M. F. WOOTEN AND C. C. AND P. V. HARMON.

CARBONATED MIXED DRINK DISPENSING APPARATUS.

APPLICATION FILED MAR. 7, 1916.

1,316,528.

Patented Sept. 16, 1919.

4 SHEETS—SHEET 1.

Fig. 11.

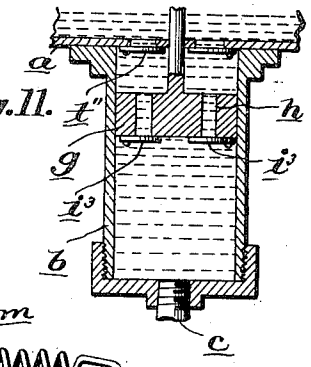



Fig. 1.

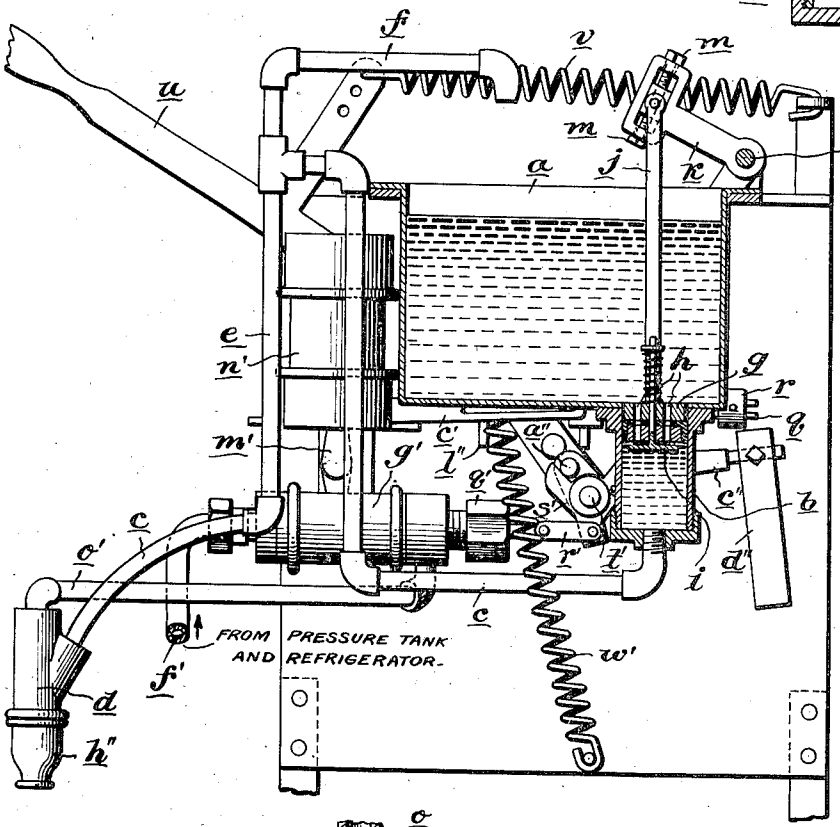



Fig. 9.

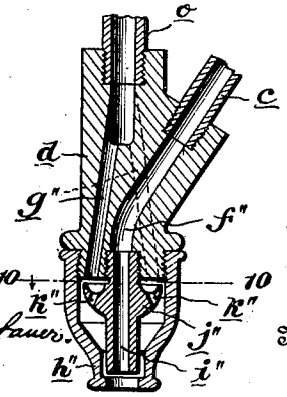
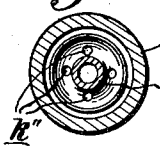



Fig. 10.




Witness

Chas. L. Grieshauer.

Inventors

M. F. Wooten

C. C. Harmon

P. V. Harmon

By Davis & Davis

Attorneys

M. F. WOOTEN AND C. C. AND P. V. HARMON.

CARBONATED MIXED DRINK DISPENSING APPARATUS.

APPLICATION FILED MAR. 7, 1916.

1,316,528.

Patented Sept. 16, 1919.

4 SHEETS—SHEET 2.

Fig. 8.

