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(54) CAPSULE, SYSTEM AND METHOD FOR PREPARING A DRINK

KAPSEL, SYSTEM UND VERFAHREN ZUR HERSTELLUNG VON GETRÄNKEN

CAPSULE, SYSTEME ET METHODE POUR LA PRODUCTION DES BOISSONS

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(73) Proprietor: **Patiño Patiño, Segundo**
08850 Gavà (ES)

(72) Inventor: **Patiño Patiño, Segundo**
08850 Gavà (ES)

(74) Representative: **Sugrañes Patentes y Marcas**
Calle Provenza 304
08008 Barcelona (ES)

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Description

Technical field of the invention

[0001] The invention relates to a single-dose capsule for preparing an infused or percolated beverage, such as coffee or tea; or a soluble beverage, such as chocolate or milk in a machine for preparing the beverage. The invention also relates to a system and a method for preparing a beverage by means of the capsule.

Background of the invention

[0002] Currently, there are a great variety of single-dose capsules for preparing a beverage intended for use in self-service or other known machines that prepare the beverage by means of the capsule.

[0003] More specifically, the capsules for preparing a beverage that are known are provided with tearing means configured to tear the lower part of the capsule when the interior of the capsule reaches a predetermined level of pressure, after injecting a pressurized fluid, such as hot water, into the capsule, through the upper part thereof, through a self-service machine.

[0004] Patent document EP2238050 describes this type of capsule comprising a cup-shaped body made up of watertight material that stores a product dose for preparing a beverage, in which an upper mouth is distinguished closed by a first watertight sealing film welded to said body and prepared to be punctured by an injector element of a pressurized fluid intended to dissolve or infuse the dose of product for preparing the beverage, and a lower mouth arranged at its base, provided for the outflow of the prepared beverage.

[0005] This capsule also comprises a second watertight film welded on the inside to the body, that separates the upper mouth and the lower mouth, the product dose being stored in the body between the first and the second film. The capsule is further provided with tearing means of the second film, arranged integrally to the base of the body under said second film.

[0006] Thus, the high fluid pressure in the capsule pushes the second film, which is displaced by elasticity until it comes into contact with the tearing means, at which time said second film tears, allowing said beverage to flow out.

[0007] On the other hand, patent documents EP1472156 and EP1808382 also disclose this type of capsule, comprising a closed chamber containing a product dose and opening means allowing the capsule to be opened at the time of use and enabling the outflow of the beverage. The opening of the capsule is achieved by the relative engagement of the opening means with a retaining film of the closed chamber. In a similar way, said relative engagement is carried out under the effect of the rise in pressure of the fluid in the chamber. Another example of such a capsule is disclosed in WO2016/102736 A2.

[0008] However, these capsules have the drawback of requiring that the fluid be injected under pressure, delaying the preparation of the beverage until it reaches the predetermined level of pressure inside the capsule. Another drawback they present is that the walls of the capsule have to be sized to withstand the inside pressure, whereby it is necessary to use sufficiently rigid materials having sufficient thickness, which increases the final cost of the capsule.

[0009] It is therefore an object of the present invention to disclose a capsule for preparing a beverage that enables preparing a beverage efficiently without having to size the capsule in order to withstand a high pressure on the inside and thereby reducing production costs.

Description of the invention

[0010] The capsule for preparing a beverage in a machine of the present invention is of the type that comprises a body of a single piece of watertight material, comprising a cup and a base, the cup being adapted to store at least one dose of a product for preparing the beverage and provided with an upper mouth, closed by a first watertight film, bonded or welded to the cup and prepared for puncturing by an injector element of a fluid for preparing a beverage, and the base being provided with a lower mouth, intended for the outflow of the prepared beverage; the capsule being further provided with a second watertight film, bonded or welded on the inside to the cup, above the base, and separating the upper mouth and the lower mouth, the product dose being stored between the first and the second film, and the base being provided with tearing means of the second films. Within the scope of the invention, the watertight materials must be interpreted as being impervious to liquids, that is, liquid cannot pass through it, specifically the water or liquid that is introduced into the capsule and the prepared beverage.

[0011] Essentially, the capsule is characterized in that the cup and the base are joined by a flexible portion, said flexible portion being capable of bending when pushing the base towards the second film, holding the cup in place, enabling the tearing means to be displaced until tearing or breaking the second film. Advantageously, this way it is possible to open the bottom of the capsule before injecting water into the capsule, so that the beverage can flow out during the injection of water, preventing the injected water from increasing the pressure inside the capsule. Therefore, it is not necessary to size the capsule in order to withstand high pressure on the inside, enabling the body of the capsule to be manufactured with materials that may be weaker and less expensive or using smaller thicknesses of the plastic materials normally used for the manufacture of capsule bodies, achieving considerable savings in material. Naturally, although it is expected that the machine for preparing beverages exerts the necessary pressure on the capsule to open it before injecting water therein, in order to prevent the capsule form accidentally opening before use, in other variant embodi-

ments it is also foreseen that it is the user itself who can open the capsule, for example by pressing the upper and lower part of the capsule with its fingers before inserting it into the machine for preparing beverages. Although the cup and the base are expected to be essentially rigid and that only the flexible portion that joins them is flexible, it is also considered that part of the base or part of the cup or even the entire base or the cup be flexible, thereby the flexible portion would be continuous.

[0012] It is also disclosed that at least part of the flexible portion has a thickness that is lesser than the thickness of the adjacent ends of the cup and the base that it joins, said flexible portion acting as an articulation, enabling that, by exerting pressure on the base towards the second film, it can be brought closer to the second film and the tearing means can break or tear said second film. Naturally, it is foreseen that the flexible portion may have combined sections of greater or lesser thickness, for example, to achieve a double or triple articulation. However, it is foreseen that preferably the entire flexible portion has a thickness that is lesser than the thickness of the ends of the cup and the base that it joins, since it has been established that one single articulation is sufficient to be able to tear the second film of the capsule.

[0013] In a variant embodiment, the flexible portion has a minimum thickness that is lesser than 50 micrometers, thus enabling its operation as an articulation, especially when the flexible portion is made of polypropylene.

[0014] It is further disclosed that the flexible portion surrounds the base, enclosing it, so that it is sufficient to exert pressure at any point of the base in order to tear the second film.

[0015] It is also disclosed that the second film is made of aluminum. This second film has a thickness that is greater than 10 micrometers and is adapted to withstand a pressure of up to 10 bar, that is, a pressure of up to 1 megapascal.

[0016] In a variant embodiment, the base is provided with at least one lower support projection, which enables the capsule to be raised when it is inserted into the housing of a machine for preparing beverages.

