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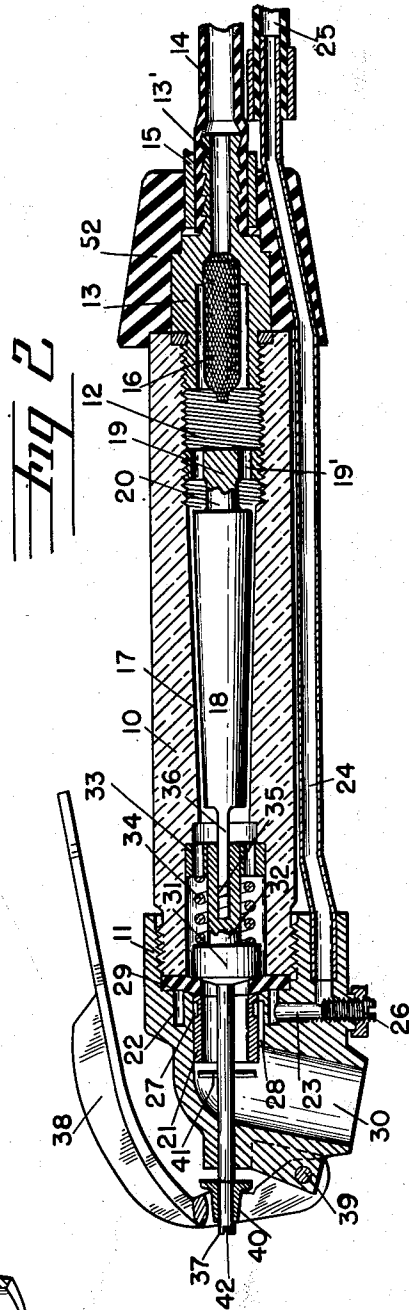
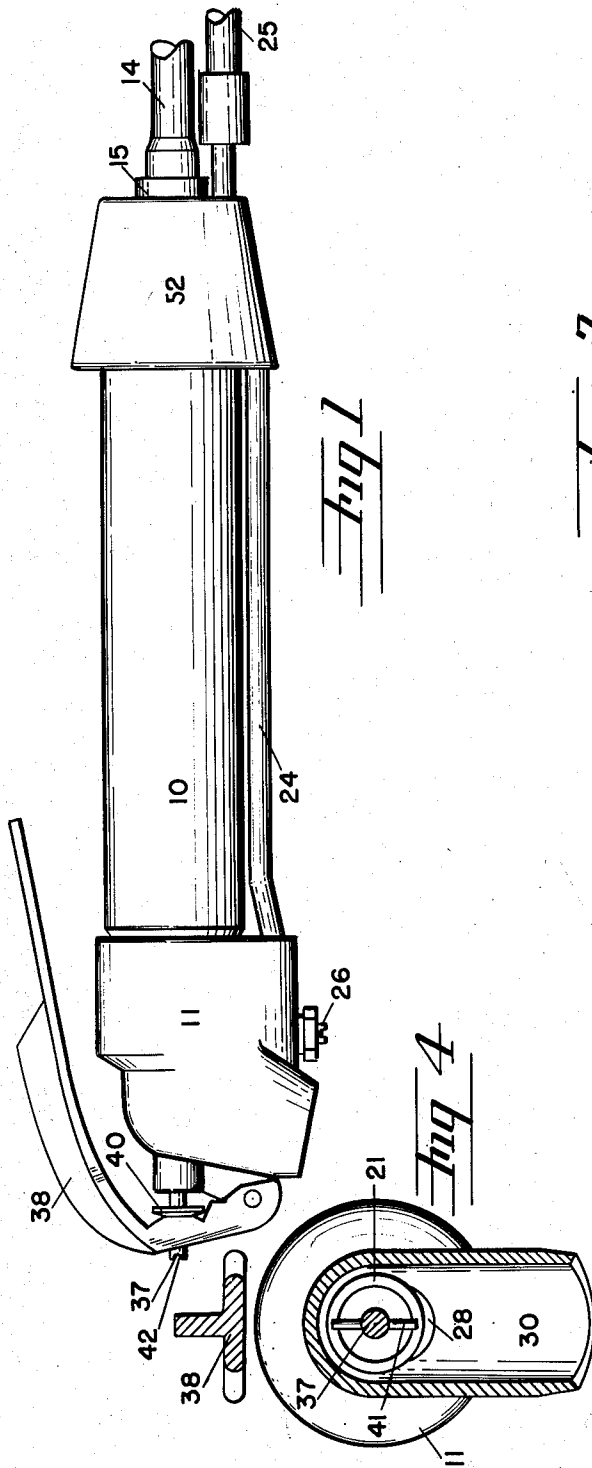
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CARBONATED DRINK MIXER AND DISPENSER

