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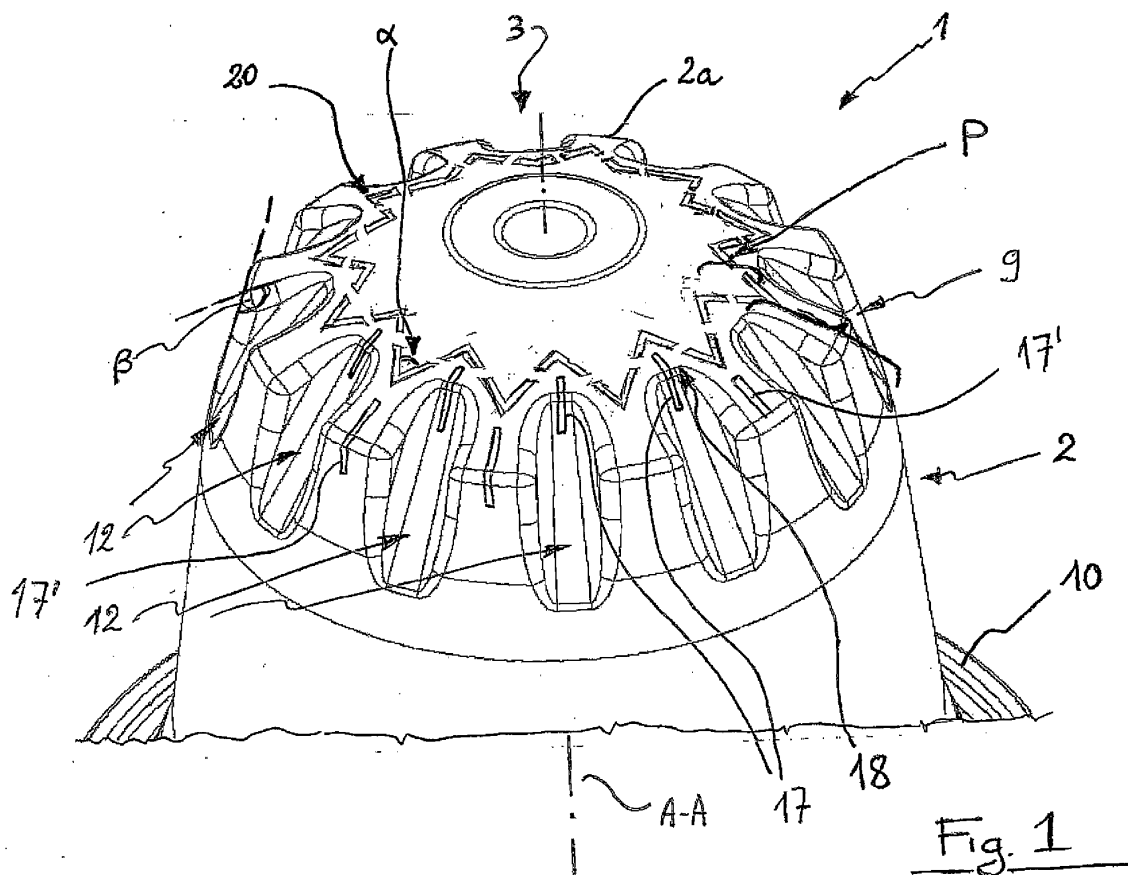
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(54) **Beverage capsule and system with improved wall**

(57) A capsule for the preparation of a beverage has a lateral wall, a water inlet wall and an outlet wall, the inlet wall comprises at least one piercing area where there is provided a plurality of lines having reduced thick-

ness that form a pattern including a plurality of angles, wherein the pattern is a broken line alternating lines having reduced thickness with areas where the thickness is greater than in the said lines.



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Description

[0001] The present invention relates to a capsule for preparing a coffee or similar beverage on-demand, having an improved wall. Namely, the invention relates to a capsule for brewing a beverage from a metered amount of one or more products contained inside the capsule by a diluent or preparation liquid injected into the capsule to extract the product contained therein. The invention also relates to a system and an apparatus for beverage preparation comprising a capsule according to the invention and a brewing device (beverage preparation device) for injecting the preparation or brewing liquid into the capsule.

Background of the invention

[0002] Beverage capsules comprising a hollow container portion that houses a predetermined amount of at least one extractable or reconstitutable product, generally ground coffee, but also other foodstuffs such as tea, herbal remedies, instant i.e. powdered drinks and liquid concentrates, are known in the art. The capsules also comprise a portion that interacts with a beverage preparation device to prepare the required beverage.

[0003] The typical brewing device comprises water heating means, an enclosing member, or receptacle, intended to cooperate with the capsule to define a preparation chamber and a pump or similar means so that the preparation or brewing liquid, usually but not exclusively hot water under pressure, can be supplied to the capsule for the extraction or reconstitution of the beverage from the dose of product contained therein.

[0004] In a known beverage preparation process, a capsule is fed into the receptacle of the brewing device and is fed with the preparation or brewing liquid, such as hot water.

[0005] The injected hot water passes through the capsule dissolving the soluble solids contained in the foodstuff or solubilising the powder contained in the capsule or otherwise diluting the liquid concentrate contained therein. In other words the injection of the brewing liquid inside the capsule allows for the constitution of the beverage from the ingredient enclosed therein. The beverage then exits the capsule to reach a beverage collector or an outlet spout and thence a cup or a container.

[0006] In the following description reference will be made to coffee preparation with hot water, nevertheless, this disclosure is exemplary and the scope of the present invention is not limited to coffee preparation with hot water.

[0007] It is known to provide the inlet wall (or inlet surface) of the capsules with holes to feed water inside the capsule. This solution, though, allows for coffee powder to be spilled outside the capsule during handling or transport and in general for a faster oxidization of the coffee powder in the capsule. This type of capsule thus requires an external envelope to seal it from atmospheric oxygen

and once the envelope has been opened, immediate consumption is necessary to avoid oxidation of the content. Additionally, the sealed edge of the envelope may present creases and false soldering portions, so that this solution may result in product's quality flaws.

[0008] For the above reasons it is preferred to use capsules in which the inlet wall and the outlet wall of the capsule are closed, i.e. the capsule body is in general closed body. Therefore, the brewing device is provided with piercing, or opening, means, usually in the form of one or more protruding parts intended to contact and to perforate the inlet wall and/or the outlet wall of the capsule. Apertures, or holes, formed by the piercing means allow the passage of the brewing liquid inside the capsule from the inlet wall and/or the extraction of the prepared beverage from the outlet wall. Feeding of brewing hot water by piercing the inlet wall of the capsule is a method well known in the art and is disclosed in several prior art documents. A problem with known plastic capsules is that piercing plastic capsules is more difficult than piercing aluminium capsules. There have been proposed several different solutions to this problem, e.g. plastic capsules have been provided with internal reinforcing members to make more rigid the inlet wall that has to be pierced; another solution is to provide the inlet wall or both inlet and outlet walls with recesses arranged directed radial with respect to the axis of the capsule, as in EP2651780 or in PCT/IB2011/003021.

