



HU000031047T2

(19) **HU**(11) Lajstromszám: **E 031 047**(13) **T2****MAGYARORSZÁG**
Szellemi Tulajdon Nemzeti Hivatala**EURÓPAI SZABADALOM**
SZÖVEGÉNEK FORDÍTÁSA(21) Magyar ügyszám: **E 13 721063**(51) Int. Cl.: **B65D 85/804** (2006.01)(22) A bejelentés napja: **2013. 03. 05.**

(86) A nemzetközi (PCT) bejelentési szám:

(96) Az európai bejelentés bejelentési száma:

PCT/IB 13/051749**EP 20130721063**

(87) A nemzetközi közzétételi szám:

(97) Az európai bejelentés közzétételi adatai:

WO 13132436**EP 2822878 A1** **2013. 09. 12.**

(97) Az európai szabadalom megadásának meghirdetési adatai:

EP 2822878 B1 **2016. 08. 24.**

(30) Elsőbbségi adatok:

BO20120104 **2012. 03. 05.** **IT**

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Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

(19)



(11)

EP 2 822 878 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:

24.08.2016 Bulletin 2016/34

(21) Application number: **13721063.9**

(22) Date of filing: **05.03.2013**

(51) Int Cl.:

B65D 85/804 ^(2006.01)

(86) International application number:

PCT/IB2013/051749

(87) International publication number:

WO 2013/132436 (12.09.2013 Gazette 2013/37)

(54) **INTERCHANGEABLE CAPSULE FOR THE PREPARATION OF AN INFUSION OF A POWDERED PRODUCT, AND RELATIVE METHOD FOR OBTAINING SUCH AN INFUSION**

AUSTAUSCHBARE KAPSEL ZUR ZUBEREITUNG EINER INFUSION EINES PULVERPRODUKTS UND VERFAHREN ZUM ERHALT SOLCH EINER INFUSION

CAPSULE INTERCHANGEABLE POUR LA PRÉPARATION D'UNE INFUSION D'UN PRODUIT EN POUDRE, ET PROCÉDÉ ASSOCIÉ D'OBTENTION D'UNE TELLE INFUSION

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **05.03.2012 IT BO20120104**

(43) Date of publication of application:
14.01.2015 Bulletin 2015/03

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WO-A1-02/081337 **WO-A1-2012/117383**
DE-A1-102010 030 988 **US-A1- 2006 065 127**

EP 2 822 878 B1

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DescriptionTECHNICAL FIELD

[0001] The present invention concerns an interchangeable capsule for the preparation of an infusion of a powdered product, e.g. coffee or the like.

[0002] In particular, the present invention concerns the preparation of the so called "American coffee".

[0003] Incidentally, although the present invention finds an advantageous but not exclusive application to interchangeable capsules for the preparation of an infusion of "American coffee" (to which the following description will explicitly refer, without ever losing its general character), the teaching of the present invention can be applied to any kind of interchangeable capsule, e.g. to interchangeable capsules for espresso, tea, chamomile tea, etc.

BACKGROUND ART

[0004] As already known, the so called "American coffee" is an infusion made by means of a particular machine wherein the hot water passes through a filter containing ground unpressed coffee and settles by gravity in an underlying pot.

[0005] The coffee used for the preparation of such a drink is different from the one used by mocha machines or machines for Italian espresso because it is more roughly ground and it is not subjected to any pre-compression when it is in the capsule.

[0006] Some machines, which are presently commercially available, have been expressly designed for the preparation of American coffee and are characterized by a very simple operation.

[0007] In fact, these machines have a water tank, a pump sending heated water inside a small container provided with a paper filter containing coffee. The hot water submerges the coffee and, passing through the paper filter, falls by gravity into the dedicated underlying pot which is suited to keep the drink hot for a long time because it is heated by a special electrical resistance.

[0008] Besides traditional American coffee machines, wherein the cone-shaped filter is manually filled by the user, capsules having an outer casing containing a paper filter partially filled with unpressed coffee have recently appeared on the market.

[0009] By means of suitable percolator machines, the plastic lid and the plastic bottom are pierced in order to create a hot water flow infusing the coffee powder.

[0010] However, the capsules which are presently commercially available are not completely reliable. In fact, since they usually have only one filter in the bottom, the incoming hot water is induced to flow along substantially vertical preferential fluid threads which, therefore, do not involve the whole mass of powdered product contained in the capsule.

[0011] WO-A1-2012/117383 describes a capsule suit-

ed to contain a mass of powdered coffee for preparing an infusion. The capsule comprises a container closed by a lid. The container is provided with a filter of the coffee/hot water infusion. The mass of powdered coffee is located in an annular space surrounding a central chimney. The infusion water converges from the annular space towards the central chimney passing first through a vertical filter. WO-A1-02/081337 describes another capsule.

DISCLOSURE OF INVENTION

[0012] Therefore, the main object of the present invention is to provide an interchangeable capsule for infusions wherein the path of the infusing water inside said capsule is as long and as winding as possible in order to delay the infusion times and in order to involve the largest possible amount of product.

[0013] According to the present invention, therefore, an interchangeable capsule is produced according to the content of claim 1 or of any of the claims directly or indirectly dependent on claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] For a better understanding of the present invention it is described hereinafter an embodiment given for mere illustrative and not limitative purposes, with a reference to the annexed figures, wherein:

- figure 1 shows a 3D view of an interchangeable capsule for a powdered product according to the present invention;
- figure 2 shows a first longitudinal section of the capsule of figure 1;
- figure 3 shows a 3D view from above of a container for the powdered product belonging to the capsule according to figures 1 and 2;
- figure 4 shows a 3D view from below of the container of figure 3;
- figure 5 shows a side view of the container shown in figures 3 and 4;
- figure 6 shows a back view of the container shown in figures 3, 4, 5;
- figure 7 shows a front view of the container shown in figures 3, 4, 5, 6;
- figure 8 shows a 3D view from below of a lid belonging to the capsule according to figures 1 and 2; this lid, in use, is coupled to the container in order to form the capsule shown in figures 1, 2;
- figure 9 shows a side view of the lid of figure 8; and
- figure 10 shows a plan view of the lid of figure 8.

