

April 6, 1954

A. J. NICHOLAS

2,674,264

BEVERAGE DISPENSING MECHANISM

Filed Sept. 9, 1949

2 Sheets-Sheet 1

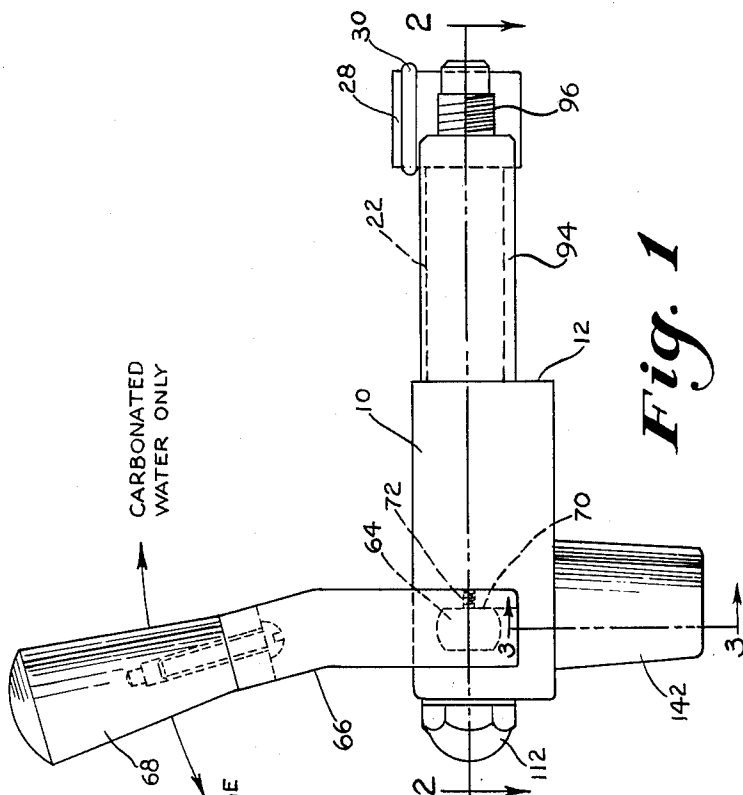


Fig. 1

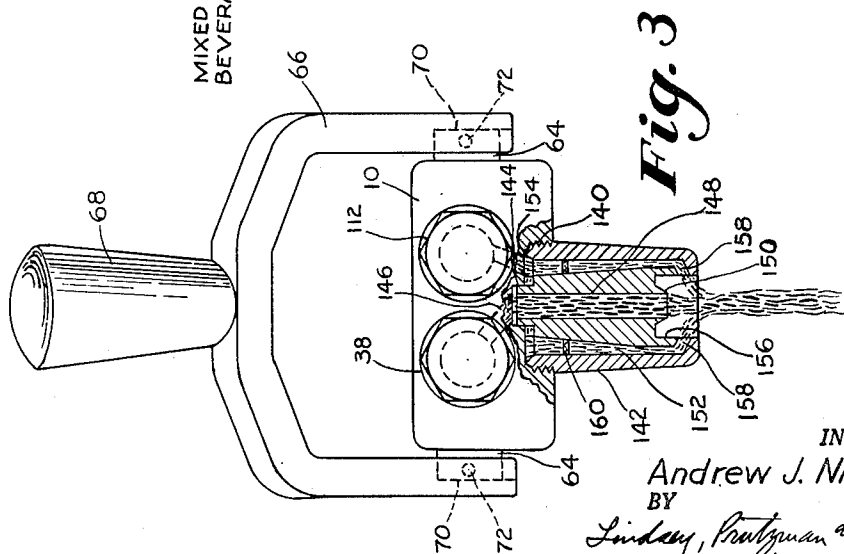


Fig. 3

INVENTOR.