[0009] Another solution, known e.g. from WO2010/041179, WO2010038213 and ITTO20120899, is to have areas of the inlet wall that are defined by lines with reduced thickness of the wall, so as to provide rupture lines that will break when the wall is contacted and compressed by the piercing means of the brewing apparatus.

[0010] A further problem of the known capsules is that in some cases, due to poor engineering or to the aim of making some brewing devices not suitable to extract capsules produced by competitors, the perforation of the capsule cannot be achieved with different brewing devices. In fact, brewing apparatuses of different models may all be suitable to perforate the same type of aluminium capsule but not all of those apparatuses will be able to pierce plastic capsules produced by competitors; usually this derives from the fact that the brewing devices of different models are provided with piercing means shaped in different manner. It was recently found that in fact the same model of known brewing apparatus might be provided with different piercing means, so that it is no longer possible to know if said model is suitable to be used with the competitor's plastic capsules.

[0011] It is an aim of the present invention to solve the above problems and to provide a capsule, a system and a method for beverage preparation using such capsule, that can be opened in a simple and effective manner to allow feeding hot water into the capsule.

[0012] Another aim of the present invention is to provide a capsule that can be effectively used in different

types of beverage preparation device, provided with different piercing means, and to provide independently from the beverage preparation device used, and in particular independently from the shape of the piercing means, an effective opening of the inlet wall of the capsule to allow the injection of the brewing water and the extraction of the prepared beverage.

Summary of the invention

[0013] These and other aims are achieved by means of the capsule of the present invention, that is a capsule for the preparation of a beverage from a dose of a product, according to claim 1. Other objects of the invention are a system for beverage preparation, according to claim 11 and a brewing apparatus according to claim 15. Preferred embodiments are objects of the dependent claims.

[0014] The capsule for the preparation of a beverage according to the invention comprises a lateral wall, a water inlet wall and an outlet wall, forming a hollow body where a brewing product is contained. The inlet wall comprises a so-called piercing area, that is, an area where the piercing blades will act, to contact and/or compress and/or perforate the inlet wall so as to provide at least one opening in the said wall.

[0015] Therefore, the capsule according to the invention allows an effective beverage preparation independently from the beverage preparation device inside which the capsule is used, and in particular independently from the shape of the piercing means of the beverage preparation device.

[0016] The contacting means of the beverage preparation device can be the piercing means of the beverage preparation device, however the piercing means of the brewing apparatus may also be blunt, or in part made of a blunt portion; thanks to the weakened lines, i.e. the lines of reduced thickness, the capsule could be opened by simply contacting said walls and exerting thereon a pressure or a force. Another advantage is that the brewing apparatus of the system can be provided with blunt piercing means, so as to avoid danger of cutting the user's fingers when he is servicing the brewing apparatus. A brewing apparatus provided with blunt piercing elements is therefore another object of the invention.

Brief Description of the Drawings

[0017] Further advantages and features of the present invention will be more apparent from the description below, provided with reference to the accompanying drawings, purely by way of a non-limiting example, wherein:

- Figure 1 is a partial perspective view of the inlet wall and lateral wall of a capsule according to the present invention;
- Figure 2 is a radial sectional view from a plane passing through the central axis of the capsule according to the present invention;

- Figure 3 is a perspective view from the side of the outlet wall of the inside of the capsule according to the present invention;
- Figure 4 is a plan view of the inside of the capsule according to an exemplary embodiment of the present invention taken from the side of the outlet wall;
- Figure 5 is a plan view, from the side of the outlet wall, of the inside of a capsule according to another embodiment of the invention;
- Figure 6 is an enlarged sectional view of the embodiment of fig. 5 taken along plane X-X; and
- Figure 7 is the enlarged view of another detail of the embodiment of fig. 5.

Detailed Description

[0018] Figures 1 - 7 show exemplary embodiments of the capsule 1 according to the invention that can be used in combination with a brewing device in the system according to the invention.

[0019] The preparation of a beverage, such as coffee, tea, hot and cold drinks, or any other liquid foodstuff, is obtained from an amount of a brewing product, for example an extractable, or soluble, or dilutable product, either liquid or solid, contained inside the capsule. Preferably, the dose of brewing product comprise a powder product, such as coffee powder, which is brewed by means of brewing liquid, preferably hot water under pressure, that is injected into the capsule for obtaining the desired beverage.

[0020] The capsule 1 comprises a lateral wall 2, an inlet wall 3 and an outlet wall 4, said walls defining a hollow body 5 where the dose of product (not shown in the figures) is located. The inlet wall 3 is the inlet surface of the capsule and is intended to allow the passage of the brewing liquid into the capsule.

[0021] The outlet wall 4 allows the exit of the prepared beverage from the capsule, for example into a container; in the shown embodiment (fig. 3) outlet wall 4 is partially represented by a foil sealed to flange 10; the wall 4 is made of a membrane, or foil, typically of a laminate of aluminium and plastic, or by a lid in plastic material, preferably with self-piercing openings. Exemplary embodiments of an outlet wall are e.g. disclosed by applications PCT/EP2013/063873, PCT/EP2013/063858, PCT/EP2013/063848. Outlet walls are well known in the art, e.g. the outlet wall can be an open filter, provided with a plurality of apertures intended to allow the flow of the brewing liquid from the capsule, or it can be a closed outlet wall that is intended to be perforated by suitable contacting means present in the brewing apparatus into which the capsule is used, or by the combination of the action of said contacting means with the hydraulic pressure built inside the capsule.

[0022] The capsule 1 has a substantially cup-shape, or frustum-conical shape, with a central axis A-A (vertical axis); in other words, in the exemplary embodiment

shown in the figures, the lateral wall 2 is not parallel to the central axis A-A and the hollow body 5 is closed by the outlet wall 4 at one end and by the inlet wall 3 at the opposite end of lateral wall 2 with respect to outlet wall 4. It has to be noted that, as visible in the figures, the expression "central axis A-A of the capsule" is used herein to indicate a longitudinal axis of the capsule passing through the centre of inlet wall 3 and of outlet wall 4 of the capsule.

[0023] It has to be noted that the water inlet wall 3 can be at least partially flat and/or convex, elliptical and/or tapered, in other words, the inlet wall 3 can be shaped in different manners, including being shaped according to an ellipse, at least from the centre to the piercing area of the inlet wall. Inlet wall 3 may have a constant thickness apart for rupture (weakened) line or lines, that have a reduced thickness; reinforcing elements such as ribs may be present on part of the inlet wall and/or on the lateral wall.

