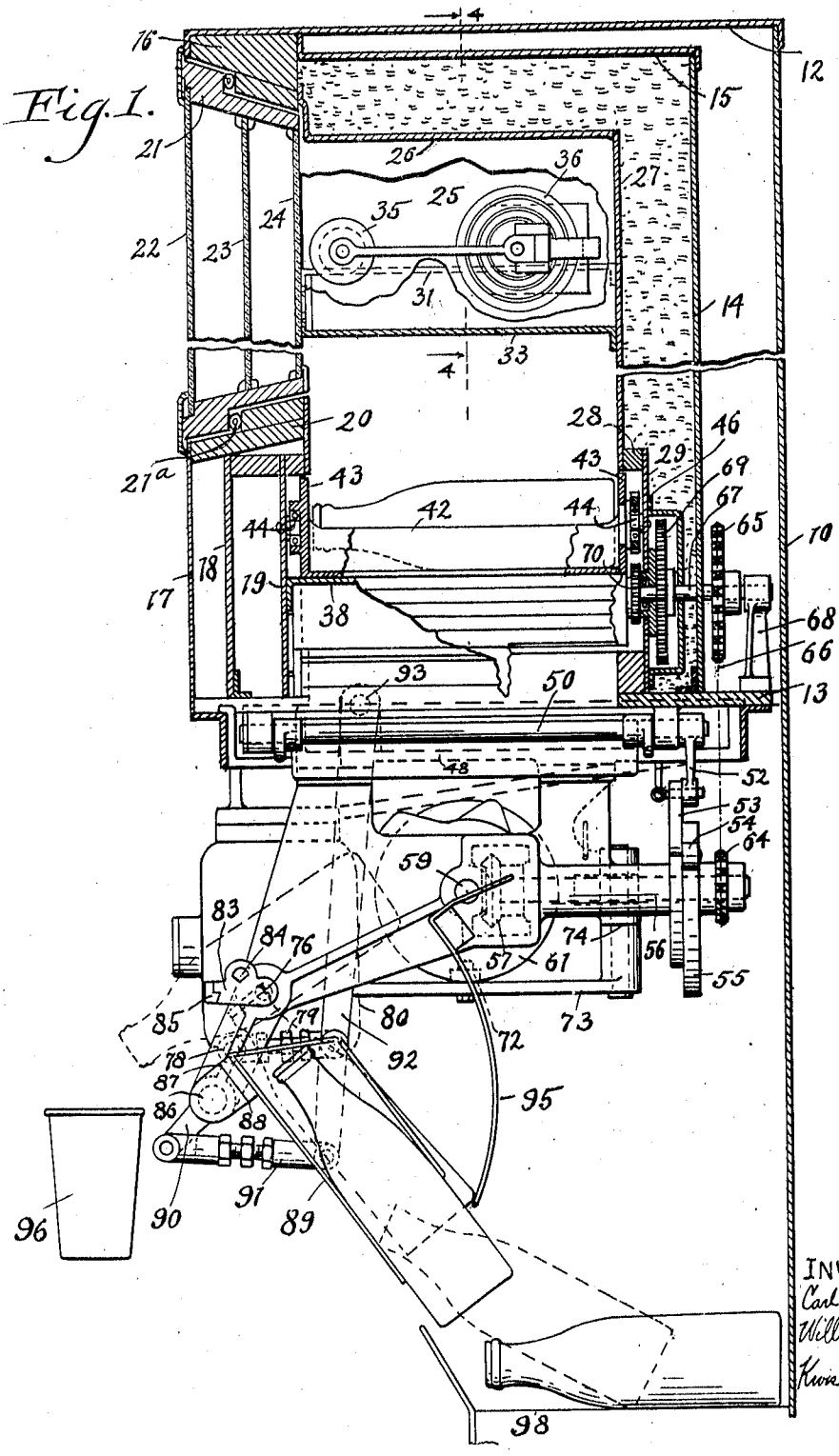
March 21, 1933. C. W. BLOSSOM ET AL 1,902,612

VENDING MACHINE

Filed May 31, 1930 3 Sheets-Sheet 1

Fig. 1.



