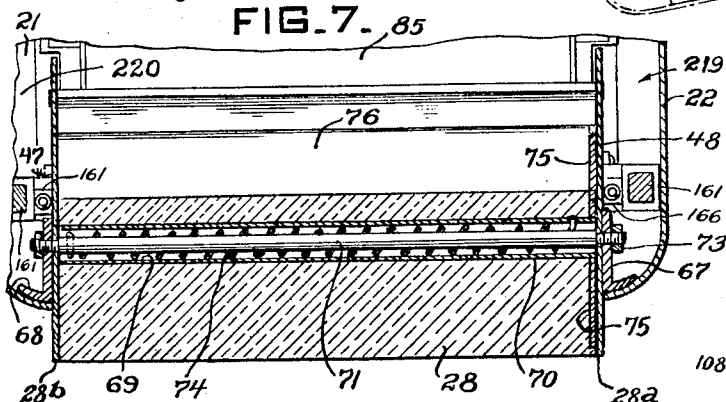


FIG. 9b.

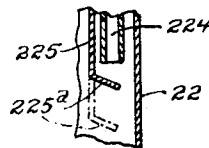


FIG. 8.

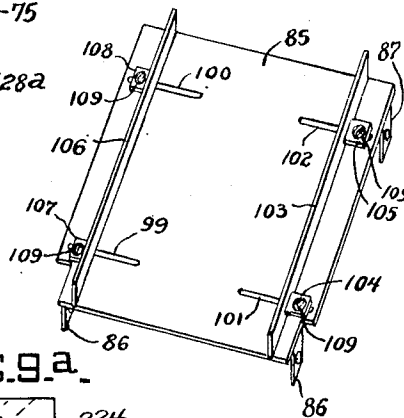


FIG. 9.

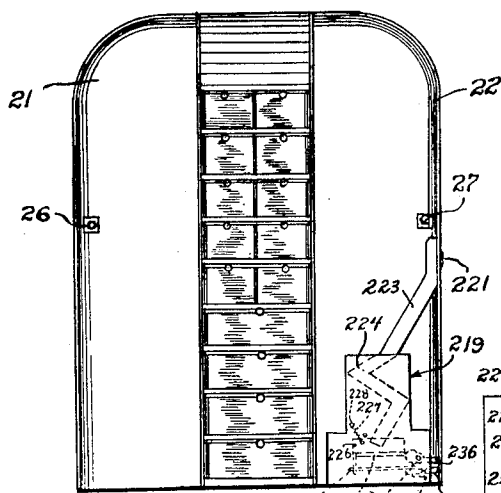
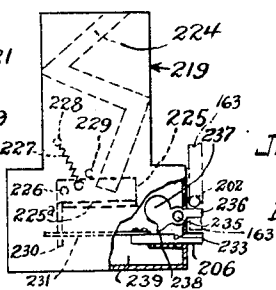


FIG. 9a.