[0024] In the embodiment shown in figures 1 - 7, inlet wall 3 of the capsule extends towards the peripheral end 2a of the lateral wall 2. The inclination of the inlet wall 3 at the peripheral edge 2a of the lateral wall 2 can change according to different possible embodiments, and preferably the angle β (see figure 2) formed (inside the capsule) between the inlet wall 3 and the lateral wall 2 at the peripheral end 2a is equal or greater than 90° . In the embodiment shown in the figures, the capsule is provided with a substantially convex inlet wall 3, and the angle β formed between the lateral wall 2 and the inlet wall 3 is greater than 90° . To provide further rigidity to the structure, a preferred range for angle β is 100° to 130° .

[0025] According to another aspect of the invention, the water inlet wall 3 of the capsule is substantially dome-shaped; this shape of the inlet wall 3 can be obtained, according to different possible embodiments, by means of a curved surface or by means of two or more flat surfaces arranged inclined one to another in order to provide a substantially dome shape. In a preferred embodied the curve of the dome is elliptical.

[0026] In other words, in a cross sectional view of the capsule taken from a radial plane passing through the central axis of the capsule, the inlet wall is formed by a curved line, having substantially a circular or elliptic shape, or by two or more straight lines inclined one to another. In the latter example, the straight lines can be for example arranged to be tangent to a circular or elliptic line.

[0027] It has to be noted that according to another possible embodiment the water inlet wall can be formed by one flat surface or by a surface arranged inclined with respect to the central axis, i.e. to form a conical inlet wall. Furthermore, it has to be noted that the inlet wall can be formed by a combination of curved and flat surfaces.

[0028] According to the invention, inlet wall 3 comprises at least one piercing area P, where the capsule is going to be perforated when it is used in a brewing apparatus, that is provided with a plurality of lines 7 having

reduced thickness with respect to the thickness of the inlet wall. Lines 7 form a pattern including a plurality of angles; the pattern is in the shape of a broken line alternating reduced thickness lines 7, i.e. weakened lines, and areas of the inlet wall 3 where the thickness is not reduced. In known patterns of reduced thickness lines on an inlet wall, the weakened lines are closed lines that define a portion of the inlet wall that is contained within a perimeter formed by the weakened lines. This portion has hinges so that it can be pushed and folded into the capsule body. Contrary to this, lines 7 of the pattern of the present invention are not closed lines but open lines, that form a broken line, where the pattern provides portions of reduced thickness alternated with portions of intact inlet wall, i.e. portions where the thickness of the wall is not reduced.

[0029] The broken line pattern of the invention is thus a discontinuous line or a series of line segments, as a series of dashes, or a figure, made up of line segments defining a series of angles α ; the angles are defined by the lines that may or may not meet together, if the lines do not meet together, the angles are defined by the direction of the lines 7. The lines 7 (or their direction) form angles α preferably in the range of 110° to 25° , preferably 30° to 95° , most preferably acute angles α in the range of 40° to 80° . In the shown embodiments, the lines are V-shaped and form a pattern of "Vs"; preferably, the Vs formed by the line segments have vertexes directed to the lateral wall or to the centre of the capsule, or alternately directed to the centre and lateral wall. The vertexes 6 may have a rounded shape, e.g. for easier moulding of the line 7.

[0030] Preferably, the piercing area P extends circumferentially around axis A-A of the capsule; in the shown exemplary embodiments, area P is located between and partially overlapped with two reinforcing areas, a central reinforced area 8 and a peripheral reinforced area 9. Areas 8 and 9 include means to increase the rigidity of the inlet wall 3 and of the lateral wall 2, thus allowing an easier perforation of the inlet wall when the capsule is in use.

[0031] The reduced thickness line 7 is preferably obtained by having the reduction of thickness of the wall located on the inner side of wall 3, as visible in figures 2-4; in fig. 1 the groove resulting from the reduced thickness of the wall is located on the outer side of the wall 3 and combinations of the two arrangements are possible, i.e. the reduced thickness is partly provided on the inner and part on the outer side of inlet wall 3. The ratio of thickness of line 7 : thickness of inlet wall 3 is in the range of 1:2 to 1:30, preferably 1:5 to 1:30.

[0032] In the embodiment shown in the figures 1 - 7, the capsule 1 comprises at least one rib 11 in central reinforcing area 8 and/or at least one recess portion 12 extending on the inlet wall 3 and/or on the lateral wall 2 of the capsule to provide peripheral reinforced area 9. The broken line 20 of the invention may be provided on any known capsule, with or without reinforcing ribs and

with reinforcing ribs of any type.

[0033] More in detail, the capsule according to the exemplary embodiments shown in figures 1 - 7, is provided with reinforcing means comprising at least one, preferably a plurality of recess portions 12 extending on both the inlet wall 3 and on the lateral wall 2 and connecting together areas of said walls. In other words, the capsule is provided with at least one recess portion 12 (preferably a plurality of recess portions) forming a corrugation in correspondence of the peripheral end 2a of the lateral wall 2, i.e. the junction area between walls 2 and 3. It has to be noted that the at least one recess portion 12 defines a modification of the shape of both the inlet wall 3 and of the lateral wall 2 in correspondence of the peripheral edge 2a of the lateral wall 2 from which the inlet wall 3 extends.

[0034] Recess portion 12 comprises at least one surface connecting the lateral wall to the inlet wall of the capsule and forming an additional wall that connects lateral and inlet walls 2, 3. Preferred embodiments of a capsule having recess portions are disclosed in co-pending application PCT/IB2012/002408.

[0035] The at least one recess portion 12 comprises at least one surface, preferably the bottom surface of the recess portion, that lies on a plane or that contains at least one axis B maintaining a constant angle of inclination α with respect to the central axis A of the capsule or with respect to a vertical axis parallel to the central axis.

[0036] The recess portion 12 can be seen as the "removal" of a portion of volume of the capsule from the junction (peripheral edge 2a) between inlet wall 3 and lateral wall 2; thus, the walls are modified and they "sink" below their original level to rise again to the original level and shape. Exemplary shapes of the removed volume are prisms or portions of prisms, preferably a prism selected from triangular, parallelepiped, cylinder and hexagonal base prisms or prisms having a base formed by a regular or irregular polygon. The number of the recess portion can be varied according to different possible embodiments; additionally, according to other possible embodiment, not shown in the figures, the recessed portions 12 are produced only on the inlet wall 3 of the capsule and are completely contained within the inlet wall 3, instead of extending on both the inlet wall 3 and the lateral wall 2.

[0037] As shown in the figures 1 - 7, the capsule 1 can be provided with a plurality of ribs 11 protruding from the internal, or external, surface of the inlet wall 3. The ribs 11 are preferably arranged in a radial manner from the internal central surface of the inlet wall 3, substantially from the central axis X.

[0038] Furthermore, in the exemplary embodiments show in the figures, the capsule is provided with vertical lugs 13 protruding from the internal surface of the lateral wall 2 and intended also to prevent the capsules from stacking during the production process. Thickness, shape and radius of such lugs will vary depending on the chosen manufacturing methods, to be selected amongst

the ones mentioned earlier, as it can easily inferred by the skilled in the art.