Filed Dec. 20, 1950

2 SHEETS—SHEET 1



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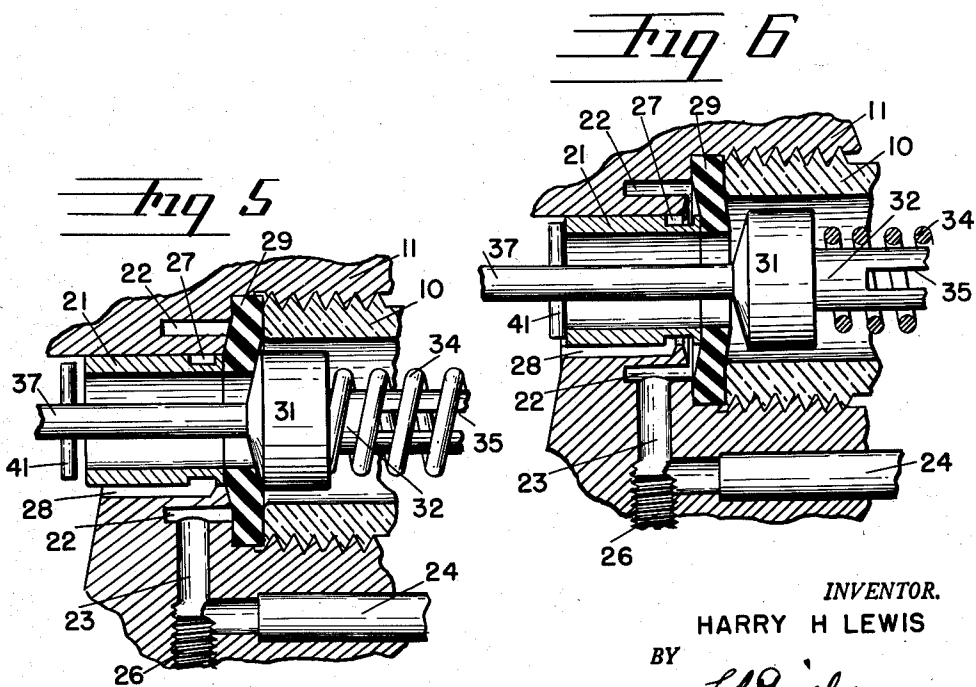
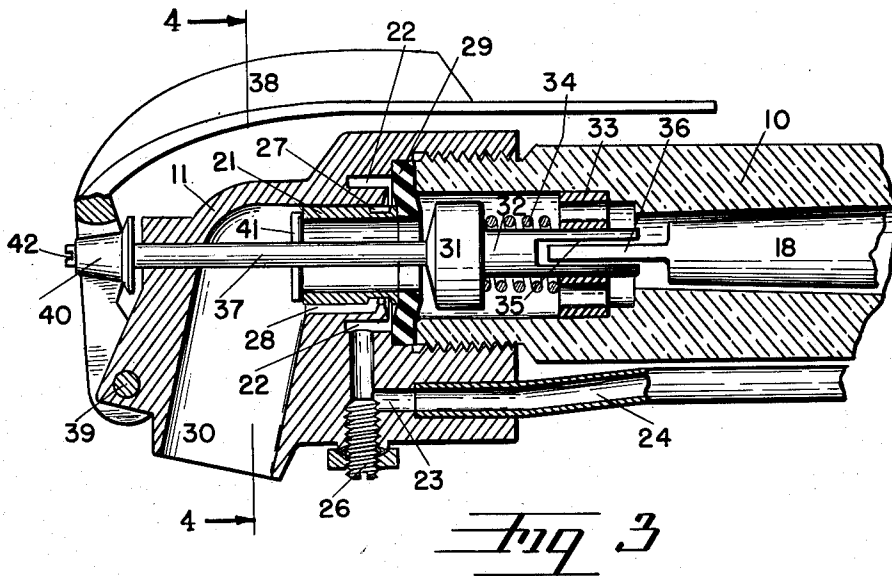
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CARBONATED DRINK MIXER AND DISPENSER

