

(19)



**Octrooi centrum
Nederland**

(11)

2017587

(12) B1 OCTROOI

(21)

Aanvraagnummer: **2017587**

(51)

Int. Cl.:
B65D 85/804 (2016.01)

(22)

Aanvraag ingediend: **07/10/2016**

(41)

Aanvraag ingeschreven:
16/04/2018

(73)

Octrooihouder(s):
Koninklijke Douwe Egberts B.V. te Utrecht.

(43)

Aanvraag gepubliceerd:
-

(72)

Uitvinder(s):
Glen Andrew Oliver te Utrecht.

(47)

Octrooi verleend:
16/04/2018

(74)

Gemachtigde:
ir. C.M. Jansen c.s. te Den Haag.

(45)

Octrooischrift uitgegeven:
16/04/2018

(54)

Capsule, system and method for preparing a beverage

(57)

In a capsule containing a substance constituted by a mass of loose, solid particles, for the preparation of a potable beverage by extracting and/or dissolving the substance by means of supplying a fluid under pressure into the capsule, a screen, permeable to water and impermeable to a predominant portion of particles of the substance is positioned between the substance and the bottom. The screen is attached to the capsule body in such a manner that the screen releases from the capsule body during brewing. A beverage brewing system comprising such a capsule and a method of use of such a capsule are described as well.

TITLE: Capsule, system and method for preparing a beverage

FIELD AND BACKGROUND OF THE INVENTION

The invention relates to a capsule according to the introductory portion of claim 1. Such a capsule is known from European patent application

5 0 468 079.

In practice, such capsules are mostly arranged and used for extracting coffee, by pressing an injection fluid such as hot water under pressure through powder obtained by grinding roasted coffee beans. However, the substance, which may be in the form of for instance granules, chips or flakes, may also be
10 constituted by or contain constituents that are to be dissolved and/or entrained, such as sugar or milk powder. Substances to be extracted may also be of other types than coffee, such as tea or herbs.

Widely used in the market are capsules of which the capsule body is of aluminium or plastic and of which the open end is sealed-off by a thin sheet,
15 usually of aluminium. The closed end of the capsule body is typically referred to as the bottom. The coffee machines have a housing in which a major portion of capsule body can be received and a closing member. The housing and/or the closing member is/are movable relative to the other between an operating position in which the flange of the capsule is clamped between the housing and
20 a closing member and a transfer position leaving an opening through which a used capsule can be removed from the housing and a fresh capsule can be positioned in the housing. Piercing elements are provided which in use pierce a bottom portion of the capsule body inside the housing.

When pressurised fluid is fed into the housing, it penetrates the capsule
25 through the holes made by the piercing element, and causes an increase in the internal pressure which causes the cover to be torn, for instance with assistance of piercing members of the closing member. Then, a flow of water is pressed into the substance and brewed beverage exits the capsule and guided

to a receptacle of the user outside of the machine. The cover may also be to some extent open prior to injection of the pressurized fluid, for instance if the capsule is packaged in a barrier material for retaining flavours, which barrier material is to be removed prior to use.

5 Substance may leave the capsule through the pierced openings when the piercing elements are retracted out of the capsule.

 The screen may also affect the distribution of the flow of water through the substance and in particular its uniformity over all of the substance and for the entire duration of the beverage making stage. Also, the degree of
10 compression of the substance and formation of foam ("crema") appears to be affected by the screen.

 While properties affecting cleanliness of the coffee machine and organoleptic and visual quality of the beverage are important, manufacturing costs and suitability for recycling of materials used are also important for a
15 packaging product such as capsules, which are manufactured in large numbers.

 Over the course of time, many solutions have been proposed for the screen or filter for retaining the substance in the capsule after it has been opened. For instance in European patent application 0 468 079, the screen is
20 welded to a shoulder inside the capsule body, the screen being detached from the bottom of the capsule.

 European patent application 1 165 398 discloses a screen that can be pierced or be provided with an opening through which the piercing element can pass and be retracted. Such a pre-cut opening is in the form of a cross-
25 shaped cut-out and closed when the piercing element is retracted for retaining coffee behind the screen.

 European patent application 1 190 959 discloses a screen in the form of a fabric sheet that is sealed to the bottom of the cup over two zones, on the one hand a central part and on the other hand along the periphery of the bottom,
30 allowing the piercing elements to enter in a spacing left between the capsule bottom and the screen between the central and peripheral sealed zones.

European patent application 2 516 296 discloses a screen in the form of a filter element of non-woven material produced from fine plastic fibres, the screen being attached via a dust proof sealing along the periphery of the screen.

5 WO2015/087180 discloses arranging the screen in the form of a filter element between the substance and the capsule bottom without attachment of the screen to the capsule, so that it is free to move away from the bottom except for the resistance applied by the powdered food substance.

10 SUMMARY OF THE INVENTION

It is an object of the present invention to provide a capsule which can be manufactured in a simple manner at low costs and which is further improved with respect to processing of the substance into a beverage of high organoleptic
15 and visual quality.

According to the invention, this object is achieved by providing a capsule according to claim 1.

Because the screen is attached to the capsule body in such a manner that the screen releases from the capsule body during brewing, the screen is
20 allowed to move away from the bottom of the capsule body more completely as the liquid is injected into the capsule. Thus more room is left between the screen and the capsule body bottom for radial water distribution over the substance. On the other hand, because the screen is attached to the capsule body prior to brewing, the screen is reliably held in place during filling and
25 subsequent handling of the capsule prior to brewing, even if the capsule is shaken, e.g. during transport.

The screen may for instance be made from a filter material provided with a plurality of passages that are large enough to allow at least smaller ones of particles of the substance to pass through. More particularly the filter
30 material may be a non-woven material. It shows that such a screen provides an excellent water distribution over the substance bed (in particular ground

coffee bed) so that extraction is improved. Without being bound to theory, it is expected that the improved extraction is obtained by a combination of the porosity of the filter material on the one hand and the passages in the filter material on the other hand.

5 The passages may for instance have a diameter of 1-4 mm. The diameter of the screen may for instance be 20-40 mm, for example 22-30 mm. The diameter of the bottom of the capsule may for instance be 20-40 mm, for example 22-30 mm. The diameter of the screen may be about the same as (e.g. 95 – 105% of) the diameter of the bottom at the inside of the capsule. The
10 screen may for instance be provided with 4-30 passages, preferably about 15-25 passages. The screen area including a pattern of the passages may cover 50-100% of the bottom, the remainder of the screen area being free of a pattern of the passages. In a practical embodiment the screen is provided with 15-18 passages each having a diameter of 1.5-2.5 mm, preferably 1.6–2.2 mm, more
15 preferably of 1.6-1.8 mm.

 The screen material may for instance have a weight of 20-200 g/cm², preferably 40-100 g/cm². The screen material may for instance have a thickness of 0.1-1 mm, preferably 0.2-0.5 mm. The screen material (without the passages) may for instance have an air permeability between 500 and
20 3000 l/(m²s) at a pressure drop of 100 Pa over the screen material, preferably between 1000 and 1500 l/(m²s) at a pressure drop of 100 Pa over the screen material.

 Particular elaborations and embodiments of the invention are set forth in the dependent claims. The invention may also be embodied in a system
25 according to claim 38 and in a method according to claim 40.

 Further features, effects and details of the invention appear from the detailed description and the drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective cross-sectional view of a first example of a capsule according to the invention;

5 Fig. 2 is a schematic cross-sectional side view of the capsule according to Fig. 1 positioned between a housing and a closing member of a coffee making machine and with a screen released from a capsule body;

Fig. 3 is a perspective cross-sectional view of a second example of a capsule according to the invention;

10 Fig. 4 is top plan view of a screen of a third example of a capsule according to the invention;

Fig. 5 is a top plan view of a screen of a fourth example of a capsule according to the invention; and

15 Fig. 6 is a top plan view of a screen of a fifth example of a capsule according to the invention.

DETAILED DESCRIPTION

In Figs. 1 and 2 a first example of a capsule 1 according to the invention is shown. The capsule 1 has a capsule body 2 having a bottom 3, a side wall 4, an end 5 opposite of the bottom 3 and a flange 6 extending outwardly from the side wall 4 and around the open end 5. A cover 7 of the capsule is attached to the outwardly extending flange 6 and hermetically closes off the end 5 of the capsule body 5 opposite of the bottom 3. For illustrative purposes, the cover 7 is shown as a transparent member. The cover may also be open to some extent, for instance in an embodiment in which the capsule is packaged in a flavour retaining barrier that is to be removed prior to use and in which the cover does not have to be opened further to allow the brewed beverage to flow through.

The capsule body 2 and the cover 7 bound a capsule chamber 8. The capsule chamber 8 contains a substance 9 constituted by a mass of loose, solid particles, for the preparation of a potable beverage by extracting and/or

dissolving the substance by means of supplying an injection fluid under pressure into the capsule.

