

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 August 2008 (28.08.2008)

PCT

(10) International Publication Number
WO 2008/103183 A2

(51) International Patent Classification:
B01D 29/37 (2006.01) **B01D 39/14** (2006.01)

(74) Agent: **GRAHAM, Lawrence**; Black Lowe & Graham,
Pllc, 701 Fifth Avenue, Suite 4800, Seattle, WA 98104
(US).

(21) International Application Number:
PCT/US2007/068788

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(22) International Filing Date: 11 May 2007 (11.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
29/277,285 20 February 2007 (20.02.2007) US
29/277,401 23 February 2007 (23.02.2007) US
29/277,399 23 February 2007 (23.02.2007) US
11/690,045 22 March 2007 (22.03.2007) US

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **PROGRESSIVE INTERNATIONAL CORPORATION**
[US/US]; 6111 South 228th Street, Kent, WA 98032 (US).

(72) Inventor; and

(75) Inventor/Applicant (*for US only*): **CURTIN, Heather**
[US/US]; 10415 Se 174th Street No. 5366, Renton, WA 98055 (US).

Published:

— *without international search report and to be republished upon receipt of that report*

(54) Title: COLLAPSIBLE COLANDER & BOWL

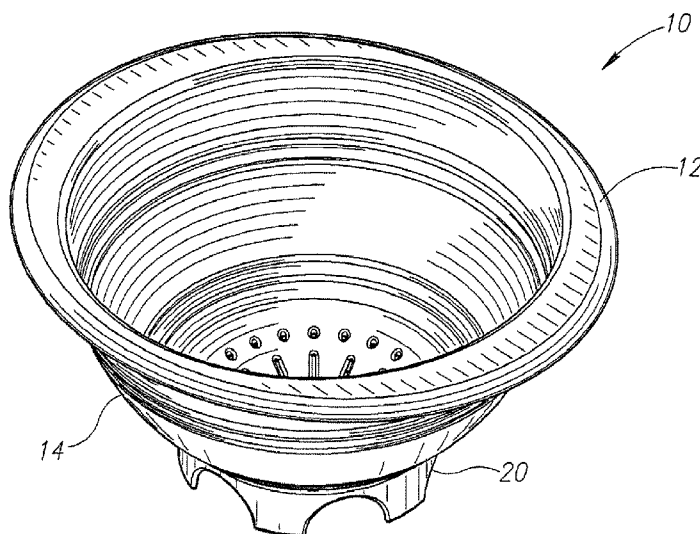


FIG.3

(57) Abstract: A collapsible container consists of three parts: a rigid top rim, a flexible center band, and a rigid base. This combination of sections allows the container to easily collapse to about one-third of its original height. The container is also quite stable when expanded and is self-supporting. In various embodiments of the invention, for example, the upper rim may be expandable, the base may include holes or mesh to serve as a colander or strainer, or the base may be configured as a tube to function as a funnel.



WO 2008/103183 A2

COLLAPSIBLE COLANDER & BOWL

INVENTOR
Heather Curtin

PRIORITY CLAIM

[0001] This application claims the benefit of prior U.S. Design Application Serial No. 29/277,285, filed February 20, 2007 under Attorney Docket No. PROG-1-1221, U.S. Design Application Serial No. 29/277,401, filed on February 23, 2007 under Attorney Docket No. PROG-1-1228, and U.S. Design Application Serial No. 29/277,399, filed February 23, 2007 under Attorney Docket No. PROG-1-1249.

FIELD OF THE INVENTION

[0002] This invention relates generally to collapsible bowls, colanders, measuring cups, and strainers.

BACKGROUND OF THE INVENTION

[0003] Large kitchen items such as bowls and colanders can be difficult to store. They can take up to an inordinate amount of space in a kitchen cabinet or drawer, making it cumbersome to retrieve the item and replace it when finished.

[0004] In some instances, others have created collapsible containers to reduce the storage space required. But existing collapsible containers have several drawbacks. Some collapsible containers are made of a single material, generally a type of plastic, with multiple pleats. The design makes them very hard to expand and collapse because the material is relatively stiff and a substantial force is required. In some instances, collapsible strainers have been formed entirely from a flexible material. This design allows the item to be readily flattened, but because the material is so flexible it is not self-supporting and will just collapse when placed on a surface. Accordingly, there is a need for an improved collapsible container and strainer that can be easily collapsed and expanded and that is fully self-supporting on a surface.

SUMMARY OF THE INVENTION

[0005] The preferred collapsible container as discussed below consists of three parts: a rigid top rim, a flexible center band, and a rigid base. This combination of sections allows the container to easily collapse to about one-third of its original height. The container is also quite stable when expanded and is self-supporting. The top rim of the container can incorporate different types of handle shapes. The base can also have different kinds of shapes, such as cut away section for draining or non-skid feet.

[0006] In some examples of the invention, the container is a colander. In that form, the container base preferably includes holes to facilitate draining, but the center band and rim do not have holes.

[0007] In yet other examples, the container is a funnel, a strainer, or other item that generally includes a rigid rim and collapsible center section.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Preferred and alternative embodiments of the present invention are described in detail below with reference to the following drawings:

[0009] FIGURE 1 is a side view of a preferred colander;

[0010] FIGURE 2 is a top view of a preferred colander;

[0011] FIGURE 3 is a perspective view of a preferred colander in an expanded position;

[0012] FIGURE 4 is a perspective view of a preferred colander in a collapsed position;

[0013] FIGURE 5 is a side view of an alternate preferred colander;

[0014] FIGURE 6 is a perspective view of an alternate preferred colander;

[0015] FIGURE 7 is a side view of an over-the-sink collapsible colander;

[0016] FIGURE 8 is a perspective view of an over-the-sink collapsible colander;

[0017] FIGURE 9 is a perspective view of an over-the-sink collapsible colander, shown with a rim in a retracted position;

[0018] FIGURE 10 is a perspective view of a preferred colander with handle;

[0019] FIGURE 11 is a perspective view of a preferred collapsible bowl in a collapsed position;

[0020] FIGURE 12 is a side view of a preferred collapsible bowl in an expanded position;

[0021] FIGURE 13 is a top view of a preferred collapsible strainer;

[0022] FIGURE 14 is a side view of a preferred collapsible strainer;

[0023] FIGURE 15 is a perspective view of a preferred collapsible funnel;

[0024] FIGURE 16 is a side view of a preferred collapsible funnel; and

[0025] FIGURE 17 is a cross-sectional view of a collapsible container, taken along the lines A-A from FIGURE 9.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0026] Figures 1-4 depict an example of a collapsible container which, in the form as shown, is a colander 10. Figure 1 shows a side view of the colander 10, in which the colander 10 includes a substantially rigid rim 12 and a substantially rigid base 20, and a flexible center section extending between the base and the rim. The center section is a flexible membrane 14 attached to the base and the rim such that together the base, rim, and center membrane form the container. Preferably, the center section is formed from a single material extending between the rim and the base, and most preferably, the material is a food-grade material so that the container can be used with food items.

