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(54) **Title:** INFUSION PROCESS APPARATUS AND METHOD

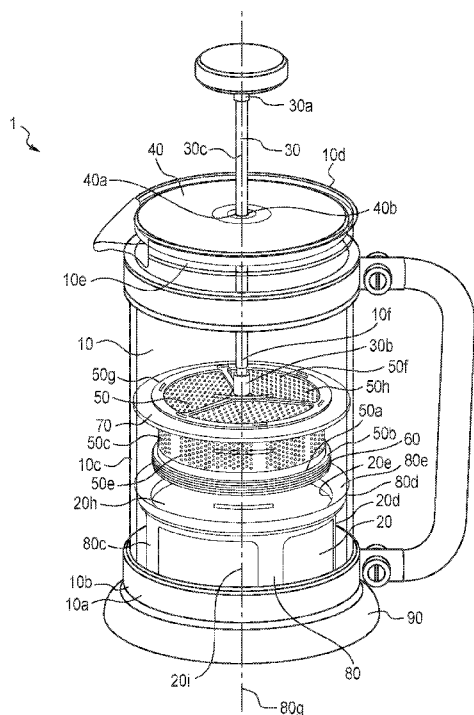


FIG. 1

(57) **Abstract:** An infusion process apparatus (1) for making a beverage includes a container (10), an insert (20) which initially holds a measured amount of an infusible material and later holds this same material in the form of the grinds that are filtered from the beverage, an elongated plunger (30), a filtering basket (50) attached to the plunger, and a means (60) adapted to releasably lock with the insert (20) so as to remove it and its grinds contents from the container (10) as the filtering basket (50) is withdrawn from the container - thereby providing for easy cleanup of the process' grinds, and wherein the filter basket's bottom (50A) is adapted to compress the filtered infusible material that has been forced down into the insert (20) by the filter basket's downward movement and to adhere to the insert's contents while stopping the infusion process so that the beverage does not acquire the characteristic bitterness and burnt taste that is associated with an over-infused brew.



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INFUSION PROCESS APPARATUS AND METHOD

CROSS-REFERENCE TO RELATED APPLICATIONS

This PCT Patent Application claims the benefit of U.S. Patent Application No. 14/593,643, filed January 9, 2015 and entitled "Infusion Extracting Apparatus and Method," and U.S. Continuation-In-Part Patent Application No. 14/991942, filed January 9, 2016 and entitled "Infusion Process Apparatus and Method." The teachings of these applications are incorporated herein by reference to the extent that they do not conflict with the teachings herein.

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

The present invention generally relates to equipment and methods for use in a beverage making process. More particularly, it relates to a method and an apparatus capable of being used for extracting an active and soluble portion of a substance or infusible material (such as ground coffee beans or tea leaves) by steeping that substance in a liquid, usually hot water, so as to create a new version of a desired beverage (also referred to as an extraction solution or extract or infusion or brew) that is often named after the substance that was steeped to create it (e.g., coffee from ground coffee beans and tea from ground tea leaves).

2. DESCRIPTION OF THE RELATED ART

Extraction or infusion devices, such as the French Press type coffee maker, have been in use for many years. Generally, they usually involve a method that includes placing an infusible material (such as ground coffee beans or tea leaves) in a

1 container filled with hot water and, after allowing the mixture to steep for a sufficient
2 time period, the infusible material which has been suspended in the container filled
3 with the hot water is pushed downward into the container using a plunger with
4 strainer to separate the infusible material from the extract. The infusible material,
5 which, after the active and soluble portion of the infusible material has been
6 extracted, is often referred to as "solid grounds," is trapped between the strainer and
7 the bottom of the container, and the extract is poured out. Such devices and methods
8 are not limited to use with coffee or tea. Some medical devices, for example, operate
9 with a similar manner and technique.

10 Alternative extraction or infusion methods that involve placing a ground
11 infusible material in contact with hot water entail using an AeroPress or an espresso
12 maker. In the AeroPress, a filter is positioned over openings at the bottom of a
13 cylindrical container or holder. The grounds infusible material or grounds and hot
14 water are mixed together and allowed to steep over the filter for a period of time.
15 Then, a plunger, which makes an airtight seal with the container is used to force the
16 extracted with the suspended grounds through the filter 2220 into a receiving vessel.
17 The grounds are held above the filter. The French press device and AeroPress device
18 differ in that pressure is applied in the AeroPress to force the extract past the grounds
19 as it exits the container.

20 To make an espresso drink, the grounds are first compacted together to form a
21 "puck." Hot water is then forced under high pressure through the contained puck into
22 a receiving vessel. A wide variety of devices have been devised to make espresso
23 drinks.

24 In the process for preparing a new version of a desired beverage, i.e.,
25 extraction solution or extract or infusion or brew, the infusible material (which may
26 come in the form of a bean) is often roasted and then ground. The fineness or
27 coarseness of the grind of the roasted beans affects the flavor of the brew. The
28 coarseness of the grind is typically matched to the method that will be used to make
29 the coffee. Brewing methods in which the grounds are exposed to heated water for a
30 relatively long period of time generally use a coarse grind. If the grind for such
31 methods is too fine, then too much surface area of the beans will be exposed to water

1 for too long a time, and the resulting brew will be over-extracted, producing a bitter
2 taste. On the other hand, if the brewing method used exposes the ground beans to the
3 heated water for a short period, too coarse a grind will result in a weak, tasteless
4 brew.

5 Two major problem associated with prior art devices and methods is that they
6 are often susceptible to making over-extracted, bitter brews and they do not allow for
7 the easy cleanup of the infusible material or grounds once the extraction has taken
8 place. For example, with a typical, prior art French Press type coffee maker, the user
9 must remove the plunger and strainer and then wash the spent grounds out of the
10 container. This can be a messy process, particularly if there is not a handy water
11 source. And, it can be difficult to remove coffee grounds using water without have a
12 significant portion wash down a drain or otherwise cause a mess in one's sink. If a
13 user decides to leave the coffee grounds in the container, then the user must remove
14 the extract immediately or otherwise the extract may become bitter.

15 What is needed is a French Press type apparatus that allows for the efficient
16 and thorough separation of the infusible material or grounds from the extract, and
17 also an easy cleanup of the grounds – maybe even the ability to remove the infusible
18 material without having to remove the extract.
19

SUMMARY OF THE INVENTION

The present invention provides an infusion process apparatus and method that overcomes some of the shortcomings of French Press type extraction apparatus known in the prior art.

