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(54) Title: CAPSULE FOR PREPARING CONSUMABLE PRODUCT

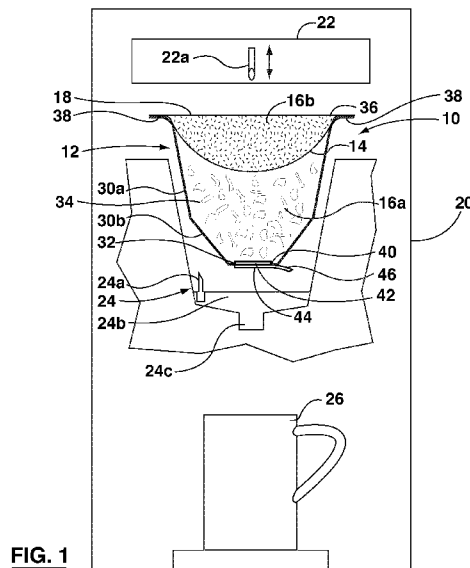
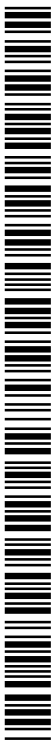


FIG. 1

(57) Abstract: A capsule is provided for use in a machine for preparing product from capsules. The capsule includes a body that defines an interior space with an opening at one location and an aperture at another location. A soluble closure is disposed on an interior surface of the body to cover the aperture. Ingredients are disposed within the interior space for preparing a desired product. A cover is disposed over the opening and a removable cover is disposed over the aperture. The removable cover is removed from capsule prior to insertion of capsule into the machine. The soluble closure is adapted to dissolve upon exposure to fluid from the capsule machine in order to allow prepared product to exit capsule through aperture. In another embodiment, a delivery system such as a soluble pouch or a film containing ingredients is disposed in the capsule.



WO 2014/183219 A1

TITLE: CAPSULE FOR PREPARING CONSUMABLE PRODUCT**FIELD**

[0001] This specification relates to consumable products and in particular to capsules for preparing a consumable product.

BACKGROUND

[0002] The following background discussion is not an admission that anything discussed below is citable as prior art or common general knowledge. The documents listed below are incorporated herein in their entirety by this reference to them.

[0003] Single serve capsules for use in machines to prepare a desired consumable product are becoming increasingly popular. Such capsules come in a variety of formats most typically for producing beverages such as espresso coffee, drip coffee, tea, hot chocolate or soup broth.

[0003] Capsule machines typically include an injection system for injecting a fluid, such as hot water, into a capsule for mixing with ingredients disposed within the capsule. A dispensing system is also provided to dispense the prepared product from the capsule for delivery to a receptacle such as a user's cup or bowl. The dispensing system may for instance comprise a hollow probe that is adapted to pierce the capsule and allow product to flow through the probe from the capsule for delivery to a desired receptacle.

[0004] A problem with conventional single serve capsules and capsule machines is that they are not adapted for use with insoluble consumable ingredients. Such ingredients will not easily flow through conventional dispensing systems such as those with hollow narrow diameter probes in order that they may be deposited into the desired receptacle for consumption by a user. For

example, vegetables and noodles for a soup product will not flow through a conventional hollow probe dispensing system for a capsule machine.

[0005] Another problem with conventional single serve capsules is that they are not adapted for separating ingredients within the capsule in a cost effective manner to meet regulatory standards or other product requirements. For example, it may be desirable to prepare a product from two or more ingredients that must be kept separate from one another within the capsule until the preparation stage. The ingredients may include dry ingredients and wet ingredients that may not be mixed until the preparation stage. Or the ingredients may include an active ingredient that reacts in the presence of another ingredient. Or the ingredients may include an additive that must be separated from other ingredients and be delivered directly into a cup for improving efficacy.

[0006] Another problem with conventional single serve capsules is that they are not adapted for dispensing product to a desired receptacle without exposing portions of the capsule machine to contamination by the dispensed product. This is a problem when the residue from the dispensed product comes into contact with subsequent products prepared with the capsule machine. This can impact flavors and can also present a health risk when the dispensed product contains ingredients that may be harmful to others (such as regulated drugs, alcohol or ingredients that may be an allergy risk such as a peanut allergy).

[0007] There is a need for an improved capsule for use in a capsule machine that addresses one or more problems with conventional capsules such as those listed above.

SUMMARY

[0008] In one aspect the invention provides a capsule, for use in a machine for preparing consumable products from capsules, said capsule comprising:

a body defining an interior space with an opening at one location and an aperture at another location;

a soluble closure disposed in said body for closing said aperture;

ingredients disposed in said interior space for preparing a desired product;

a cover disposed over said opening; and

a removable cover disposed on an exterior surface of said body over said aperture..

[0009] In another aspect the invention provides a capsule, for use in a machine for preparing consumable products from capsules, said capsule comprising:

a body defining an interior space with an opening at one location and an aperture at another location;

a soluble delivery system disposed in said body, said soluble delivery system containing ingredients for preparing a desired product;

a cover disposed over said opening; and

a removable cover disposed on an exterior surface of said body over said aperture.

[0010] Other aspects and features of the teachings disclosed herein will become apparent, to those ordinarily skilled in the art, upon review of the following description of the specific examples of the specification.

DRAWINGS

[0011] The drawings included herewith are for illustrating various examples of articles, methods, and apparatuses of the present specification and are not intended to limit the scope of what is taught in any way. For simplicity and clarity of illustration, where considered appropriate, reference numerals may

be repeated among the drawings to indicate corresponding or analogous elements.

