June 2, 1942. W. M. STEWART 2,284,931

VENDING MACHINE

Filed Aug. 22, 1939 5 Sheets-Sheet 1

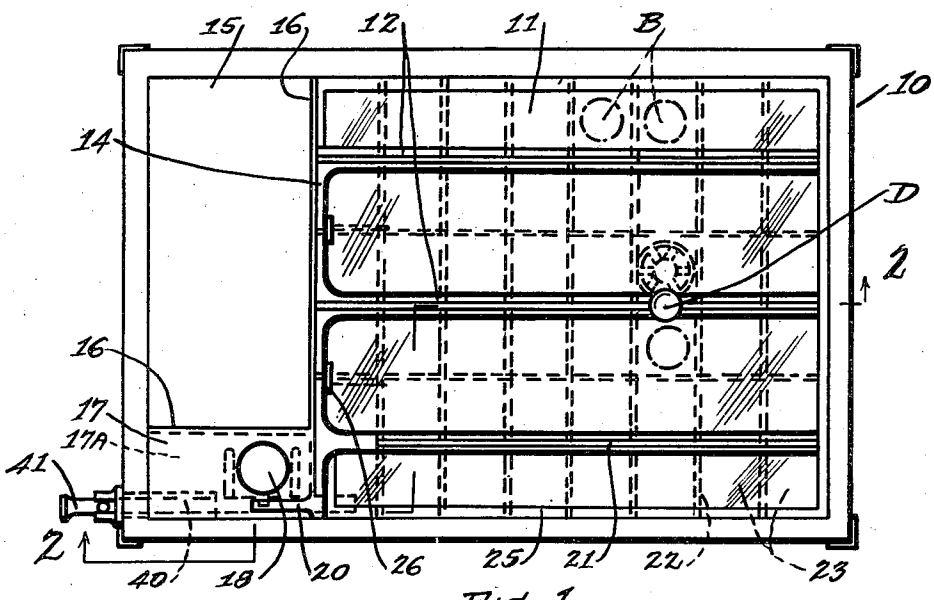


FIG. 1

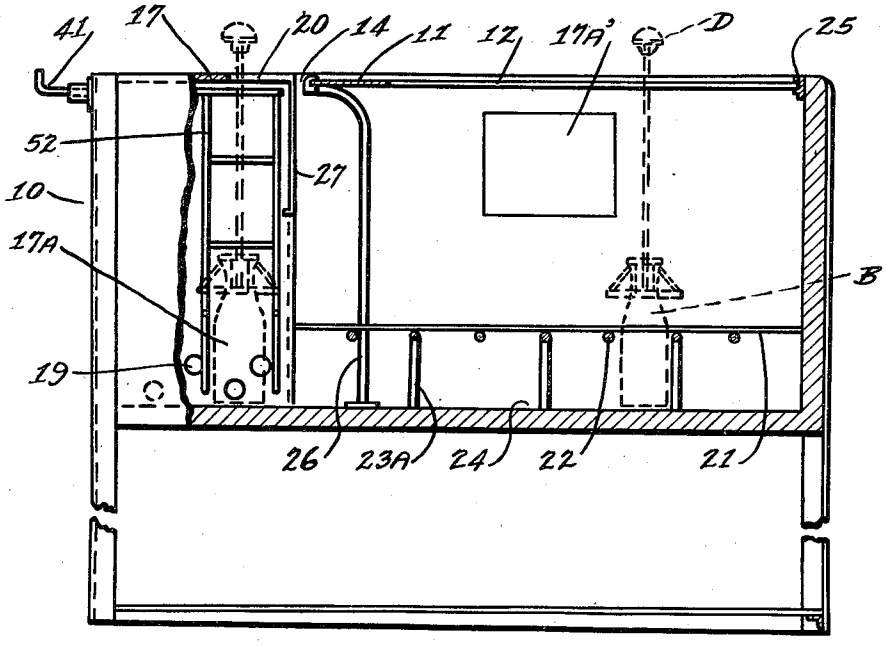


FIG. 2

INVENTOR-
W. M. STEWART
BY
Louis J. Cameron.
ATTORNEY

June 2, 1942. W. M. STEWART 2,284,931

VENDING MACHINE

Filed Aug. 22, 1939 5 Sheets-Sheet 2

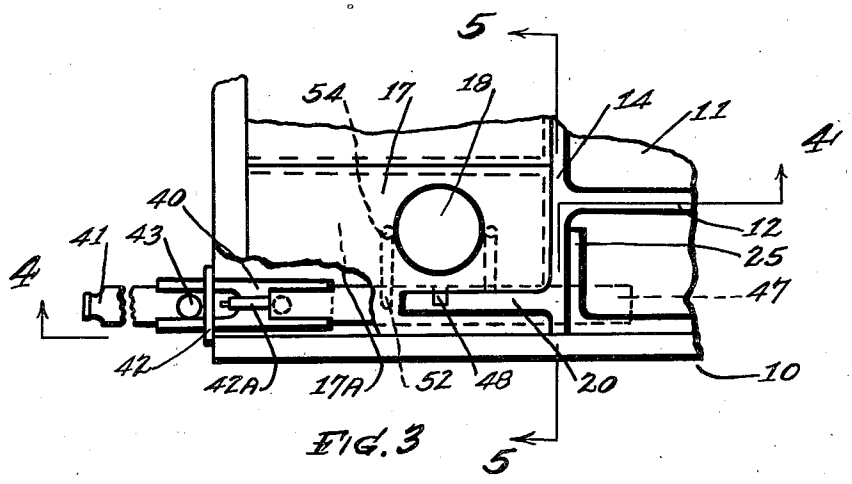