In this example and in embodiments of the invention in general, the substance can for instance be ground, roasted coffee beans, but may also be another substance from which constituents are to be extracted and/or which is to be dissolved and/or emulsified when pressurised injection liquid such as hot water is passed through, for instance tea, milk powder and/or sugar, or dried soup. The substance may for instance be 5 - 40 grams, preferably 5 - 30 grams, more preferably 5 - 14 grams of roasted and ground coffee.

For compatibility with widely used coffee machines, it is generally preferred that the capsule is in accordance with one or more of the following features, wherein dimensions are to be selected within these ranges depending on the type of coffee making machine in which the capsule is to be used:

- the outer diameter of the outwardly extending flange is approximately 37 - 45 mm,
- the diameter of the bottom of the capsule is about 23 - 30 mm,
- an inner edge of a curled outer edge of the outwardly extending flange has a radius about the central capsule body axis of 32 - 42 mm,
- the curled outer edge of the outwardly extending flange has a largest dimension of about 1.2 - 1.6 mm,
- the inner diameter of the free end of the side wall of the capsule body is about 29 - 35 mm,
- the distance between the free end of the side wall of the capsule body and an outermost edge of the outwardly extending flange is about 3.5 - 5 mm,
- a height of the capsule body is about 28 - 40 mm,
- the capsule body is truncated, wherein preferably the side wall of the capsule body encloses an angle with a line transverse to the central capsule body axis of about 94 - 98°,
- the bottom of the capsule body has a largest inner diameter of about 23 - 29 mm,

- the bottom of the capsule body is truncated, preferably having a bottom height of about 4 - 7 mm and wherein the bottom further has a generally flat central portion opposite the cover having a diameter of about 8 - 11 mm,
- 5 • the height of the sealing member portion to be contacted first by the free end of the enclosure member when the enclosure member is closed is at least about 0.1 mm, more preferably at least 0.2 mm and most preferably at least 0.8 mm and at most 3 mm, more preferably at most 2 mm and most preferably at most 1.2 mm.

10 The wall thickness of the cover (preferably made of aluminium) is preferably smaller than the wall thickness of the capsule body, which may for instance be of aluminium or plastic material, such that the cover can be caused to open with assistance of a pressure applied to the capsule chamber, for instance by causing the aluminium cover to tear open on a closing member of
15 the beverage preparation device, such as an extraction plate of the beverage preparation device, under the influence of fluid pressure in the capsule.

 In the capsule chamber 8, a screen 10, of a material permeable to water and impermeable to a predominant portion of the particles of the substance 9 is arranged. The screen 10 is positioned between the substance 9 and the
20 bottom 3 of the capsule and has a centre approximately coaxial with a centre line 11 of the capsule 1. In the condition shown in Fig. 1, the screen 10 is attached to the capsule body 1 along attachment zones 12 spaced from the centre 11 and circumferentially spaced from each other. In the condition shown in Fig. 2, the screen 10 is released from the capsule body 2, i.e. no longer
25 attached to the capsule body 2 and rests on the substance 9 in the capsule.

 In some embodiments, it may sometimes, mostly or always occur that the screen is not fully released from the bottom of the capsule body. Depending on the pattern of non-released attachment areas, this may cause the position of the screen in the capsule body to become skewed. However, probably due to
30 the permeability of the screen, this has not been found to noticeably affect the quality of the brewed beverage.

The attachments in zones 12 keep the screen 10 in position in the capsule 1 immediately after it has been fixed to the bottom, during filling of the capsule and during storage and handling prior to brewing, yet interfere very little with liquid flow through the screen 10, since the screen 10 is released from the bottom 3 of the capsule body 2 during brewing, so that a relatively large portion of the screen 10 up to its peripheral edge is available for liquid to pass through and the screen 10 is moved to a position spaced from the bottom 3 of the capsule body 2 relatively far and over substantially its entire surface area, so as to leave more room for the liquid entering the capsule via piercings 16 made in the bottom 3 by piercing elements 13 to be easily distributed radially over the surface area of the screen 10 and the substance 9 downstream of the screen 10.

In the present example, the screen 10 is attached such that the attachments 12 tear apart during brewing. Thus, it is ensured that the screen 10 is released quickly as a pressure drop over the screen 10 builds up during brewing.

The screen 10 is attached to the bottom 3 in attachment zones 12 which are elongated in a radial direction and have most inward ends radially spaced from a central axis 11 of the capsule 1. When brewing starts, the screen 10 will bulge out in a central area, so that peeling forces exerted on the attachment zones 12 will be concentrated at the inward ends thereof. Since these attachment zones 12 are elongated in radial direction, these zones 12 are relatively small in circumferential sense. Therefore, the force pulling the screen 10 off the bottom 3 is concentrated in very small ranges in circumferential sense, so that a large peeling tension is exerted at the inward ends of the attachment zones and relatively little force is required to initiate peeling the screen 10 off the bottom 3. Once peeling has been initiated, the current inner ends of the remaining attachment zones 12 move radially outward until the outer ends of the attachment zones 12 are reached. Then, the screen 10 is completely detached from the bottom 3.

For facilitating peeling along the length of the attachment zones 12, the attachment zones 12 preferably have a width of less than 2 mm and more preferably of less than 1 or 0.6 mm. For reliability of attachment and ease of manufacturing a largest attachment zone width of at least 0.3 or 0.4 mm is preferred.

The screen 10 is provided with a plurality of passages 23 dimensioned so that at least a fraction of the substance 9 can pass through the passages 23 in solid form. The fraction of the substance 9 that can pass through the passages may for instance be the smallest 10%, 30% or 50% of the substance 9. It may also be provided that all particles of the substance are in principle capable of passing through the passages or that some of the passages allow a larger fraction of the substance to pass through than other ones of the passages. Also, even though particles are in principle capable of passing through the passages, in practice most of the substance, and also most of the fraction that can pass through the passages, will in fact not pass through the passages. This is because, after brewing, most of the substance is not exposed to backflow of sufficient magnitude to entrain these particles through the passages and because particles tend to cling to each other after having been wetted. However, it has been found that an appreciable amount of particles does pass through the passages and even to the outside of the capsule, so that after brewing a sample of the substance from which the beverage is brewed is visible and can easily be smelled by the consumer.

Moreover, these passages 23 allow water distribution over the substance 9, through which the water is pressed with a smaller pressure drop over the screen, because the relatively large passages provide distributed local areas where flow resistance is particularly low. This allows water to be distributed over flow paths including flow paths of a relatively great length, where pressure drop per unit of flow distance would otherwise be relatively low. Also any tendency of water to pass along flow paths circumventing the screen 10 or to pass to a relatively large extent through a hole pierced in the screen is reduced, because the pressure drop over the screen 10 is lowered. Reducing the

pressure drop over the screen 10 further provides the advantage that more of the overall pressure drop is left as a net pressure drop over the substance 9, so that extraction can be more intensive.

To allow the screen 10 to be displaced by the piercing elements 13 easily, without being pierced thereby, the screen 10 is preferably made of flexible material, such as paper, plastic film, or fibre material in the form of a woven, non-woven or knitted structure. Good brewing results at low costs can be achieved if the screen 10 is of filter paper. If the filter paper contains thermoplastic constituents such as fibres and/or binder material, these can be used for sealing to the capsule body in the attachment zones, as will be described in more detail.

For allowing the screen 10 to be displaced by the piercing elements 13 easily, it is also advantageous if all the attachment zones are distributed along a periphery of the screen element only.

In Fig. 2 also relevant parts of a coffee machine, which, together with the capsule 1, form a beverage brewing system, are shown. These parts include a housing 14 in which a major portion of capsule body 2 can be received and a closing member 15 with passages 17 for allowing a prepared beverage to flow away from the capsule 1. The housing 14 and/or the closing member 15 is/are movable relative to the other between an operating position in which the flange 6 of the capsule 1 is clamped between the housing 14 and the closing member 15 and a transfer position leaving an opening through which a used capsule 1 can be removed from the housing 14 and a fresh capsule 1 can be positioned in the housing 14. The piercing elements 13, which are arranged for, in use, piercing a bottom portion 3 of the capsule body 2 inside the housing 14 in several piercing locations 16 (in principle a single piercing element for piercing in a single location would be possible as well; in this example three piercing elements are provided which lay on a circle such that each of the piercing elements pierces the capsule just outside a central part of the bottom). Such coffee machines are commercially available and therefore not described in more detail.

In operation, the capsule 1 is positioned in the housing 14 and clamped between the housing 14 and the closing member 15 with perforations 17 for allowing brewed beverage outputted through the cover 7 to flow away from the capsule 1. A bottom portion 3 of the capsule body 2 inside the housing 14 is
5 pierced and pressurised injection fluid, such as hot water, is fed into the housing 14, causing the injection fluid to penetrate the capsule 1 through at least one hole 16 pierced in the bottom 3. The hole may also have been provided in the bottom prior to placing the capsule in the housing, e.g. during manufacturing.

