



- (51) International Patent Classification:  
*B08B 9/032* (2006.01)
- (21) International Application Number:  
PCT/US2014/045817
- (22) International Filing Date:  
8 July 2014 (08.07.2014)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
61/844,800 10 July 2013 (10.07.2013) US
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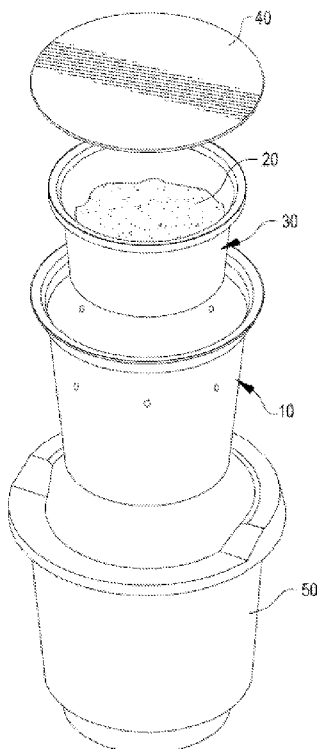
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

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(54) Title: CONTAINERS HAVING A PORTIONED AMOUNT OF CLEANING COMPOSITION; METHODS FOR CLEANING RESIDUE FROM BEVERAGE MAKING MACHINES

FIG. 4A



(57) Abstract: Containers having a portioned amount of a cleaning composition located in an internal volume are provided for cleaning a portion of a beverage making machine. The external size and configuration of the container is designed to fit within a carrier in a single (or multi-) serve beverage making machine. The container is insertable in the carrier in the place of a beverage making pod, cup, cartridge or the like. Following placement of the container in the carrier, the beverage making machine may be operated to perform a regular brew cycle or a specialized cleaning cycle in which water is introduced to the internal volume of the container and cleaning solution is released from the container, optionally under pressure, to contact and clean internal surfaces of the container carrier.

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

**Published:**

- *without international search report and to be republished upon receipt of that report (Rule 48.2(g))*

Date of Filing and EFS Submission: July 8, 2014

**CONTAINERS HAVING A PORTIONED AMOUNT OF CLEANING COMPOSITION;  
METHODS FOR CLEANING RESIDUE FROM BEVERAGE MAKING MACHINES****TECHNICAL FIELD OF THE DISCLOSURE**

The present disclosure relates to containers having a portioned amount of a cleaning composition provided in an internal volume. In one aspect, the present disclosure relates to a container having a cleaning composition that provides cleaning solution upon the introduction of water to clean portions of the machine. In another aspect, methods for cleaning residue from beverage making machines using a container having a portioned amount of cleaning composition are provided.

**BACKGROUND**

Single use or re-usable cartridge-type containers that retain a material such as coffee or tea in an internal volume are used in many different types of beverage brewing systems, and particularly in single serving beverage brewing systems. U.S. Patent 5,840,189 discloses an exemplary beverage filter cartridge, and U.S. Patents 6,079,315, 6,182,554, 6,655,260 and 6,644,173 disclose various types of beverage filter cartridge holders. Water is typically introduced to the container during a brew cycle at the top of the container (e.g., by piercing a cover), and the brewed beverage is released from the bottom of the container. The brewing container or cartridge is typically inserted in a carrier or a recess in the brewing machine during a brewing cycle and removed from the recess following completion of the brewing cycle or prior to initiation of a new brewing cycle.

Residue tends to build up in the recess where the brewing container or cartridge is inserted and along the walls and exit port of the carrier where the beverage contacts and exits the brewer. This residue may eventually cause clogging of the system. The residue remaining from previous beverage making cycles may furthermore taint or contaminate the flavor of beverages made subsequently, particularly when different beverage types or flavors are made using the same system. The residue may also produce or encourage accumulation of contaminants in the carrier, which may be introduced to beverages during subsequent beverage making cycles and unintentionally ingested.

Some coffee brewers recommend use of a cleaning cycle wherein the operator loads a cleaning substance such as vinegar into the water reservoir or elsewhere in the brewer. The cleaning composition circulates to dissolve residual material from the interior of the brewer components that it contacts and is evacuated from the system. Methods for cleaning coffee machines using a cleaning composition in tablet format introduced to the water tank of a coffee

machine are known and are described, for example, in U.S. Patent 6,514,429. Sachets containing a unit dose of a water soluble cleaning composition that dissolves quickly, increasing the efficiency of the cleaning operation, are disclosed in U.S. Patent Publication US 2005/0245416. U.S. Patent Publication 2006/0201329 discloses a method for cleaning a beverage making device by assembling a packet having cleaning agent rather than coffee and then running a brewing cycle. The packet is assembled using a rectangular filter sheet that is folded over to envelop the grounds or other beverage or cleaning composition.