BEST MODE FOR CARRYING OUT THE INVENTION

[0015] The enclosed figures show a preferred embodiment of an interchangeable capsule 100 produced according to the principles of the present invention.

[0016] The interchangeable capsule 100 is suited to contain inside it a certain amount of a powdered product (e.g. coffee) for preparing an infusion, in particular, an "American coffee" according to the above definition.

[0017] The interchangeable capsule 100 comprises a container 101 closed by a lid 102 by means of known methods.

[0018] The container 101 comprises, in turn, a bottom 101A advantageously but not necessarily produced in one piece with the side wall 101B.

[0019] It must be noticed that an axis (X) passes through the bottom 101A, said axis substantially lying on a plane (π), which defines a substantially horizontal direction.

[0020] Moreover, in the present description, any "substantially horizontal" element, body or device is an element, body or device substantially lying on the plane (π). Obviously, also elements bodies or devices substantially lying on any plane parallel to plane (π) must be considered "substantially horizontal".

[0021] As shown in figure 2, the side wall 101B shows a central vertical axis of symmetry (Y) which is perpendicular to the aforesaid axis (X).

[0022] Therefore, in the present description, any "substantially horizontal" element, body or device is an element, body or device substantially extending according to the direction defined by axis (Y).

[0023] The side wall 101B has the usual substantially truncated-cone shape, flared upwards.

[0024] An annulus-shaped support edge 104 protrudes from the upper end 103 of the container 101 so that the whole interchangeable capsule 100 can be received in a special housing created in a percolator machine (not shown). Preferably, but not necessarily, the bottom 101A, the side wall 101B and the support edge 104 are made in one piece of a suitable plastic material for foods of a known type.

[0025] The outer surface of the side wall 101B could also be provided with some ribs 105 (figure 1) to strengthen the structure of said side wall 101B.

[0026] As shown in particular in figure 2, a feeding well 110 protrudes from the lid 102 towards the inside of the container 101.

[0027] As shown in greater detail in figure 8, the bottom 111 of the feeding well 110 is provided with three spokes 112 whereon, in use, a filter 113 (figure 2) is fastened, said filter allowing the passage of hot water from the feeding well 110 to the inside of the container 101, but not the other way. In other words, the filter 113 acts as separating element between the hot water coming from the feeding well 110 and the infusion inside the container 101. In fact, a possible accidental reflux of the infusion towards the feeding well 110 is prevented by the fact that the hot water pressure inside the feeding well 110 is obviously always higher than the infusion pressure in the container 101, a depression being present outgoing from the capsule 100.

[0028] As shown in particular in figure 2, below the

feeding well 110 there is a small tank 120 (also having an axis (Y)) supported by the bottom 101A of the container 101 by means of a cup-shaped support device 130 coaxial to the small tank 120.

[0029] The support device 130, having a transverse size larger than that of the small tank 120, is arranged outside said small tank 120.

[0030] In particular, the small tank 120 has a circular-shaped bottom which is transverse to the incoming water jet whose direction and orientation are defined by an arrow (F1). In other words, the bottom 121 represents a deflecting device (transverse to axis (X)), substantially horizontal, of the infusion jet, substantially vertical, whose direction and orientation are defined by the arrow (F1). Besides bottom 121, the small tank 120 comprises a truncated-cone-shaped side wall 122.

[0031] After the impact with the bottom 121, the infusion liquid jet (therefore already comprising a certain amount of the product infused in hot water) is horizontally and radially deflected according to directions and orientations defined by the arrows (F2).

[0032] In the embodiment shown in the enclosed figures, the small tank 120 is raised with respect to the plane (n) in order to form an underlying chamber 140, which will be useful for reasons better explained hereinafter.

[0033] More precisely, the chamber 140 is defined from above by the bottom 121 and laterally by a lower truncated-cone shaped portion 131 of the support device 130.

[0034] As shown in figure 2, a toroidal space 150 is defined between the inner wall of an upper portion 132 of the support device 130 and the outer wall of the small tank 120, said space being in hydraulic communication with the chamber 140 by means of an annulus-shaped passage 151.

[0035] Advantageously, but not necessarily, the upper portion 132, substantially cylindrical, of the support device 130 is provided with a plurality of indentations 133.

[0036] Between each pair of indentations 133 it is therefore defined a related through opening 134 allowing the outflow of the infusion.

[0037] Obviously, the width of each through opening 134, advantageously shaped like an indentation, has been calculated in order to prevent, as far as possible, the passage of granules of ground product dragged by the hot infusion.

[0038] The indentations 133 and the openings 134 form together first vertical filtering means (FT1) suited to filter the infusion (see hereinafter).

[0039] Also the wall 122 of the small tank 120 comprises a full lower portion 123 and an upper portion 124 possibly provided with a plurality of indentations 125. Between each pair of indentations it is defined a related through opening 126 allowing the passage of the hot water/powdered product infusion.

[0040] The indentations 125 and the openings 126 form together second vertical filtering means (FT2) suited to filter the infusion of powdered product outgoing from

the small tank 120 (see hereinafter).

[0041] Obviously, also in this case the width of each through opening 126, advantageously shaped like an indentation, has been calculated in order to prevent, as far as possible, the passage of granules of ground product dragged by the hot infusion.