Andrew J. Nicholas

BY

Lindsey, Protzman and Rust
Attorneys

April 6, 1954

A. J. NICHOLAS

2,674,264

BEVERAGE DISPENSING MECHANISM

Filed Sept. 9, 1949

2 Sheets-Sheet 2

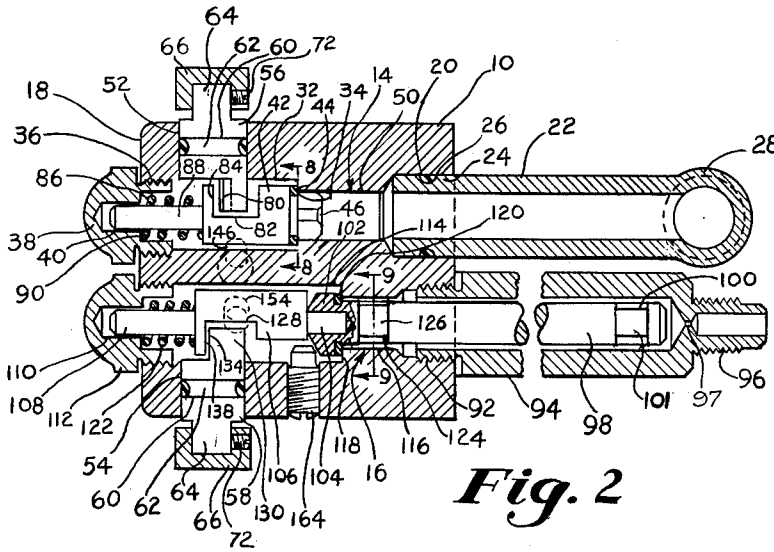


Fig. 2

Fig. 8

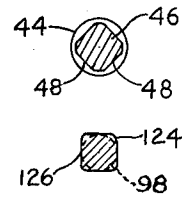


Fig. 9

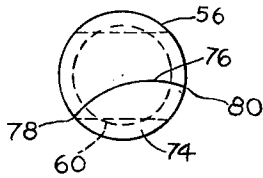


Fig. 7

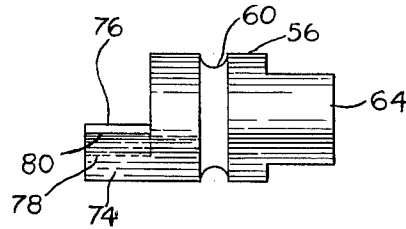


Fig. 6

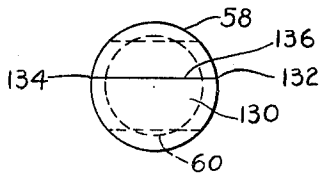


Fig. 5

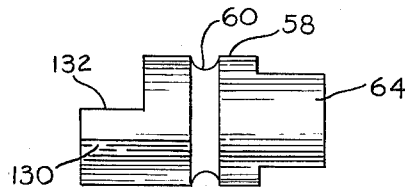


Fig. 4

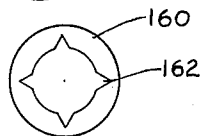


Fig. 10

INVENTOR.
Andrew J. Nicholas
BY
Finley, Prutzman and Jacob
Attorneys

UNITED STATES PATENT OFFICE

2,674,264

BEVERAGE DISPENSING MECHANISM

Andrew J. Nicholas, Farmington, Conn.

Application September 9, 1949, Serial No. 114,704

2 Claims. (Cl. 137—604)

1

This invention relates to improvements in a beverage dispensing valve and more particularly to a beverage dispensing compound or combination valve adapted to control the flow of syrup and carbonated water in predetermined proportions from separate sources of supply and thoroughly mix said syrup and highly carbonated water as the same are discharged through a nozzle provided on the valve.

It is an object of the invention to provide a dual-valve device so arranged that a stream of carbonated water is restrictively regulated and fed at a predetermined pressure through a conduit while a stream of syrup concentrate is fed by gravity through another conduit in predetermined proportion to the carbonated water, said syrup and water being dispensed in thoroughly mixed condition from a nozzle when the valve operating handle is actuated in one direction.

Another object of the invention is to provide a device wherein thoroughly mixed syrup and carbonated water is dispensed from the aforementioned dual valve when the operating handle thereof is moved in one direction but only carbonated water is dispensed from the valve when the valve handle is moved in the opposite direction.

Still another object of the invention is to provide a valve outlet nozzle so constructed that when the valves are closed from dispensing both syrup and water and the actuating handle is moved subsequently in the direction to dispense only carbonated water, the flow of syrup from the valve will immediately stop upon closing the syrup valve and the subsequently dispensed carbonated water will not be contaminated with any of the syrup even though dispensed through the same nozzle through which the mixed beverage was just previously dispensed.

A further object of the invention is to provide, in the carbonated water supply means, mechanism by which the character of the carbonated water furnished thereto is changed before being discharged from the nozzle of the beverage dispensing mechanism, whereby, regardless of the degree of hardness or softness of the carbonated water furnished to said supply means, the carbonated water discharged from the nozzle will have a highly acceptable effervescence, sparkle, and "bite."

A still further object of the invention is to utilize the self-closing valve for the carbonated water supply as a safety valve means in the event the CO₂ regulator for the water carbonator should fail and cause excess pressure to be generated within the carbonator.

