Feb. 14, 1956 J. H. SMITH 2,734,659

MECHANICAL AUTOMATIC LIQUID DISPENSER

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Fig. 1

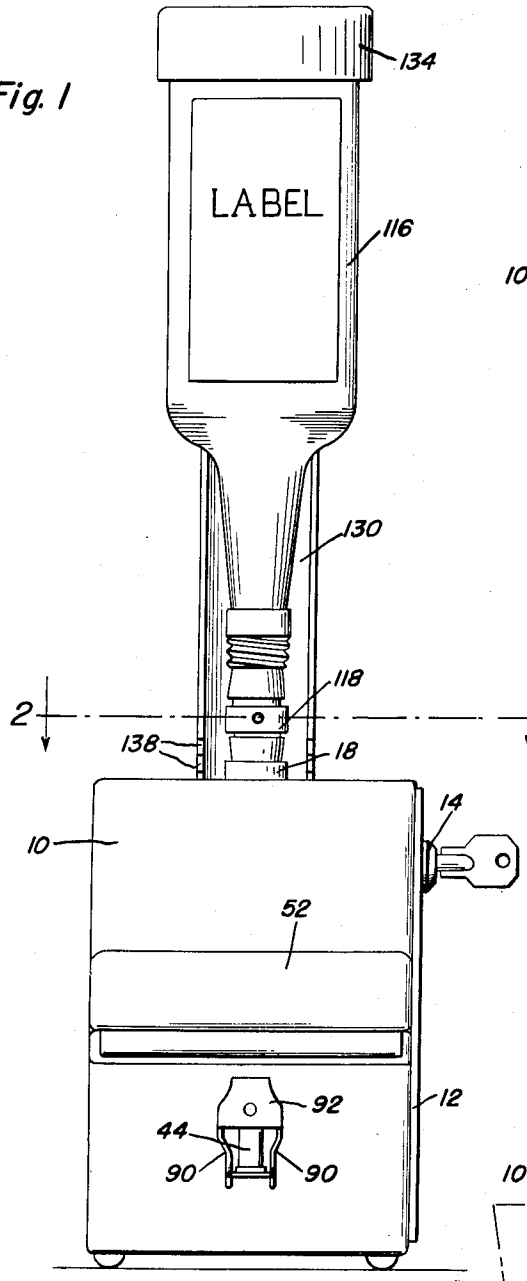


Fig. 2

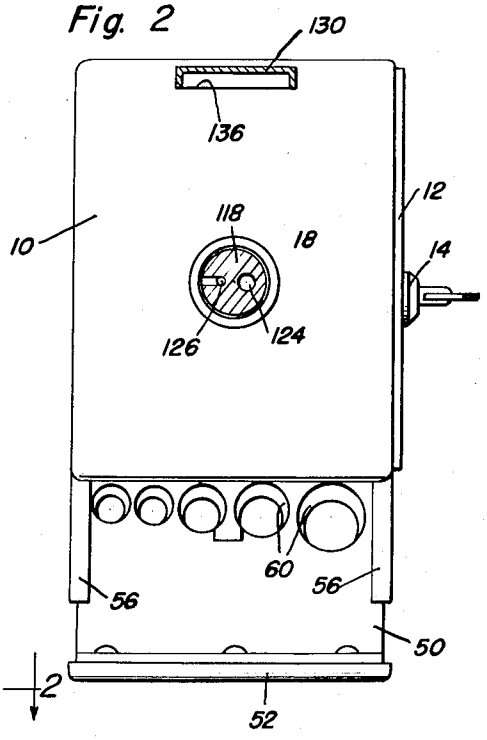
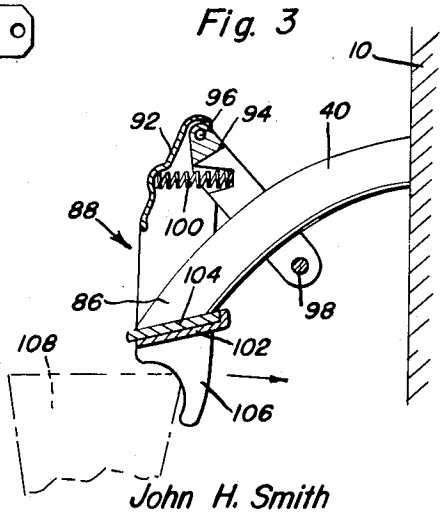


