mechanism are particularly reliable. Furthermore, cleaning takes place twice at every cycle of use of the machine since the latter is opened twice, for introducing a capsule and removing it.

It is to be noted that the ingredient capsule 54 contains food ingredients or substances that are used by addition of a liquid, e.g. water, for preparing a beverage or, to a larger extent, liquid comestibles.

Such ingredients may be coffee, e.g. roasted and grounded coffee.

Other ingredients include, in a non limitative way, tea (leaf tea, herbal tea or fruit tea), soluble tea or soluble coffee, a mixture of ground coffee and soluble coffee, cocoa, or a cocoa or chocolate-based or supplemented product including coffee, a soup, or foods such as in the form of infusions, for example.

It is to be noted that any ingredient capsule may be used and for instance open capsules such as filter pods or the like.

As a variant, it is possible to design an injection member having more than one needle element which may be connected by a means of a duct or the like.

The pattern and design of these needle elements may vary in order to meet different requirements regarding the injection conditions of the beverages to be prepared. In particular, the injection conditions may vary especially with regard to the dissolution and/or extraction of the substances provided within the ingredient capsules 54.

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~~fall within the scope of the appended claims.

Claims

1. A beverage preparation system (1) for preparing a beverage by injection of a liquid into an ingredient capsule, the beverage system comprising an ingredient capsule (54) and a beverage preparation machine (2; 200) having:

- an injection unit (73; 204)with at least one inner through channel (75; 210) for injecting a liquid into the ingredient capsule;

- operating means for causing the machine to prepare a beverage, characterized in that the machine further comprises a cleaning device (90; 220) for automatically cleaning said at least one inner through channel, said cleaning device being actuated by said operating means~~.~~;

- said cleaning device (90; 220) has an elongated cleaning member (102; 232) actuation of said cleaning device causing said elongated cleaning member to slide within the at least one inner through channel.

~~**2.** The beverage system according to claim 1, characterized in that the cleaning device (90; 220) has an elongated cleaning member (102; 232) actuation of said cleaning device causing said elongated cleaning member to slide within the at least one inner through channel.~~

~~3.~~2. The beverage system according to claim ~~2~~1, characterized in that the elongated cleaning member (102; 232) is able to automatically occupy two positions, a first active position in which said elongated cleaning member extends within the at least one inner through channel (75; 210) through to the free emerging end thereof, and a second rest position in which said elongated cleaning member is at least partly withdrawn from said at least one inner through channel.

~~4.~~3. The beverage system according to claim 2~~ or 3~~, characterized in that the at least one inner through channel (210) comprises at least two channel portions, a first channel portion (210a) including the free emerging end (210d) of said at least one inner through channel and having a first inner diameter (d1), and at least one upstream channel portion (210b, 210c) disposed upstream said first channel portion and having an enlarged second inner diameter (d2, d3).

~~5.~~4. The beverage system according to claims ~~3~~ 2 and ~~4~~3, characterized in that the elongated cleaning member (232) has a free extremity (232a) which, in the second rest position, is located in the at least one upstream channel portion.

~~6.~~5. The beverage system according to claims ~~4~~ 3 or ~~5~~4, characterized in that the elongated cleaning member (232) has an outside diameter which substantially fits the first inner diameter of the first channel portion (210a) while enabling sliding of said elongated cleaning member thereinto.

~~7.~~6. The beverage system according to any of claims 1 to ~~6~~5, characterized in that said operating means comprise actuation means for actuating the machine from a first open position in which said machine is open for enabling introduction of the ingredient capsule thereinto to a second closed position in which said machine is closed and the ingredient capsule is inside said machine for liquid injection, and vice versa, said cleaning device being actuated by said actuation means.

~~8.~~7. The beverage system according to claims ~~2~~ 1 and ~~7~~6, characterized in that the elongated cleaning member (232) and the injection unit (204) are movable relative to one another when the machine is actuated from the first open position to the second position and vice versa.