[0042] The choice of kind of filtering means, their allocation and their structure, in terms of indentations and through openings, is made by the manufacturer of the interchangeable capsule 100 before starting the production of the same according to the chemical and physical properties of the powdered product which will be the base of the infusion.

[0043] Advantageously, but not necessarily, the annulus-shaped passage 151 is provided with a further filter 152 (made of paper, felt, etc.) in order to filter further the percolating liquid before it enters the chamber 140.

[0044] The mass of powdered product (MC) is present both in the space defined between the inner wall of the container 101 and the outer wall of the support device 130 and inside the small tank 120.

[0045] Furthermore, advantageously but not necessarily, the chamber 130 is at least partially filled by a waffle containing at least one more essence, such as cardamom, cinnamon or ginseng.

[0046] The present capsule 100 works as follows:

- a) the pressurized hot water enters the container 101 from the feeding well 110, after having passed through filter 113, according to the direction and orientation indicated by the arrow (F1);
- b) immediately after having passed through filter 113, the hot water meets the powdered product (MC) arranged between the feeding well 110 and the small tank 120; the product/hot water infusion liquid starts to be formed;
- c) this infusion liquid hits the bottom 121 of the small tank 120 and is horizontally and radially deflected according to the directions and orientations of the arrows (F2);
- d) in case second vertical filtering means (FT2) are provided, a first portion of the infusion liquid passes immediately through the openings 126 of second vertical filtering means (FT2) for flowing towards the toroidal space 150 (arrows (F3)); from this toroidal space 150 the infusion flows towards the chamber 140 after having possibly been filtrated by the filter 152; passing through the waffle, in case present in the chamber 140, the infusion takes the taste of the substance contained by the waffle;
- e) a second portion of the infusion liquid is deflected according to directions and orientations given by the arrows (F4) in order to involve also the mass of powdered product (MC) arranged in the space defined between the container 101 and the support device 130;
- f) in case also first vertical filtering means (FT1) are present, the infusion will be deflected according to

the directions and the orientations given by the arrows (F5) to pass through the openings 134 and to converge to the toroidal space 150 together with the infusion whose origin is indicated by the arrows (F3); g) the infusion according to the arrow (F3) and the infusion according to the arrow (F5), joined together in the toroidal space 150, undergo a further filtering operation by means of the filter 152; the final infusion (arrow (F6)) is therefore enriched with an essence possibly present in the chamber 140 and is sent to the final user.

[0047] In another embodiment, not shown, the pressurized hot water enters the container, not through the well 110 but through a hole pierced in the lid 102 by known means.

[0048] The advantages of the disposable capsule object of the present invention are as follows:

- the capsule object of the invention has, preferably but not necessarily, a central well through which the hot water outgoing from a single jet of the machine flows; therefore, the hot water is evenly distributed in the mass of ground product; this feature allows an even and constant control of the water distribution in the capsule;
- the bottom of the capsule, or better to say, the bottom of the space containing the powdered product, is closed, thus avoiding preferential vertical water outflows during the infusing step, as is the case with the other known capsules having a filter in the bottom or a single opening produced by piercing the bottom itself;
- the infusion filtering area is substantially vertical in order to obtain a larger filtering area if compared to the capsules having only a coffee filter arranged in the bottom; moreover, this vertical filtering creates a turbulence effect, thus improving the exploitation of the product to be infused;
- the capsule object of the present invention allows the production of several different products by calibrating the water inlet and the product outlet according to the product itself;
- the capsule object of the present invention allows to contain larger volumes of product though maintaining equal filtering capacity;
- the capsule is advantageously produced in one piece with several sections, thus allowing the use of a simpler packaging machine for the industrialization of the capsule;
- in the industrialization step, the capsule object of the present invention allows to carry out a central dosing, thus simplifying the related packaging machines; and
- the structure of the capsule object of the present invention creates inside it a winding liquid path, thus allowing the maximum exploitation of the contained infusion.

Claims

1. A capsule (100), which is suited to contain in its inside a powdered product (MC) for preparing an infusion; said capsule (100) comprising a container (101), which is closed by a lid (102), said container (101) being provided with filtering means ((FT1), (FT2)) for filtering the powdered product (MC)/hot water infusion; the capsule (100) comprises:

- a central feeding device (110) for feeding a hot liquid according to a substantially vertical direction (F1); said hot liquid being suited to obtain an infusion with said powdered product (MC); and
- a deflecting device (120), which is arranged transverse to the hot liquid flow coming from said central feeding device (110); said deflecting device (120) being supported by the bottom (101A) of said container (101) by means of a support device (130);

capsule (100) **characterised in that** it comprises filtering means ((FT1), (FT2)), which are substantially vertical and are arranged both on said deflecting device (120), and on said support device (130).

2. A capsule (100) according to Claim 1, **characterised in that** said support device (130) comprises an outer support cup, which is coaxial to said deflecting device (120).
3. A capsule (100) according to Claim 2, **characterised in that** said support device (130), having a transverse size larger than the one of said deflecting device (120), is arranged outside said deflecting device (120) itself.
4. A capsule (100) according to any of the previous Claims, **characterised in that** said central feeding device (110) comprises a feeding well (110) provided with a filter (113).
5. A capsule (100) according to any of the previous Claims, **characterised in that**, after hitting said deflecting device (120), the jet of infusion liquid is horizontally and radially (F2) deflected.
6. A capsule (100) according to any of the previous Claims, **characterised in that** said deflecting device (120) comprises a small tank (120), which is raised with respect to a horizontal plane (n), so as to form an underlying chamber (140).
7. A capsule (100) according to Claim 6, **characterised in that** a toroidal space (150) is defined between the inner wall of an upper portion (132) of the support

device (130) and the outer wall of the small tank (120); said toroidal space (150) being in hydraulic communication with said chamber (140) by means of an annulus-shaped passage (151).

