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(54) **Rigid capsule for coffee or other soluble products with improved lower seal**

(57) Rigid capsule (1) for coffee or other soluble products; the capsule (1) is defined by a container (2) in plastic material closed at the top with an upper surface (3) and closed at the bottom with a lower surface (4); the lower surface (4) has a first lower internal annular edge (5),

which rises perpendicularly from the lower surface (4), and a second lower external annular edge (6), which rises perpendicularly from the lower surface (4), is arranged coaxially and externally with respect to the first lower edge (5), and whose height is lower than the first lower edge (5)

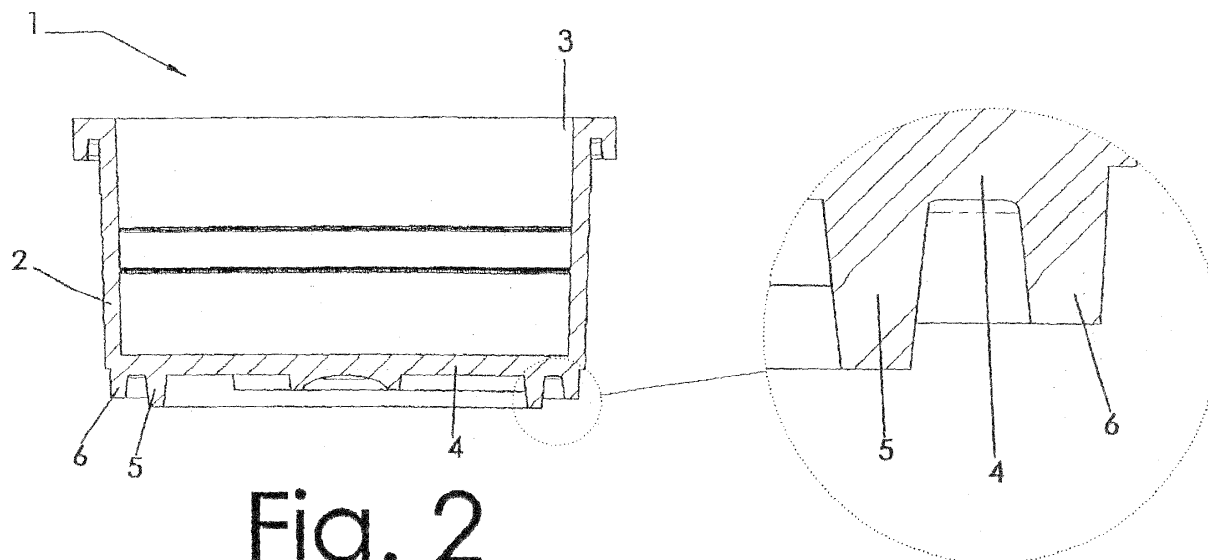


Fig. 2

Description

TECHNICAL FIELD

[0001] The present innovation relates to a rigid capsule or cartridge for the containment of coffee or other products soluble in hot water for the preparation of beverages; other soluble products are generally in granular or powder form such as, for example, barley, milk powder and similar products or leaf-derived products such as, for example, tea, chamomile or herbal tea.

[0002] The present innovation is advantageously applied to a rigid capsule for the containment of coffee to which the following description explicitly refers but without any loss of generality; it is clear that the rigid capsule according to the present innovation may be used for the containment of other soluble products for the preparation of beverages.

PRIOR ART

[0003] A rigid capsule for coffee is essentially cylindrical or tapered in shape and is defined by a container in plastic material closed at the top with an upper surface and closed at the bottom with a lower surface. The coffee powder and a filter are arranged inside the cartridge so as to come into contact with the lower part of the cartridge.

[0004] Generally the lower surface and/or the upper surface of the cartridge are made of rigid perforated plastic. When the cartridge is inserted in a percolation chamber of a beverage extraction machine, hot water is delivered under pressure onto the upper surface of the cartridge and passes through the upper surface so as to reach the powder product within the cartridge, retaining the aromas in order to produce the beverage. The beverage then passes through the filter that retains the powder product and escapes through the lower surface of the cartridge to be collected in a cup for consumption by the user. The percolation chamber of a beverage extraction apparatus is defined by an upper hot water supply element that rests sealingly against the upper surface of the coffee cartridge and by a lower coffee extraction element that rests sealingly against the lower surface of the coffee cartridge.

