



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
05.02.2020 Bulletin 2020/06

(51) Int Cl.:
B65D 85/804 ^(2006.01)

(21) Application number: **19188988.0**

(22) Date of filing: **30.07.2019**

(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**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **Capitani S.r.l.**
22070 Solbiate (CO) (IT)

(72) Inventor: **CAPITANI, Gionata**
22070 Albiolo (CO) (IT)

(74) Representative: **Parisi, Luigi**
Viale Beatrice d'Este, 20
20122 Milano (IT)

(30) Priority: **02.08.2018 IT 201800007758**

(54) **CAPSULE FOR MACHINES FOR PREPARING INFUSED BEVERAGES**

(57) A capsule (100) for machines for preparing infused beverages is described, comprising: a body (2) shaped like a bowl, comprising a side wall (4) extending around an axis (X-X) and a bottom wall (3); said body (2) being made of paper or paper material; said body (2) being sized so as to contain a predetermined amount of a powdered preparation for preparing an infused beverage. The capsule being further provided with an annular peripheral edge (18) designed to abut against a bearing surface of an infusion chamber of an

infusion assembly when the capsule (100) is inserted into the chamber.

The annular peripheral edge (18) comprises a first annular portion (19) integrally made with the bowl-like body (2); and an annular reinforcing element (20) comprising a second annular portion (21) applied to the first annular portion (19) and an elongate portion (22) extending along a direction parallel to the axis (X-X) to face towards said side wall (4).

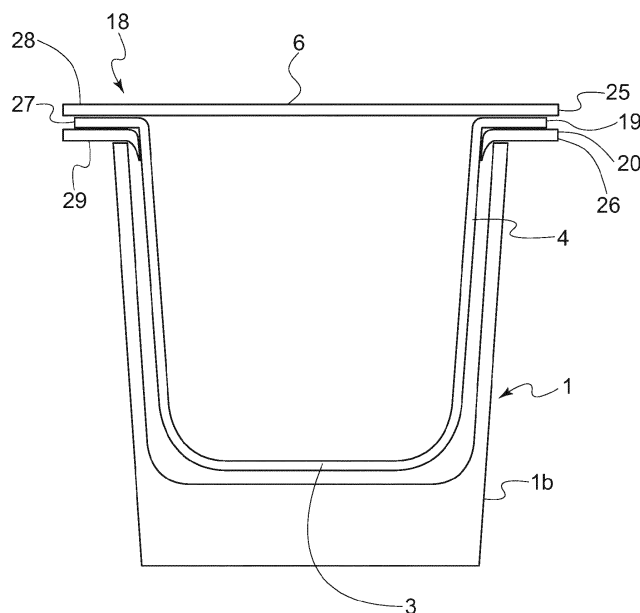


Fig. 1

Description

Field of the invention

[0001] The present invention concerns a capsule containing a powdered preparation for preparing infused beverages, in particular the present invention concerns a capsule of the aforesaid type made of paper material.

Known art

[0002] The capsule, containing the powdered preparation or aromatic essence, is placed or transported inside an infusion chamber of the machine, so that the injection of hot pressurized water into the infusion capsule achieves the extraction of the aromatic essence.

[0003] Capsules for this use are generally made of a bowl-like body formed by a side wall and a bottom wall. The side wall and the bottom wall are arranged so as to form a cavity inside the bowl-like body, the cavity being shaped to contain a predetermined amount of powdered preparation.

[0004] Generally, the bowl-like body further has an annular peripheral edge apt to abut against a bearing surface surrounding an infusion chamber of an infusion assembly when the capsule is inserted into said chamber.

[0005] Usually, these capsules are made of plastic material. In an attempt to solve the problem related to the disposal used plastic capsules, which is widely felt given the enormous number of capsules produced worldwide, capsules obtained from a sheet of paper were suggested.

[0006] However, the Applicant has noted that the paper capsules suggested until now do not always ensure the optimal operation provided by similar plastic capsules. For example, in some cases, sealing problems arose during the closing of the infusion chamber.

