Beverage Machine

BACKGROUND

[0001] The present application relates to the technical field of beverage appliances, and in particular to a beverage machine.

[0002] Existing mixing devices for mixing beverages and gas, such as beverage machines, usually introduce gas and liquid directly into a large-capacity mixing container, and use high gas pressure to force the gas into beverages. This results in bad efficiency of mixing gas and beverages. Additionally, some mixing devices utilize the fluidity of gas and beverages to make the gas mixed into the beverages by increasing the contact between the gas and the beverages. However, the existing mixing devices in the manner of gas-liquid flow are often provided with numerous parts inside, and have complicated structure and large overall size, such that it is not convenient for installation and use.

[0003] Therefore, there is a need for a beverage machine that at least partially addresses the problems existing in prior arts.

SUMMARY

[0004] A series of simplified concepts is introduced into the portion of Summary, which would be further illustrated in the portion of the detailed description. The utility model Summary of the present application does not mean attempting to define the key feature and essential technical feature of the claimed technical solution, let alone determining the protection scope thereof.

[0005] In order to at least partially solve the above-mentioned problems, the present application provides a beverage machine, comprising:

[0006] a tank having an accommodating space for accommodating beverage and a gas input port in communication with the accommodating space;

[0007] a valve nozzle arranged at a bottom of the tank;

[0008] a fluid mixing member, comprising:

[0009] a fluid mixing part arranged in the accommodating space and having a fluid mixing chamber with an opening;

[0010] a first pipe arranged in the accommodating space, the first pipe at its top being in communication with the fluid mixing chamber, and the first pipe at its bottom being provided with a liquid inlet in communication with the accommodating space; and

[0011] a second pipe at least partially arranged in the accommodating space, the second pipe at its top being in communication with the fluid mixing chamber, and the second pipe at its

bottom being provided with a liquid outlet in communication with the valve nozzle; and

[0012] a fluid mixing cap detachably connected to the fluid mixing part at the opening to cover the opening, the fluid mixing cap being provided with a gas inlet orifice through which the accommodating space is in communication with the fluid mixing chamber.

[0013] According to the beverage machine of the present invention, when the beverage is dispensed by a user, gas can be input into the tank, and the beverage and the gas in the tank can be effectively mixed in the fluid mixing chamber of the fluid mixing part, such that the beverage mixed with gas will be dispensed. The operation process is simple. In addition, by providing a detachable fluid mixing cap, it is possible to regulate the gas injection volume and the degree of gas mixing by replacing the fluid mixing caps having the gas inlet orifices of different cross-sectional areas. Furthermore, the beverage machine has simple overall structure and is easy to clean and maintain.

[0014] Alternatively, a cross-sectional area of the gas inlet orifice is less than an opening area of the liquid inlet.

[0015] Alternatively, the fluid mixing cap comprises a baffle part and a coupling part coupled to the baffle part, wherein the baffle part is arranged in the fluid mixing chamber to close the opening, the coupling part is at least partially located outside the fluid mixing chamber, and the gas inlet orifice is provided to the baffle part.

[0016] Alternatively, the baffle part is configured in the form of a plate, and the coupling part is configured to extend outwardly with respect to a periphery of the baffle part.

[0017] Alternatively, the first pipe and the second pipe are arranged side by side and both disposed vertically, and at least one of the first pipe and the second pipe is integrally formed with the fluid mixing part as a single unitary.

[0018] Alternatively, the fluid mixing part has a first hole in communication with the first pipe and a second hole in communication with the second pipe, wherein a cross-sectional area of the first hole is smaller than a cross-sectional area of an inward surface of the first pipe, and a cross-sectional area of the second hole is smaller than a cross-sectional area of an inward surface of the second pipe.

[0019] Alternatively, the valve nozzle is detachably arranged at the bottom of the tank, and the valve nozzle comprises a valve body and a valve core arranged in the valve body, wherein the valve body has a bottom end with a dispensing outlet, and the valve core is provided with a plurality of injection holes each in communication with the dispensing outlet and the liquid outlet.

[0020] Alternatively, the valve core comprises a first extending section, a second extending section, and a third extending section, the first extending section and the second extending section each is configured to extend radially outwardly with respect to an outer circumferential surface of the third extending section, an outer circumferential surface of the first extending section abuts against an inward surface of the valve body, and an outer circumferential

surface of the second extending section and the outer circumferential surface of the third extending section each forms a clearance with the inward surface of the valve body, wherein the plurality of injection holes are arranged at the first extending section.