[0012] Figure 1 is a schematic view of a capsule in accordance with the present invention being loaded into a capsule machine for preparing a consumable product;

[0013] Figure 2 is a vertical sectional view of another embodiment of capsule in accordance with the present invention;

[0014] Figure 3(a) is a vertical sectional view of another embodiment of capsule in accordance with the present invention, the capsule having an exit nozzle disposed in a retracted position;

[0015] Figure 3(b) is a vertical sectional view of the capsule as shown in Figure 3(a), with the exit nozzle disposed in an extended position;

[0016] Figure 4(a) is a vertical sectional view of another embodiment of capsule in accordance with the present invention;

[0017] Figure 4(b) is a perspective view of a conical insert for use with the capsule shown in Figure 4(a);

[0018] Figure 5 is a vertical sectional view of another embodiment of capsule in accordance with the present invention;

[0019] Figure 6 is a vertical sectional view of another embodiment of capsule in accordance with the present invention; and

[0020] Figure 7 is a schematic enlarged sectional view of the dispensing system for the capsule shown in Figure 6.

DESCRIPTION OF VARIOUS EMBODIMENTS

[0021] Various apparatuses or methods will be described below to provide examples of the claimed invention. The claimed invention is not limited to apparatuses or methods having all of the features of any one apparatus or

method described below or to features common to multiple or all of the apparatuses described below. The claimed invention may reside in a combination or sub-combination of the apparatus elements or method steps described below. It is possible that an apparatus or method described below is not an example of the claimed invention. The applicant(s), inventor(s) and/or owner(s) reserve all rights in any invention disclosed in an apparatus or method described below that is not claimed in this document and do not abandon, disclaim or dedicate to the public any such invention by its disclosure in this document.

[0022] A single serve capsule in accordance with the present invention is shown generally at 10 in the figures. Capsule 10 includes a body 12, filter 14 (when required), ingredients 16 and cover 18.

[0023] Ingredients 16 may include soluble and insoluble ingredients. Insoluble ingredients may include consumable ingredients 16a (ingredients, such as noodles and dried vegetables, that are intended to be consumed as part of the prepared product) and non-consumable ingredients 16b (ingredients, such as tea leaves, coffee grounds, herbs or other flavoring ingredients, that are not intended to be consumed as part of the prepared product). Ingredients 16 may include active ingredients (eg foaming agents), natural health additives, regulated drugs, alcohol or other desired ingredients.

[0024] Capsule 10 is sized and configured for use in a machine 20 that is adapted for preparing a product from capsule 10. Capsule may be formed in any shape that is adapted to fit within a corresponding capsule chamber disposed in machine 20. Machine 20 may include an injection system 22 for injecting a fluid, typically heated water, into the capsule for mixing with ingredients 16. Injection system 22 may include a nozzle 22a disposed on machine 20 that is adapted to pierce cover 18 to inject fluid into capsule 10. Injection system 22 may alternatively have at least one component disposed on capsule 10, such as on

cover 18, and adapted to pierce body 12 and interact with machine 20 to inject fluid into capsule 10.

[0025] Machine may also include a dispensing system 24 for dispensing product from capsule 10 into a desired receptacle 26 such as a bowl or cup. Dispensing system 24 may include a hollow probe 24a that is adapted to pierce capsule 10 to dispense a prepared product from capsule 10. Dispensing system 24 may further include a collection chamber 24b and exit port 24c, downstream from hollow probe 24a for collecting and dispensing prepared product into receptacle 26.

[0026] Capsule 10 may be configured to avoid interaction with hollow probe 24a for use in cases where a conventional hollow probe 24a is not adapted for dispensing insoluble consumable ingredients 16a. Such ingredients 16a may become clogged within the small diameter channel defined in hollow probe 24a.

[0027] Body 12 of capsule 10 includes a sidewall 30 and an end wall 32 together defining an interior space 34. Sidewall 30 has a first portion 30a and a second portion 30b. Second portion 30b is configured to avoid contact with dispensing system 24 when capsule is disposed in machine 20. Second portion may thus taper inwardly from first portion 30a to end wall 32 sufficiently to avoid contact with dispensing system 24.

[0028] An opening 36 is defined at one end of body 12 and a flange 38 extends around the perimeter of opening 36.

[0029] Filter 14 is adapted to be disposed within body 12 to define at least one ingredients chamber within interior space 34 for receiving one or more ingredients 16 and in particular non-consumable ingredients 16b. Filter 14 may be secured to flange 38 or to an interior surface of capsule 10 (such as to sidewall 30). Capsule 10 may be provided without filter 14 in instances where ingredients are soluble or where it is desired that ingredients 16 are dispensed together with fluid into receptacle 26 (as shown in Figure 2).

[0030] Cover 18 is disposed over opening 36 and secured to body 12 such as by sealing cover 18 directly to flange 38 or indirectly with a portion of filter 14 located between.

[0031] An aperture 40 is defined in end wall 32 for dispensing product from capsule. Aperture 40 is sized to allow product including consumable ingredients 16a to pass through aperture 40 without clogging. Preferably aperture 40 has a diameter in the range of 5-50 mm, more preferably 10-30mm and most preferably 15-25 mm.

[0032] Second portion 30b of side wall 30 tapers inwardly from first portion 30a to aperture 40. Second portion 30b thus directs product within capsule 10, including consumable insoluble ingredients 16a, toward aperture 40.

[0033] A soluble closure 42 is provided to close aperture 40 to prevent consumable ingredients 16a from passing through aperture 40 until fluid is injected into capsule. Soluble closure 42 may be formed of any food safe (edible) soluble material that is suitable for preventing ingredients from passing through aperture 40 until the desired time.