Fig. 3



John H. Smith

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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MECHANICAL AUTOMATIC LIQUID DISPENSER

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Fig. 4

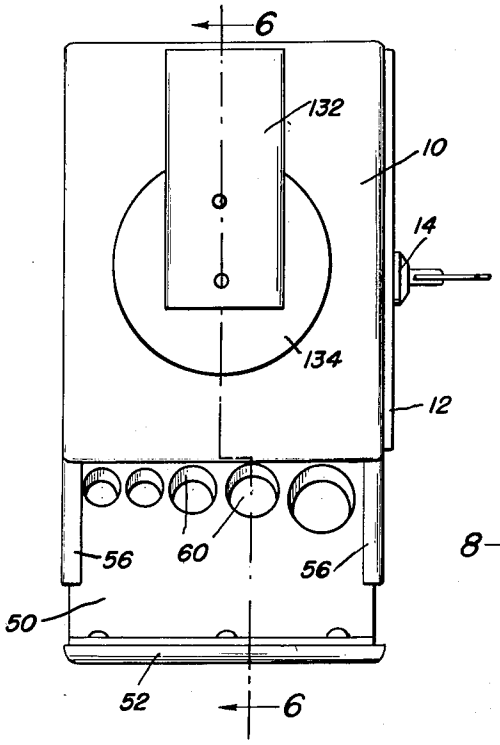


Fig. 5

John H. Smith

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

Feb. 14, 1956 J. H. SMITH 2,734,659

MECHANICAL AUTOMATIC LIQUID DISPENSER

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Fig. 7

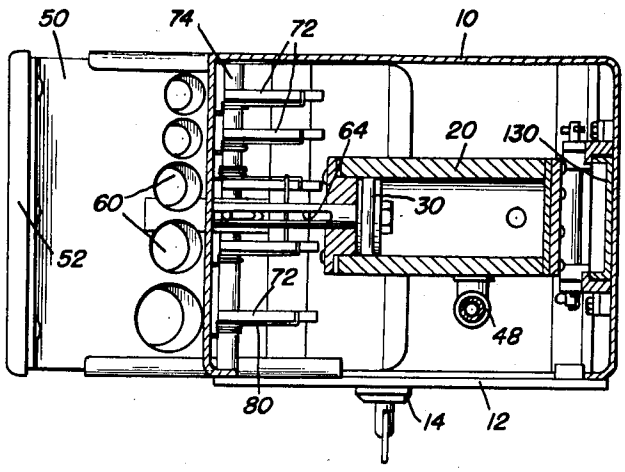


Fig. 6

John H. Smith
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Feb. 14, 1956 J. H. SMITH 2,734,659