[0017] In order that the pressure exerted on each lower projection is correctly transmitted to the base, it is foreseen that the base be provided with at least three lower support projections, which determine a plane and allow the capsule to remain stable in the housing. In order to correctly transmit the force exerted on each lower projection to the base, in a variant of interest, the three lower support projections make up the vertices of an equilateral triangle.

[0018] It is also foreseen that the base be provided with at least six lower support projections that make up the vertices of a hexagon, or in other words, these six lower support projections that make up the vertices of a hexagon also make up the vertices of two equilateral triangles, optimally distributing the force that will be exerted on said projections.

[0019] It is also disclosed that the tearing means comprise at least one puncturing or cutting flange of the second film, these tearing means can be made up of, for example, plastic material by means of a mold, as part of the base, for example to be molded together with the body of the capsule, or they could be bonded or welded subsequently to the base, for example, if the base is flexible and the tearing means, such as flanges, are added after the molding of the body.

[0020] In a variant of interest, at least one puncturing or cutting flange is aligned with one lower support projection, such that when exerting force on each lower support projection that is aligned with a puncturing or cutting flange, the displacement carried out by each of these lower projections, due to the effect of the exerted force, will be directly transmitted to the puncturing or cutting flange that it is aligned with. Thus, the displacement is transmitted more efficiently to the puncturing or cutting flanges, although the capsule is unbalanced, for example, if the lower projections are broken or if they are partly defective, and it would be possible to break or cut the second film even if the entire base could not move.

[0021] In a variant embodiment, the cup comprises an inner wall that surrounds and encloses the product dose, said inner wall being closed at the top by a third permeable film, such as filter paper, thus enabling to prepare beverages that require infusion or percolation without turbulence, such as coffee or tea. Naturally, it will not be necessary to incorporate this inner wall closed at the top by the third film when preparing beverages in which the turbulence generated by the injection of water is indifferent or even beneficial, such as soluble products, thus saving material and simplifying manufacture. It is also foreseen that the capsule be devoid of a wall and that the third film be bonded directly to the walls of the cup or to a rim of said wall, leaving the product dose requiring infusion or percolation, such as coffee or tea, without any turbulence, between the second and the third film, even if the capsule is not provided with an intermediate wall.

[0022] A system for preparing a beverage is also disclosed, comprising a capsule and a machine for preparing a beverage by means of said capsule, the machine being provided with a housing for housing and retaining the capsule such that the capsule protrudes at the top from said housing, and the machine being further provided with compressing means for closing the housing at the top and pressing the capsule against the bottom of said housing such that the base of the capsule is pushed towards the second film of the capsule enabling the tearing means thereof to be displaced, when the flexible portion of the capsule bends, until tearing or breaking the second film.

[0023] A method for preparing a beverage is also disclosed, comprising the steps of housing and retaining the capsule in a housing of the machine, such that the capsule protrudes at the top from said housing and closes the housing at the top by means of compressing means of the machine, pressing the capsule that protrudes at the top from the housing, such that the base of the cap-

sule is pushed towards the second film of the capsule, enabling the tearing means thereof to be displaced, when the flexible portion of the capsule bends, until tearing or breaking the second film.

Brief description of the drawings

[0024] As a complement to the description provided herein and for the purpose of helping to make the characteristics of the invention more readily understandable, this specification is accompanied by a set of drawings which, by way of illustration and not limitation, represent the following:

Figure 1 shows a front view of the body of the capsule object of the invention;
Figure 2 shows a lower perspective view of the body of the capsule;
Figure 3 shows an upper perspective view of the body of the capsule;
Figure 4 shows top view of the body of the capsule;
Figure 5a shows a view of the capsule object of the invention;
Figure 5b shows a detail of the capsule of Figure 5a;
Figures 6a and 6b show a sequence for positioning the capsule of the present invention in a machine for preparing beverages before tearing the second film of the capsule, and Figure 6c shows a subsequent step in which the second film of the capsule is torn before preparing the beverage;
Figure 7a shows a cross-section of the capsule and the machine in the sequence shown in Figure 6b;
Figure 7b shows a detail of Figure 7a;
Figure 8a shows a cross-section of the capsule and the machine in the sequence shown in Figure 6c;
Figure 8b shows a detail of Figure 8a; and
Figures 9 to 11 show another variant of the embodiment of the capsule.

Detailed description of the drawings

[0025] Figures 1, 2, 3 and 4 show different views of the body 2 that will form part of the capsule 1 object of the present invention. As can be seen in these figures, the body 2 is made up of a single piece or watertight material comprising a cup 3 and a base 4 joined by a flexible portion 11. This flexible portion 11 will enable the base 4 to be brought closer to the cup 3, albeit very slightly, by pressing the base 4 against the cup 3, as detailed here below. It is foreseen that this flexible portion 11 has a thickness that is lesser than the thickness of the ends of the cup 3 and the base 4 that it joins, enabling the flexible portion 11 to act as an articulation. As can be seen, the cup 3 of the body 2 has frustoconical walls, the base 4 of the body 2 having a substantially concave shape.

[0026] As can be seen, the cup 3 is provided with an upper mouth 6, which will be closed by a first watertight film 7, which will be bonded or welded to the cup 3 and will be prepared to be punctured by an injector element of a fluid, such as water, for preparing the beverage. The base 4 in turn is provided with a lower mouth 8, intended for the outflow of the prepared beverage and equipped with a spout15.

[0027] It is further provided that the cup 3 has a second watertight film 9 bonded or welded on the inside to said cup 3, above the base 4, and which will separate the upper mouth 6 and the lower mouth 8, such that the product dose 5 contained in the capsule 1 is stored between the first film 7 and the second film 9. Furthermore, as can be seen, the base 4 is provided with tearing means 10, in the manner of flanges 12, of this second film 9 which, as will be seen later, will enable to tear of break the second film 9 when the base 4 is brought closer to the cup 3.

[0028] The cup 3 of the body 2 also has an inner wall 13 that will surround and enclose the product dose, it being foreseen that said inner wall 13 be closed at the top by a third permeable film 14.

[0029] Figure 5a shows a cross-section view of the capsule 1 of the present invention, closed and ready for use in a machine for preparing beverages, such as one of the known single-dose or self-service type machines, in the way that will be illustrated further on. The capsule 1 comprises the body 2 described above, as well as the first watertight film 7, bonded or welded to the cup 3, for example, by means of an adhesive, which closes the upper mouth 6 of the cup 3, the first film 7 being prepared to be punctured by an injector element of a fluid for preparing the beverage.