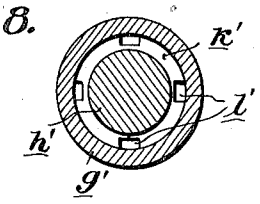



Fig. 2.

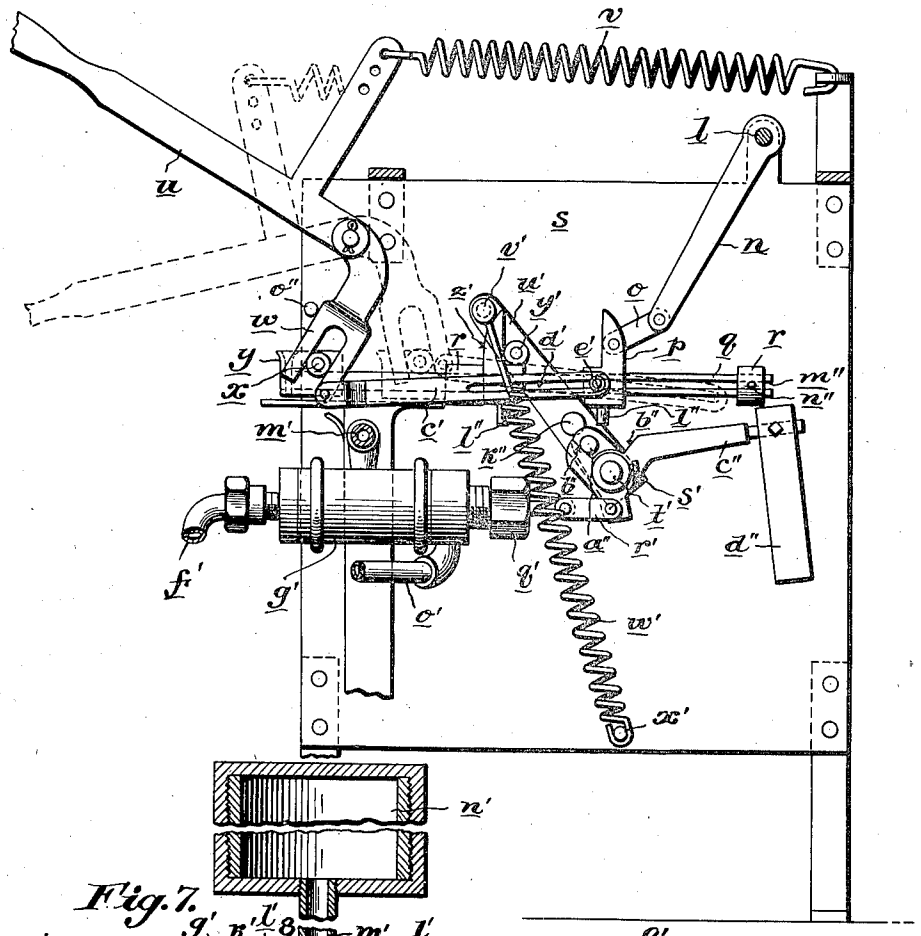
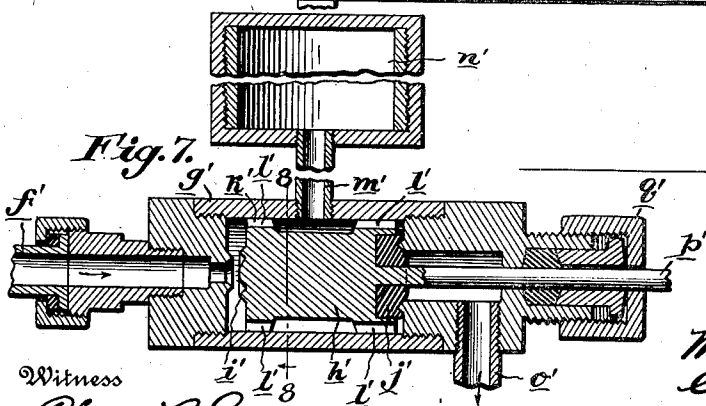



Fig. 7.




Witness

Chas. K. Griesbauer.

Inventor

M. F. Wooten

C. C. Harmon

Paul V. Harmon

By

Davis & Davis

Attorneys

M. F. WOOTEN AND C. C. AND P. V. HARMON.

CARBONATED MIXED DRINK DISPENSING APPARATUS.