8. A capsule (100) according to any of the previous Claims, **characterised in that** said first vertical filter (FT1) and said second vertical filter (FT2) respectively comprise a plurality of respective indentations (133) and (125), respectively.

Patentansprüche

1. Kapsel (100), welche zum Aufnehmen eines pulverförmigen Produkts (MC) in ihrem Inneren zum Zubereiten eines Aufgusses geeignet ist; wobei die Kapsel (100) einen Behälter (101) umfasst, welcher durch einen Deckel (102) geschlossen ist, wobei der Behälter (101) mit Filtermitteln ((FT1), (FT2)) zum Filtern des Aufgusses aus pulverförmigem Produkt (MC) und heißem Wasser ausgestattet ist; die Kapsel (100) umfasst:
- eine zentrale Zuführvorrichtung (110) zum Zuführen einer heißen Flüssigkeit entsprechend einer im Wesentlichen vertikalen Richtung (F1); wobei die heiße Flüssigkeit dafür geeignet ist, einen Aufguss mit dem pulverförmigen Produkt (MC) zu erhalten; und
 - eine Umlenkvorrichtung (120), welche quer zu dem von der zentralen Zuführvorrichtung (11) kommenden Strom heißer Flüssigkeit angeordnet ist; wobei die Umlenkvorrichtung (120) mittels einer Haltevorrichtung 130 von dem Boden (101 A) des Behälters (101) gehalten ist; wobei die Kapsel (100) **dadurch gekennzeichnet ist, dass** sie Filtermittel ((FT1), (FT2)) umfasst, welche im Wesentlichen vertikal sind und sowohl an der Umlenkvorrichtung (120) als auch an der Haltevorrichtung (130) angeordnet sind.
2. Kapsel (100) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Haltevorrichtung (130) einen äußeren Haltebecher umfasst, welcher coaxial zu der Umlenkvorrichtung (120) ist.
3. Kapsel (100) nach Anspruch 2, **dadurch gekennzeichnet, dass** die Haltevorrichtung (130), welche eine Größe in Querrichtung hat, welche größer als diejenige der Umlenkvorrichtung (120) ist, außerhalb der Umlenkvorrichtung (120) selbst angeordnet ist.
4. Kapsel (100) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die zentrale Zuführvorrichtung (110) eine Zuführquelle (110) umfasst, welche mit einem Filter (113) ausge-

stattet ist.

5. Kapsel (100) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Strahl der Aufgussflüssigkeit nach dem Auftreffen auf die Umlenkvorrichtung (120) horizontal und radial (F2) umgelenkt ist.
6. Kapsel (100) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Umlenkvorrichtung (120) einen kleinen Behälter (120) umfasst, welcher gegenüber einer horizontalen Ebene (n) angehoben ist, um eine darunter liegende Kammer (140) zu bilden.
7. Kapsel (100) nach Anspruch 6, **dadurch gekennzeichnet, dass** ein kreisringförmiger Raum (150) zwischen der inneren Wand eines oberen Abschnitts (132) der Haltevorrichtung (130) und der äußeren Wand des kleinen Behälters (120) gebildet ist; wobei der kreisringförmige Raum (150) mittels einer ringförmigen Durchgangs (151) mit der Kammer (140) in hydraulischer Kommunikation steht.
8. Kapsel (100) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der erste vertikale Filter (FT1) und der zweite vertikale Filter (FT2) jeweils mehrere entsprechende Kerben (133) und (125) haben.

Revendications

1. Une capsule (100), qui est adaptée pour contenir à l'intérieur un produit en poudre (MC) pour préparer une infusion; ladite capsule (100) comprenant un contenant (101), qui est fermé par un couvercle (102), ledit contenant (101) étant fourni avec des moyens de filtration ((FT1)), (FT2)) pour filtrer le produit en poudre (MC)/ l'infusion d'eau chaude ; la capsule (100) comprend :
 - un dispositif central d'alimentation (110) pour alimenter un liquide chaud selon une direction substantiellement verticale (F1) ; ledit liquide chaud étant adapté pour obtenir une infusion avec ledit produit en poudre (MC) ; et
 - un dispositif déflecteur (120), qui est agencé transversalement au flux de liquide chaud venant dudit dispositif central d'alimentation (110) ; ledit dispositif déflecteur (120) étant supporté par le fond (101A) dudit contenant (101) au moyen d'un dispositif support (130) ;

capsule (100) **caractérisée en ce qu'**elle comprend des moyens de filtration ((FT1), (FT2)), qui sont substantiellement verticaux et sont tous les deux agencés sur ledit dispositif déflecteur (120), et sur

ledit dispositif support (130).

2. Une capsule (100) selon la revendication 1, **caractérisée en ce que** ledit dispositif support (130) comprend une coupelle support extérieure, qui est coaxiale audit dispositif déflecteur (120).
3. Une capsule (100) selon la revendication 2, **caractérisée en ce que** ledit dispositif support (130) ayant une taille transversale plus grande que le premier desdits dispositifs déflecteurs (120), est agencé à l'extérieur dudit dispositif déflecteur (120) lui-même.
4. Une capsule (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** ledit dispositif central d'alimentation (110) comprend un puit d'alimentation (110) muni d'un filtre (113).
5. Une capsule (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce que**, après avoir chauffé ledit dispositif déflecteur (120) le jet de liquide d'infusion est dévié horizontalement et radialement (F2).
6. Une capsule (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le dispositif déflecteur (120) comprend une petit réservoir (120), qui est élevé par rapport à un plan horizontal (II), afin de former une chambre sous-jacente (140).
7. Une capsule (100) selon la revendication 6, **caractérisée en ce que** un espace torique (150) est défini entre la paroi intérieure d'une paroi supérieure (132) du dispositif support (130) et la paroi extérieure du petit réservoir (120) ; ledit espace torique (150) étant en communication hydraulique avec ladite chambre (140) au moyen d'un passage de forme annulaire (151).
8. Une capsule (100) selon l'une quelconque des revendications précédentes, **caractérisée en ce que** ledit premier filtre vertical (FT1) et ledit second filtre vertical (FT2) comprennent respectivement une pluralité d'indentations respectives (133) et (125), respectivement.