## SUMMARY

The present disclosure relates to a container having a pre-determined or pre-portioned amount of a cleaning composition provided in an internal volume. In some embodiments, the cleaning composition is retained in the internal volume of the container itself with no intermediate containment structure. In some embodiments, the pre-determined or pre-portioned amount of cleaning composition is retained in a containment structure, such as an insert, provided in an internal volume of the container. In some embodiments, the predetermined or pre-portioned amount of cleaning composition is positioned as desired within the internal volume of the container by means of a support or baffle.

The cleaning composition may be in a powder or granular form, or in another solid form that, upon the addition of an aqueous solution, dissolves (fully or partially) to provide a cleaning solution. Alternatively, the cleaning composition may be in a gel or semi-solid or liquid form that, upon addition of an aqueous solution or a vapor, provides a cleaning solution having the desired properties. One or more perforations or holes are preferably provided in the container, allowing a cleaning liquid to escape from the containment structure during a cleaning cycle. Container products as disclosed herein thus comprise a container having an internal volume with a pre-determined or portioned amount of cleaning composition contained in the internal volume and one or more perforations in the container. A cover or lid is typically provided for purposes of convenience to enclose, and optionally seal, the cleaning composition within the container.

The container has a size and configuration designed to fit within a carrier in a beverage making machine that typically retains a cartridge or pod or another device containing material (e.g., coffee, tea, hot chocolate, etc.) for making a beverage upon addition of water during a beverage making cycle. In one exemplary embodiment, containers as disclosed herein have an external configuration that substantially matches, or that fits within, a carrier in a single or multi-serve beverage making machine (e.g., a beverage brewer) and are insertable into a carrier member of the beverage making machine in the place of a beverage-making cartridge or pod or cup. In various embodiments, the external configuration of containers disclosed herein may generally fit within a carrier for receiving beverage-making cups or cartridges (e.g., coffee or tea or hot chocolate "pods") containing a beverage-making material designed to fit in Keurig brewers (e.g.,

K-CUP® containers); LAVAZZA® brewers; NESPRESSO® brewers; STARBUCKS® single serve brewers, CAFITALY® single serve brewers, TASSIMO® brewers, and the like.

In use, containers with cleaning composition(s) as described herein are placed in a carrier of a beverage making (e.g., brewing) machine where beverage making cups or cartridges are typically placed during a beverage making cycle. Following placement of the cleaning container, the brewing machine may be operated to perform a regular beverage making cycle or a specialized cleaning cycle. During this cycle, water is introduced into the internal volume of the cleaning container and the cleaning composition is dissolved or diluted in the water to provide a cleaning solution. The cleaning solution is released from the container, generally under pressure, through one or more perforations or holes provided in the container.

As cleaning solution is released from the container during a cleaning cycle, the cleaning solution contacts the internal surface(s) of the container carrier, cleaning residue that tends to accumulate during beverage making cycles. The cleaning solution typically exits the container carrier through one or more ports at the bottom of the carrier, cleaning internal surfaces of the beverage exit port(s) as well. During a cleaning operation, the cleaning solution travels generally the same path as beverages made during a beverage making cycle, thus cleaning oils, residue, particulate materials, and other undesired materials produced during beverage making cycles and deposited on internal surfaces of the container carrier and exit port(s). The cleaning solution may be collected in a cup or another receptacle placed below the exit port(s) and discarded following completion of the cleaning cycle.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

The drawings provided with this application show sketches illustrating various aspects of the devices described herein. These figures are intended to illustrate various concepts and various ways of implementing those concepts; they are not intended to illustrate definitive or limiting embodiments of the present disclosure.

Fig. 1A shows a side view and Fig. 1B shows a top perspective view of an exemplary container as disclosed that contains a pre-determined amount of a cleaning composition; Figs. 1C shows a cut-away side view illustrating cleaning composition positioned in a lower portion of an internal container volume; Fig. 1D shows a cut-away side view illustrating cleaning composition positioned above a lower portion of an internal container volume; Fig. 1E shows a cut-away side view illustrating cleaning composition retained in a pouch-like barrier positioned in an internal volume; and Fig. 1F shows a cut-away side view illustrating a tablet or solid-form cleaning composition positioned in a lower portion of an internal container volume.

Fig. 2A shows a top perspective view and Fig. 2B shows a side view of an optional internal container that fits within the outer container of Figs. 1A and 1B and may hold a pre-determined amount of a cleaning composition. Fig. 2C illustrates a side view of the internal

container of Figs. 2A and 2B, cut-away to illustrate an amount of a cleaning composition in the internal container.

Fig. 3A shows an exploded side view and Fig. 3B shows an exploded top perspective view of a container, (optional) internal container and lid as they fit together to provide a cleaning capsule or cartridge as described herein.