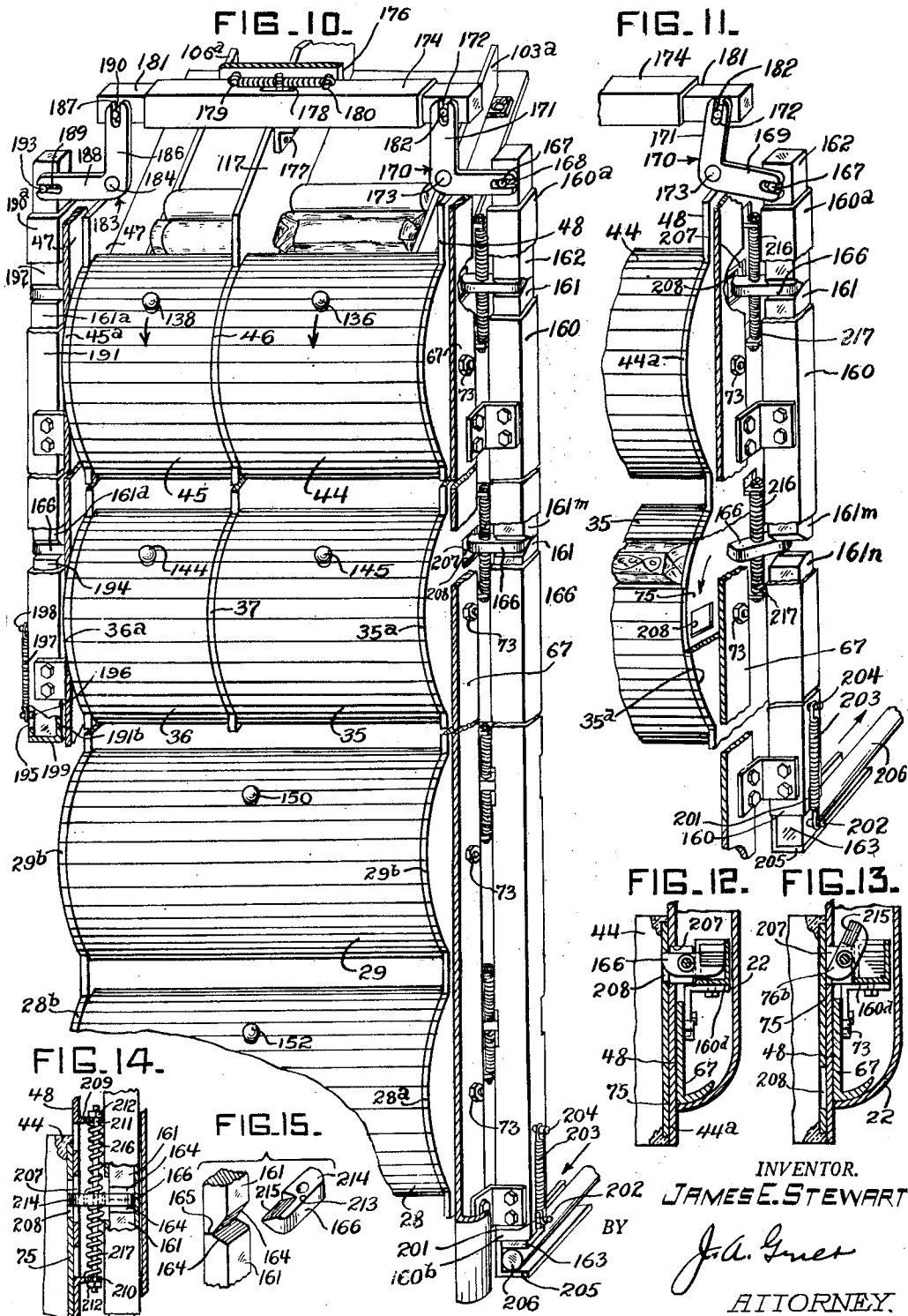


INVENTOR.  
JAMES E. STEWART  
BY *J. A. Grier*  
ATTORNEY.

**2,513,595**

Filed Oct. 4, 1944

4 Sheets-Sheet 4



## UNITED STATES PATENT OFFICE

2,513,595

## VENDING MACHINE

James E. Stewart, Rye, N. Y., assignor, by mesne assignments, to Stewart Products Corporation, a corporation of Delaware

Application October 4, 1944, Serial No. 557,164

7 Claims. (Cl. 312—46)

1

This invention relates to improvements in vending machines and is directed more particularly to machines for vending small packages of merchandise. One object of the invention is the provision of a machine carrying a plurality of inclined planes each adapted to hold a maximum number of said packages, thereby providing a machine of greater capacity in proportion to its size than has heretofore been known.

Another object of the invention is the provision, in machines for vending small articles and packages, of a rotary article ejecting member having an article cavity formed therein, an inclined article support normally positioned so that the lowermost article enters said cavity when said member is in its normal or reset position, said member serving both as a delivery member and an article separator, thereby insuring sequential delivery of said articles.

A further object of the invention is the provision, in machines for vending small articles and packages, of a rotary article ejecting member having an article cavity formed therein, an inclined article support adjustably mounted in said machine and including lateral portions mounted thereon and adapted to be adjusted toward or away from each other in accordance with the lengths of the articles or packages to be vended therefrom.

Yet another object of the invention is the provision in machines for vending small articles or packages, of a rotary article ejecting member having an article cavity formed therein, an inclined support for a plurality of articles, the lower end of said support being adjustable relative to said ejecting member so that the lowermost article on said support may always enter said cavity.

A further object of the invention is the provision in a vending machine for small articles or packages, of inclined article supports including lateral portions mounted thereon and adapted to be adjusted toward or away from each other in accordance with the lengths of the articles or packages to be vended therefrom, said lateral portions having extensions at least partially overhanging any articles or packages to prevent such articles (especially round ones) from "piling up".

Other objects and advantages of the invention will be apparent to those skilled in the art.