[0007] The Applicant believes that the cause of this malfunction is connected to the annular peripheral edge, which allows water or infused beverage infiltrations between the annular edge itself and the side wall of the capsule, if not made correctly.

[0008] The infiltration problems can also be amplified whenever the capsule and the infusion chamber are improperly centered.

[0009] The Applicant has thus identified the need to provide a capsule made of paper material for preparing an infused beverage that allows to eliminate or anyhow considerably reduce the infiltration problems between the side wall and the annular peripheral edge thereof.

Summary of the Invention

[0010] Thus, in its first aspect, the invention concerns a capsule for machines for preparing infused beverages, comprising:

a body shaped like a bowl, comprising a side wall extending around an axis and a bottom wall; said

body being made of paper or paper material;

said body being sized so as to contain a predetermined amount of a powdered preparation for preparing an infused beverage;

said capsule being further provided with an annular peripheral edge designed to abut against a bearing surface of an infusion chamber of an infusion assembly when the capsule is inserted into said chamber; said annular peripheral edge comprising a first annular portion integrally made with said bowl-like body;

an annular reinforcing element comprising a second annular portion applied on said first annular portion and an elongate portion extending along a direction parallel to the axis to face towards said side wall.

[0011] In the aforesaid aspect, the present invention can have at least one of the preferred characteristics defined hereunder.

[0012] Preferably, the elongate portion is arranged substantially orthogonal to said second annular portion.

[0013] Conveniently, the elongate portion extends for at least 0.5 mm.

[0014] Preferably, the elongate portion extends for 7 mm at the most.

[0015] Conveniently, the elongate portion is applied to the side wall.

[0016] Preferably, the elongate portion extends from the second annular portion in contact with the side wall.

[0017] Conveniently, the elongate portion has a section tapering away from the second annular portion.

[0018] Preferably, the capsule comprises a lid designed to close the opening, the lid comprising an inner surface comprising a third annular portion designed to be applied at an outer surface of the first annular portion.

[0019] Advantageously, the capsule comprises a liquid-proofing glue or resin layer applied at the head surfaces of the first and second annular portions.

[0020] Further characteristics and advantages of the invention will become clearer in the detailed description of some preferred, but not exclusive, embodiments of a capsule made of paper material containing a powdered preparation for preparing infused beverages according to the present invention.

Brief description of the drawings

[0021] Such description will be set forth hereunder with reference to the accompanying drawings, provided only by way of example and thus without limitations, in which:

- figure 1 shows a schematic view of a capsule made of paper material according to the present invention, inserted into an infusion chamber of an infusion assembly;
- figure 2 is a schematic view of a capsule made of paper material according to the present invention, wherein the annular peripheral edge is in exploded

view;

- figure 3a is a schematic view of the annular reinforcing element according to the present invention;
- figure 3b is a schematic and sectional view of the annular peripheral edge in exploded view.

Detailed description of embodiments of the invention

[0022] With reference to figures 1-3b, a capsule containing a powdered preparation for preparing infused beverages such as coffee, infusions, herbal tea, etc. according to the present invention, is denoted by the numerical reference 100.

[0023] The capsule 100 is preferably a disposable capsule for preparing infused beverages such as coffee, tea, herbal teas and the like.

[0024] Each capsule 100, containing an aromatic essence in the form of powdered preparation, is placed or transported inside an infusion chamber of the machine so that the injection of hot pressurized water into the capsule 100 achieves the extraction of the aromatic essence. The capsules 100 typically have a bowl-like body 2 provided with a bottom wall 3, a side wall 4 substantially cylindrical or truncated-pyramid shaped, an upper opening 5 arranged at the end opposite the side wall 4 with respect to the bottom wall 3 and a lid 6 generally represented by a film or sealing film. The lid 6 is arranged to seal the upper opening 5.

[0025] The bowl-like body 2 is made of paper or paper material. Paper material not only means the widely used material made of cellulose pulp or wood or plants, but also of other fibers such as cotton, linen, hemp and, obviously, recycled paper.

[0026] Preferably, the bowl-like body 2 is made of plant-based parchment containing a low percentage of PLA (polylactic acid).