[0030] As can be seen in this figure, the capsule 1 is further provided with a second watertight film 9, bonded or welded on the inside to the cup 2, for example, by means of an adhesive, above the base 4, and separating the upper mouth 6 and the lower mouth 8, the product dose 5 being stored between the first film 7 and the second film 9, and housed on the second film 9. It can also be seen that the tearing means 10 of the second film 9 are arranged in the base 4 so as to allow breaking or tearing the second film 9 when the base 4 is brought closer to the cup 3. Advantageously, the cup 3 and the base 4 of the body 2 are joined by a flexible portion 11, said flexible portion 11 being capable of bending when pushing the base 4 towards the second film 9, for example, when pressing the cup 3 against the base 4, enabling the tearing means 10 to be displaced until tearing or breaking the second film 9, opening the capsule 1 mechanically and thus preventing that a subsequent injection of liquid into the capsule 1 increases the pressure inside the capsule 1, thus avoiding having to make the body 2 of a material strong enough to prevent the explosion thereof. Thus, the body 2 can be manufactured out of weaker and less expensive materials or out of those having smaller thicknesses than the bodies of known capsules that must withstand high pressures in the interior thereof.

[0031] It is further noted that the cup 3 has an inner

wall 13 that surrounds and encloses the product dose 5, said inner wall 13 being closed at the top by a third permeable film 14, such as filter paper. Evidently, it is foreseen that other variants of the embodiment will be devoid of this inner wall 13, the product dose 5 being stored throughout the interior of the cup 3.

[0032] Figure 5b shows a detail of the capsule 1 of Figure 5a. In this detail, it is possible to see the flexible portion 11 joining the cup 3 to the base 4 and enabling the tearing means 10 to be brought closer until they break or cut the second film 9, when it is flexed as an articulation.

[0033] It is highlighted that at least part of the flexible portion 11, joining the ends of the cup 3 and the base, has a thickness that is lesser than the thickness of the ends of the cup 3 and the base 4, thus enabling the flexible portion 11 to act as an articulation. Ideally, the flexible portion 11 is expected to surround the base 4 by joining the entire perimeter of the base 4 with the cup 3. Nevertheless, it is also foreseen that the base 4 and the cup 3 may also be joined by some rigid point, which does not prevent the capsule 1 from being opened when the base 4 is pressed against the cup. It is foreseen that, in order to achieve this flexible effect, the flexible portion 11 will have a minimum thickness of lesser than 50 micrometers and form a crown or ring between the cup 3 and the base 4, if the material out of which the body 2 is made is polypropylene.

[0034] In order to achieve that the tearing means 10 of the base 4 tear or cut the second film 9, it is foreseen that this second film 9 be made of aluminum and have a thickness greater than 10 micrometers, which allows withstanding a pressure of up to 1 megapascal.

[0035] Figures 6a, 6b and 6c show the steps for preparing a beverage by means of a system 100 made up of a capsule 1 and a machine 101 for preparing a beverage from a product dose 5 stored in the capsule 1.

[0036] As can be seen, the method for preparing a beverage by means of said system 100 comprises the steps of housing and retaining the capsule 1 in a housing 102, as illustrated in Figure 6a. It is foreseen that the body 2 of the capsule 1 be sized such that the capsule protrudes from the housing 102 at the top. Said housing 102 will be adapted in order to be inserted in the machine 101, as shown in Figure 6b. After inserting the housing 102 containing the capsule 1 in the machine 101, the housing 102 will be closed at the top by means of compressing means 103 of the machine 101, for example, by the user when actuating a lever 105 arranged in the machine 101 for this purpose, such that the compressing means 103 press the capsule 1 against the bottom 104 of the housing 102. At this time, when the capsule 1 protrudes from the housing 102, the compressing means 103 will press the cup 3 of the capsule 1, such that the base 4 of the capsule will be pushed towards the second film 9 when the flexible portion 11 thereof bends, enabling the tearing means 10 of the capsule 1 to be displaced until tearing or breaking the second film 9. At this point, as the capsule 1 is open at the bottom, when the machine 101 injects water inside the capsule 1 through the first film 7, the beverage will flow out through the lower mouth 8 without raising the pressure inside the capsule 1. It is further noted that the bottom 104 of the housing 102 is provided with an opening in which the spout 15 of the capsule 1 is housed for the outflow of the prepared beverage.

[0037] The interaction between the capsule 1 and the machine 101 described above is illustrated in detail here below.

[0038] Figure 7a shows a schematic cross-section view of the system 100 in the position shown previously in Figure 6b, of which a detailed view of the flexible portion in shown in Figure 7b. These figures show that the capsule 1 is inserted in the housing 102, but is sized such that it is not perfectly housed in said housing 102 but protrudes from the top of the housing 102, albeit very slightly, leaving the base 4 of the capsule touching the bottom 104 of the housing. As will be seen below, the capsule 1 will have to protrude from the housing 102 at least the distance that the tearing means 10 must travel in order to break or cut the second film 9. For a better rendering, in this and the following schematic views the product dose 5 has not been represented.

[0039] Figure 8a shows a schematic cross-section view of the system 100 in the position shown previously in Figure 6c, of which a detailed view of the flexible portion in shown in Figure 8b. In this position, the compressing means 103 of the machine 101 close the housing 102 at the top, pressing the cup 3 of the capsule 1 against the bottom 104 of the housing 102, such that the base 4 of the capsule 1 is pushed towards the second film 9 of the capsule enabling the tearing means 10 of the base to be displaced until tearing or breaking the second film, when the flexible portion 11 bends, such that the capsule 1 is opened at the bottom, and when the machine 101 injects liquid inside the capsule 1, the beverage flows out through the lower mouth 8 without raising the pressure inside the capsule 1.

[0040] In order to improve the support of the capsule 1 on the bottom 104 of the housing 102, a variant embodiment foresees that the base 4 of the capsule 1 be provided with lower support projections 16 in the manner of legs. The six projections 16 shown in the variant of the embodiment of Figure 9 enable ensuring that the base 4 of the capsule 1 will be in contact with the bottom 104 of the housing 102 as shown above and that it will also protrude sufficiently from the housing 102 in order to be able to tear the second film 9 when the housing 102 closes the compressing means 103 of the machine 101 at the top, in a manner similar to that described above.

[0041] Figure 10 shows, schematically, a detail of the base 4 of the capsule 1 of Figure 9 in a lower view, in which it can be seen that each group of three lower support projections 16 make up the vertices of an equilateral triangle, and also that the six lower support projections 16 make up the vertices of a hexagon, enabling to efficiently transmit the displacement exerted on the projec-

tions towards the second film 9 to the entire base 4.