[0039] Vertical lugs can extend on both the inlet and lateral walls 3 and 2, or they can be provided only on the lateral wall 2 of the capsule. An annular rib provided on the inlet wall may be another embodiment.

[0040] According to the invention, the piercing area P of inlet wall 3 is provided with a plurality of weakened lines 7, i.e. lines where wall 3 has reduced thickness, that are suitable to be broken by a pressure applied on the piercing area so as to provide an opening in said wall 3. Said line or lines 7 are characterized by being so arranged as to form a pattern that includes a plurality of angles α having vertexes 6 that are preferably located along a circular path with respect to the axis (A-A) of the capsule 1.

[0041] As shown in the exemplary embodiment of figures 1-7, preferably the angles are oriented towards the periphery end 2a and/or towards the centre i.e. axis (A-A) of the capsule; most preferably lines 7 extend circumferentially in piercing area P, vertexes 6 of angles α are alternatively directed to the periphery 2a and to the axis A-A of the capsule. As previously mentioned, weakened lines 7 are positioned between, preferably partially overlapped to, said reinforced areas 8 and 9 of the inlet wall 3 to provide an easier piercing of the same, even by a blunt piercing means.

[0042] In a preferred embodiment, visible in the figures, weakened lines 7 form a pattern that is a discontinuous line 20 in the form of a zig-zag. In greater detail, line 20 is provided with a plurality of parts 16 where the thickness of the wall is the same as the rest of inlet wall 3. In an exemplary embodiment shown in figures 1-4, all parts 16 are arranged at the same distance (i.e. radius) R from the centre; in this exemplary embodiment, R is the distance from axis A-A, i.e. the radius, of the point where piercing means 14 of the brewing apparatus will impinge on the inlet wall 3 of capsule 1 during the piercing step when preparing a beverage from the capsule. Thus, in this embodiment, the piercing means 14b does not contact wall 3 in correspondence of an area of reduced thickness, i.e. of one of lines 7.

[0043] In a preferred embodiment as the one shown by figures 1-7, broken, i.e. discontinuous, line 20 has a pattern of lines 7 that is periodical and that cannot be divided by the number of the blades of the brewing device; in the figures, the pattern of lines 7 is eleven "Vs" and eleven recesses vs. three blades or piercing elements 14.

[0044] In fig. 2 piercing means 14 of brewing apparatus 15 are schematically shown; they comprise a blade 14b and an additional portion 14a extending laterally from said blade 14b, forming an angle; in the shown embodiment, portion 14a may be blunt and is roughly arranged in a radial direction to axis A-A. According to a preferred embodiment of the invention, weakened lines 7 extend in part also to the areas of the inlet wall 3 that are going to be contacted by additional portion 14a of the contacting

means 14; in the shown exemplary embodiments the said portions are formed by vertexes 6 that are located between recessed portions 12.

[0045] Fig. 5 shows an exemplary embodiment in which the broken line 20 contains a plurality of lines 7 forming a plurality of Vs defining angles α ; the Vs are arranged to have their vertexes directed to the lateral wall and the plurality of discontinuity areas 16 (with thickness not reduced) located at the ends of lines 7, close to the centre of the inlet wall. The broken line 20 is thus a discontinuous line made of V-shaped lines, wherein the vertexes 6 of the Vs are aligned along a circumference and the opposite ends of the Vs are aligned along a circumference that is internal to the circumference defined by the vertexes.

[0046] In the shown exemplary embodiments, ribs 11 extend from the centre, i.e. from the axis, of the capsule into the area of the inlet wall where the broken line 20 is located; as visible from the figures, in particular from figures 5 and 7, end 11a of rib 11 is located between the two legs 7a and 7b of line 7 that shaped as a V. Preferably, lines 7 extend towards edge 2a so that vertexes 6 are positioned on the inlet wall 3, between two adjacent recesses, or indents, 12. The opposite arrangement is also possible: in this embodiment the vertexes 6 are located closer to the centre than the ends of legs 7a and 7b and the end portion 18 of the recesses 12 is located between said ends of legs 7a and 7b.

[0047] Thanks to the disposition of lines 7 and to the pattern of broken line 20 formed by lines 7, the capsule of the invention is suitable to be opened by all the brewing devices that are designed to operate with capsules having an overall shape as above disclosed, i.e. a truncated-conical body, an inlet wall, an outlet wall and a flange 10 extending from the outlet wall. "L"-shaped lines with reference 14 in fig. 5 shows the position of piercing blades 14 (see fig.2) with respect to lines 7 of broken line 20, as seen from inside the capsule.

[0048] Additionally, further embodiments will comprise weakened lines 17 with reduced thickness located at least at the inner edges 18 of recesses 12; weakened lines 17 preferably extend radially towards axis (A-A) of the capsule, as visible in the figures, but they can also be arranged according to different patterns, provided they can be broken under a direct or indirect action of the piercing blade 14, namely by the additional portion 14a of the piercing means 14. Another embodiment provides for lines 17' being located between two adjacent recesses 12, on the inlet wall 3, towards edge 2a. Lines 17' may extend to the lateral wall 2 to help inlet wall bending.

[0049] As mentioned, the invention also provides a system for preparing a beverage, that includes a capsule 1 comprising a lateral wall 2, a water inlet wall 3 and an outlet wall 4 forming a hollow body 5 where a brewing product is contained. The inlet wall 3 comprises at least one piercing area P where the capsule is going to be provided with at least one opening by piercing means of

a brewing apparatus, said piercing area of the inlet wall being provided with a plurality of lines 7 of reduced thickness that are suitable to be broken by a pressure applied on the piercing area. The system also comprises a brewing apparatus 15 (fig.2) having piercing means 14 intended to exert a force or a pressure on the piercing area P of inlet wall 3 to provide at least one opening in said wall. As mentioned, thanks to the invention at least part of the piercing means 14 may be blunt.