[0027] The lid 6 is also preferably made of paper or paper material and is shaped like a discoid element.

[0028] Preferably, the lid 6 is made of plant-based parchment containing a low percentage of PLA (polylactic acid).

[0029] The capsule 100 is further provided with an annular peripheral edge 18 apt to abut against a bearing surface surrounding an infusion chamber of an infusion assembly when the capsule is inserted into the same chamber.

[0030] The annular peripheral edge 18 comprises a first annular portion 19 made integrally with the bowl-like body 2 and an annular reinforcing element 20.

[0031] The first annular portion 19 is arranged so as to surround the upper opening 5 and extends radially for at least 1 mm, preferably at least 2 mm.

[0032] In any case, the first annular portion 19 extends for a maximum of 10 mm. In a preferred embodiment, the annular reinforcing element 20 has a second annular portion 21 designed to be applied to the first annular portion 19 and an elongate portion 22 extending along a direction substantially parallel to the axis X-X so as to

face towards the side wall 4 of the bowl-like body 2.

[0033] The annular reinforcing element 20 is also made of paper or paper material.

[0034] Preferably, the annular reinforcing element 20 is also made of cardboard.

[0035] In the embodiment shown in the figures, the elongate portion 22 is arranged substantially orthogonal to the second annular portion 21.

[0036] In the embodiment shown in the figures, the elongate portion 22 extends without interruptions from the second annular portion 21.

[0037] Preferably, the elongate portion 22 is linked to the second annular portion 21 such as not to create areas of structural weakening.

[0038] The shape of the annular reinforcing element 20, and especially the reciprocal positioning of the second annular portion 21 and the elongate portion 22 and their positioning with respect to the bowl-like body 2, is achieved during the production process of the capsule 100.

[0039] In particular, the shape of the annular reinforcing element 20, and especially the reciprocal positioning of the second annular portion 21 and of the elongate portion 22 and their positioning with respect to the bowl-like body 2, is achieved by bending through a pressure applied onto the annular reinforcing element 20.

[0040] The elongate portion 22 has a smaller extension than the second annular portion 21. Preferably, the elongate portion 22 extends for at least 0.5 mm. Preferably, the elongate portion 22 extends for 10 mm at the most.

[0041] The elongate portion 22 extends from the second annular portion 21 such as to be in contact, preferably along its entire extension, with the side wall 4 of the bowl-like body 2.

[0042] The elongate portion 22 is thus preferably glued for at least a length of its extension with the side wall 4 of the bowl-like body 2.

[0043] The elongate portion 22 has a section tapering away from the second annular portion 21. The annular reinforcing element 20 has a thickness s between 1 and 5 mm in section.

[0044] In the embodiment shown in the figures, the thickness of the section of the second annular portion 21 is substantially constant and between 0.3 and 5mm, whereas the thickness of the elongate portion 22 is decreasing away from the second annular portion and less than 5.

[0045] In any case, the material of the annular reinforcing element 20, as that of the bowl-like body 2 and lid 6, is a material for food.

[0046] The material of the annular reinforcing element is for example cardboard.

[0047] The lid 6 is designed to close the opening 5 and, for this object, has a discoid shape provided with an inner surface facing the opening 5, in the embodiment shown in the figures.

[0048] The inner surface in turn comprises a circular portion 24 and a third annular portion 23 arranged radially

outside of and concentrically to the circular portion 24.

[0049] The third annular portion 23 is designed to be applied at an outer surface 24 of the first annular portion 19. In this regard, the third annular portion 23 preferably has a radial extension substantially equal to that of the first annular portion 19.

[0050] The lid 6 further has, at its radially outer end, a head surface 25 arranged substantially parallel and concentrically to the axis X-X.

[0051] The first 19 and second 21 annular portions also comprise head surfaces 26,27 arranged substantially parallel to the axis X-X.

[0052] The head surfaces 26,27 of the first 19 and second 21 annular portions can be covered by a liquid-proofing glue or resin layer; this way, during the infusion, the water or infused beverage is prevented from penetrating the edge 18 made of a paper material, thus from making it swell and compromising the operation of the machine and the quality of the infused beverage.