[0034] Soluble closure 42 may for example be in the form of a membrane (as shown in Figures 1, 2 and 4) that covers aperture 40 or in the form of a plug (as shown in Figures 3(a) and 3(b)) that is disposed within aperture 40. When closure 42 is in the form of a membrane it may be sealed to an interior surface of capsule 10 around the perimeter of aperture 40 using suitable sealing materials such as polyethylene or polypropylene. When closure 42 is in the form of a plug it may be sized to fit snugly within aperture 40 with or without the aid of a similar sealing material. A plug is best suited for use when aperture 40 comprises an elongate passage.

[0035] Closure 42 is adapted to dissolve upon exposure to fluid within a predetermined time. In some instances, it is preferable that there is a delay in the

dissolution of closure 42 in order to allow the fluid and ingredients 16 to mix and steep to extract flavor or functional components prior to dispensing product from capsule 10. This is particularly desirable when certain ingredients are non-consumable insoluble ingredients contained within filter 14. In such instances, it is desirable that fluid is contained within capsule 10 and permitted to mix with ingredients and steep for a pre-determined time. The rate of dissolution of closure 42 may be determined/programmed at least in part by parameters of closure 42 such as thickness, density and composition (molecular weight and chemistry) as well as external factors such as fluid temperature and internal pressure.

[0036] Preferred materials for soluble closure 42 include protein or carbohydrate based materials which could be starch based (e.g., amylose film and amylopectin film), protein based (e.g., gelatin film, casein film), polysaccharide based (e.g., pullulan film, cellulose film), alginate sodium film and pectin film, to name a few. For example, the Vivos[™] edible water soluble film from MonoSol[™] can be employed as a membrane form of closure 42 in this application. As mentioned earlier, the dissolution rate of a soluble closure is dependent on the material type. Within the same type, the dissolution rate is normally slower when having heavier material density or molecular weight. Preferably the closure 42 thickness is in the range of 10-100 μm , more preferably 20-80 μm and most preferably 30-70 μm .

[0037] Soluble closure 42 may also be formed from ingredients 16. An agglomeration of soluble and/or insoluble consumable ingredients 16a on their own or with a food safe binder material, similar to a bouillon cube, may for instance be formed into a plug that is disposed within aperture 40.

[0038] A removable cover 44, preferably formed of a multilayered material that includes a barrier layer (preferably adapted to act as a barrier for one or more of moisture, oxygen, and light), is disposed over aperture 40 on an exterior surface of capsule 10 to provide a barrier seal for ingredients 16 within capsule

10. Removable cover 44 may include a tab 46 that may be gripped by a user to peel away removable cover 44 and expose aperture 40. It will be understood that closure 42 continues to cover aperture 40 following removal of cover 44 until use of capsule 10 in machine 20.

[0039] During use, a user will remove cover 44 from capsule 10 and insert capsule into a corresponding capsule chamber within machine 20. Machine 20 is activated by the user in order that injection system 22 injects fluid, such as heated water, into capsule 10. Fluid mixes with ingredients 16 and dissolves closure 42. Upon dissolution of closure 42, aperture 40 is exposed and product (fluid plus extract from non-consumable ingredients 16a, if applicable, plus insoluble consumable ingredients 16b) is allowed to pass through aperture 40 into desired receptacle 26.

[0040] Alternative embodiments of capsule 10 are described with reference to Figures 2-7 below. Similar reference numerals are used to refer to similar elements as the embodiment discussed above.

[0041] Referring to Figure 2, another embodiment of capsule 10 is shown. In this embodiment, capsule 10 does not include filter 14 or non-consumable ingredients 16b.

[0042] Referring to Figures 3(a) and 3(b), another embodiment of capsule 10 is shown. In this embodiment, capsule 10 does not include filter 14 or non-consumable ingredients 16b. Capsule 10 further includes an exit nozzle 50 that is disposed in aperture 40 and adapted to be moved from a retracted position, prior to removal of cover 44, to an extended position, following removal of cover 44. In its extended position, exit nozzle 50 provides a clean disposable surface for product to flow through exit port 24c of machine 20 to receptacle 26.

[0043] Exit nozzle 50 defines an aperture 52 that is closed by closure 42. In this embodiment, closure 42 is in the form of a plug that is disposed in exit

nozzle 50. Exit nozzle 50 further includes a shoulder 54 that is adapted to prevent exit nozzle 50 from falling through aperture 40.

[0044] In a variation of this embodiment, capsule 10 may be provided with exit nozzle 50 that is fixed in an extended position. Exit nozzle 50 and cover 44 may have corresponding threads (not shown) to allow cover 44 to be removably and threadably attached to exit nozzle 50. Exit nozzle 50 may alternatively have a closed end and be adapted to be broken, cut open or pierced to expose aperture 52.

[0045] Referring to Figure 4(a), another embodiment of capsule 10 is shown. In this embodiment, capsule 10 has a conventional shape similar to capsules 10 used for preparing beverage products. A conical insert 60 (as shown in isolation in Figure 4(b)) is disposed within capsule 10 to define second portion 30b of side wall 30 for directing product to aperture 40. Conical insert may be secured in place with a sealing material or other suitable attachment means. Conical insert 60 is sized to avoid contact with dispensing system 24. As a result, dispensing system 24, such as probe 24a may puncture end wall 32 of capsule 10 without contacting second portion 30b of sidewall 30. The advantage of the embodiment depicted in figure 4(a) is that the capsule resembles a conventional capsule and also has a flat base defined by end wall 32 to allow capsule 10 to rest on a flat surface prior to use.