[0005] A known coffee cartridge of the type currently available on the market must be of proportions that are perfectly suited to the proportions of the percolation chamber since, in the case of even slight differences in proportions, a good seal is not obtained between the coffee cartridge and the elements of the percolation chamber and, consequently, some hot water and/or coffee leaks outside the percolation chamber, staining the beverage extraction machine. Furthermore, in the case of a particularly weak seal in relation to the upper surface of the coffee cartridge, the hot water may not be able to reach sufficient pressure to adequately penetrate the coffee cartridge and would therefore result in the production of very poor quality coffee.

[0006] Consequently, a known coffee cartridge of the type currently available on the market requires a percolation chamber whose proportions are specific for that coffee cartridge and cannot be easily used in a percolation chamber that is not specifically proportioned. Therefore, a specific coffee capsule has to be produced for each family of beverage extraction machines and it is not possible to produce a universal coffee capsule that can be used for more than one family of beverage extraction machines.

DESCRIPTION OF THE INNOVATION

[0007] The purpose of the present innovation is to provide a rigid capsule for coffee or other soluble products that overcomes the drawbacks described above and, at the same time, is simple and cost-effective to produce.

[0008] According to the present innovation a rigid capsule for coffee or other soluble products is produced as set forth in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The present innovation will now be described with reference to the attached drawings, illustrating a nonlimiting embodiment thereof, in which:

- Figure 1 illustrates a schematic perspective view of a rigid capsule for coffee produced in accordance with the present innovation; and
- Figure 2 illustrates a side view, partially shown in cross-section, of the rigid capsule for coffee shown in Figure 1.

PREFERRED EMBODIMENT OF THE INNOVATION

[0010] In Figure 1, number 1 indicates, as a whole, a rigid capsule for coffee defined by a container 2 in plastic material closed at the top with an upper surface 3 and closed at the bottom with a lower surface 4.

[0011] As shown in Figure 2, the lower surface 4 has a lower internal annular edge 5, which rises perpendicularly from the lower surface 4, and a lower external annular edge 6, which rises perpendicularly from the lower surface 4, is arranged coaxially and externally with respect to the lower edge 5, and whose height is lower than the lower edge 5. For example, the lower edge 5 has a total height of about 2.30 mm and the lower edge 6 has a total height of about 1.50 mm. Consequently, the difference in height between the lower edge 5 and the lower edge 6 is about 0.70 mm; more generally, the difference in height between the lower edge 5 and the lower edge 6 could be between 0.60 and 0.80 mm, but could also be outside this range.

[0012] Preferably, each lower edge 5 or 6 has a trapezoidal cross-section with the larger base coplanar with the lower surface 4. Preferably, the upper surface 3 houses a disk of permeable fabric fixed to said upper surface 3.

[0013] In use, when the lower surface 4 of the capsule 1 comes into contact with a lower element of a percolation chamber of a beverage extraction machine, the lower internal edge 5 of the lower surface 4 initially comes into contact with the lower element; the pressure exerted by the lower element deforms said lower surface 4 (which tends to form a bulge) until the lower external edge 6 of the lower surface 4 also comes into contact with the lower element. In this situation, the lower internal edge 5 does not form a regular contact with the lower element because of the buckling of the lower surface 4 and therefore does not achieve a good seal; instead, the external edge 6 forms a regular contact with the lower element and therefore succeeds in achieving a perfect seal that prevents any leakage of coffee. This result is obtained even if there are some differences in proportion between the capsule 1 and the lower element.

[0014] The capsule 1 described above has many advantages, as it is simple and cost-effective to produce while at the same time it enables a good seal to be achieved with a lower element of a percolation chamber of a beverage extraction machine even if there are differences in proportion between the capsule 1 and said lower element. In this way, the capsule 1 is a universal capsule that can be used in more than one family of beverage extraction machines.

1 to 4, wherein each lower edge (5, 6) has a trapezoidal cross-section with the larger base coplanar with the lower surface (4).