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Filed May 31, 1930 3 Sheets-Sheet 2

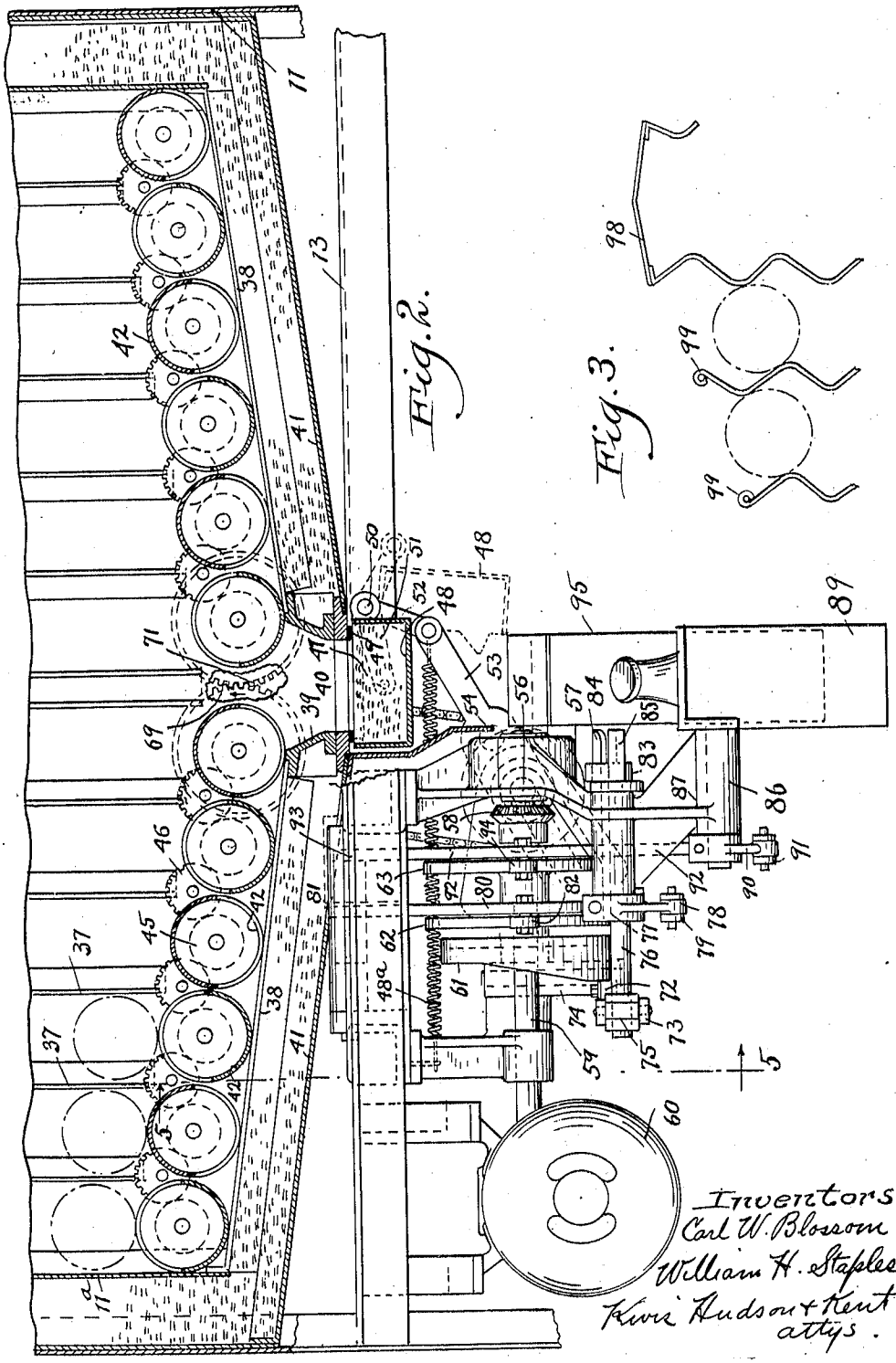


Fig. 2.

Fig. 3.

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Fig. 4.

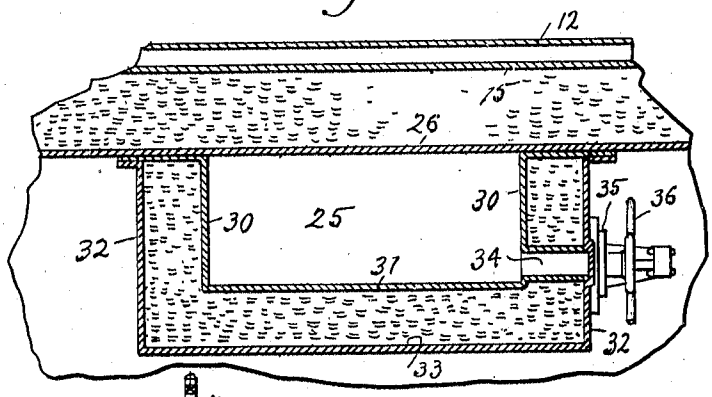


Fig. 5.

