Nov. 20, 1956 J. E. OPGENORTH ET AL 2,771,215

CONTAINER VENDING MACHINE

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Fig. 1

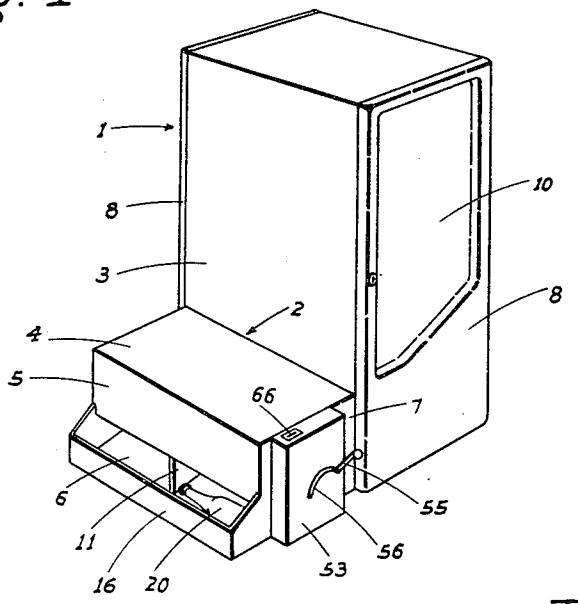



Fig. 9

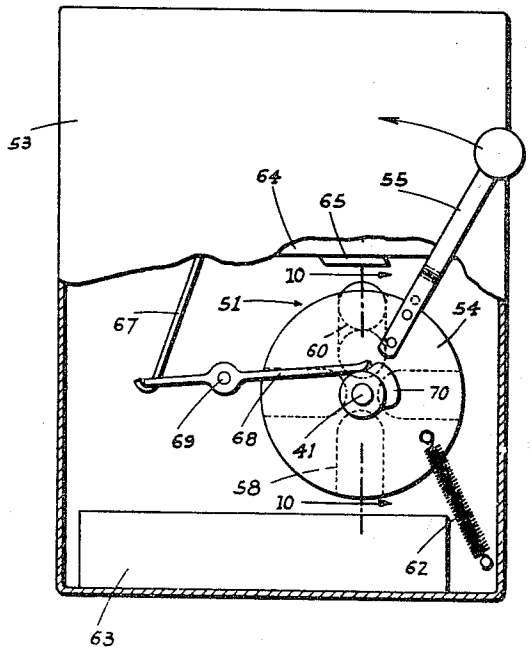
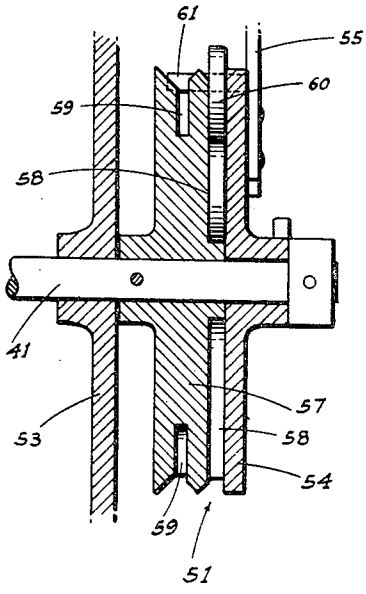