Fig. 4A shows an exploded top perspective view of the components of a cleaning capsule or cartridge as described herein and a carrier the capsule or cartridge is inserted into during a cleaning operation. Fig. 4B shows a schematic, top perspective view of the cleaning capsule as described herein inserted in a carrier (partially broken away) to illustrate a liquid cleaning composition being ejected from perforations in the cleaner capsule during a cleaning operation.

## DESCRIPTION

In one aspect, container products as described herein comprise a container that is generally impermeable to liquids and that has a predetermined external size and configuration designed to be received in a carrier of a beverage-making system. In many embodiments, the external configurations of container products described and claimed herein generally match an external configuration of beverage-making containers (e.g., pods, cups, capsules, and the like) and fit within a carrier of a beverage-making system in much the same way the beverage-making container fits within the carrier. In some embodiments, the external configuration of container products described herein may be different than that of corresponding beverage-making containers to provide greater flow, or optimized flow, of cleaning solution to internal surfaces of the carrier.

Figs. 1A-1F schematically illustrate a container 10 as described herein having an external cup-shaped configuration with sidewall(s) 12 having a (slightly) tapered cylindrical configuration, bottom wall 14 enclosing a lower portion of the container and an upper rim 16 extending around the circumference of the container. Container 10 and bottom wall 14 may be provided as a unitary structure or may comprise two components (comprising the same or different materials) joined to one another. It will be appreciated that in alternative embodiments, containers may have cylindrical or polygonal sidewall(s), and may be deeper or shallower than illustrated to accommodate carriers having different configurations.

Container 10 may be fabricated from a substantially liquid impermeable material such as a plastic material, a polymeric material, a metallic material, a fibrous or particulate material bound with a waterproof resin, or other types of substantially liquid impermeable materials. In alternative embodiments, container 10 may be fabricated from a material having some liquid permeability, such as a fibrous or cellulosic-containing material having a substantially liquid impermeable coating or layer, or being impregnated with a liquid impermeable composition providing a liquid impermeable barrier. The permeability properties of the material forming container 10 are preferably such that the container side wall(s) 12 and bottom wall 14 are capable

of retaining an aqueous solution without leakage through the side wall(s) and bottom wall for the time required for a cleaning cycle, which is generally from about 5 sec to about 60 sec. In some embodiments, bottom wall 14 is fabricated from a material that is yieldably pierce-able to allow piercing by an outlet probe during a cleaning cycle, thereby releasing cleaning solution through an outlet probe or a port provided by an outlet probe in the bottom wall of the container.

In some embodiments, container 10 is fabricated from a recyclable material, such as a recyclable metallic or plastic or polymeric or cellulosic-containing material. In some embodiments, container 10 is fabricated from a biodegradable and/or compostable material, such as a fibrous or polymeric or cellulosic-containing material. In some embodiments, container 10 is provided as a single-use, disposable product; in other embodiments, container 10 is provided as a reusable product.

One or more perforations or holes or passages may be provided container 10, allowing liquids introduced to the internal volume of container 10 to escape from container 10. In the embodiments illustrated in Figs. 1A and 1B, perforations 18 are provided in sidewall(s) 12 of container 10. In some embodiments, perforations 18 may have the same or similar dimensions and may be evenly spaced around a circumference of sidewall(s) 12, as shown in Fig. 1B. In other embodiments, perforations in sidewall(s) 12 may have different dimensions and may be unevenly distributed around a circumference of sidewall(s) 12. In some embodiments, perforations 18 are located above a midline between bottom wall 14 and upper rim 16, as shown in Figs. 1A and 1B. In other embodiments, perforations 18 may additionally or alternatively be provided below a midline between bottom wall 14 and upper rim 16, as shown in Fig. 1C. One or more perforation(s) may additionally or alternatively be provided in bottom wall 14 of container 10 to provide a desired distribution and volume of liquid from the internal volume of the container for a desired period of time.

Perforations 18 are shown as being generally round holes, but it will be appreciated that perforations, holes and passages having a variety of configurations, such as round holes of different sizes, slots of different sizes, porous areas of different sizes and configurations, and the like may be provided, and that various combinations of perforation configurations may be provided to ensure a desired distribution and volume of liquid from the internal volume of the container for a desired period of time. The size, number, spacing, etc. of perforations provided in any particular container 10 allows a desired volume of cleaning solution to be released from the container over the desired time period and will vary depending on the configuration of the carrier, the type of beverage making machine, the volume of water being used in a cleaning cycle, and the length of a cleaning cycle.