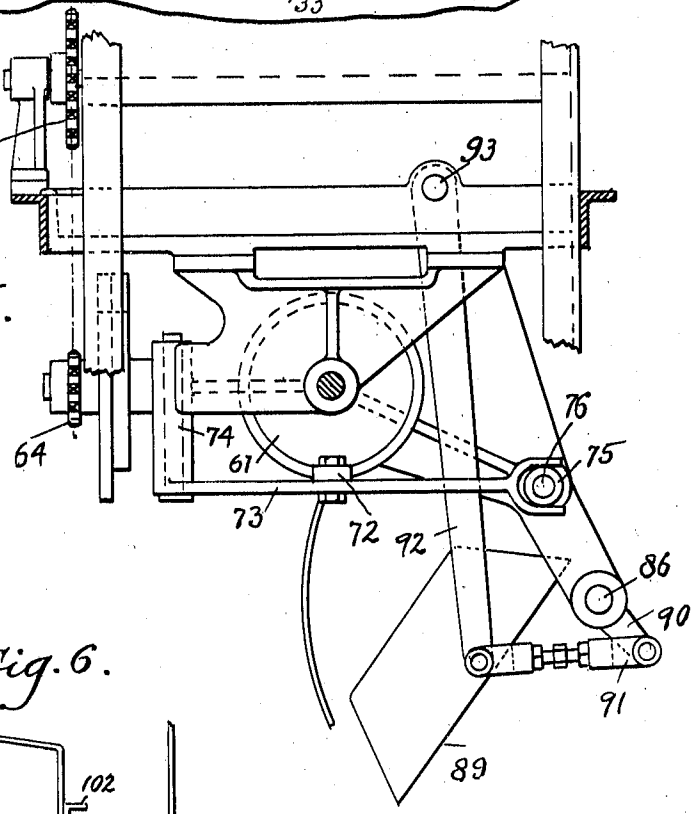
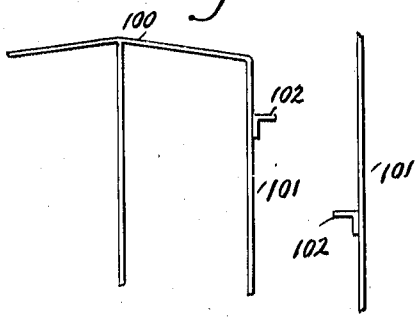


Fig. 6.



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UNITED STATES PATENT OFFICE

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VENDING MACHINE

Application filed May 31, 1930. Serial No. 457,726.

This invention relates to a vending apparatus, and particularly to a vending apparatus adapted to dispense bottled beverages or other bottled liquids.

An object of the invention is to provide a vending apparatus such that upon the insertion of the proper coin or token in the slot provided in the apparatus for that purpose, the contents of a bottle of liquid is poured automatically into a suitable container positioned in a convenient place to be taken by the customer.

Another object is to provide a vending apparatus such that upon the insertion of the proper coin or token, a bottle is withdrawn automatically from a chilled bottle chamber, decapped, and the contents thereof poured into a suitable container, such as for example, a paper cup, after which the emptied bottle is deposited in a suitable receptacle for that purpose.

Another object is to provide a vending apparatus that is substantially entirely automatic in its operation since it merely involves, upon the part of the customer, the insertion of the coin or token and the withdrawal of the filled container.

Another object is to provide an apparatus of this character which is simple in construction, efficient in operation, and which may be economically manufactured and serviced.

Additional objects and advantages will become apparent hereinafter as the detailed description of an embodiment of the invention proceeds.

An embodiment of the invention is illustrated in the accompanying drawings, wherein

Figure 1 is a transverse vertical section through the apparatus, the lower portion of the cabinet being omitted;

Fig. 2 is a fragmentary longitudinal vertical section through the apparatus, certain of the parts being shown in section;

Fig. 3 is a fragmentary detail view thereof;

Fig. 4 is a fragmentary sectional view;

Fig. 5 is a fragmentary sectional view taken substantially on line 5—5 of Fig. 2, looking in the direction of the arrows, certain of the parts being shown in side elevation;

Fig. 6 is a modification of the detail shown in Fig. 3.

