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A BEVERAGE PREPARATION SYSTEM

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Field of the invention

The present invention concerns a beverage preparation system, particularly a system comprising a beverage preparation machine and a capsule containing a beverage preparation ingredient, said capsule being designed to be inserted into said machine for preparation of a beverage by mixing under pressure a fluid and said ingredient into the capsule.

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Background of the invention

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Beverage preparation machines are well known in the food science and consumer goods area. Such machines allow a consumer to prepare at home a given type of beverage, for instance a coffee-based beverage, e.g. an espresso or a brew-like coffee cup.

Today, most beverage preparation machines for in-home beverage preparation comprise a system made of a machine which can accommodate portioned ingredients for the preparation of the beverage. Such portions can be soft pods or pads, or sachets, but more and more systems use semi-rigid or rigid portions such as rigid pods or

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capsules. In the following, it will be considered that the beverage machine of the invention is a beverage preparation machine working a semi-rigid or rigid capsule.

The machine comprises a receptacle for accommodating said capsule and a fluid injection system for injecting a fluid, preferably water, under pressure into said capsule.

5 Water injected under pressure in the capsule, for the preparation of a coffee beverage according to the present invention, is preferably hot, that is to say at a temperature above 70°C. However, in some particular instances, it might also be at ambient temperature. The pressure inside the capsule chamber during extraction and/or dissolution of the capsule contents is typically about 1 to 6 bar for dissolution products, 2 to 12 bar for extraction of
10 roast and ground coffee. Such a preparation process differs a lot from the so-called “brewing” process of beverage preparation – particularly for tea and coffee, in that brewing involves a long time of infusion of the ingredient by a fluid (e.g. hot water), whereas the beverage preparation process allows a consumer to prepare a beverage, for instance coffee within a few seconds.

15 The principle of extracting, infusing, and/or dissolving the contents of a closed capsule under pressure is known and consists typically of confining the capsule in a receptacle of a machine, injecting a quantity of pressurized water into the capsule, generally after piercing a face of the capsule with a piercing injection element such as a fluid injection needle mounted on the machine, so as to create a pressurized environment inside the
20 capsule either to extract the substance or dissolve it, and then release the extracted substance or the dissolved substance through the capsule. Capsules allowing the application of this principle have already been described for example in applicant’s European patent n° **EP 1 472 156 B1**, and in **EP 1 784 344 B1**.

Machines allowing the application of this principle have already been
25 described for example in patents **CH 605 293** and **EP 242 556**. According to these documents, the machine comprises a receptacle for the capsule and a perforation and injection element made in the form of a hollow needle comprising in its distal region one or more liquid injection orifices. The needle has a dual function in that it opens the top portion of the capsule on the one hand, and that it forms the water inlet channel into the capsule on the
30 other hand. In many instances, the capsule is inserted into a capsule holder, which is preferably (but not necessarily) detachable from the machine. The capsule holder loaded with the capsule is then inserted into the machine. Using a capsule holder for loading the capsule into the machine is not mandatory though, as the capsule can also be loaded directly into an opening

35 The machine further comprises a fluid tank – in most cases this fluid is water – for storing the fluid that is used to dissolve and/or infuse and/or extract under pressure the ingredient(s) contained in the capsule. The machine comprises a heating element such as a

boiler or a heat exchanger, which is able to warm up the water used therein to working temperatures (classically temperatures up to 80-90°C). Finally, the machine comprises a pump element for circulating the water from the tank to the capsule, optionally though the heating element. The way the water circulates within the machine is selected via a selecting
5 valve means, such as for instance a peristaltic valve of the type described in applicant's European patent application **EP 2162653 A1**.

When the beverage to be prepared is coffee, one interesting way to prepare the said coffee is to provide the consumer with a capsule containing roast and ground coffee powder, which is to be extracted with hot water injected therein.