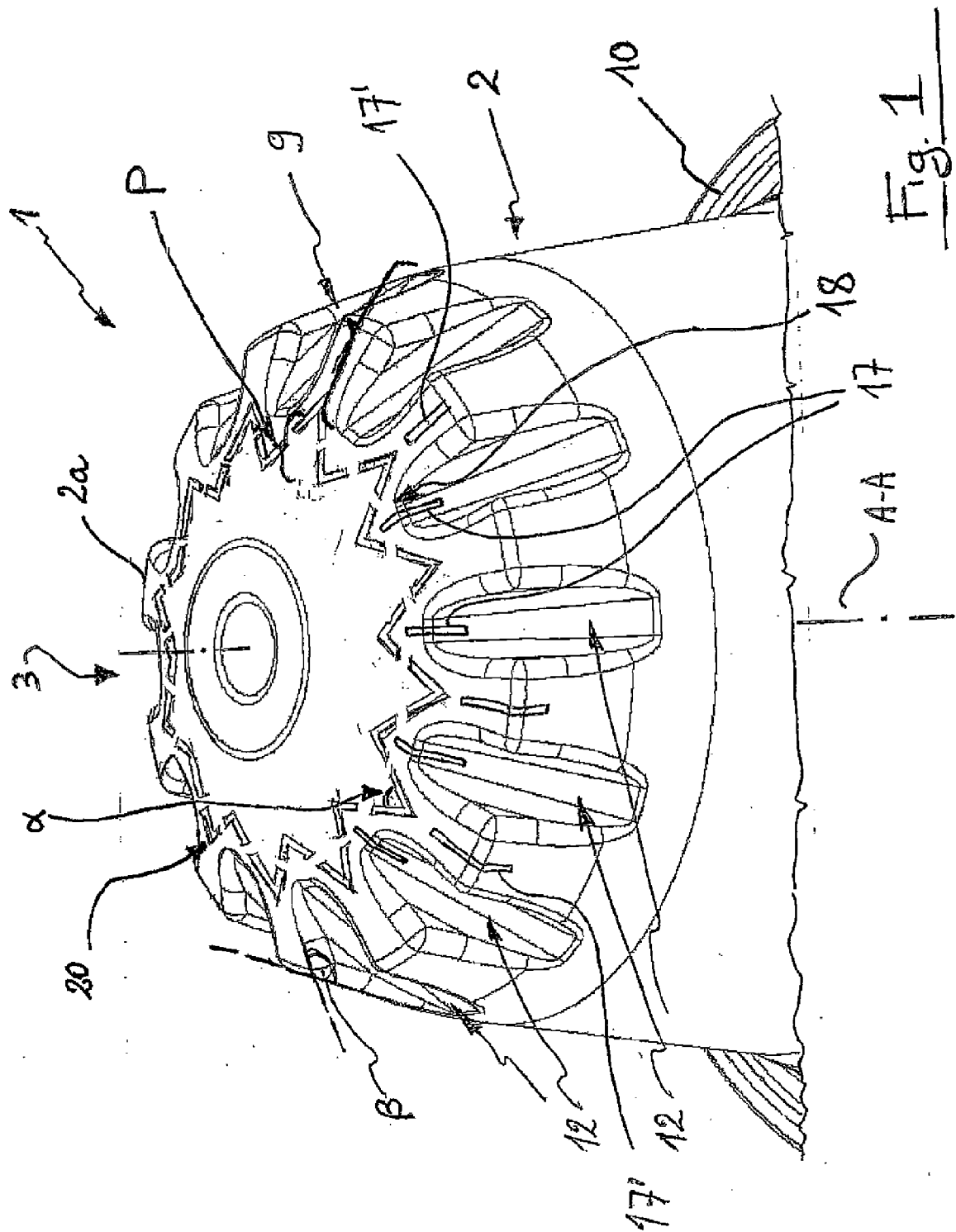
[0050] A brewing apparatus having blunt piercing means is an object of the invention.

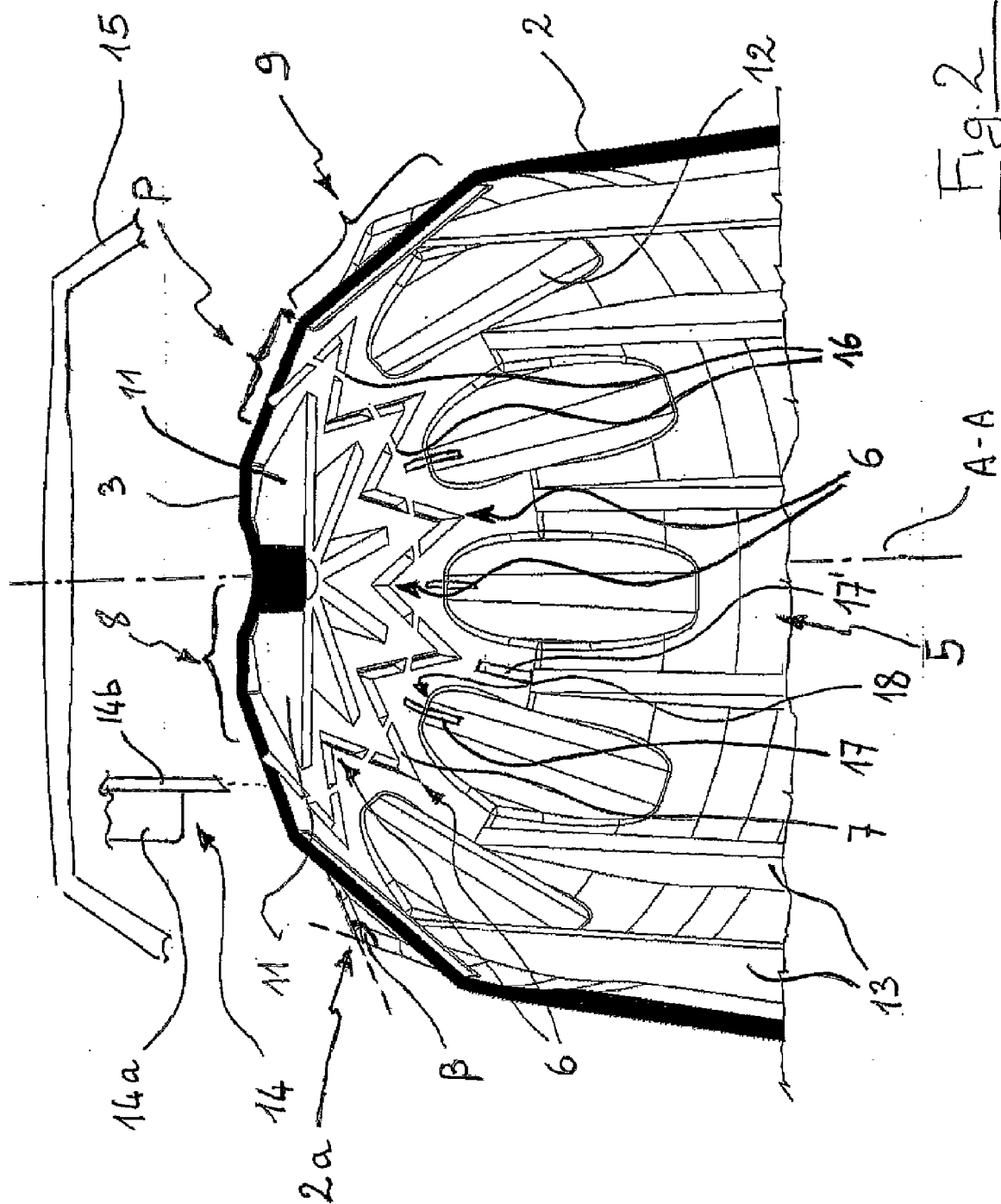
[0051] In use, the inlet wall of the capsule will be contacted by piercing means that will apply a compression force to the inlet wall and break it in some regions thanks to the presence of lines 7. By triggering the rupture, angles 6 of line 7 will make it easier for the piercing means to operate and to provide an opening for the brewing water to flow into the capsule; this rupture is carried out also by the "L" shaped piercing means schematically shown in fig.2. In case the piercing means are, as shown in fig.2, provided with the additional, possibly blunt, portion 14a, the possible presence of additional weakened lines 17 will break under action of part 14a, so as to provide a further "seat" for said part 14a and enable the blade 14b to perforate or otherwise open the inlet wall 3.