An apparatus of the character embodied in the invention is particularly useful as a means for dispensing various kinds of beverages or liquids without the necessity of an attendant and may be advantageously placed in such locations as theater lobbies, golf courses, stations, schools and various other places of a public or semi-public character, although, of course, they may be placed in any other suitable place.

The apparatus is arranged in a suitable cabinet, the upper part of which preferably contains the cooling chamber and the bottle chamber, while the lower part contains the major portion of the operating mechanism, and the chamber for the empty bottles.

Preferably the cabinet will be so constructed that the greater portion of the operating mechanism and the bottle chamber will be visible so that the customer may not only see that he is obtaining the beverage as bottled by the maker, but also that he may see the interesting operation of the apparatus.

The upper part of the cabinet containing the cooling chamber and the bottle chamber is constructed so as to be thermally insulated from the atmosphere and also so that the two chambers are insulated from each other except for the provision of a suitable opening or openings allowing for a circulation of air between the chambers.

The cabinet is formed with a back or rear wall 10, side walls 11, and top wall 12, all of these walls preferably being formed of metal. The upper portion of the cabinet containing the cooling chamber and the bottle chamber is separated from the lower portion by a partition 13 suitably secured in the cabinet and forming a support for the operating mechanism.

Within the upper portion of the cabinet, and spaced inwardly of the walls 10 and 11 and below the top wall 12, is a second back or rear wall 14, side walls 11^a, and a second top wall 15, an air space thus being provided between the two sets of walls to provide for heat insulation.

Extending across the top of the cabinet and held in position by the spaced top walls 12 and 15 thereof and by the side walls 11*a* and by the cabinet framework, is a molding strip 16, the lower side of which is formed to provide a surface cooperating with a removable door.

Three plates 17, 18 and 19, which if desired may be provided with glass inserts, extend longitudinally of the apparatus at the front thereof and are secured to the horizontal partition 13 by angle brackets or other suitable means and to the side walls 11 and 11*a* of the cabinet in any suitable manner. These metallic plates support at their upper ends a longitudinally extending member 20 having its upper surface formed to provide a door sill corresponding to the configuration of the strip 16.

Members similar to the members 16 and 20 are arranged at the sides of the cabinet and extend between the members 16 and 20, with which they form a doorway adapted to receive a removable door having a frame 21 supporting three spaced glass panels 22, 23 and 24.

A suitable sealing ring 21*a* is arranged between the door and its frame whereby when the door is positioned in the frame an effective seal is provided against the transfer of heat into or out of the cabinet. When the door is removed access may be had to the cooling chamber and to the bottle chamber for servicing the apparatus and, since the panels 22, 23 and 24 are of glass, the customer can see that he is actually obtaining the beverage as bottled by the maker.

The cooling chamber indicated generally at 25 is substantially rectangular in configuration and is formed with a top wall 26 supported at its forward edge by the member 16 and with a rear wall 27 extending downwardly through the bottle chamber and secured to a securing strip 28, in turn secured to the upper end of a supporting plate 29 extending upwardly from the partition 13 forwardly of the inner wall member 14.

The sides 30 and the bottom 31 of the cooling chamber are preferably formed of a single piece of metal substantially U-shaped in cross section and secured to the top wall 26 of the chamber by welding or in any other suitable manner. The front side of the cooling chamber is open so that access may be had thereto when the door is removed, but when the door is in position the chamber will be entirely closed and sealed, except for an air circulating opening later to be referred to. A second U-shaped member forming second side walls 32 and a second bottom wall 33 is secured to the top wall 26 so as to be spaced from the walls 30 and 31 and to provide an insulated space between the side walls 30 and 32 and the bottom walls 31 and 33 of the cooling chamber.

It should be noted that cork or other suitable thermal insulation is arranged between the top walls 15 and 26, the rear walls 14 and 27, the side walls 30 and 32 and the bottom walls 31 and 33, whereby the cooling chamber and the bottle chamber are efficiently insulated against heat loss with respect to the exterior, while the two chambers themselves are adequately insulated with respect to each other.

In order to provide for a circulation of air between the cooling chamber and the bottle chamber a small passage 34 provides communication between the two chambers, while the opening of this passage on the bottle chamber side may be closed by a suitable cover 35 operated by a sylphon disc 36 or by other suitable thermostatically controlled means. The temperature of the disc 36 in the bottle chamber automatically controls the transfer of heat between the cooling chamber and the bottle chamber, it being understood that preferably the bottle beverage is already chilled at the time it is placed in the apparatus so that it is only necessary to maintain a temperature in the bottle chamber sufficiently low to keep the beverage at such temperature.