In a preferred embodiment, the present invention is an apparatus for separating or filtering by multi-phase filtration means the beverage or extract yielded by an infusion process from any of the infusible material that was used in the process and is subsequently suspended during the steeping process in the extract while also providing for the easy removal and disposal of such filtered infusible material or grinds. This preferred embodiment includes: (a) a container having a bottom with a perimeter edge, a container wall that extends vertically upward from around the perimeter edge and terminates in a container rim that encloses and defines an opening into the container, and wherein the container is adapted to hold the liquid and infusible material during the infusion process, (b) an insert having an bottom with a perimeter edge, an insert side with an insert inner face that extends vertically upward from around the perimeter edge and terminates in an insert rim that encloses and defines an insert opening into the insert, and wherein this insert is adapted to enable it to be temporarily inserted through the container's opening and into the container so that the insert's bottom rests proximate the container's bottom during the infusion process and initially holds a measured amount of the infusible material that is to be used in the infusion process, (c) an elongated plunger having proximal and distal ends, (d) a container lid having a center orifice with a perimeter edge and a tubular wall extending downward from this center orifice perimeter edge and adapted to allow the distal end of the plunger to pass through the lid's center orifice so as to align the plunger's and container's longitudinal centerlines, (e) a filtering basket having a solid bottom with a bottom perimeter edge, a porous top with a top perimeter edge, a porous basket side that releasably attaches to and extends vertically from either the basket's top or bottom perimeter edges and with the basket side having an upper portion that includes a basket rim, and wherein the filter basket has a configuration adapted to enable the basket top to attach to the plunger's distal

1 end so as to enable the filtering basket to be temporarily situated in the container and
2 moved vertically up and down within it by the movement of the plunger as the
3 beverage in the container is filtered of grinds (or the infusible material that is
4 suspended during the steeping process in the beverage) in two phases by forcing the
5 beverage to flow through the basket's porous side (phase one) and top surfaces (phase
6 two), (f) a filter seal attached to the filter basket's top edge and sealing it to the
7 container wall as the filter basket moves down in the container so as to prevent the
8 suspended infusible material from passing between the filter basket side and the
9 container wall during the movement of the filter basket and rising above the filtering
10 basket's top surface, and (g) a basket coupling means attached to the filtering basket
11 and having a configuration adapted to enable the basket coupling means to
12 temporarily and releaseably lock together with the insert when the bottom of the
13 filtering basket moves downward through the insert's opening and into said insert to
14 compact the infusible material and wherein this locking together is sufficient to
15 enable the insert, with its contents of now compacted infusible materials, to be lifted
16 upward and out of the container.

17 In a variation of this preferred embodiment of the present invention, the filter
18 basket's bottom has a configuration adapted to compress the suspended infusible
19 material that has been forced down into the insert by the filter basket's downward
20 movement and to temporarily and releaseably promote adhesion to the filtered and
21 compacted infusible material and to stop the infusion process so that, if the extract
22 remains in the container, it does not acquire the characteristic bitterness and burnt
23 taste that is associated with an over-infused extract caused by an excessive steeping
24 period.

25 In another variation of this preferred embodiment of the present invention, it
26 further includes a pliable insert basket having a configuration adapted to enable the
27 cylindrical insert to be temporarily and removably inserted into the insert basket so
28 that its rim assumes a position that is proximate the container wall so as to aid in
29 safely positioning and locating the insert in the bottom of the container.

30 In another variation of this preferred embodiment of the present invention, it
31 further includes a paper or micromesh or other specialized filter that is situated in the

1 filtering basket or proximate its top surface, and wherein each of these specialized
2 filters have a configuration adapted to provide the beverage with a third phase of
3 filtration.

4 Thus, there has been summarized above (rather broadly and understanding
5 that there are other preferred embodiments which have not been summarized above)
6 the present invention in order that the detailed description that follows may be better
7 understood and appreciated.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a preferred embodiment of the present invention when the filter basket has been moved down about half way towards the insert in the bottom of the container and before any infusible material or liquid have been added to the container.

FIG. 2 is a cross-sectional view of the preferred embodiment of the present invention shown in FIG. 1

FIG. 3A is an exploded, perspective view of the filter basket of the present invention shown in FIG. 1.

FIG. 3B is a cross-sectional view of the lower portion of a preferred embodiment of the present invention at a point in time when the filtering basket has moved down into an empty insert and wherein a triple filtration mode of operation is being utilized that includes an optional micromesh filter being used proximate the basket's top, second phase, filtration surface.

FIG. 4A is a perspective view of the cylindrical insert of the present invention shown in FIG. 1.

FIG. 4B is a cross-sectional view of the cylindrical insert shown in FIG. 4A.

FIG. 5 is a perspective view of the pliable insert basket of the present invention shown in FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Before explaining at least one embodiment of the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

The present invention generally relates to equipment and methods for use in a beverage making process. More particularly, it relates to a method and an infusion process apparatus capable of being used for extracting an active and soluble portion of a substance or infusible material (such as ground coffee beans or tea leaves) by steeping that substance in a liquid, usually hot water, for a specified time or steeping period so as to create a new type of beverage (also referred to as an extraction solution or extract or infusion or brew) that is often named after the substance that was infused to create it (e.g., coffee from ground coffee beans and tea from ground tea leaves), while also providing for the easy removal and disposal of the separated infusible material.

FIGS. 1 and 2 provide, respectively, a perspective view and a cross-sectional view of a preferred embodiment of the present invention. It is seen to include a cylindrical container **10** or carafe having a container bottom **10a** with a perimeter container bottom edge **10b**, a container wall **10c** that extends vertically upward from around the perimeter container bottom edge for a specified uniform distance that defines the wall's height and terminates in a container rim **10d** that encloses and defines a container opening **10e** into the top of container, and it can be referred to as having a container longitudinal centerline **10f** that extends between the container's bottom and its opening. This container is generally configured to hold the liquid and infusible material during the infusion process that takes place within the container.

This container may be made of glass, metal, plastic, ceramic, or other materials typically used with coffee/tea making apparatuses. Additionally, the

1 container may optionally include a double-layered wall, such as a double metal wall,
2 with a vacuum or an insulating substance between such a container's two walls. As
3 shown in FIG. 1, this container may also be provided with a base **90** in which the
4 container sits and may be removed therefrom for cleaning and other purposes.

5 Inserted in the bottom of the container is a cylindrical insert **20** that has an
6 insert bottom **20a** with a perimeter insert bottom edge **20b**, an insert side **20d** with an
7 insert inner face **20e** that extends vertically upward from around this insert's bottom
8 edge, for a specified uniform distance that defines the side's height, and terminates in
9 an insert rim **20f** that encloses and defines an insert opening **20h** into the insert. An
10 insert longitudinal centerline **20i** can also be identified for this insert. This insert
11 generally has a configuration adapted to enable it to be temporarily inserted through
12 the container's opening so that the insert's bottom rests proximate the container's
13 bottom during the infusion process and to enable the insert to initially contain a
14 measured amount of the infusible material that is to be used in the infusion process.
15 See FIGS. 4A – 4B.

16 Additionally, it can be noted in FIG. 4B that the insert's bottom has a concave
17 portion **20c** adapted to promote the movement of the insert off of the bottom of the
18 container at the end of the infusion process when the container is filled with the
19 newly created brew or extract and the infusible material has been filtered from the
20 extract and compacted down into the bottom of the insert. The insert's rim **20f** is also
21 seen to have a top surface **20g** that is configured to extended upward and outward
22 from the insert's side so as to aid in directing the movement of the bottom of the filter
23 basket **50a**, seen in FIGS. 1 – 2, through the insert's opening and into the insert.