[0027] As shown, the membrane 14 includes a first relatively uniform section 21, a first folding section 22, a second relatively uniform section 23, and a second folding

section 24. Each of the first and second relatively uniform sections is formed from flexible material having a substantially uniform thickness within the region of that section. The thickness and material is chosen to provide a sufficient degree of rigidity such that the container will not collapse under its own weight when extended into the position of Figure 1. In some examples of the invention, the height of the central section is approximately half the height of the membrane overall.

[0028] In the preferred embodiment, the membrane 14 is formed from silicone and the base 20 and rim 12 are each formed from plastic, with the membrane being over-molded onto the rim and the base. The membrane may alternatively be formed from other flexible materials such as thermoplastic elastomers, and may be glued or otherwise adhered to the base and rim. Likewise, the rim and base may alternatively be formed from other rigid or semi-rigid materials such as metals.

[0029] The base 20 includes a convex or rounded portion 27 that serves as the bottom of the container 10. The bottom of the base need not necessarily be rounded, but it facilitates drainage in the form of a colander and is a preferred shape in the form of a bowl. The base also includes a peripheral rim defined by a plurality of feet 29 that are each separated by cut-away arches 28. The bottoms of the feet 29 are preferably lower than the outermost and lowest portion of the rounded portion 27, such that the bottom of the rounded portion 27 of the container is above and will not touch the floor of a sink or other horizontal surface on which the container is placed. This arrangement of the height of the feet helps to facilitate more rapid drainage of liquids from the colander. In other examples of the

invention, the base has no feet, and may alternatively terminate in an annular rim or a substantially flat bottom.

[0030] The base of the container includes a plurality of holes 30 to allow drainage when the container takes the form of a colander. As best seen in Figure 2, the size, shape, and arrangement of the holes may vary. In one example, the base may include a first plurality of generally circular holes 30a and a second plurality of generally oval holes 30b. As shown, the circular holes 30a are positioned toward the center of the base while the second plurality of oval holes is distributed radially outward from the center. Optionally, a third plurality of circular holes 30c is provided adjacent an upper rim of the base.

[0031] As shown in Figures 1-3, the container (in this case a colander) can be expanded so that it is ready to accept food or other items. The holes within the base allow the liquid to drain from the bottom of the container. When not in use, as shown in Figure 4, the container can be collapsed. In the collapsed position, the height of the container is much shorter than in the expanded position. In the most preferred example, the height of the container when collapsed is approximately one third of the height of the container when expanded. Each of the first and second folding sections 22, 24 has been folded in order to collapse the container. Thus, the membrane 14 has been folded upward along the first folding section 22 and downward along the second folding section 24. The first and second substantially uniform sections 21, 23 remain substantially uniform and not folded.



[0032] In alternate forms of the invention, the first uniform section 21 is substantially omitted, such that the membrane 14 is attached to the rim 12 at a location relatively close to the first folding section 22.

[0033] The first and second folding sections 22, 24 are created within the membrane 14 by forming one or more portions about the membrane that are more likely than the rest of the membrane to fold under force. In one example, each folding section includes several alternating convex and concave ridges about the entire perimeter of the membrane. Alternately, the folding sections may be regions of thinner material, may be scored, have surrounding thickened regions, or otherwise be fashioned to urge the membrane to fold in the vicinity of the folding region. In this fashion, each of the folding sections serves as a living hinge that is configured to be more willing to fold than the substantially uniform sections 21, 23.

[0034] In order to collapse the container, a force is applied at the rim 12, with the force generally being in the direction from the rim toward the base. To expand the container, a force is applied to urge the rim upward while holding the base generally stationary.

[0035] In an alternate example, as shown in Figures 5 and 6, the membrane 14 may also include holes for drainage. In this example, the container is the same as in Figures 1-4 except that a plurality of drainage holes 40 is provided. Although the holes in the membrane are possible, the inventor has found that the inclusion of such holes adds an unnecessary complexity to the construction of the device, and further that the colander drains equally well without adding holes to the membrane.

[0036] In yet another example, the collapsible container may be configured to enable the rim of the container to rest on the rim of a sink so that the colander is suspended over the sink. An example container of this type is shown in Figures 7-9. The container as shown includes a rim, central membrane, and base as described above with respect to Figures 1-4. The principal difference is that the rim is expandable to enable the container to be suspended over a sink 52. Thus, the rim includes a first side 54, a second side 55, and a pair of arms 56. The arms are slideably retained within sleeves defined by front and back portions of the rim 58, thereby allowing the width between the first side of the rim 54 and second side of the rim 55 to be adjusted to accommodate sinks of varying sizes.

[0037] As shown in Figure 8, with the arms 56 extended to a desired width the first side of the rim rests on a first side of the counter top 50a (or sink rim) and the second side of the rim of the container rests on a second side of the countertop 50b (or sink rim). The container is thereby suspended above the sink to allow a user to place a large quantity of items into the container. Because this example also includes a plurality of drainage holes in the base as described above, it can be used as a colander, with water from a faucet being used to rinse food items such as fruits and vegetables.

[0038] When finished using the over-the-sink version of the invention, the arms are retracted as shown in Figure 9. The container can also be collapsed as described above and illustrated in Figure 4. In alternate examples, the expandable arms may be telescoping, folding, or otherwise configured to extend from a retracted to an extended position.



[0039] Another example of the invention is shown in Figure 10. In this example, the container includes a handle 60 attached to the rim, in this case by forming the rim with an integral handle. While such a handle may be attached to any version of the invention, it is most useful for somewhat smaller container sizes in which the user can hold the container by the handle while draining items placed within the container. Other than the handle 60, the container as illustrated in Figure 10 is otherwise functionally similar to the container of Figures 1-4.

[0040] In some forms of the invention, the base does not include drainage holes. Such an example of the invention is shown in Figures 11 and 12. In this form, the container is a bowl rather than a colander, and therefore the base 20 does not include holes. Because it is not functioning as a colander, the base 20 also need not include arched portions, but rather can simply include a circular foundation configured to rest on a surface. The central membrane is configured to be collapsible as described above with respect to Figures 1-4, such that the bowl can be collapsed as shown in Figure 11 or expanded as shown in Figure 12.

[0041] Instead of relatively large drainage holes within the base, the base may include a metal or other mesh material so that the container is adapted for use as a strainer rather than a colander. An example of this form of the invention is shown in Figures 13 and 14, in which the container includes an upper rim 12, a handle 60, a central membrane 14, and a base 20. The base in this case includes a ring formed of substantially rigid plastic, with

mesh material 70 secured to the ring and filling the area within the ring. The mesh is preferably a metal wire mesh, but may alternatively be formed from other materials.

