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(54) Title: Brewing Device for Preparing a Hot Beverage and Method for Preparing a Hot Beverage

(57) Abstract: A brewing device (100) for preparing a hot beverage, particularly a coffee beverage, as well as a method for preparing a hot beverage, specifically a coffee beverage, is disclosed. To achieve the objective of preparing relatively large portions of hot beverages in the shortest possible time while maintaining the beverage quality, particularly with respect to minimizing the extraction of bitter compounds, according to the invention the brewing device (100) comprises, in addition to a brewing unit (60), at least one first hot water source (41) and at least one second hot water source (42). Furthermore, at least one brewing water supply system (31, 51a, 51b) is provided to deliver hot water from at least one hot water source (41) to the brewing unit (60), and at least one hot water mixing system (32, 52c, 53) is provided to selectively mix hot water from at least one hot water source (42) downstream of the brewing unit (60). Additionally, the brewing device comprises a control unit (20) for controlling the at least one hot water mixing system (32, 52c, 53), with the control unit being configured to perform the controls because of a specified or adjustable amount of hot beverage that is to be dispensed.

Description:

[0001] The present invention relates to a brewing device for preparing a hot beverage, in particular a coffee beverage, as well as a method for preparing a hot beverage, in particular a coffee beverage.

[0002] Brewing devices are known from the art, in particular for the automatic preparation of hot beverages such as coffee beverages, which have a brewing unit which can usually be automatically filled with the beverage base which is to be brewed, for example ground coffee powder. After the brewing unit of such a conventional brewing device has preferably been automatically filled with the ground coffee powder, then a stream of hot water, the so-called brewing water, is routed to the brewing unit in a subsequent step, so that the finished brewed, prepared hot beverage, for example the coffee beverage, emerges at an output end of the brewing unit. In an automatically operating brewing device which is, for example, part of a fully automatic coffee machine or the like, the hot beverage leaving the brewing unit is subsequently routed via piping systems such as flexible hoses to an outlet unit, which then dispenses the brewed hot beverage into a corresponding vessel such as a cup.

[0003] As far as the personal or culturally influenced preferences of a hot beverage brewed in this way, such as a coffee beverage, are concerned, the brewing methods sometimes differ considerably in terms of the amount of coffee powder used and also in terms of the portion size of a single hot beverage portion. For example, small so-called coffee products such as ristretto and espresso are known, in which a comparatively small portion of hot water per drink is passed through the brewing unit. On the other hand, it is also possible with conventional brewing devices to dispense a coffee product that represents a large portion of hot beverage compared to an ordinary espresso. Although the amount of ground coffee powder that can be routed into the brewing unit can be varied, it is limited by the available volume of the brewing unit.

[0004] With conventional brewing devices and conventional methods for preparing hot beverages, in particular coffee beverages, the problem therefore arises that when very large portions of hot beverages are obtained, then the quantity of ground material, for example coffee powder, which would be required for such a large portion exceeds the limited volume of the brewing unit. Although it is now possible to pass a larger amount of water through the brewing unit, the desired flavors and aromas have already been extracted early in the coffee brewing process when preparing such a sizable portion of coffee. By subsequently passing additional brewing water through the ground coffee, which has already been used up in terms of the desired coffee aroma, undesirable bitter substances are extracted from the ground coffee, which can easily spoil the taste of a sizable portion of coffee. Furthermore, the time required to prepare larger quantities of hot beverages increases i.e. compared to the preparation of a coffee product with a relatively small reference quantity, such as an espresso portion, and an undesirably long period of time elapses for the preparation of larger coffee portions.

[0005] The present invention was therefore based on the task of further developing a conventional brewing device described above for preparing a hot beverage and a corresponding method in such a way that a hot beverage of very good quality is dispensed even when large portions of hot beverage are drawn off and, at the same time, the time for drawing off i.e. preparing such a large portion of hot beverage, is thereby shortened.