10 Capsules have been developed for such an application, which are described and claimed in applicant's European patent **EP 1 784 344 B1**, or in European patent application **EP 2 062 831**.

In short, such capsules comprise typically:

- a hollow body and an injection wall which is impermeable to liquids and to
15 air and which is attached to the body and adapted to be punctured by e.g. an injection needle of the machine,

- a chamber containing a bed of roast and ground coffee to be extracted,
- an aluminum membrane disposed at the bottom end of the capsule, closing the said capsule, for retaining the internal pressure in the chamber, the said
20 membrane being associated with piercing means for piercing dispensing holes in the said aluminum membrane when said internal pressure inside the chamber reaches a certain pre-determined value,

- optionally, means configured to break the jet of fluid so as to reduce the speed of the jet of fluid injected into the capsule and distribute the fluid across the bed of
25 substance at a reduced speed.

Beverage preparation machines and capsules as described above, for many of them, are designed to give the consumer the choice of preparing the beverage he likes amongst a whole range of beverage products.

30 For each beverage type, the dose of ingredients contained in a capsule are carefully dosed, to correspond to a volume to be dispensed in the cup. Such a volume is optimized to guarantee an optimal organoleptic profile, in terms of flavors, aromas, and texture.

Some machines are automatically set by recognition of the capsule type, so
35 that the machine adapts the volume of beverage that is dispensed in the cup, depending on the beverage that is prepared. Other machines can be programmed manually, so that the user can chose a small cup or a large cup dispensing, whatever the beverage type.

However, such machines have the disadvantage that they lack flexibility to give an easy access to the volume selection at each serve: automated machines do not give any possibility to the consumer to divert from the pre-programmed dispensing volume, and the programmable machines require to be re-programmed each time the user wants to adapt the cup size.

Summary of the invention

The drawbacks of known beverage preparation systems, as set out above, are solved by the presentation invention with a beverage preparation machine comprising :

- (i) a reservoir for a fluid,
- (ii) a brewing head adapted for receiving at least one ingredient capsule,
- (iii) a pump for pumping a predetermined volume of said fluid from said reservoir to said brewing head, such that said fluid can be injected into said capsule to mix with said ingredient under pressure and produce a predetermined volume of beverage,
- (iv) a heating element for optionally heating said fluid pumped from said reservoir before it enters the capsule,
- (v) an electronic control board able to receive commands from a control panel of the machine, and actuate operation of the pump, heating element, control panel, and/or brewing head,

characterized in that said control panel comprises in combination:

- a rotating wheel which is linked to the control board such that by rotating the wheel, a beverage preparation parameter is set in said control board, and
- illuminated means, at least a portion of which has the shape of a schematic cup, which is linked to said control board such that the state of said beverage preparation parameter within said control board is represented on said means.

The schematic cup can have any shape as long as it represents schematically a volume to be dispensed in an empty container. The shape can be a rectangle made of superimposed bars, or a series of dots (in line, arc, circle or other shape). The shape can be vertical, horizontal, or placed in any other direction.

In a preferred embodiment of the invention, the beverage preparation parameter comprises a volume V to be pumped from the reservoir, to be represented on the illuminated means as a fraction of said schematic cup total volume. This volume V corresponds to the volume of the beverage that will eventually be dispensed into the cup, with the difference of a small volume of beverage which may stay in the ingredient capsule and also in part of the machine pipes, e.g. between 1 and 10 cl, preferably between 1 and 5

cl (the final in-cup volume is slightly less than the initial volume of water pumped from the reservoir).

More particularly, the volume V preferably corresponds to a volume of prepared beverage, which is comprised between 10 and 400 ml, preferably between 30 and 300 ml, more preferably between 50 and 250 ml.

Advantageously, said wheel can comprise a press-button degree of liberty, so that a consumer can press it as a push button.

More preferably in this case, said wheel is the only command button for the machine, serving as:

(i) a rotating selector, for selecting at least one beverage preparation parameter, and

(ii) a press-button selector, for validating or cancelling each of said beverage preparation parameter, and to start a brewing cycle.