Referring to the drawings which illustrate, by way of example, one embodiment of the invention:

Figure 1 is a front elevation of the improved vending machine;

Figure 2 is a side elevation of the machine of Figure 1, as seen from the right side;

Figure 3 is an elevation partly in section of the machine shown in Figures 1 and 2;

2

Figure 4 is an elevation of a portion of the frame and one of the said plates supporting the rotary ejecting means;

Figure 5 is a sectional plan view of the machine as seen along the line 5—5 of Figure 1;

Figure 6 is a sectional plan view of the machine as seen along the lines 6—6 of Figure 1;

Figure 7 is a sectional view of one of the rotary article ejectors showing the method of supporting the same as well as other details;

Figure 8 is a perspective view of one of the article supporting shelves and its adjustable lateral plates which may be adjusted in accordance with the lengths of various packages and articles to be vended;

Figure 9 is a front view of the machine with both sides open, giving access to both sides of the mechanism as well as to the coin mechanism;

Figures 9a and 9b are views of one form of coin device which may be used in my improved machine;

Figure 10 is a perspective diagrammatic view of the coin controlled locking and unlocking mechanism cooperating with the rotary article ejectors;

Figure 11 is a fragmentary view of a portion of Figure 10, showing the coin controlled interposer as withdrawn (due to the proper coin in the coin device) and one of the article ejectors moved to its ejecting position, the camming member moved by the ejector being shown positioned between two lockout members;

Figure 12 is a plan view, in section, of the camming member in its normal position relative to the article ejector cylinder and the lockout blocks;

Figure 13 is similar to Figure 12, but shows the camming member moved by a cylinder associated therewith to a position between abutting ends of the adjacent lockout blocks;

Figure 14 is a fragmentary elevation showing the camming member in its normal relation to its associated cylinder article ejectors, and spring means associated therewith for urging the camming member into such relation; and

Figure 15 is a perspective view of the abutting ends of a pair of lockout blocks or members, and one of the camming members adapted to cooperate therewith.

Referring first to Figs. 1 and 2, the cabinet 20 has its sides 21 and 22 in the form of doors which are hinged to the back plate 23, at 24 and 25 respectively. The side 21 is provided with a lock 26, and the side 22 has a lock 27.

The cabinet has several wide article ejecting members 28, 29, 30, and 31, and several groups of narrower ejecting members grouped in pairs. Ejecting members 32 and 33 form a pair with a separating breaker strip 34 therebetween. The

3

lengths of the members 32 and 33, plus the thickness of the strip 34, are substantially equal to the length of one of the wide ejecting members. Above the pair 32 and 33 are pairs of members; 35, 36 with a separator 37 therebetween; 38, 39, with a separator 40 therebetween; 41, 42 with a separator 43 therebetween; and 44, 45 with a separator 46 therebetween.

It will be understood that the members 28 to 31 inclusive will accommodate longer types of articles or packages, and the shorter grouped members will accommodate shorter articles or packages.

Referring to Figs. 3 and 4, it will be noted that Fig. 3 is an elevation partly in section, and that the rotary ejecting members are shown in elevation. The frame plate 47 and a duplicate frame plate 48 (Fig. 4) conjointly support the supporting shafts (to be presently described) of all of the rotary ejecting members. The plate 48 has a series of square holes 49, 50, 51, 52, 53, 54, 55, 56 and 57. Adjacent to these holes is a series of elongated slots 59 to 66 inclusive, and a slot 58 is below and in alignment with said first slots. An angled frame member 67 has the plate 48 secured thereto, and a similar frame member 68 on the other side of the machine has the plate 47 secured thereto, and the plate has corresponding square holes and corresponding elongated slots in horizontal alignment with the square holes 49 to 57 inclusive, and the slots 59 to 66 inclusive, in the plate 48.

The plate 47 has several curved extensions 28b, 29b, 30b, 31b, 33a, 35a, 39a, 42a and 45a, lining up respectively with the outer edges of the left ends of the ejecting members 28, 29, 30, 31, 33, 36, 39, 42, and 45 (see Fig. 1). Likewise the plate 48 has similar extensions 28a, 29a, 30a, 31a, 32a, 35a, 38a, 41a, and 44a, lining up with the right ends respectively of ejectors 28, 29, 30, 31, 32, 35, 38, 41 and 44.

In Fig. 7 is shown a sectional view of the rotary ejecting member 28 which may be formed of a transparent plastic material, so that the articles therein are visible. This member has a longitudinal hole 69 with a metallic tube 70 pressed or otherwise secured therein. A shaft 71 passing through aligned holes in the frame 68 and the plate 47 on one side of the machine, and aligned holes in the plate 48 and the frame member 67, carries a helical spring 74, and the tube 70 has a working fit thereon. The rotary ejecting member has a metallic plate 75 set into and flush with one end thereof, and this plate cooperates with a camming member and the coin controlled release as will be presently described.

The shaft 71 is shouldered at each end and is secured in the frame and plates described by means of nuts 73. One end of the spring 74 is secured to the ejecting member and the other end is secured to the shaft, so that the latter may be turned to wind the spring sufficiently to urge the ejecting member to its normal position—the position shown in Fig. 3. The ejecting member 28, has an article cavity 76 formed therein, preferably parallel to its axis.