2

In general it is an aim of the present invention to provide a dual purpose valve capable of delivering, if desired, a continuous supply of either mixed carbonated beverage or carbonated water alone for use in soda bars, taverns, or the like, and, when mixed carbonated beverages are dispensed by the valve, the syrup and carbonated water will be in constant predetermined proportions, regardless of the quantity dispensed through the valve. The direction of movement of the valve handle will determine whether either a mixed carbonated drink or carbonated water alone will be dispensed from the valve. In either event, it is a further aim of the invention to so construct the valve that the carbon-dioxide remains entrained within the carbonated water or mixed carbonated beverage as it issues from the nozzle of the valve, whereby such carbonated water or mixed carbonated beverage is a highly palatable, effervescent, and refreshing beverage having constantly uniform characteristics regardless of the quantity dispensed by the valve.

Details of the invention and the objects and aims thereof, as well as other objects thereof, are set forth in the following specification and illustrated in the accompanying drawings comprising a part thereof.

In the drawings:

Fig. 1 is a side elevation of a beverage dispensing valve embodying the principles of the present invention.

Fig. 2 is a sectional plan view taken on the line 2—2 of Fig. 1.

Fig. 3 is a vertical front elevation of the valve shown in Fig. 1, said view being partly in section on the line 3—3 of Fig. 1 to better illustrate certain details of the construction.

Fig. 4 is a side elevation of one of the valve actuating members per se of the invention.

Fig. 5 is an end view looking toward the left-hand end of the valve actuating member shown in Fig. 4.

Fig. 6 is a side elevation of another valve actuating member per se embodied in the invention.

Fig. 7 is an end view looking toward the left-hand end of the valve actuating member shown in Fig. 6.

Fig. 8 is a sectional view of a detail taken on the line 8—8 of Fig. 2.

Fig. 9 is a sectional view of a detail taken on the line 9—9 of Fig. 2.

Fig. 10 is a plan view of another detail embodied in the invention.

Referring to the drawings, the beverage dispensing valve illustrated therein comprises a valve body or head member 10 which may be formed of

any suitable material such as stainless steel, for example, and suitably machined and finished to present a pleasing appearance on the exterior and include various openings and channels as explained hereinafter. The rear end 12 of said head member 10 may be secured to a suitable supporting panel or means at the rear of a soda bar counter, for example. Said head 10 is provided with a pair of tubular channels or openings 14 and 16 extending in parallel relation to each other through the head member from the rear end thereof to the front end 18 thereof. Said channels 14 and 16 have a plurality of different diameters as will be described in greater detail hereinafter.

The rear end of the channel 14 is enlarged to provide a cylindrical socket 20 within which the front end of syrup supply pipe or tube 22 is closely fitted so there will be no leakage from the socket 20. This is assured for example, by providing an annular groove 24 in the exterior surface of the forward end of syrup pipe 22 and disposed therein is a compressible sealing ring 26 formed from any suitable material, such as "neoprene" synthetic rubber and conventionally known as an O-ring which firmly engages the inner surface of socket 20. The rear end of syrup pipe 22 communicates with a cup-shaped member 28, the upper end of which is provided on its exterior with an annular groove for purposes of receiving another sealing O-ring 30 which may be used to sealably connect the upper end of the member 28 with any appropriate container or conduit from or through which syrup is supplied to the pipe 22 from a source not shown. Syrup flows through the pipe 22 preferably by the force supplied by the head of the syrup supply which communicates with the tube.

The forward portion of channel 14 has a larger diameter than the intermediate portion of the channel as shown at 32, thereby providing an annular shoulder comprising a valve seat 34. The forward end of the enlarged portion 32 of channel 14 is internally threaded at 36 to accommodate a closure 38 which is threaded into the forward end of the portion 32 of the channel. The closure 38 is preferably provided with an outer contour that is pleasing in appearance. It also has a cylindrical aperture 40 extending forwardly from the rearward end of the closure and comprising guide means for the forward end of a cylindrical valve member 42. The rearward end of the valve is provided with a suitable washer or gasket 44 formed from any suitable material, such as "neoprene" synthetic rubber, which bears against the valve seat 34 and provides a tight seal when the valve is closed.

The rearward end of valve member 42 terminates in a guiding projection 46 which also additionally serves as flow control means for the syrup. As shown in Fig. 8, the projection 46 is somewhat square in cross section, the same being formed by first making the projection cylindrical and then shaving off portions of the surface thereof to provide a series of flats 48. Thus, the curved corners which interconnect the flats 48 are curved to conform to the cylindrical surface of the restricted intermediate portion 50 of the channel 14 by which it is guided at the rear. Thus, the spaces between the flats 48 and the cylindrical surface 50 comprise openings through which syrup flows when the valve member 42 is moved forwardly to open position.