[0053] The glue or resin layer, not shown in the figure, is selected from proofing glues or resins for food use.

[0054] Preferably, the resin or glue layer is selected from compostable proofing glues or resins.

[0055] The glue or resin layer can not only be arranged at the head surface of the first and second food portions, but also at the head surface of the lid 6 and can extend on the upper surface 28 of the lid 6 or on the lower surface 29 of the reinforcing element 20. The resin or glue layer can further extend between the annular reinforcing element 20 and the annular portion 19, as well as between the lid 6 and the first annular portion 19. The material of the annular reinforcing element 20, as that of the bowl-like body 2 and lid 6, is a material for food.

[0056] Preferably, the material of the annular reinforcing element 20, as that of the bowl-like body 2 and lid 6, is a compostable material.

[0057] Different changes can be made to the embodiments described in detail, anyhow remaining within the protection scope of the invention, defined by the following claims.

Claims

1. Capsule (100) for machines for preparing infused beverages, comprising:

a body (2) shaped like a bowl, comprising a side wall (4) extending around an axis (X-X) and a bottom wall (3); said body being made of paper or paper material;

said body (2) being sized so as to contain a pre-determined amount of a powdered preparation for preparing an infused beverage;

said capsule (100) being further provided with an annular peripheral edge (18) designed to abut against a bearing surface of an infusion chamber of an infusion assembly when the cap-

sule (100) is inserted into said chamber;

said annular peripheral edge (18) comprising a first annular portion (19) integrally made with said bowl body (2); and

an annular reinforcing element (20) comprising a second annular portion (21) applied to said first annular portion (19) and an elongate portion (22) that extends along a direction parallel to the axis (X-X) to face towards said side wall (4).

2. Capsule (100) according to claim 1, **characterized in that** said elongate portion (22) is arranged substantially orthogonal to said second annular portion (21).

3. Capsule (100) according to claim 1, **characterized in that** said elongate portion (22) extends for at least 0.5 mm.

4. Capsule (100) according to claim 1, **characterized in that** said elongate portion (22) extends for 7 mm at the most.

5. Capsule (100) according to claim 1, **characterized in that** said elongate portion (22) is applied to said side wall (4).

6. Capsule (100) according to claim 1, **characterized in that** said elongate portion (22) extends from said second annular portion (21) in contact with said side wall (4).

7. Capsule (100) according to claim 1, **characterized in that** said elongate portion has a section tapering along the direction away from said second annular portion (21).

8. Capsule according to any one of the preceding claims, **characterized in that** said annular reinforcing element (20) is made of paper or paper material.

9. Capsule according to any one of the preceding claims, **characterized by** comprising a lid designed to close said opening, said lid comprising an inner surface facing said opening and comprising a third annular portion (23) designed to be applied at an outer surface of said first annular portion (19).

10. Capsule comprising a liquid-proofing glue or resin layer applied at head surfaces (26, 27) of at least said first and second annular portions (19, 21).

