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(54) **CONTAINER WITH RELEASE
ENGAGEMENT MEMBER**

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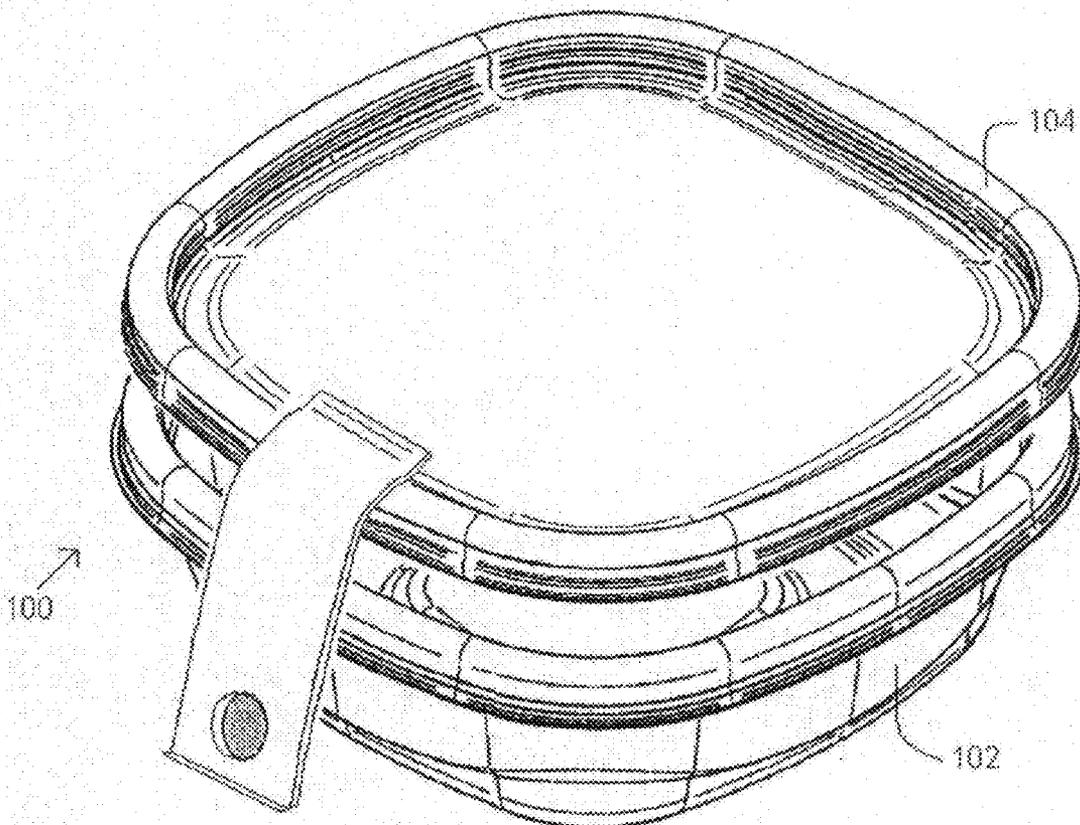
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(52) **U.S. Cl.** **220/375**
(57) **ABSTRACT**

Container having a cover and a base that may be engaged with each other with the help of a releasable engagement member is provided. The cover includes a leash as the releasable engagement member. The leash comprises a protrusion. The base comprises a depression located at a position corresponding to the position of the leash on the cover. When the cover is placed over the base, the protrusion of the leash of the cover may be lockingly engaged with the depression of the base. In addition, a protrusion of the leash of one cover may be engaged with a depression of the leash of a second cover, when it is desired to stack the covers together, separate from their bases.