[0046] Referring to Figure 5, another embodiment of capsule 10 is shown. In this embodiment, at least some consumable ingredients 16a are contained within a soluble delivery system 70 in the form of a pouch 72. Ingredients 16 may include liquid ingredients (such as a concentrate) or other ingredients that must be kept separated within capsule (such as foaming agents or other active ingredients). Soluble and insoluble consumable ingredients 16a may all be contained within a single delivery system 70 or may be separated into a plurality of delivery systems 70. Non-consumable ingredients 16b may be contained separately within capsule 10 in a chamber defined by filter 14. Soluble closure 42

is not required for this embodiment if all loose ingredients are contained within delivery system 70. Soluble closure 42 may still be provided however in instances where certain consumable ingredients 16a are not contained within soluble delivery system 70. Soluble closure 42 may also be provided as an added control over the dwell time of fluid within capsule prior to dispensing as discussed above.

[0047] Soluble delivery system 70 may be made of similar food safe materials as described above for soluble closure 42. Delivery system 70 is adapted to dissolve when fluid is injected into capsule 10. The rate at which delivery system 70 dissolves may be determined at least in part by parameters of delivery system 70 such as thickness, density and composition as well as external factors such as fluid temperature and internal pressure.

[0048] Referring to Figures 6 and 7, capsule 10 may include an alternate delivery system 70 in the form of a soluble film 80 comprising one or more layers 82 of ingredients 16 tied together with a soluble binder 84. A soluble protective layer 86 may be provided to protect certain ingredients 16 contained within capsule 10 from exposure to other ingredients 16 contained within film 80. Protective layer 86 may also protect ingredients 16 contained within film 80 from external elements during processing and handling. Protective layer 86 may have desired barrier properties to maintain the stability of ingredients 16 contained within film 80 until protective layer 86 is dissolved.

[0049] Film 80 may be disposed in capsule 10 for the purpose of adding microdoses of desired additives such as flavor, health or medicinal ingredients or active agents. In the case of certain sensitive additives, such as medicinal additives, film 80 may be formed at a third party manufacturing facility that meets the regulatory requirements for producing such ingredients and then delivered to a facility for manufacturing capsules 10.

[0050] While the above description provides examples of one or more processes or apparatuses, it will be appreciated that other processes or apparatuses may be within the scope of the accompanying claims.

CLAIMS

I/We claim:

1. A capsule, for use in a machine for preparing consumable products from capsules, said capsule comprising:

 a body defining an interior space with an opening at one location and an aperture at another location;

 a soluble closure disposed in said body for closing said aperture;

 ingredients disposed in said interior space for preparing a desired product;

 a cover disposed over said opening; and

 a removable cover disposed on an exterior surface of said body over said aperture.

2. The capsule of claim 1, wherein said body includes a side wall that tapers inwardly from said opening to said aperture.

3. The capsule of claim 2, wherein said side wall has a first portion that extends from said opening to a second portion, said second portion tapering inwardly from said first portion to said aperture.

4. The capsule of claim 1 wherein said ingredients include insoluble consumable ingredients.

5. The capsule of claim 4 wherein said ingredients include noodles.

6. The capsule of claim 4 wherein said ingredients include dried vegetables.

7. The capsule of claim 1 further comprising a filter disposed in said body for filtering at least some of said ingredients.

8. The capsule of claim 7, wherein said filter defines a first chamber containing insoluble non-consumable ingredients.

9. The capsule of claim 1 further comprising an exit nozzle disposed in said aperture, said exit nozzle being adapted for directing the consumable product from said capsule to a desired receptacle without the consumable product contacting the machine.

10. The capsule of claim 9 wherein said exit nozzle is adapted to move from a retracted position to an extended position.

11. The capsule of claim 1 further comprising an insert disposed in said interior space, said insert being adapted for directing the consumable product to said aperture.

12. The capsule of claim 1 further comprising a soluble delivery system disposed in said body, said soluble delivery system containing at least some ingredients for preparing a desired product.

13. The capsule of claim 12 wherein said soluble delivery system comprises a soluble pouch containing at least some ingredients.

14. The capsule of claim 12 wherein said soluble delivery system comprises a soluble film comprising one or more layers containing at least some ingredients.

15. The capsule of claim 12 wherein said soluble film includes a protective layer adapted to protect certain ingredients disposed in said film from exposure to other ingredients disposed in said capsule.

16. A capsule, for use in a machine for preparing consumable products from capsules, said capsule comprising:

a body defining an interior space with an opening at one location and an aperture at another location;

a soluble delivery system disposed in said body, said soluble delivery system containing ingredients for preparing a desired product;

a cover disposed over said opening; and
a removable cover disposed on an exterior surface of said body over said aperture.

17. The capsule of claim 16, wherein said body includes a side wall that tapers inwardly from said opening to said aperture.

18. The capsule of claim 17, wherein said side wall has a first portion that extends from said opening to a second portion, said second portion tapering inwardly from said first portion to said aperture.

19. The capsule of claim 16 wherein said ingredients contained in said soluble delivery system include soluble consumable ingredients.

20. The capsule of claim 16 further comprising a filter disposed in said body, wherein said filter defines a chamber containing insoluble non-consumable ingredients for preparing a desired product.

21. The capsule of claim 16 wherein said soluble delivery system comprises a soluble pouch containing at least some ingredients.

22. The capsule of claim 16 wherein said soluble delivery system comprises a soluble film comprising one or more layers containing at least some ingredients.

23. The capsule of claim 16 wherein said soluble film includes a protective layer adapted to protect certain ingredients disposed in said film from exposure to other ingredients disposed in said capsule.