[0042] As best seen in Figure 14, the outer portion of the base 20 may optionally include a plurality of peripheral feet 29 and cut-away arches 28, in the manner as described with respect to Figure 1. The strainer is collapsible in the manner of the other containers described above, by including a flexible membrane with a living hinge.

[0043] An additional example of the invention is illustrated in Figures 15 and 16. In this example, the container is a funnel defined by an upper rim 12, a flexible central membrane 14, and a base 80. The base of the funnel is substantially tubular, in which the diameter of the tubular base is much smaller than that of the upper rim. The funnel is collapsible in the manner of the other containers described above, by including a flexible membrane with a living hinge.

[0044] Figure 17 is a cross-sectional view of a collapsible container, in this case the container depicted in Figure 9. Accordingly, the view of Figure 17 is taken along the line A-A from Figure 9. Each of the collapsible containers described above has a similar cross-sectional construction, however, and therefore this image is intended to also be generally representative of the other embodiments described above.

[0045] As shown, the collapsible container includes a flexible membrane 14 having a first folding section 22, a relatively uniform section 23, and a second folding section 24. Each of the first and second folding sections are living hinges in which the elastomeric material forming the membrane 14 is somewhat thinner than the surrounding material,

thereby making the material at the living hinge more susceptible to folding than the surrounding material. While the living hinge is formed by use of a thinner section of material in the preferred embodiment, it should be understood that the folding sections can be produced in other means in order to manufacture a location that is more likely to bend or fold than other areas.

[0046] The relatively uniform section 23 is illustrated as having a generally consistent thickness across its length between the first and second folding sections. Alternatively, this central section need not be uniform, but rather is preferably formed such that it generally resists folding more than the first and second folding sections.

[0047] Each of the collapsible containers is preferably dimensionally arranged as depicted in Figure 17. Thus, a first vertical length l_1 is defined as the distance between the top of the rim of the container and the first folding section 22. A second vertical length l_2 is defined as the distance between the first folding section and the second folding section. A third vertical length l_3 is defined as the distance between the lowest part of the base and the second folding section. Each of these lengths when expressed as a “vertical length” is measured as a vertical distance above a horizontal surface upon which the container is resting.

[0048] In the preferred form, each of the lengths l_1 , l_2 , and l_3 is approximately the same in magnitude, dividing the container into thirds. Consequently, when the container is collapsed the height of the container is approximately one-third of its original height. In other

forms of the invention, each of the three vertical heights is at least one-quarter of the overall height of the container when expanded.

[0049] In addition, the location of the second folding section 24 and the length of the central section 23 as defined by l_2 are such that at least a portion of the base 20 extends below the flexible membrane 14 when the container is in the collapsed position. This relationship ensures that the container is resting on the base even when collapsed, reducing the stress on the living hinge during storage.

[0050] While the preferred embodiment of the invention has been illustrated and described, as noted above, many changes can be made without departing from the spirit and scope of the invention. Accordingly, the scope of the invention is not limited by the disclosure of the preferred embodiment. Instead, the invention should be determined entirely by reference to the claims that follow.



The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A collapsible container, comprising:
 - a substantially rigid rim;
 - a substantially rigid base; and
 - a flexible membrane having an upper end secured to the rim and a lower end secured to the base, the flexible membrane having a central section of substantially uniform thickness, a first living hinge relatively adjacent the rim, and a second living hinge relatively adjacent the base.
2. The collapsible container of claim 1, wherein the base further comprises a plurality of bores configured to allow liquids to drain from the container through the base.
3. The collapsible container of claim 2, wherein the flexible membrane is devoid of holes.
4. The collapsible container of claim 1, wherein the flexible membrane is formed from a unitary material.
5. The collapsible container of claim 1, wherein the flexible membrane is formed from silicone.
6. The collapsible container of claim 1, wherein the flexible membrane comprises a height and the central section comprises a height, the height of the central section being at least one half of the height of the flexible membrane.

7. The collapsible container of claim 1, wherein the base defines a perimeter about the lower end of the flexible membrane, the base further having a central area within the perimeter and a mesh material secured within the central area.
8. The collapsible container of claim 7, further comprising a handle extending from the rim.
9. The collapsible container of claim 1, further comprising a handle extending from the rim.
10. The collapsible container of claim 1, wherein the base comprises a tube having a first end secured to the lower end of the flexible membrane and a second end extending away from the lower end of the flexible membrane, the tube having a diameter and the rim having a diameter, wherein the diameter of the tube is less than the diameter of the rim.
11. The collapsible container of claim 10, further comprising a handle extending from the rim.
12. The collapsible container of claim 1, wherein the rim comprises a first side and a second side, the second side being extendable.
13. The collapsible container of claim 12, wherein the second side of the rim is slideably extendable between a first position relatively more close to the first side of the rim and a second position relatively more distant from the first side of the rim.
14. The collapsible container of claim 13, wherein the base further comprises a plurality of bores configured to allow liquids to drain from the container through the base.
15. A collapsible container, comprising:

a substantially rigid rim;
a substantially rigid base; and
a flexible membrane having an upper end secured to the rim and a lower end secured to the base, the flexible membrane having a central section, a first folding section relatively adjacent the rim, and a second folding section relatively adjacent the base;
whereby the container is configurable in either a first position in which the container is expanded and a second position in which the container is collapsed, the container in the collapsed position being folded into three portions.

16. The collapsible container of claim 15, further comprising a first vertical length between the rim and the first folding section, a second vertical length between the first folding section and the second folding section, and a third vertical length between the second folding section and the base, wherein each of the first vertical length, second vertical length, and third vertical length is approximately equal.
17. The collapsible container of claim 15, wherein the container has a first height in the expanded position and a second height in the collapsed position, the second height being approximately one third of the first height.
18. The collapsible container of claim 17, wherein the base further comprises a plurality of bores configured to allow liquids to drain from the container through the base.
19. The collapsible container of claim 18, wherein the flexible membrane is devoid of holes.

20. The collapsible container of claim 15, wherein the central section has a lowest level in the collapsed position, and at least a portion of the base extends below the lowest level of the central section when the container is in the collapsed position.
21. The collapsible container of claim 15, further comprising a first vertical length between the rim and the first folding section, a second vertical length between the first folding section and the second folding section, and a third vertical length between the second folding section and the base, wherein each of the first vertical length, second vertical length, and third vertical length is greater than one quarter of a height of the container in the expanded position.



