

March 13, 1945.

C. A. MELCHERT

2,371,343

VENDING MACHINE MECHANISM

Filed April 6, 1942

5 Sheets-Sheet 1

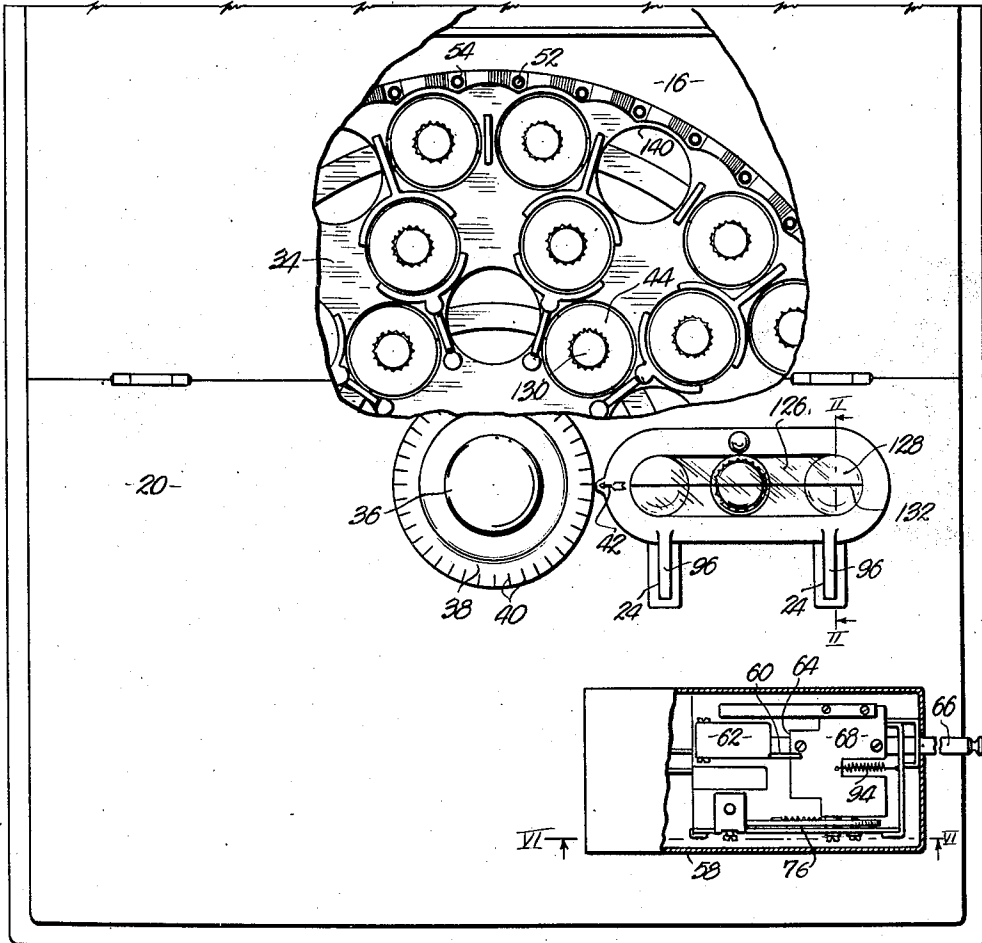


Fig. 1.

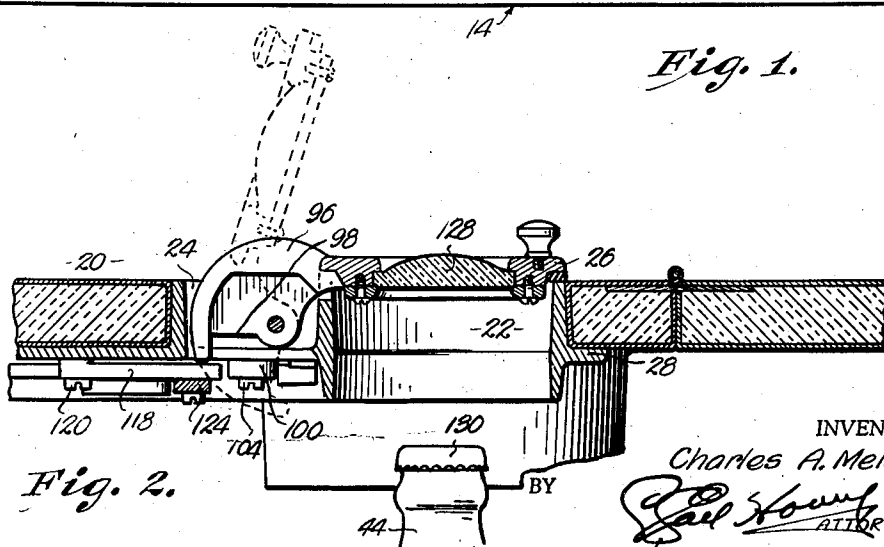


Fig. 2.