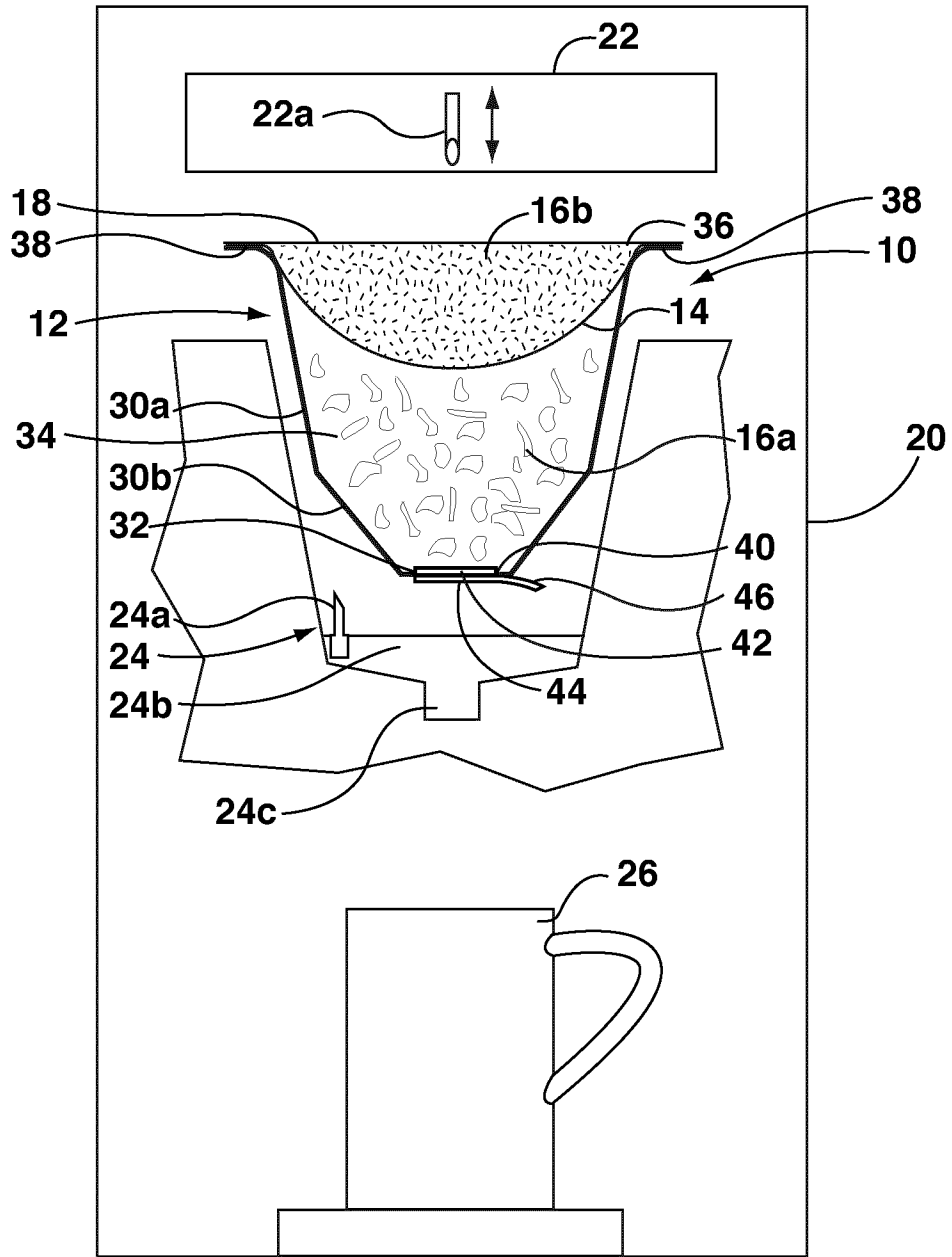


FIG. 1

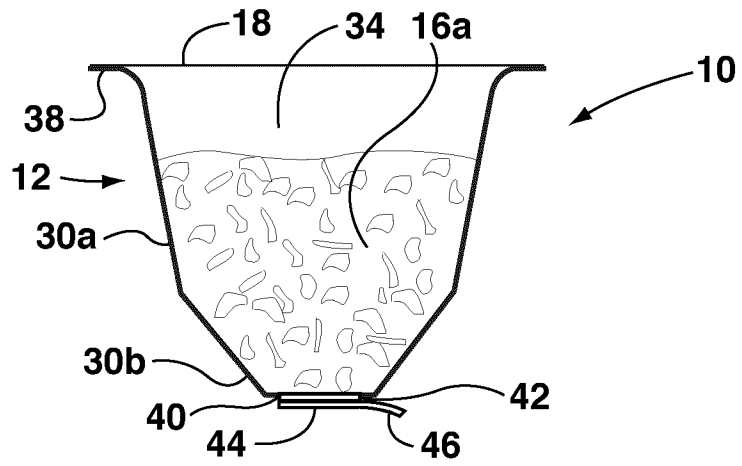


FIG. 2

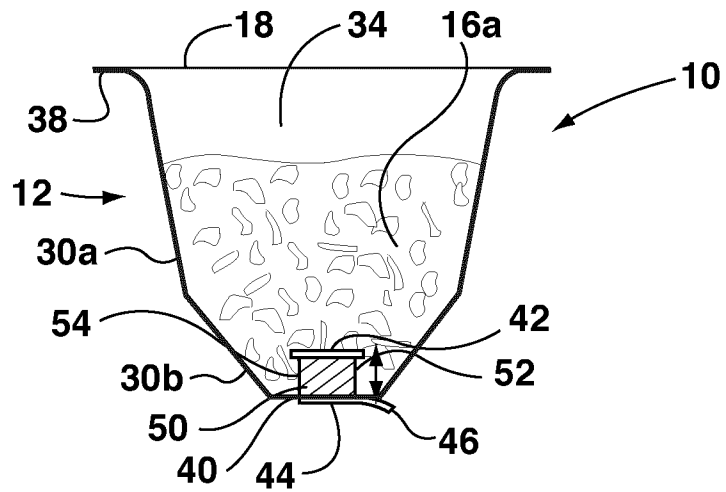


FIG. 3(a)