[0021] Alternatively, the tank at its bottom is provided with a mounting part, wherein

[0022] the second pipe has a bottom end being plugged into the mounting part, the valve body has a top end being sleeved over the mounting part, the mounting part at its center is provided with a flow-restricting orifice in communication with both the liquid outlet and the injection hole, and a cross-sectional area of the flow-restricting orifice is smaller than a cross-sectional area of an inward surface of the second pipe; or

[0023] the second pipe has a bottom end extending through the mounting part and into the valve body.

[0024] Alternatively, the tank comprises a tank body with a top opening and a lid for covering the top opening, and the gas input port is provided to the lid, wherein the tank body is provided with a bump on its outward surface and the lid is provided with a groove, and the tank body is coupled to the lid by the bump being screwed into the groove.

[0025] Alternatively, the beverage machine further comprises a first sealing ring held between the tank body and the lid in a circumferential direction of the tank body; or

[0026] the beverage machine further comprises a second sealing ring held between the fluid mixing part and the fluid mixing cap in a circumferential direction of the opening.

[0027] Alternatively, one of the tank body and the lid is provided with a magnet and the other of the tank body and the lid is provided with a magnetic sensor, such that it is determined whether the lid is installed in place relative to the tank body by the magnetic sensor detecting a magnetic field of the magnet.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] The following drawings are hereby incorporated as part of the present application for the understanding of the application. The embodiments are illustrated and described in the drawings in order to explain the principles of the present application.

[0029] In the drawings:

[0030] FIG. 1 is a schematic perspective view of a beverage machine according to a first embodiment of the present invention;

[0031] FIG. 2 is a schematic perspective view of a partial structure of the beverage machine illustrated in FIG. 1, with the bracket and fasteners removed;

[0032] FIG. 3 is a schematic sectional view of a partial structure of the beverage machine illustrated in FIG. 2;

[0033] FIG. 4 is another schematic sectional view of the partial structure of the beverage

machine illustrated in FIG. 2;

[0034] FIG. 5 is a schematic exploded perspective view of the partial structure of the beverage machine illustrated in FIG. 1, showing the tank body, the lid, and the pressure sensor;

[0035] FIG. 6 is a schematic perspective view of the lid illustrated in FIG. 5;

[0036] FIG. 7 is a schematic perspective view of a valve core of the valve body of the beverage machine illustrated in FIG. 3;

[0037] FIG. 8 is a schematic sectional view of the partial structure of the beverage machine according to a second embodiment of the present invention.

[0038] Description of reference signs

[0039] 100: Beverage machine	110: Tank
[0040] 111/211: Tank body	112: Lid
[0041] 113: Bump	114: Groove
[0042] 115: Accommodating space	116/216: Mounting part
[0043] 117: Flow-restricting orifice	118: Gas input port
[0044] 119: Sprayer	120: Valve nozzle
[0045] 121/221: Valve body	122/222: Valve core
[0046] 124: Injection hole	125: First extending section
[0047] 126: Second extending section	127: Third extending section
[0048] 128/228: Dispensing outlet	130: Fluid mixing member
[0049] 131: Fluid mixing part	132/232: First pipe
[0050] 133/233: Second pipe	134/234: Liquid inlet
[0051] 135/235: Liquid outlet	136: First hole
[0052] 137: Second hole	138: Fluid mixing chamber
[0053] 139: Opening	140: Fluid mixing cap
[0054] 141: Baffle part	142: Coupling part
[0055] 143: Gas inlet orifice	144: Guide surface
[0056] 150: First sealing ring	160: Second sealing ring
[0057] 170: Magnet	180: Magnetic sensor
[0058] 190: Pressure sensor	191: Annular wall
[0059] 192: Transverse wall	193: Spray hole
[0060] 194: Bracket	195: Fastener

DETAILED DESCRIPTION

[0061] In the following description, numerous specific details are set forth in order to provide a more thorough understanding of the present application. However, it is obvious to those skilled in this art that the present application may be implemented without one or more of these details. Some technical features well-known in this art are not described in other examples in order to avoid confusion with the present application.

[0062] In order to thoroughly understand the present application, a detailed description will be provided in the following description. Obviously, the implementation of the embodiments of the present application is not limited to the specific details familiar to those skilled in the art. The preferred embodiments of the present application are described in detail as follows. However, in addition to these detailed descriptions, the present application may have other embodiments.