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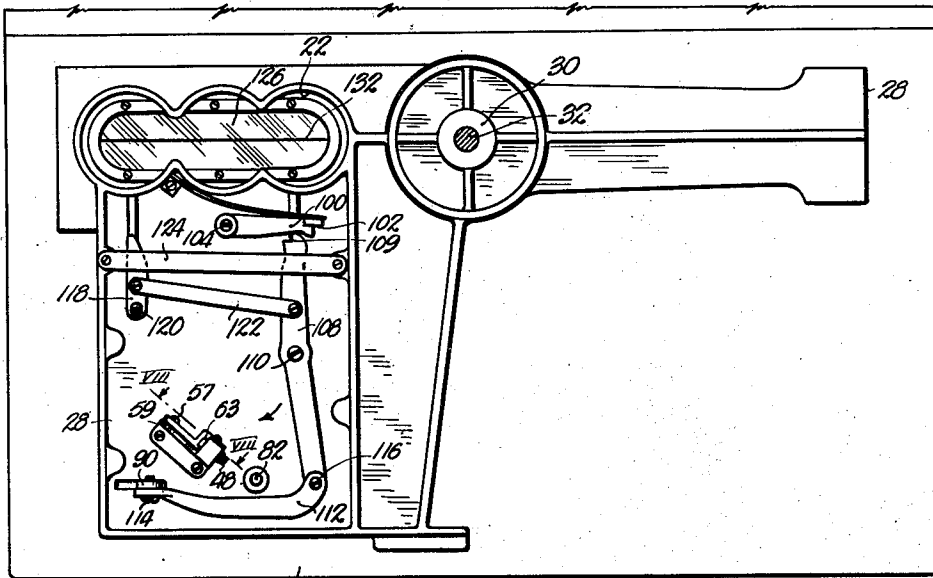


Fig. 3.

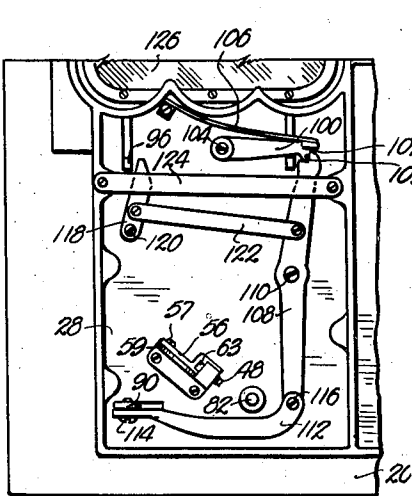


Fig. 4.

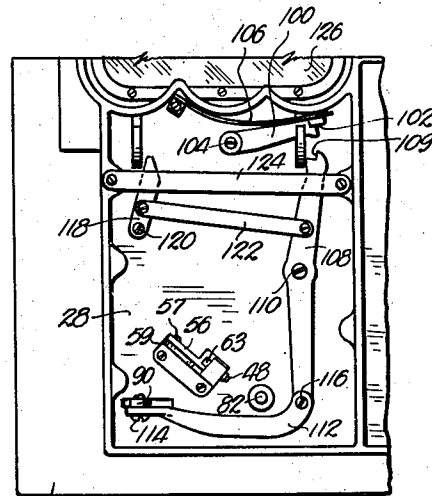


Fig. 5.

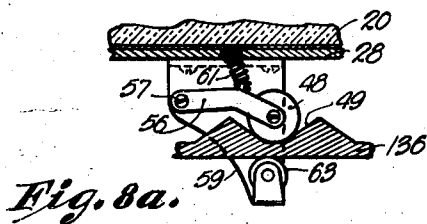


Fig. 8a.

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VENDING MACHINE MECHANISM.

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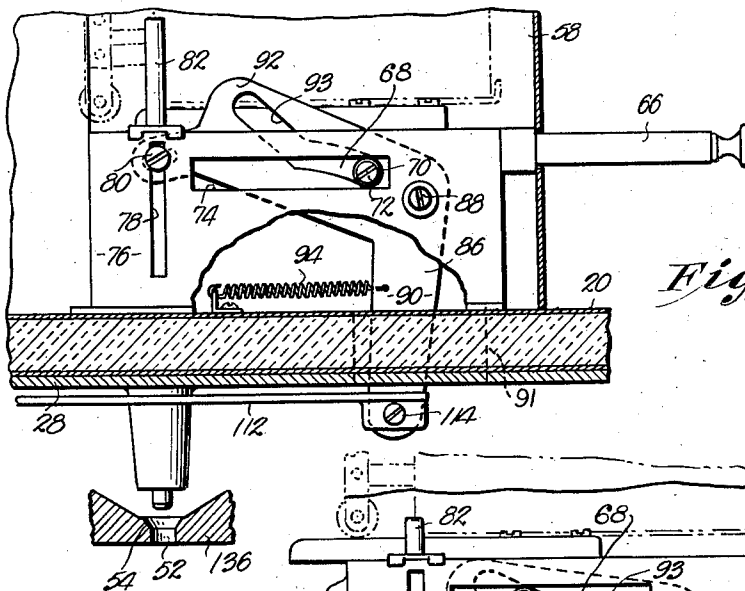


Fig. 6.