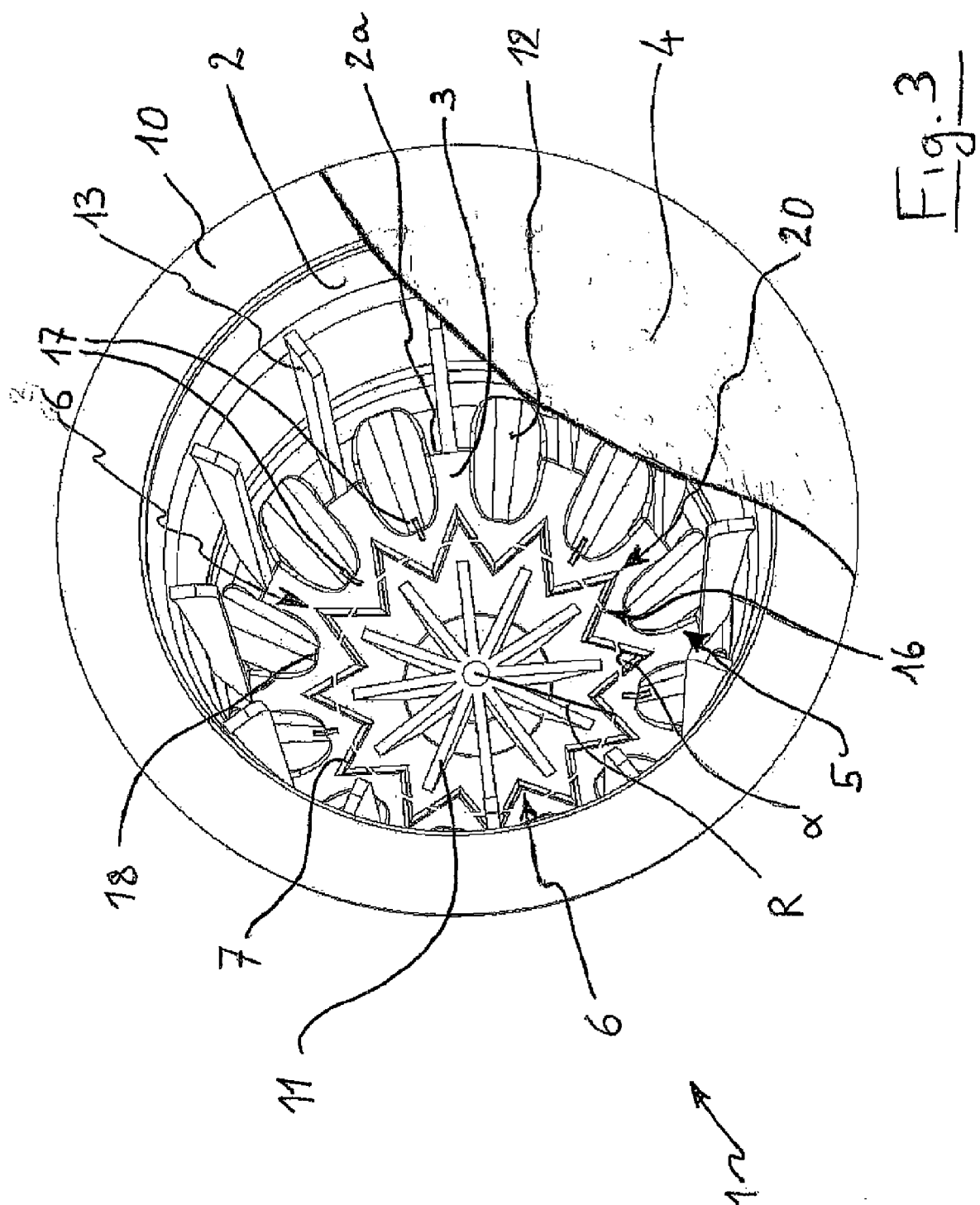
Claims

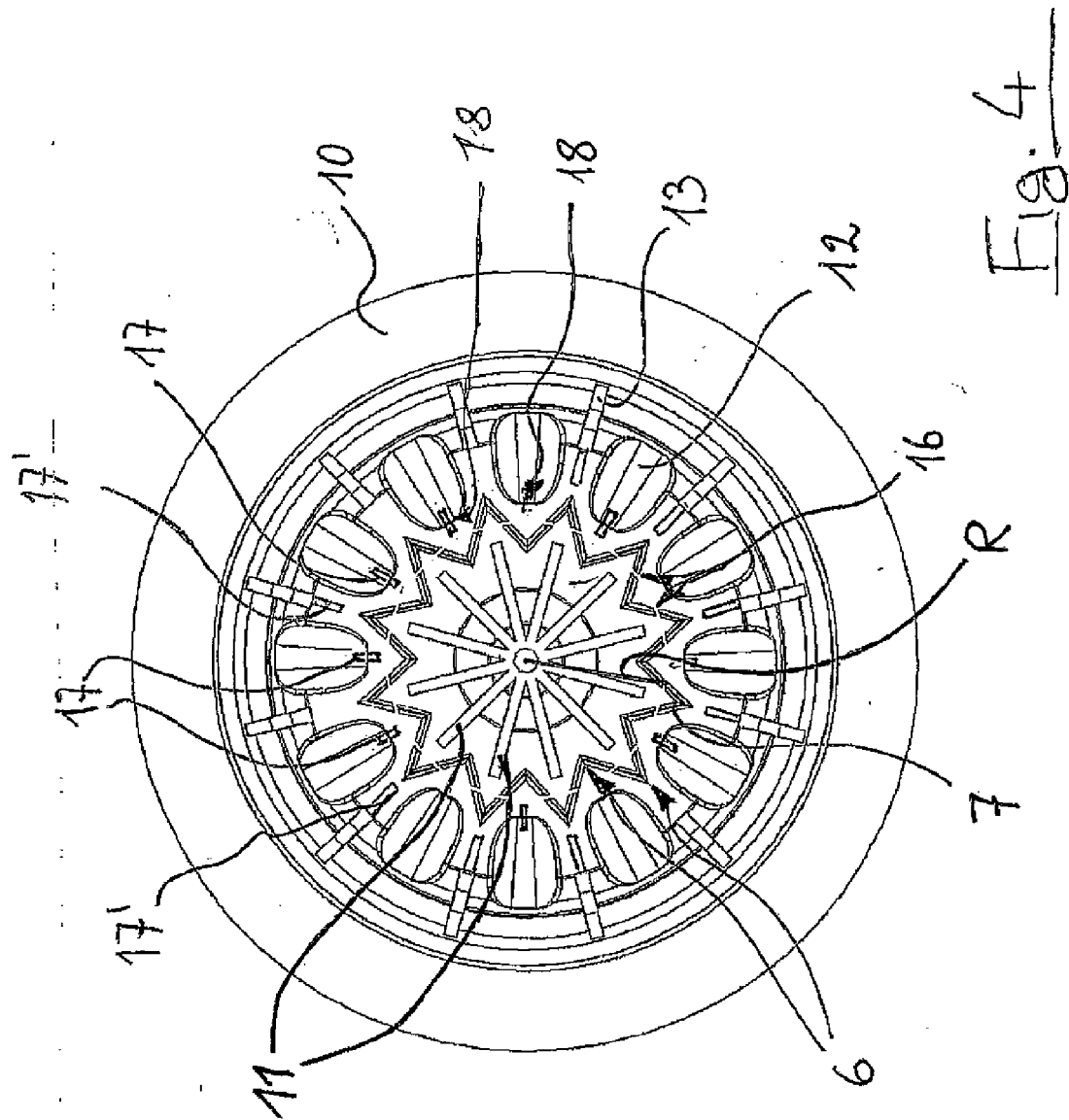
1. A capsule (1) for the preparation of a beverage comprising a lateral wall (2), a water inlet wall (3) and an outlet wall (4) forming a hollow body (5) where a brewing product is contained said inlet wall (3) comprising at least one piercing area (P) where the capsule is going to be provided with at least one opening, said piercing area of the inlet wall being provided with at least one weakened line (7) of reduced thickness that is suitable to be broken by a pressure applied on the piercing area so as to provide an opening in said wall (3), **characterized in that** said inlet wall has a plurality of lines (7) having reduced thickness that form a pattern including a plurality of angles (6), wherein the pattern is a broken line (20) alternating lines having reduced thickness with areas (16, 19) having thickness greater than in said lines (7).
2. A capsule according to claim 1, wherein said angles α are within the range of 110° to 25° , preferably 30° to 95° .
3. A capsule according to claim 1, wherein the vertexes (6) of said angles α are located along a circular path with respect to the axis (A-A) of the capsule.
4. A capsule according to claim 2 or 3, wherein said angles are oriented towards the periphery and/or the axis (A-A) of the capsule.