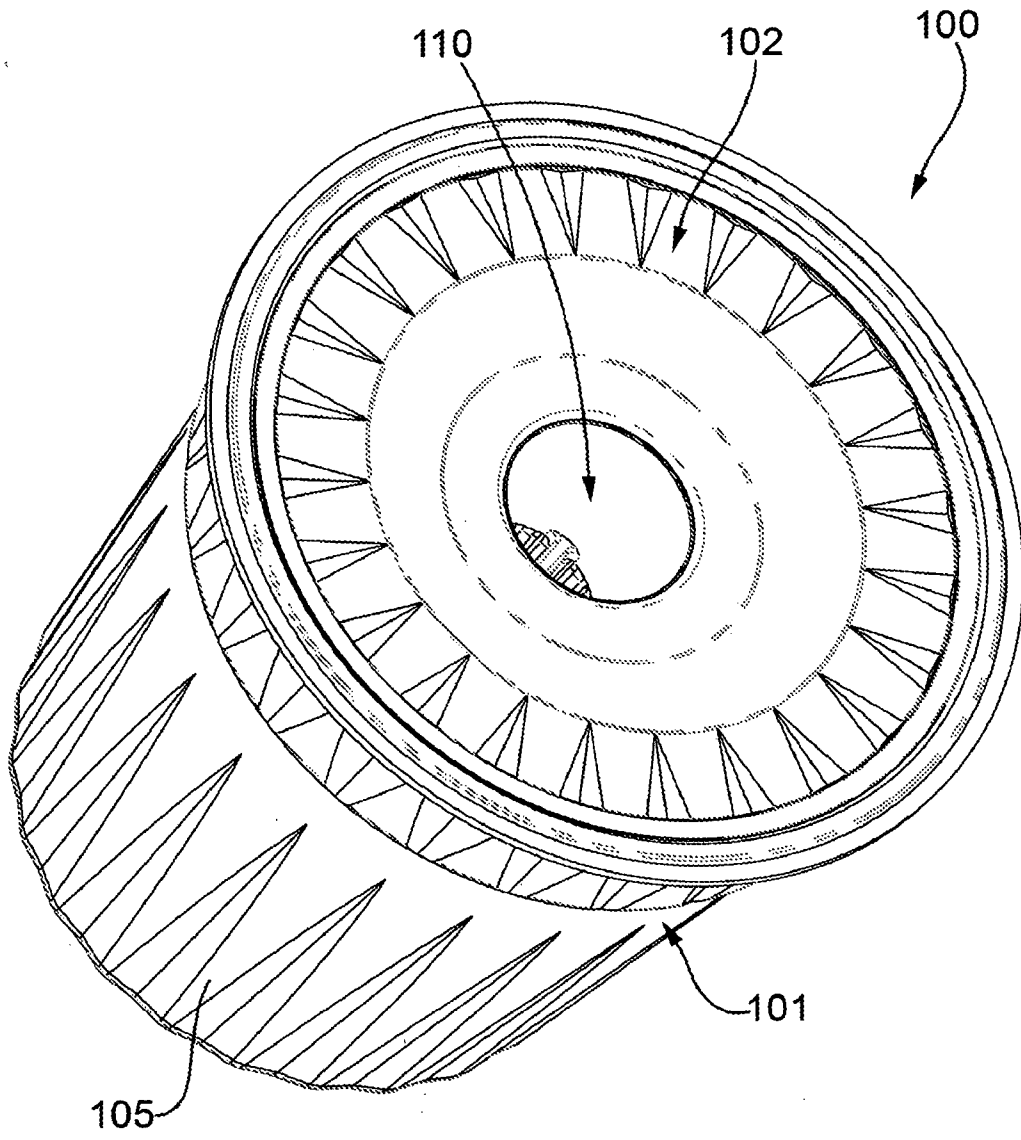


FIG.1

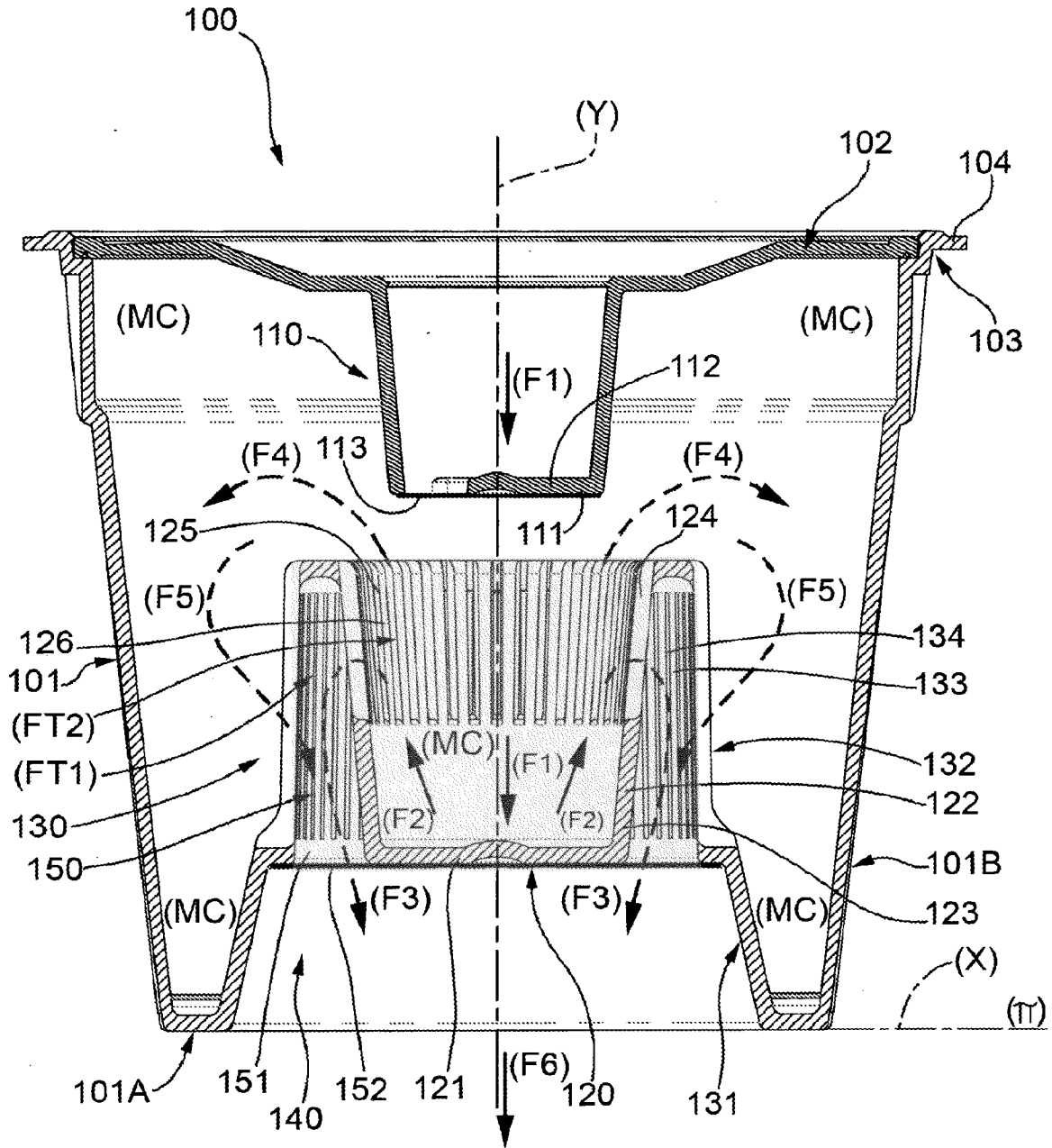