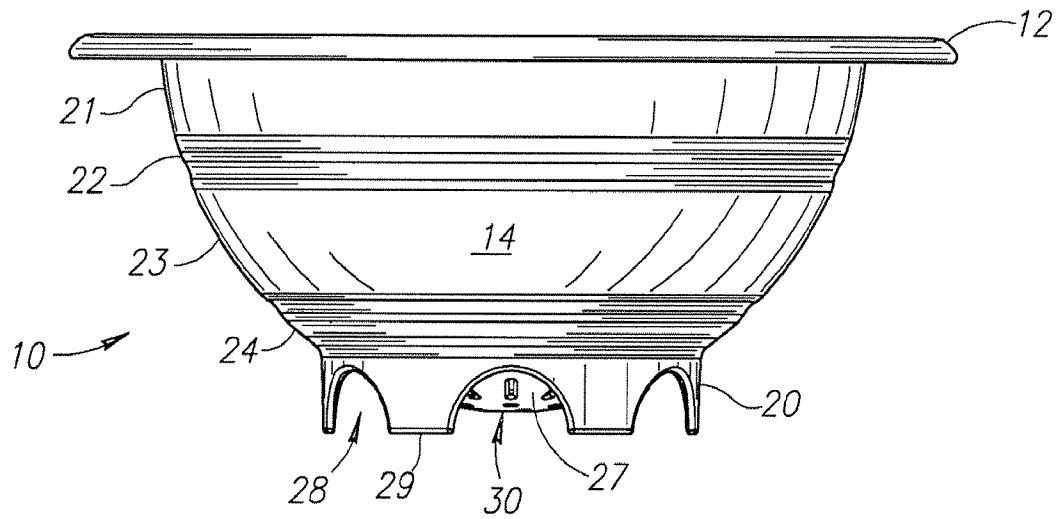


FIG.1

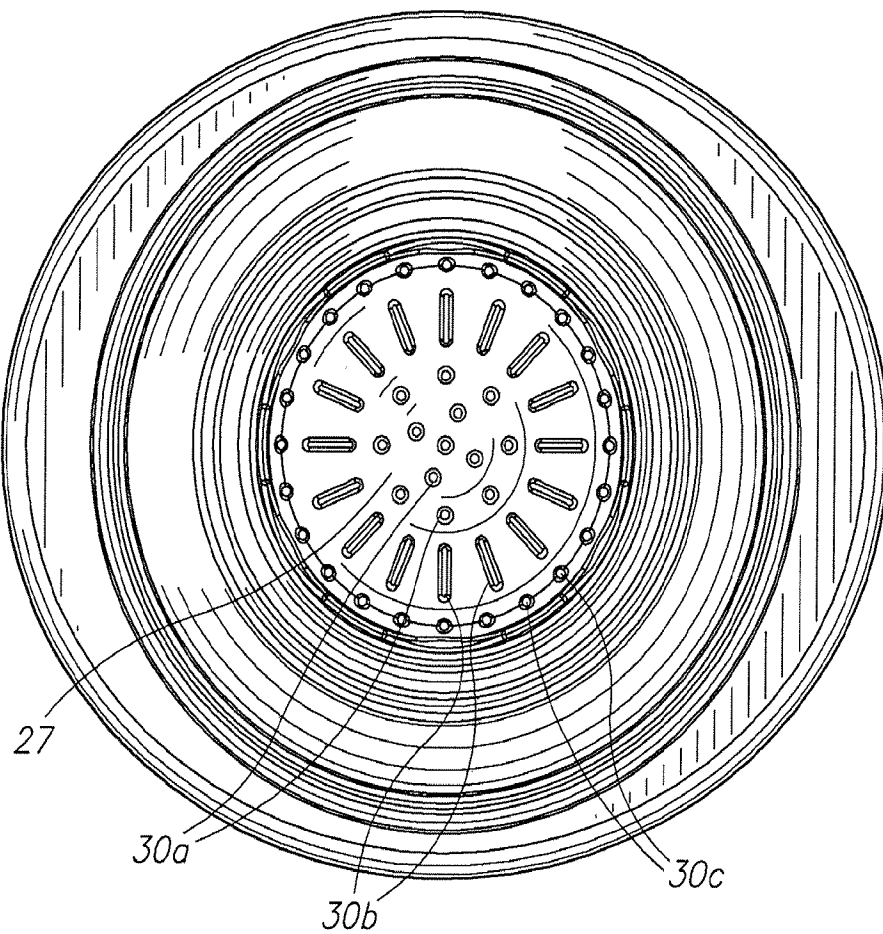


FIG.2

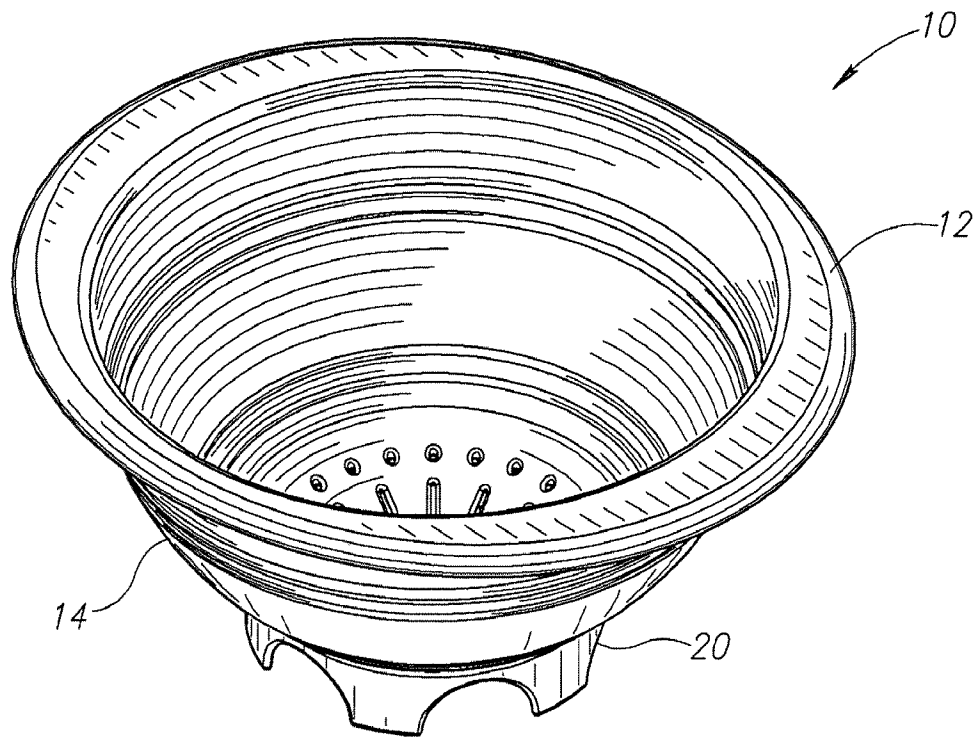


FIG. 3

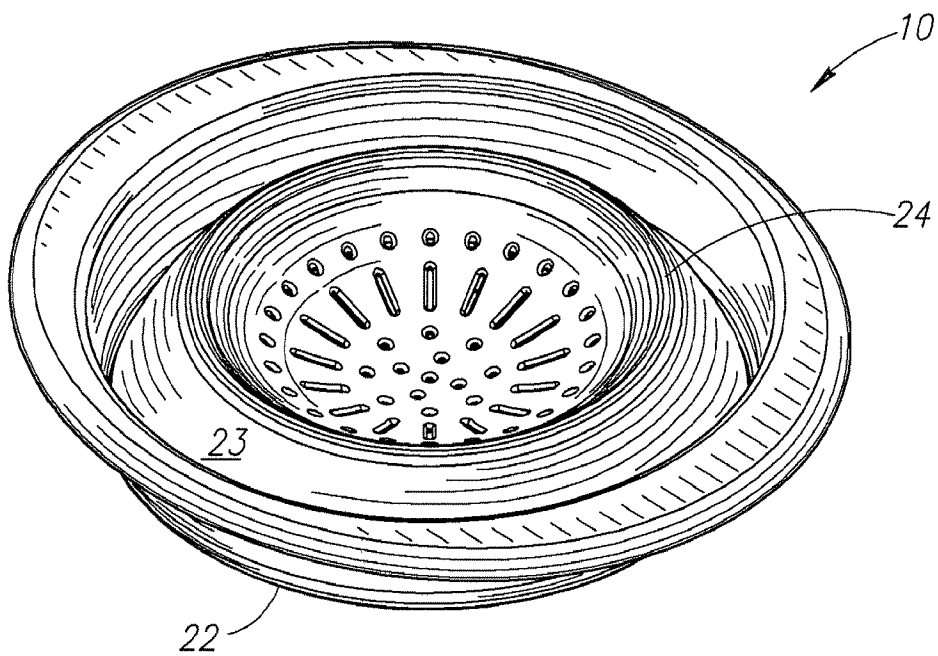