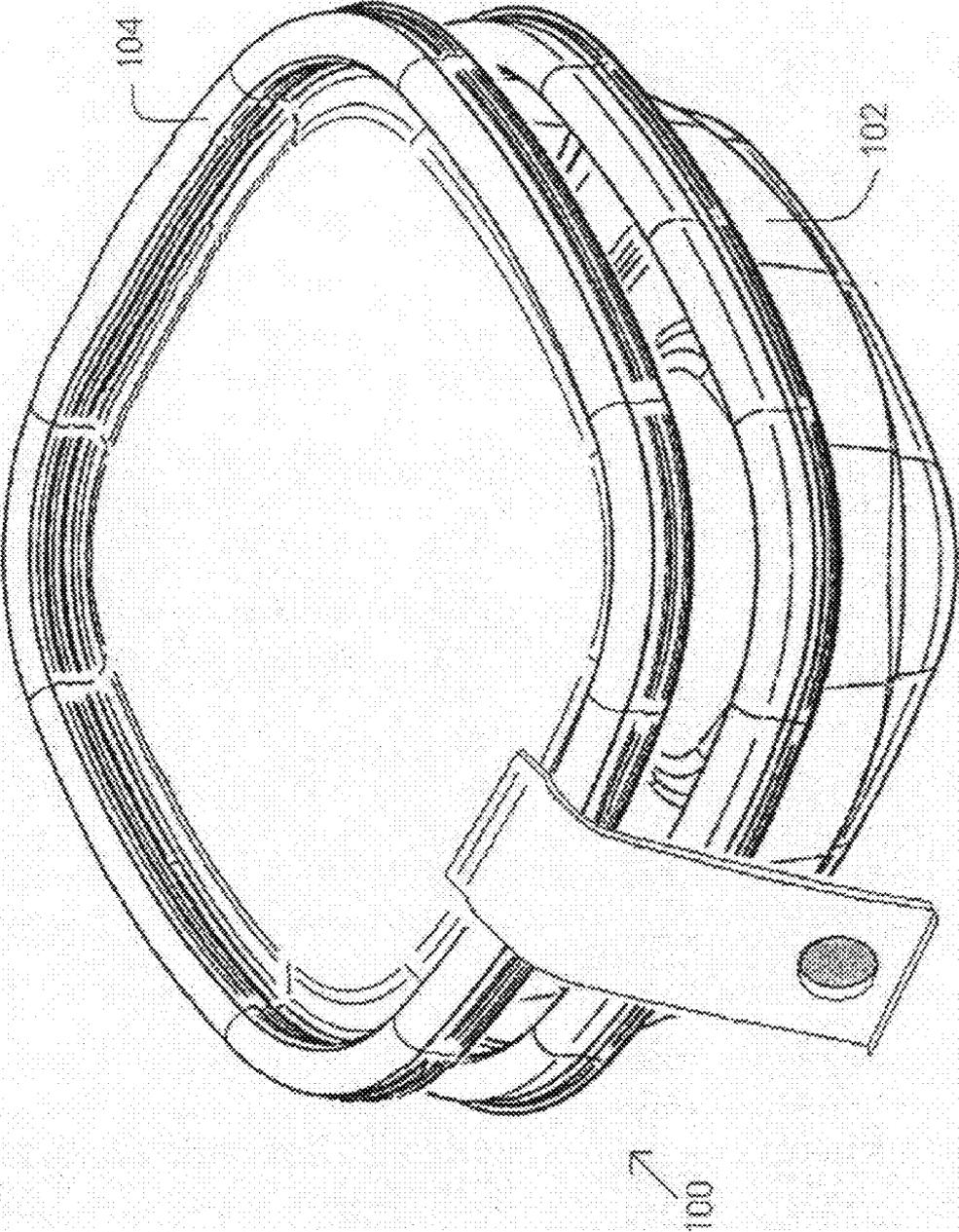
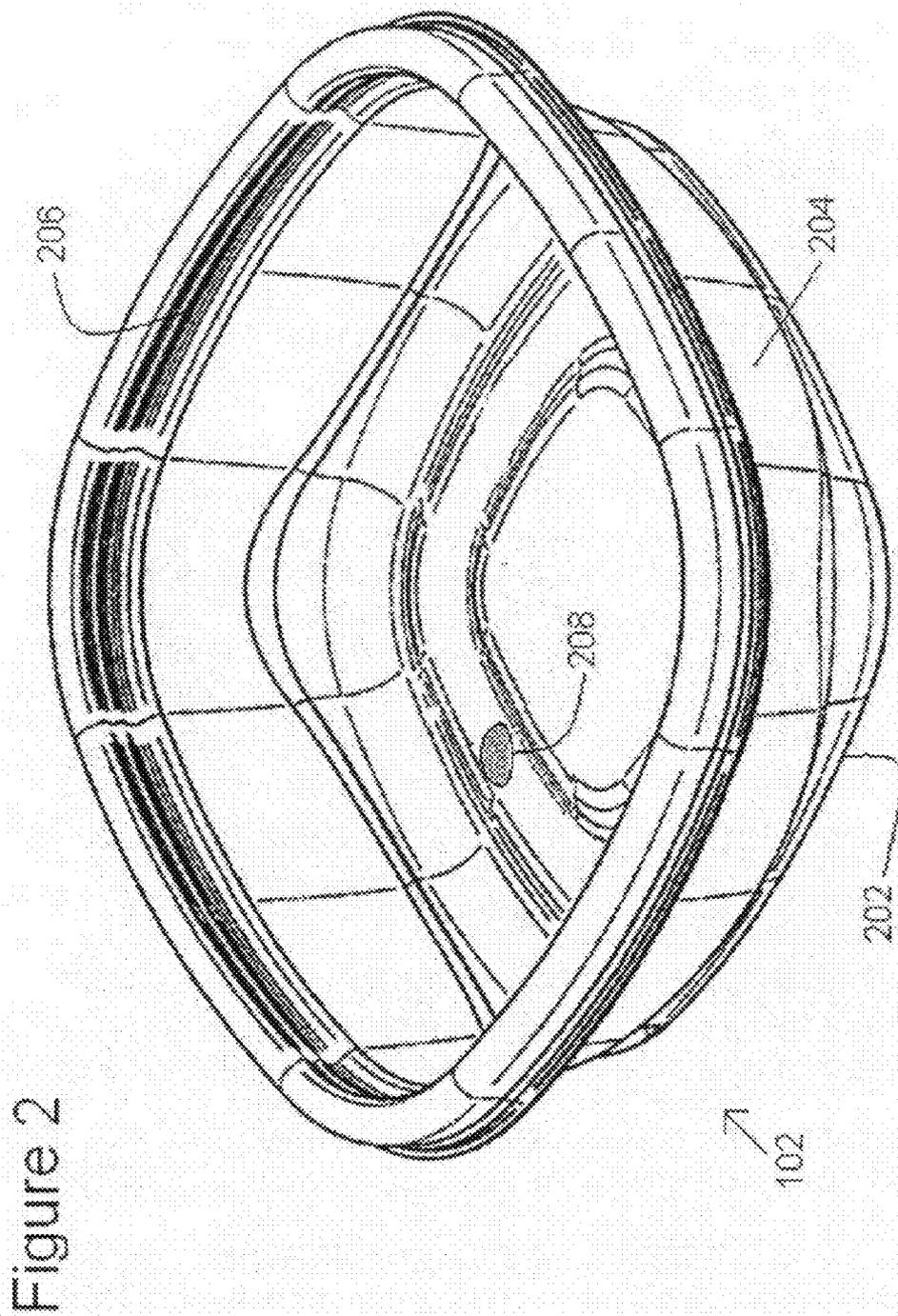