FIG. 3

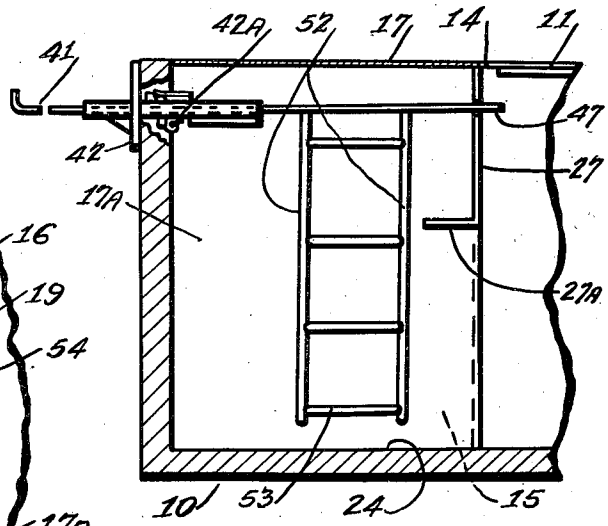


FIG. 4

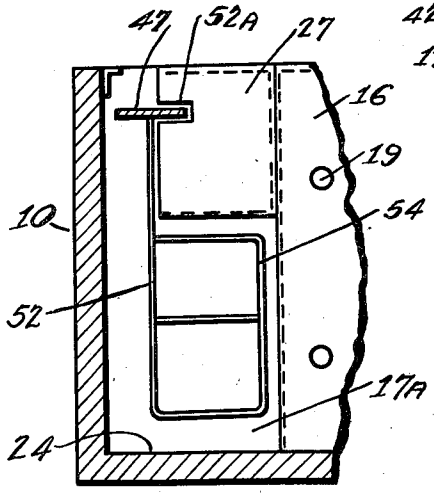


FIG. 5

INVENTOR-
W. M. STEWART
BY
Louis K. Cameron,
ATTORNEY

June 2, 1942. W. M. STEWART 2,284,931

VENDING MACHINE

Filed Aug. 22, 1939 5 Sheets-Sheet 3

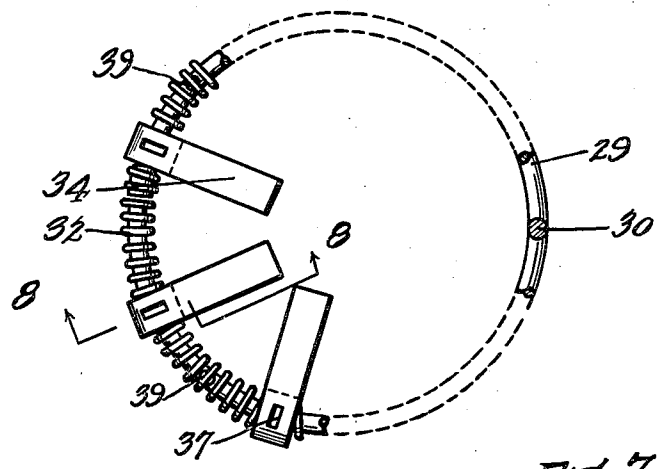


FIG. 7

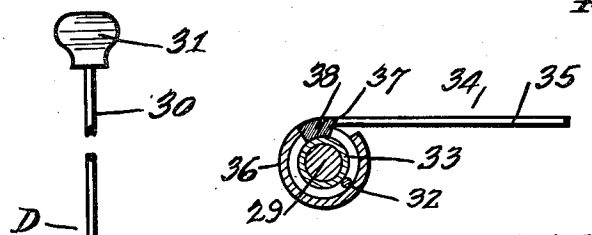


FIG. 8

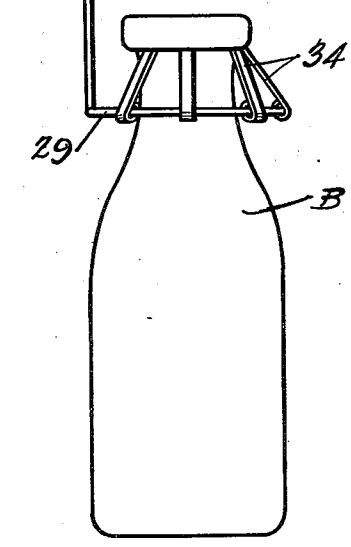