10 Then, the cover 7 is caused to be torn, preferably under the influence of fluid pressure in the capsule 1 and a flow of the injection fluid is passed at least partially through the screen 10, into and through the substance and through the cover so that a brewed beverage exits the capsule; and the brewed beverage is guided to a receptacle.

15 Since the passages 23 are dimensioned to allow particles of the substance 9 to pass through in solid form, an appreciable amount of the particles will pass to the outside of the capsule body 2 as and/or after the piercing elements 13 have been retracted and pressure is no longer applied to the capsule 2. Thus, the user can see and better smell some of the substance
20 from which the beverage has been brewed, which enhances the similarity to and association with brewing coffee in a manually filled brewing apparatus such as a conventional espresso machine that has to be filled with ground coffee manually.

For radial distribution of water, it is preferred that at least some of the
25 passages 23 are located peripherally of the location or locations of the piercings 16 or of openings pre-fabricated in the bottom.

In Fig. 3 a second example of a capsule 51 according to the invention is shown. In principle, only features of this capsule 51 that differ significantly from the capsule 1 shown in Figs. 1 and 2 are described. For illustrative
30 purposes, the cover 57 in Fig. 3 is shown as a transparent member.

In this capsule 51, the attachment zones 62 are also elongated, but extend circumferentially from inward ends and are curved to extend more radially towards the outer ends. This allows relatively long attachment zones 62 for reliable attachment while peeling in radial direction becomes easier towards the radially outer ends of the attachment zones 62, when peeling forces tend to become smaller.

In this example, the passages 73 through the screen 60 that are large enough to allow particles of the substance 59 to pass through in solid form are arranged in a single circle instead of in two concentric circles as the example shown in Figs 1 and 2.

In Fig. 4 yet another example of a screen 110 for a capsule according to the invention is shown. In this example, the attachment zone 112 is in the form of an endless closed loop around the central axis of the screen 110. In such an embodiment, the attachment zone 112 has no free extreme end where peeling may be initiated. However, because the brewing liquid cannot escape otherwise than through the screen 110, the attachment zone will be in relatively intimate contact with the brewing liquid and the pressure drop of the screen 110 will be relatively large, in particular if the screen 110 is of a material that is impermeable to liquid or has a low liquid permeability only and if no passages through the screen material are located inside the loop formed by the attachment zone and all openings in the bottom through which liquid enters are inside of the attachment loop.

In particular in such an attachment zone design, but also in attachment zones of other designs, reliable release of the screen 110 can be facilitated by providing that the attachment is formed by a food grade heat sensitive adhesive including a constituent having a glass transition temperature lower than 92 °C and preferably lower than 85 °C. The heat of the brewing liquid as used for brewing for instance coffee or tea causes the adhesive to become easily deformable, so that the attachment is released more easily.

Reliable release of the screen can also be enhanced by providing that the attachment is formed by a food grade adhesive that is water soluble or

includes a water soluble constituent. Usually, the brewing liquid is water. Contact with the warm brewing liquid will cause the water soluble constituent of the adhesive to dissolve quickly, so that the screen will be released along the attachment zone 112.

5 In Fig. 5, a further example of a screen 160 for a capsule according to the invention is shown. In this example, the attachment zones 162 each have an inward end portion having a width decreasing in inward direction to a sharp point at the inward end. Thus, peeling off in a radially outward direction is initiated particularly easily.

10 The passages 173, 174, 175 are arranged in three annular zones concentric around the centre 176 of the screen 160. The passages 173, 174 in the inner rings are formed by openings in the material of the screen 160, which openings are circumferentially bounded by material of the screen 160. The passages 175 in the outer annular zone are formed by bays in the outer
15 circumferential edge of the screen 160. The bays form areas of reduced flow resistance where water can pass between the perimeter of the screen 160 and the side wall of the capsule body.

 In Fig. 6, yet another example of a screen 210 for a capsule according to the invention is shown. In this example, the passages 223 (not all designated
20 by a reference number) are arranged in a pattern that is uniform over the entire surface area of the screen 210. An advantage of passages arranged according to a uniform pattern is that the screen material can be provided with the passages very efficiently before screens are severed out of the screen material. Then the screens can be cut or otherwise severed out of the patterned
25 screen material.

 In this example, the pattern is a uniform pattern of columns and rows at uniform mutual distances. However, also other patterns, such as patterns in which successive rows are mutually staggered in longitudinal direction, e.g. by half of the pitch between successive columns, or a pattern in which the
30 passages are centred on corners of imaginary hexagonal cells.

In this example, the attachment zones 212 (not all designated by a reference number) are arranged in a pattern that is different than the uniform pattern of the passages 223. The location of the attachment zones 212 is determined by a tool for sealing the screen to the capsule body bottom and accordingly, to the extent that the screen 210 is centred inside the capsule body, centred in relation to the centre 226 and the outer circumference of the screen 210, but not determined in rotational sense about approximately the centre 226 of the screen 210. In contrast, the location of the uniform pattern on the screen 210 is (almost) completely random, because the screen is cut out of a web of screen material that has previously been provided with passages 223, without particular attention to the location of the pattern of the passages 223 relative to the centre 226 and outer edge of the screen. The attachment zones 212 are arranged in such a configuration that, regardless the placement of the uniform pattern of the passages 223 relative to the attachment zones, the attachment zones of a triangle of attachment zones 212 that are closest together (e.g. triangle of attachment zones A) can not simultaneously all fit completely (and preferably also not partially) within passages of any triangle of the passages 223 (e.g. passages 223 of the triangle of passages B or C or D). Thus, at worst, two neighbouring attachment zones 212 can fall within passages 223 and not contribute to attaching the screen 210 to the bottom of the capsule body. However, in that situation, other ones of the attachment zones 212 provide sufficient fixation of the screen 210 in the capsule body.

In the present example, the number of attachment zones is five, so that if two adjacent attachment zones 212 completely overlap with passages 223, the attachment zones adjacent to these two attachment zones will at least partially contribute to fixing the screen 210 and are located far enough apart to provide the required fixation of the screen 210 relative to the capsule body. The number of attachment zones may also be larger than five, but for a quick release during brewing and quick attachment by for instance heat sealing, it is preferred that the number of attachment zones is not larger than ten and more preferably smaller than eight.

For effectively distributing water to radially outer portions of the capsule and of the substance 59, it is advantageous if at least some of the passages 73 are arranged at a distance from the centre of more than 40% and more preferably more than 50% or more than 60% of the distance of a
 5 peripheral edge from the centre, measured in a direction from the centre to the respective passage. Radially outward water distribution is even further enhanced if this applies to all of the passages.

Radially outward water distribution (which may also be achieved effectively using a screen with a uniform pattern of openings) is particularly
 10 relevant if, as for instance in the examples shown in Figs. 1-3, 15. The capsule body 2, 52 has an internal cross-sectional area along a plane parallel to the cove 7, 57, which is larger at the cover 4, 57 than at the bottom 3, 53. In such a capsule 1, 51, the cross-sectional area increases from the bottom 3, 53 to the cover 7, 57, i.e. in the direction of flow of water through the substance, so that
 15 the water will need to distribute over a larger cross-sectional area as it flows through the substance 9, 59. By leading a relatively large portion of the water radially outwardly while incurring only a relatively small pressure loss at the screen, it is ensured that water is also effectively distributed to outer regions of cross-sections of the substance close to the cover 7, 57.

20 Radially outward water distribution is even more relevant if a shoulder is provided in a side wall of said capsule body, the internal cross-sectional area being larger at a cover side of the shoulder than at a bottom side of the shoulder.

Particularly effective reductions of local flow resistance are achieved if
 25 at least some or all of the passages each have a cross-sectional surface area of at least 3 mm², for instance 3-7 mm², more preferably 4-5.5 mm² and/or a cross-sectional size of at least 1-4 mm. The cross-sectional size of the screen may for instance be 20-40 mm, for example 22-30 mm. The diameter of the bottom of the capsule may for instance be 20-40 mm, for example 22-30 mm.
 30 The diameter of the screen may be about the same as the diameter of the bottom at the inside of the capsule. The screen may for instance be provided

with 4-30 passages, preferably about 15-25 passages. The screen area in which the passages are located may cover 50-100% of the bottom. In a practical embodiment the screen is provided with 15-18 passages each having a diameter of 1.5-2.5 mm, preferably 1.6–2.2 mm, more preferably of 1.6-1.8 mm.