The back plate 23 has forwardly extending portions 83 on one side thereof and 84 on the other side, see Figs. 5, 6, and 3, and an article shelf 85 is provided with lugs 86 under the front end thereof and lugs 87 under the back end thereof. The lugs 86 are engaged by bolts 88 passing through slots in said lugs and through the slot 58 in the plate 48 on one side and through the slot 58a in the plate 47 on the other side. One of

4

the lugs 87 is engaged by a bolt 89 passing through a slot in the lug and a hole in the portion 83 on one side and the other lug is engaged by a similar bolt passing through a hole in the portion 84. By loosening the screws 88 and 89, the shelf 85 may be adjusted endwise with respect to the ejecting member 28, and adjusted to align its upper surface with respect to the article cavity 76, after which the screws may be tightened to retain the setting.

Shelves 90, 91, 92 are identical with the shelf 85, and are respectively provided with front lugs 93, 95, 97 and back lugs 94, 96, 98 also employing screws 88 and 89, and these shelves may be adjusted in the same manner as that described for the shelf 85.

Referring now to Figs. 5 and 8, the shelves 85, 90, 91, 92, 110, 111, 112, 113 and 114, are provided with spaced parallel slots 99 and 100 adjacent one edge thereof, and spaced parallel slots 101 and 102 adjacent the opposite edge thereof. Each of the shelves 85, 90, 91, 92 has mounted thereon a bar 103 with ears 104 and 105 preferably formed integral therewith. Screws 109 passing through holes in these ears and also passing through the slots 101 and 102 respectively engage nuts under the slots. Each of these shelves also has a bar 106 with ears 107 and 108 preferably formed integral therewith. Screws 109 passing through holes in these ears and also passing through the slots 99 and 100 respectively engage nuts under the slots. The bars are, in effect, sides of the shelves, and by loosening the screws, the bars may be moved or adjusted in accordance with the lengths of the packages to be vended from said shelves.

Similar bars may be mounted on shelves 110 to 114 inclusive; however, in cases where round packages are to be vended, I may use modified adjustable sides for the shelves. These sides include portions which overlie the packages and prevent them from "piling up". For example, reference is made to Figs. 3 and 6, wherein the adjustable members consist of a lefthand member having an upstanding portion 106a with lugs 107a and 108a through which screws 109 extend and passing through the slots 99 and 100 respectively, engage nuts below these slots. This member also includes a horizontal portion 115 formed integral therewith and adapted to overlie the packages. Also a righthand member has an upstanding portion 103a with lugs 104a and 105a and a horizontal portion 116 formed integral therewith. Screws 109 passing through holes in the lugs and through the slots 101 and 102 respectively, engage nuts therebelow. The portion 116 is adapted to overlie the articles on the shelf to prevent "piling up".

It will be noted that shelves 110 to 114 inclusive are provided respectively with lugs 120, 121; 122, 123; 124, 125; 126, 127; and 128, 129; and are used to support two groups of articles. At the lower ends of each shelf are provided two article ejecting members. The shelf 110 has ejecting members 32 and 33. These members are mounted on a shaft like the shaft 71; they are provided with tubular linings like 69, except shorter; they are provided with individual springs like 74 except shorter, and they are provided with inset plates or discs 75. The member 32 has its disc 75 set in on the righthand side (looking at the front of the machine) and the member 33 has its disc set in on the left side. Between the members 32 and 33 is a breaker or trim plate 34 which may form an integral part of an upright 117 in the

5

machine. This upright has; a trim portion 37 between members 35 and 36, a trim portion 40 between members 38 and 39, a trim portion 43 between members 41 and 42, and a trim portion 46 between ejecting members 44 and 45.

The upright 117 (Figs. 4 and 6) separating the shelves 110 to 114 into two parts each, have therein slots 113 to permit adjustment of the shelves relative to the article cavities in the ejecting members. This upright is secured to the rear wall by means of brackets (not shown). The front end of the upright is scalloped to form the separators 34, 37, 43 and 46, and these separators have holes therein through which the shafts 71, supporting the pairs of short rotors 32—33, 35—36, 38—39, 41—42, and 44—45 extend.

Referring now to Figs. 1 and 3, the curved top 20 of the machine carries on its lower end a transverse channel 130 in the form of an inverted U. Mounted in the upper aligned square holes 57 in the plates 47 and 48, is a square bar 131.

A member 132 formed from a sheet of spring material (brass for example) has one end 133 formed to fit the square bar 131, and the other end 134 is upturned and normally projects a little way into the channel 130. The square bar 131 is mounted in the square holes 57 in the vertical support plates. A portion of the member 132 normally bears against the cylindrical surface of the article ejecting member 44, along the top thereof. The knob 136 may have a threaded stud (not shown) integral therewith and engaging a tapped hole in the plastic member 44. When the knob 136 is pulled (after the coin is dropped into the coin mechanism) to rotate the member 44 in a clockwise direction, (as seen in Fig. 3) to effect the delivery of a package or article 135 in the cavity 82, the left end of the member 132 is "sprung" upwardly if the article 135 is thicker than the depth of the cavity 82. If this occurs, the upturned end 134 is momentarily moved more deeply into the channel 130. This arrangement is provided to prevent any blocking due to irregular sizes of the packages or articles.