[0006] According to the invention, this task is therefore solved in a brewing device in that the brewing device possesses, in addition to the brewing unit, at least one initial hot water source and at least one second hot water source and in that at least one brewing water supply device for supplying hot water from the at least one first hot water source to the brewing unit and at least one hot water mixing device for mixing hot water from the at least one second hot water source, located downstream of the brewing unit, as required are provided, the brewing device additionally being equipped with a control device for activating the at least one hot water mixing device, the control device being designed to execute the activation as a function of a predetermined or determinable quantity of hot beverage to be dispensed. With regard to the method for preparing a hot beverage, in particular a coffee beverage, in a brewing device, the problem is solved in accordance with the invention in that a quantity of hot beverage to be dispensed is initially determined and then a hot water portion is supplied from at least a first hot water source to a brewing unit of the brewing device. According to the invention, the method additionally provides that an admixture requirement of hot water is determined as a function of the determined amount, and that then, when an admixture requirement has been determined, the hot water is admixed from at least a second hot water source located downstream of the brewing unit, so that the hot beverage thereby obtained can be dispensed in a hot beverage dispensing pipe.

[0007] The advantages that can be achieved by the invention are obvious: for example, the fact that when there is a corresponding demand i.e. thereby, by adding hot water to the brewing product which is to be dispensed from the brewing unit when a large portion of hot beverage has been preselected, then it is ensured that only the optimum portion of brewing water in relation to the filling quantity of the brewing unit is passed through the brewing unit, so that only the desired flavors and aromas are discharged during the brewing process and, as far as physically possible, no undesirable bitter substances are dissolved when passing through the brewing unit. The addition of hot water to the brewing product to be dispensed from the brewing unit as required ensures that a sufficiently large portion is dispensed from the brewing device in accordance with the predetermined or definable quantity. At the same time, the fact that this hot water, which can be added as required, is thereby taken from a second hot water source which does not supply the brewing unit with brewing water, means that a shorter total brewing time or total preparation time for the hot beverage can be achieved when compared with conventional brewing devices and the conventional method, so that there is no need to wait, or only an

insignificantly longer wait, for the preparation of a large coffee product than for the preparation of a comparatively small coffee product according to the invention, such as an espresso in this case.

[0008] In one embodiment of the brewing device according to the invention, it is provided that the temperature of the added hot water from a minimum of at least one second hot water source is different from the temperature of the hot water supplied to the brewing unit, which is taken from the first hot water source. The temperature of the mixed product to be dispensed i.e. the finished hot beverage, can subsequently be adjusted and brought to an optimum value i.e. generally an optimum drinking temperature, by varying the temperature of the brewing water on the one hand and the water that can be added downstream of the brewing unit as required accordingly. It may be possible to influence the temperature of the brewing water, the temperature of the hot water to be added as required or both temperatures independently of each other, for example by controlling or regulating them. By selectively controlling the temperature of the water to be dispensed from the respective hot water sources, the temperature of the hot beverage which is to be dispensed can thereby be varied in a positive manner over a wide range without negatively affecting the taste of the coffee due to an unsuitable brewing water temperature.

[0009] In particular, it may be provided that the temperature of the added hot water from the at least one second hot water source is higher than the temperature of the hot water supplied to the brewing unit from the at least one first hot water source. While the brewing temperature i.e. the temperature of the brewing water from the at least one first hot water source, which is to be routed to the brewing unit, is usually in the range between 90 and 95°C, it can subsequently be achieved by adding hot water which is located above this range i.e. is higher than 90° and preferably more than 95°, that the coffee reaches an optimum drinking temperature, for example in the range between 80 and 85°C, when it is dispensed, without the coffee in the brewing unit being negatively influenced by a brewing water temperature which is too high and without bitter substances being dissolved out.

[0010] Furthermore, it may be provided that the brewing unit is equipped with a brewing unit dispensing pipe which opens into a hot beverage dispensing pipe via a mixing node. In this case, the second hot water source is connected to the mixing node via a hot water output pipe. Such a mixing node can be implemented relatively easily and thereby ensures sufficient mixing of the brewing product to be dispensed by the brewing unit and the hot water from the second hot water source, which may be added.

[0011] Here, it may be provided that the mixing node is arranged upstream of an outlet unit provided with at least one coffee beverage outlet. This has the advantage that sufficient and advantageously homogeneous mixing takes place in the hot beverage outlet pipe upstream of the

outlet unit, which is connected to the mixing node, so that the outlet unit can be relatively simple.