5 The screen material may for instance have a specific weight of 20 - 200 g/cm², preferably 40-100 g/cm². The screen material may for instance have a thickness of 0.1-1 mm, preferably 0.2-0.5 mm. The screen material (without the passages) may for instance have an air permeability of 500 - 3000 l/(m²s) at a pressure drop of 100 Pa over the screen material,
10 preferably between 1000 and 1500 l/(m²s) at a pressure drop of 100 Pa over the screen material.

 The screen has a surface area that can be regarded as being composed of an inner surface area and an outer surface area surrounding the inner surface area, the inner surface area forming at least 25% of a total surface area of the
15 screen and an inner portion of the passages in the inner surface area provide an open surface area of a first proportion of the inner surface area, while an outer portion of the passages in the outer surface area provide an open surface area of a second proportion of the outer surface area. It is then advantageous for outward water distribution if the second proportion is larger than the first
20 proportion. The inner surface area may form at least 40%, 50% or 60% of the total surface area of the screen and the inner surface area may also be free of passages, at least prior to brewing. The inner surface area may have a circular boundary, a centre of the screen forming the centre of the inner surface area.

 The screen is preferably of water permeable material (e.g. one or more
25 layers of fibrous material, such as filter paper, felt material or woven material), so that not all of the water flow is concentrated through the passages. However, if the number of passages is sufficiently large and the passages are sufficiently evenly distributed, the screen may also be of water impermeable material.

30 Several features have been described as part of the same or separate embodiments. However, it will be appreciated that the scope of the invention

also includes embodiments having combinations of all or some of these features other than the specific combinations of features embodied in the examples.

Conclusies

1. Een capsule omvattende:
 - een capsulelichaam met een bodem, een zijwand, een uiteinde tegenover de bodem en een flens die zich van de zijwand naar buiten en rond het open uiteinde uitstrekt; en
 - 5 een afdekking die is bevestigd aan de zich naar buiten uitstreckende flens, waarbij de afdekking het uiteinde van het capsulelichaam tegenover de bodem afsluit;
 - waarbij het capsulelichaam en de afdekking een capsulekamer begrenzen, waarbij de capsulekamer bevat:
 - 10 een substantie die is gevormd door een massa van losse, vaste deeltjes, voor de bereiding van een drinkbare drank door het extraheren en/of oplossen van de substantie door middel van het verschaffen van een fluïdum onder druk in de capsule, en
 - een scherm, uit een materiaal dat ondoordringbaar is voor een
 - 15 overheersend gedeelte van genoemde deeltjes, waarbij genoemd scherm tussen genoemde substantie en genoemde bodem is geplaatst en is bevestigd aan genoemd capsulelichaam;
 - daardoor gekenmerkt dat genoemd scherm aan genoemd capsulelichaam is bevestigd op een zodanige manier dat het scherm van het
 - 20 capsulelichaam lost tijdens het brouwen.
2. Een capsule volgens conclusie 1, waarbij het scherm is bevestigd door ten minste één bevestiging, waarbij genoemde bevestiging is ingericht om te scheuren tijdens het brouwen.

3. Een capsule volgens conclusie 2, waarbij de bevestiging ten minste één bevestigingszone vormt, die langwerpig is in een radiale richting en een meest naar binnen gericht uiteinde heeft dat radiaal op afstand is gelegen van een centrale as van de capsule.

5

4. Een capsule volgens conclusie 3, waarbij een naar binnen gericht uiteinde gedeelte van de bevestigingszone een breedte heeft die afneemt in een naar binnen gericht richting tot een scherpe punt op genoemd naar binnen gericht uiteinde.

10

5. Een capsule volgens conclusie 3 of 4, waarbij de genoemde tenminste ene bevestigingszone een breedte heeft van minder dan 2 mm.

6. Een capsule volgens één der voorgaande conclusies, waarbij de bevestiging is gevormd door een hitte-gevoelige kleefstof met een bestanddeel dat een glastransitietemperatuur heeft lager dan 92°C en bij voorkeur lager dan 85°C.

7. Een capsule volgens één der voorgaande conclusies, waarbij de bevestiging is gevormd door een kleefstof omvattende een wateroplosbaar bestanddeel.

8. Een capsule volgens één der voorgaande conclusies, waarbij genoemd scherm aan genoemd capsulelichaam is bevestigd op een zodanige manier dat het scherm volledig van het capsulelichaam lost tijdens het brouwen.

9. Een capsule volgens één der voorgaande conclusies, waarbij het scherm is voorzien van meerdere doorgangen die zo zijn gedimensioneerd

dat ten minste een fractie van de substantie in vaste vorm door de doorgangen kan passeren.

10. Een capsule volgens conclusie 9, waarbij genoemde doorgangen zijn
5 aangebracht in een patroon dat uniform is over de volle oppervlakte van het scherm.

11. Een capsule volgens conclusie 10, waarbij de bevestigingszones in
zulk een configuratie aangebracht zijn dat, ongeacht de plaatsing van het
10 uniforme patroon van de doorgangen ten opzichte van de bevestigingszones, de bevestigingszones van een driehoek van bevestigingszones die het dichtst
samenzijn niet allemaal tegelijk volledig binnen de doorgangen van een
driehoek van genoemde doorgang kunnen vallen.

12. Een capsule volgens conclusie 11, waarbij het aantal
15 bevestigingszones ten minste vijf is.

13. Een capsule volgens één der voorgaande conclusies, waarbij genoemd
scherm is bevestigd aan genoemd capsulelichaam langs bevestigingszones
20 die op afstand van het centrum en in omtrekszin op afstand van elkaar zijn
gelegen.

14. Een capsule volgens conclusie 13, waarbij alle genoemde
bevestigingszones dicht, en bij voorkeur gelijkmatig, langs een perifere rand
25 van het scherm zijn verdeeld.

15. Een capsule volgens conclusie 13 of 14, waarbij ruimtes in omtrekszin tussen opeenvolgende bevestigingszones ten minste 30% in omtrekszin van een omtrekszone waarin de bevestigingszones zijn gelegen, open laten.
- 5 16. Een capsule volgens één der voorgaande conclusies 9-15, waarbij ten minste een aantal van de doorgangen zijn verschaft in de vorm van inkepingen of uitsparingen in een perifere rand van het scherm.
- 10 17. Een capsule volgens één der voorgaande conclusies 9-16, waarbij ten minste een aantal van de doorgangen zijn verschaft in de vorm van openingen die rondom begrensd zijn door materiaal van het scherm.
- 15 18. Een capsule volgens één der voorgaande conclusies 9-17, waarbij ten minste een aantal of alle van genoemde doorgangen een oppervlakte in dwarsdoorsnede van ten minste 3.0 mm^2 hebben.
- 20 19. Een capsule volgens één der voorgaande conclusies 9-18, waarbij ten minste een aantal of alle van genoemde doorgangen een kleinste grootte in dwarsdoorsnede van ten minste 1.0 mm hebben.
- 25 20. Een capsule volgens één der voorgaande conclusies 9-19, waarbij ten minste een aantal van genoemde doorgangen zijn aangebracht op een afstand van het centrum van meer dan 40% en meer bij voorkeur meer dan 50% of meer dan 60 % van de afstand van een perifere rand vanuit het centrum, gemeten in een richting van het centrum naar de respectieve doorgang.

21. Een capsule volgens conclusie 9, waarbij alle van genoemde doorgangen zijn aangebracht op een afstand van het centrum van meer dan 40% en meer bij voorkeur meer dan 50% of meer dan 60% van de afstand van een perifere rand vanuit het centrum, gemeten in een richting van het centrum naar de respectieve opening.
22. Een capsule volgens conclusie 9, waarbij het scherm een oppervlakte heeft omvattende een binnenoppervlakte en een buitenoppervlakte die de binnenoppervlakte omringt, waarbij de binnenoppervlakte ten minste 25% vormt van een totale oppervlakte van het scherm, waarbij een binnengedeelte van genoemde doorgangen in genoemde binnenoppervlakte een open oppervlakte verschaffen van een eerste proportie van genoemde binnenoppervlakte, waarbij een buitengedeelte van genoemde doorgangen in genoemde buitenoppervlakte een open oppervlakte verschaffen van een tweede proportie van genoemde buitenoppervlakte, en waarbij genoemde tweede proportie groter is dan genoemde eerste proportie.
23. Een capsule volgens conclusie 22, waarbij genoemde binnenoppervlakte ten minste 40% van de totale oppervlakte van het scherm vormt.
24. Een capsule volgens conclusie 22 of 23, waarbij genoemde binnenoppervlakte vrij is van genoemde doorgangen.
25. Een capsule volgens één der conclusies 22-24, waarbij genoemde binnenoppervlakte een cirkelvormige grenslijn heeft, waarbij een centrum van het scherm het centrum van de binnenoppervlakte vormt.