Fig. 10




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Fig. 2

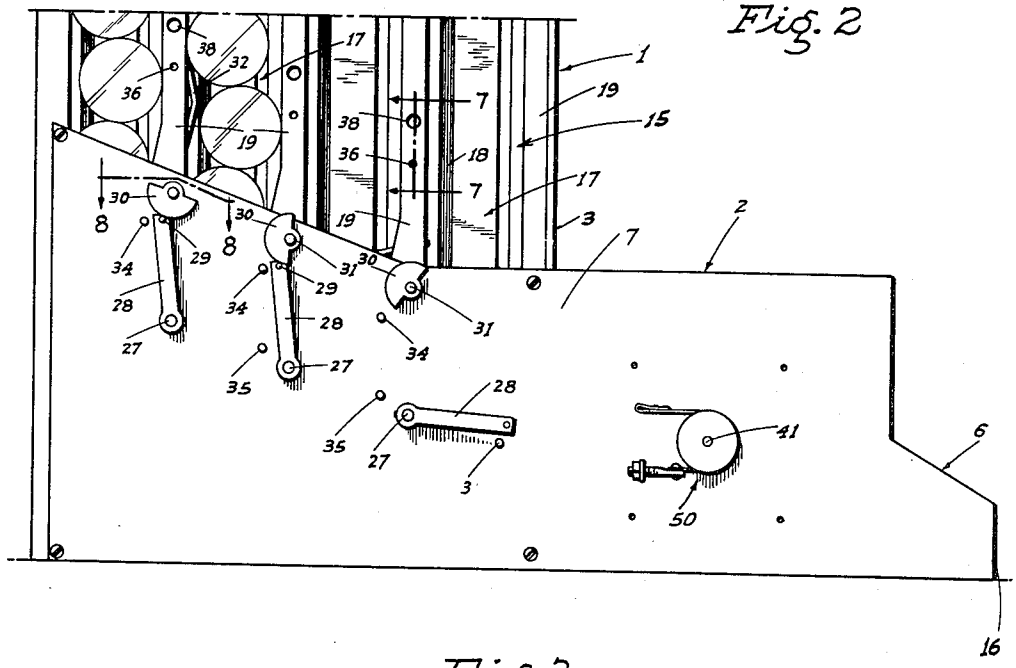
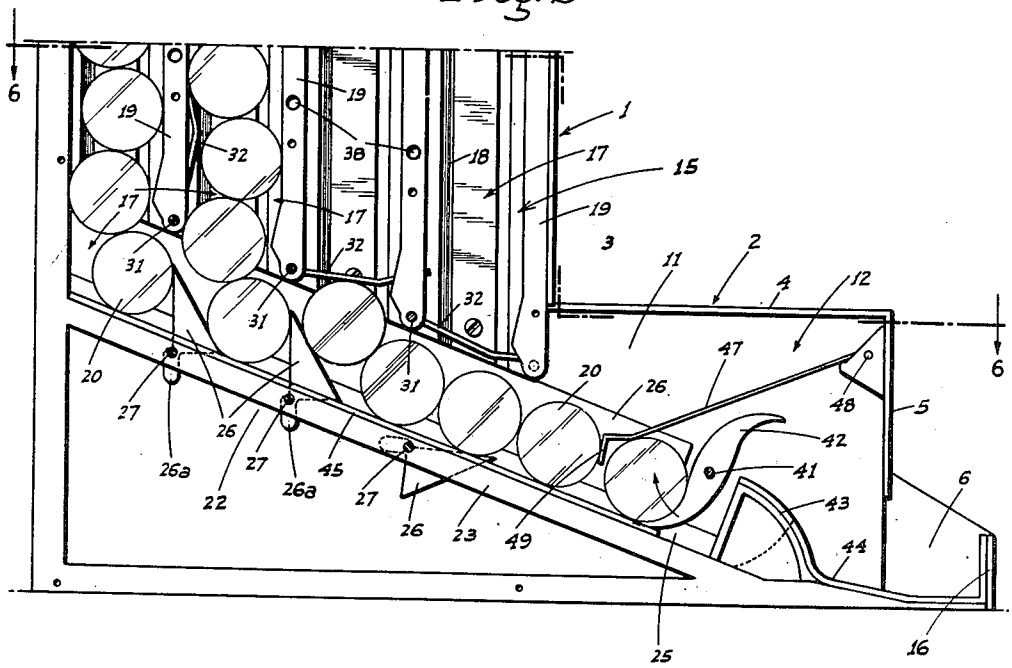