FIG. 6

INVENTOR-
W. M. STEWART
BY
Louis H. Canaan.
ATTORNEY.

June 2, 1942. W. M. STEWART 2,284,931

VENDING MACHINE

Filed Aug. 22, 1939 5 Sheets-Sheet 4

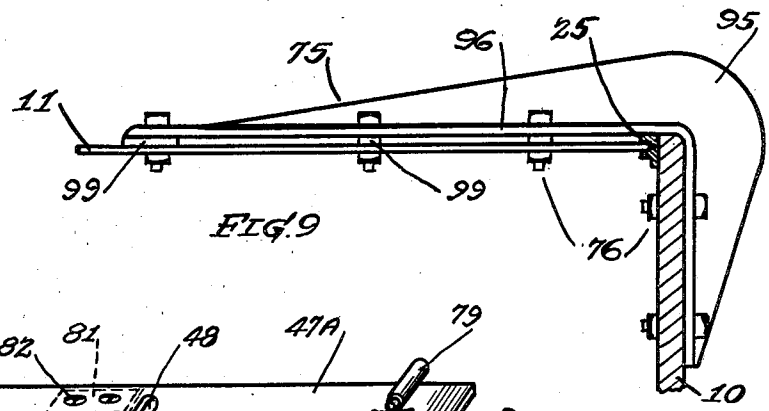


FIG. 9

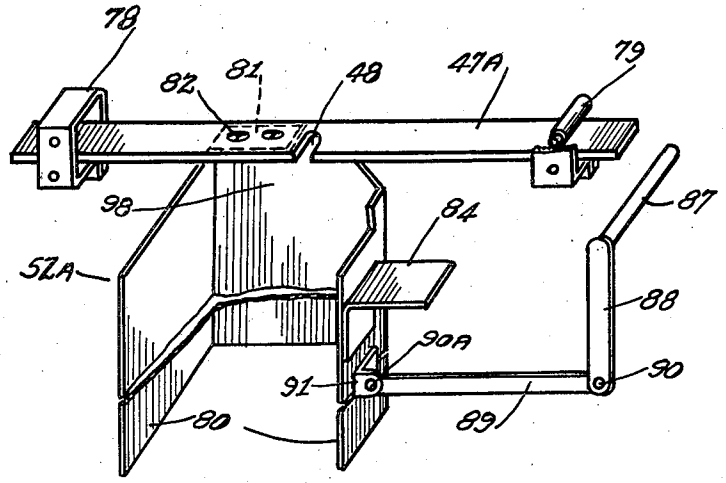


FIG. 10

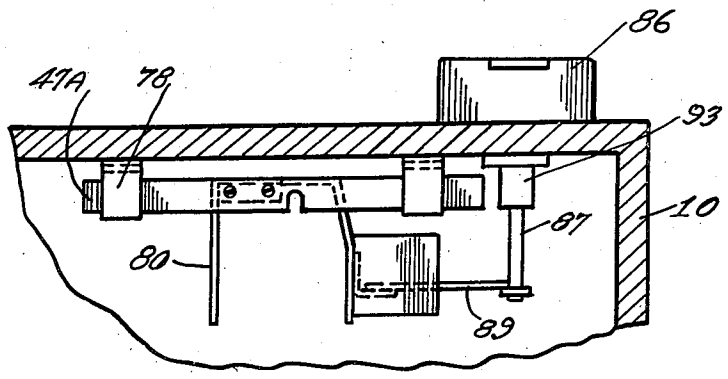


FIG. 11

INVENTOR.
W. M. STEWART
BY
Louis K. Cameron.
ATTORNEY.