26. Een capsule volgens één der voorgaande conclusies, waarbij het capsulelichaam een interne dwarsdoorsnedeoppervlak langs een vlak parallel aan de afdekking heeft, dat groter is bij de afdekking dan bij de bodem.

5

27. Een capsule volgens conclusie 26, waarbij een schouder is voorzien in een zijwand van genoemd capsulelichaam, waarbij genoemde interne dwarsdoorsnede-oppervlak groter is aan een afdekkingszijde van genoemde schouder dan aan een bodemzijde van genoemde schouder.

10

28. Een capsule volgens één der voorgaande conclusies, waarbij het scherm uit waterdoorlatend materiaal is.

29. Een capsule volgens conclusie 28, waarbij het scherm van één of meer lagen van vezelig materiaal is, zoals filterpapier, vilten materiaal of gewoven materiaal.

15

30. Een capsule volgens één der voorgaande conclusies, waarbij alle bevestigingszones waar het scherm is bevestigd aan de capsule op afstand van het centrum zijn en in omtrekszin op afstand van elkaar zijn gelegen.

20

31. Een capsule volgens één der voorgaande conclusies, waarbij het scherm niet is bevestigd aan een centrumgebied van de bodem.

32. Een capsule volgens één der voorgaande conclusies, waarbij het scherm is ingericht om weg te bewegen van het centrumgebied van de bodem onder invloed van perforatie-elementen, waarmee in gebruik openingen worden geprikt in de bodem van de capsule om een fluïdum in de

25

capsule te injecteren en/of onder invloed van een fluïdum dat is geïnjecteerd via openingen in de bodem, welke openingen worden gecreëerd door middel van een koffiemachine waarin de capsule is gepositioneerd om koffie te zetten.

5

33. Een capsule volgens één der voorgaande conclusies, waarbij het scherm cirkelvormig is met een diameter van 20-40 mm.

10

34. Een capsule volgens één der voorgaande conclusies, waarbij het scherm in hoofdzaak het hele interne oppervlak van de bodem van het capsulelichaam bedekt.

15

35. Een capsule volgens één der voorgaande conclusies 9-25, waarbij het aantal genoemde doorgangen 4-30 is.

36. Een capsule volgens één der voorgaande conclusies, waarbij het schermmateriaal een gewicht van 20-200 g/cm² heeft.

20

37. Een capsule volgens één der voorgaande conclusies 9-25 en 35, waarbij het schermmateriaal zonder genoemde doorgangen een luchtpermeabiliteit tussen 500 en 3000 l/(m²s) heeft bij een drukval van 100 Pa over het schermmateriaal.

25

38. Een systeem omvattende een capsule volgens één der voorgaande conclusies en een koffiemachine, waarbij de koffiemachine heeft:
een behuizing waarin een voornaamste gedeelte van een capsulelichaam kan worden ontvangen;

een sluitorgaan met doorgangen om een bereidde drank te laten wegvloeien van de capsule, waarbij de behuizing en/of het sluitorgaan beweegbaar is ten opzichte van de ander tussen een bedrijfsstand waarin de flens van de capsule tussen de behuizing en het sluitorgaan is geklemd, en
5 een overdrachtsstand die een opening laat waardoor een gebruikte capsule kan worden verwijderd van de behuizing en een verse capsule in de behuizing kan worden geplaatst;

perforatie-elementen die zijn ingericht om, in gebruik, een bodemgedeelte van het capsulelichaam in de behuizing te perforeren op ten
10 minste één perforatielocatie; en

een watertoevoer om water toe te voeren naar genoemde perforatielocatie en om het water te doen binnengaan in genoemde capsule via genoemde geperforeerde bodem.

15 39. Een systeem volgens conclusie 38, waarbij de capsule een capsule is volgens één der conclusies 9-25, 35 of 36; en waarbij zich ten minste een aantal van de doorgangen perifeer van de ten minste ene perforatielocatie bevinden.

20

40. Een werkwijze om een drank te bereiden met gebruikmaking van een systeem volgens conclusie 38 of 39, omvattende:

het plaatsen van de capsule in een behuizing en geklemd tussen de behuizing en een sluitorgaan met perforaties om gebrouwen drank die door
25 de afdekking wordt uitgevoerd, te laten wegvloeien van de capsule;

het toevoeren van onder druk staand injectiefluidum zoals heet water de behuizing in, zodat het injectiefluidum binnendringt in de capsule door ten minste één gat in genoemde bodem;

het doen scheuren van de afdekking bij voorkeur onder invloed van
fluidumdruk in de capsule;

- 5 het ten minste gedeeltelijk door het scherm, in en door de substantie
en door de afdekking drukken van een stroom van injectiefluidum, zodat een
gebrouwde drank de capsule verlaat; en
 het geleiden van de gebrouwde drank naar een houder.