[0012] However, it is just as possible to arrange the mixing node within such an outlet unit in order to ensure additional mixing of the partial streams, for example by a corresponding design of the mixing node, which can thereby promote mixing and results in a finished hot beverage which is mixed as homogeneously as possible at the coffee beverage outlets of the outlet unit.

[0013] In order to enable particularly simple on-demand mixing of hot water from the at least one second hot water source located downstream of the brewing unit, it may be provided that the at least one hot water mixing device additionally has a controllable directional control valve. Due to the controllable design of such a directional control valve, it is possible to mix the hot water from the at least one second hot water source as required after the positive determination of a hot water mixing requirement by a simple signal, which is hereby emitted by the control device, to the controllable directional control valve.

[0014] Furthermore, it is provided that the brewing device I equipped with a valve block connected to the at least one second hot water source, wherein the valve block enables hot water from the second hot water source to be supplied to an additional outlet as required. A further outlet can preferably be a milk frothing nozzle. This therefore makes it possible, in addition to the on-demand admixing of hot water from the at least one second hot water source located downstream of the brewing unit into the hot beverage to be dispensed, to also operate a milk frothing nozzle with the hot water from the second hot water source, irrespective of whether an admixing requirement has actually been determined, which additionally reduces the design and construction effort and thereby also the cost of such a brewing device due to the intended dual use of the at least one second hot water source.

[0015] Alternatively or additionally, it may be provided that the brewing device further comprises a device for supplying a cleaning fluid to the hot beverage dispensing pipe as required. Such a cleaning fluid is in particular a water vapor generated with at least one of the hot water sources, preferably using at least one second hot water source. In particular, when using the at least one second hot water source in order to generate such a cleaning fluid, no amendment in the design of the temperature range of this second hot water source is required when the temperature of the hot water to be discharged from the second hot water source is generally higher. Such a cleaning fluid is subsequently dispensed into the hose system positioned between the brewing unit and the coffee outlet as required, for example after a portion of hot beverage has been prepared. It is of course also possible to execute such a rinsing or cleaning process with hot water first, in order to subsequently generate a steam jet by briefly increasing the temperature of the respective hot water source, preferably the second hot water source. This not only rinses and cleans the hose system between the brewing unit and the coffee outlet, which is usually provided as a hot beverage dispensing pipe, but also drains it as a result of the steam blast. Hygiene is then

improved in conjunction with the described cleaning of the coffee spout with a water-steam mixture.

[0016] In the following, an embodiment of the brewing device according to the invention is explained in more detail with reference to a drawing.

[0017] It shows:

Fig. 1 : a schematic view of the brewing device according to the invention in accordance with one embodiment of the invention.

[0018] Fig. 1 shows a schematic view of the brewing device 100 according to one embodiment of the invention. A liquid container 10, for example a water tank, is connected to an initial feed pump 31 via a liquid pipe 31a and, independently thereof, to a second feed pump 32 via a liquid pipe 32a. The first feed pump 31 creates part of a brewing water feed device and is connected to a hot water feed pipe 51a via a liquid pipe 31b and a first hot water source 41, in the embodiment example according to Fig. 1 designed as a continuous flow heater, which opens into a brewing unit feed pipe 51b. The brewing unit supply pipe 51b supplies a brewing unit 60 with hot water (brewing water) from the first hot water source 41. Here, a brewing chamber (not shown in Fig. 1) of the brewing unit 60 is preferably automatically refilled with ground coffee, in particular with ground coffee powder, for each brewing process i.e. for each portion of a hot beverage, for example as part of a fully automatic coffee machine. The brewing unit feed pipe 51b is thereby connected to the brewing chamber of the brewing unit 60, so that a portion of hot water (brewing water), which has been conveyed by means of the first feed pump 31 via the brewing unit feed pipe 51b to the brewing unit 60, can flow from the first hot water source 41 into the brewing chamber and the coffee powder in the brewing chamber can be brewed by means of this portion of hot water, whereby a brewed coffee beverage (hot beverage) is produced.