MECHANICAL AUTOMATIC LIQUID DISPENSER

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Fig. 8

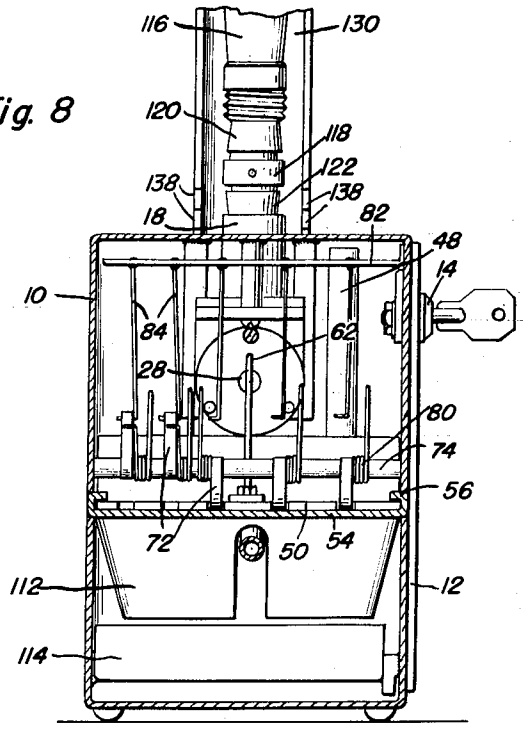


Fig. 9

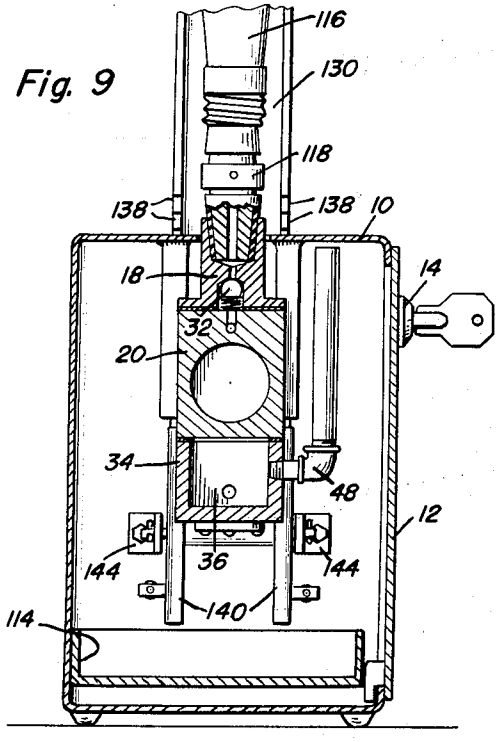


Fig. 10

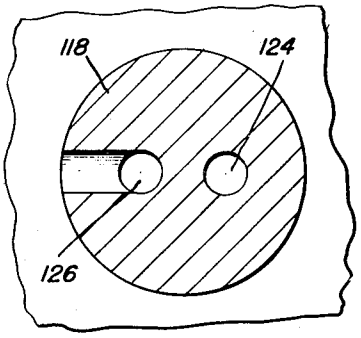


Fig. 11

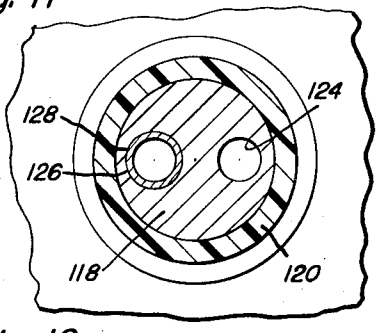
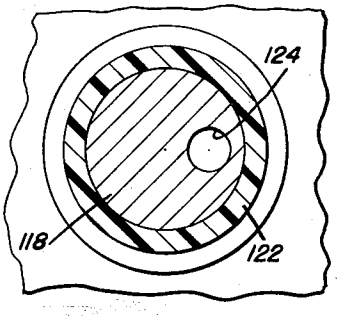


Fig. 12



John H. Smith
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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2,734,659

MECHANICAL AUTOMATIC LIQUID DISPENSER

John H. Smith, Columbus, Ohio

Application November 17, 1952, Serial No. 320,976

10 Claims. (Cl. 222—2)

This invention comprises novel and useful improvements in a mechanical automatic liquid dispenser and pertains to subject matter generally similar to that set forth in my prior copending application, Serial Number 193,592, filed November 2, 1950, for Automatic Liquor Dispenser.

The principal object of this invention is to provide a portable liquid dispenser especially adapted for the dispensing of measured variable charges of a beverage from a bottle in response to adjustable coin controlled mechanism.

A further object of the invention is to provide a dispensing apparatus as set forth in the preceding object in which improved means are provided to permit varying the number and value of the coins required to activate the coin operating mechanism of the apparatus.

Another important object of the invention is to provide a dispensing apparatus in conformity with the preceding objects wherein improved means are provided to permit a variation in the quantity of liquid dispensed by the apparatus upon one actuation of the coin operated mechanism of the same.

Another important object of the invention is to provide a beverage vending machine wherein an improved retaining means shall be provided to releasably and removably secure a beverage bottle in operative position upon the apparatus and wherein the release of the retaining means is controlled from within the casing of the device.

Another very important object of the invention is to provide an improved liquor serving machine in which a single element may be utilized to perform the several functions of releasably supporting a beverage bottle upon the apparatus; establishing communication between the beverage bottle and the dispensing mechanism of the apparatus; and for venting the interior of the bottle to the atmosphere upon the exterior of the apparatus.