For instance a user can set a beverage preparation parameter by rotating the wheel, and validate the setting by short pressure onto the wheel. If the setting suits the user needs, a brewing cycle can be started by an additional short pressure onto the wheel. In case the setting does not fit the user needs, it can be cancelled by a long pressure onto the wheel. The same setting process can be used for several preparation parameters, each being set by wheel rotation then validated by wheel push, so that once a parameter is set and validated, the wheel is used similarly for setting and validating another parameter, until all parameters are set and validated, so that an additional pressure on the wheel starts a beverage preparation (i.e. brewing) cycle. Preferably in this case, the number of various parameters is quite limited to shorten and simplify the machine usage. Highly preferably, not more than two parameters are to be set.

Such a control panel configuration comprising one single command switch (i.e. the wheel) is particularly simple, intuitive, and easy to use, compared to beverage preparation machines having a control panel with more than one single command switch; it solves the disadvantages of fully automated or manual machines of the art.

Alternatively, the control panel of the machine can comprise, in addition to the selector wheel, at least one other selector for pumping fluid from the reservoir either: directly into the capsule, or via said heating element such that said fluid entering said capsule is hot.

More preferably, said selector comprises one push-button for pumping water at room temperature, and another push-button for pumping water to be heated.

In one first alternative embodiment of the present invention, said illuminated means comprises a plurality of superimposed retro-illuminated LED (Light Emitting Diodes) lamps having the shape of: bars, dots, and/or being frustoconical, said LED lamps being disposed such as to represent a cup shape.

5 In a second alternative embodiment of the present invention, said illuminated means comprises a black and white or colour LCD (Liquid Crystal Display), OLED (Organic Light-Emitting Diode), or AMOLED (Active-Matrix Organic Light-Emitting Diode) screen.

10 Advantageously, the rotating wheel can comprise rotation blocking means to prevent said wheel to rotate more than half a rotation, preferably more than a quarter of a rotation.

15 Further, said wheel preferably comprises clicking means to produce audible and/or touch sensitive feedback during rotation, so as to give sensitive feedback to the user during setting of the machine parameter(s). Preferably, each audible click produced by the rotating wheel during rotation, corresponds to one increment in the parameter that is set by the rotation.

Advantageously, the wheel can be illuminated. In this case, it is made from a translucent material, and comprises at least one LED disposed therein, or similar source of light.

20 In a highly preferred embodiment of the present invention, said wheel protrudes from the surface of the machine, so as to be easy to sense and manipulate by the user finger.

Brief description of the drawings

25 Additional features and advantages of the present invention are described in, and will be apparent from, the description of the presently preferred embodiments which are set out below with reference to the drawings in which:

Figure 1 is a perspective view of a machine comprising a control panel according to a first possible embodiment of the invention ;

Figure 2 is an enlarged partial perspective view of the extraction head of a beverage preparation machine with a control panel according to the a second embodiment.

Detailed description of the invention

35 The present invention concerns a beverage preparation machine 1, as illustrated in **figure 1**, which comprises :

(i) a reservoir 2 for a fluid,
(ii) a brewing head 3 adapted for receiving at least one ingredient capsule (not illustrated in the drawing),
(iii) a pressure pump for pumping a predetermined volume of said fluid
5 from said reservoir 2 to said brewing head 3, such that said fluid can be injected into said capsule to mix with said ingredient under pressure, and thereby produce a predetermined volume of beverage which is dispensed in a cup (not shown in the drawing) placed onto the cup tray 4.

The machine further comprises a heating element for optionally heating said
10 fluid pumped from said reservoir before it enters the capsule, and an electronic control board able to receive commands from a control panel 5 of the machine, and actuate operation of the pump, heating element, control panel, and/or brewing head,

According to the invention, the control panel 5 comprises in combination:

15 - a rotating wheel 6 which is linked to the control board such that by rotating said wheel, a beverage preparation parameter is set in said control board, and
- illuminated (or coloured, or tactile) means 7, at least a portion of which has the shape of a schematic cup, which is linked to said control board such that the state of said beverage preparation parameter is represented on said means.