Fig. 3




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Fig. 4

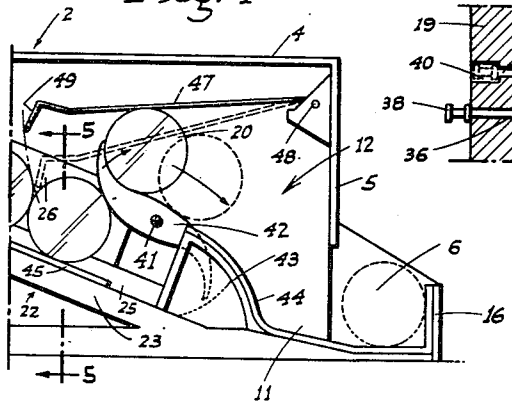



Fig. 7




Fig. 5

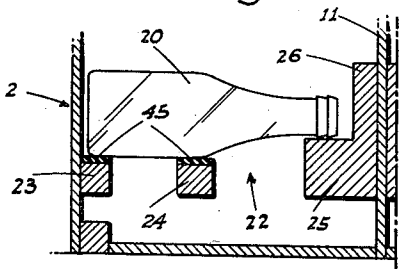



Fig. 6

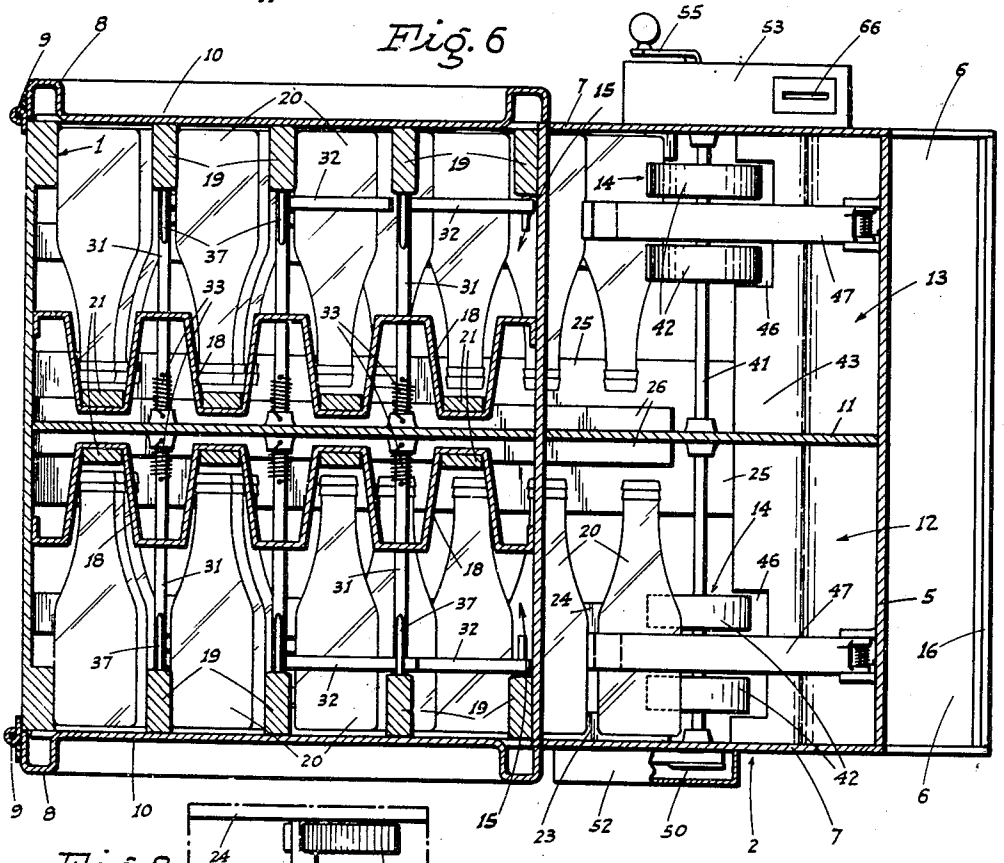
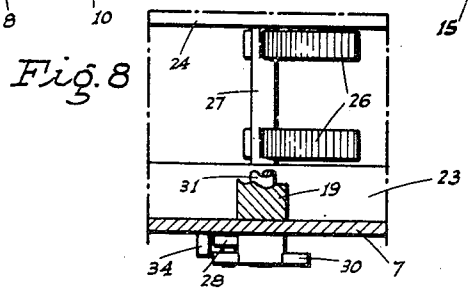



Fig. 8




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2,771,215

# CONTAINER VENDING MACHINE

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Los Angeles, Calif.