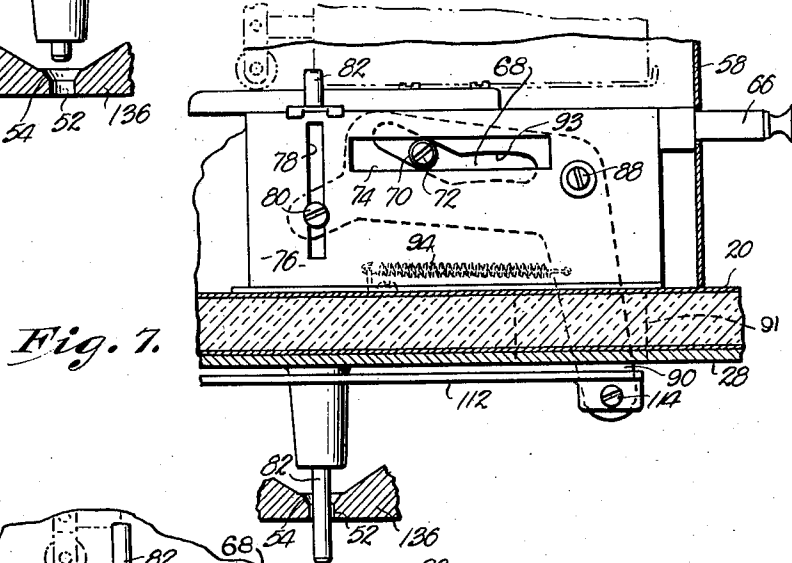


Fig. 7.

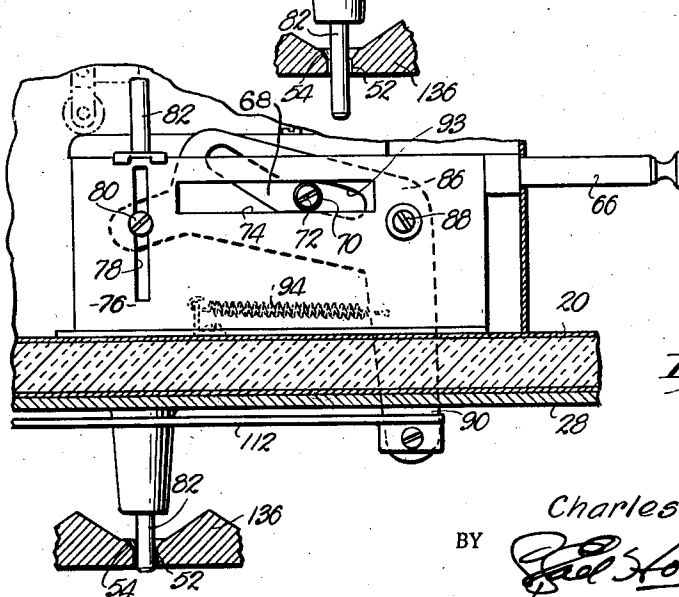


Fig. 8.