A member (not shown) similar to the member 132, has one end also engaging the bar 131, and its other end 137, which can be seen in Fig. 1, also engaging the channel 130. This member contacts the upper surface of the ejecting member 45, which incidentally carries a knob 138.

A channel member 153 (in the form of an inverted U) extends from side to side above the ejecting members 41 and 42 and has its ends secured to the frame plates 47 and 67. A pair of spring members, similar to member 132, have their inner ends mounted on a square bar 156 mounted in the square holes 56 in plates 47 and 48 and their upturned outer ends 154 and 155 respectively engaging the channel member 153.

Similar channel members 157, 158, and 159, also having their ends secured to the frame plates 47 and 67, are positioned above the respective pairs of ejecting members 38, 39; 35, 36; and 32, 33; and similar spring members like 132 mounted on square bars like the bar 133, said bars being supported in square holes 55, 54, 53, etc. These spring members engage said channel members in substantially the same manner described above, therefore, the description need not be repeated, and like members are also associated with ejecting members 28, 29, 30 and 31.

*Coin control and locking circuit associated therewith*

A rectangular tube 160, Fig. 10, is mounted on

6

the frame member 67 on the right-hand side of the machine and extends from a point 160a, above the ejector member 44, to a point 160b alongside the right end of the lowest ejector member 28. Various portions are cut away to show the lockout members, and clearance is provided for the cams, etc. The tube 160 carries a plurality of lockout members 161, 162, 163. The members 161 are the intermediate members and one of them is shown in perspective in Fig. 15. Since the tube 160 spans a total of nine article ejectors (28, 29, 30, 31, 32, 35, 38, 41 and 44) there are eight of the intermediate members 161. The member 162 is at the top and abuts the uppermost member 161. The member 163 is at the bottom and its upper end abuts the lower end of the lowest member 161. Each member 161 consists of an elongated rectangular bar with beveled surfaces 164 and flat surfaces 165 on each end thereof. The length of each member 161 is equal to the distance from the center of one ejector member to the center of the next.

The member 162 has a bevel and a flat on its lower end which cooperates with the bevel and the flat on the upper end of the uppermost member 161 whereby they may be separated by a camming member 166 in a manner to be presently described. The member 162 carries a stud 167 which is engaged by a slot 168 in the arm 169 of a bell crank 170. The bell crank is mounted on a shaft 173 which is in turn supported on a bracket (not shown) on the strip 67. The arm 171 of the bell crank is at a right angle with the arm 169, and it also is provided with a slot 172.

Extending across the machine near the top thereof and below the curved top surface 20, is a rectangular tube 174 which is secured to the plates 47 and 48 by ears, not shown, and the mid-portion of the tube may be secured to the plate 117 by means of a bracket 177 riveted or screwed to the plate and the tube.

A slot 176 is formed in the upper surface of the tube 174 intermediate the ends thereof and communicates with the hollow interior thereof. An ear, or lug, 179 is at one end of the slot, and a second like ear 180, is at the other end of the slot, both being mounted on a plate 176 secured to 117.

A bar 181 has a working fit in the tube 174 and carries a stud 182 near one end which is engaged by the slot 172 in the arm 171 of the bell crank 170. A second bell crank 183, is mounted on a shaft 184 carried on a bracket, not shown, supported on the plate 47. This bell crank has a vertical arm 186 with a slot 187 formed therein, and a horizontal arm 188 with a slot 189 formed therein. A stud 190 in the opposite end of the bar 181, engages the slot 187, having a working fit therewith.

A rectangular tube 191, similar to the tube 160, is mounted on the left side of the machine and extends from a point 190a above the ejector member 45 to a point 191b alongside the left end of the lowest lefthand short ejector member 30. Various portions of the tube 191 are also cut away to show the lockout members, and clearance is provided for the camming members, etc., to be presently described. The tube 191 carries a plurality of lockout members namely: an upper member 192 is identical with the member 162, having a bevel and a flat on its lower end and carrying a stud 193, which is engaged by the slot 189 in the bell crank arm 188, four intermediate members 161a which are identical with the members 161 shown in Figs. 10 and 15. These

intermediate members are one less in number than the number of article ejector members (33, 36, 39, 42, and 45) on the left side of the machine. There is also a lower member 194, the upper end of which has a bevel and a flat which normally abuts the lower bevel and flat of the lowest member 161a.