~~9.~~8. The beverage system according to claims ~~3~~ 2 and ~~8~~7, characterized in that the cleaning device (220) has a support member (226) to which the elongated cleaning member (232) is connected, said support member being movable relative to the injection unit (204) over a reduced path so that the elongated cleaning member is only withdrawn in part from said at least one inner through channel (210) in its second position.

~~10.~~9. The beverage system according to claim ~~9~~8, characterized in that the support member (226) has two opposed ends, one end (226a) being connected to the elongated cleaning member and the other opposed end (226b) being linked with guiding means (236) which are connected to the machine, said other opposed end being slidably guided over said reduced path when the machine is actuated from the first open position, to the second closed position, and vice versa.

~~11.~~10. The beverage system according to anyone of claims 1 to ~~10~~9, characterized in that the machine (2) has:

- a liquid source (10),
- a pump (20) for pumping said liquid from said liquid source towards the injection unit (73),

- activating means for causing said liquid to be pumped from said source towards said injection unit, said cleaning device (90) being actuated by said activating means.

~~12.~~11. The beverage system according to claims ~~3~~ 2 and ~~11~~10, characterized in that the elongated cleaning member (102) is able to automatically occupy said two positions depending on the injection or not of liquid into the at least one inner through channel, said elongated cleaning member being in said first active position in the absence of liquid injection thereinto, said elongated cleaning member being in said second active position due to the pressure of liquid injected into the at least one inner through channel.

~~13.~~12. The beverage system according to claim ~~12~~11, characterized in that the cleaning device (90) includes active means (106) for exerting upon the elongated cleaning member a first predetermined force (F1) so as to urge said elongated cleaning member to be inserted into the at least one inner through channel with a view to occupying the first active position, said elongated cleaning member (102) being able to be pushed backwards under the action of the pressure of the liquid to be injected into the at least one inner through channel and which counteracts the first predetermined force so that the elongated cleaning member is at least partly withdrawn from said at least one inner through channel.

~~14.~~13. The beverage system according to any preceding claim, characterized in that the beverage preparation machine (2) includes a capsule-holder (58) for holding the ingredient capsule.

~~15.~~14. A beverage system according to claim 1, wherein said cleaning device for cleaning said channel (75; 210) in which a liquid temporarily flows including :

- a support member (100; 226);

- an elongated cleaning member (102; 232) connected to the support member and that is suitable for being inserted into the channel for cleaning thereof;

- said support member and elongated cleaning member being movable in a forward direction under the action of a predetermined force so as to be urged to occupy a first active position in which said elongated cleaning member extends within the channel (75; 210) through to the free emerging end thereof, said support member and elongated cleaning member being movable in a backward direction under the action of an opposed predetermined force so as to be urged to occupy a second rest position in which said elongated cleaning member is at least partly withdrawn from said channel.

~~**16.** Method for preparing a beverage with a beverage preparation machine (2; 200) by injection of a liquid into an ingredient capsule, said machine comprising~~

an injection unit (73; 204) with at least one inner through channel (75; 210) for injecting a liquid into the ingredient capsule, the method including the steps of:

- providing an ingredient capsule (54);

- operating the machine for causing said machine to prepare a beverage, characterized in that said method further comprises the step of cleaning the at least one inner through channel, said cleaning step being automatically initiated when the operating step for operating the machine is performed.

17. The method according to claim 16, characterized in that said operating step for operating the machine includes an actuating step for actuating the machine from a first open position in which said machine is open for enabling introduction of the ingredient capsule thereinto to a second closed position in which said machine is closed and the ingredient capsule is inside said machine for liquid injection, and vice versa.

18. The method according to claim 16 or 17, characterized in that the machine comprising a liquid source (10) and a pump (20), the method further includes a step of injecting liquid into the ingredient capsule through said at least one inner through channel, said automatically cleaning step being performed before and/or during and/or after the injection of liquid.