[0042] It is further foreseen that the puncturing or cutting flanges 12, like the six flanges 12 shown previously in Figure 4 are each aligned with a lower support projection 16, such that the displacement exerted on each projection 16 towards the second film 9 is transmitted directly to the flange 12 with which it is aligned. Naturally, this alignment could also take place with other tearing means 10 that the capsule 1 may have, and that are different from the flanges 12. By way of example, this alignment between a flange 12 and a projection 16 can be seen in the detail of the cross section of the capsule 1 shown in Figure 11.

Claims

1. A capsule (1) for preparing a beverage in a machine comprising a body (2) of a single piece of watertight material comprising a cup (3) and a base (4), the cup being adapted to store at least one dose (5) of a product for preparing the beverage and provided with an upper mouth (6) closed by a first watertight film (7) bonded to the cup and prepared for puncturing by a injector element of a fluid for preparing the beverage, and the base being provided with a lower mouth (8), intended for the outflow of the prepared beverage; the capsule being further provided with a second watertight film (9) bonded on the inside to the cup, above the base, and separating the upper mouth and the lower mouth, the product dose being stored between the first and the second films; and the base being provided with tearing means (10) of the second film, **characterized in that** the cup and the base are joined by a flexible portion (11), said flexible portion being capable of bending when pushing the base towards the second film, enabling the tearing means to be displaced until tearing or breaking the second film.

2. The capsule (1) according to the preceding claim, **characterized in that** at least part of the flexible portion (11) has a thickness that is lesser than the thickness of the adjacent ends of the cup (3) and the base (4) that it joins.

3. The capsule (1) according to the preceding claim, **characterized in that** the entire flexible portion (11) has a thickness that is lesser than the thickness of the adjacent ends of the cup (3) and the base (4) that it joins.

4. The capsule (1) according to any one of the preceding claims, **characterized in that** the flexible portion (11) has a minimum thickness that is lesser than 50 micrometers.

5. The capsule (1) according to any one of the preceding claims, **characterized in that** the flexible portion (11) surrounds the base (4).

6. The capsule (1) according to any one of the preceding claims, **characterized in that** the base (4) is provided with at least one lower support projection (16).

7. The capsule (1) according to the preceding claim, **characterized in that** the base (4) is provided with at least three lower support projections (16).

8. The capsule (1) according to the preceding claim, **characterized in that** the three lower support projections (16) make up the vertices of an equilateral triangle.

9. The capsule (1) according to any one of claims 6 to 8, **characterized in that** the base is provided with at least six lower support projections (16) that make up the vertices of a hexagon.

10. The capsule (1) according to any one of the preceding claims, **characterized in that** the tearing means (10) comprise at least one puncturing or cutting flange (12).

11. The capsule (1) according to any one of claims 6 to 9, **characterized in that** the tearing means (10) comprise at least one puncturing or cutting flange (12) and at least one puncturing or cutting flange (12) is aligned with a lower support projection (16).

12. The capsule (1) according to the preceding claim, **characterized in that** each puncturing or cutting flange (12) is aligned with a lower support projection (16).

13. The capsule (1) according to any one of the preceding claims, **characterized in that** the second film (9) is made of aluminum and has a thickness greater than 10 micrometers.

14. A system (100) for preparing a beverage comprising a capsule (1) according to any one of the preceding claims, and a machine (101) for preparing a beverage by means of said capsule, **characterized in that** the machine is provided with a housing (102) for housing and retaining the capsule such that the capsule protrudes at the top from said housing, and the machine being furthermore provided with compressing means (103) for closing the housing at the top and pressing the capsule against the bottom (104) of said housing such that the base (4) of the capsule is pushed towards the second film (9) of the capsule enabling the tearing means (10) thereof to be displaced, when the flexible portion (11) of the capsule bends, until tearing or breaking the second film.

15. A method for preparing a beverage by means of a system (100) according to the preceding claim, **characterized in that** it comprises the following steps:

a) housing and retaining the capsule (1) in a housing (102) of the machine (101), such that the capsule protrudes at the top from said housing, and
b) closing the housing at the top by means of compressing means (103) of the machine, pressing the capsule that protrudes at the top of the housing against the bottom (104) of the housing, such that the base (4) of the capsule is pushed towards the second film (9) of the capsule enabling the tearing means (10) thereof to be displaced, when the flexible portion (11) of the capsule bends, until tearing or breaking the second film.

Patentansprüche

1. Kapsel (1) zur Herstellung eines Getränks in einer Maschine umfassend einen Körper (2) aus einem einzigen Stück aus wasserdichtem Material umfassend ein Gefäß (3) und eine Basis (4), wobei das Gefäß dazu angepasst ist, mindestens eine Dosis (5) eines Produkts zur Herstellung des Getränks aufzubewahren und mit einer oberen Öffnung (6) versehen, welche mit einem ersten wasserdichten Film (7) geschlossen ist, welcher mit dem Gefäß verbunden ist und dazu vorbereitet ist, von einem Flüssigkeitseinspritzelement zur Herstellung des Getränks durchgestochen zu werden, und wobei die Basis mit einer unteren Öffnung (8) versehen ist, welche für den Auslass des hergestellten Getränks bestimmt ist; wobei die Kapsel zusätzlich mit einem zweiten wasserdichten Film (9) versehen ist, welcher im Inneren mit dem Gefäß, über der Basis, verbunden ist und die obere Öffnung und die untere Öffnung trennt, wobei die Produktdosis zwischen dem ersten und dem zweiten Film aufbewahrt wird; und wobei die Basis mit Reißmitteln (10) für den zweiten Film versehen ist, **dadurch gekennzeichnet, dass** das Gefäß und die Basis durch einen flexiblen Teilbereich (11) aneinandergefügt sind, wobei der genannte flexible Teilbereich in der Lage ist sich zu biegen, wenn die Basis zum zweiten Film hin gedrückt wird, sodass es erlaubt wird, dass die Reißmittel verlagert werden, bis der zweite Film gerissen oder gebrochen wird.

2. Kapsel (1) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** mindestens ein Teil des flexiblen Teilbereiches (11) eine Dicke aufweist, welche kleiner ist als die Dicke der benachbarten Enden des Gefäßes (3) und der Basis (4), welche er aneinanderfügt.

3. Kapsel (1) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** der gesamte flexible Teilbereich (11) eine Dicke aufweist, welche kleiner ist als die Dicke der benachbarten Enden des Gefäßes (3) und der Basis (4), welche er aneinanderfügt.

4. Kapsel (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der flexible Teilbereich (11) eine minimale Dicke aufweist, welcher kleiner als 50 Mikrometer ist.