The tube 191 has a slot 195 formed in its side near its lower end, and a pin 196 mounted in the member 194 projects through this slot and is engaged by one end of a spring 197. The other end of the spring is secured to a pin 198 mounted on the tube 191, so that the spring urges the member 194 upwardly, and in turn the members 161a and the member 192 are urged upwardly.

The lower end of the tube has a cross portion or barrier 199 rigidly secured thereto, and this barrier abuts the lockout member 194 (when all slack between the lockout members is taken up due to the urge of the spring 197).

The tube 160 has, near its lower end and on the right side, a slot 201. The lower lockout member 163 has a bevel and a flat on its upper end which cooperates with the lower end of the lowermost member 161, and a pin 202, mounted in the member 163, extends through this slot and is engaged by one end of a spring 203. The other end of this spring engages a pin 204 on the wall of the tube 160, thereby urging the member 163, the member 161 and the member 162 upwardly.

The lower end of the tube 160 has a cross portion or barrier 205 rigidly secured thereto and spaced away from the member 163 (when all lockout members in the tube 160 are in contact with one another) a distance slightly greater than the thickness of a camming member 166 above referred to.

Between the lower end of the lockout member 163 and the barrier 205 is normally positioned an interposer 206, which is adapted to be moved rearwardly, a sufficient distance to clear the lockout member 163, by the coin control mechanism. The diameter of the interposer 206 is the same as the thicknesses of the camming members 166. The space between barrier 205 and member 163 is described as slightly greater than the thickness of camming member 166, when the slack is taken up (by spring 203). This clearance may be, for example, .005 to .010 to provide sufficient clearance for the interposers to move freely. The stud 202, in addition to holding spring 203, performs another function which will presently be described.

The tubes 160 and 191 may be secured to the mechanism in any rigid manner, for example, by means of brackets.

From the above description it will be understood that the entire lockout circuit extends from the barrier 199 upwardly to the bell crank 183, thence across the top of the machine via the bar 181, to the bell crank 170, and thence down the right side of the machine to the barrier 205. Since there is no lost motion between the several pins and the slots in the bell cranks cooperating therewith, the interposers and the lockout members, together with the cross-over bar 181 permit substantially no lost motion (except for the clearances referred to above). So it is impossible for any camming member to pass between the adjacent or contacting ends of any of the lockout members unless the interposer 206 is withdrawn by the coin mechanism. When the interposer is withdrawn, and one camming member can enter between any two adjacent lockout blocks, all the other camming members are locked out.

### *Camming members and their relation to the article ejectors*

The plate 48 (as can be seen in Fig. 4) has a series of rectangular holes 207 formed therein. These holes are clearance holes and each is positioned alongside the frame member 67 and communicating with the upper portion of the metallic plate 75, which is set into the right end of each of the article ejecting members, 23, 29, 30, 31, 32, 35, 38, 41, and 44. Since there are nine article ejecting members on this side (the right side) of the machine, there are nine square clearance holes 207. The plate 47 on the opposite side of the machine has five such clearance holes communicating with the metallic insert plates adjacent to the curved extensions 45a, 42a, 39a, 36a, and 33a, (of the plate 47) on the left ends of the article ejectors 45, 42, 39, 36, and 33, respectively.

Referring now to Figs. 10, 11, 12, 13 and 14, one of these clearance holes, 207, may be seen in the plate 48, and (Fig. 12) a rectangular hole 208 is formed in the metallic plate 75 on the end of the article ejector 44. Normally the hole 208 is in registration with the hole 207. A pair of equally spaced lugs 209 and 210 are secured to the plate 48 above and below the hole 207, as seen in Fig. 14, and these lugs support a vertical shaft 211, which may be threaded on each end and secured in the lugs by means of nuts 212.

Pivoted on the shaft 211 is a camming member 166, one end 214 of which normally engages the hole 208 in the metallic plate 75 of the article ejector 44. The other end 215 of the camming member is peaked to form an entering wedge and to nicely cam against adjacent beveled faces 164 on the lockout members 161. The camming member is positioned between balanced springs 216 and 217 on the shaft 212. These springs are wound or arranged so that they also urge the camming member in a clockwise direction, as seen in Figs. 12 and 13, with the result that it normally comes to rest against the tube wall 160d, and when operated the end 214 is urged against the plate 75 (Fig. 13) to insure its re-engagement with the hole 208, in the plate 75. Like camming members are provided for all the other article ejectors.

In Figure 11, the ejector 35 is shown in the article delivery position. It can be seen that the act of pulling down on the knob 145, by the customer, (after inserting the coin to effect the withdrawing of the interposer 206), the hole 208 in the plate 75 of the article ejector 35 causes the camming member to pass between abutting lockout members and the cylinder can be turned further to uncover the article cavity. After removing the article and releasing the knob, the cylinder returns to normal under the urge of spring 74. The camming member reengages the hole 208 and is ready to operate again. While one camming member is interposed between two adjacent lockout members, no other camming member in the machine can enter between any other two members 161, and only a single article can be delivered.