These, together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a front elevational view of a liquid dispensing apparatus in accordance with the principles of this invention;

Figure 2 is a horizontal sectional view taken substantially upon the plane indicated by the section line 2—2 of Figure 1;

Figure 3 is a fragmentary detailed view taken partly in vertical section and in side elevation of a portion of the apparatus, showing the discharge valve of the same and indicating in dotted lines therein the manner in which a drinking receptacle may be utilized to activate the closure of the discharge spout;

Figure 4 is a top plan view of the apparatus in Figure 1;

Figure 5 is a side elevational view of the apparatus of Figure 1, with the end cover plate of the casing removed therefrom to disclose the arrangement of the mechanism upon the interior of the casing;

Figure 6 is a vertical central sectional view through the apparatus taken substantially upon the plane indicated by the section line 6—6 of Figure 4;

Figure 7 is a horizontal sectional view through the apparatus taken substantially upon the plane indicated by the section line 7—7 of Figure 6;

Figure 8 is a vertical transverse sectional view of the apparatus, taken substantially upon the plane indicated by the section line 8—8 of Figure 5;

Figure 9 is a fragmentary vertical transverse sectional view through the apparatus taken substantially upon the plane indicated by the section line 9—9 of Figure 6; and,

Figure 10, Figure 11 and Figure 12 are respectively horizontal sectional views taken upon the planes indicated by the section lines 10—10, 11—11 and 12—12 of Figure 6.

The portable beverage dispenser illustrated in the accompanying drawings includes a cabinet or casing 10 of any desired material, size and construction, and which preferably is provided with a removable end wall 12 having a key controlled lock 14 thereon, whereby access may be had to the interior of the casing for inspecting, adjusting or servicing the mechanism contained therein. The top of the casing is provided with an opening 16 preferably disposed substantially at the center thereof and a cylindrical member 18 extends through the opening for a purpose which will be hereinafter set forth.

Disposed within the casing 10 is a cylinder 20 which by means of supports 22 is dependingly mounted from the upper or top wall of the casing, in a manner clearly shown in Figure 6. The cylinder 20 constitutes part of a measuring device for beverages, and further includes a pair of removable end wall 24 and 26, the latter slidingly receiving a piston rod 28 having a suitable plunger or piston 30 secured thereto and slidably received within the cylinder 20 in a fluid type manner.

The member 18 constitutes part of a beverage inlet means and communicates with the interior of the cylinder 20, being provided with a check valve 32 in the form of a ball valve which is spring urged to its upward or seated position. This check valve permits the flow of beverage downwardly through the valve into the cylinder 20, under the influence of a suction created within the cylinder by the piston 30, but prevents reverse or return flow through the member 18.

Secured to the undersurface of the metering device cylinder 20, in any suitable manner, is a casing 34 having a beverage collection chamber 36 therein, the bottom wall of this collection chamber having an opening 38 which communicates with a discharge spout 40 which extends through an opening 42 in the front wall of the casing and is provided with a discharge nozzle 44 thereon. The collection chamber 36 communicates with the interior of the metering device cylinder 20 by means of passages controlled by a non-return check valve 46 which also may be of the spring pressed ball type, which is urged upwardly against its seat. This valve will permit fluid to flow downwardly through the same into the collection chamber, but will prevent return flow.

The operation of the device as so far described is as follows. A beverage or other liquid fed past the non-return valve 32 into the cylinder 20 will maintain the latter full of liquid when the piston is in the position shown in Figure 6. As the plunger 30 is pushed inwardly of the cylinder by the plunger rod 28, liquid within the

cylinder to the right of the plunger is prevented from escaping upwardly through the member **18** by virtue of non-return valve **32** and therefore forced downwardly past the valve **46** into the collection chamber **36** and from thence into the spout **40**. Obviously the quantity of liquid displaced from the metering device and into the collection chamber will depend upon the length of the inward stroke of the piston **30**. Upon the outward stroke of the piston, liquid is drawn downwardly past the valve **32** which is open by this downflow of liquid, whereby the cylinder is again filled with liquid, while liquid is prevented from returning from the spout **40** or collection chamber **36** by the non-return valve **46**. Thus, the extent of the inward stroke of the plunger will vary the volume of the liquid displaced from the cylinder **20** and thus will serve to control or meter the charge of liquid dispensed by the device through the chamber **36** and spout **40**.

It will be here noted that the liquid inlet and outlet from the cylinder **20** are both disposed at the inner end of the cylinder, with reference to the inward stroke of the piston **30**, that is at the right end of the cylinder as shown in Figure 6.