24 This insert **20** may be made of any strong, light and moldable material used in
25 the manufacture of press type extract apparatus such as plastic, metal, and other such
26 materials. Its side may also contain markings that can be used to measure the amount
27 of infusible that is initially placed in the insert at the beginning of an infusion
28 process.

29 The present invention has a unique filtering basket **50** with multi-phase
30 filtering capability. See FIGS. 3A – 3B. It has a basket bottom surface **50a** with a
31 perimeter basket bottom edge **50b**, a porous basket top surface **50f** with a perimeter

1 basket top edge **50g**, a porous basket side **50c** that attaches to and extends vertically
2 from either the top or bottom's perimeter edge. The basket's porous side and top
3 surface provide, respectively, both a first and a second phase of filtering as the basket
4 is moved downward during the filtering process and the beverage is forced to flow
5 through these porous elements and their various smaller sizes holes serve to filter out
6 and block any of the larger size grinds that were suspended in the beverage during the
7 steeping process from flowing through the basket and contaminating the filtered
8 beverage which results above the filtering basket.

9 The side's attachment may also be releasable (e.g., by using a threaded,
10 bayonet or other type of connector) so as to allow either the top or bottom to be
11 removed so that the interior of the basket may be used to house an optional, third type
12 or phase of filtering (e.g., one or more stacked paper filters of the kind that are used
13 for coffee making).

14 Such a third phase of filtering can also be achieved by using an additional and
15 optional, specialized filter proximate or above the basket's top surface. See FIG. 3B
16 where there is shown a cross-sectional view of the lower portion of a preferred
17 embodiment of the present invention at a point in time when the filtering basket **50**,
18 with its porous side and top surfaces, has moved down into an empty (i.e., no coffee
19 grounds have yet been added) insert **20** and wherein a three-phase, filtration mode of
20 operation is being utilized that includes a micromesh or specialized filter **50j** used
21 proximate the basket's top filtration surface. This micromesh filter is one of a set of
22 specialized, optional filters that can be used proximate the basket's top surface to
23 provide additional filtering capability. The micromesh filter is special because of its
24 very small diameter holes or pores, some of which can be so small as to preclude any
25 particles greater than 150 microns from passing through such a micromesh filter.

26 Additional advantages of having a releasable top or bottom (i.e., other than
27 allowing for the use of paper filters within the basket) include: (i) providing the
28 ability for one to clean the inner portions of the filtering basket's outer surfaces, (ii)
29 allowing the inside of the filtering basket to be used as a receptacle to hold tea leaves
30 when the apparatus is used for making tea, and (iii) allowing the inside of the filtering

1 basket to be used as a receptacle to hold special flavorings (e.g., spices, fruits) that
2 are used in the recipe for a desired brew.

3 This paper filter option has the additional advantage of greatly reducing one's
4 consumption of cafestol (a diterpene molecule present in small amounts [0.4 – 0.7%
5 by weight] in coffee beans) whose regular consumption has been observed to result in
6 one having increased levels of serum cholesterol. For consumers concerned about
7 such possible health concerns, the paper filter option is valuable option of the present
8 invention. This paper filter option also yields a “gritless” brew or coffee; thus, the
9 option to use fine grinds (e.g., espresso) without them making it through the filter.

10 The filtering basket's side also has an upper portion that includes a basket rim
11 **50d**. The basket's top surface is attached to the distal end of the plunger and the
12 basket is generally configured to enable it to be, temporarily and during the infusion
13 process, situated in the container and moved vertically up and down by the plunger's
14 movement to filter the suspended infusible material from the resulting extract or
15 beverage.

16 As mentioned above, the first two phases of the basket's filtering operation is
17 achieved by the filter basket side and top surface having porous portions **50e**, **50h**
18 through which the extract flows as the suspended infusible material is filtered from
19 the beverage. Additionally, the filter perimeter basket's top edge **50g** has an attached
20 filter seal **70** that seals this perimeter edge to the container's wall so as to prevent the
21 suspended infusible material from passing between it and the side of the filter basket
22 side and then rising above the filtering basket's top surface during the basket's
23 filtering movement down through the container as the filtered extract or beverage
24 flows through the filtering basket's porous top and side surfaces – i.e., after this
25 filtering process, only the filtered beverage resides above the filtering basket's top
26 surface.

27 The porosity of the filter basket's side and top porous portion is sufficient to
28 separate the extract yielded by the infusion process from any of the infusible material
29 that is suspended in the extract as the bottom **50a** of the filtering basket is moved
30 downward through the container. This basket eventually come to rest when its
31 bottom surface moves temporarily into the insert to compact the infusible material

1 that has been filtered and forced down into the insert where it initially resided before
2 the addition of water to the container.

3 These porous portions can be created in many ways. For example, a thin
4 sheet (e.g., sheet thickness in the range of 0.01 – 0.03 inches) of material (e.g.,
5 stainless steel) with small diameter and close together holes (e.g., hole diameters in
6 the range of 0.01 – 0.03 inches and spaced apart so as to yield porosities in the range
7 of 25% - 60%) in it may be used.

8 The filtering basket's bottom **50a** is especially unique in that it is configured
9 to, while compressing the previously suspended, infusible material that has been
10 forced down into the insert, to temporarily and releaseably promote adhesion to this
11 filtered and compacted infusible material and to also stop or bring a halt to the
12 infusion process that had been occurring in the container. The advantage of this is
13 that, if the extract were to remain in the container, it would not acquire the
14 characteristic bitterness and burnt taste that is often associated with an over-infused
15 extract that has undergone an excessive steeping period. Various ways to configure
16 the filter basket's bottom surface are to fabricate it preferably as a solid surface that is
17 either smooth or has short spike-shaped protrusions or other means extending
18 vertically down from the bottom that are sized and configured so as to promote
19 adhesion to the infusible material that has been compacted into the insert. In certain
20 situations, a porous bottom surface has even been used.

21 This adhesion of the filtered and compacted infusible material to the filter
22 basket's bottom surface **50a** is important since the filtering or filter basket **50** is also
23 configured to help remove the insert **20** and its contents from the container **10** so as to
24 avoid the container cleanup task that is associated with a French Press type of
25 infusion process that has no such insert.

26 A basket coupling means **60** (e.g., an O-ring located at or proximate the
27 basket's perimeter bottom edge [in some situations, it may be mounted on the
28 basket's side but near its bottom edge] has an outer portion that is temporarily
29 compressed against the insert's inner face **20e** as the basket's bottom moves
30 downward into the insert) is attached to the filtering basket and is adapted to enable
31 this basket coupling means to temporarily and releaseably lock together with the

1 cylindrical insert **20** when the bottom **50a** of the filtering basket moves downward
2 though the insert opening and into the insert. This temporary locking together further
3 aids in enabling the insert to then be lifted upward and eventually out of the container
4 during the subsequent upward movement of the filtering basket when it is desired to
5 remove the grinds from the container.

