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(54) **CAPSULE FOR HOT DRINK MACHINES**

KAPSEL FÜR HEISSGETRÄNKEAUTOMATEN

CAPSULE POUR MACHINES DE DISTRIBUTION DE BOISSONS CHAUDES

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Description

State of the art

[0001] Hot drink machines using capsule systems have been on the market for many years now.

[0002] Present-day machines use either single-dose rigid cylindrical capsules, which are perforated by the machine when the water is forced through, or single/multiple-dose disc capsules, made of filter paper, which come in different shapes and sizes according to the type of machine they're used in. The disc capsules feature a convex top/bottom and contain the drink product, such as coffee for example. Such a shape, however, can be inconvenient, because when the hot water under pressure is forced through the filter, from the water heating block, it spreads and penetrates irregularly through the capsule shell and tends to "slide" along the convex surface, thus impairing the quality of the drink.

[0003] A further inconvenience consists in that, like all disc-shaped objects, in order to provide a best quality drink they must preferably be placed with a specific side against the hot water supply, and according to a specific orientation with respect to the filter holder; as regards the disc capsules currently on the market these preferential positions are generally indicated on the capsule shell with a small coloured text, which, however, in most cases is hard to find and to read by the user.

[0004] Document GB 2411106 describes a cartridge which contains one or more beverage ingredients and is formed from substantially air- and water-impermeable materials. The cartridge comprises an inlet for the introduction of an aqueous medium into the cartridge, and an outlet for a beverage produced from the beverage ingredients. The cartridge comprises means for producing a jet of the beverage comprising an aperture in a beverage flow path linking the inlet to the outlet, and is characterised in that the cartridge also comprises one or more microscopic projections at or in the vicinity of the aperture for contacting the beverage flow path; the cartridge disclosed in GB 2411106 does not seem capable of solving the problems related to the uniform penetration of the liquid medium into the cartridge and is complex and therefore expensive to produce.

Description of the invention

[0005] The present invention relates to a hot-drink capsule in accordance with appended claim 1, capable of remedying the above mentioned inconveniences.

[0006] According to this invention the capsule features a flat top that fits perfectly against the filter, so that the hot water forced through from the heating block spreads in a uniform manner.

[0007] The flat top is made of filter paper and is sealed around the edges onto a polypropylene container, of suitable shape and size, the bottom of which features a series of microscopic holes in the middle, covered by filter pa-

per, through which the brewed beverage can pass and be poured through a spout into the cup or other container.

[0008] In a preferred embodiment of this invention the edge of the capsule features a notch or indentation that matches a protuberance on the capsule holder, of any shape or size, to help the user immediately and properly fit the capsule into its holder, also thanks to the above mentioned flat top side.

Description of the drawings

[0009] A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:

- figure 1 shows a cross-section of the polypropylene container;
- figure 2 shows a cross-section of the polypropylene container complete with the filter paper at the top;
- figure 3 shows a view from above of the container without the filter paper top;
- figure 4 shows a view from above of the capsule;
- figure 5 shows a plan view of the lower part of the container.

Description of the preferred mode of carrying out the invention

[0010] Referring to the drawings, the capsule consists of a rigid disc-shaped container (1), made of PP (polypropylene) suitable for food use applications, or other like material, containing the drink product, such as milk powder, in the centre (6); the edge (4) features a tab (5), of the preferred shape, for easily extracting the capsule from its holder after use.

[0011] The middle bottom part (6) of the container (1) features small or very small holes (7), through which the brewed drink leaves the container (1) when hot water is forced through, after having passed through a layer of filter paper beneath (3).