Extending inwardly from opposite sides of valve head member 10 and axially aligned with each

other are a pair of cylindrical openings 52 and 54 which respectively receive rotatable cam members 56 and 58. Each of the cam members are provided intermediate their ends with annular grooves 60 for purposes of receiving compressible sealing rings 62, such as O-rings formed from "neoprene" synthetic rubber, or the like, whereby the cam members 56 and 58 may be rotated about their axis within the openings 52 and 54 while preventing the escape of fluids between the cam members 56 and 58 and said openings 52 and 54. The cam members 56 and 58 are each provided at their outer ends with projections 64 having opposed flat parallel sides as shown in Fig. 1.

A bail-like member 66 having a knob 68 projecting from the intermediate portion thereof comprises a valve operating handle by which the cam members 56 and 58 are simultaneously rotated about their axes for purposes of actuating the valves as will be described hereinafter. The opposed inner surfaces of the free ends of the bail member 66 are provided with parallel grooves 70 for purposes of closely receiving the projections 64. The handle is mounted on said cam members by simply pushing the grooves 70 of the member 66 downward over the projections 64, whereby the opposed flat sides of the projections closely engage the sides of the grooves 70. When the projections are disposed against the inner ends of the grooves, locking means such as set screws 72 are tightened to prevent separation of the handle from the cam members 56 and 58.

Referring to the cam member 56 illustrated in Figs. 6 and 7, it will be seen that the inner end thereof comprises a valve actuating cam 74, the outer surface of which comprises a continuation of the adjoining outer surface of cam member 56. The inner surface 76 is curved as clearly shown in Fig. 7, but it will be seen that the shoulder 78, formed by the intersection of curved surface 76 and the outer surface of the cam 74, is disposed lower, as viewed in Fig. 7, than the shoulder 80 which is formed by intersection of the other end of curved surface 76 with the outer surface of cam 74. This arrangement is made for the purpose of permitting movement of the syrup valve 42 away from its valve seat 34 when the valve actuating handle is moved forwardly or toward the left as viewed in Fig. 1.

It will be seen from Fig. 2 that the valve 42 is provided with a recess 82 intermediate the ends thereof and the actuating surface 84 of said valve will be engaged by shoulder 80 of the actuating member 56 when the valve actuating handle is moved forwardly as described above but, when the handle is moved rearwardly, the shoulder 78 of the cam member will not engage the actuating surface of the valve, whereby the valve remains closed. Thus, when a mixed beverage comprising predetermined portions of syrup and carbonated water are to be dispensed from the dual valve arrangement described herein, the valve actuating handle is moved forwardly so as to open the syrup valve 42 but, when only carbonated water is to be dispensed as will be described in greater detail hereinafter, the valve 42 is not opened as when the valve actuating handle is moved rearwardly as described above. After the valve 42 has been opened by moving the actuating handle forwardly as described above and is released or moved backward, the valve is automatically closed by means of a suitable spring 86 surrounding the forward guiding portion 88 of valve 42 which extends into the cylindrical aperture 40 of the closure 38. The

5

spring 86 extends between an annular shoulder 90 in closure 38 and the front end of the enlarged intermediate portion of the valve 42.

Referring to channel 16, the same is also provided with a plurality of different diameters. The rearward end 92 of the channel 16 is internally threaded for purposes of receiving the threaded forward end of a carbonated water conduit 94. The rearward end 96 of conduit 94 is preferably reduced in diameter and externally threaded so that a conduit from a water carbonating device may be secured to said rearward end 96 by any suitable means, such as a clamping nut, not shown. Carbonated water may be supplied to conduit 94 to any desired pressure.

The beverage dispensing device comprising the present invention is adapted for universal installation, regardless of the degree of hardness or softness of the water which is carbonated by a carbonator, not shown in the drawings, and which is connected to the entrance end of the carbonator 94. The carbonated water issuing from the conduit 94 must have a palatably acceptable effervescence, sparkle and "bite" for purposes of either mixing the same with syrup to form a mixed carbonated beverage or for purposes of providing carbonated water only when the latter is desired. It is known to those versed in this art that, unlike carbonated soft or alkali water, it is difficult, and in some instances impossible, to carbonate hard water so as to have acceptable effervescence, sparkle and "bite," even though highly carbonated. Hard water generally contains appreciable amounts of carbonates in solution in the water. Commercial bottling establishments using a supply of hard water overcome this difficulty by treating the water in suitable ways to soften it prior to carbonation. Coagulation and filtering are often resorted to for this purpose and, in addition, lithium salts are frequently added to the water to provide an acceptable "bite."