All of the other article ejector cylinders or members have their metallic plates 75 provided with holes like 208, they have cooperative camming members and all other elements associated therewith, like those described above in connection with the article ejector 44—so a detailed description of each is not necessary.

*Operation of the coin mechanism to obtain a selected article from a long or from a short righthand article ejector*

Fig. 11 is a diagrammatic sketch showing the interposer 206 withdrawn by its coin mechanism 219 (shown in the righthand door 22, in Fig. 9). The article selected is in the article ejector 35. Now, since the interposer 206 is withdrawn, by the proper money via slot 221 to the coin mechanism 219, the operator grasps the knob 145 and pulls downwardly. The camming member 166 moves until its entering wedge 215 finds the point of abutment between the adjacent members 161m and 161n, and then is interposed between them, thus forcing the (lower) adjacent member 161n together with all other members therebelow, and also the member 163 downwardly until the latter member is (except for the slight clearance) practically in contact with the abutment 205. Further movement of the knob 140 downwardly uncovers the article cavity in the ejector so that the purchaser may pick the article up and release the knob 140. The central spring 74 in the ejector urges it back to its normal position and as it returns to normal, the end 214 of the camming member engages the hole 208 in the plate 75.

I would like to point out that when any camming member, that has been operated, returns to its normal position, either the balancing spring 203, or 197 (depending on which side the article ejector used is located), returns the lockout members to their normal positions so that the interposer, 206, that had previously been withdrawn, can also return to its normal position in the lockout circuit in a manner to be presently explained.

Referring now to Figures 9, 9a, and 9b, the coin mechanism 219, in the righthand door, has a chute 223 leading downwardly from a coin slot 221, the chute leads the coin into a passage 224 and a coin passing down this passage engages (with an impact) a member 225, mounted on a pivot 226. This member has an angular portion 225a, so that a coin as it leaves the passage 224, engages the portion 225a and by impact swings it down to the position shown in dotted lines in Fig. 9b. A spring 227 has one end connected to the member 225 and its other end engages a stud 228, thus—the spring urges the member 225 in a counter-clockwise direction (Fig. 9a) against a stop 229. The member 225 has an extension 230, the lower end of which extends through a hole formed in a plate member 231. An interposer, 206, is secured to the member 231 and is reciprocally movable in the coin mechanism casing. A notch 233 is formed in the interposer 206. A lever 237 is mounted on a pivot 235 in the casing and has a portion 236 extending therefrom and adapted to be engaged by the stud 202, on the lockout member 163 (Fig. 10). The opposite end of the lever 237 is enlarged to form a weight and carries a portion 238 forming a pawl.

When a coin has momentarily moved the member 225 down to the dotted position, as shown in Fig. 9b, the extension 230 causes the interposer to move to the left as seen in Fig. 9, and the pawl 238 engages the notch 233 and holds the interposer 206 in the withdrawn position, thus the interposer 206 is withdrawn from the lockout circuit, thereby enabling the purchaser to operate one of the ejecting members and cause one of the camming members to interpose itself in the lockout circuit as described above. As soon as this occurs, the lockout member 163 moves

down to the barrier 205 and the stud 202 moving downwardly with the lockout member 163 engages the projecting end of 236 of the lever and disengages the pawl 238 from the notch 233, permitting the interposer 206 to be urged outwardly to its normal position by the spring 227. However, if the member 163 is in the way the interposer presses lightly against the side of this member and then, after the camming member is withdrawn from the lockout circuit the spring 203, Fig. 10, urges the lockout members upwardly thereby clearing the space between the lower end of the member 163 and the barrier 205. This permits the interposer 206 to enter in this space which is its normal position. The interposer 206 is in the form of a round rod and it moves with the coin mechanism when the door 22 is opened. When the door is closed, the interposer 206 may easily re-enter the space it left when the door was open. The coin, after actuating the member 225, falls into the bottom compartment 239.

*To obtain an article from one of the lefthand (short) article ejectors*

A coin having been inserted in the coin mechanism, thereby causing the interposer 206 to be withdrawn, it is assumed that an article from the ejector 35 is desired. The purchaser grasps the knob 144 and pulls it forward (in the same manner as described in connection with the ejector 35). This causes the aperture (208) in the left end of the ejector 35 to rotate the camming member (163) associated therewith to urge it between the junction of the members 161a and 194. Of course, the member 194 cannot move, due to the fact that its lower end is against barrier 199, so, as the camming member enters between them, the member 161a is moved upwardly, together with any other members 161a in the series. The series of members, in turn, cause the member 192 to move upwardly, and this motion is imparted, via the bell-crank 183, to the bar 181—thence to the bell-crank 170, and on to the members 162, the several members 161, and the member 163, causing the latter to move down into the space left open by the withdrawal of the interposer 206.