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2 SHEETS--SHEET 2



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CARBONATED DRINK MIXER AND DISPENSER

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6 Claims. (Cl. 137-604)

1

This invention relates to the dispensing of carbonated drinks at soda fountains, bars, and the like, and, more specifically, to the dispensing of drinks in which carbonated water is combined with a suitable flavoring syrup, as the two are dispensed, so as to produce the desired carbonated drink.

The invention relates also, in particular, to the dispensing of carbonated drinks by means of a retractable dispensing device, capable of being moved over and consecutively filling a plurality of drinking glasses, instead of requiring the more customary holding of the glasses separately under the dispenser.

An object of this invention is to provide an improved dispenser for carbonated drinks which will enable such drink to be dispensed more conveniently and more expeditiously by the person who does the dispensing.

More specifically, one of the objects of this invention is to provide a dispenser, for a mixed drink, containing carbonated water and a syrup or flavoring component, which dispenser can be connected to the reservoirs or supply containers for the two components by flexible tubes, so that the dispenser, in the hands of the operator, can be conveniently moved over a restricted area for filling glasses or other drinking containers with a mixed drink and then can be set back in a holder or other suitable station when not in use.

Another object of the invention is to provide a movable dispenser by means of which the two components of the carbonated drink, for example, the carbonated water and the syrup or flavoring component, will be mixed in the dispenser while being simultaneously discharged, so that the drink, whenever dispensed from the dispenser, will have a desirable high CO₂ content.

A further object of the invention is to provide an improved dispenser for mixing and dispensing a carbonated drink which can easily be adjusted so as to vary the proportionate amount of carbonated water and syrup to meet the desired or preferred requirements in the particular mixed drink as dispensed.

An additional object of the invention is to provide an improved carbonated drink dispenser in which carbonated water and syrup are mixed as they are dispensed, but in the discharging mouth of which no syrup will remain to leave the discharging mouth sticky after the drink is dispensed.

A further object of the invention is to provide

2

an improved dispenser from which carbonated water and syrup will be simultaneously dispensed, which can easily and thoroughly be cleaned and which will be capable of meeting the highest sanitary requirements.

A still further object of this invention is to provide a dispenser for carbonated drinks in which the two main components of the drink will be mixed as dispensed, with the dispensed drink having a high carbon dioxide gas content, but without resulting in any excessive foaming of the mixed drink as dispensed.

These objects, and other advantages which will become apparent in the course of the following brief description of the invention, I have been able to accomplish by including, in a simple dispenser, adjustable means controlling the flow and discharge of carbonated water and separate adjustable means controlling the flow and discharge of the syrup component, and, in general, by constructing and arranging the various parts of my improved dispenser as hereinafter described and as illustrated in the accompanying drawings, to which reference is made.

In the drawings:

Fig. 1 is a side elevation of the dispenser;

Fig. 2 is a sectional elevation taken longitudinally through the center of the dispenser showing the dispenser in the closed or shut-off position;

Fig. 3 is a sectional elevation of the front half of the dispenser, taken longitudinally along the center line, but drawn to a larger scale but showing the dispenser in the open or discharging position;

Fig. 4 is a vertical transverse section taken through the mixing and discharging mouth of the dispenser and taken on the plane indicated by the line 4-4 of Fig. 3;

Fig. 5 is a fragmentary sectional elevation corresponding in part to Fig. 2 but drawn to a considerably larger scale, the valve assembly being in closed position; and

Fig. 6 is a similar fragmentary sectional elevation showing the same valve assembly in open position.

