

June 9, 1931.

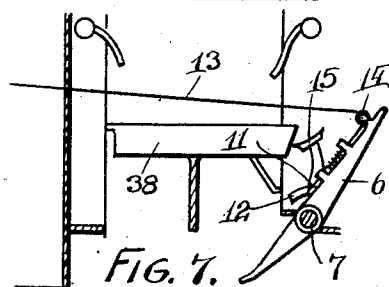
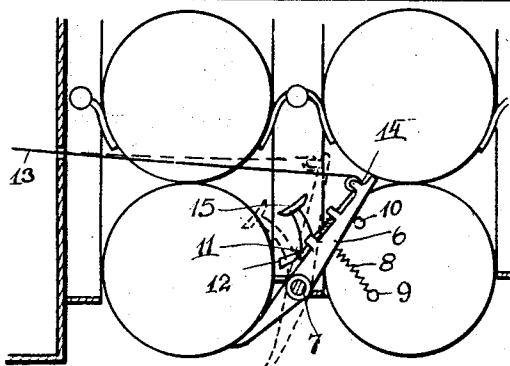
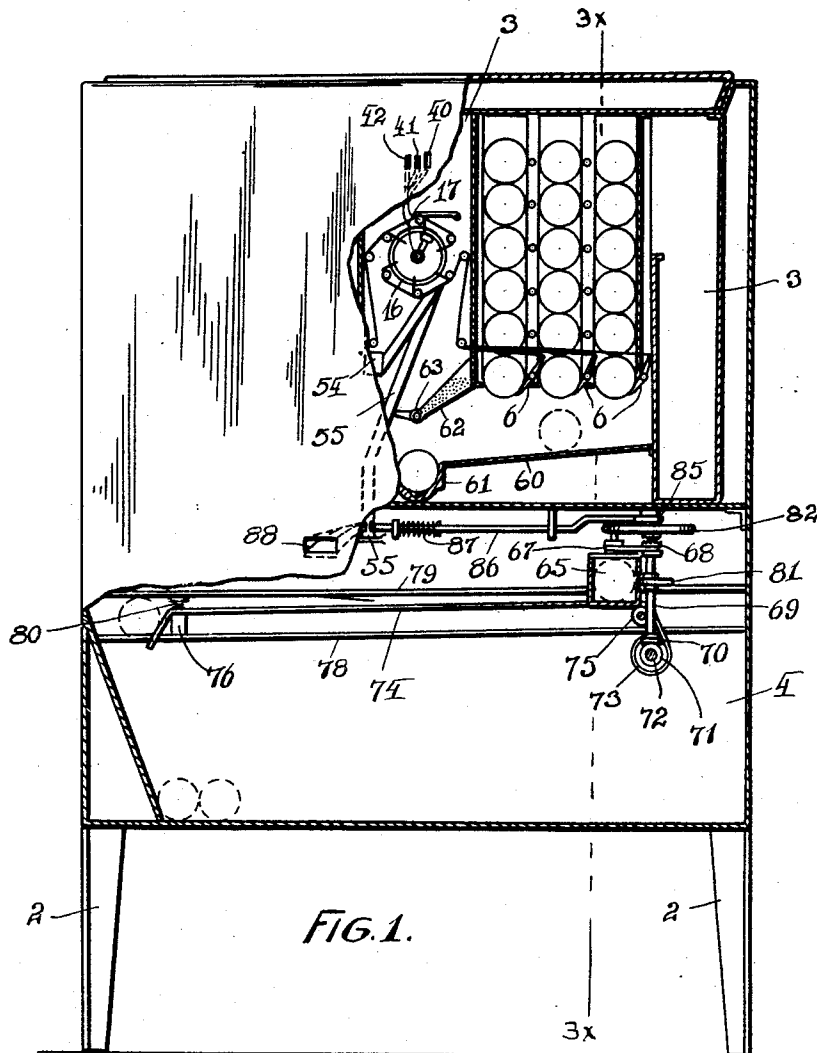
C. HAHLING