Of course various forms of cooling medium may be employed, such as an electric cooling unit, or a receptacle for ordinary ice, or a receptacle for "dry ice". The illustration of the invention as disclosed herein shows the cooling chamber adapted to receive a quantity of dry ice, but it should be understood that this showing is merely for the purpose of illustration.

The bottle chamber is divided by a number of vertical partitions 37 extending from a point below the cooling chamber to a point just above plates 38, which plates slope downwardly toward the center of the apparatus and are supported upon the inner side walls 11*a* of the cabinet and at their rear edge upon the plate 29, while their forward edges are secured to the longitudinally extending plates 19. The plates 38 have their inner adjacent ends attached to a casting 39 provided with an opening 40 of such size to permit a bottle to pass therethrough, it being understood that the casting 39 is secured upon the horizontal partition 13.

A second pair of inclined plates 41 are arranged parallel to the plates 38 and are secured at their outer ends to the side walls 11 of the cabinet and at their inner ends to the casting 39, cork or other suitable insulation being arranged between the plates 38 and 41.

The partitions 37 provide a series of vertically extending bottle receiving chambers, while at the bottom of each of such chambers there is arranged a bottle receiving member 42, semicylindrical in cross section and of a longitudinal length such that a bottle may pass into the member 42 through the open side thereof. The members 42 are each pro-

vided at their opposite ends with suitable heads 43 for rotatably supporting the members on bearings 44.

It should be noted that the members 42 being semicylindrical in transverse section will permit a bottle to pass through the open side thereof and to be positioned therein so that the center line of the bottle coincides with the center line of the members 42.

The heads 43 at one end of the members 42 each carry a gear 45 arranged to mesh with idler gears 46, whereby rotation will be communicated from each cylinder to its adjacent cylinders. In assembling the cylinders in the apparatus the open sides of adjacent cylinders will be placed at 180° to one another, while the interconnecting gears between the cylinders are so designed that this relationship will be maintained at all times during the operation of the apparatus.

In the center of the apparatus an opening 47 is provided through the horizontal partition 13, and registers with the opening 40 in the casting 39, these two openings being of such size as to receive one bottle and allow the same to pass therethrough. The opening 47 is closed at its under side by an insulated door 48 which, in turn, is sealed by a suitable sealing strip 49. The door 48 is mounted on a shaft 50, by means of a suitable attaching bracket 51, the shaft 50 being journalled in suitable bearings carried by the partition 13 and having fixed thereon at its rear end a suitable crank 52 in turn connected to a lever 53 carrying a roller 54 cooperating with a cam 55 fixed on a shaft 56.

The lower end of the lever 53 is bifurcated and straddles the shaft 56. The shaft 56 extends transversely of the apparatus at substantially the middle thereof and terminates at the longitudinal center line, where it has fixed upon its end a bevel gear 57 meshing with a bevel gear 58 arranged upon a shaft 59 extending longitudinally of the apparatus along the center line thereof. The shaft 59 is driven by a suitable motor 60, it being understood that the rotor shaft of the motor is connected to the shaft 59 by means of suitable gearing, whereby the shaft 69 will make one revolution per cycle of operation of the apparatus.

There are three cams fixed on the shaft 59 to wit, the cams 61, 62 and 63, while the rear end of the shaft 56 has fixed thereon a sprocket 64. The sprocket 64 is connected to a sprocket 65 by means of a chain 66, it being observed that the sprockets 64 and 65 are of such relative size that the sprocket 65 will turn one half as fast as the sprocket 64.

The sprocket 65 is fixed on a shaft 67 rotatably mounted in a bearing bracket 68 arranged on the partition 13 and in a bearing formed in the plate 29, the shaft 67 passing through an opening in the inner rear wall 14 of the upper portion of the cabinet. A gear 69 is fixed on the shaft 67 while the inner end of the shaft 67 carries a small gear 70 arranged to mesh with the gear 45 carried by the head of the cylinder at the left center of the apparatus (see Figs. 1 and 2). The gear 69 meshes with a large gear 71 fixed on a stub shaft arranged parallel to the shaft 67, and carrying at its inner end a second small gear meshing with the gear 45 arranged on the head of the bottle receiving member 42 located at the right center of the apparatus. It will be seen that since the gear 69 drives the gear 71, and these gears being of the same size, the bottle receiving members on the opposite sides of the center of the apparatus will run in opposite directions and at the same rate of rotation.