[0063] It shall be noted that the terminology used herein is for the purpose of describing particular embodiments only and is not intended to limit the exemplary embodiments of the present application. As used herein, the singular forms are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprising" and/or "including," when used in this specification, specify the presence of stated features, wholes, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, wholes, steps, operations, elements, components, and/or combinations thereof.

[0064] Ordinals such as "first" and "second" quoted in this application are merely identifications and do not have any other meanings, such as a specific order. Moreover, for example, the term "first component" itself does not imply the presence of "second component", and the term "second component" itself does not imply the presence of "first component."

[0065] It should be noted that the terms "up", "down", "front", "back", "left", "right", "inside", "outside" and similar expressions used herein are for illustrative purposes only and are not restrictive.

[0066] The exemplary embodiments of the present application will now be described in further details with reference to the accompanying drawings. However, these exemplary embodiments can be implemented in various forms but should not be construed as being limited to the embodiments set forth herein. It is to be understood that these embodiments are provided to make the disclosure thorough and complete and fully convey the concepts of these exemplary embodiments to those of ordinary skill in the art.

[0067] The present embodiment provides a beverage machine capable of efficiently mixing gas and beverage. The gas to be mixed may include but is not limited to food-grade nitrogen, carbon dioxide or their mixed gases. Beverages to be mixed may include but are not limited to coffee, tea, dairy products, and fruit juices.

[0068] It should be noted that the directional terms used herein to describe the beverage machine, such as "vertical", "upward", "downward", "above", "below", etc., are relative to the

beverage machine in a vertical state. It would be understood that the beverage machine will be placed and used in the vertical state.

[0069] Embodiment 1

[0070] As shown in FIGS. 1 to 3, the beverage machine 100 according to the first embodiment basically includes a tank 110, a valve nozzle 120, a fluid mixing member 130, and a fluid mixing cap 140.

[0071] The tank 110 has an accommodating space 115 for accommodating beverage and a gas input port 118 in communication with the accommodating space 115. The gas input port 118 is used to input gas into the tank 110 to pressurize the accommodating space 115. The valve nozzle 120 is disposed at the bottom of the tank 110 for further mixing the beverage and pouring out gas-mixed beverage. Specifically, the tank 110 includes a tank body 111 with a top opening and a lid 112 for covering the top opening. The tank body 111 is substantially cylindrical and extends vertically. The lid 112 is detachably arranged at the top of the tank body 111. The gas input port 118 is arranged at the lid 112, and the lid 112 can be opened such that beverages may be poured into the tank 110. The valve nozzle 120 is arranged at the bottom of the tank body 111. The gas input port 118 is connected with the upstream gas source and valves, and is used to drive the beverage and provide gas for the fluid mixing, as well as to release internal pressure in the accommodating space 115 after dispensing. The gas may be nitrogen, carbon dioxide or a mixture of nitrogen and carbon dioxide.

[0072] In the present embodiment, as shown in FIG. 5 and FIG. 6, the outward surface of the tank body 111 is provided with a bump 113. The lid 112 is provided with a groove 114. The tank body 111 is connected to the lid 112 by the bump 113 being screwed into the groove 114. In this way, the structure of installations between the tank body 111 and the lid 112 is relatively simple, and free of fasteners. The number of the bump 113 and the groove 114 is preferably more than one. The positions of the bump 113 correspond to the positions of the groove 114 such that the connection between the tank body 111 and the lid 112 is secure.

[0073] In the present embodiment, the tank body 111 is provided with a magnet 170 (see FIG. 5), and the lid 112 is provided with a magnetic sensor 180 (see FIG. 2). The magnetic sensor 180 detects the magnetic field of the magnet 170 to determine whether the lid 112 is installed in place relative to the tank body 111. No follow-up process will be performed when the lid 112 is not installed in place. The number of the magnetic sensor 180 may be one, and the number of magnet 170 is preferably more than one. For example, the number of the magnet 170 is the same as the number of the bump 113. It would be understood that, if required, the magnet 170 can be arranged to the lid 112 and the magnetic sensor 180 can be arranged to the tank body 111, and the number of the magnetic sensor 180 can also be the same as the number of the bump 113.