Claims

1. Rigid capsule (1) for coffee or other soluble products; the capsule (1) is defined by a container (2) in plastic material closed at the top with an upper surface (3) and closed at the bottom with a lower surface (4); the capsule (1) is **characterized in that** the lower surface (4) has a first lower annular edge (5), which rises perpendicularly from the lower surface (4), and a second lower annular edge (6), which rises perpendicularly from the lower surface (4), is arranged coaxially and externally with respect to the first lower edge (5), and whose height is lower than the first lower edge (5).
2. Capsule (1) according to claim 1, wherein the first lower edge (5) has an overall height of about 2.30 mm and the second lower edge (6) has an overall height of about 1.50 mm.
3. Rigid capsule (1) according to claim 1 or 2, wherein the difference in height between the first lower edge (5) and the second lower edge (6) is about 0.70 mm.
4. Capsule (1) according to claim 3, wherein the difference in height between the first lower edge (5) and the second lower edge (6) is between 0.60 and 0.80 mm.
5. Rigid capsule (1) according to one of the claims from

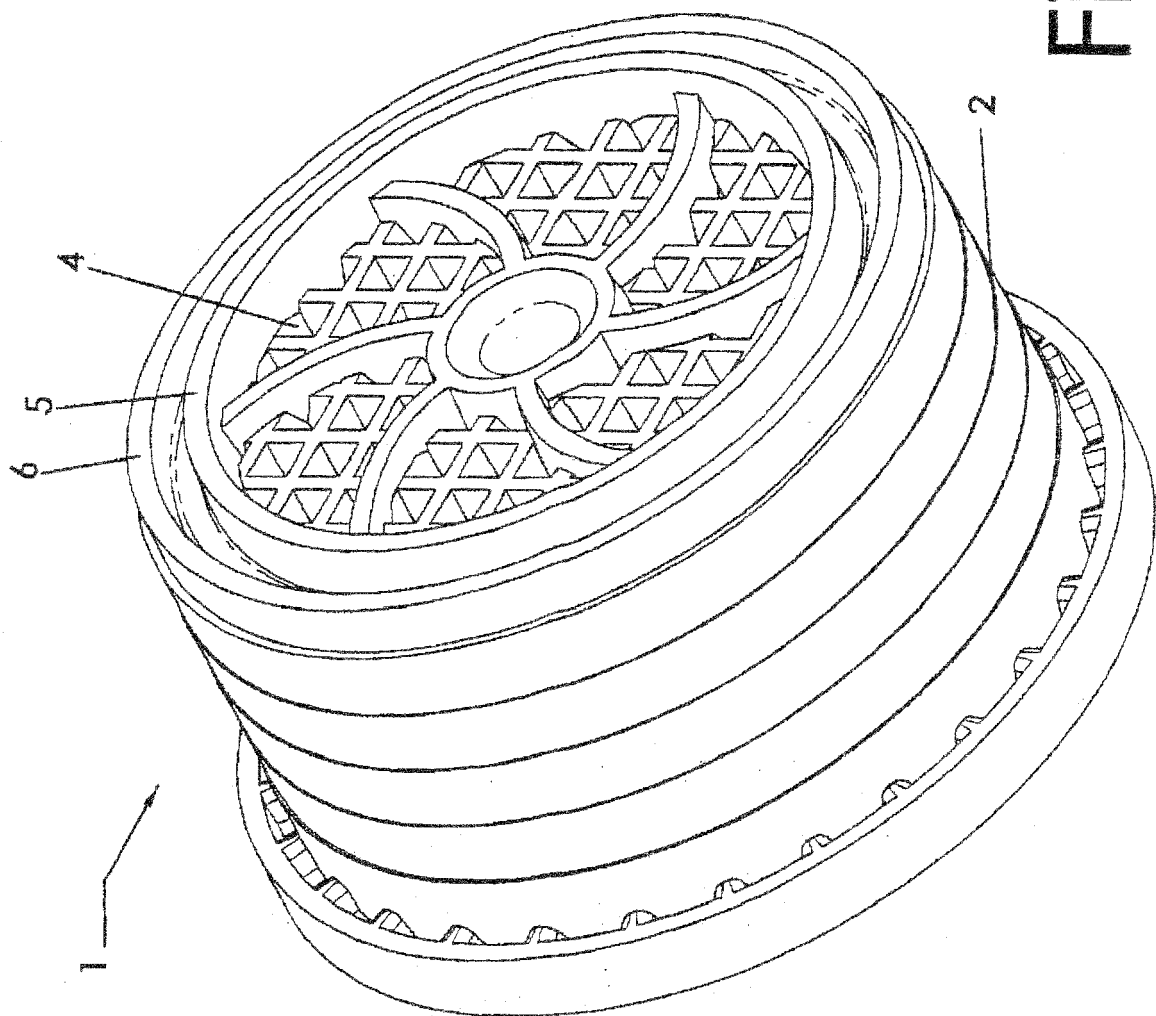


Fig. 1

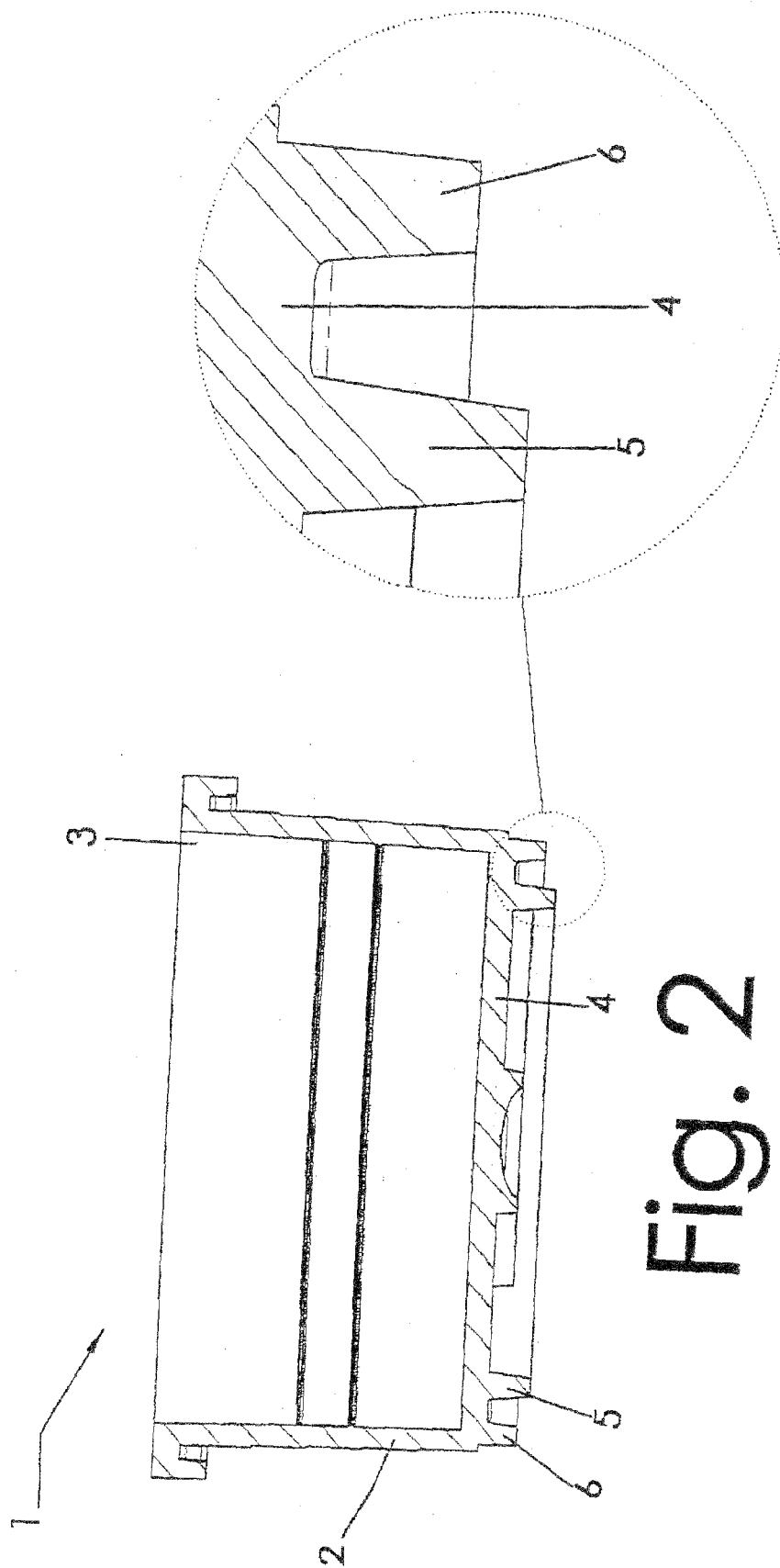


Fig. 2