Referring first to Figs. 1 and 2, my dispenser includes a tubular shank or main body member 10, which may be made of metal or any other suitable material, but which I prefer to make of clear or transparent plastic for reasons mentioned later. At the front end the shank member 10 has its outer diameter reduced and the outer surface of this reduced portion is threaded to enable a head member 11 to be screwed firmly

3

on the front end of the shank member. At the opposite end the shank member 10 has an internally threaded portion 12 (see Fig. 2) into which a fitting 13 is screwed. This end fitting 13 is preferably shaped as shown in Fig. 2 and is formed with an extended stem or nipple 13' on which the end of a flexible tube 14 is clamped by a clamping ring 15. The flexible tube 14 is connected to the charged water tank or container (not shown) in which the carbonated water is kept under suitable pressure as usual. The flexible tube 14 may be made of any suitable material such as plastic, reinforced rubber, etc., which will enable the tube as a whole to be flexible while also causing it to be strong enough to withstand the internal pressure of the carbonated water. Preferably a tubular water screen 16 is mounted in the channel of the fitting 13 to prevent the possibility of any foreign substance in the carbonated water from passing into the shank member.

The internal channel which extends through the shank member 10 has a central section 17 (Fig. 2) of uniformly decreasing diameter so as to constitute an axially aligned tapered passageway in order to accommodate a frusto-conical flow-restricting plug 18. A perforated cylindrical plug guide-control 19 is integrally connected to the large diameter end of the flow-restricting plug 18 by the stem 20, and the periphery of the plug guide-control 19 is threaded to engage the threads in the portion 12 of the shank channel. Thus the rotation of the plug 18, which is brought about in a manner to be explained later, will, by producing rotation of the plug guide-control 19, increase or decrease the restricting annular passageway between the plug 18 and the surrounding tapered channel wall of the shank, depending on the direction of rotation given the plug 18. The plug guide-control 19 is formed with a plurality of perforations 19' (Fig. 2) to permit the carbonated water to pass freely through the guide-control 19 to the tapered restricted passageway of the shank.

The head 11 of the dispenser (Figs. 2 and 3) has a central channel which connects with the channel through the shank member 10 and which in turn leads to the mixing and discharging mouth chamber 30. A sleeve 21 (see also Figs. 5 and 6) is slidably positioned in the central channel of the head 11. An annular chamber 22 is located in the inner end of the head 11, concentric with, but spaced from, the central channel. An L-shaped channel 23 extends through the lower portion of the head to the annular chamber 22. A tube 24 has one end secured in this channel 23 and the tube 24 extends along the outside of the shank 10. The opposite end of this tube 24 (see Fig. 2) is joined to a flexible tube 25 by a suitable sealing connection. The flexible tube 25 in turn is connected to the tank (not shown) in which the syrup or flavoring for the mixed drink is kept under pressure. An adjusting screw 26 governs the flow of the syrup through the channel 23 in the head.

The sleeve 21 has an annular groove 27 extending around its outer surface near its inner end. This groove 27, which will be seen most clearly in Figs. 5 and 6, forms an annular channel which connects with a shallow outlet channel 28 below the underside of the sleeve 21. The outlet channel 28 leads to the mixing and discharging mouth 30 of the head. As will be noted from Fig. 4, this shallow outlet channel 28 is crescent shaped in cross section.

4

A flexible seating and sealing ring 29, which is held clamped between the head 11 and the shank 10, bears against the inner end of the sleeve 21. The flexible ring 29 has an inside diameter corresponding approximately to the inside diameter of the sleeve 21 and is concentric with the sleeve 21, as shown.

The annular groove or channel 27 around the sleeve 21 not only connects with the shallow outlet channel 28 below the sleeve, but, when the sleeve 21 is pushed inwardly (by means hereinafter described) from the position of Fig. 5 to the position shown in Fig. 6, the inward movement of the sleeve and resulting inward thrust on the sealing ring 29 act to provide a passageway around the inner end of the separating annular wall section and over the outer face of the sealing ring whereby the annular chamber 22 is also connected with the annular groove 27.