APPLICATION FILED MAR. 7, 1916.

1,316,528. Patented Sept. 16, 1919.

4 SHEETS—SHEET 3.

Fig. 3.

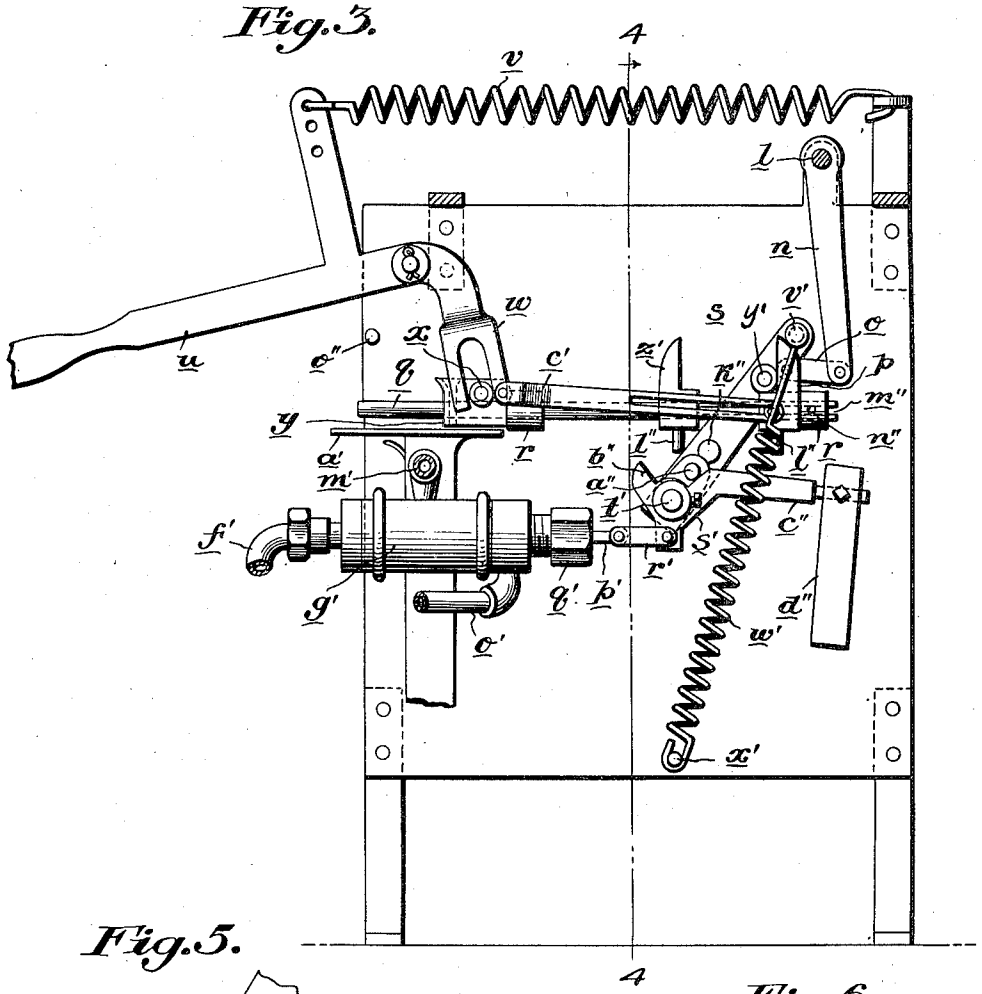



Fig. 5.