[0019] In order to enable automatic operation of the brewing unit 60 or brewing device 100, the brewing device is equipped with a control device 20, which can be designed as a microprocessor, for example. As in Fig. 1, in the present example, the brewing unit 60 is connected to the control device 20 via a (for example bidirectional) data pipe 60', via which the control device 20 can send suitable control signals to the brewing unit 60 and/or receive them from the brewing unit 60 in order to control the brewing unit 60, for example, to fill the brewing chamber of the brewing unit 60 with a predetermined amount of ground coffee powder (before the respective brewing process) and to remove the brewed coffee powder from the brewing chamber of the brewing unit 60 (after the preparation of the respective hot beverage by brewing the coffee powder in the brewing unit 60).

[0020] On the output side i.e. downstream, there is a brewing unit output pipe 51c located on the brewing unit 60, which opens into a mixing node 53. This brewing unit output pipe 51c is

connected to the brewing chamber of the brewing unit 60, so that the coffee beverage which is brewed in the brewing chamber can flow to the mixing node 53 via the brewing unit output pipe 51c. Hot water from the second hot water source 42, which is also designed as a continuous flow heater, is supplied to the mixing node 53 at an additional inlet via a hot water output pipe 52c.

[0021] In order to enable a demand-based supply of this hot water to be mixed from the second hot water source 42, the second feed pump 32 creates part of a hot water mixing device and supplies water from the liquid container 10 to the second hot water source 42 via a liquid pipe 32b, which leaves this second hot water source 42 on the output side via a hot water supply pipe 52a and is supplied to a directional control valve 55 via a directional control valve supply pipe 52b. This directional control valve 55 is designed to be controllable and thereby enables the hot water to be routed to the hot water dispensing pipe 52c by means of appropriate control by means of the control device 20 by means of demand-based control depending on a predetermined or determinable quantity of hot beverage to be dispensed. In order to enable this control of the directional control valve 55, the directional control valve 55 is connected to the control device 20 via a (for example bidirectional) data pipe 55', via which the control device 20 can send suitable control signals to the directional control valve 55 and/or receive them from the directional control valve 55 in order to control the directional control valve 55.

[0022] As Fig. 1 additionally indicates, in the present example a first flow meter 21 is installed on the liquid pipe 31a, which is designed to measure a flow rate of water i.e. the quantity of water which flows per unit of time through the liquid pipe 31a to the first feed pump 31 and is routed to the first hot water source 41 by means of the first feed pump 31 and to provide a measurement signal which corresponds to the measured flow rate. This measurement signal can be received by the control device 20 via a (for example bidirectional) data pipe 21', which connects the first flow meter 21 to the control device 20, so that the control device 20 is provided with information about the respective flow rate of water in the liquid pipe 31a measured by the flow meter 21. Furthermore, a second flow meter 22 is installed on the liquid pipe 32a, which is designed to measure a flow rate of water i.e. the quantity of water which flows per unit of time through the liquid pipe 32a to the second feed pump 32 and is routed to the second hot water source 42 by means of the first feed pump 32, and to provide a measurement signal which corresponds to the measured flow rate. This measurement signal can be received by control device 20 via a (for example bidirectional) data pipe 22', which connects the second flow meter 22 to the control device 20, so that information about the respective flow of water in the liquid pipe 32a measured by the flow meter 22 is available to the control device 20.

[0023] As Fig. 1 further indicates, in the present example, the first feed pump 31 is connected to the control device 20 via a (for example bidirectional) data pipe 31', via which the control device 20 can send suitable control signals to the first feed pump 31 and/or receive them from the first feed pump 31 in order to control the first feed pump 31. In this way, the control device 20 can

control the first feed pump 31 depending on measurement signals from the first flow meter 21, so that it is ensured that the control device 20 can precisely control a certain amount of water which is routed in a certain time interval by means of the first feed pump 31 via the liquid pipe 31b to the first hot water source 41 and from the first hot water source 41 via the hot water feed pipes 51a and 51b to the brewing unit 60 and further through the brewing unit 60 and the brewing unit output pipe 51c to the mixing node 53.