Application November 24, 1952, Serial No. 322,282

3 Claims. (Cl. 221—251)

The present invention is directed to, and it is a major object to provide, a novel coin controlled but manually actuated machine for dispensing cylindrical containers one at a time; the apparatus as shown and described herein being especially designed for dispensing bottles, such as bottled beverage, but being useful—without substantial reconstruction—to dispense cans containing beverages or other goods.

Another important object of the invention is to provide a container vending machine which embodies a novel feeding mechanism to deliver the bottles one at a time from a magazine assembly within the machine to a receiving trough open exteriorly thereof.

An additional object of the present invention is to provide a container vending machine which includes side by side, longitudinal banks of vertical, bottle receiving magazines; the feeding mechanism being operative to deliver the bottles alternately from said banks. With this arrangement the machine has a relatively large capacity, yet with the magazine assemblies in compact relationship so that the machine is not unduly large.

A separate object of the invention is to provide a container vending machine in which each magazine assembly embodies novel mechanism to prevent the delivery of the bottles from the bottom of each magazine until the magazine immediately ahead has been emptied.

A further object of the invention is to provide a container vending machine which embodies a novel coin connected actuating mechanism between an exteriorly accessible hand lever, and the rotary structure which dispenses the bottles from the magazine assemblies into the bottle receiving trough.

A still further object of the invention is to provide a container vending machine which is relatively simple and easy to load, and a machine for the purpose which functions smoothly without tendency to jamb or mis-function.

It is also an object of the invention to provide a container vending machine which is designed for ready and economical manufacture.

Still another object of the invention is to provide a practical and reliable container vending machine, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawings:

Fig. 1 is a perspective view of the improved container vending machine.

Fig. 2 is an enlarged fragmentary side elevation of the machine, with the near door removed.

Fig. 3 is a similar view, but with both the door and near side wall removed; the near rotary feeders being shown as initially engaging the adjacent bottle.

Fig. 4 is a similar view, but only of the feeding mechanism, and shows the near rotary feeder after turning 90° in pick-up relation to said adjacent bottle.



Fig. 5 is a fragmentary cross section on line 5—5 of Fig. 4, showing the position of the next bottle on the supporting rails.

Fig. 6 is a sectional plan view of the machine taken on line 6—6 of Fig. 3.

Fig. 7 is a fragmentary vertical transverse section on line 7—7 of Fig. 2.

Fig. 8 is a fragmentary sectional plan taken on line 8—8 of Fig. 2.

Fig. 9 is an enlarged side elevation, with the housing partly broken away, of the coin-connected actuating mechanism.

Fig. 10 is a fragmentary vertical transverse section on line 10—10 of Fig. 9.

Referring now more particularly to the characters of reference on the drawings, the improved container vending machine comprises an upstanding, box-like cabinet, indicated generally at 1, which cabinet includes—at the front and bottom—a forwardly projecting cabinet extension, indicated generally at 2.

The cabinet 1 includes a front wall 3 which terminates at its lower edge in substantially the plane of the top 4 of the cabinet extension 2; the latter including a front wall 5 which terminates at its lower edge clear of the bottom of the cabinet whereby to permit of the escape, in the manner as will hereinafter appear, of bottles into an upwardly opening bottle receiving trough 6 which projects ahead of said front wall below the lower edge of the latter.

Additionally, the cabinet 1 includes side walls 7 which extend the full distance from back to front of the machine, including the trough 6; such side walls being substantially the height of the cabinet extension 2, except alongside the cabinet 1 where said side walls increase in height by reason of the upper edge inclining gently upwardly to the rear.