[0012] The top (8) of the capsule is made of filter paper and is perfectly flat

[0013] The flat filter-paper surface (8), when the capsule is placed inside the holder and the holder introduced into the housing in the machine, comes into close contact with the filter, which is integral with the water heating block, through which the hot water is made to pass, under pressure, by means of a pump and is then forced through the top surface (8) of the capsule to make the drink. The flat top surface (8) of the capsule fits perfectly against the flat surface of the filter integral with the water heating block, which determines the uniform distribution and penetration of the water through the top surface (8) of the capsule and into the capsule itself, where it mixes with the drink product contained therein; the resulting hot drink then filters through the holes on the bottom surface (7), and after having passed through the lower filter paper (3) is collected inside the filter holder and poured through

the spout in the machine.

[0014] In another embodiment there is an indentation in the top surface (8) of the container (1), in any position, which matches a protuberance in the filter holder; both the indentation and the protuberance may be of any shape and size, and serve the function of immediately and properly fitting the capsule into its holder.

[0015] Obviously, the position of the indentation and protuberance may be inverted, so that the capsule (1) features a protuberance in any point of its surface (1), while the filter holder has the indentation; in this case also the indentation and the protuberance may be of any shape and size.

[0016] The solutions may be adopted independently of one another.

[0017] Based on tests carried out, it has been found that a capsule with a flat surface (6) and a diameter of 50 mm offers the best dose-quantity and drink-quality ratio.

Claims

1. Capsule for hot drink machines comprising a rigid polypropylene container (1) without a top surface and containing the basic drink product, in which the top surface (8) of the polypropylene container is closed by means of filter paper sealed at the edges, **characterised in that** a middle bottom part (6) or bottom of the above mentioned rigid polypropylene container (1) features an area with a series of holes (7) and a lower layer of filter paper (3) is arranged beneath the middle bottom part (6) or bottom of the said rigid polypropylene container.
2. Capsule for hot drink machines according to claim 1, wherein the top surface (8) is flat.
3. Capsule for hot drink machines according to claim 1, wherein the series of holes (7) consists of a micro-perforations.
4. Capsule for hot drink machines according to claim 1, wherein the top surface (8) features a tab (5) for the easy extraction of the capsule from the capsule holder.
5. Capsule for hot drink machines according to claim 1, wherein the capsule (1) features an indentation in the top surface (8), in any position, which matches a protuberance in the filter holder, both the indentation and the protuberance may be of any shape and size, and serve the function of immediately and properly fitting the capsule into its holder.
6. Capsule for hot drink machines according to claim 1, wherein the capsule (1) features a protuberance

in the top surface (8), in any position, which matches an indentation in the filter holder; both the indentation and the protuberance may be of any shape and size, and serve the function of immediately and properly fitting the capsule into its holder.

Patentansprüche

1. Kapseln für Automaten mit warmen Getränken, versehen mit einem Behälter aus festem unbiegsamem Polypropylen (1) ohne Oberfläche, der den Grundstoff des Getränks enthält; am äußersten Rand versiegelte Filterpapier-Vorrichtungen verschließen die Oberfläche des Polypropylenbehälters (8), **dadurch gekennzeichnet, daß** sich der untere mittlere Teil (6) oder der untere Teil des vorgenannten festen Polypropylenbehälters (1) durch eine Zone auszeichnet, die eine Reihe Löcher (7) aufweist; eine untere Schicht des Filterpapiers (3) ist unter dem festen Polypropylenbehälter oder am unteren mittleren Teil dieses letzteren angebracht.
2. Kapseln für Automaten mit warmen Getränken gemäß Patentanspruch 1, bei denen die Oberfläche (8) eben ist.
3. Kapseln für Getränkeautomaten gemäß Patentanspruch 1, bei denen die Reihe der Löcher (7) aus einer Reihe Mikroöffnungen besteht.
4. Kapseln für Automaten mit warmen Getränken gemäß Patentanspruch 1, bei denen die Oberfläche (8) eine kleine Lasche bildet, die das Herausziehen der Kapsel aus dem Kapselbehälter erleichtert.
5. Kapseln für Automaten mit warmen Getränken gemäß Patentanspruch 1, bei denen die Oberfläche der Kapseln (8) eine Auszackung aufweist, die in gleichwelcher Position mit einem Vorsprung im Behälter des Filters zusammenfällt; sowohl die Auszackung als auch der Vorsprung kann gleichwelche Form und Abmessungen haben; dies begünstigt eine unmittelbare, schnelle Anpassung der Kapsel in ihrem Behälter.
6. Kapseln für Automaten mit warmen Getränken gemäß Patentanspruch 1, bei denen die Kapseln auf der Oberfläche (8) einen Vorsprung aufweisen, der in gleichwelcher Position mit einer Auszackung im Behälter des Filters zusammenfällt; sowohl die Auszackung als auch der Vorsprung kann gleichwelche Form und Abmessungen haben; dies begünstigt die unmittelbare, schnelle Anpassung der Kapsel in ihrem Behälter.