Thus the syrup for the mixed drink passes through the tube 24 into the L-shaped channel 23 of the head and thence into the annular chamber 22. When the sleeve 21 and sealing ring 29 are in the position shown in Fig. 5, the syrup can not pass beyond the annular chamber 22. However, when the sleeve 21 is pushed inwardly to the position shown in Fig. 6, the resulting change of position of both the sleeve 21 and the sealing ring 29 enables the syrup from the annular chamber 22 to pass into the annular groove 27, thence to the shallow outlet channel 28, and finally into the mixing and discharging mouth 30 of the head. The rate at which the syrup will be permitted to pass out through the outlet channel 28, when the sleeve 21 is pushed inwardly, will of course be governed by the position of the adjusting screw 26.

A main valve member 31 (shown most clearly in Fig. 3), controlling the discharge of the carbonated water for the mixed drink, is located in the outer end of the shank channel and is arranged to seat against the sealing ring 29. The valve member 31 is formed with an integral rear guide extension 32 which is axially slidable in a fixed spider or perforated guide bushing 33 held in the shank channel, and a coil spring 34 on the guide extension 32, held under compression between the main valve member 31 and the fixed guide bushing 33, normally holds the valve in the closed position of Fig. 2 but permits it to be moved to the open position of Fig. 3 against the force of spring 34.

The guide extension 32 (Fig. 3) is formed with an axial slot 35, and the forward end of the flow-restricting plug 18 is formed with a flattened axial stem 36 of proper size to be slidable longitudinally in the slot 35 while holding the forward end of the plug 18 in axial alignment with the guide bushing 33. Thus the guide extension 32 of the valve member 31 can slide freely in the guide bushing 33 without interference from the plug 18 and without disturbing the position of the plug 18, but rotation of the valve member 31 and its guide extension 32 will result in rotation of the plug 18.

The main valve member 31 has an integral stem 37 extending from the opposite or forward side of the valve member in axial alignment with the rear guide extension 32. The forward stem 37 is elongated and extends through, and is longitudinally slidable in, an aperture in the front wall of the head, as shown in Figs. 2 and 3.

A trigger or finger lever control 38 (Figs. 1, 2 and 3), the lower half of which is bifurcated, is hinged on an external front rib of the head 11

5

by the hinge pin 39. The upper portion of the lever control 38 extends back over the top of the head 11 and over the front end of the shank 10, in spaced relation thereto, so that the lever control may conveniently be engaged by a finger of the hand of the operator holding the dispenser.

The outer or forward end of the valve stem 37 carries a flanged thimble 40 which bears against a shoulder on the stem 37 and which extends through the slot in the bifurcated portion of the lever control 38, the flange of the thimble being so arranged as to be engaged by the lever control when the lever control is operated. A transversely-extending pin 41 is mounted in the stem 37 so as to contact the front end of the sleeve 21 when the stem 37 is moved inwardly a short distance.

From Figs. 2 and 3 it will now be apparent that downward pressure on the free end of the top portion of the trigger or lever control 38, pushing the same downwardly from the position of Fig. 2 to that shown in Fig. 3, will cause the stem 37 to be thrust inwardly or rearwardly in the dispenser, which will result in the main valve member 31 being moved inwardly against the force of its spring 34, while the inward movement of the transverse pin 41 on the stem 37 will cause the sleeve 21 also to be moved inwardly, though to a less extent, and to press the inner periphery of the sealing ring 29 inwardly.

When the main valve member 31 is thrust inwardly against the force of its spring (and against the pressure of the carbonated water in the shank channel) to the position of Figs. 3 and 6, the carbonated water delivered into the shank channel is able to pass between the valve member 31 and the sealing ring 29 and thence through the sleeve 21 to the mixing and discharging mouth 30 of the head 11. At the same time the inward thrust of the sleeve 21 and inner periphery of the sealing ring 29, causing these members to be moved from the position in Figs. 2 and 5 to the position in Figs. 3 and 6, enables the syrup, delivered from the channel 23 to the annular chamber 22, to pass through the annular groove 27 and through the outlet channel 28 to the mixing and discharging mouth 30.

Thus both the carbonated water and syrup for the mixed drink are delivered simultaneously into the dispenser mouth 30 when the trigger or finger lever control 38 is pressed down, and the combined carbonated water and syrup drop down from the mouth 30 into the glass or other drinking container over which the mouth 30 of the dispenser is held.