[0024] Accordingly, the second feed pump 32 is connected to the control device 20 via a (for example bidirectional) data pipe 32', via which the control device 20 can send suitable control signals to the second feed pump 32 and/or receive them from the second feed pump 32 to control the second feed pump 32. In this way, the control device 20 can control the second feed pump 32 in response to measurement signals from the second flow meter 22 so as to ensure that the control device 20 can precisely control a certain amount of water that is routed in a certain time interval by means of the second feed pump 32 via the liquid pipe 32b to the second hot water source 42 and from the second hot water source 42 via the hot water feed pipes 52a, 52b and the directional control valve 55 to the mixing node 53.

[0025] Thereby, if a mixing requirement has been determined, the control device 20 will send a corresponding control signal to the directional control valve 55 via the data pipe 55', so that a mixture of the brewing product dispensed into the brewing unit dispensing pipe and the hot water required to prepare the corresponding coffee portion size is present in the mixing node 53, which in the embodiment example according to Fig. 1 is arranged above an outlet unit 70 to be explained in more detail. In the mixing node 53 and possibly further downstream in the hot beverage dispensing pipe 54, the brewing product and the hot water added as required are subsequently mixed to form the finished hot beverage i.e. in particular the finished coffee beverage.

[0026] In the embodiment example shown in Fig. 1, the hot beverage dispensing pipe 54 opens into an outlet unit 70 and is dispensed through two coffee beverage outlets 71a, 71b into a vessel, e.g. a cup.

[0027] As Fig. 1 further indicates, in the present example the first hot water source 41 is connected to the control device 20 via a (for example bidirectional) data pipe 41', via which the control device 20 can send suitable control signals to the first hot water source 41 and/or receive them from the first hot water source 41 in order to control the first hot water source 41. The control device 20 is set up to control the hot water source 41 via the data pipe 41' in such a way that in each case a portion of water, which is delivered to the first hot water source 41 via the liquid pipe 31b by means of the first feed pump 31, is heated in the first hot water source 41 to a temperature predetermined by the control device 20. This predetermined temperature of the portion of hot water produced in the first hot water source 41 can be variable within a

predetermined range (as will be explained in more detail below).

[0028] Accordingly, the second hot water source 42 is connected to the control device 20 via a (for example bidirectional) data pipe 42', via which the control device 20 can send suitable control signals to the second hot water source 42 and/or receive them from the second hot water source 42 in order to control the second hot water source 42. The control device 20 is set up to control the second hot water source 42 via the data pipe 42' in such a way that in each case a portion of water, which is delivered to the second hot water source 42 via the liquid pipe 32b by means of the second feed pump 32, is heated in the second hot water source 42 to a temperature predetermined by the control device 20. This predetermined temperature of the portion of hot water produced in the second hot water source 42 may be variable within a predetermined range (as will be explained in more detail below).

[0029] For an optimal brewing result and thereby an optimal quality of the prepared hot beverage, the hot water produced by the first hot water source 41, which is routed to the brewing unit 60, has an optimal brewing temperature, for example in the range between 90 and 95°C. To ensure that a hot beverage is dispensed from the coffee beverage outlets 71a, 71b at an optimum drinking temperature, for example at a temperature of approximately 80 to 85°C, due to the heat losses in the hot beverage dispensing pipe 54 and in the outlet unit 70, the second hot water source 42 produces hot water to be added as required at a temperature which is higher than the optimum brewing temperature of the hot water from the first hot water source 41 and is, for example, above 90°C and preferably above 95°C. Furthermore, a valve block 50 is provided, which is also connected to the first hot water source 41 or the second hot water source 42 via hot water supply pipes 56a or 57a at its inlets. The valve block 50 can be controlled in such a way that, in a first valve block position (in the embodiment example according to Fig. 1, the valve position shown on the far left), hot water from the first hot water source 41 is routed to a hot water outlet provided separately on the outlet unit 70 via a flushing pipe 56b. For this purpose, the valve block 50 is connected to the control device 20 via a (for example bidirectional) data pipe 50', via which the control device 20 can send suitable control signals to the valve block 50 and/or receive them from the valve block 50 in order to control the valve block 50. In this way, hot water can be drawn off instead of coffee, for example to prepare tea.