Fig. 1

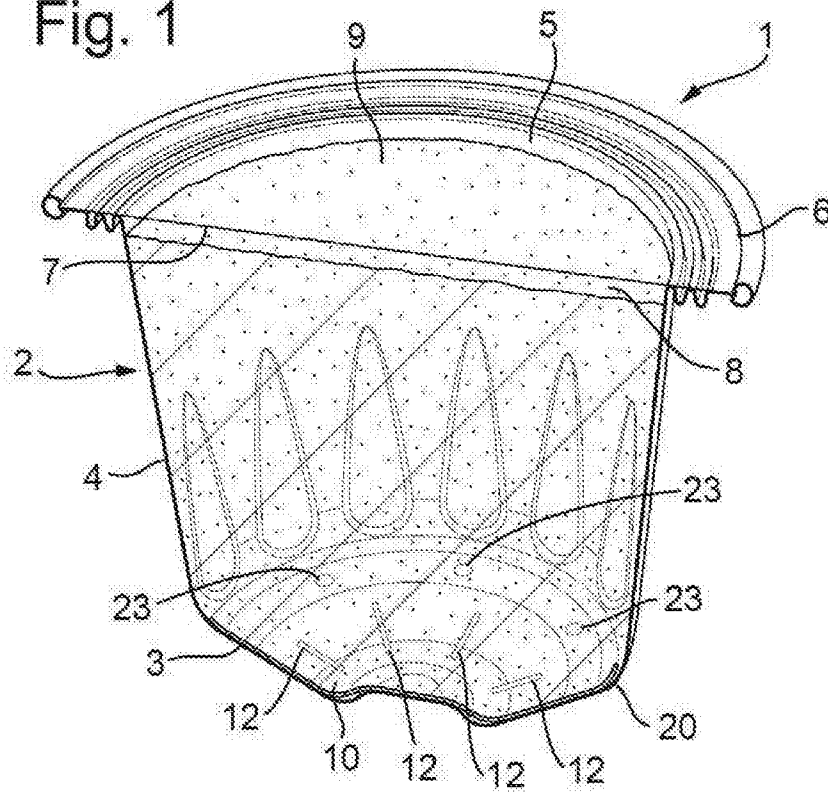


Fig. 2

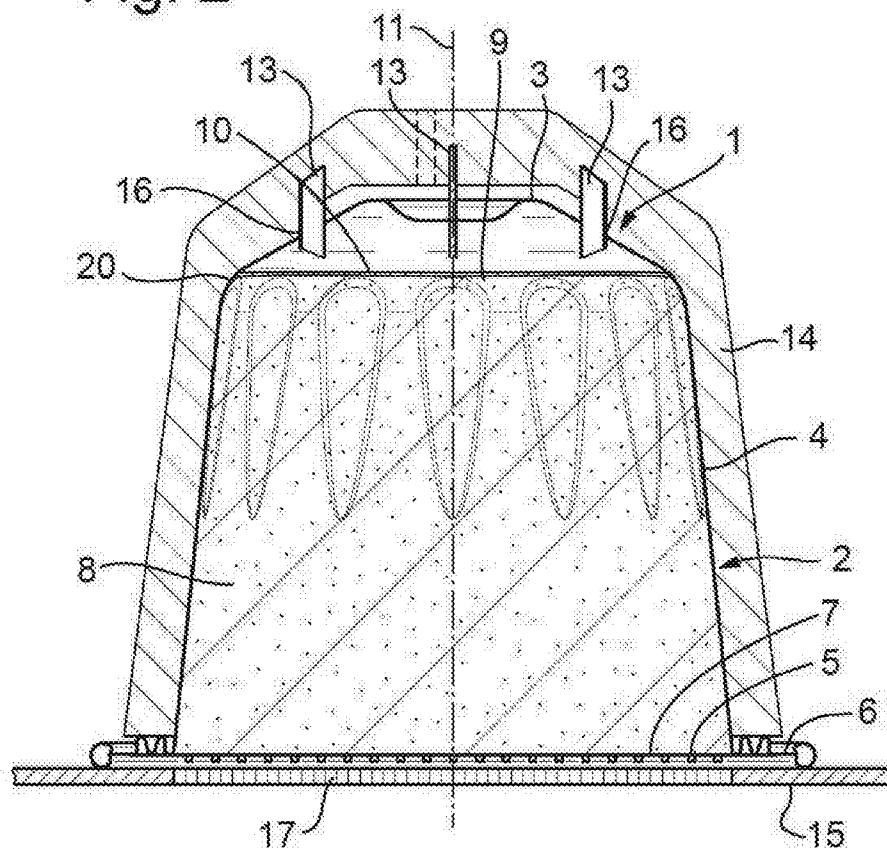


Fig. 3

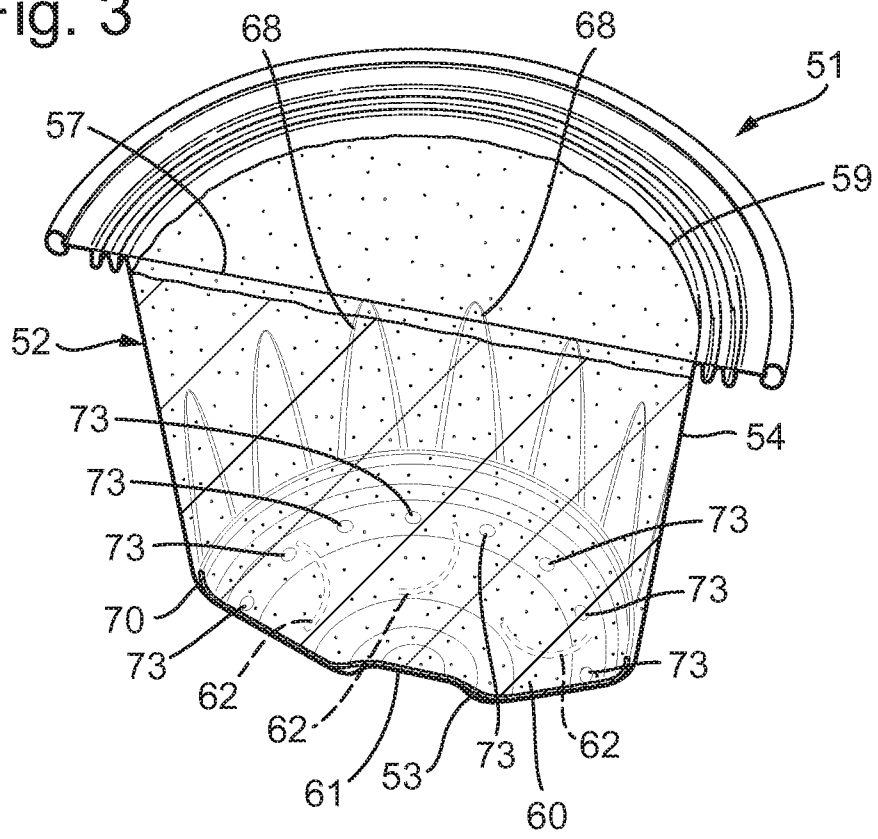


Fig. 4

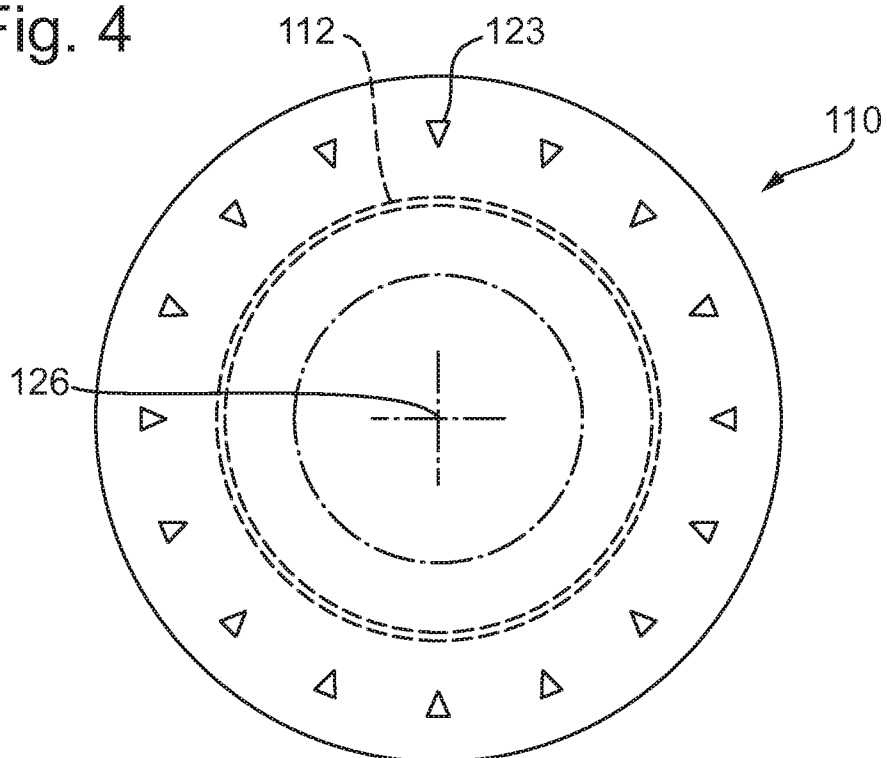


Fig. 5

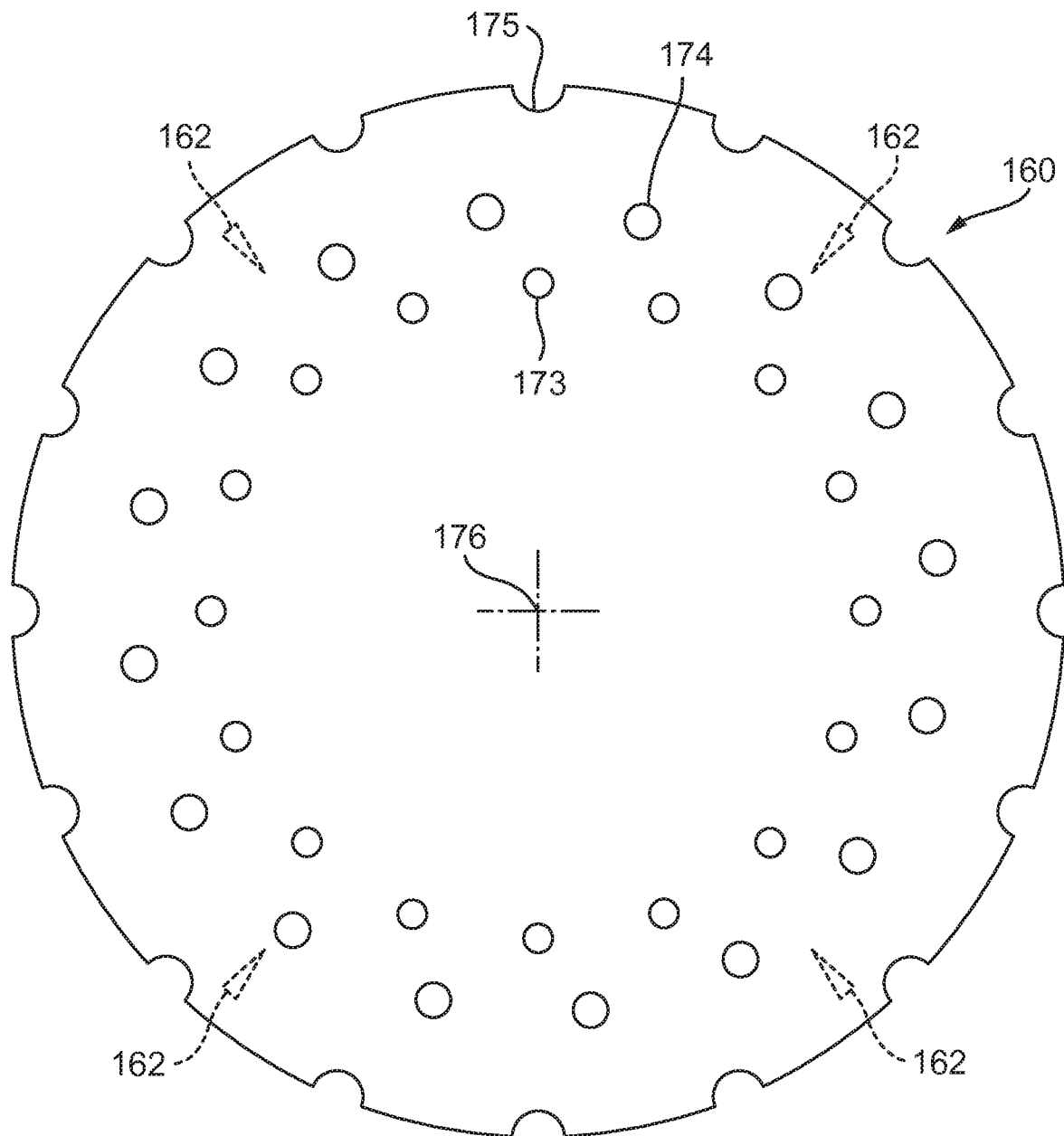
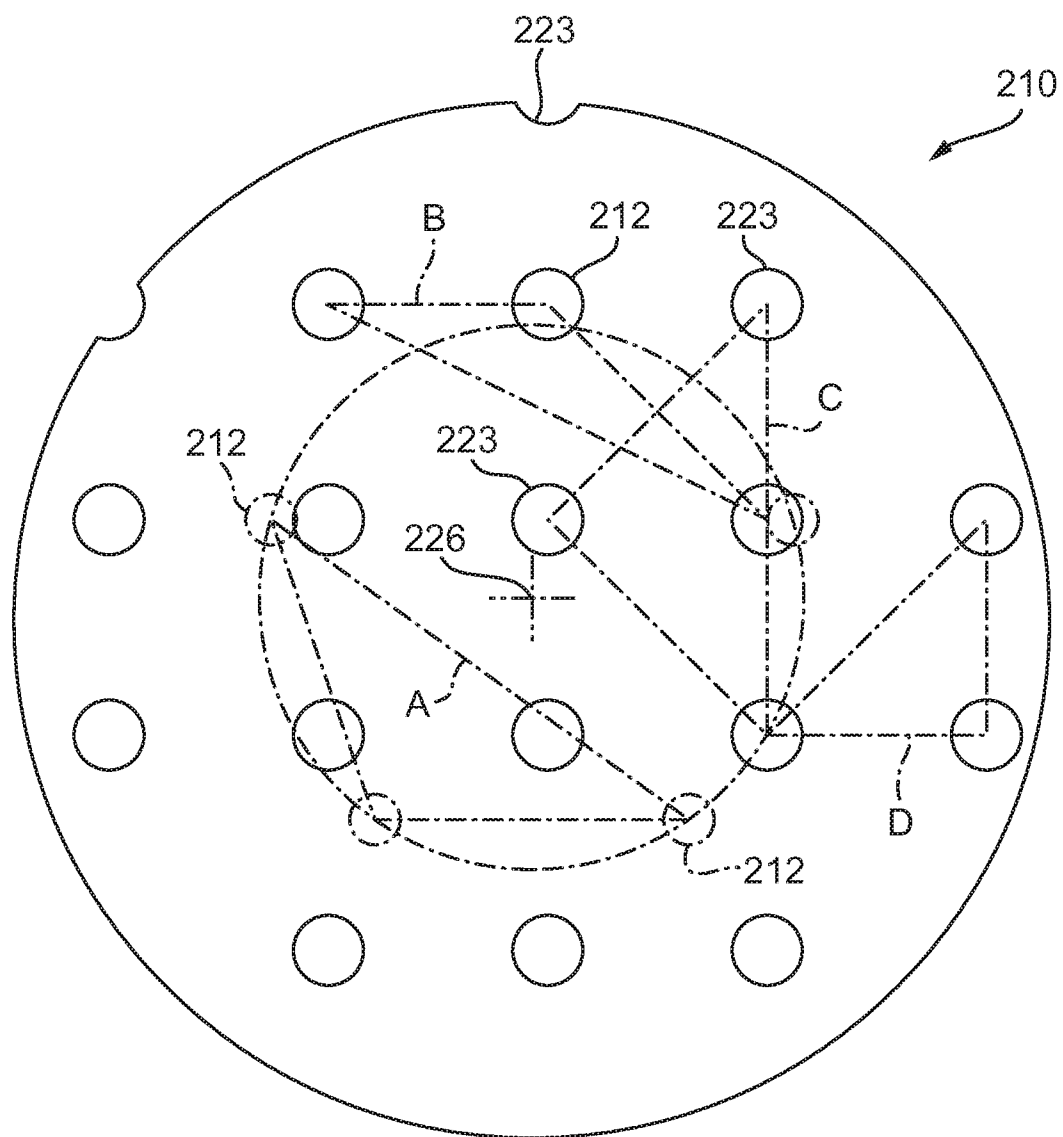


Fig. 6



TITLE: Capsule, system and method for preparing a beverage

ABSTRACT

In a capsule containing a substance constituted by a mass of loose, solid particles, for the preparation of a potable beverage by extracting and/or dissolving the substance by means of supplying a fluid under pressure into the capsule, a screen, permeable to water and impermeable to a predominant portion of particles of the substance is positioned between the substance and the bottom. The screen is attached to the capsule body in such a manner that the screen releases from the capsule body during brewing. A beverage brewing system comprising such a capsule and a method of use of such a capsule are described as well.

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE	KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE P112570NL00		
Nederlands aanvraag nr. 2017587	Indieningsdatum 07-10-2016		
	Ingeroepen voorrangsdatum		
Aanvrager (Naam) Koninklijke Douwe Egberts B.V.			
Datum van het verzoek voor een onderzoek van internationaal type 17-12-2016	Door de instantie voor Internationaal Onderzoek aan het verzoek voor een onderzoek van internationaal type toegekend nr. SN67981		
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)			
Volgens de internationale classificatie (IPC) B65D85/804			
II. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK			
Onderzochte minimumdocumentatie			
Classificatiesysteem	Classificatiesymbolen		
IPC	B65D		
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen 			
III.	☐	GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES	(opmerkingen op aanvullingsblad)
IV.	☐	GEBREK AAN EENHEID VAN UITVINDING	(opmerkingen op aanvullingsblad)

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2017587

A. CLASSIFICATIE VAN HET ONDERWERP
INV. B65D85/804
ADD.

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHETE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen)
B65D

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)

EPO-Internal, WPI Data

C. VAN BELANG GEACHTE DOCUMENTEN