FIG. 4

3/9

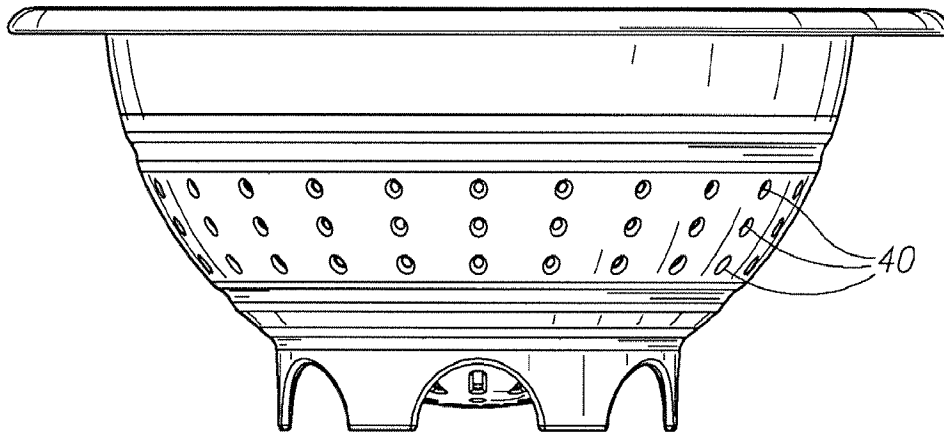


FIG. 5

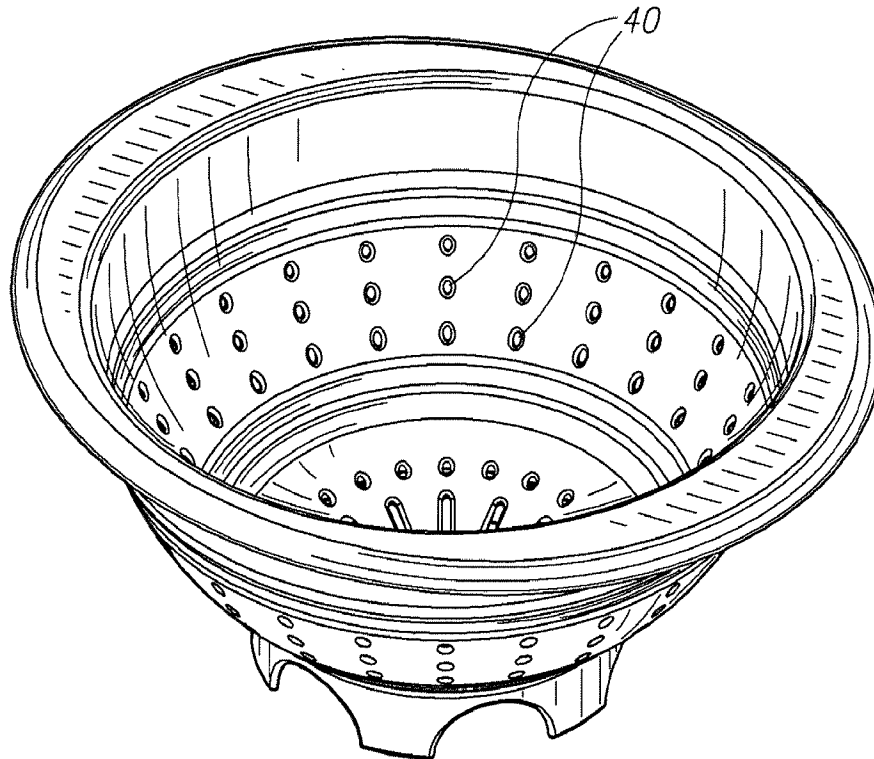


FIG. 6

4/9

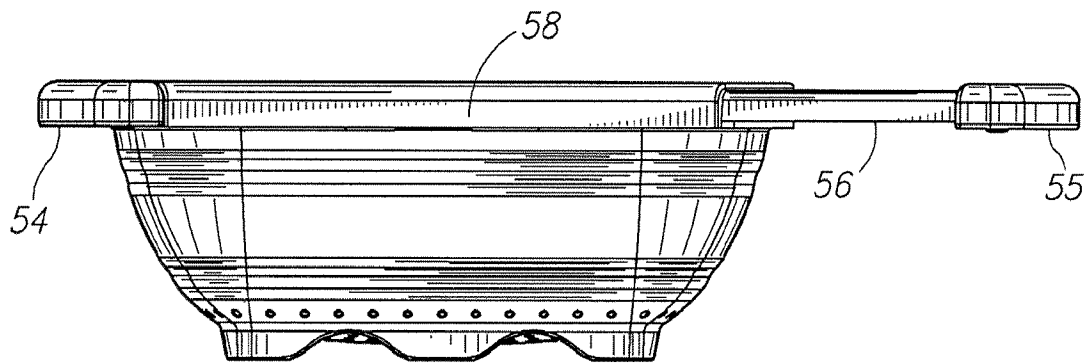