1,809,693

BOTTLE VENDING MACHINE

Filed Nov. 4, 1929

3 Sheets-Sheet 1



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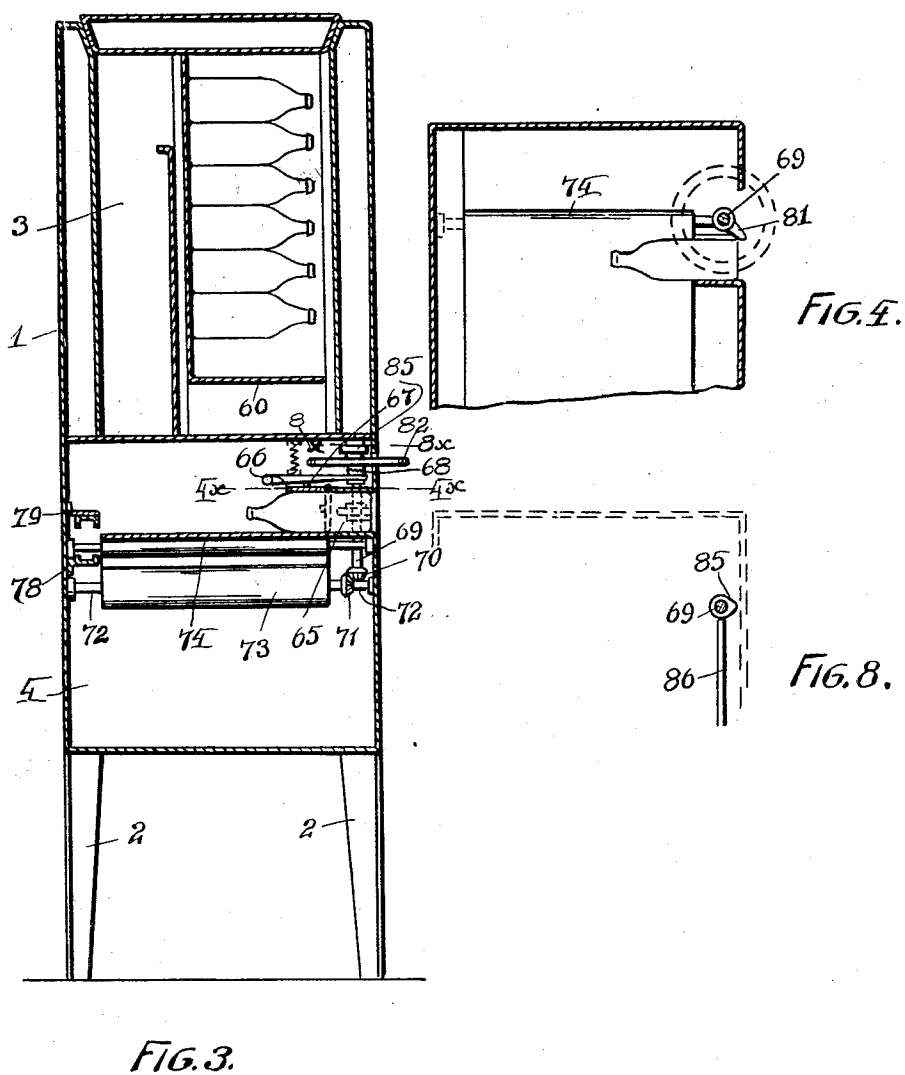
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3 Sheets-Sheet 3