Categorie	Geïsoleerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X,D	WO 2012/038063 A1 (KRUEGER GMBH & CO KG [DE]; MAHLICH GOTTHARD [DE]) 29 maart 2012 (2012-03-29) in de aanvraag genoemd	1-40
Y	* het gehele document *	2-6
X	WO 2010/115970 A1 (MITACA S R L [IT]; MACCHI EDOARDO [IT]) 14 oktober 2010 (2010-10-14)	1-40
Y	* het gehele document *	2-5
X	WO 2012/122329 A1 (KRAFT FOODS R & D INC [US]; HANSEN NICHOLAS ANDREW [GB]) 13 september 2012 (2012-09-13)	1-40
Y	* het gehele document *	2-5
	-/-	



Verdere documenten worden vermeld in het vervolg van vak C.



Leden van dezelfde octrooifamilie zijn vermeld in een bijlage

* Speciale categorieën van aangehaalde documenten

"A" niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft

"D" in de octrooiaanvraag vermeld

"E" eerdere octrooi(aanvraag), gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven

"L" om andere redenen vermelde literatuur

"O" niet-schriftelijke stand van de techniek

"P" tussen de voorrangsdatum en de indieningsdatum gepubliceerde literatuur

"T" na de indieningsdatum of de voorrangsdatum gepubliceerde literatuur die niet bezwarend is voor de octrooiaanvraag, maar wordt vermeld ter verheldering van de theorie of het principe dat ten grondslag ligt aan de uitvinding

"X" de conclusie wordt als niet nieuw of niet inventief beschouwd ten opzichte van deze literatuur

"Y" de conclusie wordt als niet inventief beschouwd ten opzichte van de combinatie van deze literatuur met andere geïsoleerde literatuur van dezelfde categorie, waarbij de combinatie voor de vakman voor de hand liggend wordt geacht

"Z" lid van dezelfde octrooifamilie of overeenkomstige octrooipublicatie

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid

11 mei 2017

Verzenddatum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

Naam en adres van de instantie

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040
Fax: (+31-70) 340-3016

De bevoegde ambtenaar

Brochado Garganta, M

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2017587

C. (Vervolg). VAN BELANG GEACHTE DOCUMENTEN

Categorie *	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
Y,D	WO 2015/087180 A1 (CAFFITALY SYSTEM SPA [IT]) 18 juni 2015 (2015-06-18) in de aanvraag genoemd * het gehele document *	2-5
Y	WO 2013/043048 A1 (KONINKL DOUWE EGBERTS BV [NL]) 28 maart 2013 (2013-03-28) * het gehele document *	6
A,D	EP 1 190 959 A1 (NESTLE SA [CH]) 27 maart 2002 (2002-03-27) in de aanvraag genoemd * het gehele document *	1-40