Figure 1



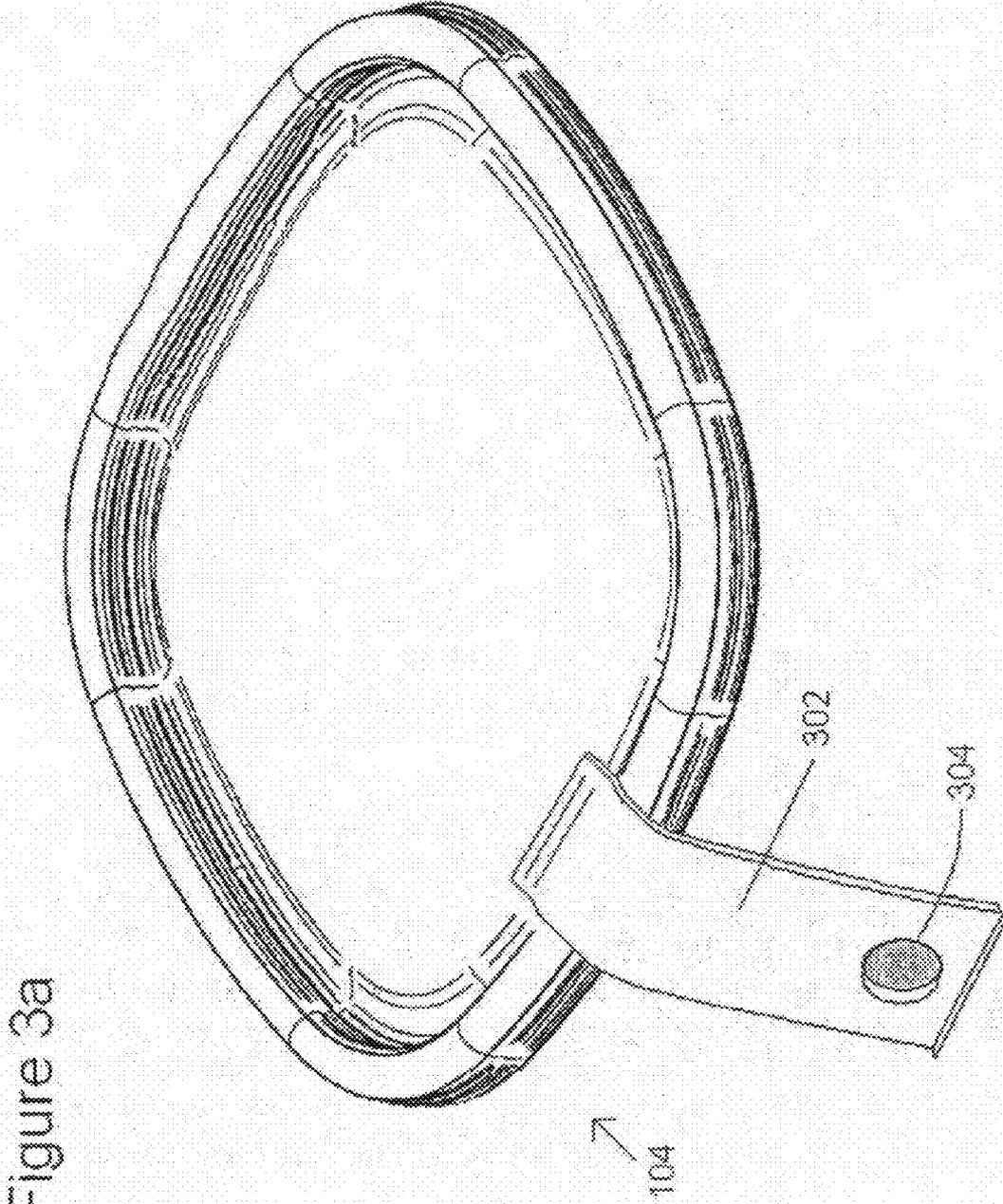