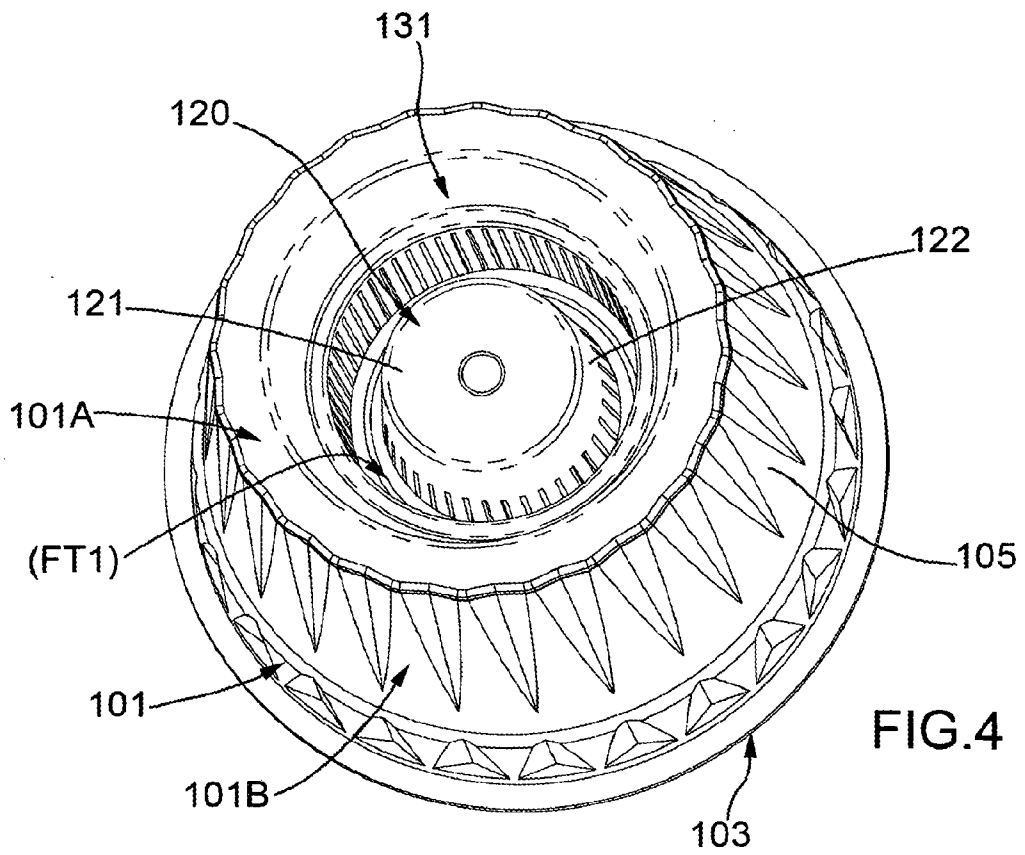
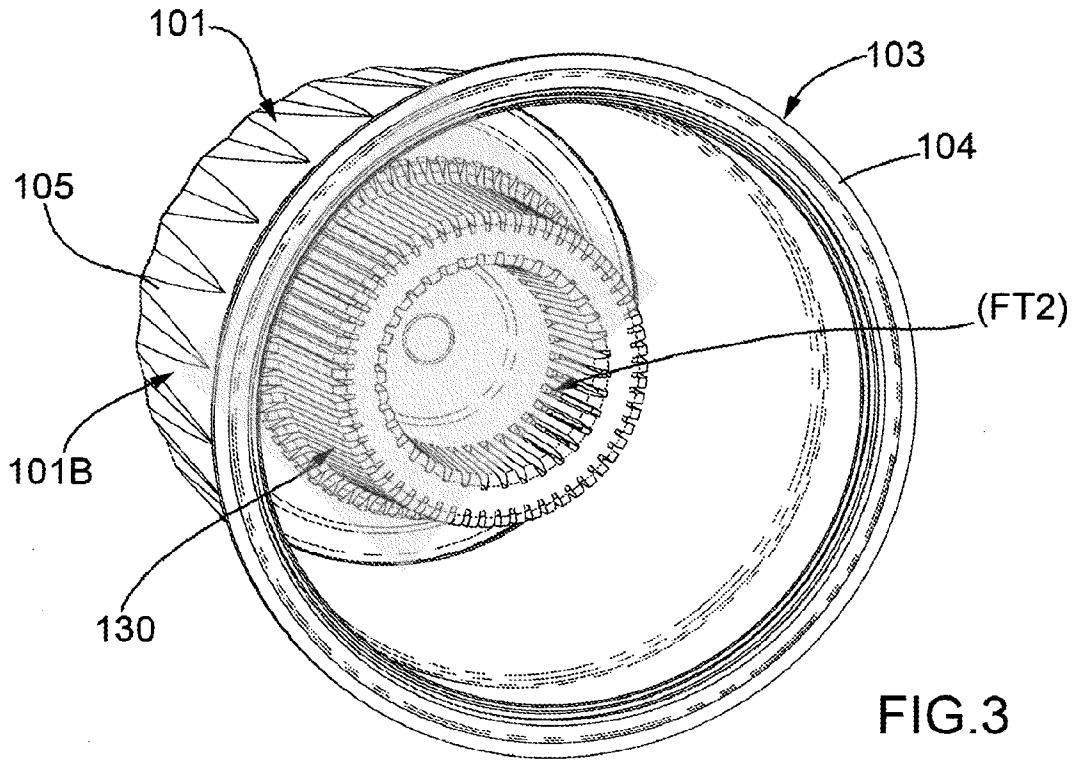