As the knob 144 is continued forward, the aperture 208 leaves the camming member (in the manner described before), and the ejector 35 reaches a position where its cavity is outside the cabinet, enabling the operator to pick the article up. When the knob 144 is released by the operator, after he has picked up the article, the ejector returns to its normal position under the urge of the central spring 74, and while so returning the aperture 208 re-engages the tail end of the camming member 166 and causes its other end to swing out from between the lockout members. This permits the lockout members along the right side of the machine to move upwardly under the urge of spring 203, to their normal position and clears the path for the interposer 206, to return to its normal position.

It is obvious that many changes may be made in the arrangement herein shown and described without departing from the spirit of the invention as set forth in the annexed claims.

What I claim is:

1. In a vending machine, a casing, an inclined support in said casing for articles to be vended, article ejector means supported in said casing and having an article cavity formed therein and movable from a normal position to a delivery position, said inclined support being adjustable

11

relative to said cavity when said ejector means is in said normal position and adapted to be locked in an adjusted position.

2. In a vending machine, a casing, an inclined article support, a plurality of article ejector members each having an article cavity formed therein, a shaft in said casing commonly supporting said members adjacent to the lower end of said article support, and separator means between said ejector members and through which said shaft extends, said separator means being contacted by the adjacent ends of said ejector members, and individual spring means for each of said ejectors, each of said spring means being comprised of a helical spring embracing said shaft and connected to said shaft and to its ejector.

3. In a vending machine, a casing, a plurality of rotary article ejector members disposed in said casing to form the front thereof, said ejectors being arrayed with spaces therebetween and each having an article cavity formed therein, a transverse member in the form of an inverted U closely adjacent to the lower surface of at least one of said ejector members, and a resilient plate member supported in said casing and having an upturned tongue portion extending between the straight legs of said transverse member and adapted to move upwardly therein, said plate member normally contacting the ejector member immediately below said last ejector member, whereby an unusually thick article in the cavity of said immediately below ejector will move the resilient plate and its tongue upwardly instead of binding.

4. In a vending machine, a casing, a plurality of spaced article delivery members extending through one wall of said casing, and inclined article supports mounted in said casing with their lower ends individually adjacent to said delivery members, said lower ends of said supports being movable to change their pitch or inclination and said supports including individual locking means whereby they may be locked in any adjusted position.

5. In a vending machine, a casing having at least one transverse space formed in the front wall thereof, upright supports in said casing, a horizontal shaft carried on said supports intermediate the upper and lower edges of said space, a cylindrical member rotatably supported on said shaft and forming a closure for said space, said cylin-

12

drical member having a longitudinal cavity formed therein, said cavity being adapted to contain an article of merchandise and to move the same from a normal position inside said casing to a point outside the same as said member is rotated, and spring means disposed about said shaft and within an inner bore of said member for urging said member back to said normal position to receive a second article after said first article is removed from said cavity, and a coin-released lock for locking said rotor in its normal position, said lock including a member pivotally carried on a vertical shaft.

6. A vending machine according to claim 5, in which the member defining at least one of said edges is yieldable, and in which the adjacent edge of a second transverse space is rigid and of U-shaped cross section, said member having a portion extending between the legs of the U and forming therewith a substantially unbroken portion of said front wall.

7. A vending machine according to claim 5, in which at least one of said edges is comprised of a fixed U-shaped channel and a resilient member having one edge which extends between the legs of the U-shaped member thereby forming a yieldable boundary or edge of said transverse space.

JAMES E. STEWART.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

| Number    | Name           | Date          |
|-----------|----------------|---------------|
| 353,572   | Myers          | Nov. 30, 1886 |
| 495,351   | Luster         | Apr. 11, 1893 |
| 738,187   | Burdick        | Apr. 25, 1905 |
| 980,941   | Haerter et al. | Jan. 10, 1911 |
| 1,164,156 | Geager         | Dec. 14, 1915 |
| 1,217,616 | Mann           | Feb. 27, 1917 |
| 1,287,514 | Tenner         | Dec. 10, 1918 |
| 1,546,077 | Hunter et al.  | July 14, 1925 |
| 1,619,006 | Vaughan        | Mar. 1, 1927  |
| 1,715,276 | Burns          | May 28, 1929  |
| 1,744,024 | Brodhead       | Jan. 14, 1930 |
| 1,818,475 | Gray           | Aug. 11, 1931 |
| 2,124,500 | Taylor         | July 19, 1938 |
| 2,210,653 | Dennis         | Aug. 6, 1940  |
| 2,233,118 | Williams       | Feb. 25, 1941 |
| 2,270,908 | Smith          | Jan. 27, 1942 |