[0074] Moreover, as shown in FIGS. 1 to 3, a pressure sensor 190 is disposed at the lid 112 for measuring the pressure in the accommodating space 115, and can be used for low pressure warning, gas input pressure control, emergency stop, etc. A sprayer 119 is arranged at the center

of the lid 112, and is connected to the upstream water feeding pipeline and valve. The sprayer 119 is provided with a plurality of spray holes 193 in communication with the accommodating space 115. The tank body 111 can be cleaned by the sprayer 119 after dispensing. Preferably, the number of spray holes 193 is from four to six, for example, four, five, or six. It can be understood that the number of spray holes 193 may also be less than four or more than six, for example three or seven, if required.

[0075] As shown in FIG. 3, the beverage machine 100 further includes a first sealing ring 150 that is configured as an annular sealing ring and held between the tank body 111 and the lid 112 in the circumferential direction of the tank body 111 to seal the gap between the tank body 111 and the lid 112 so as to prevent gas or liquid in the accommodating space 115 from leaking.

[0076] As shown in FIG. 3 and FIG. 4, the fluid mixing member 130 includes a fluid mixing part 131, a first pipe 132, and a second pipe 133. Both the fluid mixing part 131 and the first pipe 132 are disposed in the accommodating space 115, and the second pipe 133 is at least partially disposed in the accommodating space 115. The fluid mixing part 131 is provided with a fluid mixing chamber 138 having an opening 139. The first pipe 132 at its top is in communication with the fluid mixing chamber 138, and at its bottom is provided with a liquid inlet 134 in communication with the accommodating space 115, such that a clearance is present between the liquid inlet 134 and the tank body 111 of the tank 110. The liquid inlet 134 faces downward and is located at the bottom of the tank body 111 of the tank 110, such that the beverage in the tank 110 can be poured out as much as possible. The second pipe 133 at its top is in communication with the fluid mixing chamber 138, and at its bottom is provided with a liquid outlet 135. The liquid outlet 135 is in communication with the valve nozzle 120.

[0077] In the present embodiment, the first pipe 132 and the second pipe 133 are arranged side by side and both disposed in vertical direction. Preferably, at least one of the first pipe 132 and the second pipe 133 is integrally formed with the fluid mixing part 131 as a single unitary. In the present embodiment, the first pipe 132 and the second pipe 133 are integrally formed with the fluid mixing part 131 a single unitary, facilitating manufacturing and reducing production costs.

[0078] The fluid mixing part 131 has a first hole 136 in communication with the first pipe 132 and a second hole 137 in communication with the second pipe 133. The first hole 136 and the second hole 137 each is configured as a through hole. The cross-sectional area of the first hole 136 is preferably smaller than the cross-sectional area of the inward surface of the first pipe 132, and the cross-sectional area of the second hole 137 is smaller than the cross-sectional area of the inward surface of the second pipe 133. In the present embodiment, the first hole 136 and the second hole 137 are configured as circular through holes, and the first pipe 132 and the second pipe 133 are configured as circular tubular structures. Therefore, the inner diameter of the first hole 136 is preferably smaller than the inner diameter of the first pipe 132, and the inner diameter of the second hole 137 is preferably smaller than the inner diameter of the second pipe 133.

[0079] With reference to FIG. 3 and FIG. 4, the fluid mixing cap 140 is detachably

connected to the fluid mixing part 131 at the opening 139 of the fluid mixing chamber 138 for covering the opening 139. The fluid mixing cap 140 is provided with a gas inlet orifice 143 through which the accommodating space of the tank 110 is in communication with the fluid mixing part 131. Therefore, it is possible to regulate the mixing ratio of gas and beverage by replacing the fluid mixing caps 140 having the gas inlet orifices 143 of different cross-sectional areas, thereby changing the input degree of gas in the beverage.

[0080] Preferably, the cross-sectional area of the gas inlet orifice 143 is smaller than the opening area of the liquid inlet 134. The fluid mixing part 131 is located at the upper part of the tank body 111 of the tank 110. The highest liquid level of the beverage in the tank 110 is below the gas inlet orifice 143. In the present embodiment, the flow rate of the gas in the fluid mixing chamber 138 of the fluid mixing part 131 depends on the pressure difference between the accommodating space 115 (specifically, the gas in the accommodating space 115) of the tank 110 and the fluid mixing chamber 138 as well as depends on the cross-sectional area of the gas inlet orifice 143. The ratio of beverage and gas depends on the dynamic balance of the respective pressures and respective flow rates. Alternatively, the gas inlet orifice 143 is a circular through hole, and the diameter of the gas inlet orifice 143 is preferably between 0.05 mm and 0.5 mm, for example, it can be 0.05 mm, 0.1 mm, 0.2 mm, 0.3 mm, 0.4 mm or 0.5 mm. The diameter of the liquid inlet 134 is preferably between 4 mm and 12 mm, for example, it can be 4 mm, 6 mm, 8 mm, 10 mm or 12 mm. The fluid mixing cap 140 with the gas inlet orifices 143 of different diameters can be marked by laser printing, so as to facilitate the operator to identify and choose.