6 An elongated plunger **30** having a proximal **30a** and a distal end **30b** and a
7 plunger longitudinal centerline **30c** that extends between the ends and with a handle
8 on its proximal end is used to move the filtering basket up and down in the container.

9 A cylindrical container lid **40** having a center orifice **40a** with a perimeter
10 edge **40b** and a tubular wall **40c** extending downward from center orifice perimeter
11 edge is adapted to allow the plunger's distal end to pass through the lid's center
12 orifice and align the plunger's longitudinal centerline with that of the container. This
13 lid also uses an o-ring around its edge to temporarily seal the lid's edge to the
14 container's wall.

15 To aid in positioning and locating the cylindrical insert **20** in the bottom of the
16 container, a pliable insert basket **80** is used to surround and protect the insert. See
17 FIG. 5. It has an insert basket bottom **80a** with a perimeter insert basket bottom edge
18 **80b**, and an insert basket side **80c** that extends vertically upward from the insert
19 basket's bottom edge for a specified uniform distance that defines the height of this
20 side and terminates in an insert basket rim **80d** that encloses and defines an insert
21 basket opening **80f** into the pliable insert basket. In general, it is configured to fit
22 around the insert so that it may be more easily be temporarily and removably inserted
23 into the container. The configuration and material of construction for this insert
24 basket **80** (e.g., silicone) is such that placing the insert **20** into this insert basket helps
25 to stiffen it so that the insert basket's rim assumes a position that is proximate the
26 container's wall **10c**. Furthermore, the insert basket's rim **80d** has a top surface **80e**
27 that is configured to extend upward and outward from the insert basket's side **80c** so
28 as to provide a surface that directs the suspended infusible material down and into the
29 insert **20** as the filtering basket **50** moves downward in the container **10**.

30 The method of creating an acceptable or even an outstanding new version of a
31 desired brew using the infusion process of the present invention involves the control

1 of what are herein identified as certain brew parameters. These can include the
2 following: (a) the particle size distribution of the ground beans, referred to herein as
3 "grind," (b) the ratio of the amount of water to the amount of ground beans, referred
4 to herein as "ratio," (c) the temperature of the water, (d) the amount of time the slurry
5 (the mixture of the water and the ground infusible material or beans or grounds) is
6 agitated or mixed, (e) the amount of time or the period that the slurry is allowed to
7 steep, (f) the total filtration time, which is the time required to filter and separate the
8 extract from the ground beans, and (g) the volume of the resulting extract as a
9 percentage of the liquid initially added to the infusible material, which is a measure
10 of how much compaction was applied to the resulting grounds in the insert.

11 After specific initial decisions have been made with respect to the brew
12 parameters listed above, the steps involved in actually implementing the infusion
13 method of the present invention can include: Pre-steps - Make sure all parts are clean
14 and free of oils/sediments. Boil water for both brewing and preheating
15 (recommended). Once the kettle boils, preheat the cylindrical container or carafe by
16 adding some water. Grind your beans according to preference; medium-fine grind is
17 recommended. Optional Step – Place optional paper filter in filtering basket or place
18 other optional filter on top of or proximate the filtering basket's top surface for a third
19 phase of filtering. Brewing Step 1 - Place the ground beans or grounds in the insert
20 or grounds container in the carafe and let the insert slide down to the bottom; it can
21 be used as a measuring cup due to the premeasured lines which are inscribed on the
22 inner face of the insert's side (alternatively, one can put the grounds container first in
23 the carafe, then the grounds in after.) Step 2 - Pour hot water (190-200 degrees) into
24 the carafe and watch the ground beans move upward and be suspended in the hot
25 water. There are premeasured, water/liquid lines on the container's wall to aid one in
26 adding a specific desired amount of water. Step 3 - Break the resulting crust of the
27 water and suspended grounds mixture after one minute by back and forth stirs with a
28 paddling motion using a non-metal spoon/stirrer. Step 4 - Total Brewing Duration:
29 Baseline recipe (adjust according to beans, roasts, and brew preference)
30 for fine grind: 2.5 minutes; for medium grind: 3 minutes; for course grind: 4 minutes.
31 Step 5 - Press the plunger down very, very slowly until you cannot press any longer.

1 Pour your first cup, then press down a bit more to as firmly as possible compress the
2 grounds into the insert and empty all of the remaining brew out of the container. Step
3 6 - Once the liquid or brew has been drained out, lift the plunger and its attached
4 filter basket back up along with the insert or grounds container which is temporarily
5 adhered to the bottom of the filter basket. Empty the insert or grounds container and
6 clean all parts and one's apparatus is ready for its next infusion and brewing task.

7 The foregoing is considered as illustrative only of the principles of the present
8 invention. Further, since numerous modifications and changes will readily occur to
9 those skilled in the art, it is not desired to limit the invention to the exact construction
10 and operation shown and described herein. Accordingly, all suitable modifications
11 and equivalents may be resorted to, falling within the scope of the invention that is
12 hereafter set forth in the claims to the invention.

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CLAIMS

I claim:

1. An infusion process apparatus (1) that allows a user to make and filter a beverage, yielded by an infusion process that steeps an infusible material which is temporarily suspended in a liquid for a specified steeping period, of any of said infusible material and then provides for the removal and disposal of said filtered infusible material with minimal user effort, the apparatus comprising:

a cylindrical container (10) having a container bottom (10a), a container wall (10c) with a container rim (10d) that encloses a container opening (10e) into said cylindrical container, and a container longitudinal centerline (10f) that extends between said container bottom and said container opening,

a cylindrical insert (20) having an insert bottom (20a), an insert side (20d) with an insert rim (20f) that encloses an insert opening (20h) into said cylindrical insert, and wherein said cylindrical insert having a configuration adapted to enable said cylindrical insert to be inserted through said container opening (10e) and into said cylindrical container so that said insert bottom (20a) rests proximate said container bottom (10a) during said infusion process and said configuration further adapted to enable said cylindrical insert to initially contain a measured amount of said infusible material that is later temporarily suspended in said liquid during said infusion process,

an elongated plunger (30) having proximal (30a) and distal (30b) ends and a plunger longitudinal centerline (30c) that extends between said ends,

a cylindrical container lid (40) having a center orifice (40a) with a perimeter edge (40b) and a tubular wall (40c) having a configuration adapted to allow the distal end of said plunger (30b) to pass through said container lid center orifice (40a) so as to align said longitudinal centerline (30c) of said plunger with said container longitudinal centerline (10f),

a filtering basket (50) having a solid basket bottom surface (50a), a porous basket top surface (50f), and a porous basket side (50c) that releaseably attaches to a surface chosen from the group including said basket bottom and top surfaces, and

1 wherein said filtering basket top surface (50f) further having a configuration adapted
2 to enable said basket top surface to attach to said plunger distal end (30b) so as to
3 enable said filtering basket (50) to be temporarily situated in said cylindrical
4 container (10) and moved up and down within said cylindrical container and insert
5 (20) by the upward and downward movement of said elongated plunger (30),