Revendications

1. Capsules pour machines distributrices de boissons chaudes comprenant un récipient en polypropylène rigide (1) sans couvercle qui contient le produit de base de la boisson; la surface supérieure (8) du récipient en polypropylène est fermée au moyen de dispositifs en papier filtre scellé à l'extrémité, **caractérisé par le fait que** la partie inférieure médiane (6) ou la partie inférieure de ce récipient en polypropylène rigide (1) délimite une zone percée d'une série de trous (7) et une couche inférieure du papier filtre (3) est placée dans la partie du dessous ou inférieure (6) médiane inférieure de ce récipient en polypropylène rigide.
2. Capsules pour machines distributrices de boissons chaudes selon la revendication 1, dont la surface supérieure (8) est plate.
3. Capsules pour machines distributrices de boissons chaudes selon la revendication 1, dans lesquelles la série de trous (7) est formée de micro-perforations.
4. Capsules pour machines distributrices de boissons chaudes selon la revendication 1, dont la surface supérieure (8) forme une languette pour extraire plus facilement la capsule du récipient.
5. Capsules pour machines distributrices de boissons chaudes selon la revendication 1, présentant une découpe à la surface supérieure (8), dans n'importe quelle position, qui correspond à une saillie dans le récipient du filtre; la découpe et la saillie peuvent avoir n'importe quelle forme et dimension; elles favorisent l'adaptation immédiate et rapide de la capsule dans son récipient.
6. Capsules pour machines distributrices de boissons chaudes selon la revendication 1, présentant une saillie à la surface supérieure (8), dans n'importe quelle position, qui correspond à une découpe dans le récipient du filtre; la découpe et la saillie peuvent avoir n'importe quelle forme et dimension; elles favorisent l'adaptation immédiate et rapide de la capsule dans son récipient.

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FIG. 1

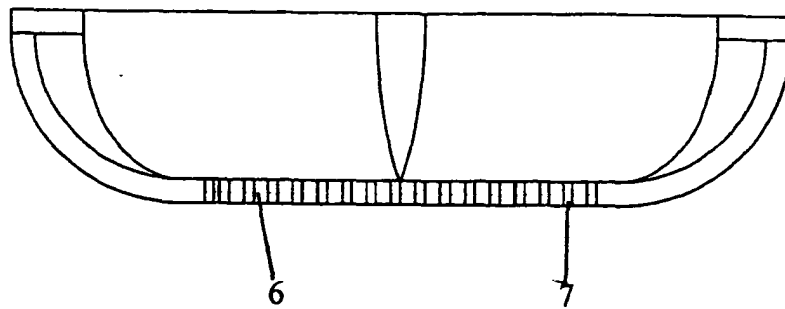
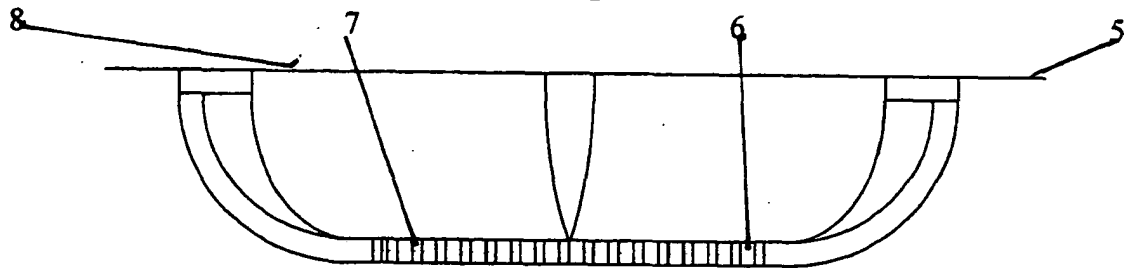