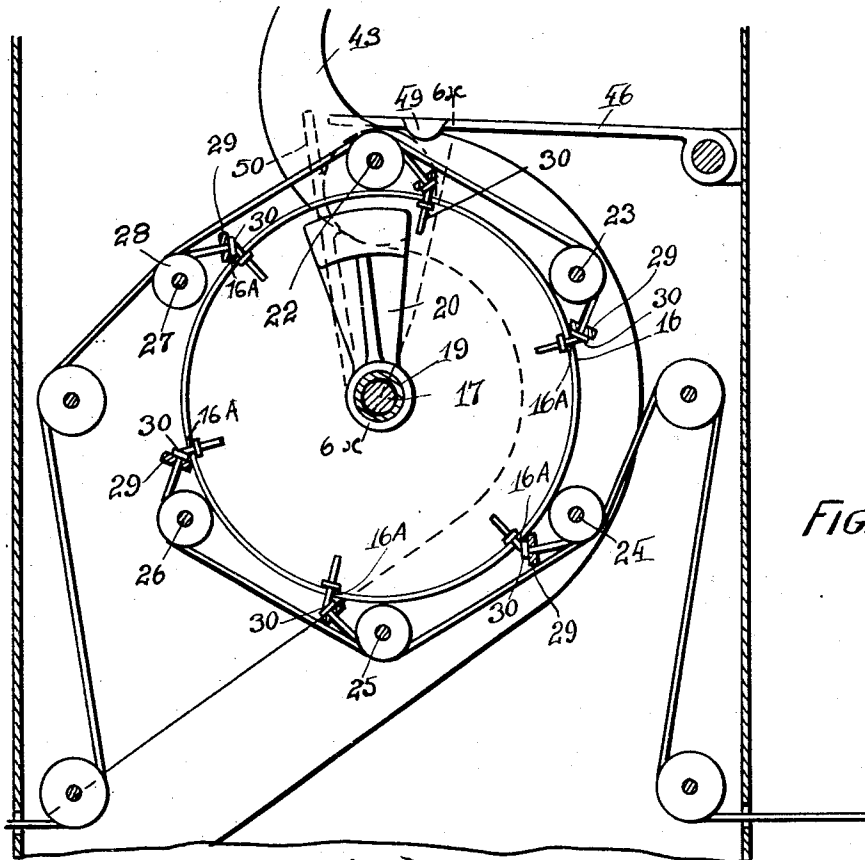


FIG. 5.

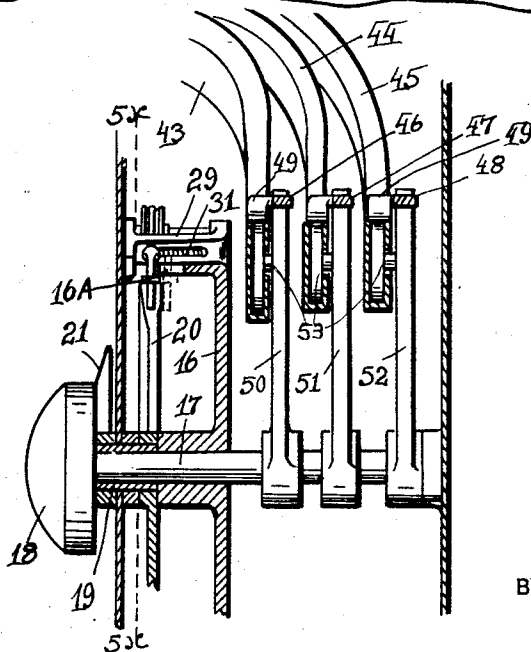


FIG. 6.

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UNITED STATES PATENT OFFICE

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BOTTLE VENDING MACHINE

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This invention relates to bottle vending machines and has for its object to provide a mechanism which not only operates to eject a filled bottle for a predetermined number of coins but which also receives the empty bottle and refunds part of the coins placed into the machine when purchasing the bottle.

These and other objects of this invention will be apparent from the drawings, the specification and the appended claims forming a part thereof.

In the accompanying drawings:

Figure 1 is a front elevation of the vending machine with a portion of the front cover broken away to illustrate the working mechanism of the machine.

Figure 2 is an enlarged detail view of the bottle release mechanism which is operated by the control knob after the coins are deposited in the machine.

Figure 3 is a vertical sectional view of the vending machine, the section being taken on the line 3x—3x of Figure 1.

Figure 4 is a horizontal sectional view of a portion of the machine, the section being taken on the line 4x—4x of Figure 3 and illustrating part of the bottle receiving mechanism.

Figure 5 is a detail view of the coin controlled operating mechanism.

Figure 6 is a vertical sectional view of the coin controlled mechanism, the section being taken on the line 6x—6x of Figure 5.

Figure 7 is a detail sectional view of one of the followers which operate to lock part of the mechanism after all the bottles in one section have been delivered.

Figure 8 is a detail top plan view of the operating mechanism for ejecting the coins on the receipt of the empty bottles.

In the several figures of the drawings like reference numerals indicate like parts.

The vending machine, forming the subject matter of my present invention, is designed to make the vending of bottles practical. Heretofore bottles have been sold thru vending machines but if the purchaser did not return the bottle, practically all of the profit or at least a large share of it was lost due to the loss of the bottle to the vender. On the

other hand if the purchaser is asked to pay more for the bottle when purchasing it from a vending machine in order to make up for the loss of the bottle, the general public will not patronize such a machine. In my present machine the purchaser of a bottle is asked to deposit in the machine a small amount of money covering the cost of the bottle in addition to the purchase price for the contents of the bottle. Thus in order to receive a bottle from the vending machine the purchaser deposits a five cent piece for the contents of the bottle and two extra one cent pieces for the bottle. After the bottle has been emptied of its contents, it is returned to the machine and placed into it and on the receipt of the empty bottle the two one cent pieces are returned to the original purchaser of the bottle. All the purchaser paid for the contents of the bottle is thus but five cents.