In some embodiments, container 10 has a portioned amount of a cleaning composition 20 provided in an internal volume of the container. Fig. 1C illustrates cleaning composition 20, located in proximity to the internal surface of bottom wall 14 of container 10. Fig. 1D illustrates

cleaning composition 20, located in proximity to an internal divider or barrier 22 located above bottom wall 14. Fig. 1E illustrates cleaning composition 20 retained in a conical or pouch-like barrier 24 extending downwardly from an upper area of container 10. Internal structures such as barriers 22 and 24 may be porous or non-porous, and may be fabricated from a liquid impermeable material or a material, such as a paper or fibrous material, that permits at least some degree of liquid penetration. Fig. 1F illustrates an alternative embodiment in which cleaning tablet 26 is provided within the internal volume of container 10. Cleaning tablet 26 may be provided in a solid, gel capsule or other solid or semi-solid format that is readily dissolvable upon introduction of water.

It will be appreciated that cleaning composition 20 may be loaded and positioned at various locations within container 10. In some embodiments in which container 10 is provided as a reusable container, container 10 may be provided without cleaning composition pre-loaded. In these embodiments, a user may load a desired cleaning composition in container 10, run a cleaning cycle, and re-fill container 10 with cleaning composition to operate additional cleaning cycles. Markings or other indicia may be provided on container 10 indicating an appropriate fill level for cleaning composition.

Cleaning composition 20, in general, may be provided in a powder, granular, or another solid form, or in a semi-solid, gel or liquid form. Preferred cleaning compositions are generally safe for use in systems producing beverages for human consumption. Various types of cleaning agents may be employed, as will be appreciated. Cleaning agents provided in a powder, granular or another solid form are preferably rapidly dissolvable in water to provide a cleaning solution that can escape from the internal volume of container 10 through one or more perforations at a desired cleaning composition concentration during a cleaning cycle of the beverage making system. Cleaning agents provided in a semi-solid, gel or liquid form may be provided in a concentrated format and, upon introduction of water during a cleaning cycle, are preferably rapidly diluted to provide a cleaning solution that escapes from the internal volume of container 10 through one or more perforations at a desired cleaning composition concentration. Cleaning compositions used in connection with the methods and containers disclosed herein are preferably non-toxic and environmentally harmless or benign.

In one embodiment, cleaning composition 20 comprises an oxidizing agent such as sodium percarbonate which, when dissolved in water, yields a mixture of hydrogen peroxide and sodium carbonate and provides cleaning, bleaching, stain removal and/or deodorizing properties. Hydrogen peroxide decomposes to form water, oxygen and soda ash, which are environmentally benign. Additional soda ash may be used in combination with sodium percarbonate to provide additional stain and oil removal capabilities, and to provide desired pH properties (generally neutral) of the cleaning composition. Additional and/or alternative cleaning compositions may comprise sodium perborate, sodium tripolyphosphate, sodium metasilicate, trisodium phosphate,

soda ash, and the like. Dyes, such as blue dye may be added. It will be appreciated that additional or different cleaning compositions may be provided, and that stabilizers, preservative agents, dessicants, fragrances, modified atmosphere, or the like may additionally be used in combination with or in conjunction with cleaning compositions as described herein.

In some embodiments, the portioned amount of cleaning composition 20 provided in container 10 is sufficient, with the introduction of water during a cleaning cycle, to substantially fill the internal volume of container 10 with cleaning solution having the desired concentration and cleaning properties. In some embodiments, the portioned amount of cleaning composition 20 provided in container 10 is sufficient, with introduction of a predetermined volume of water during a cleaning cycle, to provide a volume of cleaning solution having the desired concentration and cleaning properties that is less than the predetermined volume of water introduced during the cleaning cycle. In this embodiment, water introduced to the container during a cleaning cycle provides a desired volume of cleaning solution that is released during initial stages of a cleaning cycle and, during latter stages of the cleaning cycle, the cleaning composition is spent and water flows through the container substantially unchanged, providing a rinse.

In some embodiments, the amount of cleaning composition 20 provided in container 10 is sufficient, with the introduction of water during a cleaning cycle, to produce a volume of cleaning solution corresponding to at least 50%, or at least 60%, or at least 75%, or at least 80% of the volume of water used in a cleaning cycle. In some embodiments, the amount of cleaning composition 20 provided in container 10 is sufficient, with the introduction of water during a cleaning cycle, to produce a volume of cleaning solution corresponding to less than 100%, or less than 90%, or less than 75%, or less than 50% of the volume of water used in a cleaning cycle. In some embodiments, the amount of cleaning composition 20 provided in container 10 is sufficient, with the introduction of water during a cleaning cycle, to provide at least about 30 ml, or at least about 60 ml, or at least about 90 ml, or at least about 120 ml, or at least about 150 ml, or at least about 180 ml, or at least about 200 ml of cleaning solution having the desired concentration and cleaning properties. In some embodiments, the amount of cleaning composition 20 provided in container 10, upon introduction of water during a cleaning cycle, provides less than about 300 ml, or less than about 200 ml, or less than about 100 ml of cleaning solution having the desired concentration and cleaning properties.