The present invention obviates the need for such treatment of or additions to the water by providing in the entrance end of conduit 94 a restricting orifice 97. When carbonated water formed from hard water is introduced to the conduit 94 through restricting orifice 97, it is found that the character of the carbonated water is changed so as to render it far more effervescent and sparkling, and having very appreciably more "bite" than the water had before passing through said restricting orifice. The reason for this phenomenon is not known at the present time, but the result is definite and certain from extensive uses of devices embodying the orifice while using waters of various degrees of hardness. Not only is carbonated hard water provided with very palatable, highly acceptable effervescence, sparkle and "bite" but, when such restricting orifice is used to supply carbonated soft or alkali water to the dispensing mechanism, the result is that the carbonated soft water entering conduit 94 has a taste, effervescence and "bite" comparable to that which normally appears only in carbonated soft waters which have been carbonated at very much higher pressures than required to carbonate soft water when introduced to the conduit 94 through the restricting orifice 97. Thus, by the use of the simple expedient of the restricting orifice 97, it is therefore possible to supply water of various degrees of hardness or softness to a carbonator used in conjunction with the instant

6

beverage dispensing device and, by using the restricting orifice 97, either change the character of carbonated hard water so as to render it very lively, highly effervescent and sparkling, and having a highly satisfactory "bite," or greatly improve the character of carbonated soft water as described above.

After the carbonated water passes restricting orifice 97 and enters the conduit 94, the flow thereof is further restricted by providing in said conduit a pressure restricting member 98. The intermediate portion of the restricting member 98 between the end portions thereof has a diameter only slightly less than the interior diameter of the conduit 94. In sample devices, which have been successfully tested and operated, the difference in diameters is in the range of 10 or 11 thousandths of an inch, whereby only a very small passage exists between the restricting member 98 and the inner wall of conduit 94, but this arrangement maintains the carbon dioxide admixed in the water to a very high degree of saturation while the carbonated water flows through conduit 94.

The rearward end of restricting member 98 is provided with an annular member 100 from which portions have been removed from the perimeter to provide a series of peripherally spaced flat surfaces or flats 101. The outer surfaces of the remaining portions of member 100 conform to and engage the inner cylindrical surface of conduit 94, whereby the rear end of restricting member 98 is guided within the rear portion of the conduit 94 by said outer surfaces of member 100. The flats are tangential to the outer surface of member 98 and the spaces between the flats and the inner surface of conduit 94 admit carbonated water to the annular space between restricting member 98 and conduit 94.

The forward end of restricting member 98 terminates in a blunt cone comprising a valve 102 for carbonated water. Said valve is centrally apertured to receive and guide the restricted rearward end 104 of valve actuating member 106. The forward end of valve actuating member 108 has a reduced diameter and is received within a cylindrical guiding aperture 110 in a closure 112 which is similar to closure 38 and is threaded into the front end of channel 15 as clearly shown in Fig. 2. The actuating member 106 operates within the enlarged forward end portion 114 of channel 16, said enlarged forward end communicating with restricted intermediate portion 116 of channel 16, thereby forming an annular shoulder comprising a valve seat 118. The rearward surface of the enlarged blunt cone 102 supports a valve washer or gasket 120 which, when seated against valve seat 118, closes the entry of carbonated water from the conduit 94 into the enlarged forward end 114 of channel 16.

The valve 102 is normally urged against valve seat 118 by spring 122 which surrounds forward end 108 of valve actuating member 106. Said spring is of sufficient strength so as to readily close the valve automatically against normal pressures of 60 to 80 lbs. per square inch exerted by the carbonated water, but said spring is also preferably of adequate strength to hold the valve closed against pressures in excess of 80 lbs. per square inch and up to 90 lbs. per square inch, for example, but said valve will then open to release excess gas or carbonated water under excess pressure in the supply line in the event the CO₂ regulator on the carbonator should fail for ex-

ample. Said valve 102 thereby serves as a safety valve.

A short distance rearward of the valve 102, the restricting member 98 is provided with forward guiding and restricting means for admitting carbonated water to the valve opening and comprising an annular member 124, shown in Figs. 2 and 9, from which portions of the perimeter have been removed to provide spaced flat surfaces or flats 126 similar to flats 101 on member 100 at the rear end of restricting member 98. The corner-like portions shown in Fig. 9 which interconnect the flats 126 conform to and slidably engage the inner surface of intermediate portion 118 of channel 16 so as to accurately guide the forward end of the restricting member 98 and also permit a very restricted flow of carbonated water between the flats 126 and the inner surface of intermediate portion 116 of the channel 16. The central portions of said flats 126 are also tangential to the cylindrical exterior of the intermediate portion of restricting member 98.