The cam 61 is arranged to cooperate with a roller 72 carried by lever 73 pivoted at its rear end in a bracket supported by the partition plate 13, as indicated at 74, and extending forwardly and transversely of the apparatus. The lever 73 has at its opposite end a swivel connection 75 with a shaft 76 extending substantially longitudinally of the apparatus.

The shaft 76 is suitably and rotatably supported in brackets carried by the partition 13, and has arranged thereon a quill 77 free to slide endwise of the shaft but rotatably connected therewith by a sliding key. The quill 77 is provided with a crank 78 in turn connected to a link 79 which is pivotally connected to a lever 80 pivoted at its upper end to the partition 13, as indicated at 81 in Figs. 1 and 2. The lever 80 carries intermediate its ends a roller 82 arranged to cooperate with the cam 62.

A decapping device 83 is mounted on the end of the shaft 76 and comprises a pin 84 slightly turned up at its end, as shown in Fig. 2, and a ledge 85 adapted to engage with the lower edge of the cap on the bottle to remove the same therefrom.

A shaft 86 extending parallel with the shaft 76 and below the same, is rotatably supported in a bracket 87 carried by the partition 13, which shaft 86 has fixed thereto an arm 88 secured to the upper end of a chute 89. The shaft 86 also carries a crank 90 connected by a link 91 to the lower end of a lever 92 pivoted at its upper end to the partition 13, as indicated at 93. A roller 94 is carried by the lever 92 intermediate its ends and is arranged to cooperate with the cam 63.

A curved spring plate 95 is secured at its upper end to the supporting frame brackets carried by the partition 13 and serves as a guide for the end of the chute 89 and to exert a spring pressure upon the end of the bottle in the chute. The plate 95 is curved concentrically with the curved path of the end of the chute 89.

The operation of the mechanism so far described may be advantageously set forth at

this time to clarify the description relating to this part of the apparatus and to make the purposes of the apparatus more apparent.

It should be understood that the insertion of a coin or token in the slot provided for that purpose actuates a suitable time switch for starting and stopping the operation of the motor 60. We have not illustrated the slot or the switch, since each of these elements is conventional in vending apparatus and to show the same herein would only be adding unnecessary detail to the disclosure. For the same reason, no means has been shown for returning a customer's coin or token in case the apparatus is empty or out of order, since such means are common in apparatus of this character, but it should be understood that the employment of a means of this nature with the apparatus is contemplated.

Likewise, it will be well to state at this time that current for the motor 60 may be obtained from a commercial source of supply, if such is available, or if not available, suitable storage batteries may be arranged in the apparatus to supply the necessary current.

The customer having placed the necessary coin or token in the slot, the motor 60 starts to operate and a cup or container 96 is deposited from a suitable magazine, upon a support in a position to receive the contents of a bottle. The container or cup magazine and the mechanism for depositing a cup or container therefrom have not been shown since any of the well known devices for this purpose now on the market may be used. The cabinet will include the necessary support for the cup or container and will have provision in its front side, whereby the cup will be readily accessible to the customer, as is well understood in apparatus of this character.

The operation of the motor 60 revolves the shafts 59 and 56, the revolution of the latter shaft through the sprockets 64 and 65 and the chain 66 causing revolution of the shaft 67 and gears 69 and 70 carried thereby.

The gear 70 meshing with the gear 45 associated with the bottle receiving member 42 at the left center (Fig. 2) causes this member to rotate and through the idler gears 46 effects similar rotation of all of the members 42 on the left side of the apparatus. The gear 69 meshing with the gear 71 drives the gear 45 associated with the member 42 at the right center (Fig. 2) and, in turn, through the idler gears 46 effects rotation of all of the members 42 on the right side of the apparatus but in the opposite direction to those on the left side.

The bottle receiving members 42 being in rotation, the member 42 at the left center after turning approximately a quarter turn is in such position that the bottle therein may roll out of the open side of the member into the space 40 in the casting 39. The continued rotation of this member 42 positions the open side of the member at the top whereupon the bottle immediately above in the bottle chamber and between the adjacent partitions 37 will pass into the receiving member.

The adjacent bottle receiving members being positioned with their open sides 180° apart, the member 42 at the right center will have rotated to a position to discharge the bottle therefrom into the opening 40 in the casting 39 provided the bottle first deposited therein has been disposed of.