FIG.2



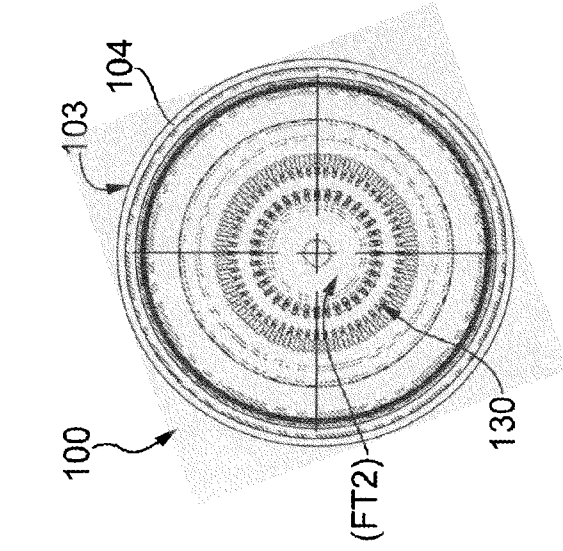


FIG. 5

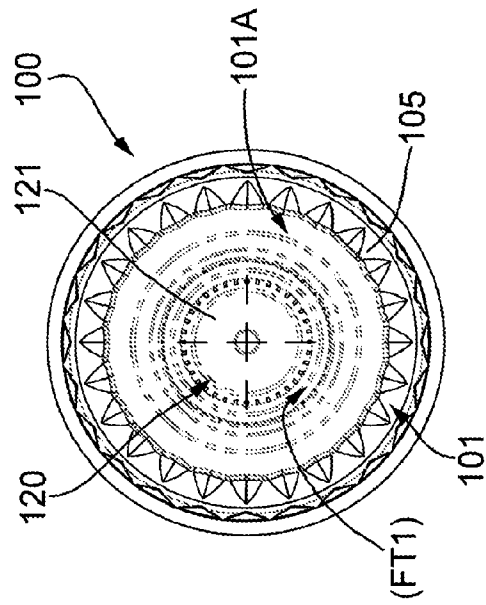


FIG. 6

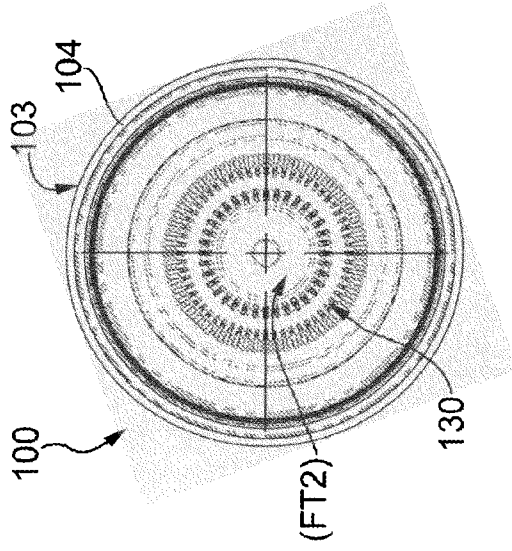
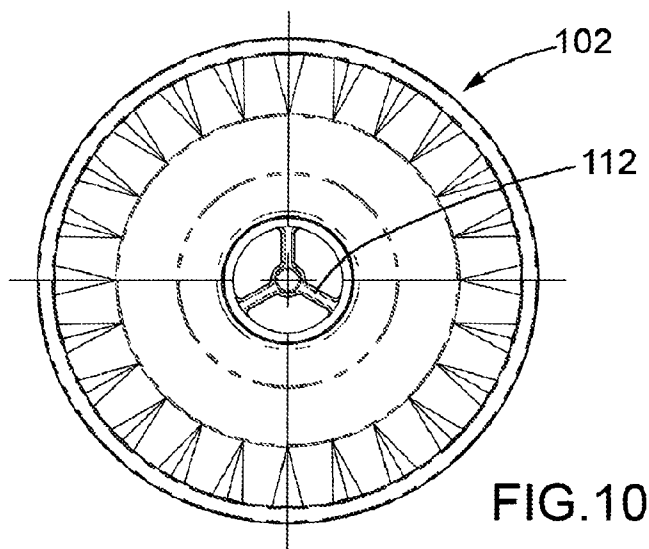
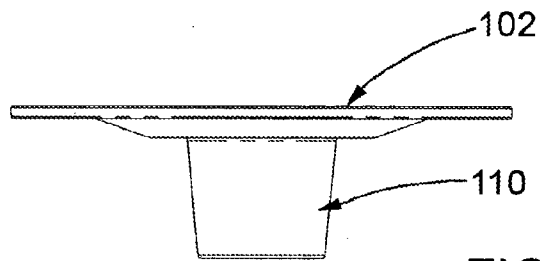
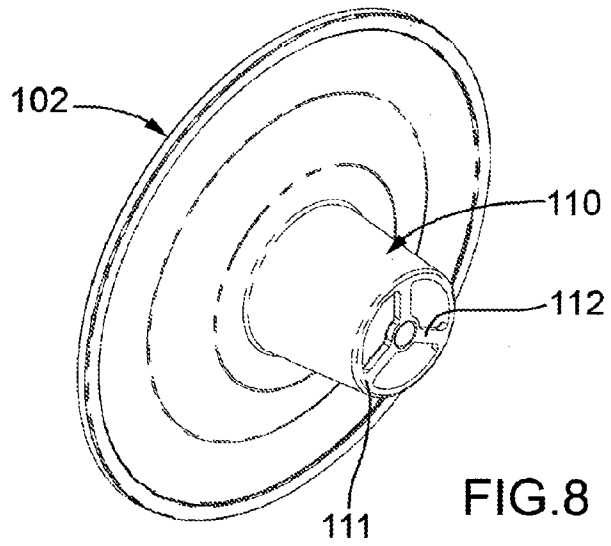


FIG. 7



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2012117383 A1 [0011]
- WO 02081337 A1 [0011]

CSERÉLHETŐ KAPSZULA PORÍTOTT TERMÉK FŐZETÉNEK KÉSZÍTÉSÉHEZ ÉS VONATKOZÓ ELJÁRÁS H. V. EN
FŐZET KINYERÉSÉRE

Szabadalmi igénypontok

5

1. Kapszula (100), amely főzet készítéséhez a belsejében porított termék (MC) tárolására alkalmasan van kiképezve; a kapszula (100) tartalmaz tartályt (101), melyet fedél (102) zár, a tartály (101) a porított termék (MC)/forróvízes főzet szűréséhez szűrőeszközökkel ((FT1), (FT2)) van ellátva;

a kapszula (100) tartalmaz

- 10
- középső betáplálóeszközt (110) forró folyadék lényegében függőleges irány (F1) menti betáplálásához; a forró folyadék a porított termékkel (MC) főzet kinyerésére alkalmas; valamint
 - eltérítőeszközt (120), amely a középső betáplálóeszközből (110) érkező forró folyadékkáramra keresztben van elrendezve; az eltérítőeszköz (120) a tartály (101) alja (101A) támasztóeszközzel (130) támasztja meg;

15 **azzal jellemezve**, hogy a kapszula (100) lényegében függőleges, továbbá az eltérítőeszközön (120) és a támasztóeszközön (130) egyaránt elrendezett szűrőeszközöket ((FT1), (FT2)) tartalmaz.