5. A capsule according to any previous claim, wherein said broken line (20) extends circumferentially in said piercing area, said angles being alternatively directed to the periphery and to the axis of the capsule.
6. A capsule according to any claim 1 to 4, wherein said broken line (20) comprises a plurality of lines of reduced thickness (7) angled in the shape of a "V" having vertexes (6) directed towards the lateral wall (2) of said capsule.
7. A capsule according to any previous claim, wherein said inlet wall (3) comprises internal and external reinforced areas (8, 9) and parts of said broken lines (7) are positioned between of the.
8. A capsule according to claim 5, comprising a plurality of recess portions (12) extending along the peripheral end (3a) of said inlet wall (3), preferably extending on both said inlet wall (3) and lateral wall (2) to provide one (9) of said reinforcing areas.
9. A capsule according to claim 7, wherein said recess portions are provided with second lines (10) having reduced thickness, preferably extending radially on said recess and on said inlet wall, towards said axis (A-A) of the capsule.
10. A capsule according to any previous claim, wherein said broken line (20) extends outside said piercing area.
11. A system for preparing a beverage, said system including :
 - a capsule (1) comprising a lateral wall (2), an inlet wall (3) and an outlet wall (4) forming a hollow body (5) where a brewing product is contained, said inlet wall (3) comprising at least one piercing area (P) where the capsule is going to be provided with at least one opening, said piercing area of the inlet wall being provided with a plurality of line (7) of reduced thickness that are suitable to be broken by a pressure applied on the piercing area,
 - a brewing apparatus (15) comprising inlet wall piercing means (14) intended to exert a force or a pressure on said capsule inlet wall (3) to provide at least one opening in said wall (3), **characterized in that** said weakened line(s) (7) having reduced thickness form in said piercing area (P) a pattern including a plurality of angles (6), wherein the pattern is a broken line (20) alternating lines having reduced thickness with areas (16, 19) where the thickness is not reduced.
12. A system according to claim 11, wherein said piercing means comprise at least one blade that contacts said inlet wall at a radius R from said capsule's axis (A-A) and wherein said inlet wall (3) at said radius R is not provided with said weakened line (7).
13. A system according to claim 11 or 12, wherein said piercing means (14) comprise a blade (14b) and an additional portion (14a) extending laterally from said blade, comprising additional lines (17, 17') of reduced thickness extending in part in the areas of said inlet wall (3) that may be contacted by said additional portion (14a) of the piercing means.
14. A system according to claim 13, wherein said additional weakened lines (7a) extend radially with respect to the said axis (A-A) and wherein preferably said additional weakened lines are provided on said recessed portions and on the adjacent areas of the inlet wall (3).
15. A brewing apparatus (15) for brewing a beverage from a capsule, said capsule comprising a lateral wall (2), a water inlet wall (3) and an outlet wall (4) forming a hollow body (5) where a brewing product is contained, said inlet wall (3) comprising at least one piercing area (P) where the capsule is going to be provided with at least one opening, said piercing area of the inlet wall being provided with a plurality of lines (7) of reduced thickness that is suitable to be broken by a pressure applied on the piercing area so as to provide an opening in said wall (3), said apparatus comprising inlet wall piercing means (14) intended to exert a force or a pressure on said capsule inlet wall (3) and said lines (7) to provide at least one opening in said wall (3), **characterized in that** said piercing means (14) are at least in part blunt.