20 As shown in **figure 1**, the machine can comprise a removable capsule holder 8, which is used to load a capsule there into, and place the loaded capsule holder into the brewing head for operation of the machine.

As illustrated in **figure 1**, the beverage preparation parameter comprises a
25 volume V to be pumped from the reservoir, which is represented on the illuminated means 7 as a fraction of said schematic cup total volume. More precisely, the volume V is represented schematically as a volume of product in a schematic representation of a cup 9.

The volume V corresponds to a volume of water that is pumped from the reservoir, which is comprised between 50 and 250 ml. This volume almost corresponds to
30 the final volume of final beverage that will be delivered in the cup. In some instances however, the in-cup volume can be a few cl less than the pumped volume of water, due to some liquid staying within the capsule and/or machine fluid pipes, not being dispensed. In the following description of specific embodiments of the invention, for simplification purposes, it will be taken for granted that the pumped volume V as set by the user on the machine
35 control panel and the beverage volume eventually dispensed in the cup, are the same. Such a volume range covers from ristretto coffees, to large size beverages, such as long tea cups, or brew-like coffee cups or Americano coffee cups.

In a first alternative embodiment of the present invention illustrated in **figure 1**, the beverage preparation machine comprises an LCD – Liquid Crystal Display – screen which is designed to display at least one beverage preparation parameter such as volume to be dispensed as shown in the drawing. More preferably, the LCD screen is able to display several menus which can be displayed alternately or simultaneously. The user switches from and menu displayed to another one by using the scroll wheel, validating his choice by using one push button located onto the control panel of the machine, or by directly pressing onto the scroll wheel to validate.

Such different menus may include information regarding the beverage preparation parameters like recipes, or parameters for the preparation of a beverage such as volume or temperature of the dispensed beverage, or settings of the machine (standby mode activation for instance).

In a second alternative embodiment of the present invention illustrated in **figure 2**, the illuminated means 7 of the beverage preparation machine comprises a series of superimposed retro-illuminated LED bars 10, each LED bar having a shape such that the group of LED bars represents a cup 9.

In this embodiment, in addition to the illuminated means 7, the control panel 5 of the beverage preparation machine 1 comprises a set of two buttons 11 to select the temperature of the fluid that will be injected into the capsule for mixing with the capsule contents and preparing a beverage. Typically, one button selects for ambient temperature (i.e. “cold”), while the other button selects for hot fluid to prepare a hot beverage.

Said rotating wheel can however additionally comprise a press-button degree of liberty, so that a consumer can press it as a push button.

In a third embodiment of the invention, the control panel 5 of the machine comprises the illuminated means 7 similarly to that described in relation to the second embodiment described above, as well as a wheel 6 which can rotate but also be used as a push button. In this case, said wheel 6 is the only command button for the machine, serving as:

- (i) a rotating selector, for selecting at least one beverage preparation parameter, and
- (ii) a press-button selector, for validating or cancelling each of said beverage preparation parameter, and to start a brewing cycle.

For instance a user can set a beverage preparation parameter by rotating the wheel, and validate the setting by short pressure onto the wheel. If the setting suits the

user needs, a brewing cycle can be started by an additional short pressure onto the wheel. In case the setting does not fit the user needs, it can be cancelled by a long pressure onto the wheel. The same setting process can be used for several preparation parameters, each being set by wheel rotation then validated by wheel push, so that once a parameter is set and validated, the wheel is used similarly for setting and validating another parameter, until all parameters are set and validated, so that an additional pressure on the wheel starts a beverage preparation (i.e. brewing) cycle. Preferably in this case, the number of various parameters is quite limited to shorten and simplify the machine usage. Highly preferably, not more than two parameters are to be set.