June 2, 1942. W. M. STEWART 2,284,931

VENDING MACHINE

Filed Aug. 22, 1939 5 Sheets-Sheet 5

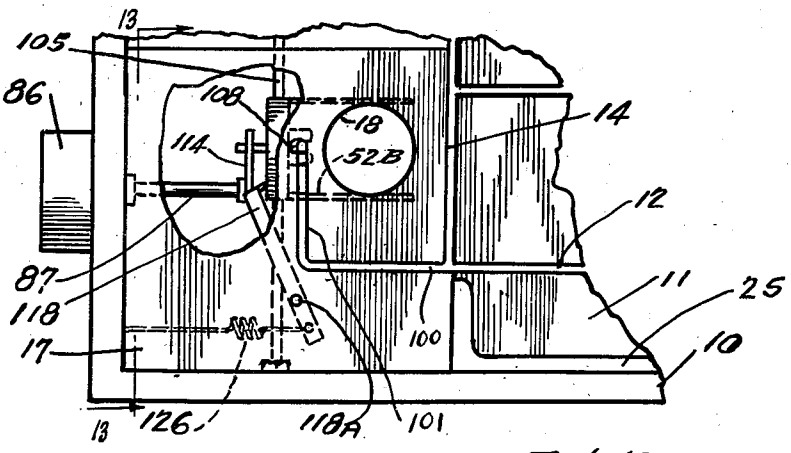


FIG. 12

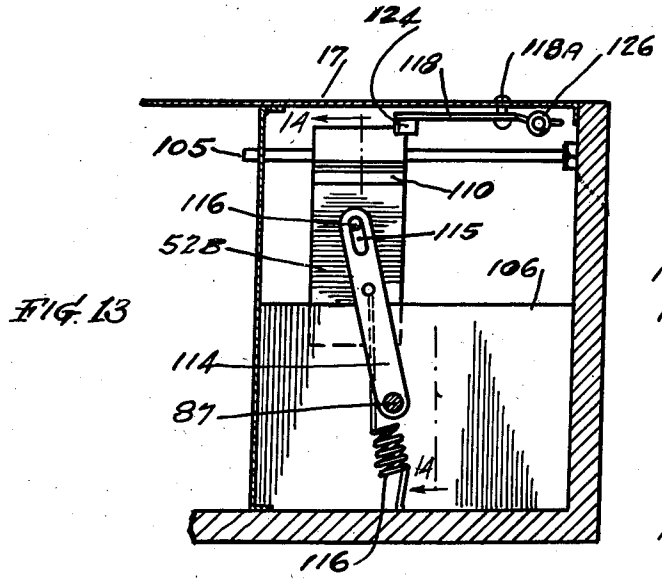


FIG. 13

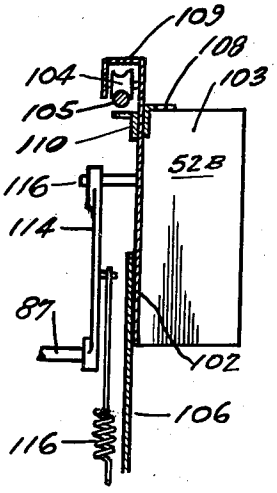


FIG. 14

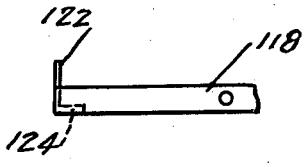


FIG. 15

INVENTOR—
W. M. STEWART
BY
Louis K. Cameron
ATTORNEY.

Patented June 2, 1942 2,284,931

UNITED STATES PATENT OFFICE

2,284,931

VENDING MACHINE

Wilson Marks Stewart, Ottawa, Ontario, Canada, assignor to Hydro-Silica Corporation, Gasport, N. Y.

Application August 22, 1939, Serial No. 291,452
In Canada May 10, 1939

8 Claims. (Cl. 312—87)

My invention relates to a vending machine.

More particularly, the machine is one adapted to vend bottled wares such as soft drinks, chocolate milk, milk, and others.

The objects of the invention, generally, are to improve on known vending machines.

A specific object of the invention is to provide a machine of the kind which permits of one selecting the particular drink desired, out of a number of various drinks stored in the machine.

Another specific object of the invention is to design the machine so that the wares stored therein are easily seen and can be selected and removed with ease.

Still another specific object of the invention is to so design the machine that unauthorized removal of the bottles cannot be accomplished.

Other objects and advantages of the machine may appear as the specification to follow is read in the light of the drawings.