In order that this phase of the operation of the apparatus may be explained in detail at this time it should be presumed that the bottles are being disposed of as rapidly as they are positioned in the opening 40.

In the next cycle of operation the bottle in the member 42 at the right center is deposited in the opening 40, while the member 42 at the left center which has received a bottle from the stack is turning to the discharge position.

Each time a coin is deposited in the slot the apparatus functions through one cycle and bottles will be deposited one by one in the opening 40 from the members 42 at the left center and right center, first one from the left center, then one from the right center, and so on until the center stacks of bottles are exhausted.

The operation of the apparatus through additional cycles necessitates taking the bottles from the other stacks, since the two center stacks are now empty. The rotation of the member 42 at the left center exposes the open side thereof to the next adjacent member on the left, and since the open sides of the members are originally positioned 180° apart, the open side of this last mentioned member will register with the open side of the member at the left center.

Since the members are arranged on an incline the bottle in the second member will be free to pass into the left center member.

The continued operation of the apparatus permits the left member to take another bottle from the stack immediately above it, while the member at the right center is receiving a bottle from its adjacent member and is discharging the same in the manner explained just above with respect to the left center member.

It will be seen that the continued operation of the apparatus will effect the discharge of all the bottles from all the stacks, as the bottles from one stack may pass into the member 42 below the next preceding stack. Since both sides of the apparatus work in the same way, the various stacks may be emptied and the entire stock sold, the discharged bottles coming alternately from the left and right-hand sides of the apparatus.

Reverting to the operation of the apparatus after the first bottle has been deposited in the opening 40 and upon the door 48, it will be seen that the rotation of shaft 56 rotates cam 55, which cooperating with the roller 54 carried by the lever 53, forces said lever 53 and crank 52 attached thereto in a direction such as to open the door 48 and against the tension of the spring 48*a*. The bottle in the opening 40 may then slide out into the chute 89, the cap end of the bottle pointing downwardly and outwardly. (See dotted line position of bottle in Fig. 1.)

The rotation of the shaft 59 has now moved cam 63 to such position that the lever 92, through the roller 94 cooperating with the cam, is moved to rock the shaft 86 in a clockwise direction (as viewed from the right of Fig. 2) to tip the chute backwardly until the bottom of the bottle contacts with the lower end of the spring plate 95. The spring 95 will push the bottle, if a short one, into the proper position for decapping, but if the bottle is a long one it will push the neck of the bottle slightly beyond the decapping position.

The rotating cam 62 has now reached a position where the roller 82 and lever 80 are moved thereby in a direction to rotate the shaft 76, by means of the quill 77 keyed thereto, in an anti-clockwise direction until the ledge 85 is below the lower edge of the cap.

A point has now been reached in the operative cycle where the cam 61, through its engagement with the roller 72, swings the lever 73 and forces the shaft 76 and decapper 83 to the right (as viewed in Fig. 2). This movement of the decapper forces it over the capped end of the bottle, the pin 84 pressing the long bottle down against the action of the spring plate 95 to permit the decapper to reach the proper and ultimate decapping position.

The cam 62 has now turned to a position to swing the lever 82 so as to rock the quill 77, shaft 76, and decapper 83 in a clockwise direction to decap the bottle.

After a slight interval to permit escape of gas, if the liquid in the bottle is carbonated, the cam 63 again swings the lever 92 and rocks the shaft 86 in an anti-clockwise direction to tip the chute 89 to its original position and to pour the contents of the decapped bottle into the cup or container 96, it being understood that the chute is provided with suitable means to restrain the bottle from sliding out of the same while its contents are being poured.

The customer may now withdraw the filled cup or container, while the operative cycle is continued by the cam 63 again tipping the chute 89 backwardly as in the movement just before the decapping operation. It should be noted, however, that this last tipping movement of the chute is carried to a position where the lower end of the bottle is out of engagement with the end of the spring plate 95, so that the bottle is free to slide out of the chute and into the empty bottle receptacle.

The chute 89 is returned or tipped to the bottle receiving position beneath the door 48 by the cam 63 at the commencement of the next cycle of operation.

In order to prevent the bottles from dropping directly into the empty bottle receptacle and being broken or chipped, they slide from the chute 89 onto an inclined deck 98 arranged a short distance below the end of the chute when in bottle discharging position.