FIG. 7

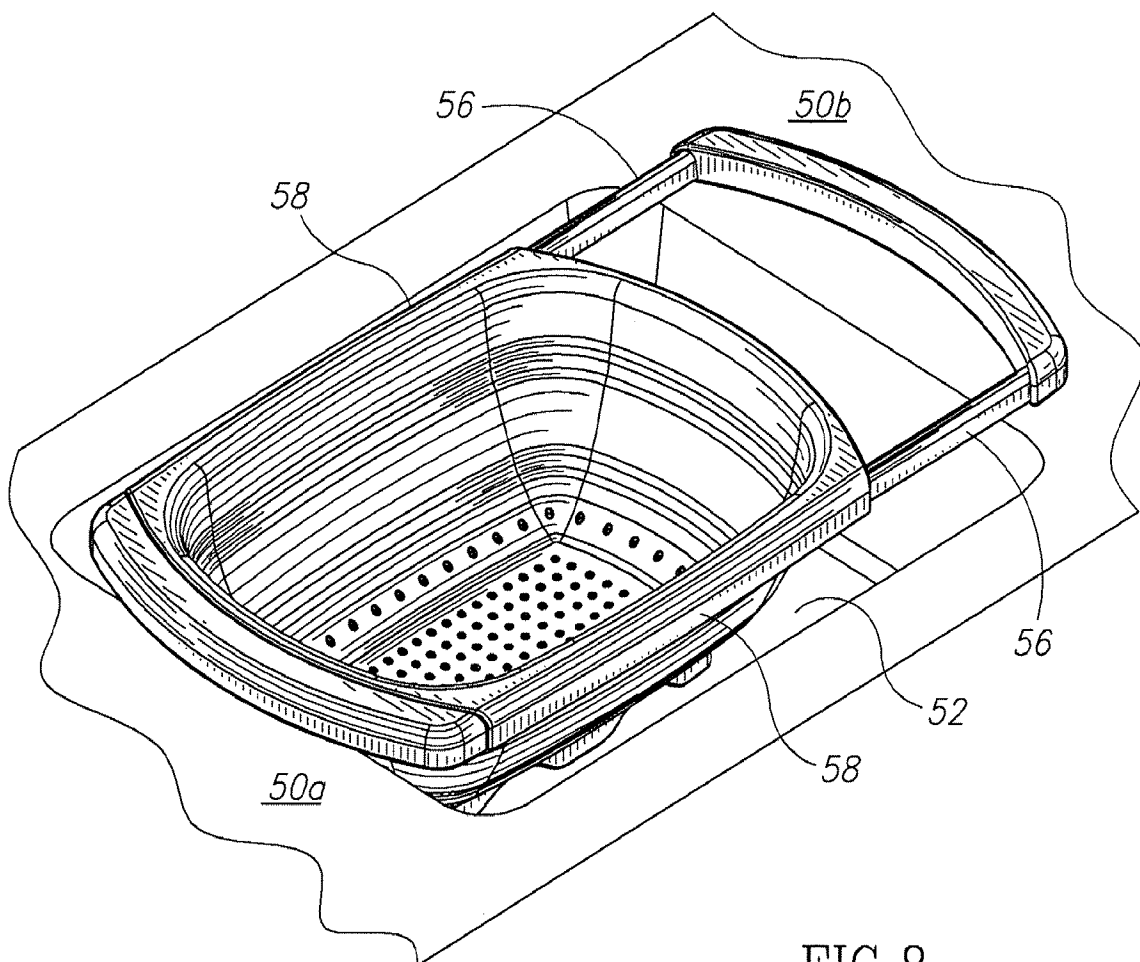


FIG. 8

5/9

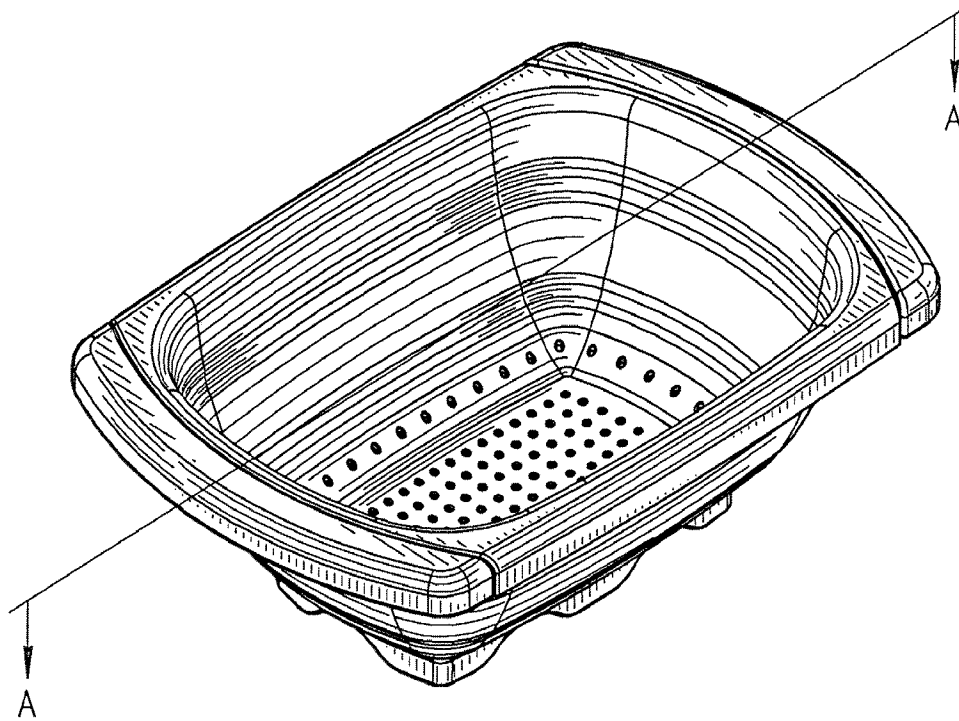


FIG. 9

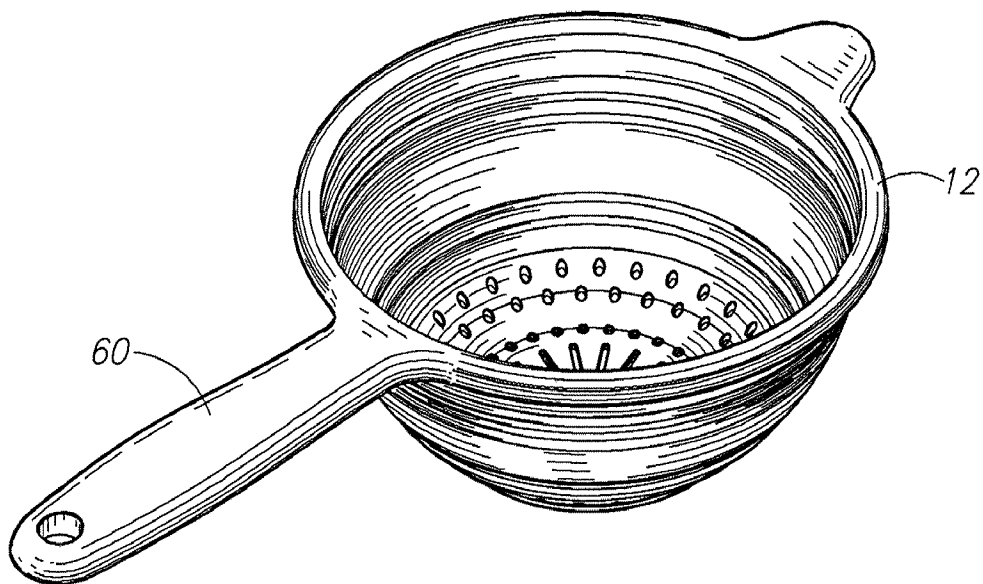


FIG. 10

6/9