5. Kapsel (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der flexible Teilbereich (11) die Basis (4) umgibt.

6. Kapsel (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Basis (4) mit mindestens einem unteren Stützvorsprung (16) versehen ist.

7. Kapsel (1) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** die Basis (4) mit mindestens drei unteren Stützvorsprüngen (16) versehen ist.

8. Kapsel (1) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** die drei unteren Stützvorsprüngen (16) die Scheitelpunkte eines gleichseitigen Dreiecks bilden.

9. Kapsel (1) nach einem der Ansprüche 6 bis 8, **dadurch gekennzeichnet, dass** die Basis mit mindestens sechs unteren Stützvorsprüngen (16) versehen ist, welche die Scheitelpunkte eines Sechsecks bilden.

10. Kapsel (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Reißmittel (10) mindestens einen Durchstech- oder Schnittflansch (12) umfassen.

11. Kapsel (1) nach einem der Ansprüche 6 bis 9, **dadurch gekennzeichnet, dass** die Reißmittel (10) mindestens einen Durchstech- oder Schnittflansch (12) umfassen und mindestens ein Durchstech- oder Schnittflansch (12) mit einem unteren Stützvorsprung (16) fluchtet.

12. Kapsel (1) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** jeder Durchstech- oder Schnittflansch (12) mit einem unteren Stützvorsprung (16) fluchtet.

13. Kapsel (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der zweite Film (9) aus Aluminium hergestellt ist und eine Dicke aufweist, welche größer als 10 Mikrometer ist.

14. System (100) zur Herstellung eines Getränks umfassend eine Kapsel (1) nach einem der vorhergehenden Ansprüche, und eine Maschine (101) zur Herstellung eines Getränks mittels der genannten Kapsel, **dadurch gekennzeichnet, dass** die Maschine mit einem Gehäuse (102) zum Aufnehmen und Halten der Kapsel versehen ist, sodass die Kapsel am oberen Teil vom genannten Gehäuses hervorsteht, und die Maschine zusätzlich mit Drückmitteln (103) versehen ist, zum Schließen des Gehäuses am oberen Teil und zum Drücken der Kapsel gegen den Boden (104) des genannten Gehäuses, sodass die Basis (4) der Kapsel zum zweiten Film (9) der Kapsel hin gedrängt wird, sodass es ermöglicht wird, dass die Reißmittel (10) derselben verlagert werden, wenn sich der flexible Teilbereich (11) der Kapsel biegt, bis der zweite Film gerissen oder gebrochen wird.

15. Verfahren zur Herstellung eines Getränks mittels eines Systems (100) nach dem vorhergehenden Anspruch, **dadurch gekennzeichnet, dass** es die folgenden Schritte umfasst:

a) das Aufnehmen und Halten der Kapsel (1) in einem Gehäuse (102) der Maschine (101), sodass die Kapsel am oberen Teil vom genannten Gehäuse hervorsteht, und
b) das Schließen des Gehäuses am oberen Teil mittels Drückmittel (103) der Maschine, sodass die Kapsel, welche am oberen Teil des Gehäuses hervorsteht, gegen den Boden (104) des Gehäuses gedrückt wird, sodass die Basis (4) der Kapsel zum zweiten Film (9) der Kapsel hin gedrängt wird, sodass es ermöglich wird, dass die Reißmittel (10) derselben verlagert werden, wenn sich der flexible Teilbereich (11) der Kapsel biegt, bis der zweite Film gerissen oder gebrochen wird.

Revendications

1. Capsule (1) pour la production de boissons dans une machine comprenant un corps (2) monobloc en matière étanche comprenant une tasse (3) et une base (4), la tasse étant adaptée pour stocker au moins une dose (5) d'un produit pour la production de la boisson et pourvue d'une embouchure supérieure (6) fermée par une première pellicule étanche (7) reliée à la tasse et préparée pour perforer par le biais d'un élément injecteur d'un fluide pour la production de la boisson, et la base étant pourvue d'une embouchure inférieure (8), destinée à la sortie de la boisson produite ; la capsule étant en outre pourvue d'une seconde pellicule étanche (9) reliée sur l'intérieure à la tasse, par-dessus la base et séparant l'embouchure supérieure et l'embouchure inférieure, la dose de produit étant stockée entre la première et la seconde pellicules ; et la base étant pourvue de moyens de rupture (10) de la seconde pellicule, **caractérisée en ce que** la tasse et la base sont unies par une partie flexible (11), ladite partie flexible étant apte à fléchir lorsque la base est poussée vers la seconde pellicule, en permettant que les moyens de rupture soient déplacés jusqu'à ce qu'ils rompent ou cassent la seconde pellicule.

2. Capsule (1) selon la revendication précédente, **caractérisée en ce qu'**au moins une part de la partie flexible (11) a une épaisseur qui est inférieure à l'épaisseur des extrémités attenantes de la tasse (3) et la base (4) reliées par celle-ci.

3. Capsule (1) selon la revendication précédente, **caractérisée en ce que** toute la partie flexible (11) a une épaisseur qui est inférieure à l'épaisseur des extrémités attenantes de la tasse (3) et la base (4) reliées par celle-ci.

4. Capsule (1) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la partie flexible (11) a une épaisseur minimale qui est inférieure à 50 micromètres.

5. Capsule (1) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la partie flexible (11) entoure la base (4).

6. Capsule (1) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la base (4) est pourvue d'au moins une saillie de support inférieure (16).

7. Capsule (1) selon la revendication précédente, **caractérisée en ce que** la base (4) est pourvue d'au moins trois saillies de support inférieures (16).

8. Capsule (1) selon la revendication précédente, **caractérisée en ce que** les trois saillies de support inférieures (16) conforment les sommets d'un triangle équilatéral.

9. Capsule (1) selon l'une quelconque des revendications 6 à 8, **caractérisée en ce que** la base est pourvue d'au moins six saillies de support inférieures (16) qui constituent les sommets d'un hexagone.

10. Capsule (1) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les moyens de rupture (10) comprennent au moins un rebord de perforation ou de coupe (12).

11. Capsule (1) selon l'une quelconque des revendications 6 à 9, **caractérisée en ce que** les moyens de rupture (10) comprennent au moins un rebord de

perforation ou de coupe (12) et au moins un rebord de perforation ou de coupe (12) est aligné avec une saillie de support inférieure (16).

12. Capsule (1) selon la revendication précédente, **caractérisée en ce que** chaque rebord de perforation ou de coupe (12) est aligné avec une saillie de support inférieure (16).

13. Capsule (1) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** la seconde pellicule (9) est réalisée en aluminium et a une épaisseur supérieure à 10 micromètres.