[0081] After gas has been input into the tank 110, the gas pressure in the accommodating space 115 of the tank 110 is higher than the pressure in the fluid mixing member 130, such that the gas can force the beverage into the first pipe 132 via the liquid inlet 134, and the gas can enter the fluid mixing chamber 138 via the gas inlet orifice 143 of the fluid mixing cap 140. It should be noted that when the fluid mixing member 130 is in communication with the external environment via the liquid outlet 135 (that is, the beverage machine is in a state where the gas-mixed beverage is to be dispensed or being dispensed), the gas pressure in the accommodating space 115 of the tank 110 is higher than the pressure in fluid pipes. Beverage and gas can be mixed in the fluid mixing chamber 138 to form a gas-mixed beverage. The gas-mixed beverage can be dispensed from the tank 110 successively via the liquid outlet 135 and the valve nozzle 120.

[0082] As shown in FIG. 4, the fluid mixing cap 140 includes a baffle part 141 and a coupling part 142 connected to the baffle part 141. The baffle part 141 is disposed in the fluid mixing chamber 138 to close the opening 139. The coupling part 142 is at least partially located outside the fluid mixing chamber 138 to facilitate installation and disengagement of the fluid mixing cap 140. Specifically, the baffle part 141 is configured in a plate shape. The coupling part 142 is configured to extend outwardly with respect to the periphery of the baffle part, and the gas inlet orifice 143 is provided at the baffle part 141.

[0083] More specifically, in the present embodiment, the baffle part 141 is configured in

a circular plate shape. The coupling part 142 is configured in a frustoconical shape, and the small head end of the coupling part 142 is connected to the periphery of the baffle part 141. The gas inlet orifice 143 is disposed inward with respect to the small head end of the coupling part 142. Preferably, the coupling part 142 has a guide surface 144 configured in a frustoconical shape. The gas inlet orifice 143 is preferably located in the centerline of the guide surface 144, thereby facilitating gas in the accommodating space 115 to enter the fluid mixing chamber 138 via the gas inlet orifice 143.

[0084] It would be understood by those skilled in the art that the shapes of the baffle part 141 and the coupling part 142 are not limited to this embodiment, and the baffle part 141 and the coupling part 142 can also be configured in any other suitable shape as required. For example, the coupling part 142 can also be configured substantially cylindrical.

[0085] As shown in FIGS. 1 to 3, the valve nozzle 120 is detachably arranged at the bottom of the tank body 111 of the tank 110. The valve nozzle 120 includes a valve body 121 and a valve core 122 arranged in the valve body 121. A dispensing outlet 128 is provided at the bottom end of the valve body 121. The valve core 122 is provided with a plurality of injection holes 124 extending vertically, and the plurality of injection holes 124 are through holes and arranged at intervals to allow gas-mixed beverage to pass through. The liquid outlet 135 is in communication with the dispensing outlet 128 through the plurality of injection holes 124. In this way, the gas-mixed beverage flowing out the liquid outlet 135 may discharge via the injection holes 124 and the dispensing outlet 128 in sequence. Thus, an empty cup placed under the valve nozzle 120 will be filled with the gas-mixed beverage with many small bubbles.

[0086] As shown in FIG. 3 and FIG. 7, the valve core 122 includes a first extending section 125, a second extending section 126, and a third extending section 127. Both the first extending section 125 and the second extending section 126 are configured to extend radially outwardly with respect to the outer circumferential surface of the third extending section 127. Specifically, both the first extending section 125 and the second extending section 126 are configured as a circular plate-shaped structure extending in the horizontal direction. The third extending section 127 is configured as a columnar structure or a stepped columnar structure extending in the vertical direction. In the state where the valve core 122 is mounted in the valve body 121, the outer circumferential surface of the first extending section 125 abuts against the inward surface of the valve body 121. The outer circumferential surfaces of the second extending section 126 and the third extending section 127 each forms a clearance with the inward surface of the valve body 121. The plurality of injection holes 124 are disposed at the first extending section 125, and the plurality of injection holes 124 are spaced apart from each other.