The mechanism with which this is done is illustrated in the several figures of the drawings and comprises the casing 1 which is supported by the legs 2, 2. This casing is divided into an upper compartment 3 and a lower compartment 4. The upper compartment is divided into suitable smaller compartments used for the storage of the bottles and the ice necessary to keep the bottles cool. The bottle compartments are divided into vertical sections in each of which are stored a series of bottles, one on top of the other. Each vertical row of bottles has different flavored contents so that the selector mechanism hereinafter described can operate to select a bottle having the desired flavor.

The retaining mechanism with which each row of bottles is held in its particular vertical section is illustrated in Figure 2 and comprises a lever 6 which is pivoted at 7. This lever is normally held in the full line position by means of the spring 8 which is anchored at 9 and draws the upper portion of the lever against the stop pin 10. The lower portion of the lever 6 is slightly curved and extends partially under the last bottle to prevent its dropping out therefrom. On the lever 6 is mounted the spring pressed latch 11 which is normally forced downwardly so as to engage behind the stationary lug

12 projecting from the casing of the machine. The engagement of the latch 11 behind the lug 12 normally locks the lever against a movement to the left so that the lever cannot swing to permit the bottle to drop out of its section. To release the bottle the latch 11 is operated by means of a cable 13 which passes over the pulley 14 carried at the upper end of the lever 6 and is attached to the end of the latch 11. When this cable is pulled to the left the latch 11 is pulled up on the lever 6 and out of engagement with the lug 12 after which the upper portion of the lever 6 is rocked to the left to swing the lower end of the lever out from under the bottle to release it and allow it to drop out of the storage section. To prevent more than one bottle from dropping out, the lever 6 is provided with an arm 15 which projects to the left thereof and swings therewith. As the lever 6 is swung to release the lowermost bottle the arm 15 swings into the path of the next succeeding bottle and stops it so that it also cannot drop out of its storage section. After the bottle has been released and the spring 8 is allowed to swing the lever 6 back to its normal position, the arm 15 is withdrawn from the bottle which it arrested in its downward movement and allows this bottle to drop further until it is again arrested by the lower portion of the lever 6 which by this time again projects to the left to hold the lowermost bottle in place ready to be released on the next pull of the cable 13. When the cable is released after its operation the latch 11 engages behind the lug 12 and locks the lever against movement until operated by the cable 13.

In order to prevent the operation of the selector mechanism of a section in which the bottles have all been taken out a follower 38 is located in each of the sections and normally rests on the uppermost bottle located therein. As the bottles are taken out of the section the follower moves down with the bottles until the last of the bottles has been taken out of the machine. With all of the bottles taken out of the section the follower drops into the position illustrated in Figure 7. In this position one side of the follower is located directly opposite the arm 15 carried by the lever 6 so that the lever is prevented from swinging; in fact it cannot be operated. If therefore a certain bottle cannot be purchased but the money has been deposited in the machine the operator instead of losing his money will be able to select a bottle from one of the other sections.

The selector mechanism with which the cables for each of the bottle release arms is operated is illustrated in Figures 5 and 6 and comprises a drum 16 which is carried on the shaft 17 that is mounted to rotate in suitable bearings provided in the housing. A knob 18 is fastened to the outer end of the shaft 17 on the outside of the housing by means of

which the drum can be rotated as will herein-after be described.

Surrounding a portion of the outer end of the shaft is a sleeve 19 which carries on the inside of the housing the cam lever 20 and on the outside of the housing the indicator 21. In this way the indicator 21 can be independently rotated from the knob 18 and the cam lever moved so that on the operation of the knob the desired bottle is ejected from the machine.