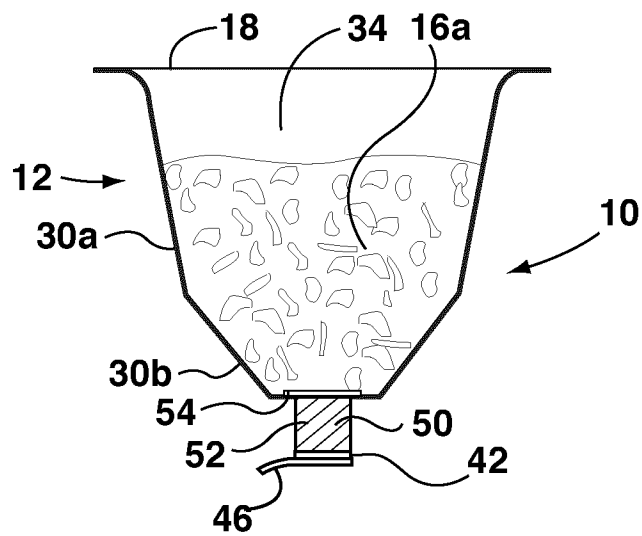


FIG. 3(b)

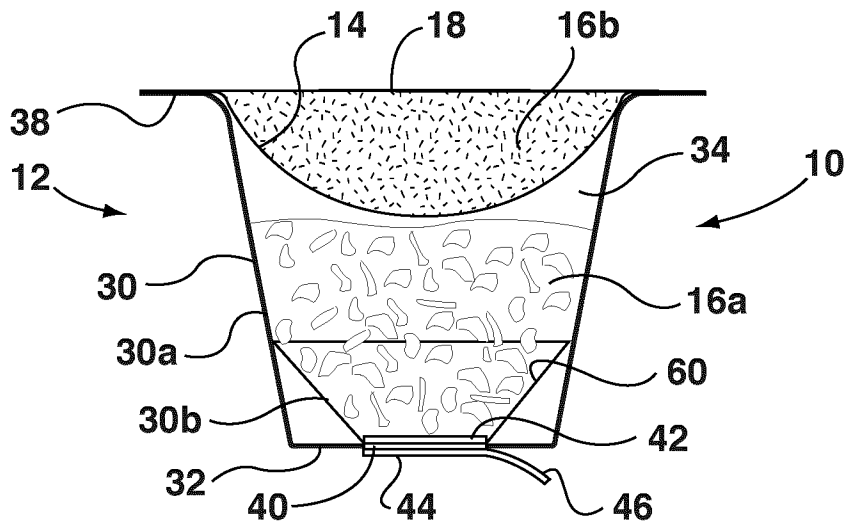


FIG. 4(a)

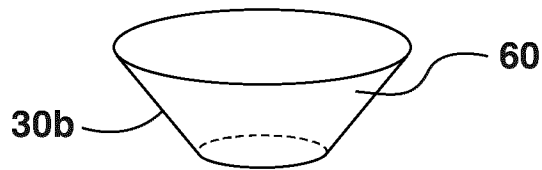


FIG. 4(b)