In one embodiment, an insert 30 may be provided and mounted or otherwise held within container 10 to provide an internal volume for retaining a cleaning composition 20. Insert 30, as shown in Figs. 2A-2C, has sidewall(s) 32 and a bottom wall 34 having a substantially similar configuration to those of container 10, but having smaller dimensions to fit within container 10. In some embodiments, an upper rim 36 of insert 30 may be sized and configured to rest on an upper rim 16 of container 10, or on a mating rim provided in container 10 at another location

below an upper rim. An amount of cleaning composition 20 may be provided in insert 30, as illustrated in Fig. 2C.

Insert 30 may be fabricated from a substantially liquid impermeable material such as a plastic material, a polymeric material, a metallic material, or a fibrous or particulate material bound with a waterproof resin. In alternative embodiments, insert 30 may be fabricated from a material having some liquid permeability, such as a fibrous or cellulosic-containing material having a substantially liquid impermeable coating or layer, or impregnated with a liquid impermeable composition providing a liquid impermeable barrier. In some embodiments, insert 30 is fabricated from a recyclable material, while in other embodiments insert 30 is fabricated from a biodegradable material, such as a fibrous or cellulosic-containing material. Insert 30 may provide a substantially solid, liquid impermeable internal volume for retaining cleaning composition 20, or it may be perforated or fabricated from a porous or mesh-like material to provide liquid permeability to a desired degree.

Figs. 3A and 3B illustrate exploded views of a container device as disclosed herein comprising container 10, insert 30 providing an amount of cleaning composition 20 in its internal volume and a cover 40. A cover may likewise be used to cover cleaning composition 20 in container 10 when an insert is not used (e.g., as shown in Figs. 1C-1F). Cover 40 generally provides a protective covering 40 to prevent loss of cleaning composition from the internal volume during shipping, storage and the like, and may be attached or sealed to an upper rim of container 10 and/or insert 30, or to an outer or inner surface of container 10 or insert 30.

Cover 40 may be fabricated from a material that prevents escape of cleaning composition from container 10. Cover 40 may additionally be fabricated from a substantially liquid and/or gas impermeable material, thus preventing ingress, or egress, of liquids, gases, and moisture to or from the internal volume of container 10. In some embodiments, cover 40 may be fabricated from a yieldably pierce-able material, such as a plastic or foil or coated or impregnated cellulosic or fibrous material, to allow piercing of the cover by probe during a cleaning cycle. In alternative embodiments, cover 40 may be fabricated from a screen-like or porous material that admits liquid to the internal volume of the container without requiring piercing the cover. In yet other embodiments, cover 40 may be incorporate or embody one or more holes or other entry accesses for introduction of liquids and passage of liquid to the internal volume.

Fig. 4A schematically illustrates a container 10, insert 30 containing cleaning composition 20 and cover 40 (exploded view) for insertion into a container carrier 50. Container carrier 50 may be separate from and insertable into a beverage making system, or container carrier 50 may form a part of a beverage making system, such as a single serve beverage brewing system.

In operation, a container having a portioned amount of a cleaning composition is inserted into a carrier of a beverage making system and a beverage making or specialized cleaning cycle

in which water is introduced to the container, generally under pressure. In some systems, the container cover is pierced and water is introduced through the pierced cover. As water accumulates in container 10, the cleaning composition is dissolved or diluted to provide a cleaning composition having desired properties. When the volume and/or pressure of the cleaning composition is sufficient, liquid cleaning composition is released through perforations in container 10 in the form of streams or jets 45, as shown schematically in Fig. 4B. Because the sidewall(s) of container 30 are positioned in proximity to the interior walls of carrier 50, liquid cleaning composition (generally under some pressure) contacts the sidewalls of the carrier, preferably around the circumference of the carrier, and travels along the sidewall(s) to one or more exit ports at a bottom of the carrier, where it exits the beverage making machine and may be collected in a cup or another vessel and discarded. In some embodiments, the portioned amount of cleaning composition is sufficient to provide a cleaning composition corresponding to less than 100% of the volume of water used during a cleaning cycle, thereby providing distribution of cleaning composition followed by distribution of water during a cleaning cycle, allowing rinsing of the carrier following a cleaning procedure.

Methods as disclosed herein are provided for cleaning residue from a beverage making machine or another system having a cartridge, capsule, insert or pod holder. In various embodiments, the methods involve providing a container having an exterior configuration that fits within the cartridge (or capsule, insert or pod) holder and having a cleaning composition contained within the internal volume of the container. Suitable exterior container configurations, internal container configurations and cleaning compositions are described above. A sealed and pierce-able cover is typically provided. In operation, a container having a cleaning composition contained within an internal volume is placed in a machine cartridge holder or recess and the machine is activated to perform a beverage-making or cleaning cycle, introducing water into the container.