FIG. 2



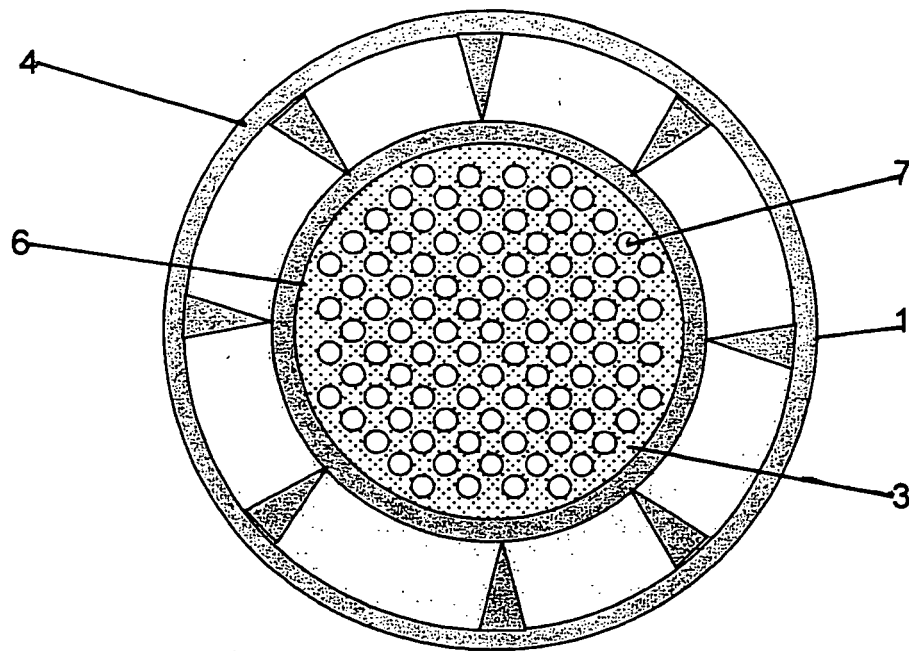


Fig. 3

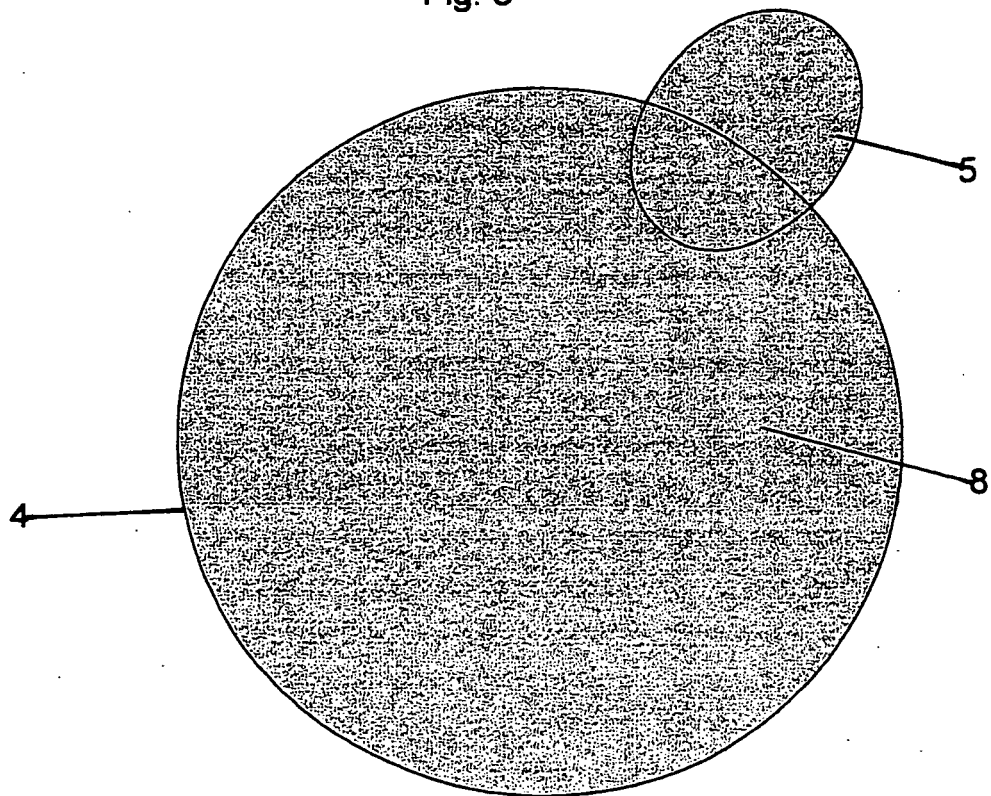


Fig. 4