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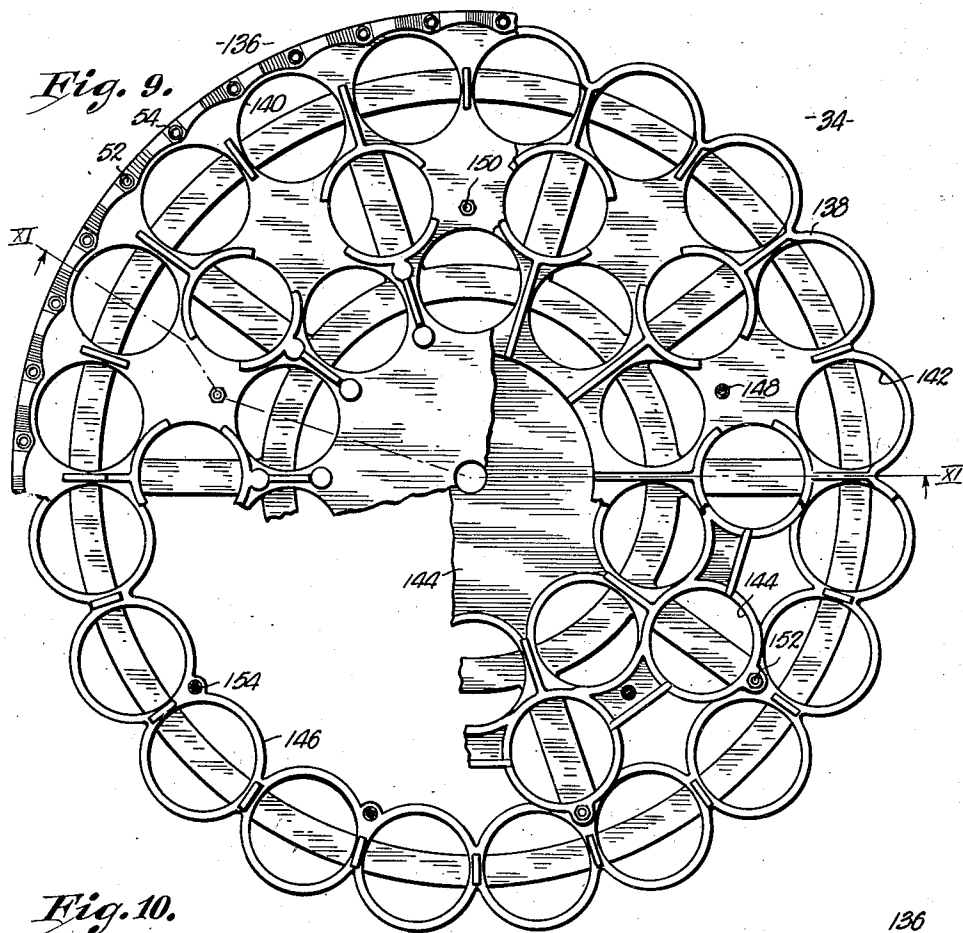
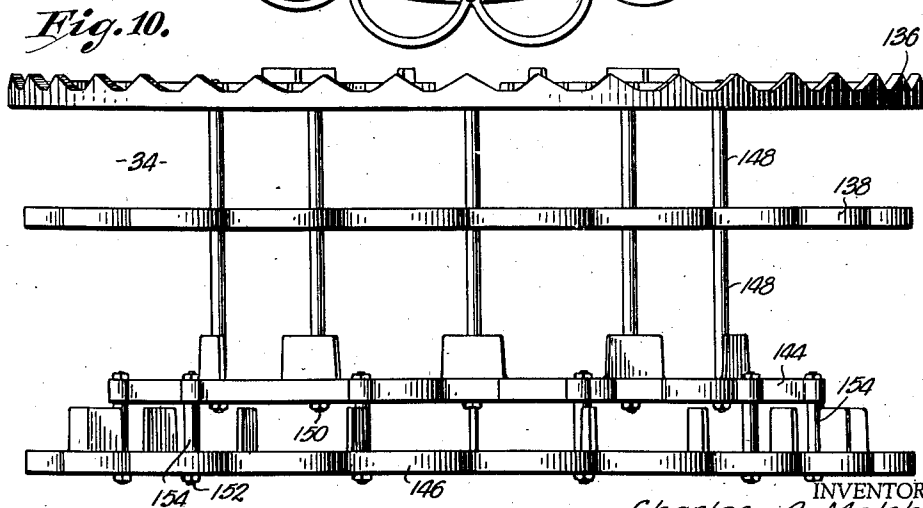
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VENDING MACHINE MECHANISM

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5 Sheets-Sheet 4



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VENDING MACHINE MECHANISM

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5 Sheets-Sheet 5

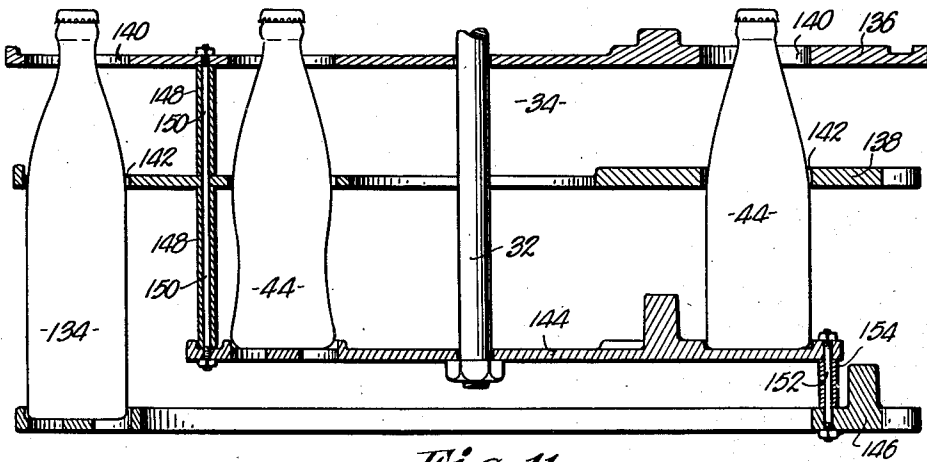


Fig. 11.

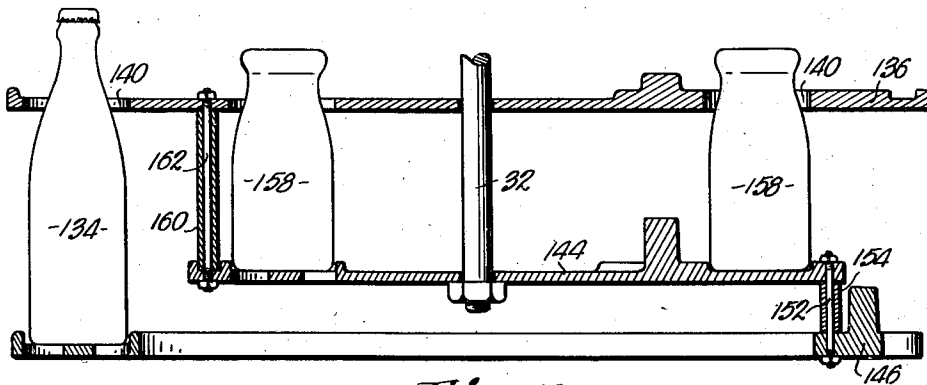


Fig. 12.