Such a control panel configuration comprising one single command switch (i.e. the wheel) is particularly simple, intuitive, and easy to use, compared to beverage preparation machines having a control panel with more than one single command switch.

In a fourth embodiment, the illuminated means comprises a mechanical level indication that replaces the LDC screen or the LED bars. For instance, said mechanical level indication can be a coloured (e.g. green) element that is movable up/down behind openings cut through the surface of the control panel. The movement of the coloured element is linked mechanically to the rotation of the selector wheel. The mechanical element is retro-illuminated such that it is visible through the openings of the control panel. This is a cheaper solution to that involving LED bars or a LCD screen, while providing similar advantages to the consumer.

In any of the preceding embodiments described, the rotating wheel can comprise rotation blocking means to prevent said wheel to rotate more than a quarter of a rotation.

Furthermore, said wheel then comprises clicking means to produce audible and touch sensitive feedback during rotation, so as to give sensitive feedback to the user fingers during setting of the machine parameter(s). Each audible and sensitive click produced by the rotating wheel during rotation, corresponds to one increment in the parameter that is set by the rotation, which is represented on the illuminated means by one more or one less LED bar which is illuminated so as to represent more or less volume to be dispensed in the cup.

With such a wheel, it is possible to set the machine before starting a beverage preparation cycle, without even looking at the illuminated means. In that case, setting a volume to be dispensed is easy: the user first rotates the wheel in an extreme direction until the rotation is blocked. For instance, by rotating the wheel downwardly, the volume is set to the lowest in-cup volume possible (no bars are illuminated on the LED bar

screen). Then the user increments a higher volume by rotating the wheel upwards, one click at a time, until a desired volume is reached. While rotating the wheel, feedback is given to the user by audible (i.e. click) and sensitive means (i.e. sensitive feedback that each incremental rotation requires a small effort to reach the next incremental position of the wheel). When the user has set the desired volume to dispense, for instance five increments out of seven (seven representing the maximum volume that can be dispensed, which is represented on the LED bar screen by all seven LED bars illuminated), then five LED bars are illuminated as illustrated in figure 2, and the user can start a beverage preparation cycle by either pressing one of the buttons "hot" or "cold", or alternatively press onto the wheel to save the volume parameter that has just been set, and then either:

- start a beverage brewing cycle by pressing onto the wheel a second time, or

- use the wheel to start a second parameter, for instance the temperature if no specific temperature buttons are present on the control panel 5.

In that second case, the user rotates the wheel up or down to select "hot" or "cold" and then presses again onto the wheel to validate her/his choice. A beverage preparation cycle then starts automatically, and the machine stops automatically when the selected volume has been dispensed in the cup.

Although one main problem underlying the present invention is to provide the user with a user-friendly control panel for easily, conveniently and intuitively setting and using the beverage preparation machine, another problem underlying the invention is also to provide the user with a control panel that provides a maximum of flexibility in setting the desired preparation parameters, while requiring a minimum of buttons, levers or switches to be actuated.

This problem is met with a display that graphically represents the cup to be filled, and that is linked to a very user-friendly actuator in the form a wheel which rotates such that less than two, preferably less than one, more preferably less than half a full rotation (i.e. 360°) of the wheel is necessary to set a volume V of water to be pumped from the reservoir (i.e. which corresponds almost to the final volume of dispensed beverage in cup) which is comprised between 0% and 100% of the maximum volume of water that can be pumped for preparation of one serving. Preferably, the maximum volume that can be pumped by the machine to prepare one beverage serve is 400 ml.

In a more preferred embodiment, a rotation of between 15° and 180° is necessary to set a volume V to be pumped that is comprised between 0 and 400 ml, preferably between 30 and 300 ml, more preferably between 50 and 250ml. In that last instance, the minimum volume V that can be selected for preparing a beverage corresponds

to a pumped volume of water from the reservoir which is 50ml, and also corresponds to an in-cup serving size of between 45 and 50ml, depending on the volume of small beverage drops remaining within the machine and capsule, that are not dispensed in the cup.

