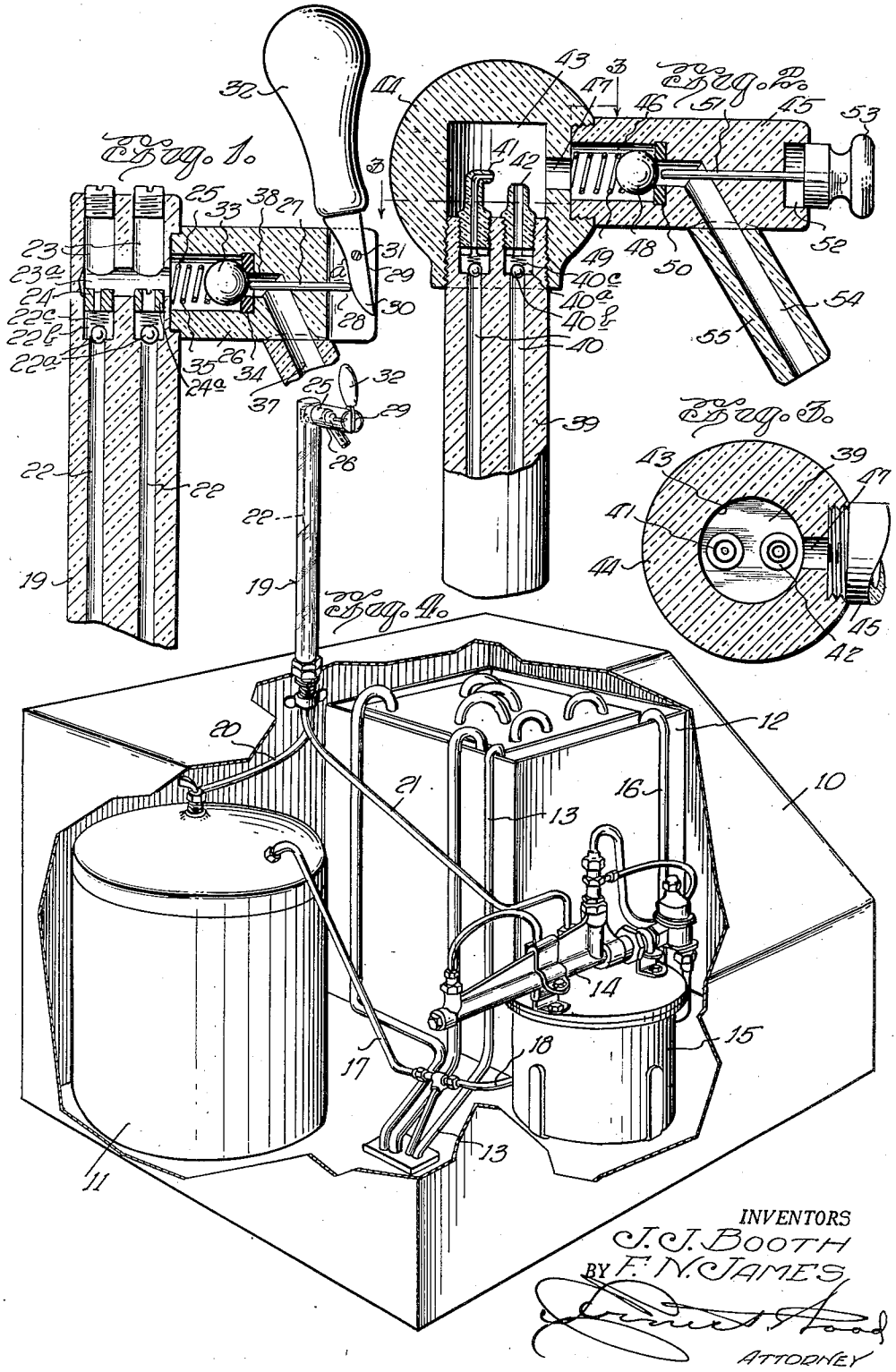
April 17, 1951 J. J. BOOTH ET AL 2,548,938

BEVERAGE MIXING AND DISPENSING APPARATUS

Filed June 23, 1945



Patented Apr. 17, 1951

2,548,938

UNITED STATES PATENT OFFICE

2,548,938

BEVERAGE MIXING AND DISPENSING APPARATUS

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Application June 23, 1945, Serial No. 601,226

4 Claims. (Cl. 137—69)

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This invention relates to beverage dispensing machines and more particularly to drink mixing apparatus.

The principal object of the invention is to provide a self contained automatic soft drink syrup and carbonated water mixing dispenser wherein CO_2 is introduced into refrigerated water which is, in turn, brought under proper pressure to the head of a delivery spigot. The syrup or body of the beverage is also brought, under proper pressure, to the head of the spigot. When the delivery or operating element of the spigot is actuated, the syrup and CO_2 water will, by their individual pressures, be released through individual delivery jets in the spigot or riser and will, by the subsequent turbulence mix and flow through the drink delivery spout.