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2017587

In het rapport genoemd octrooigescrift	Datum van publicatie	Overeenkomst(e) geschrift(en)	Datum van publicatie
WO 2012038063	A1	29-03-2012	
		AU 2011304736 A1	02-08-2012
		CA 2753230 A1	22-03-2012
		CN 102791595 A	21-11-2012
		CN 104957994 A	07-10-2015
		CN 104986456 A	21-10-2015
		DE 102011012881 A1	22-03-2012
		DK 2516296 T3	13-10-2014
		EP 2516296 A1	31-10-2012
		EP 2801538 A1	12-11-2014
		EP 3023360 A1	25-05-2016
		ES 2504981 T3	09-10-2014
		HK 1214226 A1	22-07-2016
		HK 1214489 A1	29-07-2016
		JP 6055410 B2	27-12-2016
		JP 2013540475 A	07-11-2013
		JP 2017070764 A	13-04-2017
		KR 20130044199 A	02-05-2013
		PT 2516296 E	13-10-2014
		RU 2012145004 A	27-04-2014
		RU 2015118032 A	20-10-2015
		RU 2015118033 A	20-10-2015
		SG 181866 A1	30-07-2012
		SG 10201507889X A	29-10-2015
		US 2012070551 A1	22-03-2012
		US 2015079241 A1	19-03-2015
		WO 2012038063 A1	29-03-2012
		ZA 201204377 B	26-02-2014
WO 2010115970	A1	14-10-2010	
		CN 102448853 A	09-05-2012
		EP 2417039 A1	15-02-2012
		ES 2604665 T3	08-03-2017
		HR P20161537 T1	24-03-2017
		IT 1393936 B1	17-05-2012
		JP 5449527 B2	19-03-2014
		JP 2012523259 A	04-10-2012
		LT 2417039 T	12-12-2016
		PL 2417039 T3	28-02-2017
		RU 2011145272 A	20-05-2013
		SI 2417039 T1	31-01-2017
		US 2012031280 A1	09-02-2012
		WO 2010115970 A1	14-10-2010
WO 2012122329	A1	13-09-2012	
		BR 112013022869 A2	06-12-2016
		CA 2829162 A1	13-09-2012
		CN 103502115 A	08-01-2014
		EP 2683625 A1	15-01-2014
		ES 2561091 T3	24-02-2016
		GB 2488799 A	12-09-2012
		HK 1188194 A1	07-04-2017
		JP 2014511253 A	15-05-2014
		KR 20140010127 A	23-01-2014
		RU 2013144826 A	20-04-2015
		US 2014037803 A1	06-02-2014
		WO 2012122329 A1	13-09-2012
WO 2015087180	A1	18-06-2015	
		AU 2014363073 A1	23-06-2016
		CA 2932842 A1	18-06-2015
		CN 106029524 A	12-10-2016

**ONDERZOEKSRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een onderzoek naar
de stand van de techniek

NL 2017587

In het rapport genoemd octrooigescrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
		EP 3080010 A1	19-10-2016
		JP 2017505158 A	16-02-2017
		US 2016311608 A1	27-10-2016
		WO 2015087180 A1	18-06-2015
WO 2013043048 A1	28-03-2013	US 2014287105 A1	25-09-2014
		WO 2013043048 A1	28-03-2013
EP 1190959 A1	27-03-2002	AR 030968 A1	03-09-2003
		AT 263086 T	15-04-2004
		AU 2352702 A	08-04-2002
		AU 2002223527 B2	01-04-2004
		BR 0114162 A	29-07-2003
		CA 2422681 A1	04-04-2002
		DE 60009495 D1	06-05-2004
		DE 60009495 T2	19-08-2004
		DK 1190959 T3	28-06-2004
		EP 1190959 A1	27-03-2002
		ES 2216791 T3	01-11-2004
		JP 4675024 B2	20-04-2011
		JP 2004509815 A	02-04-2004
		KR 20030069994 A	27-08-2003
		MX PA03002630 A	19-06-2003
		MY 128455 A	28-02-2007
		NO 20031358 A	25-03-2003
		NZ 525110 A	29-10-2004
		PT 1190959 E	30-06-2004
		SI 1190959 T1	30-06-2004
		TW 510883 B	21-11-2002
		US 2003217643 A1	27-11-2003
		US 2007068395 A1	29-03-2007
		WO 0226588 A1	04-04-2002
		ZA 200303213 B	26-04-2004

WRITTEN OPINION

File No. SN67981	Filing date (day/month/year) 07.10.2016	Priority date (day/month/year)	Application No. NL2017587
International Patent Classification (IPC) INV. B65D85/804			
Applicant Koninklijke Douwe Egberts B.V.			

This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the application
- ☒ Box No. VIII Certain observations on the application

	Examiner Brochado Garganta, M
--	----------------------------------

WRITTEN OPINION

Application number

NL2017587

Box No. I Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing:
 - ☐ contained in the application as filed.
 - ☐ filed together with the application in electronic form.
 - ☐ furnished subsequently for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty	Yes: Claims	2-37, 39, 40
	No: Claims	1, 38
Inventive step	Yes: Claims	
	No: Claims	1-40
Industrial applicability	Yes: Claims	1-40
	No: Claims	

2. Citations and explanations

see separate sheet

WRITTEN OPINION

Application number

NL2017587

Box No. VII Certain defects in the application

see separate sheet

Box No. VIII Certain observations on the application

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following documents:

- D1 WO 2012/038063 A1 (KRUEGER GMBH & CO KG [DE]; MAHLICH GOTTHARD [DE]) 29 maart 2012 (2012-03-29) in de aanvraag genoemd
- D2 WO 2010/115970 A1 (MITACA S R L [IT]; MACCHI EDOARDO [IT]) 14 oktober 2010 (2010-10-14)
- D3 WO 2012/122329 A1 (KRAFT FOODS R & D INC [US]; HANSEN NICHOLAS ANDREW [GB]) 13 september 2012 (2012-09-13)
- D4 WO 2015/087180 A1 (CAFFITALY SYSTEM SPA [IT]) 18 juni 2015 (2015-06-18) in de aanvraag genoemd
- D5 WO 2013/043048 A1 (KONINKL DOUWE EGBERTS BV [NL]) 28 maart 2013 (2013-03-28)

2. Novelty and inventive step

D1i discloses a capsule (1) comprising a capsule body (2) having a bottom (3), a side wall, an end opposite of the bottom and a flange (5) extending outwardly from the side wall and around the open end; and a cover (6) attached to the outwardly extending flange, the cover closing off the end of the capsule body opposite of the bottom; the capsule body and the cover bounding a capsule chamber (100), the capsule chamber containing a substance (101) constituted by a mass of loose, solid particles, for the preparation of a potable beverage by extracting and/or dissolving the substance by means of supplying a fluid under pressure into the capsule, and a

screen (7), permeable to water and impermeable to a predominant portion of said particles, said screen being positioned between said substance and said bottom, said screen having a centre and being attached to the capsule body (see claims 1, 5 and 11-13 and figures 1, 4a, 4b and 6a).

The subject-matter of claim 1 is therefore not novel.

The characterizing portion, related to the fact that the screen is attached in such a manner that the screen releases from the capsule body, is giving only the result to be achieved (see Re Item VIII) and not indicating the kind of attachment of the screen to the capsule body.

Also D2 (see 4 in figure 2) and D3 (see 16 in figure 2) define a filter or screen positioned in the bottom of the capsule in some way attached to the body of the capsule. Also these documents are novelty destroying for the subject-matter of claim 1.

The same reasoning applies, *mutatis mutandis*, to the subject-matter of the corresponding independent claim 38 which therefore is also not novel.

Dependent claims 2-37 and 39-40 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements in respect of novelty and/or inventive step:

- their features are already disclosed in D1-D3 (see respectively, claims 1-13; claims 1-10; claims 1-15) or they are merely standard design deviations certainly known to the skilled person
- claims 2-5 for example, even if novel will lack inventive step, as D4 already discloses a capsule having a filter which is capable of being free to move away from the capsule body (see claim 1). It is considered to be within the capabilities of the skilled person to combine D1-D3 with D4 without for that needing to perform an inventive step.

- claim 6 refers to having the attachment formed by a heat sensitive adhesive. Such adhesive for attachment of filters to beverage containers is already known in the art (see for example D5, [0053]). Thus, this claim is also not inventive.
- particularly with respect to the features of claim 9, the fact that the screen is provided with a plurality of passages dimensioned so that at least a fraction of the substance can pass through the passages in solid form cannot confer novelty to the claim as a part of the substance will always pass any screen or filter. Depending on the filter or on the dimension of the particles the percentage of particles that will anyway pass through the screen can be variable. In any coffee mixture there is a Gaussian distribution of the particle size and the frequency of the particles. So in any mixture some of the particles are small enough to go through any screen.

Re Item VII

Certain defects in the international application

1. The features of claims 1-40 are not provided with reference signs placed in parentheses.

Re Item VIII

Certain observations on the application

1. Claim 1 does not meet the requirement of clarity because the matter for which protection is sought is not clearly defined. The claim attempts to define the subject-matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.