In order to allow a very fine tuning / setting by the user, of the fluid volume V to be pumped from the reservoir (which almost corresponds to the in-cup delivery volume of the prepared beverage), the rotation of the wheel along the angle that covers the full range of volumes that can be set (0% to 100%) is preferably divided into rotation angle segments. Each segment corresponds to one fraction of the total volume V that can be set by the user, and is to be displayed as such on the illuminated means.

In the case of the second and third embodiments described above with reference to Figure 2, the machine can be designed for instance such that the full range of volumes that can be set (i.e. between 0% and 100% of the maximum volume that can be pumped for one serve) is covered by a circular wheel rotation amplitude of 0° to 120°.

In a preferred embodiment of the invention, each fraction of the volume range that can be selected manually with the wheel, is displayed on the illuminated means as a corresponding illuminated fraction of the cup representation. For instance, if the rotating wheel is set such that the full range of selectable volumes is divided into seven fractions, the cup representation in the illuminated means of the machine is also divided into seven corresponding fractions. For each additional volume fraction that is selected by rotating the wheel, one corresponding additional fraction of the cup is illuminated on the illuminated means. The number of fractions for a full volume range is at least 3, preferably at least 4, more preferably at least 5, and most preferably at least 7, but not higher than 30. Each fraction of the cup representation on the illuminated means can be for instance a bar that belongs to a series of superimposed retro-illuminated LED bars 10 as described above in reference to figure 2, each LED bar having a shape such that the group of LED bars represents a cup 9.

Importantly, it is to be noted that all fractions of volume as selected with the wheel and as displayed in the illuminated means, do not necessarily correspond to pumped volumes which are equivalent for all selected fractions. For instance, the first fraction in the selectable volume range can correspond to 60 ml of liquid to be pumped from the reservoir, the second fraction which can be then selected will correspond to an additional 30 ml, whereas the third fraction that will be selected if the user keeps rotating the wheel will correspond to an additional 50 ml, etc., until the user reaches the maximum volume that can be pumped from the reservoir by rotating the wheel for a selection of the last fraction in the selectable volume range.

In one further embodiment of the invention, the first fraction of the selectable volume range can be preselected automatically in the beverage machine program, such that

at machine start, the first fraction is already preselected and represented on the illuminated means as one fraction of the cup representation. For larger volumes, the user then rotates the wheel for selecting additional volume fractions.

It will be appreciated that the various possibilities and embodiments described above can be combined, in order to achieve the most convenient control panel. Typically, a control panel using LED bar illuminated means, a rotating wheel for selection of volume, and two buttons for "hot" or "cold" selection, is preferred.

However, a similar version without the temperature selectors, that are replaced by a selection and validation by rotating/pressing the wheel as described above is also certainly very advantageous, and particularly, brings the advantage that users with limited or no eyesight can rapidly learn and use such a machine.

In all embodiments described above, the wheel protrudes from the surface of the machine, so as to be easy to sense and manipulate by the user finger.

Last but not least concerning the wheel selector, in one possible embodiment of the invention, the wheel is not a complete circle (360°), but only a "rocker" switch, for instance shaped as a half moon. This kind of rocker lever can be used when there is no room for a full wheel in the control panel of the machine, for example if the beverage preparation machine is particularly small in size. In such a case, by holding the rocker lever in one of the end positions, the settings and LED bars levels move up/down, incrementally corresponding to each of the impulses given by the user using the rocker-like wheel.

The fluid reservoir can be integrated into the machine casing, or it can be remote from the machine. In the latter case, the reservoir can be for instance a water bottle. In that case, the machine comprises a tubing connected in a fluid manner to the fluid pump, said tubing being adapted to be plunged into the remote reservoir (e.g. water bottle).