The valve actuating member 106 is provided with a recess 120 which extends inward from one side thereof for purposes of receiving a cam 130 projecting inward from cam member 58. The cam 130 is provided with a pair of shoulders 132 and 134 at opposite ends of a flat surface 136 which intersects the cylindrical exterior surface of cam member 58. The shoulders 130 and 134 are spaced and positioned relative to the cam member 58 so that whether the valve actuating handle shown in Figs. 1 and 3 is moved either forwardly or rearwardly as described above, the valve actuating member 106 will be moved forwardly by engagement of one of the shoulders with the actuating surface 120 of the recess 128. The pressure of the carbonated water on the rearward end of restricting member 98 will cause the same to be moved forwardly and thereby separate valve member 102 from valve seat 118 and permit the flow of carbonated water through the valve. Movement of the valve actuating handle in either direction is limited by engagement of the forward ends of valve guide members 88 and 108 with the forward ends of cylindrical guide apertures 40 and 110 in closures 33 and 112. Thus, during normal operation of the valves, they are opened by moving the actuating handle to the full extent in either direction.

Provided in the under surface of head member 10 is a shallow cylindrical recess 140, the walls of which are threaded for purposes of receiving the upper end of a mixing nozzle 142 within said recess. Centrally of the inner end of recess 140 is an aperture 144 which communicates with one end of a branch aperture 146, the other end of said branch aperture communicating with the enlarged portion 32 of channel 14, whereby when the valve member 42 is open, syrup will flow from supply pipe 22 and through channel 44, branch aperture 146, central aperture 144, and downward through an elongated syrup dispensing aperture 148 provided in the center of nozzle 142. The lower end of said aperture 148 terminates in a sharp annular knife-like edge 150 for purposes which will be described.

The nozzle 142 is also provided adjacent the outer walls thereof with an elongated annular recess 152 which extends from the top to near the lower end of nozzle 142 and into which carbonated water passes. The inner end of recess 140 is also provided with a branch aperture 154 which connects annular opening 152 with the

interior of enlarged forward portion 114 of channel 16, whereby carbonated water may pass through the conduit 94 when the valve 120 is open and into the enlarged portion 114 of channel 16, through branch conduit 154, and into annular recess 152.

The mixing nozzle is provided centrally of its lower end with an upward extending cylindrical recess 156 and the annular knife-like edge 150 defining the exit opening for the syrup depends from the center of the upper end of said recess 156. The side walls of said recess contain a row of circumferentially spaced exit ports 158 which communicate with the lower end of annular recess 152. The ports 158 may be of any suitable number. In the exemplary illustrated herein, eight such ports are evenly spaced around the side walls of the recess 156. Said ports also extend inwardly and downwardly toward the center of recess 156 as clearly shown in Fig. 3. The ports 158 are also not only spaced a substantial distance below the knife edge 150 defining the syrup outlet but they also are directed downward therefrom.

In Fig. 3, it will be seen that when the valve operating handle is moved forwardly, or toward the left as viewed in Fig. 1, carbonated water will flow under considerable pressure and at substantial speed through the spaced exit ports 158, the streams impinging upon each other so as to thoroughly mix with each other. Syrup will also flow from the exit end of aperture 148 and the stream of syrup issuing therefrom will be immediately impinged from all sides by the circumferential row of downwardly directed streams of carbonated water issuing from the ports 158. Thus, thoroughly and instantaneous mixture of the carbonated water and syrup is assured. However, as soon as a glassful of mixed carbonated beverage has been dispensed from the nozzle 142, the valve operating handle is either released to permit the springs 86 and 122 to restore the valves to closed position or said handle is manually moved to its intermediate position wherein the valves are closed. Assuming that an attendant wishes to immediately thereafter dispense carbonated water from the nozzle 142, subsequently to dispensing a glassful of mixed carbonated beverage, the attendant will move the valve operating handle rearwardly or toward the right as viewed in Fig. 1, whereupon no syrup will issue from the aperture 148 and the streams of carbonated water which then flow from the ports 158 will impinge against each other in such a way as not to wash or otherwise come in contact with the lower end of the syrup dispensing aperture 148 defined by the knife edge 150. When the valves are closed following the dispensing of mixed carbonated beverage, the annular knife edge 150 defining the lower edge of syrup dispensing aperture 148 will cause a distinct and quick break in the stream of syrup issuing from the lower end of aperture 148 and no drop-like formation of syrup will depend from the knife edge 150. There will be a slightly rounded formation of syrup depending a very short distance below the knife edge, but said syrup will not be engaged by the streams of carbonated water issuing from ports 158 when carbonated water alone is being dispensed from the nozzle 142. Therefore, closing of the syrup valve will immediately stop the flow of syrup from the lower end of aperture 148 and opening the carbonated water valve alone, by moving the actuating handle rearwardly, may take place immediately

after the closing of the syrup valve and the carbonated water then being withdrawn from the nozzle 142 will not be contaminated at all with syrup in view of the formation of the lower end of the nozzle 142 described above.