6 a filter seal (70) attached to said filtering basket top surface (50f) and which
7 has a configuration that enables the sealing of said filtering basket (50) to said
8 container wall (10c) as said filtering basket moves downward in said container to
9 filter said beverage by forcing said suspended infusible material downward and back
10 into said cylindrical insert (20) as said filtered beverage flows through said porous
11 basket side (50c) and top (50f) surfaces and thereby undergoes, respectively, a first
12 and a second filtration phase during said downward movement of said filtering
13 basket, and

14 a basket coupling means (60) attached to said filtering basket (50) and having
15 a configuration adapted to enable said basket coupling means to temporarily and
16 releaseably attach together with said cylindrical insert (20) when said bottom surface
17 of the filtering basket (50a) moves downward to provide said filtration and through
18 said insert opening (20h) and into said insert so as to enable said insert, which is then
19 filled with said filtered infusible material, to be lifted upward from the bottom (10a)
20 of said container and eventually out of said container by the sufficient upward
21 movement of said filtering basket (50).

22 2. The infusion process apparatus as recited in Claim 1, wherein:

23 said filtering basket bottom surface (50a) has a configuration adapted to
24 compress and compact said filtered infusible material that has been forced down into
25 said insert (20) by the downward movement of said filtering basket (50) and to
26 temporarily and releaseably promote adhesion of said filtering basket bottom surface
27 (50a) to said filtered and compacted infusible material and to stop the infusion
28 process so that, if the filtered beverage remains in said container, said beverage does
29 not acquire the characteristic bitterness and burnt taste that is associated with an over-
30 infused beverage caused by an excessive steeping period.

31 3. The infusion process apparatus as recited in Claim 1, wherein:

1 said insert bottom (20a) having a concave portion (20c) adapted to promote
2 the movement of said insert (20) off of the bottom of said container (10).

3 4. The infusion process apparatus as recited in Claim 2, wherein:

4 said insert bottom (20a) having a concave portion (20c) adapted to promote
5 the movement of said insert (20) off of the bottom of said container (10).

6 5. The infusion process apparatus as recited in Claim 1, wherein:

7 said insert rim (20f) having a top surface (20g) that is configured to extended
8 upward and outward from said insert side (20d) so as to aid in directing the
9 movement of the bottom surface (50a) of said filter basket though said insert opening
10 (20h) and into said insert.

11 6. The infusion process apparatus as recited in Claim 2, wherein:

12 said insert rim (20f) having a top surface (20g) that is configured to extended
13 upward and outward from said insert side (20d) so as to aid in directing the
14 movement of the bottom surface (50a) of said filter basket though said insert opening
15 (20h) and into said insert.

16 7. The infusion process apparatus as recited in Claim 3, wherein:

17 said insert rim (20f) having a top surface (20g) that is configured to extended
18 upward and outward from said insert side (20d) so as to aid in directing the
19 movement of the bottom surface (50a) of said filter basket though said insert opening
20 (20h) and into said insert.

21 8. The infusion process apparatus as recited in Claim 4, wherein:

22 said insert rim (20f) having a top surface (20g) that is configured to extended
23 upward and outward from said insert side (20d) so as to aid in directing the
24 movement of the bottom surface (50a) of said filter basket though said insert opening
25 (20h) and into said insert.

26 9. The infusion process apparatus as recited in Claim 1, further comprising:

27 an optional filter (50j), situated at a location chosen from the group consisting
28 of within said filtering basket (50) and proximate the top surface (50f) of said
29 filtering basket, having a configuration adapted to provide said beverage with a third
30 phase of filtration.

31 10. The infusion process apparatus as recited in Claim 2, further comprising:

1 an optional filter (50j), situated at a location chosen from the group consisting
2 of within said filtering basket (50) and proximate the top surface (50f) of said
3 filtering basket, having a configuration adapted to provide said beverage with a third
4 phase of filtration.

5 11. The infusion process apparatus as recited in Claim 4, further comprising:

6 an optional filter (50j), situated at a location chosen from the group consisting
7 of within said filtering basket (50) and proximate the top surface (50f) of said
8 filtering basket, having a configuration adapted to provide said beverage with a third
9 phase of filtration.

10 12. The infusion process apparatus as recited in Claim 6, further comprising:

11 an optional filter (50j), situated at a location chosen from the group consisting
12 of within said filtering basket (50) and proximate the top surface (50f) of said
13 filtering basket, having a configuration adapted to provide said beverage with a third
14 phase of filtration.

15 13. The infusion process apparatus as recited in Claim 8, further comprising:

16 an optional filter (50j), situated at a location chosen from the group consisting
17 of within said filtering basket (50) and proximate the top surface (50f) of said
18 filtering basket, having a configuration adapted to provide said beverage with a third
19 phase of filtration.

20 14. The infusion process apparatus as recited in Claim 9, further comprising:

21 a pliable insert basket (80) having an insert basket bottom (80a) and an insert
22 basket side (80c) with an insert basket rim (80d) that encloses an insert basket
23 opening (80f) into said pliable insert basket, and wherein said pliable insert basket
24 having a configuration adapted to enable said cylindrical insert (20) to be temporarily
25 and removably inserted into said insert basket (80) so that said insert basket rim (80d)
26 assumes a position that is proximate said container wall (10c) and aids in safely
27 positioning and locating said cylindrical insert (20) in the bottom of said cylindrical
28 container (10) without damaging said cylindrical container.

29 15. The infusion process apparatus as recited in Claim 10, further comprising:

30 a pliable insert basket (80) having an insert basket bottom (80a) and an insert
31 basket side (80c) with an insert basket rim (80d) that encloses an insert basket

opening (80f) into said pliable insert basket, and wherein said pliable insert basket having a configuration adapted to enable said cylindrical insert (20) to be temporarily and removably inserted into said insert basket (80) so that said insert basket rim (80d) assumes a position that is proximate said container wall (10c) and aids in safely positioning and locating said cylindrical insert (20) in the bottom of said cylindrical container (10) without damaging said cylindrical container.

16. The infusion process apparatus as recited in Claim 11, further comprising:

a pliable insert basket (80) having an insert basket bottom (80a) and an insert basket side (80c) with an insert basket rim (80d) that encloses an insert basket opening (80f) into said pliable insert basket, and wherein said pliable insert basket having a configuration adapted to enable said cylindrical insert (20) to be temporarily and removably inserted into said insert basket (80) so that said insert basket rim (80d) assumes a position that is proximate said container wall (10c) and aids in safely positioning and locating said cylindrical insert (20) in the bottom of said cylindrical container (10) without damaging said cylindrical container.

17. The infusion process apparatus as recited in Claim 13, further comprising:

a pliable insert basket (80) having an insert basket bottom (80a) and an insert basket side (80c) with an insert basket rim (80d) that encloses an insert basket opening (80f) into said pliable insert basket, and wherein said pliable insert basket having a configuration adapted to enable said cylindrical insert (20) to be temporarily and removably inserted into said insert basket (80) so that said insert basket rim (80d) assumes a position that is proximate said container wall (10c) and aids in safely positioning and locating said cylindrical insert (20) in the bottom of said cylindrical container (10) without damaging said cylindrical container.