[0087] In the present embodiment, as shown in FIG. 3, the bottom of the tank body 111 of the tank 110 is provided with a mounting part 116. The bottom end of the second pipe 133 is plugged into the mounting part 116. The top end of the valve body 121 is sleeved over the mounting part 116. The mounting part 116 at is center is provided with a flow-restricting orifice

117 in communication with both the liquid outlet 135 and the injection hole 124. The cross-sectional area of the flow-restricting orifice 117 is smaller than the cross-sectional area of the inward surface of the second pipe 133 to restrict the flow rate of gas-mixed beverages, thus providing a stable resistance/flow rate, and allowing for better mixing/foaming quality of beverage and gas.

[0088] Specifically, the mounting part 116 includes an annular wall 191 extending in vertical direction and a transverse wall 192 disposed inward with respect to the annular wall 191 and extending in horizontal direction. The upper end of the annular wall 191 is disposed in the accommodating space 115, and the lower end of the annular wall 191 is located outside the accommodating space 115. The flow-restricting orifice 117 is disposed to the transverse wall 192 and at the center of the transverse wall 192. The bottom end of the second pipe 133 is plugged into the annular wall 191, and the top end of the valve body 121 is sleeved over the annular wall 191.

[0089] Accordingly, the gas-mixed beverage out of the liquid outlet 135 enters the valve nozzle 120 via the flow-restricting orifice 117, is injected to the second extending section 126 via the injection hole 124 disposed at the first extending section 125 in the valve nozzle 120, then successively flows through the clearance between the outer circumferential surface of the second extending section 126 and the inward surface of the valve body 121, the clearance between the outer circumferential surface of the third extending section 127 and the inward surface of the valve body 121, and finally is discharged via the dispensing outlet 128. In this way, it is possible not only to improve the mixing of gas and beverage, but also to rectify the flow before dispensing the gas-mixed beverage to avoid splashing.

[0090] As shown in FIG. 3 and FIG. 4, the beverage machine 100 further includes a second sealing ring 160 held between the fluid mixing part 131 and the fluid mixing cap 140 in the circumferential direction of the opening 139, specifically, held between the fluid mixing part 131 and the coupling part 142 of the fluid mixing cap 140. This makes it possible to seal the gap between the fluid mixing part 131 and the fluid mixing cap 140 and prevent the gas or liquid in the fluid mixing chamber 138 from entering the accommodating space 115 via the gap between the fluid mixing part 131 and the fluid mixing cap 140, and it is convenient for detachment and cleaning of the fluid mixing cap 140.

[0091] As shown in FIG. 1, the beverage machine 100 further includes a bracket 194. The bracket 194 is configured as a plate-like structure and is connected to the lid 112 by a fastener 195 such as a screw. The bracket 194 can be connected to other modules by fasteners, such that the beverage machine 100 is mounted to other modules.

[0092] Embodiment 2

[0093] Hereinafter, a beverage machine of a second embodiment will be described with reference to FIG. 8. The beverage machine according to the present embodiment has substantially the same structure and/or configuration as the beverage machine 100 of the first embodiment

except for the installation position of the valve nozzle 220. Therefore, elements with substantially the same functions as those in the first embodiment will be numbered the same here and will not be described and/or illustrated in detail for the sake of brevity.

[0094] In the present embodiment, the valve nozzle 220 is detachably mounted at the bottom end of the second pipe 233. Specifically, at the bottom of the tank body 211 is provided with a mounting part 216. The mounting part 216 is configured as a through hole conforming to the shape of the second pipe 233. The bottom end of the second pipe 233 extends through the mounting part 216 and into the valve body 221 of the valve nozzle 220.

[0095] Unless otherwise defined, the technical and scientific terms used herein have the same meanings as commonly understood by those skilled in the technical field of the present application. The terms used herein are only for describing specific implementation purposes, but not intended to limit the present application. A feature described in one embodiment herein can be applied to another embodiment alone or in combination with other features, unless the feature is not applicable in the other embodiment or otherwise stated.

[0096] The present application has been described through the above-mentioned embodiments, but it should be understood that the above-mentioned embodiments are only for the purpose of illustration and description but not intended to limit the present application to the scope of the described embodiments. More variations and modifications can be made according to the teachings of the present application, and these variations and modifications fall within the protection scope claimed by the present application.