The rotating wheel described above can also be virtual and take the form of a sensitive track-pad, onto which the user slides a finger, like for a physical rotating wheel.

It should be understood that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications can be made without departing from the spirit and scope of the present invention and without diminishing its attendant advantages. It is therefore intended that such changes and modifications be covered by the appended claims.

Claims

1. A beverage preparation machine (1) comprising :

- (i) a reservoir (2) for a fluid,
- (ii) a brewing head (3) adapted for receiving at least one ingredient capsule,
- (iii) a pump for pumping a predetermined volume of said fluid from said reservoir to said brewing head, such that said fluid can be injected into said capsule to mix with said ingredient under pressure and produce a predetermined volume of beverage,
- (iv) a heating element for optionally heating said fluid pumped from said reservoir before it enters the capsule,
- (v) an electronic control board able to receive commands from a control panel (5) of the machine, and actuate operation of the pump, heating element, control panel, and/or brewing head,

said control panel (5) comprising in combination:

- a rotating wheel (6) which is linked to the control board such that by rotating and/or pressing the wheel, a beverage preparation parameter is set in said control board, and
- illuminated means (7), at least a portion of which has the shape of a schematic cup (9), which is linked to said control board such that the state of said beverage preparation parameter within said control board is represented on said means (7) **characterized in that** said beverage preparation parameter comprises a volume **V** to be pumped from the reservoir, to be represented on the illuminated means as a fraction of said schematic cup total volume.

2. A beverage preparation machine according to claim 1, wherein each fraction of the volume range that can be selected manually with the wheel, is displayed on the illuminated means as a corresponding illuminated fraction of the cup representation, such that for each additional volume fraction that is selected by rotating the wheel, one corresponding additional fraction of the cup is illuminated on the illuminated means.

3. A beverage preparation machine according to claim 2, wherein the number of fractions for a full selectable volume range is at least 3, preferably

at least 4, more preferably at least 5, and most preferably at least 7 but not higher than 30.

5 **4.** A beverage preparation machine according to any of the preceding claims, wherein said volume **V** corresponds to a volume of prepared beverage, which is comprised between 10 and 400 ml, preferably between 30 and 300 ml.

10 **5.** A beverage preparation machine according to any of the preceding claims, wherein said wheel comprises a press-button degree of liberty, so that a consumer can press it as a push button.

6. A beverage preparation machine according to claim 5, wherein said wheel is the only command button for the machine, serving as:

- 15 (i) a rotating selector, for selecting at least one beverage preparation parameter, and
- (ii) a press-button selector, for validating or cancelling each of said beverage preparation parameter, and to start a brewing cycle.

20 **7.** A beverage preparation machine according to any of the preceding claims, wherein said panel further comprises at least one selector for pumping fluid from the reservoir either: directly into the capsule, or via said heating element such that said fluid entering said capsule is hot.

25 **8.** A beverage preparation machine according to claim 7, wherein said selector comprises one push-button for pumping water at room temperature, and another push-button for pumping water to be heated.

30 **9.** A beverage preparation machine according to any of the preceding claims, wherein said illuminated means comprises a plurality of superimposed retro-illuminated LED lamps having the shape of: bars, dots, and/or being frustoconical, said LED lamps being disposed such as to represent a cup shape.

35 **10.** A beverage preparation machine according to any of the preceding claims 1 to 7, wherein said illuminated means comprises a black and white or colour LCD, OLED, or AMOLED screen.

11. A beverage preparation machine according to any of the preceding claims, wherein said rotating wheel comprises rotation blocking means to prevent said wheel to rotate more than half a rotation, preferably more than a quarter of a rotation.

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12. A beverage preparation machine according to any of the preceding claims, wherein said wheel is illuminated.

13. A beverage preparation machine according to any of the preceding claims, wherein said wheel protrudes from the surface of the machine.

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