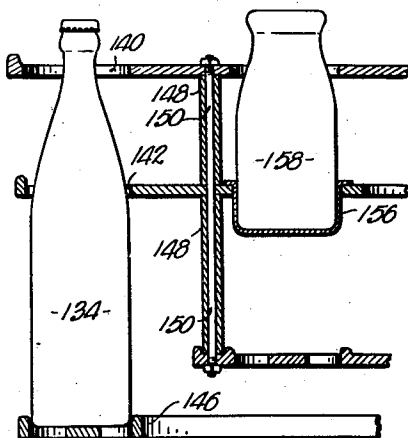


Fig. 13.

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UNITED STATES PATENT OFFICE

2,371,343

VENDING MACHINE MECHANISM

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Application April 6, 1942, Serial No. 437,780

6 Claims. (Cl. 312—36)

This invention relates to vending machines of the character wherein is supported a number of bottles disposed in a special manner to be selectively withdrawn from the vending machine case after a coin has been inserted, to render operative manually movable latching means, normally holding the access door of the cabinet in a closed and locked condition.

One of the important aims of the instant invention is to provide a bottle vending machine with door latching parts formed to preclude unauthorized opening of said door and to maintain the same closed and locked until after a coin of predetermined denomination has been introduced by the purchaser.

A further aim of this invention is to provide a vending machine of the selective type, having an unique bottle rack associated with parts on the case containing the same, whereby said rack may be easily rotated yet quickly and effectively arrested in its movement to station a selected bottle beneath the delivery opening of the case.

This invention has for another aim to provide a vending machine for bottle goods with an adjustable rack formed of a number of sections, some of which support the bottle or article, while others circumscribe parts thereof to preclude lateral displacement, said sectional rack being assembled by means capable of permitting quick adjustment whereby the rack may carry a large number of bottles of various heights with the ends thereof in substantially a common plane.

This invention relates to vending machines of the general character disclosed in my co-pending application, Serial No. 371,266, filed December 23, 1940, matured into Patent No. 2,308,989, issued January 19, 1943, in class 312, subclass 36, and is a continuation in part, of said case.

In the drawings:

Fig. 1 is a top plan view of a vending machine of the selective type, made in accordance with the present invention, parts being broken away for clearness.

Fig. 2 is an enlarged fragmentary sectional view taken on line II—II of Fig. 1.

Fig. 3 is an inverted plan view of the vending machine cover showing the locking linkage on the normally under surface thereof.

Fig. 4 is a fragmentary inverted plan view of said cover showing said linkage in another position.

Fig. 5 is a view similar to Fig. 4 illustrating the said linkage in yet another position.

Fig. 6 is a vertical fragmentary enlarged sectional view taken on line VI—VI of Fig. 1, il-

lustrating the operating plunger and associated parts which actuate the linkage shown in Figs. 3 to 5 inclusive, in the normal position.

Fig. 7 is a similar sectional view illustrating the operating plunger moved inwardly to the end of its path of travel.

Fig. 8 is a similar sectional view illustrating the position which the plunger assumes when the linkage is in that condition shown in Fig. 5.

Fig. 8a is a section on line VIII—VIII of Fig. 3.

Fig. 9 is a fragmentary plan view of the bottle rack per se.

Fig. 10 is a side elevational view of the same.

Fig. 11 is a diagrammatic fragmentary vertical sectional view through the rack taken on line XI—XI of Fig. 9.

Fig. 12 is a similar sectional view but with one of the guard sections removed to condition the rack for holding relatively short bottles; and

Fig. 13 is a fragmentary sectional view illustrating the use of adaptors for short bottles when the parts of the rack are assembled as illustrated in Figs. 9, 10 and 11.

Case 14 has walls of insulating material and forms an article receiving compartment 16 wherein refrigerating means may be disposed with the commodity being vended. A cover 20 for case 14 is provided with a delivery opening 22 and slots 24 for the reception of the hereinafter described parts of the closure 26 for opening 22.

A reinforcing spider, generally indicated by the numeral 28, is mounted on the under-side of cover 20 and forms a bearing 30 for the reception of a vertically disposed shaft 32 upon which is hung the rack 34. This shaft 32 has a handle 36 disposed above the cover 20 and an indicator plate 38 mounted on shaft 32 has graduations 40 visible to the operator to cooperate with pointer 42 on closure 26. When one of the graduations 40 is in register with pointer 42, a bottle 44 may be withdrawn through delivery opening 22. In commercial practice, it is desirable to have a graduation 40 for each stall in rack 34.

Rack 34 is mounted for free rotation in bearing 30 and said bearing should be equipped with anti-friction elements, such as ball or roller bearings, not here shown but which may be assembled with shaft 32 in the conventional manner.