14. Système (100) pour la production de boissons comprenant une capsule (1) selon l'une quelconque des revendications précédentes, et une machine (101) de production de boissons par le biais de ladite capsule, **caractérisé en ce que** la machine est pourvue d'un logement (102) pour loger et retenir la capsule de manière que la capsule dépasse sur la partie supérieure dudit logement, et la machine étant en outre pourvue de moyens de compression (103) pour fermer le logement sur la partie supérieure et presser la capsule contre le fond (104) dudit logement, de manière que la base (4) de la capsule est poussée vers la seconde pellicule (9) de la capsule en permettant que ses moyens de rupture (10) soient déplacés, lorsque la partie flexible (11) de la capsule fléchit, jusqu'à la rupture ou la cassure de la seconde pellicule.

15. Méthode pour la production de boissons par le biais d'un système (100) selon la revendication précédente, **caractérisée en ce qu'**elle comprend les étapes suivantes:

a) loger et retenir la capsule (1) dans un logement (102) de la machine (101), de manière que la capsule dépasse sur la partie supérieure dudit logement, et
b) fermer le logement sur la partie supérieur par le biais de moyens de compression (103) de la machine, presser la capsule qui dépasse sur la partie supérieure du logement contre le fond (104) du logement, de manière que la base (4) de la capsule est poussée vers la seconde pellicule (9) de la capsule en permettant que ses moyens de rupture (10) soient déplacés, lorsque la partie flexible (11) de la capsule fléchit, jusqu'à la rupture ou cassure de la seconde pellicule.