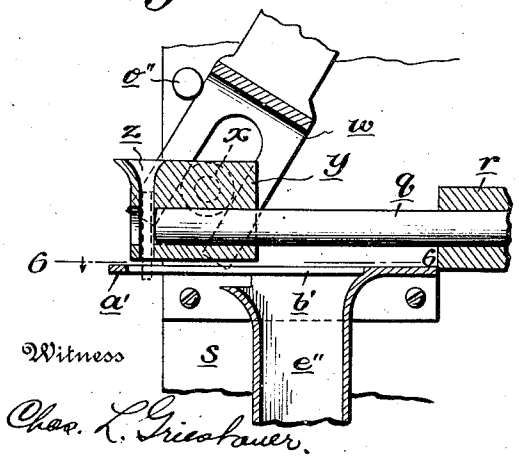
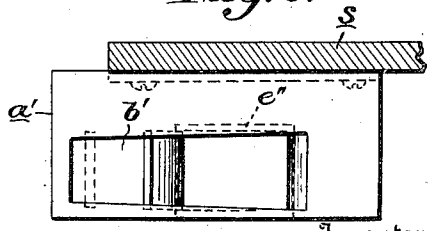



Fig. 6.




Witness

Chas. L. Griesbauer.

Inventors

Marion F. Wooten

C. C. Harmon

Paul V. Harmon

By Davis & Davis

Attorneys

M. F. WOOTEN AND C. C. AND P. V. HARMON.

CARBONATED MIXED DRINK DISPENSING APPARATUS.

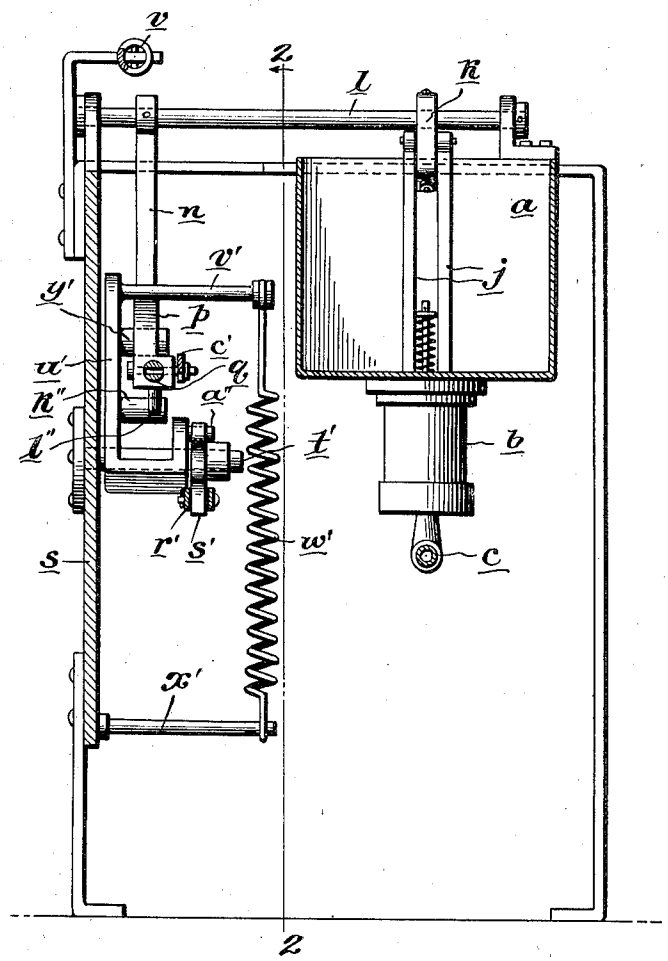
APPLICATION FILED MAR. 7, 1916.

1,316,528.

Patented Sept. 16, 1919.

4 SHEETS—SHEET 4.

*Fig. 4.*




Witness

Chas. L. Friestauer.

Inventor

M. F. Wooten

C. C. Harmon

Paul V. Harmon

By Davis & Davis

Attorneys

# UNITED STATES PATENT OFFICE.

MARION F. WOOTEN, CHRISTOPHER C. HARMON, AND PAUL V. HARMON, OF CHARLOTTE, NORTH CAROLINA, ASSIGNORS, BY MESNE ASSIGNMENTS, TO AMERICAN AUTOMATIC SODA FOUNTAIN COMPANY, OF CHARLOTTE, NORTH CAROLINA, A CORPORATION OF NORTH CAROLINA.

## CARBONATED-MIXED-DRINK-DISPENSING APPARATUS.

1,316,528. Specification of Letters Patent. Patented Sept. 16, 1919.

Application filed March 7, 1916. Serial No. 82,767.