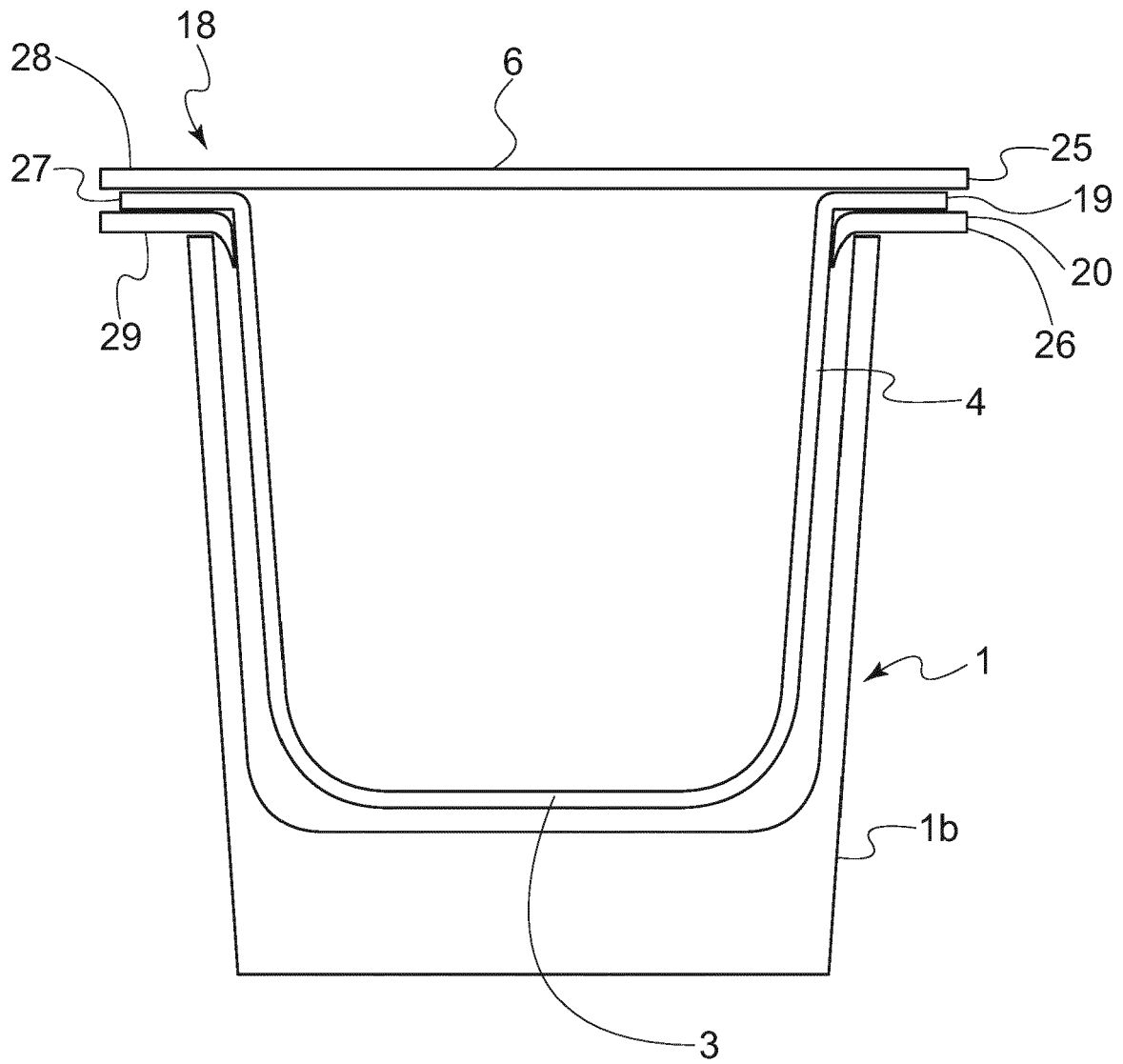


Fig. 1

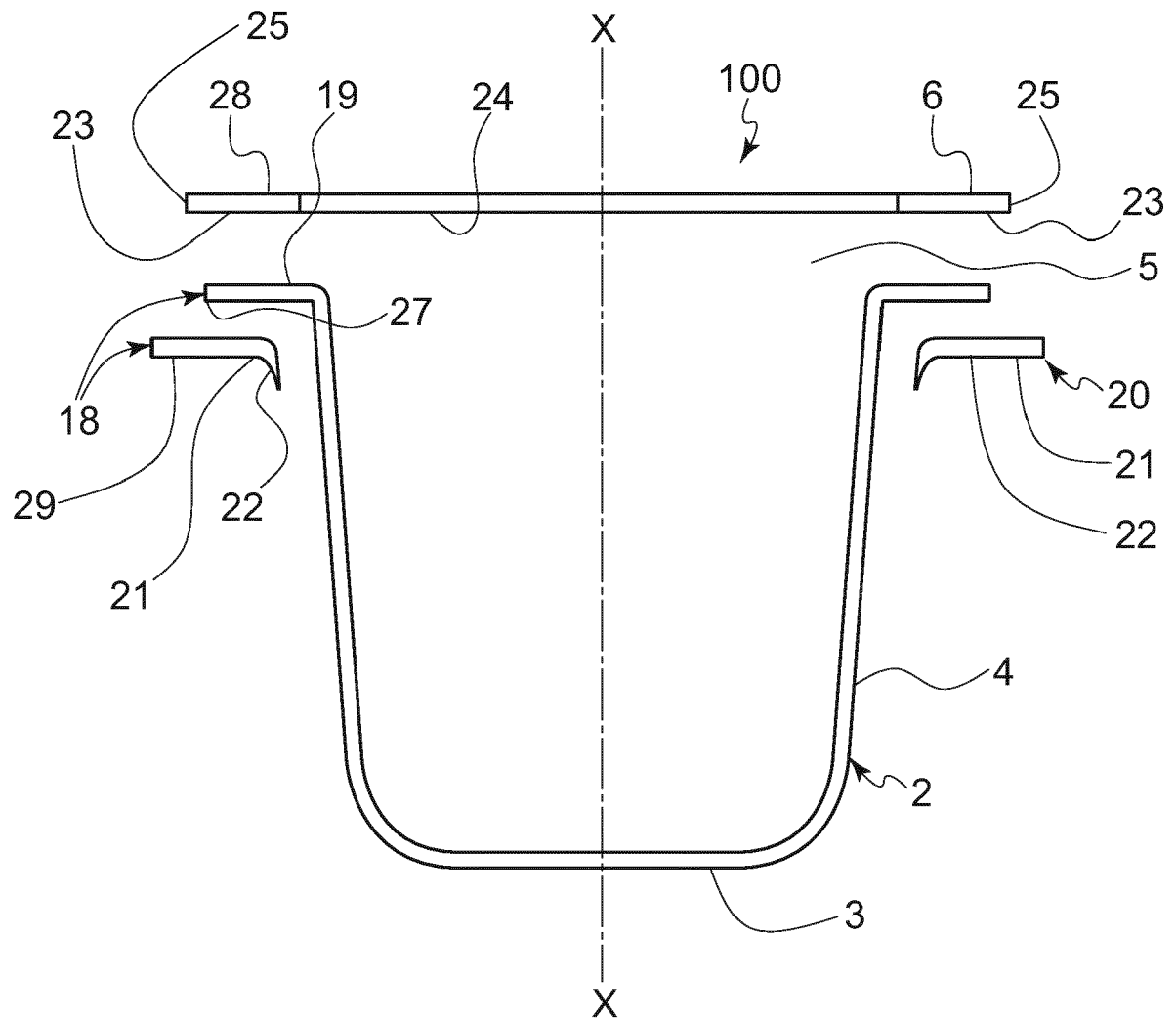


Fig. 2

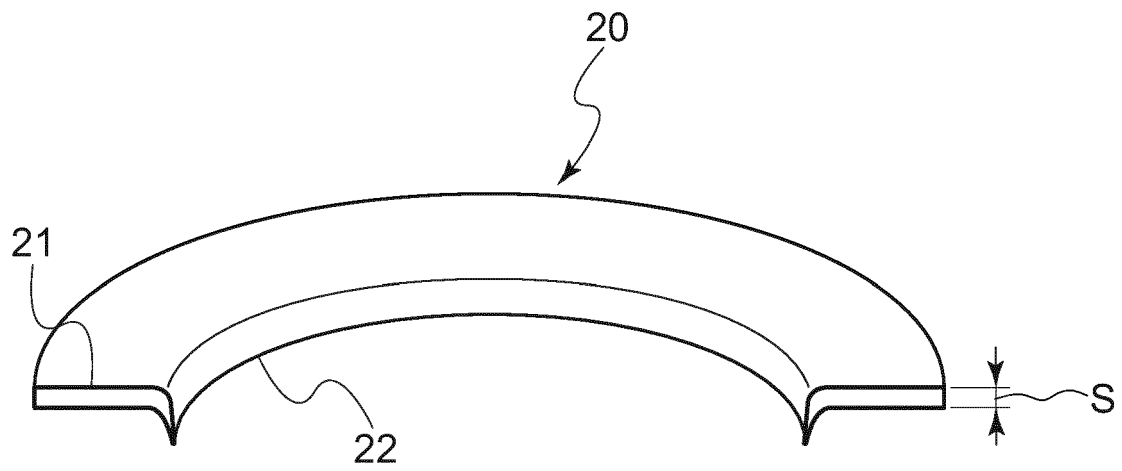


Fig. 3a

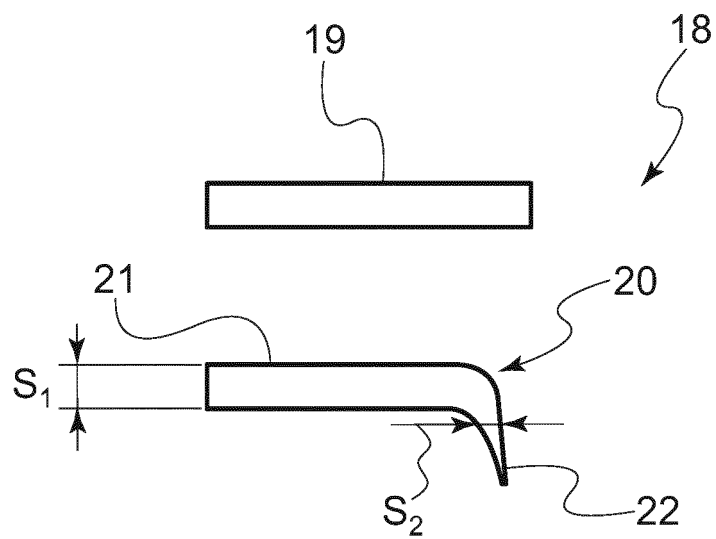


Fig. 3b



EUROPEAN SEARCH REPORT

Application Number
EP 19 18 8988

5

10

15

20

25

30

35

40

45

50

55

1

EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	EP 2 573 008 A1 (CAPITANI SRL [IT]) 27 March 2013 (2013-03-27)	1-9	INV. B65D85/804
A	* paragraphs [0014] - [0047]; figures 1-5 *	10	
Y	DE 692 05 232 T2 (NESTLE SA [CH]) 14 March 1996 (1996-03-14) * paragraphs [0054], [0060], [0078]; figures 10,15 *	1-9	