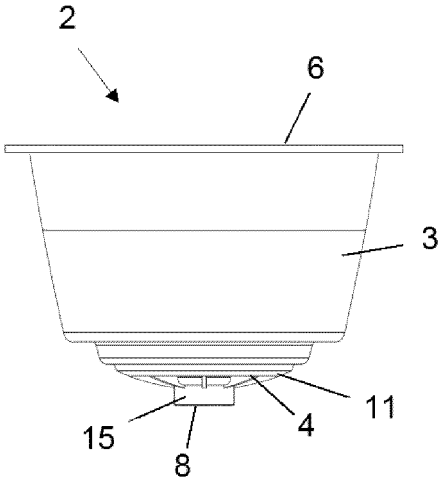

Fig. 1

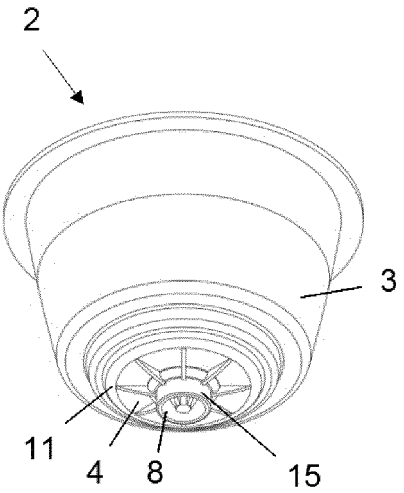

Fig. 2

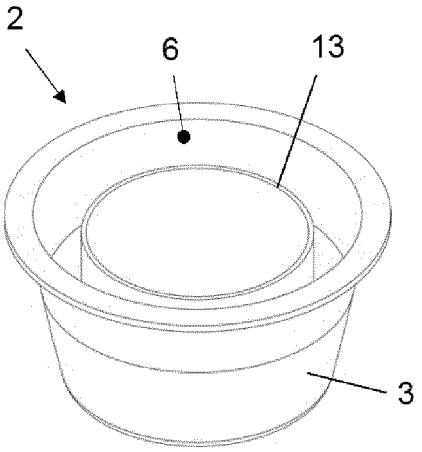

Fig. 3

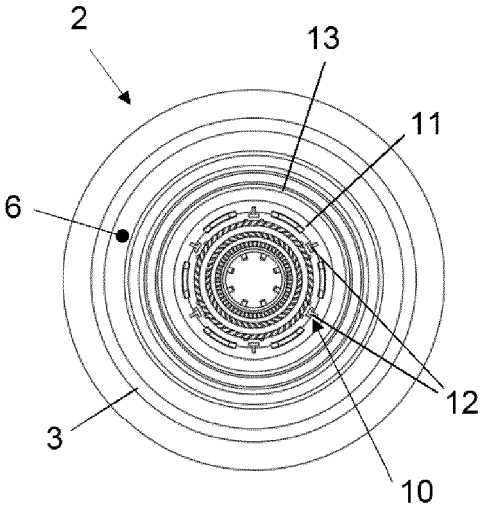

Fig. 4

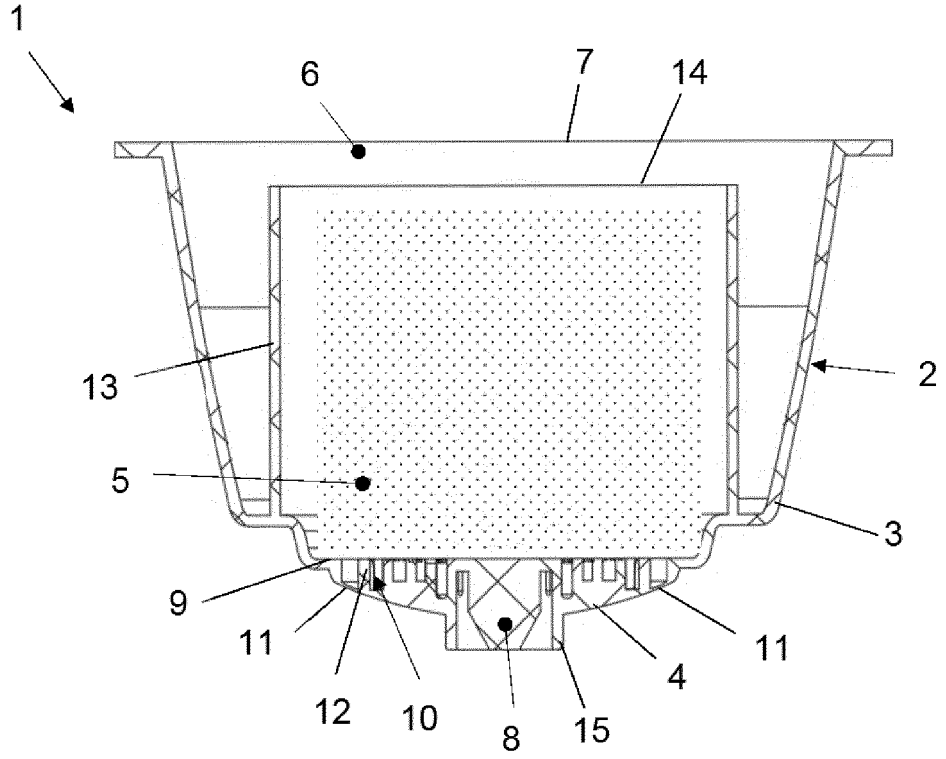

Fig. 5a

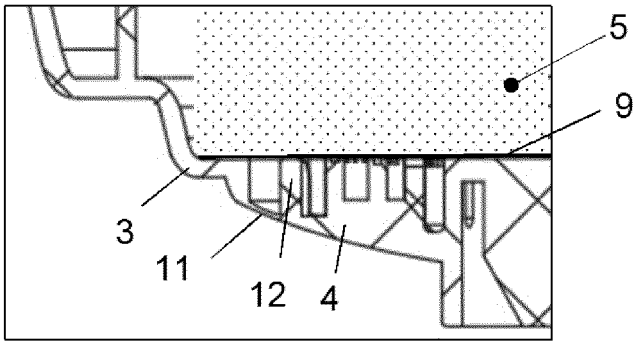

Fig. 5b

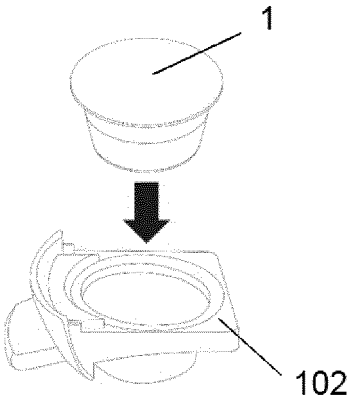

Fig. 6a

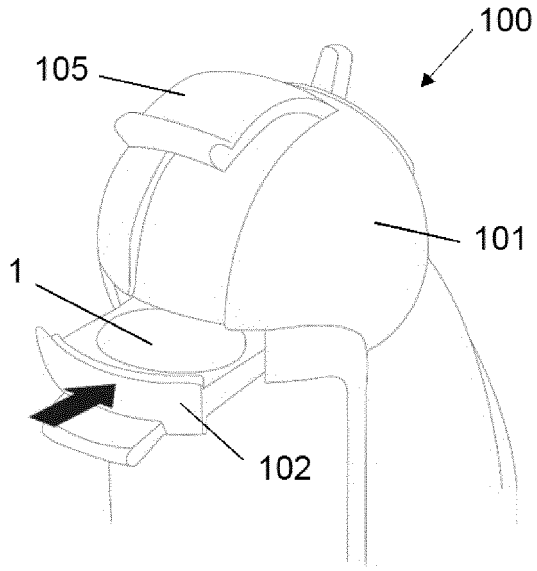

Fig. 6b

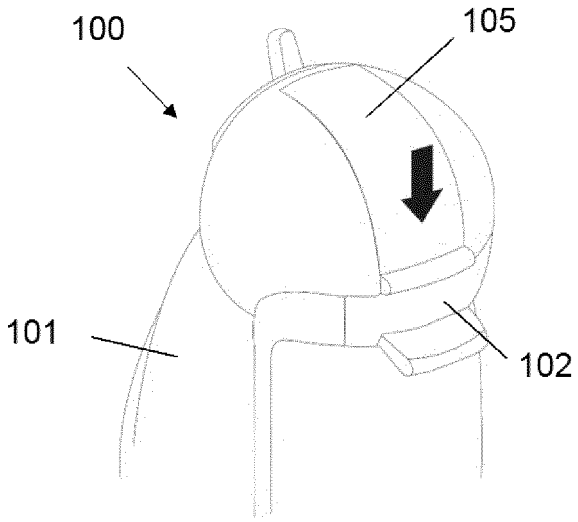