*To all whom it may concern:*

Be it known that we, MARION F. WOOTEN, CHRISTOPHER C. HARMON, and PAUL V. HARMON, citizens of the United States of America, and residents of Charlotte, county of Mecklenburg, State of North Carolina, have invented certain new and useful Improvements in Carbonated-Mixed-Drink-Dispensing Apparatus, of which the following is a full and clear specification.

The object of this invention is to provide simple mechanism for dispensing simultaneously a measured quantity of syrup and a measured quantity of water under pressure to the same nozzle, whereby the apparatus will deliver a drink of soda water properly mixed with the desired syrup, as more fully hereinafter set forth. The construction of our apparatus lends itself nicely to employment with a coin-controlled mechanism whereby the simple deposit of a coin will place the parts in position to enable the customer to complete the operation of drawing his own drink, as more fully hereinafter set forth.

In the drawings—

Figure 1 is a view, partly in side elevation and partly in vertical section, of an apparatus embodying our invention;

Fig. 2 is a vertical section on the line 2—2 of Fig. 4;

Fig. 3 is a view similar to Fig. 2 with the parts in another position, *i. e.*, in position to discharge the liquids;

Fig. 4 is a section on the line 4—4 of Fig. 3; and

Figs. 5, 6, 7, 8, 9, and 10 are detail views hereinafter described;

Fig. 11 is a vertical sectional view showing a slightly modified arrangement of the pump-valve.

Referring to the drawings by reference characters, *a* designates a syrup tank, depending from whose bottom is a measuring cylinder *b*. From the bottom of this cylinder extends a pipe *c* to the nozzle *d*, this pipe at an intermediate point being bent upwardly to a point above the normal level of liquid in the tank *a* as at *e*, and attached to said upward bend is an air vent pipe *f* which is extended inwardly far enough to discharge back into the tank *a* any liquid that may surge up into this escape pipe *f*. Working in the cylinder *b* is a piston *g* provided with holes *h* which are closed by a spring-actuated check valve *i* seating against the bottom of the piston. This piston is connected by a rod *j* to a crank arm *k* carried by a rock shaft *l*, suitable means such as set screws *m* being employed to connect the rod *j* to arm *k* in an adjustable manner, so that the stroke of the piston may be varied, in order to vary the amount of syrup discharged at each stroke from the pump cylinder *b*.

The rock shaft *l* is provided with another arm *n* which is connected by a link *o* to a tappet *p* fastened to the rod *q* slidably mounted in bearings *r* rigidly supported upon the base plate *s* of the apparatus. It will be seen that by backwardly sliding the rod *q*, the rock shaft will be rotated and the piston *g* forced downwardly in its cylinder, thereby forcing the syrup that has accumulated below the check valve out through pipe *c* to the nozzle. Upon the upward stroke of the piston, the syrup will flow down through the holes *h* past the lightly held valve *i* into the cylinder and thus refill the same. If desired, as shown in Fig. 11, a check valve *i''* may be employed above the piston *g* so as to trap the syrup above the piston and thus cause it to be forced down through piston *g*. We have found in practice, however, that this check valve *i''* is unnecessary if sufficient syrup be maintained in tank *a*. We may use instead of a single spring-actuated valve *i* as shown in Fig. 1, a pair of valves $i^3$, as shown in Fig. 11.

To force rod *q* backwardly to thus operate the measuring pump piston *g*, we employ a downwardly-working hand lever *u* which is normally held up by a coil spring *v* and is provided with a downwardly-extending forked arm *w* engaging the roller pin *x* carried by a block *y* slidably mounted on rod *q*. The block *y* is adapted to be locked to the rod *q* by means of a coin dropped into a vertical slot *z* at the front end of the block, the coin being supported in the block *y* just in front of the end of the rod *q* by means of a horizontal plate *a'* mounted just under the block. When a coin is in place and the block *y* is pushed inwardly, the end

of the rod will abut against the coin and thus cause the rod to slide with the block. As the block reaches the inner end of its stroke, the coin will drop through the widened slot $b'$ formed in plate $a'$ and thus release the rod $q$ from the block $y$. The rod $q$ will be locked in its inner position by means hereinafter described. The lever $u$ with its block $y$ will be returned to normal position by means of a spring $v$ as soon as the operator releases the lever. As the lever is thus normally pulled up by spring $v$ and the block $y$ moved forwardly, a link $c'$, connecting the forked arm $w$ with the cylinder tappet $p$, will, after the lever $u$ is returned nearly to normal, exert a forward pull on the rod $q$ and thus operate the rock shaft $l$ to bring the piston back to its upper piston and also, as hereinafter described, restore other parts to normal. To enable the link $c'$ to operate properly, it must have considerable lost motion between it and the tappet $p$; this is provided for by making a slot $d'$ in the link, in which slides the pivot $e'$ which connects the link to the tappet $p$.