The outer end of the valve stem 37 has a narrow transverse slot, as shown at 42 in Figs. 2 and 3, to enable the valve stem to be engaged by a suitable tool, for example, by an ordinary screw driver, for the purpose of turning the stem 37 and the valve member 31 and rear extension 32, and consequently for rotating the flow-restricting plug 18 and its guide control 19 so as to adjust the position of the plug 18 to increase or decrease the flow of the carbonated water through the shank when the dispenser is operated.

When the valve member 31 and the sleeve 21 are temporarily held in dispensing position by manual or finger pressure on the lever control 38, the relative amounts of carbonated water and syrup delivered into the mixing and dispensing mouth 30 will be regulated according to the independent adjustment of the plug 18 and adjusting

6

screw 26 respectively. Thus these adjustable elements enable the dispenser to be set in such manner that the mixed drink will be dispensed with any predetermined desired proportion of carbonated water and syrup, and, assuming that there is proper source of supply of both components, these desired proportions will be constantly maintained as each drink is dispensed regardless of whether a single small glassful or a large amount is dispensed from the dispenser. This is an important feature of my invention.

In my device it is impossible to open the valve for the carbonated water without opening the associated valve control for the syrup, nor is it possible to open either only part way. Inasmuch as the dispensing valve for the carbonated water is a poppet-type valve considerable initial finger pressure on the part of the operator is required to be exerted on the lever 38 in order to move the valve member 31 to open position. As a result, it will be apparent that when the valve is opened it will be opened immediately to the full extent, the inward movement of the valve member 31 being produced by the movement of the lever 38 being pressed down to the full extent permitted. In other words, it is not possible, by the operator of the lever control 38, to cause any disproportionate mixture of carbonated water and syrup to be dispensed. Furthermore, the arrangement of the flow-restricting plug 18, by adjusting the flow of carbonated water through the shank before the carbonated water reaches the main valve and the mixing and discharging mouth of the dispenser, where the carbonated water comes into contact with the air, prevents excessive agitation of the carbonated water in the dispensing mouth. The shape of the plug 18 and of the surrounding channel wall, causing the carbonated water to pass through an annular space of decreasing diameter, reduces both the pressure and the velocity of the carbonated water. As a result, the carbonated water does not pass through the sleeve 21 to the discharging mouth of the dispenser under high pressure and velocity causing it to be impinged forcibly against the wall 30 of the mouth and thus producing the agitation which might otherwise be expected, but instead practically no such forcible impingement of the water in the dispensing mouth occurs at all. Excessive agitation at the point of delivery of the carbonated water, which is a fault found in several types of carbonated beverage dispensers, results in considerable loss of the carbonic gas content from the carbonated liquid as it is dispensed.

Preferably a frusto-conical butt member 52 (Fig. 2) is mounted on the rear end of the shank 10, extending around the end fitting 13, and is provided with a channel to accommodate the rear end portion of the tube 24, holding the tube 24 in place in its position adjacent the shank body. By means of this butt member the dispenser, when not in use and when not held in the hand of the operator, can be set upright in a suitable socket or bracket having a corresponding mating conical or frusto-conical wall surface. I prefer to have this butt member of rubber.

While the body of the shank 10 may be made of various materials, I prefer to use clear plastic material for this portion of the dispenser inasmuch as such material offers good insulation in preventing the chilled carbonated water in the channel of the shank from becoming warmed by heat from the operator's hand holding the dispenser, and furthermore such material permits

7

the flow-restricting plug 18 to be seen and the flow of the carbonated water through the plug guide control 19, and around the plug, and through the valve guide bushing 33, to be observed.

The manner in which the dispenser is used by the operator, and resulting convenience to the operator which is possible by its use in the dispensing of carbonated mixed drinks, need not be further described. The carbonated water supply to the dispenser will preferably be under pressure of about 120 pounds per square inch, and the syrup should be maintained under a moderate but steady pressure, for example, at 15 pounds per square inch.

It is of course desirable that any dispenser of this general type should be capable of being thoroughly, easily and frequently cleaned, especially all parts which come into contact with the syrup. With my improved dispenser a very simple, easy and efficient cleaning of the syrup ducts and passageways can be accomplished by disconnecting the syrup tube 25 from the syrup supply reservoir or container, allowing the tubes 24 and 25 to drain for a moment, and then, after closing the mouth 30 of the dispenser, for example by holding the hand over the mouth, press the lever control 38 down and hold it in such position. When this is done the carbonated water discharged under pressure into the mouth 30, will be forced back through the syrup ducts and passageways thoroughly rinsing the same with the carbonated water.