Water is typically introduced into the container when a container cover is pierced and, upon or following introduction of water, cleaning solution is released from the container (e.g., under pressure, through one or more side wall perforations) and contacts the interior surface of the cartridge holder or recess. The cleaning solution typically drains from the cartridge holder or recess sidewall(s) and exits the cartridge holder through one or more exit ports, thereby cleaning both the cartridge holder sidewall(s) and exit ports. Cleaning solution may be collected in a receptacle placed beneath the exit ports and disposed of. In some embodiments, as described above, a volume of cleaning composition is provided that mixes with water to provide cleaning solution during an initial portion of the cleaning cycle, while unadulterated water is distributed through the container during a later portion of the cycle to rinse the cartridge holder sidewall(s) and exit ports following passage of cleaning solution.

In the description provided above, the term “about” means +/- 20% of the indicated value or range unless otherwise indicated. The terms “a” and “an,” as used herein, refer to one or more of the enumerated components or items. The use of alternative language (e.g., “or”) will be understood to mean either one, both or any combination of the alternatives, unless otherwise expressly indicated. The terms “include” and “comprise” are used interchangeably and both of those terms, and variants thereof, are intended to be construed as being non-limiting.

It will be appreciated that the methods and systems of the present invention may be embodied in a variety of different forms, and that the specific embodiments shown in the figures and described herein are presented with the understanding that the present disclosure is considered exemplary of the principles of the invention, and is not intended to limit any claimed subject matter to the illustrations and description provided herein. The various embodiments described may be combined to provide further embodiments. The described devices, systems, methods and compositions may omit some elements or steps, add other elements or steps, or combine the elements or execute steps in a different order than that specifically described.

We claim:

1. A container having an external size and configuration designed to fit within a carrier for retaining a cartridge for making a beverage in a beverage making machine and having an internal volume containing a pre-determined amount of a cleaning composition.
2. The container of claim 1, wherein the container additionally comprises a cover enclosing the internal volume.
3. The container of claim 2, wherein the cover is fabricated from a yieldably pierce-able material.
4. The container of claim 1, wherein the container has one or more perforations in a side wall or a bottom wall.
5. The container of claim 1, wherein the cleaning composition is provided in a solid, semi-solid, gel or liquid form.
6. The container of claim 1, wherein the cleaning composition comprises an oxidizing agent.
7. The container of claim 1, wherein the cleaning composition comprises sodium percarbonate.
8. The container of claim 1, wherein the cleaning composition is environmentally benign.
9. The container of claim 1, wherein the pre-determined amount of the cleaning composition is sufficient to provide a volume of cleaning solution having a desired concentration that is less than a volume of water introduced during a cleaning cycle.
10. The container of claim 1, additionally comprising an insert for retaining the cleaning composition within the internal volume.
11. The container of claim 1, additionally comprising an internal structure for supporting the cleaning composition within the internal volume.

12. A method for cleaning a beverage making system, comprising: inserting a container having an internal volume containing a pre-determined amount of a cleaning composition in a carrier of a beverage making system; causing water to be introduced to internal volume of the container to form a cleaning solution; and releasing the cleaning solution from the internal volume of the container, thereby causing cleaning solution to contact surfaces of the beverage making system carrier.

13. The method of claim 12, wherein water is introduced to the internal volume of the container by initiation of a beverage making or cleaning cycle.

14. The method of claim 12, wherein water is introduced to the internal volume of the container under pressure.

15. The method of claim 12, wherein the container additionally comprises a cover sealing the internal volume and additionally comprising causing the container cover to be pierced prior to causing water to be introduced to the internal volume of the container.

16. The method of claim 12, wherein the container has perforations and cleaning composition is released from the container through the perforations.

17. The method of claim 12, wherein the pre-determined amount of the cleaning composition in the container is sufficient to provide a cleaning composition corresponding to less than 100% of the volume of water used during a cleaning cycle.

18. A method for cleaning a carrier of a beverage making system, comprising: inserting a container having an internal volume containing a pre-determined amount of a cleaning composition in the carrier of a beverage making system, and initiating a beverage-making or cleaning cycle that causes water to be introduced to the container.