The back and forth sliding of the rod $q$ not only operates the syrup measuring and forcing devices above described, but also operates the water measuring and discharging devices, as hereinafter set forth.

The carbonated water is supplied to the apparatus by means of pipe $f'$, the usual refrigerator and pressure source not being shown in the drawings. This conduit $f'$ enters one end of a valve casing $g'$ in which slides a head $h'$ provided at one end with a valve $i'$ and at its other end with a valve $j'$, this valve head being provided with annular guide flanges $k'$, notched at $l'$ to permit the charged water to freely pass between the head and the casing $g'$. Communicating with the interior of the valve casing about midway its length is a pipe $m'$ whose other end communicates with a hermetically sealed measuring vessel $n'$. The valve $j'$ closes over the inlet end of a pipe $o'$ communicating with the interior of the cylinder at the end opposite pipe $f'$, said pipe $o'$ extending to the nozzle $d$. The double valved head $h'$ is reciprocated by means of a rod $p'$ extending through a stuffing box $q'$.

The rod $p'$ is connected by a pair of links $r'$ to the depending end of a rocking cam $s'$, this cam being pivotally mounted upon a horizontal pin $t'$ rigidly supported on the supporting plate $s$. Pivotally supported on the same pin $t'$ is an upstanding rocker arm $u'$ which extends to a point above the aforesaid sliding rod $q$ and is provided with a horizontal pin or rod $v'$ at its upper end, which pin $v'$ is connected by a tensioned coil spring $w'$ to a stationary pin $x'$ fastened to the support $s$ at a point a considerable distance below the pivot $t'$ and in vertical alinement therewith. The rocker arm $u'$ carries a roller pin $y'$ which is in the path of the above described tappet $p$ and a companion tappet $z'$ fastened to the rod $q$ at a distance from said tappet $p$, the positions of the tappets $p$ and $z'$ and said pin $y'$ being such that as the rod $q$ is reciprocated the tappets will throw the rocker arm $u'$ to one side or the other of its center of rotation. The rocker member $u'$ is also provided with another pin $a''$ which is adapted to strike alternately, as rocker member $u'$ is thrown to one side or the other, the cam faces $b''$ formed on the cam $s'$. The cam $s'$ is provided with a rearwardly-extending arm $c''$ from which is hung a weight $d''$, the tendency of which is to push the rod $p'$ forwardly and thus close valve $i'$.

It will be observed that when the rod $q$ is pushed backwardly to operate the force pump syrup-measuring device, the forward tappet $z'$ will push against roller pin $y'$ and force the rocker member $u'$ rearwardly. The instant this rocker member passes over center, the tension spring $w'$ will jerk it quickly the rest of its stroke, that is until roller pin $y'$ strikes against the rear tappet $p$. In this overthrow movement of the rocker member, this pin $a''$ will forcibly strike against the rear cam face $b''$ and thus quickly open valve $j'$ and close valve $i'$ and thereby permit the measured quantity of gas charged water in the measuring vessel $n'$ to discharge itself through pipe $o'$ to the nozzle. When the lever $u$ is released by the operator, the spring $v$ pulls the sliding rod $q$ forwardly and causes tappet $p$ to push the rocker member past center in a forward direction and thus permit spring $w'$ to quickly complete the forward stroke of the rocker member. In this forward stroke, the pin $a''$ strikes forcibly against the front cam $b''$ and thereby quickly closes valve $j'$ and opens valve $i'$, thereby permitting the carbonated-water vessel $n'$ to be again filled from the source of pressure. The object in thus quickly throwing the double valve is to prevent appreciable escape of carbonated water from the supply pipe $f'$ to the delivery pipe $o'$. If this double valve were shifted slowly, it will be seen that the carbonated water would have time to pass around the valve head through notches $l'$ to delivery pipe $o'$ and thus prevent accurate measurement of the carbonated water. The pressure is always sufficient to hold valve $j'$ closed against the tendency of the counter-weight $d''$ to open it, so that there is no danger of valve $j'$ opening during the time the pin $a''$ is shifting from the front cam $b''$ to the rear cam $b''$. The counterweight, however, is sufficiently heavy to hold valve $i'$ closed during the time the pin $a''$ is shifting from the rear cam face $b''$ to the forward cam face $b''$, so that the valve head $h'$ remains stationary until it is forcibly shifted either forwardly or backwardly by the operation of pin $a''$ and