After a drink is dispensed from my dispenser and the operator releases the trigger or lever control to permit the shut-off valve assembly to close, a small amount of carbonated water will continue to flow through the sleeve 21 into the mouth 30 for an instant after the flow of syrup has been completely shut off. This final slight amount of carbonated water, passing into the mouth 30 will be sufficient to rinse any remaining traces of the syrup from the cylindrical wall of the mouth, thus preventing any residue of the sticky syrup from remaining in the mouth in contact with the outside atmosphere.

Preferably, as shown in Figs. 2 and 3, the axis of the inside mouth wall 30 is arranged at a somewhat greater angle than 90° with respect to the axis of the dispenser shank channel and the axis of the sleeve 21. With such arrangement when the dispenser is held upright, or set upright by inserting the butt 52 in a suitable socket or bracket, any small residue of the carbonated water which may have clung to the mouth wall can not drip from the dispenser.

In the dispensing of the two components for the mixed drink the flow of carbonated water descends down on the thin flow of the syrup resulting in a thorough admixture of the two streams within the discharging mouth. This takes place without excessive violence or disturbance and consequently no excessive or undesirable foaming occurs when the mixed drink is delivered into the glass or other drinking container.

Minor changes would of course be possible in the construction of the individual parts and members of my dispenser within the scope of the invention, and without departing from the principle of my invention or the main features as set forth in the claims.

I claim:

1. In a carbonated drink mixer and dispenser of the character described, a shank, an axial

8

channel extending through said shank, a tapered section in said channel, a frusto-conical flow-restricting plug in said tapered section, a flexible tube for a carbonated liquid connected with said shank channel, a plug-holding member attached to one end of said plug, said member mounted in said shank channel adjacent said tapered section, cooperating screw threads on said member and the surrounding portion of said shank channel wall, whereby rotation of said plug and member will cause said plug to be moved longitudinally in said shank channel, means for rotating said plug and member, a head on the front end of said shank and connecting with said shank channel, a mixing and dispensing mouth in said head, a second channel in said head, means, including a flexible tube, for connecting said second channel with the source of supply of the other component of the dispensed mixed drink, an adjustable control element in said second channel for governing the flow of said other component, an outlet passageway leading from said second channel to said mouth, a main valve controlling the discharge of the carbonated liquid from said shank channel into said head and mouth, a second valve element in said head controlling said outlet passageway, and means for causing said second valve to move into open position when said main valve is opened, whereby the carbonated liquid and the other component for the mixed drink will be discharged together into said mouth and thereupon mixed and dispensed.

2. In a carbonated drink mixer and dispenser of the character described, a shank, an axial channel extending through said shank, a tapered section in said channel, a frusto-conical flow-restricting plug in said tapered section, a flexible tube for a carbonated liquid connected with said shank channel, a plug-holding member attached to the large diameter end of said plug, said member mounted in said shank channel adjacent said tapered section, cooperating screw threads on said member and the surrounding portion of said shank channel wall, whereby rotation of said plug and member will cause said plug to be moved longitudinally in said shank channel, a head on the front end of said shank and connecting with said shank channel, a mixing and dispensing mouth in said head, a second channel in said head, means, including a flexible tube, for connecting said second channel with the source of supply of the other component of the dispensed mixed drink, an adjustable control element for governing the flow of said other component, an outlet passageway leading from said second channel to said mouth, a main valve controlling the discharge of the carbonated liquid from said shank channel into said head and mouth, a valve stem extending forwardly from said main valve and through said head, means for moving said valve stem and valve to open position, a rear guide extension on said main valve, a slidable connection between said rear guide extension and said plug permitting said plug and said rear guide extension to move longitudinally with respect to each other but causing said plug to be rotated when said valve is rotated, means for rotating said valve and therewith said plug, a second valve element in said head controlling said outlet passageway, and means for causing said second valve element to move into open position when said main valve is opened, whereby the carbonated liquid and the other component for the mixed drink will be discharged together into said mouth and thereupon mixed and dispensed.