FIG. 1A

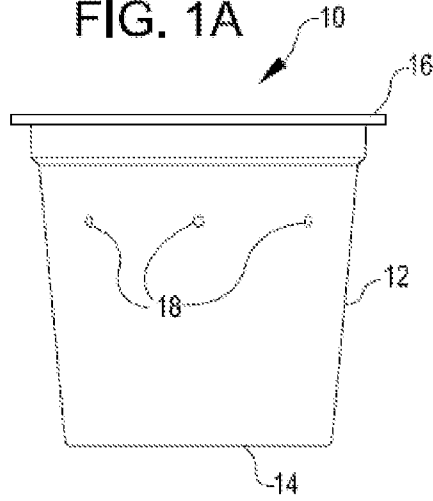


FIG. 1B

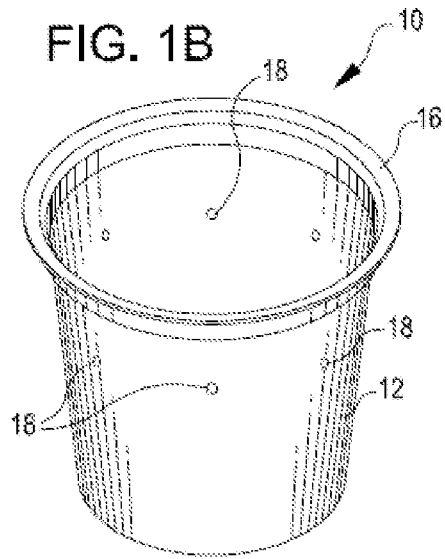


FIG. 1C

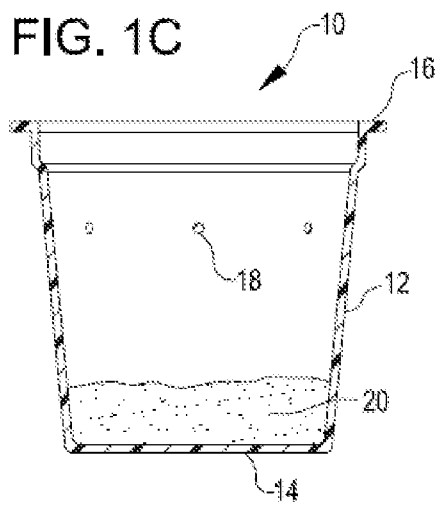


FIG. 1D

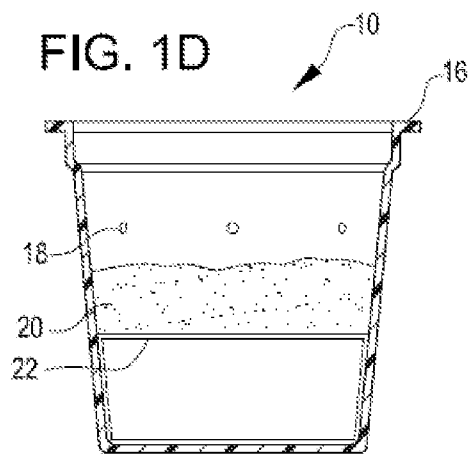


FIG. 1E

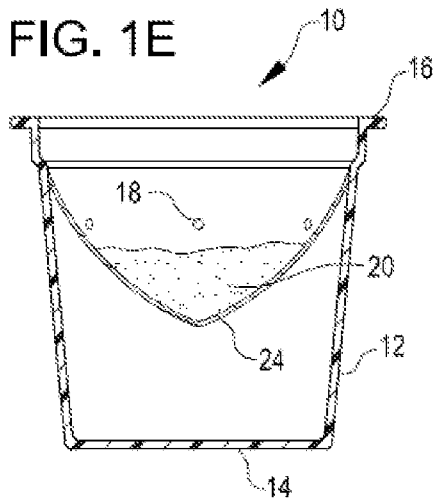


FIG. 1F

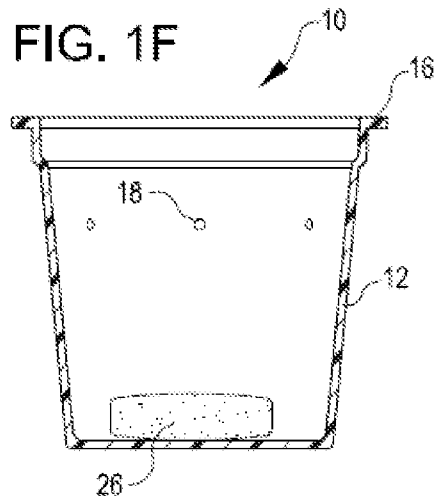