In the drawings, wherein like numerals of reference indicate corresponding parts in the various figures,

Figure 1 is a top plan view of the vending machine;

Figure 2 is a part-elevation, part side section of Figure 1, the section being on about line 2—2 in Figure 1;

Figure 3 is a fragmentary top plan view of Figure 1 on an enlarged scale, parts being broken away;

Figure 4 is a section on about line 4—4 in Figure 3;

Figure 5 is a section on about line 5—5 in Figure 3;

Figure 6 is a more or less diagrammatic side elevation of one form of selector or bottle removing device;

Figure 7 is an enlarged, fragmentary top plan view of Figure 6;

Figure 8 is an enlarged section on about line 8—8 in Figure 7;

Figure 9 is a fragmentary view of Figure 2, on an enlarged scale, showing modified means of holding the glass panels;

Figure 10 is a perspective view of a modified form of the bottle-receiving member or gate shown in Figures 1 to 5;

Figure 11 is a fragmentary horizontal section of a modified form of the machine;

Figure 12 is a fragmentary plan view of another modified form of the machine;

Figure 13 is a section on line 13—13 in Figure 12;

Figure 14 is a section on about line 14—14 in Figure 13;

Figure 15 is a fragmentary plan view of the slot-closing means used in the form of the invention shown in Figures 12 and 13.

Referring now by numerals to the drawing, 10 is a box or casing in which the bottles B to be vended are stored. It preferably takes the shape of an oblong or rectangular casing of suitable construction, suitably insulated, having a top glass cover or member 11 formed with a plurality of spaced, parallel longitudinal slots 12 extending to and connecting with an end transverse slot 14. In one end of the casing is a compartment 15 adapted to enclose a suitable refrigerating unit, or to enclose a suitable refrigerant, such as ice, to thus provide refrigeration or cooling means. For that purpose, the walls 16 which in part define the compartment 15, are formed with a plurality of suitably disposed apertures 19 to afford the required air circulation. A door (or doors) 17A', of suitable size, may be provided in one or more walls of the casing in order to gain access into the casing, or more particularly into the compartment in which the bottles are stored.

Preferably in a same plane with the glass cover 11, is a plate 17 having an ejection opening or aperture 18 through which the bottles may be withdrawn. This plate extends between the compartment 15 and the opposite or front wall of the casing and extends also between one side wall of the casing and the slot 14, thus forming a cover for a compartment or space 17A. This plate also preferably includes a downwardly-extending wall 27 adjacent the forward end of the slot 14, and preferably terminates in a turned back portion 27A (see Figure 4). In this plate 17 is formed a slot 20 which communicates with the forward end of the transverse slot 14 and extends to a point past the centre of the aperture 18.

The slots 12 are preferably so spaced as to provide room for two parallel rows of bottles therebetween, as suggested by the dot and dash lines in Figure 1, so that the maximum number of bottles can be stored in the casing for a unit length of longitudinal slot.

Preferably, a wire skeleton comprising right-angularly disposed wires 21 and 22, suitably supported above the floor 24 of the casing as by legs 23A (or, if preferred, suitably secured to opposite walls of the casing), is used to thus define compartments 23 adapted to receive individual bottles. The wires are spaced from the

bottom 24 but a short distance so that the bottles may be removed from their respective compartments by lifting them but slightly.

The glass cover 11 may be comprised of four sections as shown, that is, two centre sections and two side sections. The sections are held in place by any suitable means, as for instance, a metal moulding 25 secured to walls of the casing and formed with a groove adapted to receive the edge of the glass section. One end of the centre sections may be supported by suitable brackets or legs 26, as best shown in Figure 2.

To select and remove the bottles, one by one, I use a suitable selector device D. The selector is such that it can be lowered over a bottle, to grasp its neck, under the bead, and lift and slide the bottle, to a position under the ejection opening 18. The device is also such that the bottle may be raised or withdrawn out of the machine. As shown in Figures 6 to 8, the selector comprises a ring 29, from which extends an upright lifting member 30 having a suitable knob 31. Encircling the ring is a coil spring 32 the ends of which are secured to the upright member 30 as by soldering (not shown). Free to turn on the ring 29, and lying between the ring and the spring, are a plurality of bushings 33. Fixed to the spring and to the bushings, are lifting fingers 34. Each of the fingers 34 comprises a finger proper 35 extending from a curved or looped portion 36 encircling the spring. The fingers are fixed to the bushings and to the spring by providing a slot 37 in the upper portion of the looped portion 36 of the finger and dropping solder, as at 38, into the slot, so that the solder will adhere not only to the bushing but to a portion or portions of the spring, and will be lodged in the slot. The spring is secured or fixed to the ring 29 at spaced intervals as at, and with, solder 39. The spring will thus be held against rotation at spaced intervals and the fingers will thus be free to turn to a limited extent only. As will be readily seen, the selector is capable of handling or lifting bottles of different neck diameters, within a fairly large range.