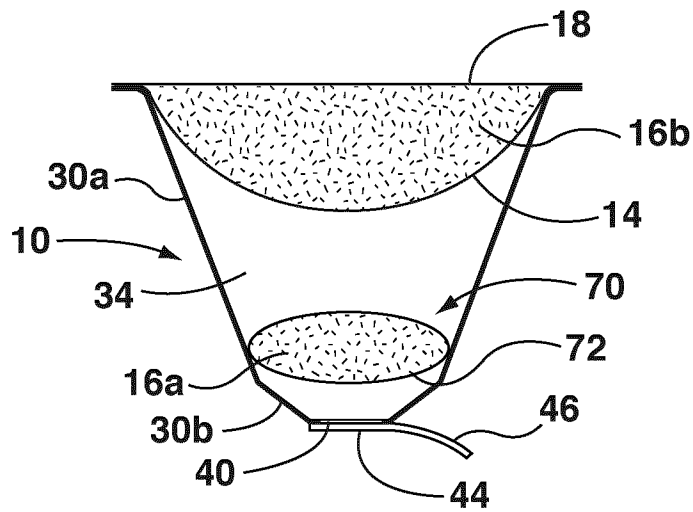


FIG. 5

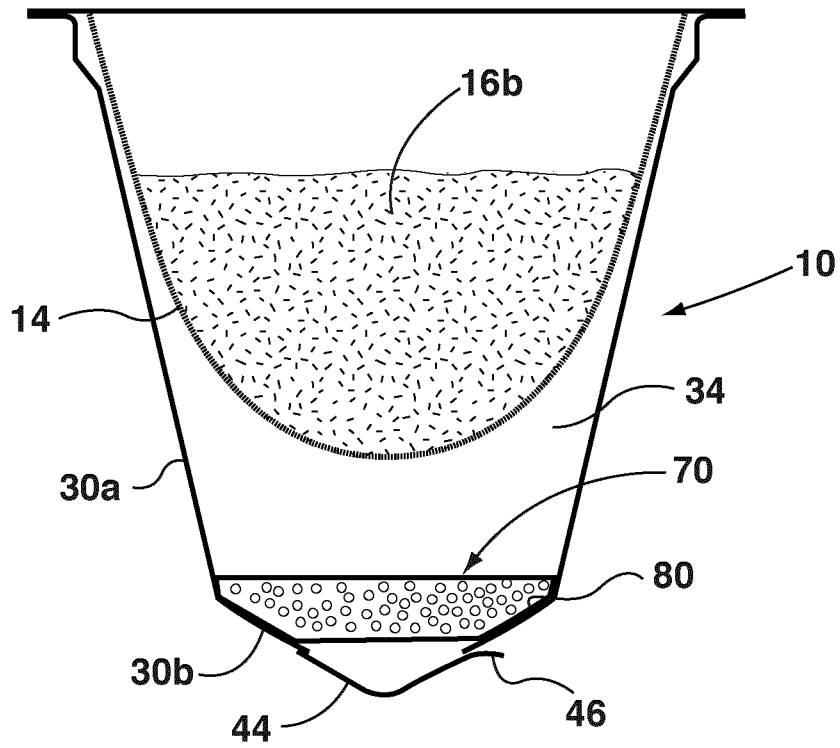


FIG. 6

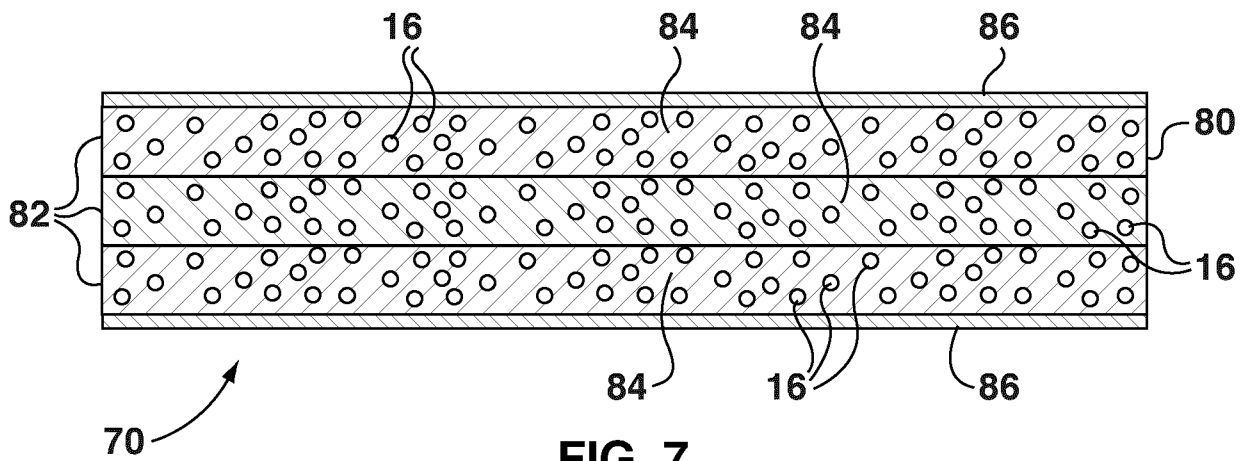


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2014/050460A. CLASSIFICATION OF SUBJECT MATTER
IPC: **B65D 81/34** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC: **B65D 81/34** (2006.01), **B65D**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)

Total Patent, Canadian Patent Database. Keywords: capsule pod soluble closure soluble cover pouch sac capsule consumable edible food safe closure membrane plug protein or carbohydrate material starch amylose film amylopectin film gelatin film casein film polysaccharide pullulan film cellulose film alginate sodium film pectin film Vivos edible water soluble film MonoSol

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CA2516417A1 (BRIZIO) 02 September 2004 (02-09-2004) Whole document	1 – 23
A	FR2930522A1 (VERSINI) 30 October 2009 (30-10-2009) *Whole document*	1 – 23
A	CA2686347A 1 (KIRSCHNER et al.) 11 December 2008 (11-12-2008) *Whole document*	1 – 23
A	US2013122153A1(FERRIER et al.) 16 May 2013 (16-05-2013) *paragraph 0037*	1 – 23
A	US5456929A(MIFUNE et al.) 10 October 1995 (10-10-1995) *Whole document*	1 - 23

 Further documents are listed in the continuation of Box C.
 See patent family annex.

* “A” “E” “L” “O” “P”	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance earlier application or patent but published on or after the international filing date document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) document referring to an oral disclosure, use, exhibition or other means document published prior to the international filing date but later than the priority date claimed	“T” “X” “Y” “&”	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art document member of the same patent family
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Date of the actual completion of the international search
18 July 2014 (18-07-2014)Date of mailing of the international search report
22 July 2014 (22-07-2014)Name and mailing address of the ISA/CA
Canadian Intellectual Property Office
Place du Portage I, C114 - 1st Floor, Box PCT
50 Victoria Street
Gatineau, Quebec K1A 0C9
Facsimile No.: 001-819-953-2476Authorized officer