Another object of the invention is to provide for the cooling, mixing and delivering of a properly proportioned carbonated beverage for immediate consumption, the said mixing step being performed by a novel draft arm including a spigot wherein the separate liquid passages are of a diameter best suited to the viscosity of the liquid required to pass therethrough and by which the beverage is proportioned. The said draft arm is preferably constructed from transparent or semi-transparent plastic material which is known to possess low heat conductivity and may be economically formed into structures of pleasing appearance.

With the foregoing objects as paramount, the invention has further reference to certain features of accomplishment which will become apparent as the description proceeds, taken in connection with the accompanying drawings wherein:

Figure 1 is a side elevational view of a draft arm and spigot in vertical section.

Figure 2 is a similar view of a slightly modified form of the invention.

Figure 3 is a view in transverse section, taken on line 3—3 on Figure 2, and

Figure 4 is a perspective view of a drink mixing apparatus, partly broken away, showing the draft arm of the present invention.

Continuing with a more detailed description of the drawing, reference is primarily made to Figure 4 which shows a more or less conventional arrangement of units ordinarily employed at soda fountains to supply the ingredients for carbonated beverages. It is customary in preparing a soft drink to first deposit ice in a glass and draw a small quantity of concentrated syrup from a

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spigot communicating with the syrup container of the system. From another spigot is drawn carbonated water to complete the mixture, thorough commingling of the ingredients being effected under pressure of the CO_2 gas. In this figure, reference numeral 10 denotes a housing which may be of any desired form but is preferably mounted on wheels (not shown) for convenience in transporting the apparatus from place to place. On the other hand, the system shown and to be described presently may occupy a position under a soda bar and from which the syrup and water may be mixed and dispensed by the draft arm of the invention, to be described presently.

Within the cabinet or housing 10 is arranged a drum 11 containing a syrup concentrate and a water tank 12, supplied from a source below the cabinet 10 through a pipe 13. A carbonator 14 of conventional construction is provided on a carbonated water storage tank 15 and receives water from the tank 12 through pipe 16. Air pressure from a compressor (not shown) is supplied to drum 11 and carbonated water storage tank 15 through pipes 17 and 18 respectively. Under pressure thus supplied in the drum and tank, syrup is constrained to pass into a riser 19 through pipe 20, while CO_2 charged water enters the riser 19 through pipe 21.

As stated previously, the present invention is particularly concerned with the draft arm shown in Figures 1 to 3 and shown applied in Figure 4. This draft arm is comprised of the cylindrical riser 19, preferably made from round plastic stock in which two parallel passages 22 are made by boring or otherwise to a point near the top thereof. These passages, which may be of the same diameter, as shown in Figure 1, communicate with a lateral passage 23, which latter in turn, communicates with a cavity 25 in the body 26 of a spigot. This cavity becomes the mixing chamber for carbonated water entering through a smaller jet member 24 and the syrup which enters the cavity through a larger jet member 24*a*. The reason for the difference in diameter of the passages in members 24 and 24*a* is to provide for the difference in viscosity of the two liquids. In other words, the heavier the liquid, the larger the passage and in the event the viscosity of the two liquids is the same, the size of the passages would, of course, be the same. It is further pointed out that should there be any cause to mix a beverage comprised of three or more separate ingredients, an equal number of passages may

be made in the riser 19 to communicate with the cavity 25 of the spigot, with the same results.

Inasmuch as there is a pressure differential in the two or more passages 22 in the riser 19, check valves 22a are disposed in recesses 22b in the upper ends of the passages, held down by springs 22c. Access to the balls 22a and springs is effected by boring holes 23 from the top of the riser into the passage 23a made laterally in the riser to communicate with the cavity 25 in the body of the spigot. The jets or fittings 24 and 24a are threaded into the recesses 22b, these being inserted through the bores 23 and set by a screw driver. The springs 22c bear against these fittings to impose yielding pressure on the balls. The open ends of the bores 23 are closed by threaded plugs.

It will be observed that liquid under pressure rising through the passages 22 will displace the balls 22a against the resistance of springs 22c to enter the lateral bore 23a and thence the cavity 25 to flow from the spigot when the latter is opened. Since pressure on the syrup is normally greater than that on the water the tendency to equalize in the passages 22 is defeated by the valves 22a.

The spigot is comprised of the body 26, having the cavity 25, with which communicates a bore 27 of smaller diameter to accommodate a rod 28, protruding through the bifurcated end 29 of the body 26. Within the bifurcated end 29 is mounted a lever 30 on a pivot 31. This lever has a handle 32 and its operative face a is curved where it engages the protruding end of rod 28.