2. Az 1. igénypont szerinti kapszula (100), **azzal jellemezve**, hogy a támasztóeszköznek (130) egy az eltérítőeszközzel (120) egytengelyű külső támasztócsészéje van.

20 3. A 2. igénypont szerinti kapszula (100), **azzal jellemezve**, hogy az eltérítőeszköz (120) keresztirányú méreténél nagyobb keresztirányú mérettel rendelkező támasztóeszköz (130) az eltérítőeszközön (120) kívül van elrendezve.

4. Az előző igénypontok bármelyike szerinti kapszula (100), **azzal jellemezve**, hogy a középső betáplálóeszköznek (110) szűrővel (113) ellátott betáplálómélyedése (110) van.

25 5. Az előző igénypontok bármelyike szerinti kapszula (100), **azzal jellemezve**, hogy a forrázó folyadéksugár az eltérítő eszköznek (120) ütközést követően vízszintesen és sugárirányban (F2) eltérül.

6. Az előző igénypontok bármelyike szerinti kapszula (100), **azzal jellemezve**, hogy az eltérítőeszköznek (120) kicsiny edénye (120) van, mely egy alatta elterülő kamra (140) létrehozásához vízszintes síkhoz (π) képest kiemelkedően van kiképezve.

30 7. A 6. igénypont szerinti kapszula (100), **azzal jellemezve**, hogy a támasztóeszköz (130) felső részének (132) belső fala és a kicsiny edény (120) külső fala között toroid alakú tér (150) van kialakítva; a toroid alakú tér (150) a kamrával (140) gyűrű alakú járat (151) révén közlekedik.

8. Az előző igénypontok bármelyike szerinti kapszula (100), **azzal jellemezve**, hogy az első függőleges szűrőnek (FT1) és a második függőleges szűrőnek (FT2) megfelelő bemélyedései (133), illetve (125) vannak.