Around the drum 16 are grouped a series of studs 22 to 27 inclusive which are suitably anchored in the wall of the casing and on each of which is mounted to freely rotate a pulley 28. Alongside each of the studs 22 to 27 inclusive are provided the slotted brackets 29 in which the dogs 30 are mounted to slide. These dogs are normally held in their extreme outer position by means of the spring 31 in order to overhang the edge of the drum 16. In the edge of the drum are provided the slots 16A, one for each of the dogs 30. These slots are adapted to receive the dogs which are pushed into them by the cam arm 20. The machine illustrated is designed to vend six different flavored soft drinks so that six different sections, each containing a vertical row of bottles, are provided in the machine. Each of these rows of bottles is controlled by one of the ejecting levers 6 heretofore described. Each of the ejecting levers in turn is operated by a cable 13 and each of the cables is directed over the pulleys 28 to a predetermined position with relation to the drum 16 where one of the dogs 30 is attached thereto. When it is desired to operate the ejecting lever of a certain row of bottles the indicator 21 on the outside of the machine is turned to a position where the arm 20 operates the dog attached to the cable which operates the ejecting lever of the particular row of levers from which one of the bottles is to be ejected. The dog is forced into the slot 16A in the drum against the pressure of the spring 31 by the selector arm. Having selected the particular flavored soft drink in the manner above described the knob 18 is rotated to bring about the ejection of the bottle thus selected. When the knob is rotated after one of the dogs has been forced into engagement with one of the slots 16A, the cable carrying the particular dog is pulled on the rotation of the drum and in turn operates the ejecting lever of the particular row of bottles that has been selected. After the bottle has been ejected the operating knob is released and allowed to return to its normal starting position ready to have the pointer rotated to select another bottle from the machine. As soon as the pointer is turned away from the particular position in which it caused the engagement of the dog with the slot in the drum, the dog is forced out of the slot by the spring 31

so that this particular dog is no longer connected with the drum. Another dog can then be made to engage the drum for the operation of another ejector lever 6.

Thus far I have described the selecting mechanism and ejecting mechanism of the machine. Both of these mechanisms are controlled by a coin operated mechanism which will now be described. This mechanism is controlled by three coins of which one may be a five cent piece which covers the cost of the contents of the bottle, while the other two coins are one cent pieces and cover the cost of the bottle. In the face of the machine are the slots 40, 41 and 42 of which the slot 40 is adapted to receive the five cent coin and the slots 41 and 42, the one cent coins. From the slots lead suitable tubes 43, 44 and 45 which direct the coins to a position behind the drum 16 as illustrated in Figures 5 and 6.

Three locking levers 46, 47 and 48 are mounted to swing alongside each of the tubes 43 to 45 inclusive and each of these levers is provided with a lug 49 which overhangs its lever and normally projects into an opening in the top of the tube near which it is located. The lugs of the levers thus obstruct the free passage of the coins thru the tubes at a predetermined point in the tubes. On the shaft 17 are also carried the arms 50, 51 and 52 one for each of the locking levers 46, 47 and 48. These arms project radially from the shaft 17 and their movement is normally arrested by the ends of the locking levers which project into their paths as illustrated in Figures 5 and 6. Each of the arms 46, 47 and 48 is provided with a lug 53 which projects into the side of the tube alongside of which the arm is located. The lugs of these arms are adapted to engage behind the coin that is placed into the tube so that on the movement of the arm the coin is forced along the tube past the lug 49 carried by the levers 46, 47 and 48. As the coins are forced past these lugs the levers are raised so that the outer free ends thereof no longer project into the path of the arms 51, 52 and 53 and allow these arms to be rotated. In this way the coins inserted into the machine serve to release the locking levers and permit the rotation of the shaft 17 by means of the knob 18.

After the coins have been moved past the lugs 49 they are allowed to continue in suitable chutes which direct the five cent coin into the box 54 where the five cent pieces are retained. The one cent pieces are directed into the vertical tube where they automatically stack themselves on the bottom of it so that two of them can be ejected from the tube later on when the bottle has been returned empty and placed back into the machine as will hereinafter be described.

After one of the bottles has been released

from its section it drops onto the inclined platform 60 from where it rolls down into the drawer 61. This drawer is mounted to slide in and out of the machine so that the bottle when deposited in the drawer can be readily taken out therefrom. With the bottle a straw is deposited in the drawer and this straw 62 is fed from the straw reservoir which is controlled by the valve 63 so that on the operation of the knob 18 the straw is dropped into the drawer at the same time a bottle is released to roll into the drawer. Suitable means may be provided to pull the drawer back to its normal position after the bottle and straw have been withdrawn from it.

The sections containing the bottles are surrounded with suitable compartments in which its placed the ice for the cooling of the bottles. The top of the machine is closed by a cover and on the removal of this cover the ice and bottles can be placed into the machine.