Upon downward movement of the handle 32, the curved surface a of the lever will urge the rod 28 inwardly to displace the ball 33 from its seat 34, set into the forward end of the cavity 25. The ball is moved against the resistance of a spring 35 in the cavity and the two liquids rising in passages 22 and entering cavity 25 through the differential passages of jet members 24 and 24a will become mixed in the cavity and will flow past the ball 33 into a waiting receptacle through the spout 36, whose passage 37 communicates with a bore 38 which, in turn, communicates with the cavity. The drink thus dispensed is accurately proportioned without conjecture and represents a saving to the merchant as well as affording the consumer a uniformly satisfying drink.

Figures 2 and 3 illustrate a slightly modified form of the draft arm shown in Figure 1. In this latter form, the riser 39 has longitudinal passages 40 of equal diameter which terminate in internally threaded recesses 40a at their upper ends.

To prevent equalizing of the normally different pressures in the passages 40, ball valves 40b are arranged in the recesses 40a in the tops of the passages, against which bear springs 40c. The fittings 41 and 42, to be specifically described presently, are threaded into the recesses 40b and it is against these that the springs 40c bear, as shown. The fitting 41 has a smaller orifice than fitting 42 and is formed to direct CO_2 charged water into the stream of syrup jetted from the companion fitting 42. The two streams of liquid enter the mixing chamber or cavity 43 of the head 44, which latter may be of any desired shape and is threaded or otherwise mounted upon the upper end of the riser 39.

Threaded into the head 44 at right angles to the riser is the body 45 of the spigot and which has a large bore or cavity 46 therein communicating with the chamber 43 of the head 44 through a smaller passage 47. A ball 48 is disposed in the cavity 46, held by means of a spring 49 against a seat 50. A rod 51 extends through a smaller bore made axially through the body 45 to protrude into a circular recess 52 in the end thereof. A button 53 is fastened to the protruding end of the rod 51 and conforms to the recess 52 so that when pressed, it will enter the recesses and actuate the rod 51 axially to displace the ball 48 with respect to its seat 50. The already mixed liquids will then flow through the passage 54 of the spout 55 into a glass held thereunder.

It is to be understood that instead of providing special jets, such as fittings 41 and 42 or passages of different diameters, such as shown at 24 and 24a in Figure 1, the passages 22 or 40 in the risers 19 and 39 respectively, may be of different sizes or, as a matter of fact, tubes of different sizes may be employed in lieu of drilled passages to accommodate liquids of different viscosities, necessary for the successful operation of a mixer and dispenser of beverages consisting of two or more liquid ingredients.

Manifestly, the construction as shown and described is capable of some modification and such modification as may be construed to fall within the scope and meaning of the appended claims is also considered to be within the spirit and intent of the invention.

What is claimed is:

1. In a draft arm for drink mixing apparatus, a riser having a plurality of longitudinal passages having individual communication with a source of liquid and a carbonating agent at their lower ends and discharging into a mixing chamber at their upper ends, a fitting in the discharge end of each of said passages defining jets, said jets having orifices of differential diameters for restricting said passages in accordance with the difference in viscosity of the liquids passing therethrough, a spigot on said riser also having a mixing chamber with which said passages communicate through said first chamber for releasing mixed liquids rising through said passages, and valve means in each of said passages to preclude equalization of the normally different pressures therein.

2. In a drink mixing and dispensing apparatus, a draft arm including a riser having a plurality of liquid passages longitudinally therethrough having individual communication with a source of syrup and a carbonating agent at one end and discharging at their opposite ends into a mixing chamber, a spigot on said riser also having a mixing chamber receiving the mixed liquids from said first chamber, a jet in the discharge end of each of said passages, said jets having orifices of unequal diameters for restricting the flow of liquids into said first chamber in accordance with differences in viscosity of said liquids and valve means also in said passages to prevent equalization of normally different pressures therein.

3. In a drink mixing and dispensing apparatus, a dispensing arm including a riser having longitudinal and relatively parallel passages therein through which syrup and carbonated water are transported individually under separate pressures from a source of syrup and carbonated water supply and for discharging the same simultaneously into a chamber, valve means in said passages for maintaining individual pressures in said passages, a spigot having a mixing chamber with which said first chamber communicates for releasing said liquids simultaneously from said passages and means in said passages having orifices of unequal diameters for restricting delivery of liquids

into said first chamber in accordance with differences in viscosity thereof.

4. In a drink mixing and dispensing apparatus, a draft arm including a riser having fluid passages therein communicating at one end with a source of flavor and a carbonating agent and discharging into a chamber at the opposite end, said passages further having means therein for restricting the flow of liquid according to its viscosity, valve means also in said passages for preventing equalization of normally different pressures therein, a spigot also having a mixing chamber in communication with said first chamber and means for releasing mixed liquids from said spigot.

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