The operation of this form of the selector is as follows: The selector is moved to a position above the particular bottle selected, the selector lowered to cause the fingers to engage the mouth of the bottle, and to spread, and to finally engage, at their outer ends, under the bead, when the selector is now in position to lift the bottle, as best suggested in Figure 6.

At 40 is shown a coin-controlled mechanism of a well-known type, more particularly, one known as Model 500, as manufactured by A. B. T. Mfg. Co., Chicago, Ill. In such a device, there is a coin slide, 41, slidable in a casting, 42, fixed to a wall of the casing, and the movement of the slide is normally determined by a dog 42A. By inserting a coin in the coin slot 43, the coin operates to lift the dog and the slide is then free to travel the length of its intended or effective stroke. Such a mechanism is conveniently used in my present machine. To the inner or free end of the slide, I secure a metal bar 47 formed with a notch 48 in one of its edges, which is adapted to receive the upright member 30 of the selector device D. The notch 48 is so positioned that it lies about opposite the centre of the ejection opening 18 when the coin slide is in its normal position, that is, in a position ready to receive a coin. The distance between the notch 48 and the axis of the transverse slot 14 is such that the notch will be brought into alignment with the axis of the slot 14 when the operating slide has travelled the extent of its intended or effective stroke.

Depending from the bar 47 are two rods 52 having cross bars 53 therebetween. The rods 52 are spaced apart a distance greater than the diameter of the body of the bottle. Formed on the lower ends of the depending rods 52 are loops 54, which are directed inwardly toward the opening 18 and lie in parallel planes at right angles to the longitudinal axis of the slide and extension bar 47. Obviously, the loops are only of such height as to clear the wall 27, so that the bottle may be brought into the compartment or space 17A.

As best shown in Figures 3 and 4, the extension bar 47 is of such length as to project through the wall 27 and beyond the transverse slot 14 at all times, so as to prevent any attempt to slide the selector device back into the slot while the slide is idle. The wall 27 may be conveniently formed with a notch 52A to provide a bearing for one end of the extension bar 47. As will be best seen in Figures 4 and 5, the use of a wall 27, and of loops 54 on the selector device D, will prevent the unauthorized removal of the bottles.

The operation of the machine will be apparent. A coin inserted into the coin slot 43 will free the slide 41, which when pushed home to the end of its intended, effective stroke, will bring the notch 48 of the extension bar 47, with the member 30 of the selector device D in the notch, in alignment with the axis of the transverse slot 14. The selector device will now be free to be moved in the slot 14, and into any of the longitudinal slots 12. The desired bottle is grasped by the selector device, raised slightly to be clear of its individual storing compartment 23, and the device moved through the particular slot 12, into and to the end of the transverse slot 14, when the member 30 of the device will enter the notch 48 of the extension bar 47; the device D, more particularly its member 30, is next urged to the left, into and along the slot 20, to bring the same to about opposite the centre of the opening 18. The bottle can now be withdrawn by lifting the device until the neck of the bottle is about flush with or slightly emerges out of the opening. At this point, the slide 41 has been brought back to its normal position, so that the selector device cannot be used to remove another bottle until another coin has been inserted into the coin slot 43.

In Figure 9 of the drawings, there is shown a modified means of holding or suspending the glass panels 11. Instead of using supports or legs such as shown at 26 of Figure 2, brackets 75, preferably of cast brass, may be used. The use of such brackets has been found preferable, in that it leaves the inside of the bottle compartment free of any obstructions. These brackets serve as cantilever beams, finding their support upon the upper edge of one of the walls of the casing, and being secured to said wall by means of bolts 76. Similar bolts 76 are used to support or suspend the glass panels 11, there being one such bracket for each glass panel. As shown, the bracket may be made to substantially T form, having a web 95 and flanges 96 perforated to receive the bolts.