X	US 2011/247975 A1 (RAPPARINI GINO [IT]) 13 October 2011 (2011-10-13) * paragraphs [0053] - [0076], [0085]; figures 1-11 *	1-7,9	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 10 October 2019	Examiner Leijten, René
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 19 18 8988

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-10-2019

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2573008 A1	27-03-2013	EP 2573008 A1	27-03-2013
		ES 2553774 T3	11-12-2015
		US 2014083873 A1	27-03-2014
DE 69205232 T2	14-03-1996	AT 128692 T	15-10-1995
		AU 649844 B2	02-06-1994
		BR 9202610 A	16-03-1993
		CA 2072300 A1	06-01-1993
		DE 69205232 D1	09-11-1995
		DE 69205232 T2	14-03-1996
		DK 0524464 T3	12-02-1996
		EP 0524464 A1	27-01-1993
		ES 2078598 T3	16-12-1995
		FI 922897 A	06-01-1993
		JP 3150202 B2	26-03-2001
		JP H05199938 A	10-08-1993
		KR 930002201 A	22-02-1993
		NO 303536 B1	27-07-1998
		NZ 243239 A	27-06-1994
		ZA 9204490 B	31-03-1993
US 2011247975 A1	13-10-2011	CA 2795507 A1	13-10-2011
		CA 2795508 A1	13-10-2011
		EP 2555997 A2	13-02-2013
		EP 2555998 A2	13-02-2013
		RU 2012143358 A	20-05-2014
		RU 2012143359 A	20-05-2014
		US 2011247975 A1	13-10-2011
		WO 2011124988 A2	13-10-2011
		WO 2011124989 A2	13-10-2011