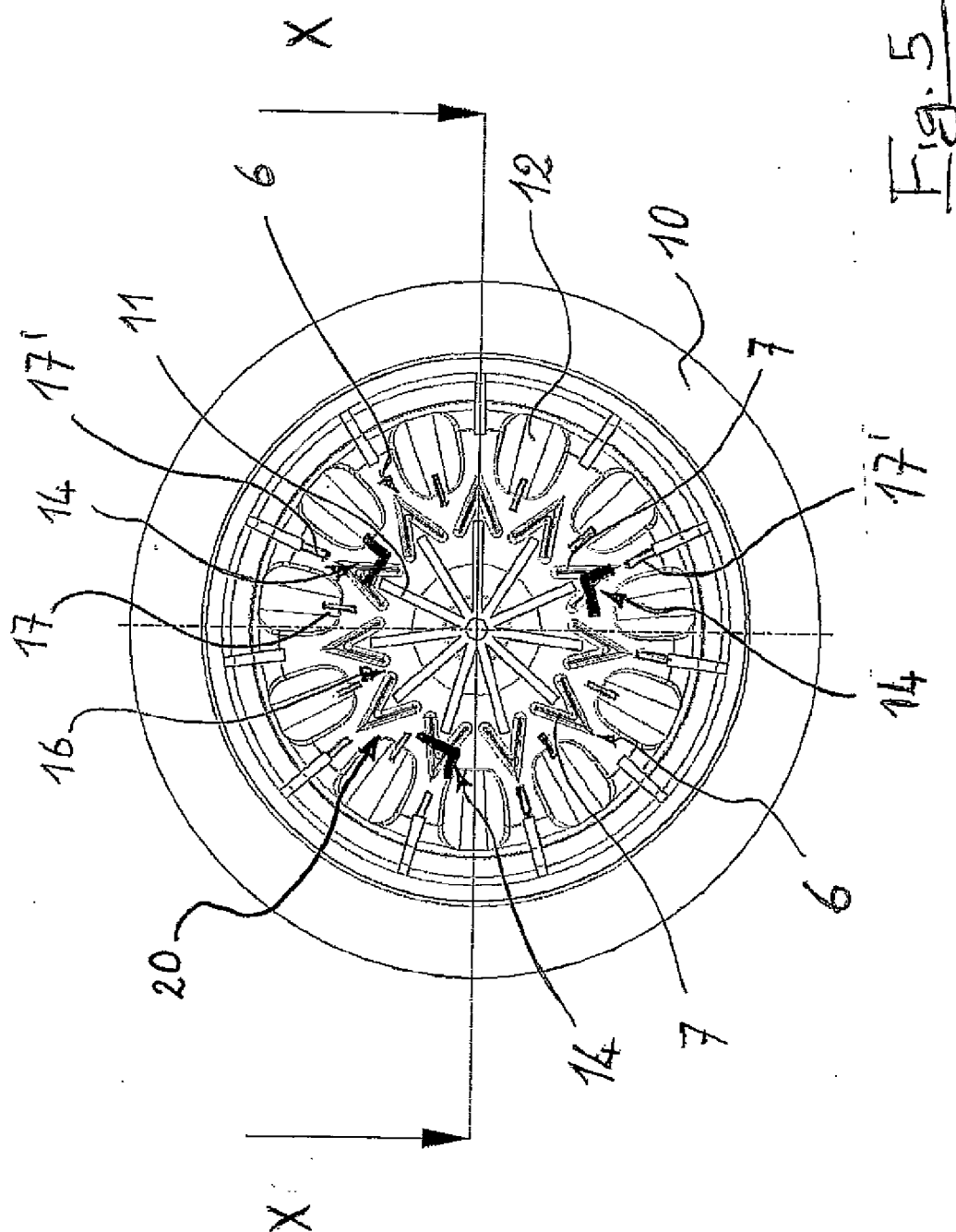


Fig. 5

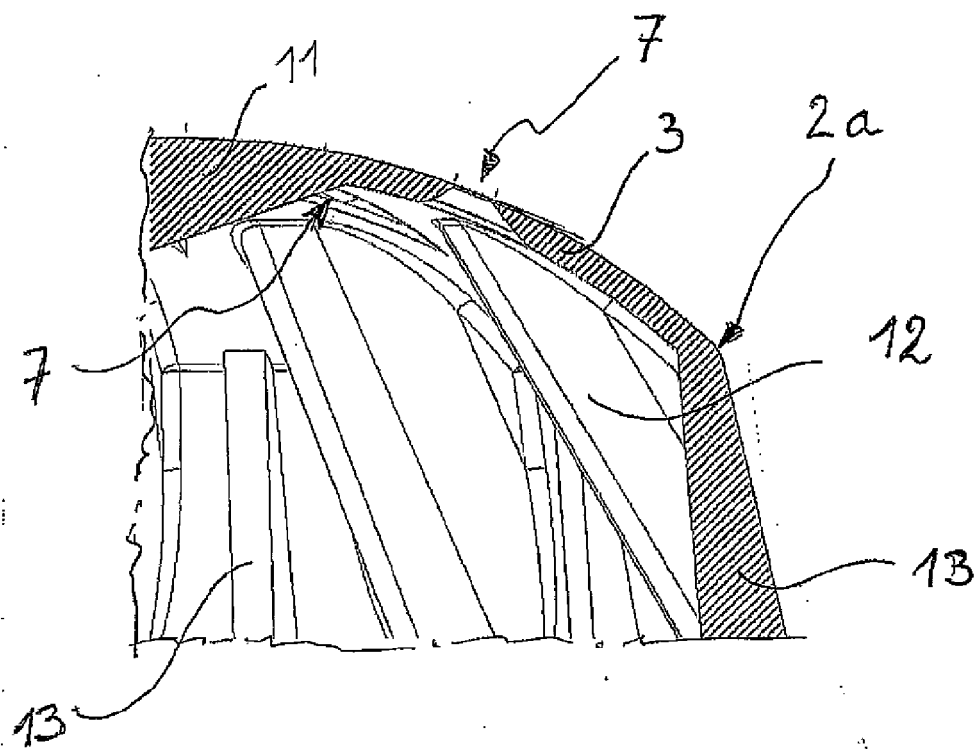


Fig. 6

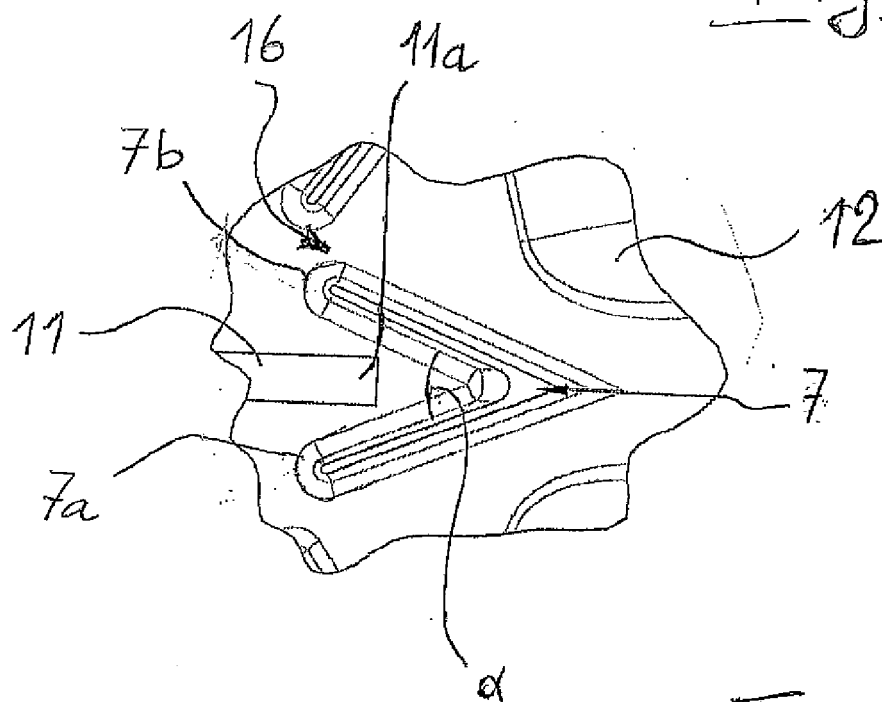


Fig. 7



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