In Figures 10 and 11, there is shown a modified form of machine. In this form, the member 52 shown in Figures 3 to 5, is replaced by the member 52A, which is best shown in Figure 10. This

member, as has already been understood, serves as a gate. It is formed more or less to a panel or U shape, having two substantially parallel walls 80 and a rear wall 98. The rear wall has a lug 81, perforated to receive screws 82, serving to suspend the gate from the operating rod 47A. The rod 47A is slidably mounted between rollers 79 journalled in brackets 78 secured to one wall of the casing. This form of the invention makes provision for a coin-controlled mechanism of the type which rejects spurious coins, slugs, or the like, and the type used is one of standard and well-known make as manufactured by A. B. T. Mfg. Co. aforesaid, and sold as Model B–1499A. This type of mechanism, shown as 86, has an operating shaft 87 which for the purposes of this invention is extended through the wall of the casing to project into the casing, the shaft being preferably supported or journalled intermediate its length in a bearing 93 secured to the inside of the casing. In order to operatively connect the gate with the shaft 87, there are provided a lever 88 fixed to the end of the shaft, and a connecting link 89 pivotally connected at one end to the lever as at 90, and pivotally connected at the other end as at 90A to a bracket 91 secured to the gate.

The operation of this form of the invention is substantially the same as that involved in the other form of the invention. A coin is dropped into the coin mechanism so as to free the shaft 87 for rotation, and the selector is then moved toward the transverse slot 14, the gate being thus moved with and by the selector to its proper bottle-receiving position. Preferably, a plate 84 extending from one wall of the gate is provided, this plate being substantially under the ejection opening 18, when the gate is in its bottle-receiving position. This plate 84 thus serves to more or less seal the ejection opening.

In Figures 12 to 15 is shown still another modified form of the invention. In this form of the machine, the gate moves transversely of the machine, and not longitudinally as in the case of the forms of the machine shown in Figures 1 to 5, or 9 to 11. The selector is brought to its bottle-ejecting position by sliding in the slot 100 which connects with the transverse slot 14, and then into a transversely-disposed portion or extension 101. The gate 52B is formed with a rear wall 102, and two side walls 103 spaced to receive the bottle therebetween. The gate is provided at the top with an inverted U-shaped portion or extension 109 in which are journalled suitable rollers 104, the rollers riding on a round bar or track 105 suitably supported at both ends. An angle member 110 is preferably fixed to the rear wall of the gate, below the supporting rod 105, to thus prevent the gate from falling off the rod. The gate also provides an angle-shaped portion formed to present a recess or notch 108 adapted to receive the stem or handle of the selector when the same reaches the end of the slot 100. The lower part of the gate slidably engages a partition 106.

The coin control 86 is also of the type shown in Figure 11, being one capable of rejecting spurious coins. To its operating shaft 87 is fixed a lever 114 which is slotted as at 115 to slidably receive a pin 116 fixed to and extending rearwardly from the rear wall 102 of the gate. As is known, the shaft 87 of the coin control is capable of a limited rotary movement, and accordingly, the gate has a limited movement also, longitudinally of and on the rod or track 105, thus determining two extreme positions, a bottle-ejecting position (as shown in Figure 12), and a bottle-receiving position. When the gate is in the first-named position, the side walls thereof are uniformly disposed with respect to the axis or centre of the ejecting slot or opening 18; when the gate is in its second-named position, its side walls are uniformly disposed with respect to the axis of the slot 100.

A spring 116, tensioned between the lever 114 and the floor of the casing 10 of the machine, serves to releasably hold the gate in either of its two extreme positions, that is, in either its bottle-ejecting position, or its bottle-receiving position. Pivoted to the top plate 17 of the casing, as at 118A, is a lever 118. One end of this lever is formed with a transversely-directed lug 122 and a downwardly-directed lug 124, adapted to form means of engaging one corner of the gate (the top left-hand corner as seen in Figure 12) when the gate is in its bottle-receiving position, to thus releasably lock the gate in such position. When the lever is swung in an anti-clockwise direction, and the gate is moved towards its bottle-receiving position, the lug 122 rides on the rear wall of the gate. From the end of the lever which is opposite the lugs 122 and 124, extends a spring 126 which is anchored at its other end to the wall of the casing, so that the spring tends to turn the lever in a clockwise direction. The lever is so formed and so positioned that when the gate is in its bottle-receiving position, a portion of the lever lies under and partly closes the slots 100 and 101, closing at least said slots over a portion of their length as measured outwardly or away from their juncture or place of merging. When the gate is in this position, releasably locked by the lever 118, it is not free to move to its bottle-ejecting position until the lever is imparted an anti-clockwise rotation as by the stem or handle of the selector as the same is in process of carrying a bottle to its ejecting position under the ejection slot 18. The lever 114 is so fixed on the shaft 87 that the gate is locked in its bottle-ejecting position until a coin has been dropped into the control mechanism, when the lever is now free to permit of the gate being moved to its bottle-receiving position.