[0030] In a second valve block position (in the illustrated embodiment example according to Fig. 1, the valve block position of the valve block 50 shown on the far right), hot water from the second hot water source 42 is additionally routed to a milk frothing nozzle 73 via a milk frothing nozzle feed pipe 57b. The milk frothing nozzle 73 further comprises a milk supply pipe 74, so that a hot beverage can be removed from the outlet unit 70 and milk froth can be removed from the milk frothing nozzle 73 simultaneously when the brewing device 100 or the directional control valve 55 and the valve block 50 are controlled accordingly.

[0031] Further details of the control device 20 and a method for preparing a hot beverage by means of the brewing device 100 are described below.

[0032] As Fig. 1 indicates, the control device 20 is connected via a data pipe 15' to an operating interface 15, which can be implemented conventionally, for example, as a keyboard, rotary knob, touch-sensitive screen or in another manner. The operating interface 15 enables a user of the brewing device 100 to be able to select a hot beverage from a plurality of hot beverages which the brewing device can prepare under the control of the control device 20 and - under the control of the control device 20 - to initiate the preparation of the hot beverage which has been selected by the user. When selecting the hot beverage, the user can use the user interface 15 not only to determine the type of hot beverage selected (e.g., espresso, ristretto, cappuccino, or the like), but also to determine other parameters, such as the amount (or volume) desired by the user and/or the temperature of a portion of the selected hot beverage to be prepared and dispensed by the brewing device 100.

[0033] After the user has selected the desired hot beverage by means of the user interface 15, the control device 20 possesses all the necessary information in order to initiate the preparation of the selected hot beverage (by controlling the brewing unit 60, the first delivery pump 31 and the first hot water source 41 and, if required, by controlling the second delivery pump 41, the second hot water source 42, the valve block 50 and/or the directional control valve 55).

[0034] As Fig. 1 indicates, the control device 20 comprises a data memory S, in which a series of parameters for controlling the preparation of the various hot beverages are stored. Among other things, a parameter is stored in data memory S for each of the hot beverages which can be prepared or selected, which parameter specifies the amount of coffee powder that is required to prepare the hot beverage and which is automatically filled into the brewing chamber of the brewing unit 60 for this purpose before the hot beverage is prepared.

[0035] Furthermore, one or more user-selectable values for a parameter Va are stored in the data memory S for each of the hot beverages that can be prepared or selected. The parameter Va specifies the volume of the portion of the selected hot beverage that the brewing device 100 is to prepare and dispense. In the present example according to Fig. 1, it is provided that the parameter Va can assume several different values, e.g. Va1, Va2 or Va3 (with $Va1 < Va2 < Va3$).

[0036] Furthermore, one or more user-selectable values for a parameter Ta can be stored in the data memory S for each of the hot beverages that can be prepared or selected. The parameter Ta specifies the temperature of the portion of the selected hot beverage which the brewing device 100 is to prepare and dispense. In the present example according to Fig. 1, it is provided that the parameter Ta can assume several different values, e.g. Ta1 or Ta2 (with $Ta1 < Ta2$).

[0037] Furthermore, a predetermined value for a parameter $V_{\max}$ is stored in the data memory S for each of the hot beverages that can be prepared or selected. The parameter indicates the maximum volume of a portion of hot water which may be used to brew the coffee powder filled into the brewing chamber when preparing the selected hot beverage and which is to be supplied to the brewing chamber of the brewing unit 60 from the first hot water source (41). In the present example according to Fig. 1, it is provided that the parameter $V_{\max}$ can assume a value which is designated V_0 in Fig. 1. V_0 may, for example, depend on the respective amount of coffee powder used to brew the selected hot beverage.

[0038] During operation of the brewing device 100, the control device - after a user has selected a hot beverage via the user interface 15 - initially controls the brewing unit 60 so that the amount of coffee powder intended for the preparation of the selected hot beverage is filled into the brewing chamber of the brewing unit 60. The control device 20 subsequently compares the value selected by the user for the parameter V_a with the predetermined value for $V_{\max}$ for the hot beverage selected by the user and determines - depending on the result of this comparison - whether hot water from the first hot water source 41 is to be supplied exclusively to the brewing unit 60 for preparing the selected hot beverage or whether hot water from the second hot water source 42 must also be added at the mixing node 53 (located downstream of the brewing unit 60).