CLAIMS

1. A beverage machine, comprising:

a tank having an accommodating space for accommodating beverage and a gas input port in communication with the accommodating space;

a valve nozzle arranged at a bottom of the tank;

a fluid mixing member, comprising:

a fluid mixing part arranged in the accommodating space and having a fluid mixing chamber with an opening;

a first pipe arranged in the accommodating space, the first pipe at its top being in communication with the fluid mixing chamber, and the first pipe at its bottom being provided with a liquid inlet in communication with the accommodating space; and

a second pipe at least partially arranged in the accommodating space, the second pipe at its top being in communication with the fluid mixing chamber, and the second pipe at its bottom being provided with a liquid outlet in communication with the valve nozzle; and

a fluid mixing cap detachably connected to the fluid mixing part at the opening to cover the opening, the fluid mixing cap being provided with a gas inlet orifice through which the accommodating space is in communication with the fluid mixing chamber.

2. The beverage machine of claim 1, wherein a cross-sectional area of the gas inlet orifice is less than an opening area of the liquid inlet.

3. The beverage machine of claim 1, wherein the fluid mixing cap comprises a baffle part and a coupling part coupled to the baffle part, wherein the baffle part is arranged in the fluid mixing chamber to close the opening, the coupling part is at least partially located outside the fluid mixing chamber, and the gas inlet orifice is provided to the baffle part.

4. The beverage machine of claim 3, wherein the baffle part is configured in the form of a plate, and the coupling part is configured to extend outwardly with respect to a periphery of the baffle part.

5. The beverage machine of claim 1, wherein the first pipe and the second pipe are arranged side by side and both disposed vertically, and at least one of the first pipe and the second pipe is integrally formed with the fluid mixing part as a single unitary.

6. The beverage machine of claim 1, wherein the fluid mixing part has a first hole in communication with the first pipe and a second hole in communication with the second pipe,

wherein a cross-sectional area of the first hole is smaller than a cross-sectional area of an inward surface of the first pipe, and a cross-sectional area of the second hole is smaller than a cross-sectional area of an inward surface of the second pipe.

7. The beverage machine of claim 1, wherein the valve nozzle is detachably arranged at the bottom of the tank, and the valve nozzle comprises a valve body and a valve core arranged in the valve body, wherein the valve body has a bottom end with a dispensing outlet, and the valve core is provided with a plurality of injection holes each in communication with the dispensing outlet and the liquid outlet.

8. The beverage machine of claim 7, wherein the valve core comprises a first extending section, a second extending section, and a third extending section, the first extending section and the second extending section each is configured to extend radially outwardly with respect to an outer circumferential surface of the third extending section, an outer circumferential surface of the first extending section abuts against an inward surface of the valve body, and an outer circumferential surface of the second extending section and the outer circumferential surface of the third extending section each forms a clearance with the inward surface of the valve body, wherein the plurality of injection holes are arranged at the first extending section.

9. The beverage machine of claim 7, wherein

the tank at its bottom is provided with a mounting part, wherein

the second pipe has a bottom end being plugged into the mounting part, the valve body has a top end being sleeved over the mounting part, the mounting part at its center is provided with a flow-restricting orifice in communication with both the liquid outlet and the injection hole, and a cross-sectional area of the flow-restricting orifice is smaller than a cross-sectional area of an inward surface of the second pipe; or

the second pipe has a bottom end extending through the mounting part and into the valve body.

10. The beverage machine of any one of claims 1 to 9, wherein the tank comprises a tank body with a top opening and a lid for covering the top opening, and the gas input port is provided to the lid, wherein the tank body is provided with a bump on its outward surface and the lid is provided with a groove, and the tank body is coupled to the lid by the bump being screwed into the groove.

11. The beverage machine of claim 10, wherein

the beverage machine further comprises a first sealing ring held between the tank body and the lid in a circumferential direction of the tank body; or

the beverage machine further comprises a second sealing ring held between the fluid mixing part and the fluid mixing cap in a circumferential direction of the opening.

12. The beverage machine of claim 10, wherein one of the tank body and the lid is provided with a magnet and the other of the tank body and the lid is provided with a magnetic sensor, such that it is determined whether the lid is installed in place relative to the tank body by the magnetic sensor detecting a magnetic field of the magnet.