the cam faces $b''$. In order that the above described action of the valves shall be assured, it is desirable that the area of the inlet end of pipe $f'$ in the valve casing shall be less than that of the inlet end of the pipe $o'$, as is obvious.

It is desirable that valve $i$ carried by the piston shall be normally slightly open, so that while the piston is at rest at the upper end of its stroke the syrup will flow past it into the measuring vessel $b$. When the piston is forced downwardly, this valve closes the passages $h$ through the piston and therefore causes the syrup to be forcibly discharged. This forcible discharge of the syrup is important, as syrups used in an apparatus of this sort are slowly moving liquids and the time for discharging the syrup is necessarily limited, and the discharge of the syrup should be practically complete by the time the lever $u$ completes its downward stroke. It will be observed also that with our apparatus the syrup discharge commences almost instantly and is well under way before the soda water discharge commences; this is important in view of the fact that it takes a much shorter time to discharge the water under pressure than it does the syrup, and for the further reason that it is desirable to discharge all or practically all the syrup before the water is completely discharged, in order that the water shall be fully utilized for the purpose of mixing the syrup thoroughly with the water in the cup or glass.

With regard to the coin-controlled mechanism, it will be observed that when the coin is in position in slot $z$ it rests on its edge in the slot $b'$, so that when the coin-carrying block $y$ is pushed backwardly, the coin will ride along on the edges of the slot $b'$ until it reaches the wider rear end of the slot, whereupon it will fall through into a suitable chute $e''$. But it will be understood that this coin will not drop out of its locking engagement with rod $q$ until the rod has been pushed far enough back to throw the rocker member $u'$ over the center. The syrup pipe $c$ empties into a central passage $f''$ in the nozzle and the soda water pipe $o'$ communicates with a pair of longitudinal passages $g''$ arranged on opposite sides of said passage $f''$.

Screwed on to the lower end of the nozzle body is a nozzle cap $h''$, into which the water passages $g''$ discharge. Screwed centrally into the nozzle body is a nozzle tube $i''$ which discharges the syrup. With this construction, it will be observed that the syrup is discharged centrally of the nozzle while the soda water is discharged in practically a tubular stream around the syrup, whereby a thorough mixture and agitation of the syrup in the cup is insured. We have found in practice that to avoid a too-quick discharge of the soda water, it is desirable to provide the syrup tube $i''$ with an annular cupped flange $j''$, into which the soda water discharges from passages $g''$. The cupped flange $j''$ is provided with one or more perforations $k''$, through which the soda water discharges. The water not only discharges through the passages $k''$ but also discharges around the upturned edge of the cup, whereby the soda water is retarded in its flow through the nozzle and is sufficiently agitated within the nozzle cap $h''$ to insure it being discharged in a tubular stream around the syrup tube.

The letter $l''$ designates a stop depending from the lower end of each of the tappets $p$ and $z'$. These pins $l''$ are adapted to strike against the pin $k''$ carried by the rocker member $u'$ to assist the tappets $p$ and $z'$ in throwing the rocker member over center. In the rear lug $r$ is mounted a pin $n''$ which works in the slot $m''$ formed in the rod $q$. The slot $m''$ is of such length that when the rod $q$ is pushed inwardly the outer end of the slot will strike the pin $n''$ and thus stop the rod at the proper point. The letter $o''$ designates a stop for limiting the upward movement of the handle $u$. It will be understood that when a coin is absent from the slot $z$, the lever, with its connected coin block $y$, is free to move independently of the rod $q$ without operating any of the parts of the apparatus; this is shown in dotted lines in Fig. 2, the slot $d'$ in link $c'$ permitting the link to slide freely on the pin $e'$.