Referring now more specifically to Figures 5 and 9, it will be seen that the casing **34** has a vent pipe **48** extending through the side wall of the same to the interior of the collection chamber **36** above the midportion of the collection chamber, the upper end of the vent terminating closely adjacent the top wall of the casing **10**. By this means air is vented to the interior of the chamber **36** to insure a complete discharge of liquid therefrom through the nozzle **44** as set forth hereinafter.

As shown best in Figures 2, 4–8, a slide **50** in the form of a flat plate having an upturned end **52** providing a finger grip or handle portion is provided, the same being mounted for horizontal sliding movement in a supporting bracket **54** in the form of a horizontal plate having its edges upwardly and inwardly turned in the form of channel members **56** to thereby support and guide the slide **50**. The guide **54** extends through the front wall of the casing **10** and to the interior of the same, being secured by a fastener **58** to the cylinder **20**. Suitable apertures or openings **60** of different size are disposed through the slide **50** to receive coins of different denominations, whereby such coins may be deposited in the appropriate openings and the slide being pushed forward, coins will be moved into the interior of the casing for a purpose to be subsequently apparent.

At this inner end, upon the interior of the casing **10**, the slide is connected with the plunger rod **28** in an adjustable manner for operating the same. For this purpose, the slide is provided with an upstanding rod or pin **62** whose upper end is movably disposed in the longitudinal slot **64** formed in the outer portion of the rod **28**. This slot **64** is disposed in a vertical plane and loosely receives the vertically disposed actuating pin **62** carried by the slide **50**. A plurality of transversely extending bores **66** are provided in the rod **28**, for the reception of a pair of transverse pins **68** and **70**. The arrangement is such that when these pins are inserted in the bores **66**, a limited amount of lost motion is possible between the actuating pin **62** of the slide **50** and the plunger rod **28**. The pin **68** is engaged by the pin **62** when the slide is moved outwardly to its original inoperative position, drawing the plunger **30** outwardly of the cylinder therewith. When the slide is moved forward however, the pin **62** will travel in the slot **64** without imparting movement to the plunger rod and plunger until the pin **62** engages the pin **70**. Thus, by properly positioning the pins **68** and **70**, the effective stroke of the piston may be varied and thereby the quantity of beverage discharged from the metering device to the collection chamber can be adjusted and controlled.

A locking means is provided preventing inward movement of the slide and consequently preventing actuation of the metering device by the slide until a predetermined

number and value of coins have been deposited in the holes **60**. This locking means comprises, as shown in Figures 7 and 8 particularly, a plurality of locking levers **72**, each pivoted upon a shaft **74** suitably mounted in the casing **10**. There is one such lever **72** provided for each of the coin recesses or openings **60**, and each of these levers has a locking hook **76** at one end and a release trigger **78** at the other end. A spring **80** encircles the shaft **74** adjacent each lever and is connected with that lever to urge the same in a clockwise direction, as viewed in Figure 6, whereby the hook of the lever will be urged downwardly and into position to engage the inner edge of the slide **50** and to prevent inward movement of the same. When a coin is placed in the hole **62**, however, initial movement of the slide will move the coin inwardly and cause the same to contact with the trigger **78**, thereby lifting the lever or rotating the same in a counterclockwise direction about the pivot **74** thereof against resistance of the spring **80**, and cause the hooks **76** to be removed from the path of travel of the edge of the slide **50**, whereby the latter, if all of the locking levers have been lifted, may then move inwardly and after taking up the loss motion in the slot **64** of the piston rod, will then actuate the piston **30**.

As above mentioned, one such locking lever is provided for each of the coin recesses **60**. Any desired number of these levers may be selectively rendered operative or inoperative at the desire of the operator of the device, in order to adapt the same to respond to a predetermined number and value of coins. For this purpose, a suitable support bracket **82** is mounted in any desired manner in the casing **10** and is provided with a plurality of depending hooks **84** whose lower ends may be latched in apertures formed in the levers **76** or may engage the levers at any other desired manner to hold the same in raised position whereby they will not interfere with the sliding movement of the slide **50**. Access to the interior of the casing for varying the slide locking means in order to vary the coils and values of coins to which the device will respond is obtained by means of the removable cover plate **12**, previously mentioned.