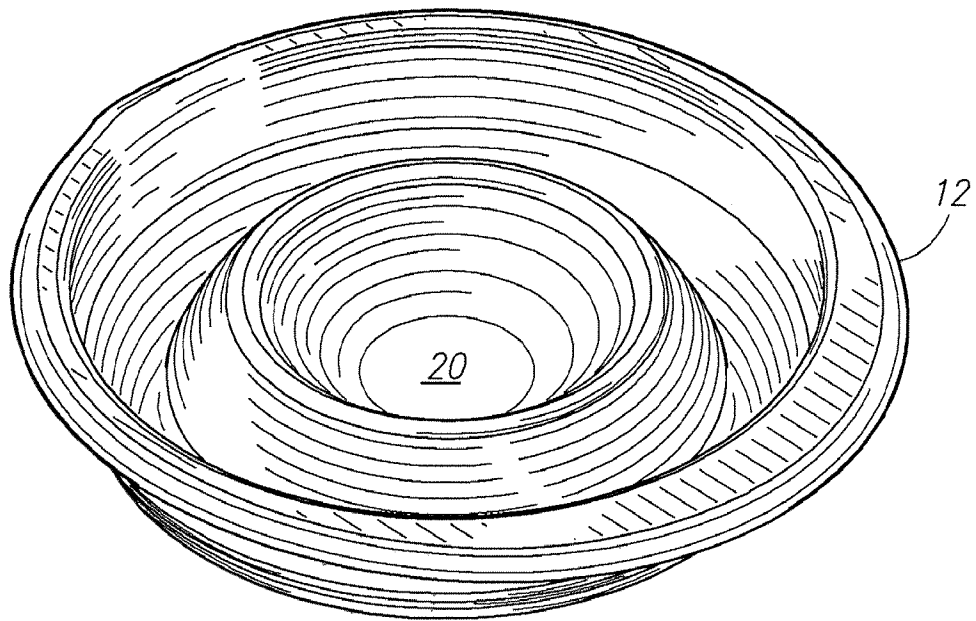


FIG.11

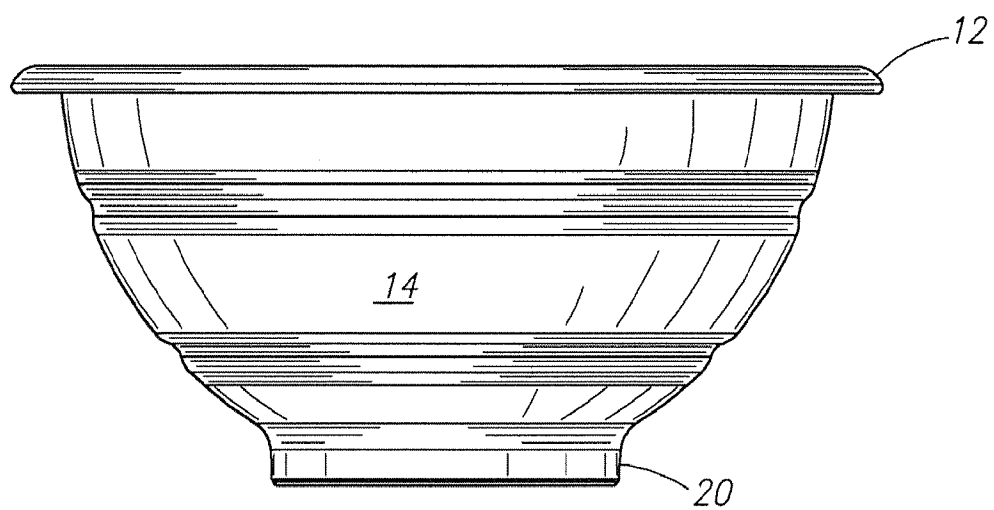


FIG.12

7/9

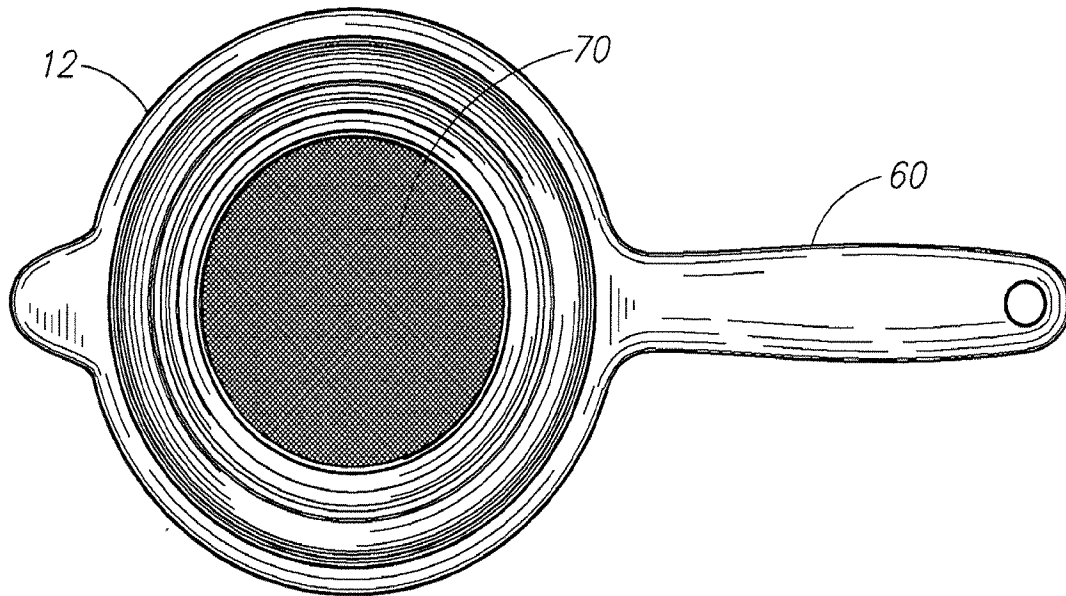


FIG. 13

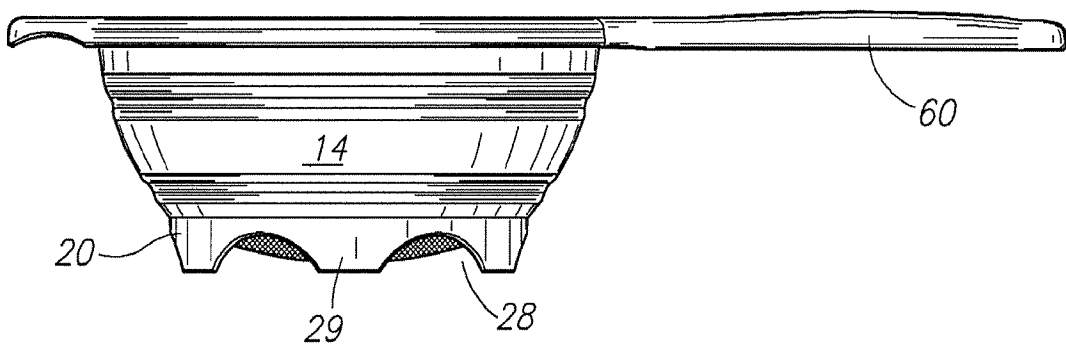