Having thus described our invention, what we claim is:

1. In an apparatus of the class set forth, mechanisms for discharging soda water and a syrup separately, a common nozzle, the syrup discharging mechanism embodying a measuring cylinder, a valved piston working therein, and means for reciprocating this piston, and a delivery pipe extending from the measuring vessel to the nozzle, this pipe having a bend extending to a point above the level of the syrup in the supply tank, said upward bend being provided with a vent tube adapted to discharge syrup back into the tank.

2. In an apparatus of the class set forth, a common nozzle and mechanisms for discharging soda water and syrup separately into said nozzle, the soda water discharging devices embodying a measuring vessel, a valve casing connected thereto, a supply pipe adapted to connect the casing to the source, another pipe connecting said casing to the nozzle, a double valve in the casing, and means for shifting said double valve to alternately close and open said pipes, said means embodying spring-actuated devices for quickly shifting the double valve, for the purpose herein described.

3. In an apparatus of the class set forth, a soda water measuring vessel, a valve cas-

ing communicating therewith, pipes connecting said casing with the source of pressure and also with the nozzle, a double valve in the casing, counterweighted means normally tending to move said double valve to close the inlet from the source of pressure, and means for suddenly shifting said valve back and forth to alternately close the inlet and outlet of the casing.

4. In an apparatus of the class set forth, a soda water measuring and discharging means embodying a measuring vessel, a valve casing and pipes connecting the same with the pressure source and with the discharge nozzle, a double valve in the casing and means for quickly shifting it for the purpose set forth, said means consisting of a weighted rocking cam, a spring-actuated rocking member, a spring for quickly actuating said rocking member as it is shifted back and forth across the center of its rocking movement, and means for moving said rocking member back and forth to positions where said spring may complete its actuation.

5. In an apparatus of the class set forth, a common nozzle and mechanisms for discharging soda-water and syrup separately into said nozzle, the soda-water-discharging-devices embodying a measuring-vessel, a valve-casing connected thereto, a supply-pipe adapted to connect the casing to the source, another pipe connecting said casing to the nozzle, a double-valve in the casing, and means for shifting said double-valve to alternately close and open said pipes, said means embodying spring-actuated devices for quickly shifting the double-valve, for the purpose herein described, said means embodying also a slidable rod carrying a pair of oppositely-facing tappets for throwing said spring-actuated devices.

6. In an apparatus of the class set forth, a common nozzle and mechanisms for discharging soda-water and syrup separately into said nozzle, the soda-water-discharging-devices embodying a measuring-vessel, a valve-casing connected thereto, a supply-pipe adapted to connect the casing to the source, another pipe connecting said casing to the nozzle, a double-valve in the casing, and means for shifting said double-valve to alternately close and open said pipes, said means embodying spring-actuated devices for quickly shifting the double-valve, for the purpose herein described, said means embodying also a slidable rod carrying a pair of oppositely-facing tappets for throwing said spring-actuated devices, and devices connecting one of said tappets to the syrup-discharging mechanism.

7. In an apparatus of the class set forth, a common nozzle and mechanisms for discharging soda-water and syrup separately into said nozzle, the soda-water-discharging-devices embodying a measuring-vessel, a valve-casing connected thereto, a supply-pipe adapted to connect the casing to the source, another pipe connecting said casing to the nozzle, a double-valve in the casing, and means for shifting said double valve to alternately close and open said pipes, said means embodying spring-actuated devices for quickly shifting the double-valve, for the purpose herein described, said means embodying also a slidable rod carrying a pair of oppositely-facing tappets for throwing said spring-actuated devices, a manually-operable device for reciprocating said rod, and a lost-motion link connection between said manual device and one of said tappets.

In testimony whereof we hereunto affix our signatures this 4th day of March, 1916.

MARION F. WOOTEN.
CHRISTOPHER C. HARMON.
PAUL V. HARMON.