The cabinet 1 is fitted on both sides, with full doors 8 hinged at the rear edge, as at 9, for opening from a normally closed and suitably locked position; the doors 8 above the upper edge of the corresponding portions of the side walls 7 being depressed or recessed, as at 10, to maintain the bottles in the magazine assemblies hereinafter described. Below the recesses 10 the doors 8 clear the side walls 7 to permit of the mounting on the latter of certain working parts, hereinafter described.

The machine, on opposite sides of a central vertical partition 11, embodies a right hand dispensing section 12, and a left hand dispensing section 13.

As these dispensing sections 12 and 13 are identical in construction, except that the dispensing mechanism for one section works in alternation to the dispensing mechanism of the other section, a description of one such section will suffice for both.

Each dispensing section (12 and 13) embodies—within the cabinet extension 2—a rotary, bottle dispensing mechanism, indicated generally at 14, and rearwardly—within the cabinet 1—a cooperating magazine assembly, indicated generally at 15; each such rotary dispensing mechanism being operative to pick up bottles one at a time from the related magazine assembly 15, and to deliver such bottle into the bottle receiving trough 6; the latter including a front wall 16.

Each magazine assembly 15 comprises a longitudinal bank of vertical, bottle receiving magazines 17; there being four such magazines in each bank. Each magazine 17 is defined at the inner side by a vertical channel 18, and at the outer side by spaced vertical posts 19, a vertical stack of bottles 20 being initially disposed in each magazine 17, with the neck end of the bottles in the channels 18, and the cylindrical body of the bottles between the related posts 19. In order that the magazines

17 may be varied in their effective horizontal depth, to accommodate different length bottles, each channel 18 is formed in the bottom thereof with a removably mounted, vertical filler strip 21.

At the bottom thereof the magazines 17 are inclined upwardly and rearwardly in spaced parallel relation to a bottle chute 22 which extends therebelow from the back of the cabinet 1 at a forward and downward incline to a termination at the bottom of said cabinet within the cabinet extension 2. As is evident, the magazines 17 deliver the bottles 20 downwardly onto the chute 22, whence such bottles roll forwardly for dispensing by the related rotary feeder, hereinafter described.

The bottle chute 22 comprises an outer rail 23 secured to the side wall 7, a central rail 24, and an inner rail 25 secured to the partition 11; the inner rail 25 including—at its inner edge—an upstanding, longitudinal flange 26. The bottles ride the rails in the manner shown in Fig. 5.

It is desired that the bottles be fed from the magazines 17 from the front rearwardly; i. e., each magazine 17 to be emptied before the next rearward magazine begins to feed bottles. This is accomplished as follows:

A pair of transversely spaced triangular dogs 26 upstand from the chute 22, between the rails thereof, intermediate the magazines 17; each such pair of dogs being carried on a cross shaft 27 journaled in connection with the chute 22 and extending through the side wall 7. The pairs of triangularly shaped dogs 26 are normally but releasably maintained in an upstanding position, whereby to prevent the bottles 20 from the next rearmost magazine 17 from feeding down the chute, by the following arrangement:

Outside the side wall 7 each cross shaft 27 is fitted with a normally upstanding, radial holding arm 28; each such arm having a lateral pin 29 thereon at its outer end, with such pin initially engaging against a semi-circular cam 30. Each cam 30 is fixed on the outer end of another and corresponding cross shaft 31 which extends transversely and horizontally through the magazine assembly between the side wall 7 and the partition 11.

Each cross shaft 31 is fitted, within the corresponding magazine 17, with a radial finger 32 which initially upstands rearwardly of the stack of bottles in such magazine; there being a torque spring 33 coupled to each cross shaft 31 in a manner tending to rotate it in a direction to swing the related finger 32 downwardly to a stop position closing the bottom of the corresponding magazine 17. It will be recognized that as long as bottles remain in each magazine 17, the corresponding cross shaft 31 cannot rotate, nor can the finger 32 swing downward to a magazine closing position. The semi-circular cams 30 engage the pins 29 and normally maintain the radial holding arms 28 against forward and downward swinging, so that the corresponding pairs of dogs 26 upstand and block the chute 22 against escape of bottles from the rearward magazine 17.