The deck 98 is inclined downwardly on both sides of a center peak whereby the bottles discharged thereon are free to roll to either the right or to the left. A series of corrugated plates 99 are arranged on each side of the deck 98 and form a plurality of slots. The bottles in rolling to either side of the deck will pass into these slots while the corrugations will cause the plates to serve as bumpers and will check the fall of the bottles so that they will not hit the bottom with sufficient force to break them. As soon as a slot has been filled with empty bottles, the last bottle in the slot will cause the next bottle rolling off the deck 98 to roll over it and into the next slot and so on until all of the bottles have been emptied and discharged. Of course, the empty bottle receptacle will be designed to receive the same number of bottles as does the full bottle chamber.

In Fig. 6 a slightly modified form of means for breaking the fall of the empty bottles is illustrated. This form comprising the sloping deck 100, plates 101, and angle brackets 102 secured to the plates to serve as bumpers and take the place of the corrugations in the plates 99.

Although not shown herein, a receptacle for receiving the caps removed from the bottles would preferably be provided, as would also some provision for catching the liquid poured from the bottles in the event that the cup or container was not properly positioned.

Although a preferred embodiment of the invention has been disclosed herein, it should be understood that the invention is susceptible of various modifications and adaptations within the scope of the appended claims.

Having thus described our invention, we claim:

1. A vending apparatus comprising means adapted to contain a plurality of capped bottles filled with liquid, and means automatically operable upon the insertion into the apparatus of a suitable medium, such as a coin, token, or the like, for decapping one of the bottles and emptying the contents thereof into a suitable container.

2. A vending apparatus comprising means adapted to contain a plurality of capped

bottles filled with liquid, means automatically operable each time a suitable medium, such as a coin, token, or the like, is inserted into the apparatus to decap a bottle in a substantially upright position, and automatic means to tilt the decapped bottle and to pour the contents thereof into a suitable container.

3. A vending apparatus comprising means adapted to contain a plurality of capped bottles filled with liquid, means automatically operable each time a suitable medium, such as a coin, token, or the like, is inserted into the apparatus to decap one of the bottles in a substantially upright position, and automatic means to tilt the decapped bottle and to pour the contents thereof into a suitable container and to discharge said bottle when empty into a portion of the apparatus arranged for that purpose.

4. A vending apparatus comprising a cooling chamber, a filled bottle chamber adapted to contain a plurality of capped bottles filled with liquid, thermostatically controlled means for effecting communication between said cooling chamber and said bottle chamber, means automatically operable each time a suitable medium, such as a coin, token, or the like, is inserted into the apparatus to decap one of the bottles, and automatic means to pour the contents of said decapped bottle into a suitable container adapted to be received by a customer and to discharge said bottle when empty into a portion of the apparatus arranged for that purpose.

5. In a vending apparatus, a chamber adapted to contain a plurality of capped bottles, mechanism for removing the bottles successively from said chamber, means for receiving each bottle as it is removed from said chamber and arranged for movement so as to position the bottle so received in either a tilted pouring position or in a substantially upright position, a decapping device, and means operable automatically upon the insertion of a suitable medium, such as a coin, token, or the like, in the apparatus for operating said mechanism, said first named means, and said decapping device to sequentially remove a bottle from said chamber, position said bottle in substantially an upright position, decap the bottle, tilt the same to pouring position, and then again move the bottle to an upright position.

6. In a vending apparatus, a chamber adapted to contain a plurality of substantially horizontally arranged capped bottles, means automatically operable upon the operation of the apparatus to remove one of the bottles from said chamber and to position the same substantially upright, means for automatically decapping said substantially upright bottle, means for automatically tilting said decapped bottle to a downwardly inclined position to discharge the contents thereof, and automatic means for then returning the empty bottle to a substantially upright position and discharging the same into an empty bottle receptacle.

7. A vending apparatus comprising means automatically operable to decap a substantially upright bottle upon the insertion into the apparatus of a suitable medium, such as a coin, token, or the like, and means automatically operable to tilt said bottle after being decapped to a downwardly inclined position to pour the contents thereof into a suitable container.

8. A vending apparatus comprising means automatically operable to decap a substantially upright bottle upon the insertion in the apparatus of a suitable medium, such as a coin, token, or the like, and means automatically operable to tilt said bottle after it has been decapped to a downwardly inclined position to pour the contents thereof into a suitable container and to discharge said bottle when empty into a portion of the apparatus arranged for that purpose.

In testimony whereof, we hereunto affix our signatures.

CARL W. BLOSSOM.
WILLIAM H. STAPLES.