18. The infusion process apparatus as recited in Claim 15, wherein:

said insert basket rim (20f) having a top surface (20g) that is configured to extended upward and outward from said insert basket side (20d) so as to provide a surface that directs said filtered infusible material down and into said cylindrical insert (20) as said filtering basket moves downward in said cylindrical container (10).

19. The infusion process apparatus as recited in Claim 16, wherein:

1 said insert basket rim (20f) having a top surface (20g) that is configured to
2 extended upward and outward from said insert basket side (20d) so as to provide a
3 surface that directs said filtered infusible material down and into said cylindrical
4 insert (20) as said filtering basket moves downward in said cylindrical container (10).
5 20. The infusion process apparatus as recited in Claim 17, wherein:

6 said insert basket rim (20f) having a top surface (20g) that is configured to
7 extended upward and outward from said insert basket side (20d) so as to provide a
8 surface that directs said filtered infusible material down and into said cylindrical
9 insert (20) as said filtering basket moves downward in said cylindrical container (10).

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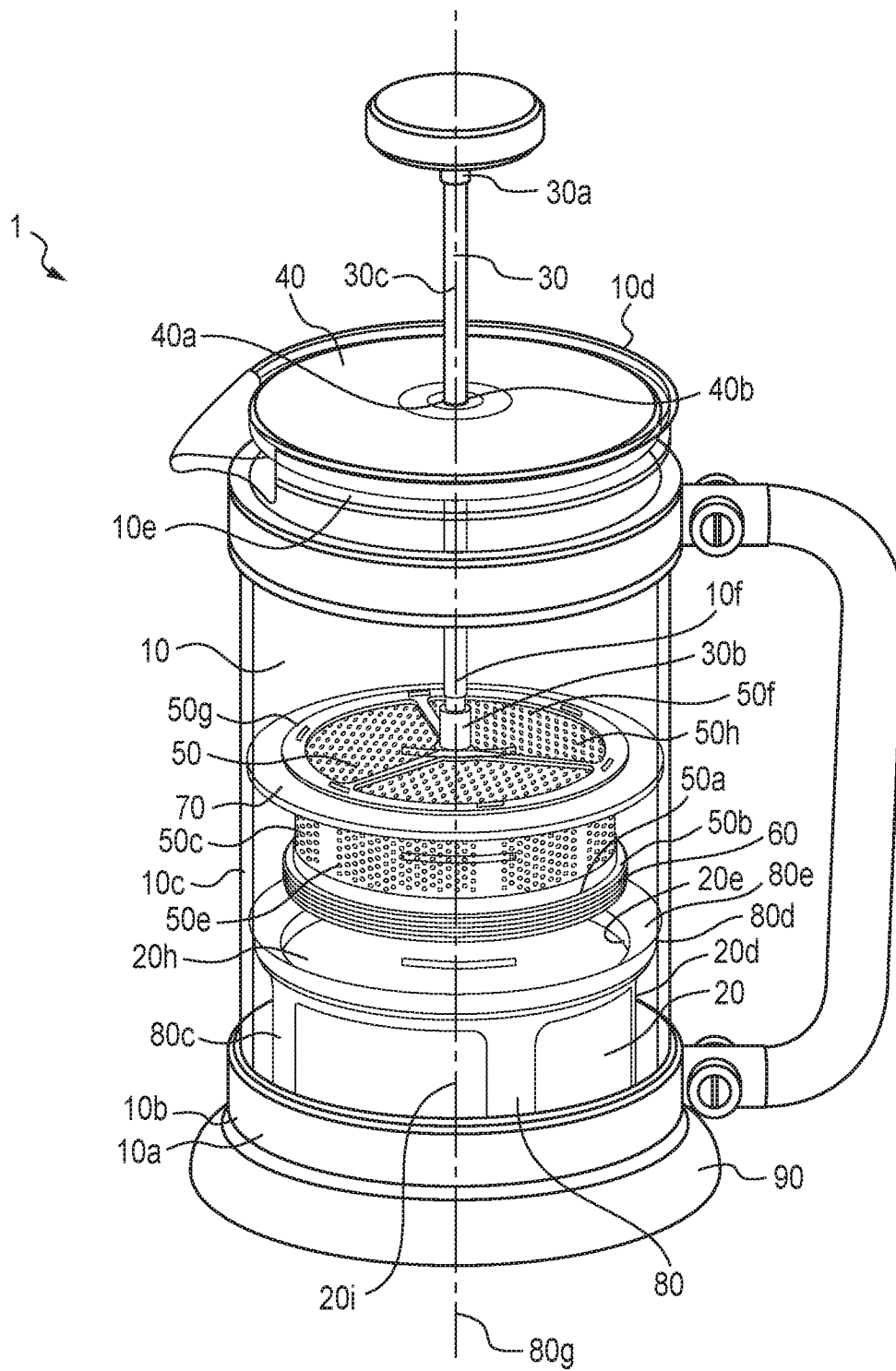