However, when each magazine 17 empties, the corresponding finger 32 swings downwardly to a magazine closing position, and the related cross shaft 31 and its cam 30 rotate a part-turn; the engaged pin 29 escaping the cam just prior to completion of such part-turn. This results in the corresponding radial holding arm 28 swinging forwardly so that the corresponding pair of dogs 26 swing forwardly and downwardly to a clearance position, whence the bottles from the next magazine may feed down said chute.

Stops 34 and 35 limit the up-throw and down-throw of the radial holding-arms 28. After the bottle chute 22 empties, the dogs 26 return automatically to their normal upstanding positions; this by reason of a counterweight 26*a* formed in connection with such dog.

In order to hold the fingers 32 in an upright position after manual setting of the radial holding arms 28 in



engagement with the cams 30, but before loading of any bottles into the magazines 17, the following is provided:

The magazines 17 are exposed from the outside when the adjacent door 8 is open, and the posts 19 have holes 36 therethrough for the insertion of a stop pin 37 which lies in front of each finger 32 after it has been raised, against the torque of the corresponding spring 33, to an upstanding position. Thus, the stop pins 37 act to hold the fingers 32 upright, while the operator loads the magazines 17 with bottles.

The stop pins 37 are formed with double heads 38 which prevent closure of the door 8 until the stop pins are removed; this being a safety feature to assure that the machine cannot be left with said stop pins in a locking position, and which would prevent proper functioning of said machine.

When the stop pins 37 are withdrawn from the holes 36 they are replaced in other out-of-the-way holes 39 having relatively deep sockets 40 in which the double heads 38 seat so that the door 8 may close.

With the foregoing magazine assembly it is assured that the magazines 17 deliver progressively their full load, onto the bottle chute 22, to the end that bottles are continuously available on said chute until the entire magazine assembly is empty.

The bottles, fed in a row as above onto the chute 22, are dispensed one at a time from said chute by a rotary, bottle dispensing mechanism 14 disposed at the end of the chute, and which is constructed as follows:

A cross shaft 41 is journaled in the cabinet extension 2 and extends from side to side thereof, thus having a portion adjacent and above the lower end of each bottle chute 22.

A pair of elongated, S-shaped rotary feeders 42 are fixed parallel to each other on the cross shaft 41 in alinement with each chute 22; the disposition of such feeders 42 being such that they lie in the plane of the cylindrical body portion of the bottles 20 on each chute.

Starting with the rotary feeders 42 in a position with one end thereof depending as in Fig. 3, a quarter-turn of the cross shaft 41 results in the lowermost bottle of the row on the chute 22 being raised to a position as in Fig. 4, whence such raised bottle rolls frowardly down a transverse shoulder 43 fixed in the cabinet extension 2 at the lower end of said chute 22. After the bottle rolls down the transverse shoulder 43, and which is rounded on its top face, as shown, the bottle continues forwardly, passes under the lower edge of the front wall 5, and deposits in the trough 6; the shoulder 43 and trough 6 being rubber-padded, as at 44, to absorb the impact of the bottle during its dispensing travel. Similarly, the rails 23 and 24 are rubber-faced, as at 45, to protect the bottles and prevent scuffing of the cylindrical body portions thereof.

In order to permit the rotary feeders 42 to work in proper relation to the transverse shoulder 43, the latter is slotted or cut away, as at 46, to permit the rotary feeders 42 to swing through such cut-away part.

Upon the lowermost bottle of the row on the chute 22 being swung upwardly from its starting position, as in Fig. 3, to its dispensing position, as in Fig. 4, such bottle—in the absence of preventative means—would tend to scuff against the next following bottle, and which would be undesirable because of unsightly abrading, which would result. This is prevented by the following arrangement:

A longitudinal spring lowered swing arm 47 is pivoted, as at 48, to the front wall 5 and thence extends rearwardly; such swing arm being formed at its rear end with a down-turned tip 49.