[0039] Suppose, for example, that the value selected by the user for the parameter V_a is the value V_{a1} according to Fig. 1, where $V_{a1} \leq V_0$. In this case, there is no need to add hot water from the second hot water source 42 when preparing the hot beverage. In this case, the control device 20 controls the directional control valve 55 in such a way that a supply of hot water from the second hot water source 42 to the hot water dispensing pipe 52c is blocked by the directional control valve 55. Furthermore, the control device 20 controls the first feed pump 31 and the first hot water source 41 in such a way that a portion of hot water with the volume V_{a1} is routed from the first hot water source 41 to the brewing chamber of the brewing unit 60, a coffee beverage (hot beverage) with the volume V_{a1} is thereby brewed in the brewing unit 60 and this coffee beverage is finally dispensed via the mixing node 53 and the outlet unit 70.

[0040] Suppose, for example, that the value selected by the user for the parameter V_a is the value V_{a3} according to Fig. 1, where $V_{a3} > V_0$. In this case, there is a need to add hot water from the second hot water source 42 during the preparation of the hot beverage. In this case, the control device 20 controls the first feed pump 31 and the first hot water source 41 in such a way that a portion of hot water with the volume V_0 from the first hot water source 41 is routed to the brewing chamber of the brewing unit 60, a coffee beverage with the volume V_0 is brewed in the brewing unit 60 and this coffee beverage is finally dispensed via the mixing node 53 and the

outlet unit 70. In addition, the control device 20 controls the directional control valve 55 in such a way that a supply of hot water from the second hot water source 42 is possible through the directional control valve 55 via the hot water outlet pipe 52c to the mixing node 53. Furthermore, the control device 20 controls the second feed pump 32 and the second hot water source 42 in such a way that a portion of hot water with the volume $V_m = V_{a3} - V_0$ is routed from the second hot water source 42 to the mixing node 53 and discharged via the outlet unit 70.

[0041] The addition of the portion of hot water from the second hot water source 42 can take place in various ways. For example, the control device 20 can control the second feed pump 32 and the second hot water source 42 so that the portion of hot water from the second hot water source 42 is routed to the mixing node 53, while the portion of hot water with the volume V_0 from the first hot water source 41 is routed to the brewing chamber of the brewing unit 60. In this case, the addition of the portion of hot water from the second hot water source 42 ensures continuous dilution of the coffee beverage which is to be brewed in the brewing unit 60 (while this coffee beverage is dispensed via the mixing node 53 and the outlet unit 70). Alternatively, the control device 20 can control the second feed pump 32 and the second hot water source 42, for example, so that the portion of hot water from the second hot water source 42 or at least a portion of this portion of hot water is routed to the mixing node 53 after the portion of hot water with the volume V_0 from the first hot water source 41 has been routed to the brewing chamber of the brewing unit 60. In this case, the addition of the portion of hot water from the second hot water source 42 thereby provides a subsequent dilution of the coffee beverage to be brewed in the brewing unit 60 (after this coffee beverage has been dispensed via the mixing node 53 and the outlet unit 70).

[0042] The control unit 20 controls the temperature of the portion of hot water from the second hot water source 42 depending on the value selected by the user for the parameter T_a : For example, if the user has selected the value T_{a2} for the parameter T_a , then the portion of hot water from the second hot water source 42 is supplied to the mixing node 53 at a temperature which is higher than the temperature at which a corresponding portion of hot water from the second hot water source 42 is supplied to the mixing node 53, in the event that the user has selected the value T_{a1} ($<T_{a2}$) for the parameter T_a .

Patent Claims:

1. Brewing device (100) for preparing a hot beverage, in particular a coffee beverage, the brewing device (100) comprising
 - a brewing unit (60);
 - at least one first hot water source (41);
 - at least one second hot water source (42);
 - at least one brewing water supply device (31, 51a, 51b) for supplying hot water from the at least one first hot water source (41) to the brewing unit (60);
 - at least one hot water mixing device (32, 52c, 53) for admixing hot water from the at least one second hot water source (42) located downstream of the brewing unit (60) as required, which is characterized in that the brewing device (100) is additionally equipped with a control device (20) for activating the at least one hot water mixing device (32, 52c, 53), and wherein the control device (20) is designed to execute the activation as a function of a predetermined or determinable quantity (Va1, Va2, Va3) of the hot beverage to be dispensed.
2. Brewing device (100) according to Claim 1, wherein the control device (20) is designed to cause the admixing of a portion of hot water from the second hot water source (42) when the quantity of hot beverage (Va1, Va2, Va3) to be dispensed is greater than a predetermined value (Vo) for a maximum quantity (Vmax) of a portion of hot water to be supplied to the brewing unit (60) from the at least one hot water source (41).
3. Brewing device (100) according to Claim 1 or 2, wherein the temperature of the added hot water from the at least one second hot water source (42) is different from the temperature of the hot water supplied to the brewing unit (60) from the at least one hot water source (41).
4. Brewing device (100) according to one of the preceding claims, wherein the temperature of the added hot water from the at least one second hot water source (42) is deemed to be higher than the temperature of the hot water supplied to the brewing unit (60) from the at least one first hot water source and in particular is more than 90°C, preferably more than 95°C.
5. Brewing device (100) according to one of the preceding claims, wherein the brewing unit (60) comprises a brewing unit output pipe (51c) opening into a hot beverage output pipe (54) via a mixing node (53), and wherein the second hot water source (42) is connected to the mixing node (53) via a hot water output pipe (52c).
6. Brewing device (100) according to Claim 5, wherein the mixing node (53) is arranged upstream of an outlet unit (70) provided with at least one coffee beverage outlet (71a, 71b).
7. Brewing device (100) according to Claim 5, wherein the mixing node (53) is arranged inside an outlet unit (70) provided with at least one coffee beverage outlet (71a, 71b).

8. Brewing device (100) according to one of the preceding claims, wherein the at least one hot water mixing device (32, 52c, 53) thereby additionally comprises a controllable directional control valve (55) which is designed for admixing the hot water from the at least one second hot water source as required.

9. Brewing device (100) according to one of the preceding claims, wherein the brewing device (100) additionally comprises a valve block (50) which is connected to the at least one second hot water source (42) for supplying hot water from the second hot water source (42) to a further outlet, preferably to a milk foaming nozzle (73), as required.

10. Brewing device (100) according to one of the preceding claims, wherein the brewing device (100) additionally comprises a device for supplying a cleaning fluid to the hot beverage delivery pipe (54) as required, and wherein the cleaning fluid is in particular water vapor generated with at least one of the hot water sources (41, 42) and preferably water vapor generated with the at least one second hot water source (42).

11. Method for preparing a hot beverage, in particular a coffee beverage, in a brewing device (100), the method comprising the following method steps:

- determining a quantity of hot beverage which is to be dispensed (Va1, Va2, Va3);
- supplying a portion of hot water from at least a first hot water source (41) to a brewing unit;
- determining an admixture requirement of hot water as a function of the specified quantity (Va1, Va2, Va3);
- when a proportioning requirement has been determined: admixing hot water from at least one second hot water source (42) located downstream of the brewing unit (60);
- dispensing the hot beverage in a hot beverage dispensing pipe (54).

12. Method according to Claim 11, wherein

an admixture requirement exists when the amount of hot beverage (Va1, Va2, Va3) to be dispensed is greater than a predetermined value (Vo) for a maximum amount (Vmax) of a portion of hot water to be supplied to the brewing unit (60) from the at least one hot water source (41).

13. Method according to Claim 11 or 12, wherein the temperature of the added hot water from the at least one second hot water source (42) is different from the temperature of the hot water supplied to the brewing unit (60) from the at least one hot water source (41), in particular higher than the temperature of the hot water supplied to the brewing unit (60) from the at least one first hot water source (41), and is preferably more than 90°C, particularly preferably more than 95°C.

14. Method according to any one of Claims 11 to 13, wherein the following method step is additionally provided:

- supplying hot water from the second hot water source (42) to an additional outlet, preferably to a milk frothing nozzle (73).

15. Method according to one of Claims 11 to 14, wherein the following method step is additionally provided:

- supplying a cleaning fluid, in particular water vapor which has been generated with at least one of the hot water sources (41, 42) and preferably with the at least one second hot water source (42), into the hot beverage dispensing pipe (54).