FIG. 1

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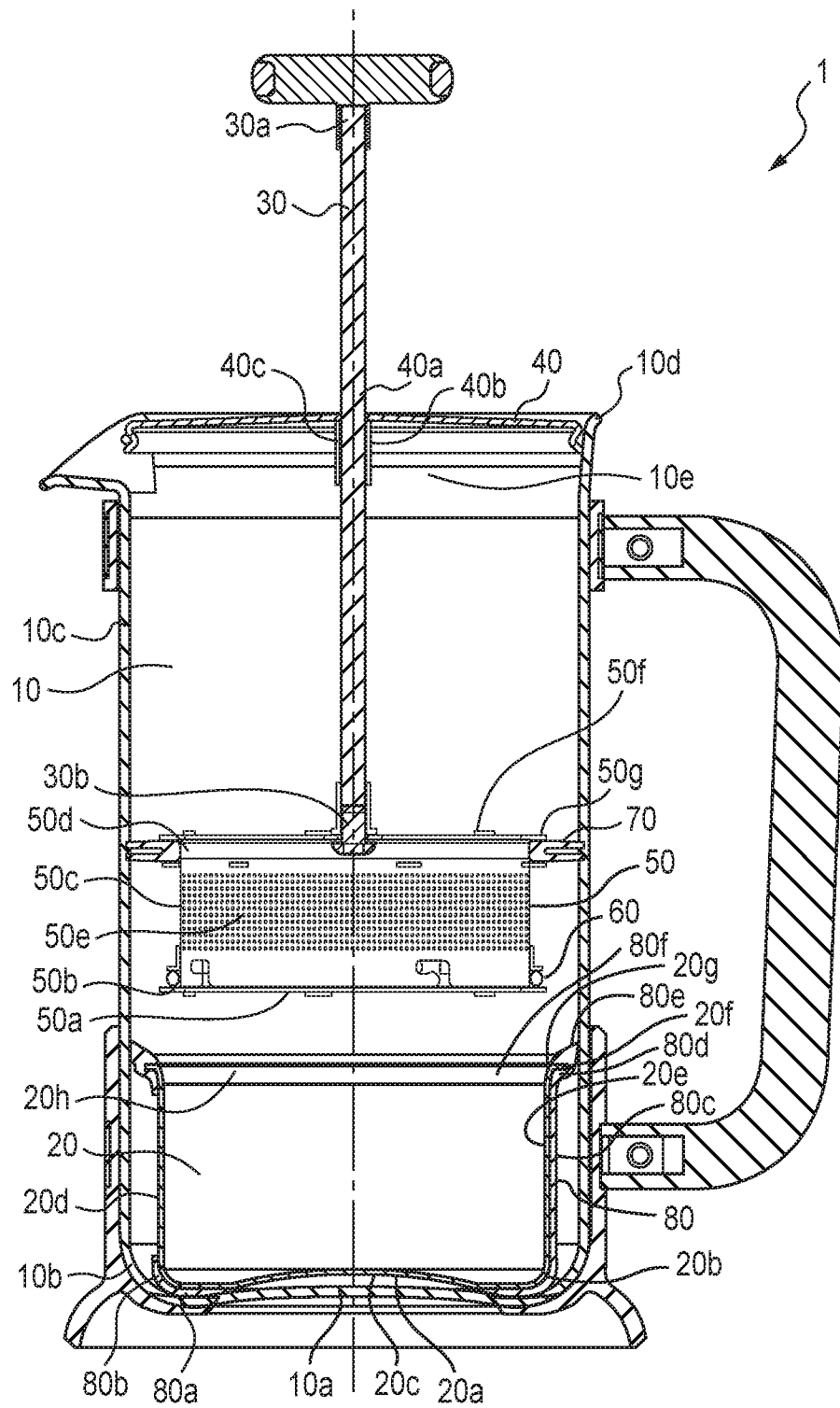


FIG. 2

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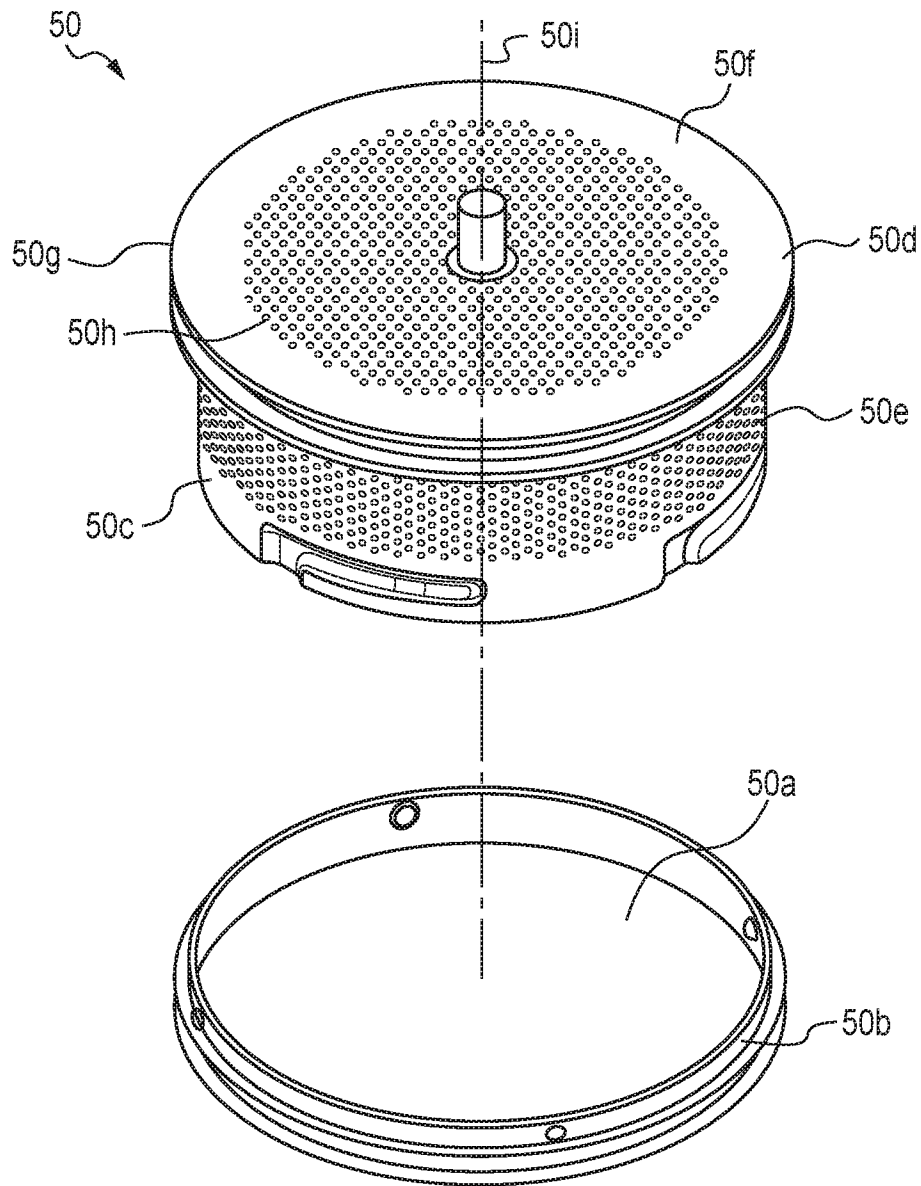


FIG. 3A

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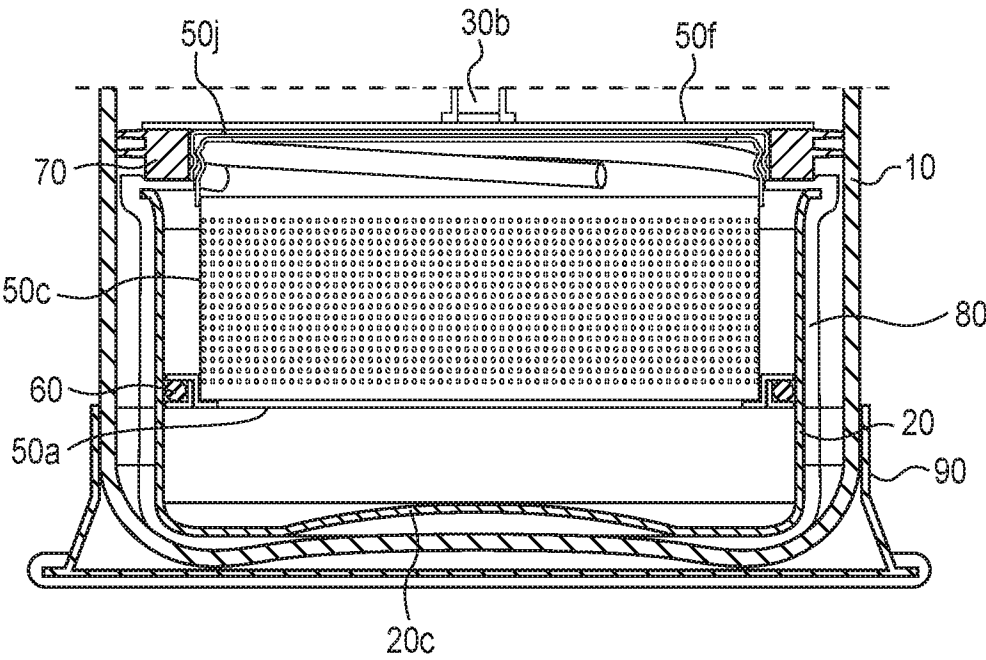