Rack 34 is releasably arrested in any one of the many positions where one of the graduations 40 registers with pointer 42. Means for so arresting the rack is in the nature of a roller 48 that rides upon the top of the upper section 136, the upper surface of which is undulated, as illus-

trated in Fig. 8a, to present a number of upwardly and outwardly diverging planar faces 49, against which rollers 48 rests when in a position to stop the movement of rack 34. When roller 48 is so positioned, surfaces 49 are tangent to the periphery of roller 48 to contact said roller on each side of a vertical plane passing through its axis of rotation. Upper section 136 of rack 34 is provided with a number of apertures 52 and counter-sinks 52, the sides of which intersect with surfaces 49.

Roller 48 is carried by an arm 56 pivotally mounted as at 57 on bracket 59, which is secured to spider 28 in the position shown in Figs. 3 to 5 inclusive. Spring 61 bears against arm 56 to force roller 48 against the undulated upper annular surface of section 136. A supporting roller 63 mounted upon bracket 59 underlies section 136, the lower surface of which is smooth throughout its length. Therefore, as roller 48 exerts a downward pressure, roller 63 will neutralize such pressure and prevent binding at bearing 30.

A housing 58 mounted upon cover 20 accommodates conventional coin chutes or the like, through which the coin 60 is passed to the operative position shown in Fig. 1. Latch 62 lies in line with shoulder 64 to preclude plunger 66 from inward movement when a coin 60 is in place. Plunger 66 is rigid to and travels with an index plate 68, upon which is mounted roller 70 through the medium of machine bolt 72, the projected portion of which roller rides in a slot 74 formed in bracket 76. This bracket is disposed in a vertical plane upon cover 20 and has a vertical slot 78 formed therein for the reception of guide pin 80 laterally from bolt 82, yieldably held in an elevated position out of engagement with apertures 52 by bell-crank lever 86 pivotally mounted as at 88 to bracket 76.

One leg 90 of lever 86 extends into compartment 16 of case 14 through a slot 91 in cover 20 while the other leg 92 is provided with a special slot 93 that receives roller 70. This slot 93 presents cam faces over which roller 93 may ride during the operation of the mechanism and said slot 93 constitutes two portions, angular with respect to each other, and each portion lies disposed at an angle to the longitudinal axis of leg 92 of lever 86.

Spring 94 not only yieldably maintains bell-crank lever 86 in a normal or set position, as seen in Fig. 6, but likewise maintains bolt 82 out of engagement with rack 34. This spring should be strong enough to maintain the herein-after described locking structure in a normal position where opening of closure 26 is precluded until a coin is dropped into the machine.

Closure 26 has fingers 96 of like character extending respectively through slots 24. Both fingers have shoulders 98 formed thereon for the purpose of engaging dog 100 as closure 26 is swung to the open position. This dog 100 is notched at its free end as at 102 and pivotally supported by bolt 104 to spider 28. A spring 106 yieldably maintains dog 100 against one end of locking member 108 that is pivotally supported as at 110 intermediate its ends. The other end of member 108 is joined to the free end of leg 90 of bell-crank lever 86 by link 112, which link has pivotal connection with leg 90 and member 108 as at 114 and 116 respectively.

Another locking member 118 pivotally mounted as at 120 to spider 28 moves with member 108 because tie-bar 122 extends between members 118 and 108 as illustrated in Figs. 3, 4 and 5. The

ends of locking members 108 and 118 normally lie in a position to close slots 24 and to preclude the movement of fingers 96 through said slots into chamber 16. A bar 124 slidably maintains the free ends of these locking members 108 and 118 against the under-side of spider 28.

Closure 26 has a transparent panel 126 therein through which may be observed bottles 44 and the magnifying areas 128 of panel 126 assist the operator in reading matter usually printed upon caps 130 of bottles 44.

With the parts normally set as illustrated and just described, rack 34 is free to rotate for the purpose of allowing the operator to select bottle 44, that he wishes to withdraw from compartment 16. Rotation of rack 34 is accomplished by manipulating handle 36 and the line 132 across panel 126 together with indicator 42 and graduations 40, will expedite locating or registering the desired bottle 44 at outlet opening 22. Roller 48 riding over surfaces 49 has a tendency to arrest the rotation of rack 34 as a bottle is disposed beneath opening 22. Thus, the visual means for quickly registering the desired bottle with outlet 22 is supplemented to a degree where the necessity for accuracy of the human element is overcome and whenever handle 36 is released, a bottle will definitely be in proper place for removal.

Assuming now that the desired bottle has been positioned beneath opening 22. A coin 60 is dropped to the position shown in Fig. 1, where inward movement of plunger 66 will force the coin beneath latch 62, lift the same, and thereby allow continued inward movement of plunger 66 and index plate 68 upon which is mounted roller 70.

As roller and bolt 70 and 72 ride along slot 74, roller 70 will exert downward pressure upon one edge of leg 92 of bell-crank lever 86 that is formed by slot 93. Such movement will rotate lever 86 about its pivotal connection 88. Leg 92 will thereby force bolt 82 into the underlying aperture 52 to preclude further rotative movement of rack 34. The other leg 90 of bell-crank lever 86 will draw lever 112 in the direction of the arrow shown in Fig. 3 to move locking members 108 and 118 about their pivotal connections 110 and 120 respectively.