3. In a carbonated drink mixer and dispenser of the character described, a shank, a channel extending through said shank, a tapered section in said channel, a frusto-conical flow-restricting plug in said tapered section, a flexible tube for a carbonated liquid connected with said shank channel, a plug-holding member attached to the large diameter end of said plug, said member mounted in said shank channel adjacent said tapered section, cooperating screw threads on said member and the surrounding portion of said shank channel wall, whereby rotation of said plug and member will cause said plug to be moved longitudinally in said shank channel, a head on the front end of said shank and connecting with said shank channel, a mixing and dispensing mouth in said head, a second channel in said head, means, including a flexible tube, for connecting said second channel with the source of supply of the other component of the dispensed mixed drink, an outlet passageway leading from said second channel to said mouth, a main valve controlling the discharge of the carbonated liquid from said shank channel into said head and mouth, a spring aiding in holding said main valve normally closed, a rear guide extension on said main valve, a valve stem extending forwardly from said main valve and through said head, means for moving said valve stem and valve against the force of said spring to open position, said valve opening means including a finger control lever on said head, a slidable connection between said rear guide extension and said plug permitting said plug and said rear guide extension to move longitudinally with respect to each other but causing said plug to be rotated when said valve is rotated, means on the outside end of said forwardly extending valve stem for rotating said valve and therewith said plug, a second valve element in said head controlling said outlet passageway, and a member on said valve stem for causing said second valve element to move into open position when said main valve is opened, whereby the carbonated liquid and the other component for the mixed drink will be discharged together into said mouth and thereupon mixed and dispensed.

4. In a device of the character described, a tubular shank, a channel extending through said shank, a flexible tube for carbonated liquid connected with the intake end of said channel, the wall of said channel having a frusto-conical section with the smaller diameter end towards the discharging end of said channel, a frusto-conical flow-reducing plug in said channel section, the taper of said plug corresponding to the taper of the wall in said section, means for holding said plug stationary and firmly in said channel section and co-axial therewith, and means for adjusting said plug in an axial direction in said section, a head secured to the discharging end of said shank, a mixing and dispensing mouth in said head, a channel in said head connecting said shank channel with said mouth, a passageway in said head leading to said head channel, means connecting a source of supply for the component of the dispensed mixed drink with said passageway, a valve controlling the discharge of

the carbonated liquid from said shank channel into said head channel, a valve controlling the discharge of said mixed drink component from said passageway into said head channel, and means for operating both valves simultaneously.

5. In a carbonated drink mixer and dispenser, a tubular shank, a channel extending through said shank, a flexible tube for carbonated liquid connected with the intake end of said channel, flow-reducing means in said channel, means for adjusting said flow-reducing means, a head secured to the discharging end of said shank, a mixing and dispensing mouth in said head, a channel in said head connecting said shank channel with said mouth, a passageway in said head leading to said head channel, means connecting a source of supply for the component of the dispensed mixed drink with said passageway, a poppet-type valve controlling the discharge of the carbonated liquid from said shank channel into said head channel, a sleeve valve in said head channel controlling the discharge of said mixed drink component from said passageway into said head channel, and means for operating said poppet-type valve and said sleeve valve simultaneously.

6. A carbonated drink mixer and dispenser of the character described including a tubular shank, a channel extending through said shank, a flexible tube for carbonated liquid connected with the intake end of said channel, the wall of said channel having a frusto-conical section, a frusto-conical flow-reducing plug in said channel section, the taper of said plug corresponding to the taper of the wall in said section, means for holding said plug stationary and firmly in said channel section and co-axial therewith, means for adjusting said plug in an axial direction in said section, a head secured to the discharging end of said shank, a mixing and dispensing mouth in said head, a channel in said head connecting said shank channel with said mouth, a passageway in said head leading to said head channel, means connecting a source of supply for the component of the dispensed mixed drink with said passageway, a poppet-type valve controlling the discharge of the carbonated liquid from said shank channel into said head channel, a sleeve valve in said head channel controlling the discharge of said mixed drink component from said passageway into said head channel, and means for operating said poppet-type valve and said sleeve valve simultaneously.

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