Referring now more particularly to Figure 3, it will be seen that the discharge spout **40** terminates at its outer end in a downwardly curving discharge nozzle **86**. A closure for this nozzle is provided to prevent dripping from the nozzle. This closure preferably consists of a pivoting body indicated generally by the numeral **88**, which body has a pair of sides **90** in the form of plates or the like, which are connected at the upper end by a transversely disposed web member **92** which in turn is pivoted upon a supporting bracket **94** as by a pivot pin **96**. This bracket in turn is removably and adjustably fastened upon the spout **40** by means of a clamping screw **98**. A spring **100** is disposed between the web **92** and the bracket **94** to yieldingly urge the body **88** in a clockwise direction as viewed in Figure 3. Across its lower portion, the body member **88** has a transversely extending plate **102** having a valve **104** in the form of a strip of liquid impervious material. The valve is so disposed as shown in Figure 3 that the spring will urge the valve into a seating position upon the open end of the nozzle **86** to prevent flow of fluid therefrom. Extending below the plate **102** is a finger **106** adapted to be engaged by the rim of a drinking glass or the like, indicated at **108**, whereby the glass may be pushed under the spout and caused thereby pivoting movement of the body **88** to cause the valve to uncover the end of the discharge nozzle whereby a liquid accumulated in the collection chamber and discharge spout from a previous operation of the metering device may be dispensed.

Immediately inside the front wall of the casing, the plate forming the guide for the slide is slotted or cut away as at **110** whereby a coin, after operating the trigger **78** of a locking lever **72**, may drop downwardly against a chute or guide **112** and may be deposited to a removable

coin collecting container **114** disposed in the bottom of the casing and which is withdrawable through the removal closure **12** previously mentioned.

In the present invention it is contemplated that a beverage or other liquid to be dispensed by this apparatus may be supplied to the same in a bottle or other container **116** which is removably mounted in an inverted position above the top of the casing. The container **116** has its neck portion telescoping seated upon the upper end of the support member **118**. The latter is in the form of a double conical member, the upper conical end of which is provided with a suitable sealing gasket **120** adapted to be frictionally engaged in the neck of the container **116** to establish a fluid type engagement therewith and to support the lower end of such container. The lower conical end of the member **118** is provided with a further sealing gasket **122** which is adapted to be frictionally engaged in a corresponding socket in the upper end of the member **18**. A passage **124** extends entirely through the member **118**, to thus establish communication between the interior of the container **116** at the lower neck portion of the same, and the interior of the member **18** and with the check valve **32**. Thus, a liquid within the container **116** is free at all times to descend by gravity down to the check valve **32** and to pass through the same as the contents of the metering cylinder **20** are discharged by the metering piston **30** as previously mentioned.

The member **118** serves not only as a support for the inverted container **116**, but also constitutes an air vent for the interior of the same. For this purpose, there is provided a further passage **126** in the member **118** which is vented to the atmosphere through the mid portion of the exterior surface of such member, and at its upper end is provided with a vent conduit **128** adapted to be disposed through the container **116** and terminate closely adjacent the upper end of the same as shown in Figure 6.

Means are provided for removably locking the container **116** to its support member **118**. This locking means preferably consists of an elongated vertically disposed channel member **130** which at its upper end is provided with the horizontally disposed head portion **132** having a seat **134** thereon which is contoured to snugly receive the upper end of the container **116** and bear downwardly upon the same. As shown more clearly in Figure 2, the vertical channel member **130** is slidably received through an appropriate slot or opening **136** in the top wall of the casing **10** adjacent a side wall of the same whereby the side wall will constitute a guide for the vertically sliding member **130**. The two sides of this channel member are provided with teeth or notches **138** which are movable within the casing **10**.

A pair of latching members in the form of levers **140** are pivoted at **142** to a pair of support brackets **144** secured to the wall of the casing. The upper end of these levers have locking fingers **146** which are engaged with the teeth **138** to prevent upward movement of the member **130** and thus retain the same tightly clamped upon the upper end of the container **116**.

A pair of compression springs **148** are provided to press against the levers **140** and thereby yieldingly urge the same into locking engagement with the retaining member **130**.

It will be observed that it will be necessary to open the closure **12** by the locking device **14** in order to obtain access to the interior of the casing to thereby release the latches **140** and permit the retaining member **130** to be raised and thereby remove the container **116** for servicing, changing or replenishing the same.

It will also be observed that the adjustment of the quantity of beverage or liquid dispensed by the apparatus; the variation of the value of the coins required to operate the dispenser; the removal of the coin collecting receptacle **114**; as well as the release of the latch means **140** require the opening of the lock controlled closure **12**.