When higher than average pressures of carbonated water are desired to issue from the exit ports 158, it is preferred that a baffle 160, which may be formed of suitable material such as of a good grade of leather, is placed within the recess 152 intermediate the ends thereof as clearly shown in Fig. 3. The baffle is shown in plan view in Fig. 10 and is in the nature of a washer. The outer perimeter thereof is of suitable diameter to engage the outer wall of annular recess 152 and the inner perimeter is of suitable diameter to engage the inner wall of said recess. The inner perimeter, however, is provided with a plurality of evenly spaced V-shaped openings 162 through which the carbonated water may pass in a very restricted manner. Said baffle tends to straighten the flow of such high pressure carbonated water. Such water flows at a rate, for example, of between 26 and 40 gallons per hour. When said water flows at such rates and said baffle is used, the streams or jets issuing from the ports 158 do so in a straight direction, whereby they tend to impinge evenly against each other and form a stream directed straight downward, whereby there is no tendency for the stream to shoot out of a glass or possibly knock a glass over.

The present invention contemplates the mixing of syrup and carbonated water in predetermined proportions when the valve operating handle is moved forwardly to dispense a stream of mixed beverage. To do this, the syrup delivered to supply pipe 22 must be of a predetermined Brix, this being a specific gravity indication of the percentage, by weight, of the sugar content which is in the desired mixed beverage. This is necessary since the sweetness of a beverage largely determines its palatability. The proportion of syrup added to carbonated water also is important to the palatability of the beverage. In the present invention, the flow of syrup from aperture 148 is substantially constant when the syrup valve is opened. Therefore, in order that the desired predetermined proportions of syrup and carbonated water may be mixed by the nozzle 142 to provide a palatable beverage of a predetermined flavor, the flow of carbonated water through the valve opening therefor may be regulated by adjusting the valve opening until the desired amount of carbonated water flows therethrough so that, when mixed with the constant flow of syrup, a beverage of predetermined proportions of syrup and carbonated water will be produced. Such regulation of the flow of carbonated water is effected by a regulating screw 164 threaded through one sidewall of head member 10, the inner end thereof being chamfered as clearly shown in Fig. 2 so as to engage the conical forward end of valve 102 with a line contact and thus comprise a stop to limit the opening movement of the valve. The threads on screw 164 are preferably of a relatively fine pitch and this, in conjunction with the obliqueness of the line of contact between the screw and valve, results in the valve opening being capable of extremely fine adjustment. After a setting of the screw 164 has been achieved, said setting may be secured if desired by a suitable set screw, not shown, which may be threaded through the

head member 10 into locking engagement with the screw 164.

To insure that the predetermined quantity of carbonated water passing the valve 102 will be carbonated to the desired degree, the carbonated water admitted to conduit 94 contains a slightly greater amount of admixed carbon dioxide than is desired in the mixed beverage dispensed from nozzle 142. As said carbonated water exits from the openings defined by flats 126 of member 124 and passes the valve seat 118, the gas in the water expands and a limited amount of it escapes from the water as free gas. This escaped gas will pass through exit ports 158 of nozzle 142 and will not interfere with the carbonated water passing through said ports. The amount of gas escaping from the carbonated water as aforesaid can be controlled by varying the number of flats 126 provided on member 124. The greater the number, the more gas will escape. Experimentation quickly indicates the number of flats needed to supply a desired carbonation in a specific mixed beverage.

Different kinds of carbonated beverages also require carbonated water which contains carbon dioxide admixed therein in different proportions. Accordingly, the present invention furnishes water carbonated to the desired degree which is supplied through different lengths of carbonated water conduits 94 and restricting members 98 when dispensing various kinds of carbonated beverages. For example, the class of beverages including colas, ginger ale, and club soda require the highest degree of carbonation and the same are dispensed at a pressure, for example, of about 80 lbs. per sq. inch. In these beverages, gas will be contained to the extent, for example, of about $3\frac{1}{2}$ to 4 volumes of gas to one volume of mixed beverage. In view of this, a relatively long conduit 94 and restricting member 98 will be used to maintain gas admixed in the carbonated water to the desired percentage. There is also a class of beverages which are carbonated to an intermediate extent such as root beer, cherry, and cream soda in which about 3 volumes of gas are dispersed within each volume of mixed beverage. This intermediate class of beverages are dispensed at a pressure of, for example, about 60 lbs. per sq. inch. For these, a medium length conduit 94 and restricting member 98 are used in view of the smaller proportion of gas than in the first mentioned class of beverages. There is also a third class of beverages flavored with various kinds of fruit juices, including orange, grape, and lime, which in general require the least carbonation of all the classes of carbonated beverages and a minimum length of conduit member 94 and restricting member 98 are used with these flavors of carbonated beverages. This third class of beverages has only about $1\frac{1}{2}$ to 2 volumes of gas dispersed within each volume of mixed beverage and the same is dispensed at a pressure of, for example, about 40 lbs. per sq. inch.