When these locking members are moved out of the path of travel of fingers 96, spring 106 will force dog 100 behind shoulder 109, as illustrated in Fig. 4. Thus, members 108 and 118 will be held in a place where closure 26 may be moved from the position shown in full lines in Fig. 2, to the position shown in dotted lines thereof. When such manual manipulation occurs, shoulder 98 engages dog 100 to move the latter out of engagement with shoulder 109 of member 108. The movement of dog 100 is from that position shown in Fig. 4 to that illustrated in Fig. 5. When the dog is so held out of operative engagement with member 108, spring 94 exerts a sufficient amount of force to draw the edge of locking member 108 against the face of finger 96 where frictional contact of sufficient force is established to preclude accidental dropping of closure 26, if the operator should release his hold thereon. In so moving locking member 108 to that position shown in Fig. 5, plunger 66 is allowed to move back to that position shown in Fig. 8.

When closure 26 is moved to the position shown in full lines of Fig. 2, finger 96 will permit locking member 108 to return to the position shown in Fig. 3 prior to the movement of dog 100 into

its path of travel. Slots 24 will again thereby be closed and the fingers cannot be moved there-through without the insertion of another coin. The machine is returned to the normal position shown in Fig. 6 by spring 94.

Through the use of slot 93, plunger 66 cannot be withdrawn until the linkage illustrated in Figs. 3 to 5 inclusive, permits such action. This slot likewise overcomes the possibility of working the machine without the insertion of a coin. If roller 70 did not ride in a slot but on the upper edge of arm 92, a quick inward thrust of plunger 66 would cause bell-crank lever arm 92 to jump away from roller 70, whereupon simultaneous upward force on closure 26 would permit opening the closure without the insertion of a coin. Thus, the relation of slot 93 to roller 70 becomes important. The arcuate form of the two sections of slot 93 is clearly illustrated in Figs. 6, 7 and 8 and are correct insofar as permitting the operation is concerned.

The rack 34 is so designed as to permit adjustment of the parts thereof, whereby to vend, for example, 6, 7, 8, 10 or 12 oz. bottles of beverages and $\frac{1}{3}$ or $\frac{1}{2}$ pt. bottles of milk.

The rack illustrated in Figs. 9, 10 and 11 has the sections thereof assembled to receive 7 or 8 oz. bottles 44 and 10 or 12 oz. bottles 134. The two upper sections 136 and 138 of rack 34 are cast with openings 140 and 142 respectively therein. These openings 140 and 142 are arranged in annular paths, one above the other and the said openings are in alignment to define individual stalls for receiving the bottles as illustrated in the drawings.

Bottle supporting platforms 144 and 146 are likewise cast from light metal, such as aluminum, and form the bottoms of stalls for the bottles 44 and 134. Sections 136 and 138 are held in spaced relation by tubes or spacers 148 through which pass tie-bolts 150.

Where 6, 7 or 8 oz. bottles are to be dispensed with 10 or 12 oz. bottles, upper platform 144 and sections 136 and 138 are secured together by tie-bolts 150. Openings 140 and 142 are arranged in three annular paths and the bottles in the two groups of openings arranged in the inner annular paths are supported by platform 144. The bottles 134 arranged in the openings of the outer annular path are supported by the ring-shaped or annular platform 146. It is advantageous therefore, to secure platform 146 to platform 144 by relatively short tie-bolts 152 that pass through sleeves 154.

Through such construction and arrangement of parts, flexibility is permitted with respect to quickly altering rack 34 to vend different types of bottles and containers of various capacities. For example, in Fig. 13, is illustrated an adaptor 156 insertible into openings 142 of section 138 for the purpose of permitting the vending of small milk bottles 158 with 6, 7 or 8 oz. bottles of other types of beverage. With this adaptor 156 employed as illustrated, the rack may also vend 10 or 12 oz. bottles 134.

An example of the advantages arising from the employment of a sectional rack 34 are further illustrated by reference to Fig. 12, wherein the intermediate section 138 has been entirely eliminated and supports 144 and 146 drawn closer to upper section 136. When the parts are assembled as just mentioned, 6, 7, or 8 oz. bottles are not vendible and only small milk bottles 158 and 10 or 12 oz. bottles 134 are operatively supported in the rack.

Tubular spacer 160 and tie-bolt 162 of a length suitable for the purpose are employed when setting the unitary sections of the rack to accommodate bottles of different heights.