It will be readily understood that certain features and subcombinations of elements disclosed in connection with this apparatus may be omitted from the same in some instances, while other features may be employed in other apparatuses. However, the apparatus as disclosed herein is particularly characterized by its compactness, convenient mobility, ease of adjustment and servicing, as well as ease and convenience of replenishing or exchanging the liquid or beverage container **116**.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A beverage dispenser comprising a casing, a liquid measuring device in said casing including a cylinder and a piston slidable therein, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, said operating means including a piston rod on said piston having an axial slot and an actuator having a finger movable in said slot, means within said casing adjustably limiting the movement of the finger in the slot for varying the quantity of liquid measured by said measuring device.

2. A beverage dispenser comprising a casing, a liquid measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, said operating means including a slide, locking means in said casing blocking movement of said slide, said operating means including a cylinder, a piston rod provided with a longitudinal slot, said slide having a member slidable in said slot for actuating said piston, said means for varying including an element for adjustably limiting the movement of said member in said slot.

3. A beverage dispenser comprising a casing, a liquid measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, said operating means including a slide, a plurality of locking means in said casing blocking movement of said slide, means for rendering inoperative selected ones of said locking means.

4. A beverage dispenser comprising a casing, a liquid measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, said liquid outlet means including a discharge spout having a discharge nozzle on the exterior of said casing, a liquid collection chamber interposed between and communicating with said metering device and said spout, a non-return valve interposed between and exterior to both of said dispensing device and said collection chamber and preventing return flow from the latter to the former.

5. A beverage dispenser comprising a casing, a liquid

measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, said liquid outlet means including a discharge spout having a discharge nozzle on the exterior of said casing, a liquid collection chamber interposed between and communicating with said metering device and said spout, a non-return valve interposed between and exterior to both of said dispensing device and said collection chamber and preventing return flow from the latter to the former, a vent from said collection chamber to the upper part of the interior of said casing.

6. A beverage dispenser comprising a casing, a liquid measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, means for supporting a container upon the measuring device and communicating the container therewith, means for retaining the container upon said last means, a latch in said casing for releasably securing said retaining means.

7. A beverage dispenser comprising a casing, a liquid measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, a support member on said measuring device for engaging and supporting the neck of a container in the inverted position of the latter, communicating means in said member for establishing communication between the container and the measuring means, vent means in said member communicating with the upper portion of the interior of the container.

8. A beverage dispenser comprising a casing, a liquid measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, a support member on said measuring device for engaging and supporting the neck of a container in the inverted position of the latter, communicating means in said member for establishing communication between the container and the measuring means, vent means in said member communicating with the upper portion of the interior of a container, a non-return valve interposed between and exterior to both of said container and said measuring device for preventing return flow from the latter to the former.

9. A beverage dispenser comprising a casing, a liquid measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, a support member on said measuring device for engaging and supporting the neck of a container in the inverted position of the latter, communicating means in said member for establishing communication between the container and the measuring means, vent means in said member communicating with the upper portion of the interior of the container, a non-return valve interposed between and exterior to both of said container and said measuring device for preventing return flow from the latter to the former, said liquid outlet means including a discharge spout having a discharge nozzle on the exterior of said casing, a liquid collection chamber interposed between and communicating with said metering device and said spout, a non-return valve interposed between said dispensing device and said collection chamber and preventing return flow from the latter to the former.

10. A beverage dispenser comprising a casing, a liquid measuring device in said casing, liquid inlet means for said measuring device, liquid outlet means for said measuring device extending to the exterior of said casing, operating means extending to the exterior of said casing and connected to said measuring device, means within said casing for varying the quantity of liquid measured by said measuring device, a support member on said measuring device for engaging and supporting the neck of a container in the inverted position of the latter, communicating means in said member for establishing communication between the container and the measuring means, vent means in said member communicating with the upper portion of the interior of the container, a non-return valve interposed between said container and said measuring device for preventing return flow from the latter to the former, said liquid outlet means including a discharge spout having a discharge nozzle on the exterior of said casing, a liquid collection chamber interposed between and communicating with said metering device and said spout, a non-return valve interposed between and exterior to both of said dispensing device and said collection chamber and preventing return flow from the latter to the former, a vent from said collection chamber to the upper part of the interior of said casing.

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