The present invention readily lends itself to an interchange of matched pairs of the required lengths of conduits 94 and restricting members 98, the lengths of said pairs being different to correspond, for example, to the three exemplary classes of the differently carbonated beverages described above. These pairs of sets of conduits 94 and restricting members 98 may be readily attached to and mounted within the head member 10 by removing the closure 112 and

11

cam member 58, and then backing-off screw 164, whereby the restricting member 98 may be readily inserted in or removed from the forward end of head member 10. The length of conduit 94 corresponding to the restricting member 98 is then secured to the threaded enlarged end 92 of carbonated water channel 16. The carbonated water supply line may then be quickly secured to the rearward end 96 of the conduit 94 and, following this, the valve actuating members and closure 112 are mounted in their operative position.

Under some circumstances, it is desirable to permit only syrup to flow from the exit end of aperture 148 without having carbonated water flow therefrom. Such conditions may occur as when it is desired to clean the syrup valve or drain it of one particular flavor of syrup before placing a supply of a differently flavored syrup in communication with the syrup supply pipe 22. When such circumstance arises, the syrup valve may be opened to the exclusion of the carbonated water valve by screwing inward the locking screw 164 until it holds valve 102 closed. Then, when the valve operating handle is moved forwardly in a direction which would normally permit the dual valve arrangement to dispense a mixed carbonated beverage, the valve operating handle will move the carbonated water valve actuating member 106 forwardly, together with the syrup valve 42, but such movement of member 106 merely causes the rearward end 104 thereof to move outward relative to its cylindrical seat in the forward end of carbonated water valve 102. It will therefore be seen that syrup may then issue from the aperture 148 until it is thoroughly drained from the supply pipe 22 and the interior of the valve. If desired, the syrup conducting members may also be flushed with water so as to clean said members, as well as completely remove one flavor therefrom before introducing either a new supply of the same syrup or a supply of a differently flavored syrup to the supply pipe 22.

While the invention has been illustrated and described in its preferred embodiment and has included certain details, it should be understood that the invention is not to be limited to the precise details herein illustrated and described since the same may be carried out in other ways, falling within the scope of the invention as claimed.

I claim as my invention:

1. A beverage dispensing faucet for mixing and dispensing a beverage composed of carbonated water and syrup in variable predetermined proportions as desired and comprising in combination, a body having a conduit to conduct syrup and a conduit to conduct carbonated water, a

12

valve in each of said conduits, means to actuate said valves simultaneously, one of said valves normally being opened to a fixed amount when actuated by said operating means, and the other valve having a sloping surface thereon and an adjustment screw carried by said body and engageable with the sloping surface on said other valve and operable to limit the opening thereof, whereby when said actuating means is actuated, the flow through said second valve may be adjusted relative to the flow through said one valve to produce a mixed carbonated beverage having desired predetermined proportions of syrup and carbonated beverage.

2. A beverage dispensing faucet for mixing and dispensing a beverage composed of carbonated water and syrup in variable predetermined proportions as desired and comprising in combination, a body having a conduit to conduct syrup and a conduit to conduct carbonated water, a valve in each of said conduits, means to actuate said valves simultaneously, said syrup valve normally opened a fixed amount by said operating means and said carbonated water valve having a sloping surface thereon, and an adjustment screw extending transversely to said carbonated water valve and engageable with the sloping surface thereon and operable to limit the opening thereof, whereby when said actuating means is actuated, the flow through said second valve may be adjusted relative to the flow through said one valve to produce a mixed carbonated beverage having desired predetermined proportions of syrup and carbonated beverage.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,124,905	Huber	Jan. 12, 1915
1,164,350	Huber	Dec. 14, 1915
1,429,574	England	Sept. 19, 1922
1,619,278	Travis	Mar. 1, 1927
1,661,150	Birkenmaier	Feb. 28, 1928
1,718,730	Brown	June 25, 1929
1,734,026	Bijur	Oct. 29, 1929
1,743,738	Travis	Jan. 14, 1930
1,800,368	Tomlinson	Apr. 14, 1931
1,819,116	Preamble	Aug. 18, 1931
1,840,961	Kuenzler	Jan. 12, 1932
1,894,903	Dawson	Jan. 17, 1933
1,981,496	Buttner	Nov. 20, 1934
1,992,851	Adams	Feb. 26, 1935
1,997,481	Buttner	Apr. 9, 1935
2,069,630	Steenstrup	Feb. 2, 1937
2,096,370	Carmody	Oct. 19, 1937
2,119,250	Smith	May 31, 1938
2,125,102	Cornelius	July 26, 1938
2,453,809	Newcomer	Nov. 16, 1948