Because changes might be made to alter the structures hereinabove described that embody the preferred form of the invention, it is desired to be limited only by the spirit of the invention and scope of the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. Selective bottle vending equipment comprising a case provided with slots and an outlet opening; a rack having bottle-receiving stalls successively registrable with the opening; means for revolvably positioning the rack in the case; a hingedly mounted door normally closing the opening; fingers on the door movable therewith through certain of the slots respectively into the case as the door is opened; a pivotally supported bell-crank lever having one leg thereof projecting through one of the said slots into the case; a reciprocable bolt movable to and from a position in the path of travel of a part of said rack in connection with the second leg of said bell-crank lever; pivotally mounted locking structure normally closing the said certain slots to preclude movement of the fingers therethrough; a link joining the locking structure and the first mentioned leg of the bell-crank lever; and manually operable coin releasable means for swinging the bell-crank lever around its pivotal support to simultaneously move the bolt into a position in the path of travel of a part of the rack and to move the locking structure to open the certain slots to permit passage of the fingers therethrough; said second leg of the bell-crank lever having an inclined slot formed therein, the said manually operable coin controlled means having a horizontally reciprocable plunger provided with a laterally disposed roller engaged within said last named slot.

2. Selective bottle vending equipment comprising a case provided with slots and an outlet opening; a rack having bottle-receiving stalls successively registrable with the opening; means for revolvably positioning the rack in the case; a hingedly mounted door normally closing the opening; fingers on the door movable therewith through certain of the slots respectively into the case as the door is opened; a pivotally supported bell-crank lever having one leg thereof projecting through one of the said slots into the case; a reciprocable bolt movable to and from a position in the path of travel of a part of said rack in connection with the second leg of said bell-crank lever; pivotally mounted locking structure normally closing the said certain slots to preclude movement of the fingers therethrough; a link joining the locking structure and the first mentioned leg of the bell-crank lever; and manually operable coin releasable means for swinging the bell-crank lever around its pivotal support to simultaneously move the bolt into a position in the path of travel of a part of the rack and to move the locking structure to open the certain slots to permit passage of the fingers therethrough, said second leg of the bell-crank lever having an inclined slot formed therein, the said manually operable coin controlled means having a horizontally reciprocable plunger provided with a laterally disposed roller engaged within said last named slot, said slot forming cam faces engageable by the roller to positively move

the bell-crank lever about its pivotal support when the plunger travels in either direction.

3. Selective bottle vending equipment comprising a case provided with slots and an outlet opening; a rack having bottle-receiving stalls successively registrable with the opening; means for revolvably positioning the rack in the case; a hingedly mounted door normally closing the opening; fingers on the door movable therewith through certain of the slots respectively into the case as the door is opened; a pivotally supported bell-crank lever having one leg thereof projecting through one of the said slots into the case; a reciprocable bolt movable to and from a position in the path of travel of a part of said rack in connection with the second leg of said bell-crank lever; pivotally mounted locking structure normally closing the said certain slots to preclude movement of the fingers therethrough; a link joining the locking structure and the first mentioned leg of the bell-crank lever; and manually operable coin releasable means for swinging the bell-crank lever around its pivotal support to simultaneously move the bolt into a position in the path of travel of a part of the rack and to move the locking structure to open the certain slots to permit passage of the fingers therethrough, said second leg of the bell-crank lever having an inclined slot formed therein, the said manually operable coin controlled means having a horizontally reciprocable plunger provided with a laterally disposed roller engaged within said slot, said last-named slot forming cam faces engageable by the roller to positively move the bell-crank lever about its pivotal support when the plunger travels in either direction, said slot having two portions of different angular disposition with respect to the longitudinal axis of the bell-crank lever arm wherein the same is formed.

4. In a selective bottle vending machine of the character described, a case provided with a delivery opening therein; a rotatable rack having bottle-receiving stalls successively registrable with the opening; means for rotating the rack from exteriorly of the case; and means to assist in arresting the rotation of the rack to position one of the stalls beneath the opening compris-

ing an annular member on the rack having a smooth, continuous under surface, an undulated upper surface, a roller beneath the member in contact with the smooth surface to prevent lowering of the rack, and a spring loaded roller riding over the undulated surface of the member above and in opposed relation with the first mentioned roller.

5. In a selective bottle vending machine of the character described, a case provided with a delivery opening therein; a rotatable rack having bottle-receiving stalls successively registrable with the opening; means for rotating the rack from exteriorly of the case; and means to assist in arresting the rotation of the rack to position one of the stalls beneath the opening comprising an annular member on the rack having a smooth, continuous under surface, an undulated upper surface, a roller beneath the member in contact with the smooth surface to prevent lowering of the rack, and a spring loaded roller riding over the undulated surface of the member above and in opposed relation with the first mentioned roller, said undulations having planar inclined faces extending upwardly and outwardly from a transverse line whereby to be tangent to the spring loaded roller at two points on the periphery thereof when the said roller is at its lowermost position on the undulated surface of the member.

6. In a selective bottle vending machine of the character described, a case provided with a delivery opening therein; a rotatable rack having bottle-receiving stalls successively registrable with the opening; means for rotating the rack from exteriorly of the case; and means to assist in arresting the rotation of the rack to position one of the stalls beneath the opening comprising an annular member on the rack having a smooth, continuous under surface, an undulated upper surface, a roller beneath the member in contact with the smooth surface to prevent lowering of the rack, and a spring loaded roller riding over the undulated surface of the member above and in opposed relation with the first mentioned roller, both of said rollers being carried by the case independently of the rack.

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