The swing arm 47 is normally lowered, with the tip 49 in engagement with the front of the next to the lowermost bottle on the chute 22, as shown in Fig. 3 whereby to maintain said bottle spaced slightly rearwardly from

the foremost bottle. Consequently, when such foremost bottle is swung upwardly by the rotary feeders **42**, such adjacent bottles are not in engagement and abrading does not result. As soon as such foremost bottle has been lifted by arms **42** until the then upper edges of said arms assume a downward slope in the direction of the trough **6**, the bottle immediately rolls off the arms. This takes place at a faster rate than the rotation of the feeders **42**, so that the latter hold back the foremost bottles on the chute **22** after the spring arms **47** have been disengaged by the first now lifted bottle rolling away from said arms. These arms, urged by the spring acting thereon, immediately snap down so that the tips **49** engage between the adjacent foremost bottles on the chute **22**, as indicated in Fig. 4. The foremost bottle on the chute is therefore freed to roll ahead slightly from the bottle immediately behind, and which is held by the arm-tips **49**, as the feeders rotate to the position necessary to engage said foremost bottle for lifting and dispensing. The arms **47**, feeders **42** and the bottles are thus returned to the relative positions shown in Fig. 3.

A brake unit **50** cooperates with the shaft **41** at one end in order to prevent said shaft from turning other than in response to the coin-connected actuating mechanism, indicated generally at **51**, which is connected to said shaft at the end opposite the brake unit **50**. The brake unit **50** is on one side of the cabinet extension **2**, being enclosed within a housing **52**, while the coin-connected actuating mechanism **51** is on the other side of the cabinet extension **2**, being enclosed in the main in another housing **53**.

The coin-connected actuating mechanism **51** comprises a lever actuated disc **54** turnable on the cross shaft **41**, within the housing **53**; such disc being fitted with a hand lever **55** which extends out of the housing **53** through an arcuate slot **56** which limits travel of said hand lever **55** to an extent that it may work—through the hereinafter described mechanism—the cross shaft **41** only through a quarter-turn.

A coin receiving wheel **57** is fixed on the cross shaft **41** alongside the disc **54**; such wheel being formed at points 90° apart with sets of coin receiving pockets; each set including a radial, relatively deep pocket **58**, and—in axially spaced relation—a radial, relatively shallow pocket **59**. For ten-cent operation, for example, two nickels **60** deposited in the uppermost one of the pockets **58** result in the top of the outermost nickel projecting above the periphery of the wheel **57**. The same is true when a ten-cent piece is deposited in the uppermost pocket **59**; i. e., a top portion of the ten-cent piece projects above the wheel **57**. Each such projecting portion of the coins provides a peripheral dog against which a laterally extending pin **61** on disc **54** engages as the hand lever **55** is pulled forwardly a quarter-turn, thus advancing the coin-receiving wheel **57** a quarter-turn, whereby to actuate the cross shaft **41** and the rotary feeders **42** thereon to effect a bottle dispensing operation.

A pull-back spring **62** returns the disc **54** and hand lever **55** to starting position after each bottle dispensing operation. The coin-receiving wheel **57** advances a quarter-turn with each bottle dispensing operation, so that a set of the pockets **58** are always uppermost; the coins from such of these pockets which are lowermost escaping the wheel and falling into a coin catch box **63**.

The coins are fed to the coin-receiving wheel **57** by a conventional coin feeder **64** mounted in the housing **53** above said wheels; such feeder including side by side coin chutes **65**, one chute delivering to the uppermost pocket **58**, while the other chute delivers to the uppermost pocket **59**; segregation of the coins being accomplished automatically in the coin feeder **64**. Such coin feeder includes a coin entry slot **66** open to the top of the housing **53**.