Fig. 6c

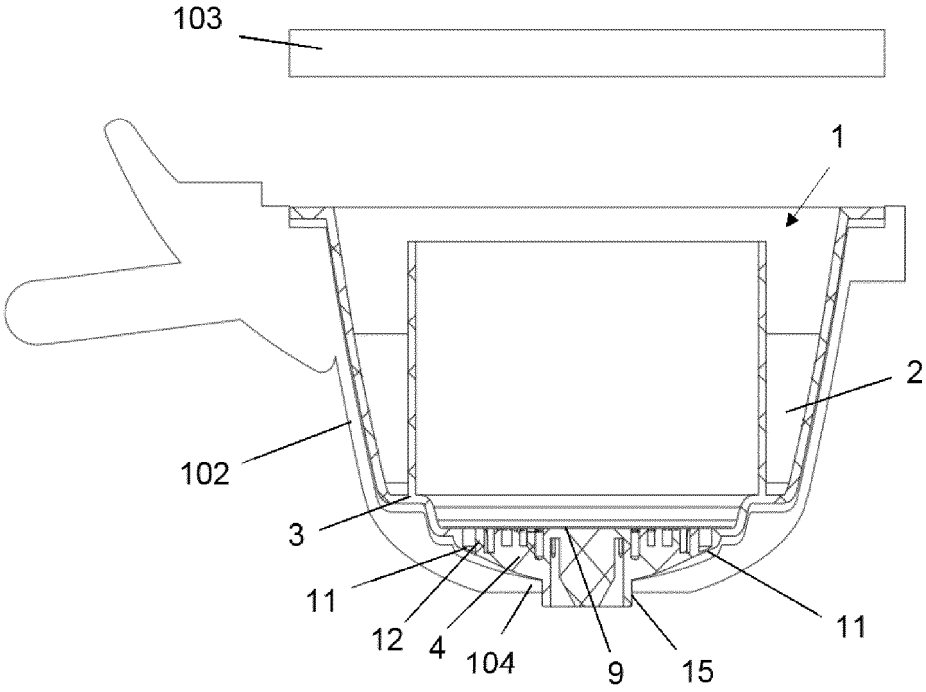

Fig. 7a

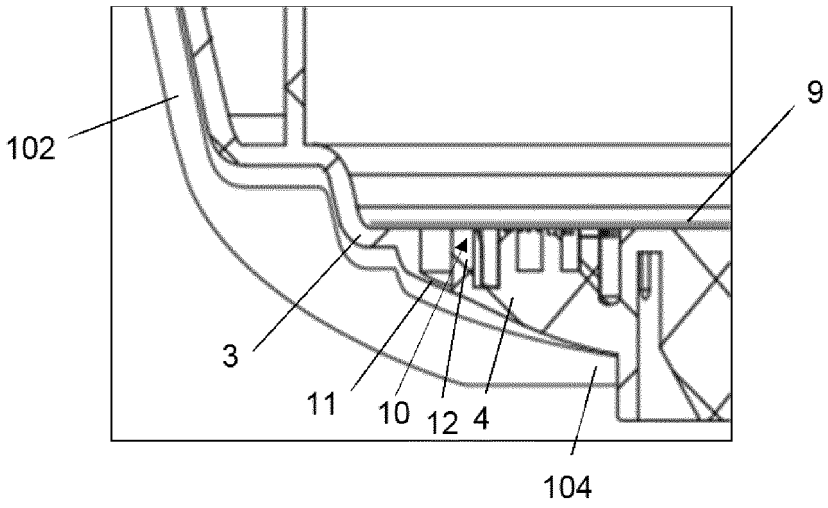

Fig. 7b

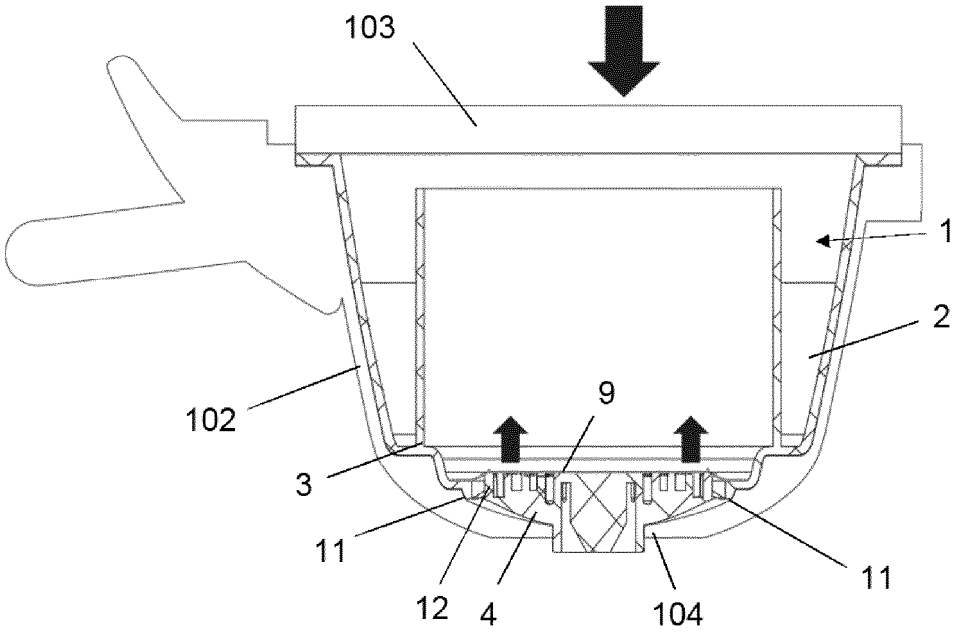

Fig. 8a

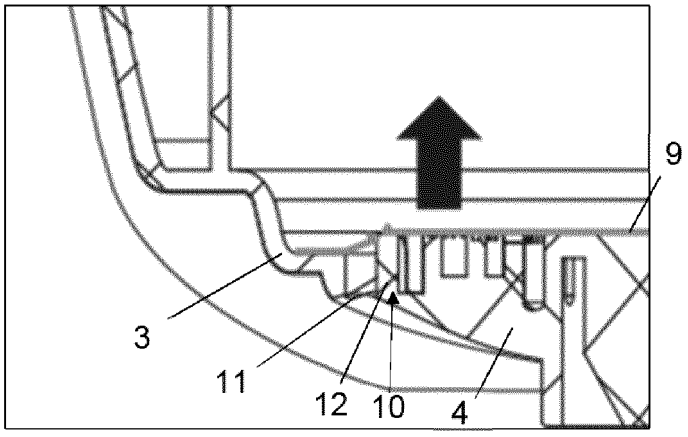

Fig. 8b

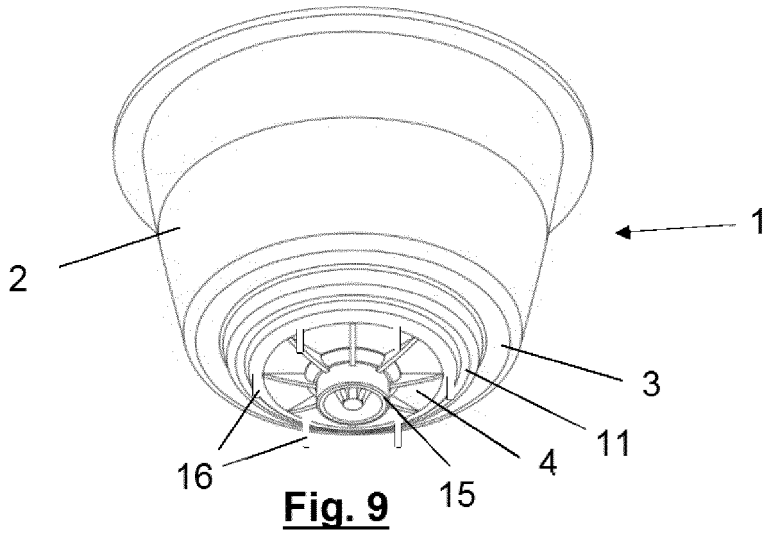

Fig. 9

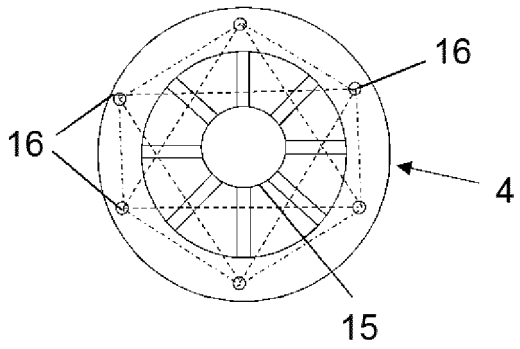

Fig. 10

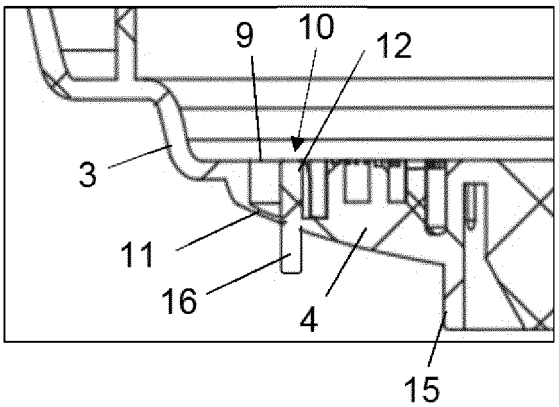

Fig. 11

REFERENCES CITED IN THE DESCRIPTION

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