FIG. 14

8/9

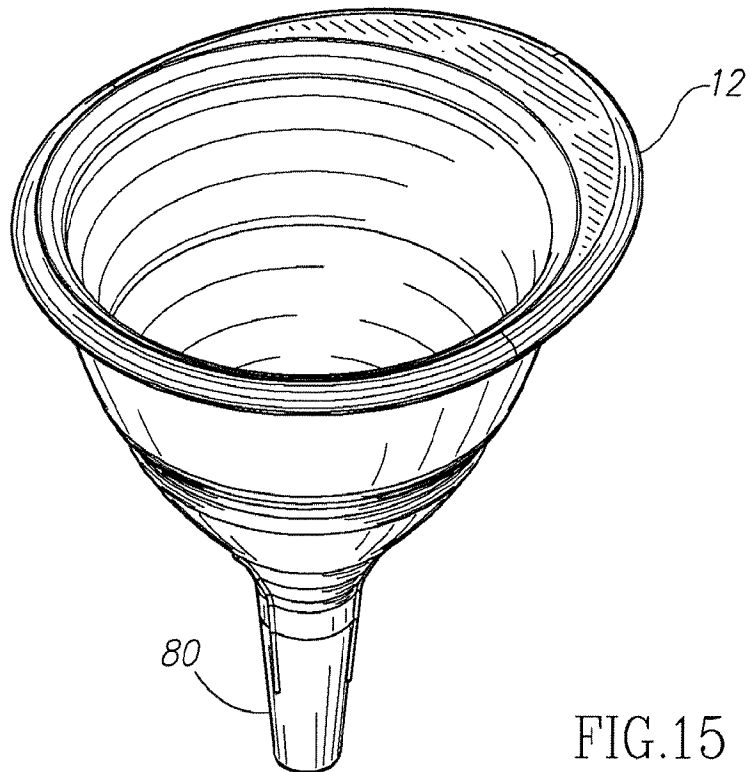


FIG. 15

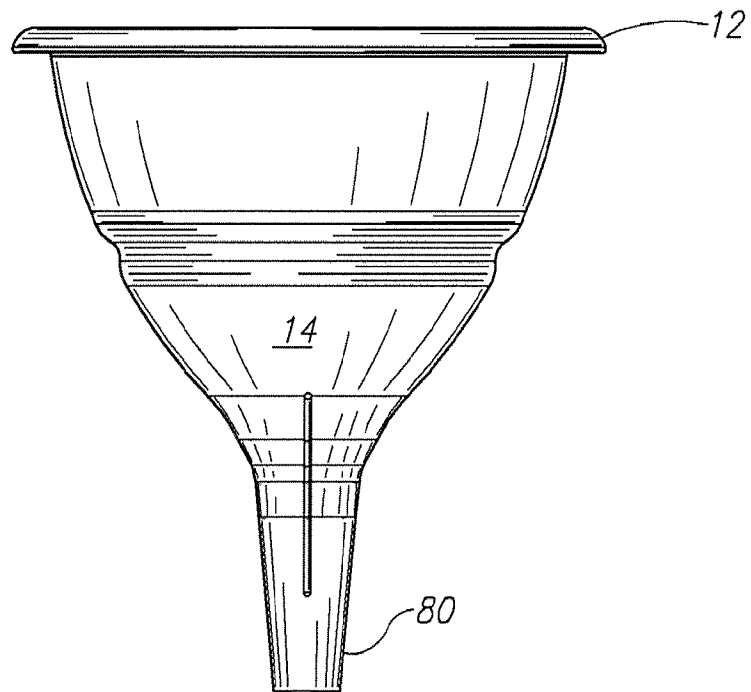


FIG. 16

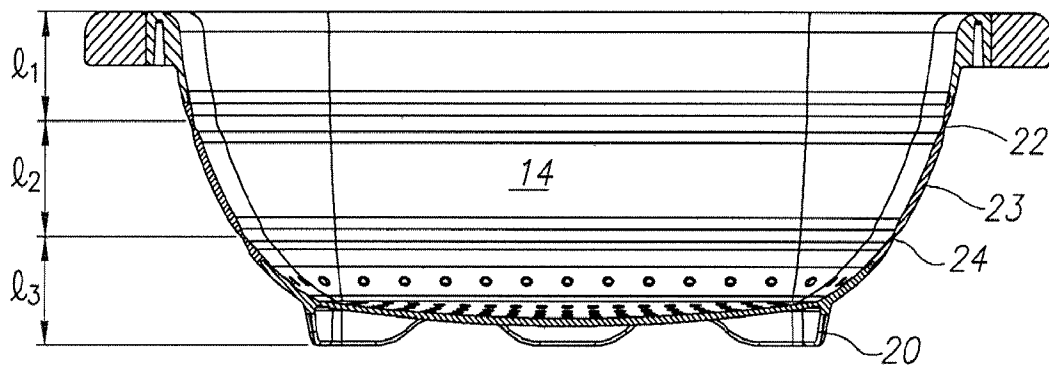


FIG.17