Where the machine is used for vending soft drinks, which as is known, are usually contained in bottles having metal caps, it is preferable to bevel or flatten the ends of the fingers 34, of the selectors, so that the bevelled ends of the fingers will better hold the bottle. As will be clearly understood, the ends of these fingers will engage or lodge between the outer edge of the metal cap and the wall of the bottle.

I claim:

1. In a vending machine, a casing forming a compartment adapted to store bottles, a top closure for said casing having a slot and an opening through which the bottles may be withdrawn one by one, a bottle lifting device operable from outside of said casing by a portion projecting through said slot, adapted to grasp a bottle and bodily slidable in said slot to bring the bottle to adjacent said opening to be withdrawn therethrough, and a coin-controlled member formed to receive said portion, movable in one direction to a position to receive said portion and in an opposite direction to bring the bottle to adjacent said opening.

2. In a machine as set forth in claim 1, said coin-controlled member having depending members formed to receive the bottle therebetween.

3. In a vending machine, a casing forming a

compartment having on the floor thereof means for receiving bottles in two parallel rows, a transparent member on said casing having a slot at least a portion of which is disposed between and parallel with the rows of bottles, said casing having an opening through which the bottles may be withdrawn one by one, a bottle lifting device operable from above said member by a portion projecting out of said slot, and adapted to grasp a bottle and bodily slidable in said slot to bring the bottle to adjacent said opening to be withdrawn therethrough, said bottle lifting device being adapted to grasp a bottle from either of the two rows by turning said device on the axis of said portion and a coin-controlled member formed to receive said portion, movable in one direction to a position to receive said portion and in an opposite direction to bring the bottle to adjacent said opening.

4. In a vending machine, a casing forming a compartment adapted to store bottles, a transparent member on said casing having a slot, a second compartment communicating with said first compartment and having a closure formed with an opening through which the bottles may be withdrawn one by one and having a slot adjacent said opening communicating with said first-mentioned slot, a bottle lifting device operable from above said transparent member by a portion projecting out through said first-mentioned slot, adapted to grasp a bottle and bodily slidable in said slot to bring said portion in said second-mentioned slot, said device being adapted to place the bottle under said opening when said portion is in said second-mentioned slot, and a coin-controlled member having a recess formed to receive said portion and slidable in one direction to receive said portion from said first slot and slidable in an opposite direction to slide said portion in said second-mentioned slot and bring the bottle under said opening.

5. In a vending machine, a casing forming a compartment adapted to store bottles, a member covering said casing and formed with a slot, said member having an opening through which the bottles may be withdrawn one by one, a bottle lifting device operable from the outside of said casing by a portion projecting through said slot, adapted to grasp a bottle and bodily slidable in said slot to bring the bottle under said opening, a coin-controlled bottle receiving member actuable by said device and movable between a position to receive a bottle brought thereto by said device and a position at which the bottle may be withdrawn through said opening, and movable means normally in a position to close a portion of said slot and operable by said device to clear said slot.

6. In a vending machine as set forth in claim 5, a spring operable to releasably hold said coin-operated member in its bottle-receiving position and in its bottle-ejecting position, alternately.

7. In a vending machine, a casing for bottles having a top closure including two transparent members spaced to provide a slot therebetween, one member co-operating at one end with a portion of said closure to provide a slot communicating with said first slot, a bottle lifting device operable from outside of said casing by a portion slidable in said slots, a bracket secured at one end to a wall of said casing and extending along one of said members toward but terminating short of said second slot, and means securing said one member to said bracket whereby said bracket acts as a cantilever beam permitting of said device to be moved freely in said second slot.

8. In a vending machine, a casing forming a compartment adapted to store bottles, a top closure for said casing having a slot and an opening through which the bottles may be withdrawn one by one, said slot including two angularly arranged intercommunicating portions, a bottle lifting device operable from outside of said casing by a portion projecting through said slot, adapted to grasp a bottle and bodily slidable in said slot to bring the bottle to adjacent said opening to be withdrawn therethrough, and a coin-controlled member formed to receive said portion of said device, movable in one direction substantially parallelly with one of the angularly disposed portions of said slot to receive said portion of said device from the other angularly disposed portion of said slot and movable in an opposite direction to bring the bottle to adjacent said opening, said portion of said device operating to close one of said angularly disposed portions of said slot when said device has been moved in said opposite direction.

W. M. STEWART.