As is conventional, the coin feeder **64** also embodies slug rejecting means operated by a pull link **67** worked by a lever **68** pivoted at its ends, as at **69**. The lever **69** is actuated to pull the link **67** and operate the slug rejecting means each time that the hand lever **55** is pulled forwardly; this being accomplished by a cam **70** on the hub of disc **54**, and which cam engages and swings the lever **68** as the hand lever **65** is pulled forwardly.

In the operation of the described container vending machine, each forward motion of the hand lever **55** produces the dispensing of a single bottle; the bottles being dispensed alternately by the dispensing sections **12** and **13**. This is for the reason that the rotary feeders **42** which correspond to the dispensing section **12** are offset 90° relative to the rotary feeders **42** which correspond to the dispensing section **13**.

The container vending machine not only functions smoothly and effectively for the dispensing of containers under the control of the coin-connected actuating mechanism **51**, but the machine has substantial capacity, which is desirable to avoid the need of too frequent servicing.

Additionally, the machine assures against operation unless the proper coin (or coins) is deposited in the coin-connected actuating mechanism **51**; this for the reason that the coins provide the actual physical connection between certain of the working parts, as described.

From the foregoing description it will be readily seen that there has been produced such a device as will substantially fulfill the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed:

1. A dispensing machine, for cylindrical containers, comprising, with a cabinet, an inclined chute for a longitudinal row of transversely disposed containers, a magazine assembly above the chute rearwardly of the lower end of the latter adapted to feed containers into said row, a container receiving trough in front of said lower end of the chute, said trough opening exteriorly of the cabinet, a controlled cross shaft above the lower end of the chute, an S-shaped rotary feeder on the shaft adapted, upon turning of the latter in a predetermined direction, to engage, lift, and discharge forwardly over the shaft the lowermost container of the row, and means spacing the lowermost container of the row from the next container thereof; said container spacing means comprising a longitudinal, downwardly urged but upwardly yieldable swing arm extending above and from ahead of the lowermost container to adjacent the rear thereof, and a down-turned tip on the rear of said swing arm normally engaging said adjacent container from the front, spacing the same from said lowermost container; the swing arm being swung upward and then released downward, upon dispensing of said lowermost container, whereby to permit forward travel of the row and movement of said adjacent container to the lowermost position on the chute; the feeder including diametrally opposed arms each arranged to engage and hold back said adjacent container when one arm is lifting said lowermost container until after the swing arm has been released by the container being dispensed.

2. In a dispensing machine, for cylindrical containers, which includes, within a cabinet, a chute for a row of containers, an upstanding magazine assembly above the chute adapted to feed containers into said row, said magazine assembly embodying a longitudinal bank of separate magazines adapted to be loaded from one side of the cabinet, said side including a door, a pivoted closure finger in each magazine tending to swing from an upstanding position alongside containers therein to a lowered position closing the lower end of the magazine when empty, removable pins operable when the door is

open arranged to engage and prevent the fingers from swinging between said upstanding and lowered positions whereby to facilitate loading of containers into the magazines from said one side of the cabinet, and means between the pins and the door operative to prevent closure of the door unless said pins are first removed.

3. In a dispenser for bottles, an inclined chute on which a longitudinal row of bottles is disposed in transversely extending and contacting relation, a receiving trough for a single bottle mounted in front of the chute at its lower end, a rotary feeder at the lower end of the chute to engage the lowest bottle on the row and lift such bottle from the chute and discharge the same into the trough upon rotation of the feeder, and releasable means mounted in the dispenser to hold the bottle next to the lowest one from engagement with the latter; said means comprising a swing arm pivoted above and in front of the feeder and extending thence over said lowest bottle in position to be engaged thereby as such bottle is lifted by the feeder, and a depending tip on the rear end of the arm normally projecting between said bottles and engaging the forward face of said next to the lowest bottle;



the feeder including diametrally opposed arms each arranged to engage and lift said lowest bottle and to then hold back said next bottle until after the swing arm has been released by the bottle being dispensed


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