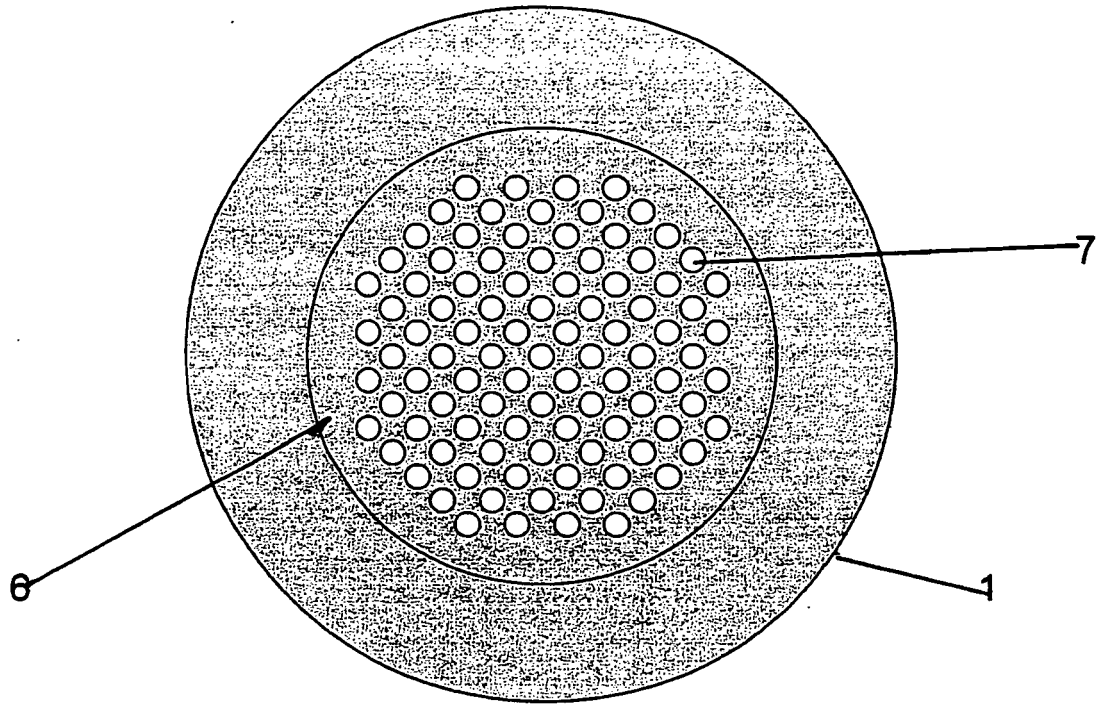


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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