Tanya Hanham (819) 953-4506

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CA2014/050460

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
CA2516417A1	02 September 2004	CA2516417A1	02 September 2004 (02-09-2004)
		CA2516417C	20 April 2010 (20-04-2010)
		AT410101T	15 October 2008 (15-10-2008)
		AU2004212687A1	02 September 2004 (02-09-2004)
		AU2004212687B2	09 April 2009 (09-04-2009)
		AU2004212687B9	17 September 2009 (17-09-2009)
		BRPI0407692A	01 March 2006 (01-03-2006)
		CN1750780A	22 March 2006 (22-03-2006)
		CN100482140C	29 April 2009 (29-04-2009)
		DE602004016974D1	20 November 2008 (20-11-2008)
		DK1610657T3	02 February 2009 (02-02-2009)
		EG24354A	04 March 2009 (04-03-2009)
		EP1610657A1	04 January 2006 (04-01-2006)
		EP1610657B1	08 October 2008 (08-10-2008)
		ES2314372T3	16 March 2009 (16-03-2009)
		HK1088796A1	24 December 2009 (24-12-2009)
		IL170172A	03 August 2009 (03-08-2009)
		ITMI20030302A1	21 August 2004 (21-08-2004)
		JP2006518314A	10 August 2006 (10-08-2006)
		JP4448125B2	07 April 2010 (07-04-2010)
		KR20050107758A	15 November 2005 (15-11-2005)
		KR101095224B1	20 December 2011 (20-12-2011)
		MA27663A1	01 December 2005 (01-12-2005)
		MEP6709A	20 December 2011 (20-12-2011)
		MXPA05008831A	18 October 2005 (18-10-2005)
		NO20054251A	14 September 2005 (14-09-2005)
		NZ541719A	28 September 2007 (28-09-2007)
		OA13031A	10 November 2006 (10-11-2006)
		PL378139A1	06 March 2006 (06-03-2006)
		PL202895B1	31 August 2009 (31-08-2009)
		PT1610657E	22 December 2008 (22-12-2008)
		RS20050640A	05 February 2007 (05-02-2007)
		RS51443B	30 April 2011 (30-04-2011)
		RU2005129263A	20 March 2006 (20-03-2006)
		RU2333715C2	20 September 2008 (20-09-2008)
		SI1610657T1	28 February 2009 (28-02-2009)
		US2006165851A1	27 July 2006 (27-07-2006)
		US7569240B2	04 August 2009 (04-08-2009)
		WO2004073468A1	02 September 2004 (02-09-2004)
		ZA200506404A	27 December 2006 (27-12-2006)
FR2930522A1	30 October 2009 (30-10-2009)	None	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CA2014/050460

Information on patent family members con't

Patent Document Cited in Search Report	Publication Date	Patent Family Member(s)	Publication Date
CA2686347A1	11 December 2008 (11-12-2008)	CA2686347A1	11 December 2008 (11-12-2008)
		AR063677A1	11 February 2009 (11-02-2009)
		AR066644A1	02 September 2009 (02-09-2009)
		AT452082T	15 January 2010 (15-01-2010)
		AT515459T	15 July 2011 (15-07-2011)
		BRPI0715333A2	26 February 2013 (26-02-2013)
		CA2660016A1	14 February 2008 (14-02-2008)
		CN101500908A	05 August 2009 (05-08-2009)
		CN101500908B	30 November 2011 (30-11-2011)
		CN101678952A	24 March 2010 (24-03-2010)
		CN101678952B	06 July 2011 (06-07-2011)
		DE602007003847D1	28 January 2010 (28-01-2010)
		DK2046665T3	19 April 2010 (19-04-2010)
		DK2155586T3	24 October 2011 (24-10-2011)
		EP2046665A2	15 April 2009 (15-04-2009)
		EP2046665B1	16 December 2009 (16-12-2009)
		EP2155586A1	24 February 2010 (24-02-2010)
		EP2155586B1	06 July 2011 (06-07-2011)
		JP2009545386A	24 December 2009 (24-12-2009)
		JP5068317B2	07 November 2012 (07-11-2012)
		JP2010532296A	07 October 2010 (07-10-2010)
		MX2009001267A	11 February 2009 (11-02-2009)
		MX2009012507A	04 December 2009 (04-12-2009)
		RU2009107011A	10 September 2010 (10-09-2010)
		RU2433942C2	20 November 2011 (20-11-2011)
		RU2009145628A	10 July 2011 (10-07-2011)
		RU2461508C2	20 September 2012 (20-09-2012)
		US2008028948A1	07 February 2008 (07-02-2008)
		US7947316B2	24 May 2011 (24-05-2011)
		US2008028946A1	07 February 2008 (07-02-2008)
		US7964230B2	21 June 2011 (21-06-2011)
		US2011262597A1	27 October 2011 (27-10-2011)
		US8399035B2	19 March 2013 (19-03-2013)
WO2008019203A2	14 February 2008 (14-02-2008)		
WO2008019203A3	27 March 2008 (27-03-2008)		
WO2008150627A1	11 December 2008 (11-12-2008)		
WO2008150627A8	26 February 2009 (26-02-2009)		
ZA200900815A	31 March 2010 (31-03-2010)		
US2013122153A1	16 May 2013 (16-05-2013)	US2013122153A1	16 May 2013 (16-05-2013)
		CN103068695A	24 April 2013 (24-04-2013)
		EP2598417A1	05 June 2013 (05-06-2013)
		FR2963332A1	03 February 2012 (03-02-2012)
		FR2963332B1	31 August 2012 (31-08-2012)
		WO2012022878A1	23 February 2012 (23-02-2012)
US5456929A	10 October 1995 (10-10-1995)	US5456929A	10 October 1995 (10-10-1995)
		AU3767593A	08 November 1993 (08-11-1993)
		EP0597111A1	18 May 1994 (18-05-1994)
		JPH0640477A	15 February 1994 (15-02-1994)
		JPH05276906A	26 October 1993 (26-10-1993)
		JPH05285049A	02 November 1993 (02-11-1993)
		JPH05305977A	19 November 1993 (19-11-1993)
		JPH05336940A	21 December 1993 (21-12-1993)
		WO9319998A1	14 October 1993 (14-10-1993)