FIG. 3B

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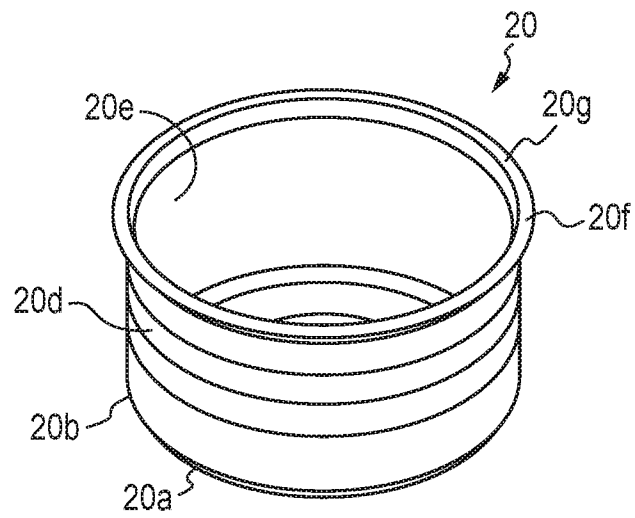


FIG. 4A

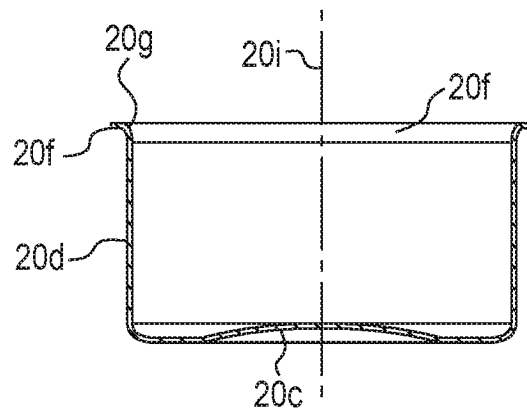


FIG. 4B

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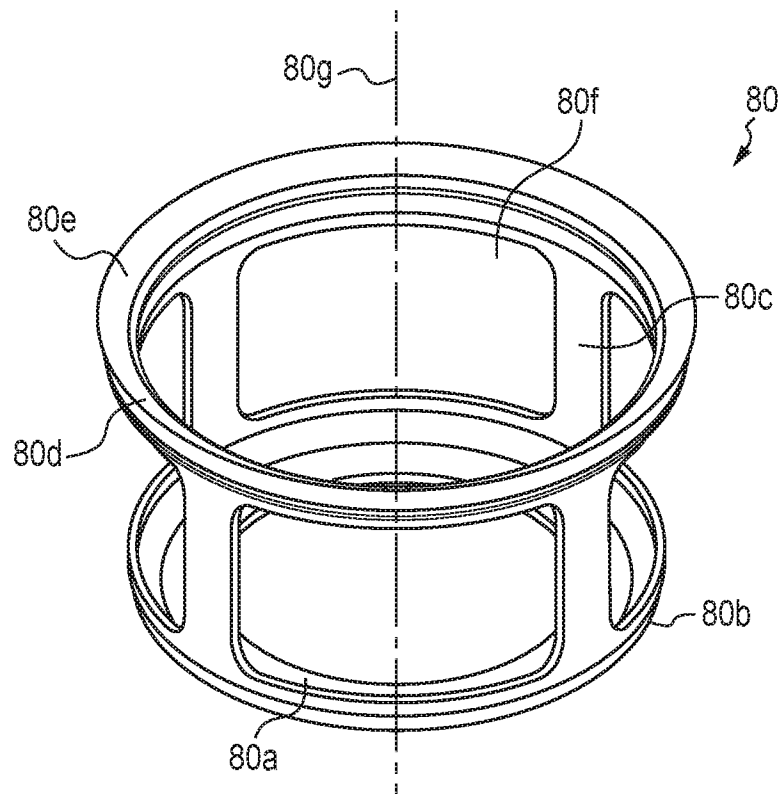


FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 16/12771

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A47J 31/00, A47J 31/38, A47G 19/14 (2016.01)

CPC - A47J 31/00, A47J 31/38, A47G 19/14, A47S 31/00

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 (8): A47J 31/00 (2016.01)

CPC: A47J 31/00

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

IPC (8): A47J 31/38, A47G 19/14, A47S 31/00 (2016.01). CPC: A47J 31/38, A47G 19/14, A47S 31/00. USPC: 99/323, 99/317, 99/279, 99/297, 99/287.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 PatBase. Google (Web, Patent, Scholar). Search Terms: Aperture, Basket, Basket, Beverage, Capsule, Carafe, Carriage, Cassette, Coffee, Cylinder, Displace, Drink, Flow, Force, French Press, Herb, Hole, Infus*, Inner, Insert, Jug, Leaf, Life, Loose Leaf, Mechanical, Mesh, O-ring, Perforated, Permeable, Piston, Pitcher, Plunger, Porous, Press, Press

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,365,544 A (HOWITT) 28 December 1982 (28.12.1982) Figs. 1-3; col 2 ln 57-62, 67-68, col 3 ln 13-18, 23-25, 40-46, col 4 ln 4-5.	1-20
A	US 7,213,507 B2 (GLUCKSMAN et al.) 08 May 2007 (08.05.2007) Figs. 1, 5; col 3 ln 66 - col 4 ln 1, 36-39, 46, col 5 ln 51-54.	1-20
A	US 5,478,586 A (CONNER) 21 October 2014 (21.10.2014) Figs. 1-3, 5; col 5 ln 28-30, 34-37, 47-52.	1-20
A	EP 0 615 714 A1 (GENERAL FOODS LIMITED) 21 September 2014 (21.09.2014) Figs. 4A-B; col 6 ln 25-28.	1-20
A	US 2011/056385 A1 (MCLEAN et al.) 10 March 2011 (10.03.2011) Figs. 1-3, 10; paras [0047-8], [0050]	1-20

☐ Further documents are listed in the continuation of Box C.


* Special categories of cited documents:	"T" 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
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" 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
"E" earlier application or patent but published on or after the international filing date	"Y" 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
"L" 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 member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

03 May 2016

Date of mailing of the international search report

16 JUN 2016

Name and mailing address of the ISA/US

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