After the bottle purchased from the machine has been emptied, it is returned to the machine and forced into the duct 65 provided for this purpose. In pushing the empty bottle into the opening of the duct 65 a door 66 located on the inside of the duct is swung upwardly into the position illustrated in Figure 3. The upward motion of this door operates the lever 67 and swings it up to operate the clutch 68. This clutch is provided on the vertical shaft 69 which is suitably mounted in bearings located on the inside of the machine. At the lower end the vertical shaft 69 carries the bevel gear 70 which meshes with the bevel pinion 71 carried on the horizontal shaft 72. On the shaft 72 is provided a roller 73 on which the belt 74 is adapted to be wound up thereon. The belt extends from the roller over the pulley 75 to the supporting bar 76 located at the end of the belt. The supporting bar extends the full width of the machine and is guided and supported between suitable guide rails 78 and 79 provided at the front and back on the inside of the compartment 4. A spring pressed lug 80 is carried at each end of the supporting bar and serves to create sufficient frictional contact between the supporting bar and its guide rails so that this bar will not move unless forced to do so on the winding up of the belt 74.

On the vertical shaft, at a point adjacent to the duct 65, is mounted the arm 81 in such a manner that on the rotation of the shaft any bottle located in the duct will be pushed further into the duct and out of the other end thereof onto the belt 74. As the belt is slightly inclined a bottle that is pushed onto the belt will quickly roll down on the belt and drop off the end of it into the compartment 4. The vertical shaft 69 which carries the arm 81, pinion 70 and clutch 68 is oper-

ated by the hand wheel 82 which is mounted to freely rotate on the vertical shaft 69 and its hub forms part of the clutch 68. Normally the hand wheel rotates freely on the shaft but when a bottle is inserted into the duct the clutch 68 is operated and connects the shaft with the wheel. On the rotation of the wheel the arm 81 is then rotated and operates to push the bottle further into the duct and out of the inner end thereof. At the same time the bevel gear 70 is rotated to roll up the belt 74 on the roller 73. The belt is of course but slightly rolled up on the roller on the rotation of the hand wheel because as soon as the bottle is pushed out of the duct the arm 67 can drop back to its normal position and disengage the clutch from the hand wheel and prevent a further rotation of the shaft by the hand wheel until the next bottle is inserted into the duct. The movement of the belt is governed so that as the empty bottles stack themselves at one end of the compartment the belt is withdrawn to allow the bottles to stack up in front of the bottles already stacked until all of the space is finally occupied in the compartment and the belt wound up on its roller.

On the vertical shaft 69 is also mounted a cam 85 which rotates with the shaft when the same is rotated by the hand wheel 82. Against this cam is yieldingly held the push rod 86 which is mounted to slide in suitable bearings and is yieldingly forced in one direction against the cam by means of the spring 87. The opposite end of the push rod is located so as to pass thru an opening in the side of the tube 55 when the push rod is moved by the cam 85. In passing thru the tube two of the one cent pieces that have been dropped into the machine in conjunction with the five cent piece, are pushed out of the tube into the receptacle 88 from which they may be taken out. In this way the two cents which were paid extra when the bottle was purchased are returned to the purchaser on the return of the empty bottle.

I claim:

1. In a bottle vending and receiving machine the combination of means for ejecting a filled bottle, a plurality of coin controlled means for locking said ejecting mechanism, means for receiving an empty bottle and means controlled by said receiving mechanism to eject part of the coins used for operating said ejecting mechanism.

2. In a bottle vending and receiving machine the combination of means for ejecting a filled bottle, a plurality of coin controlled means for locking said ejecting mechanism, means for receiving an empty bottle and means controlled by said receiving mechanism to eject part of the coins used for operating said ejecting mechanism and means for automatically stacking the empty bottles on the receipt thereof.

3. In combination with a bottle vending

machine having a bottle ejecting mechanism for ejecting filled bottles and a bottle receiving mechanism for receiving empty bottles, of a plurality of coin chutes adapted to receive a coin in each chute, means for moving the coins in said chutes, releasing means for said ejecting mechanism operated by the movement of the coins in said chutes, means for depositing said coins in separate coin receptacles and means operated by said bottle receiving mechanism to eject a coin from one of said coin receptacles.

4. In combination with a bottle vending machine having a bottle ejecting mechanism for ejecting filled bottles and a bottle receiving mechanism for receiving empty bottles, of a plurality of coin chutes adapted to receive a coin in each chute, means for moving said coins in said chutes, releasing means for said ejecting mechanism operated by the movement of said coins thru said coin chutes, means for stacking part of said coins in a coin magazine, and means operated by said bottle receiving mechanism for ejecting a coin from said coin magazine.

In testimony whereof I affix my signature.

CHARLES HAHLLING.