FIG. 2A

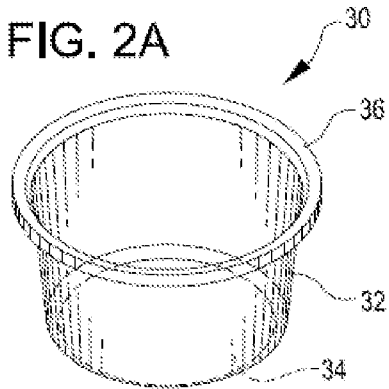


FIG. 2B

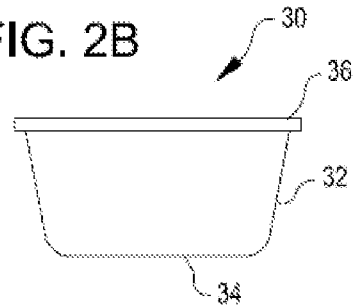


FIG. 2C

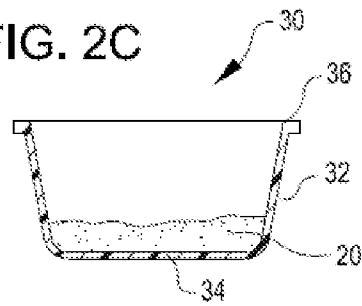


FIG. 3B

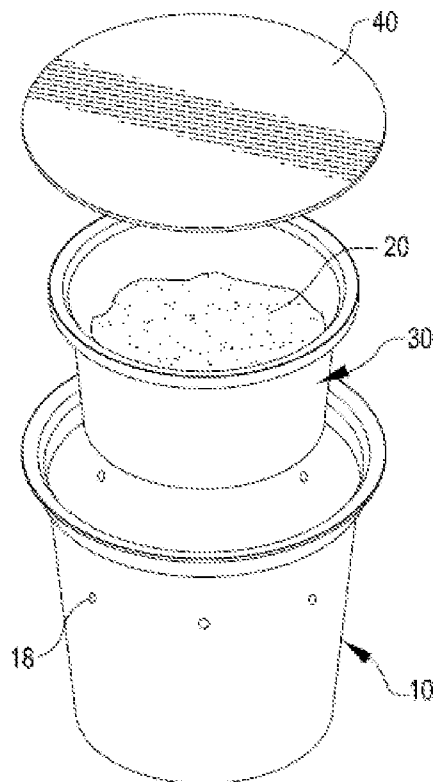


FIG. 3A

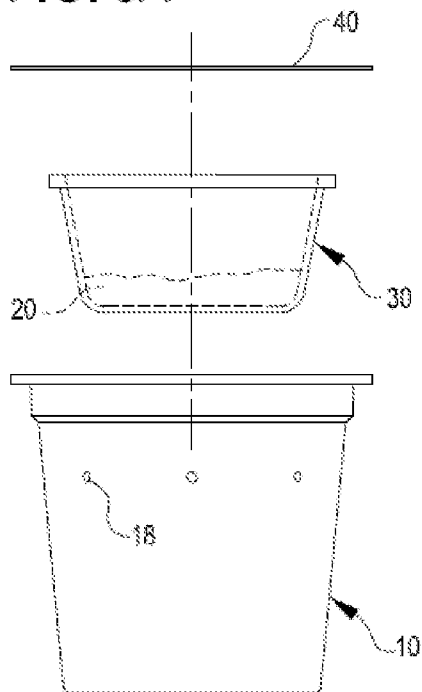


FIG. 4A

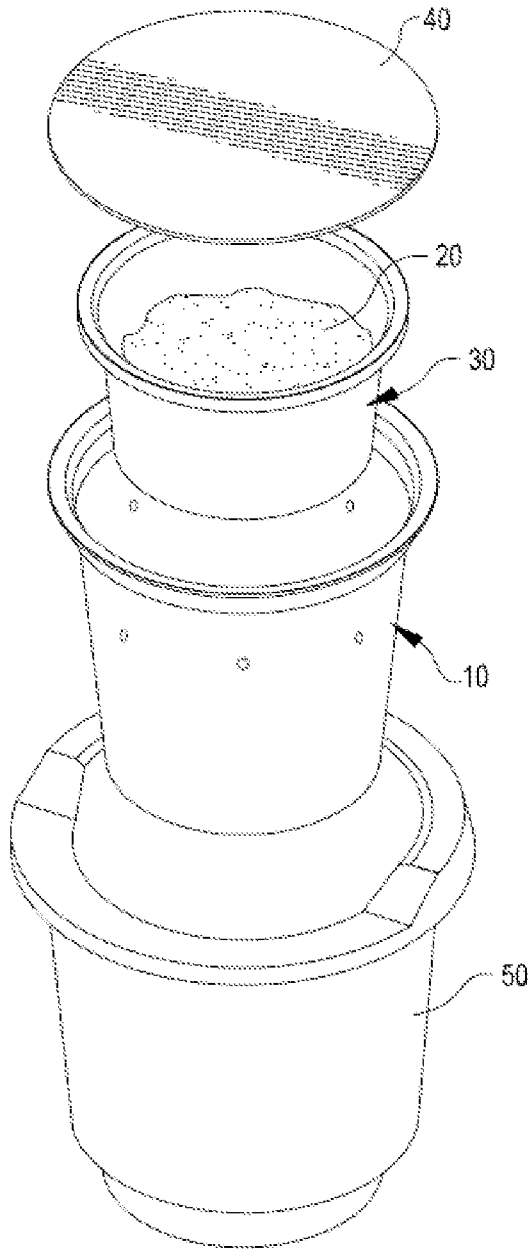


FIG. 4B