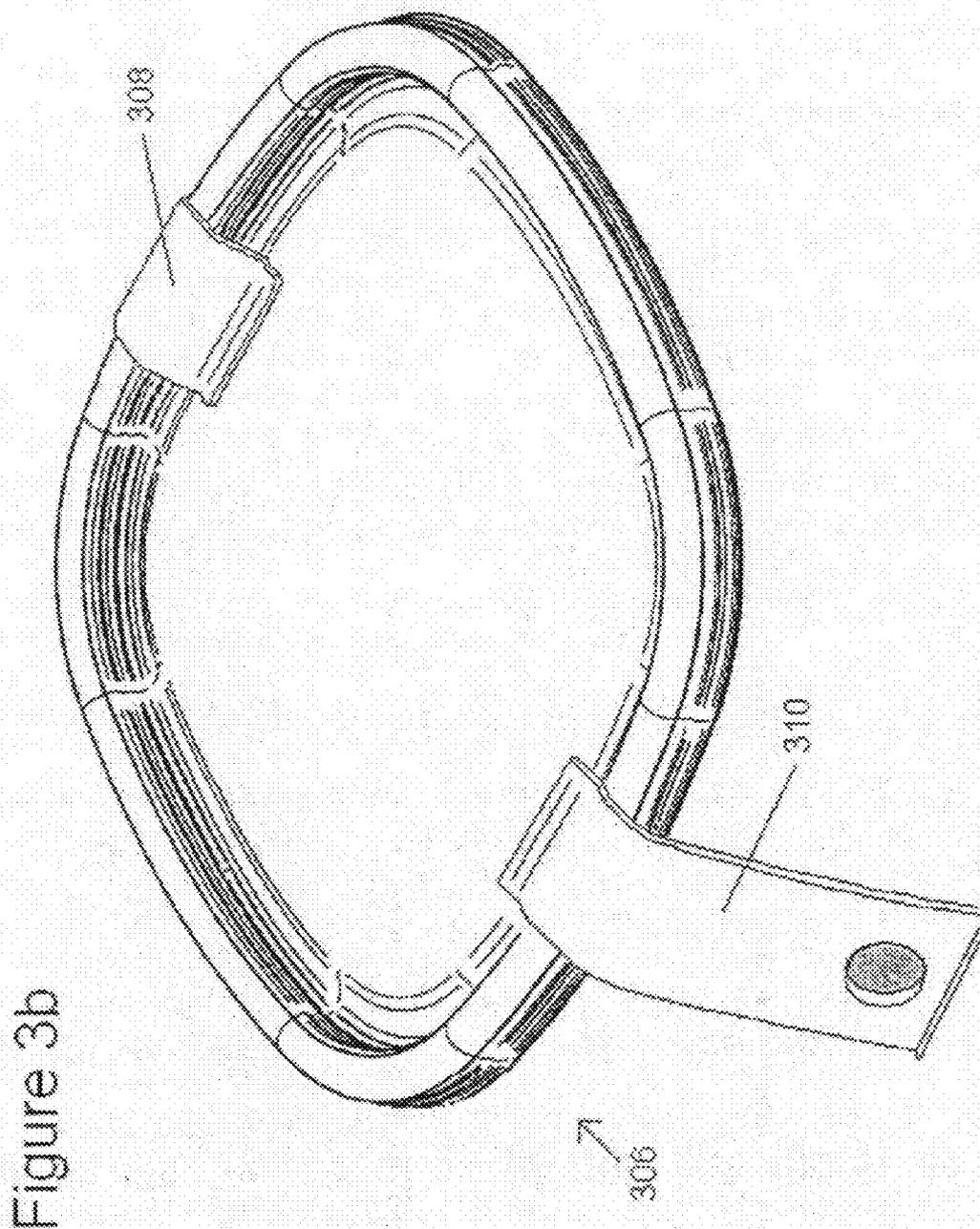


Figure 3a



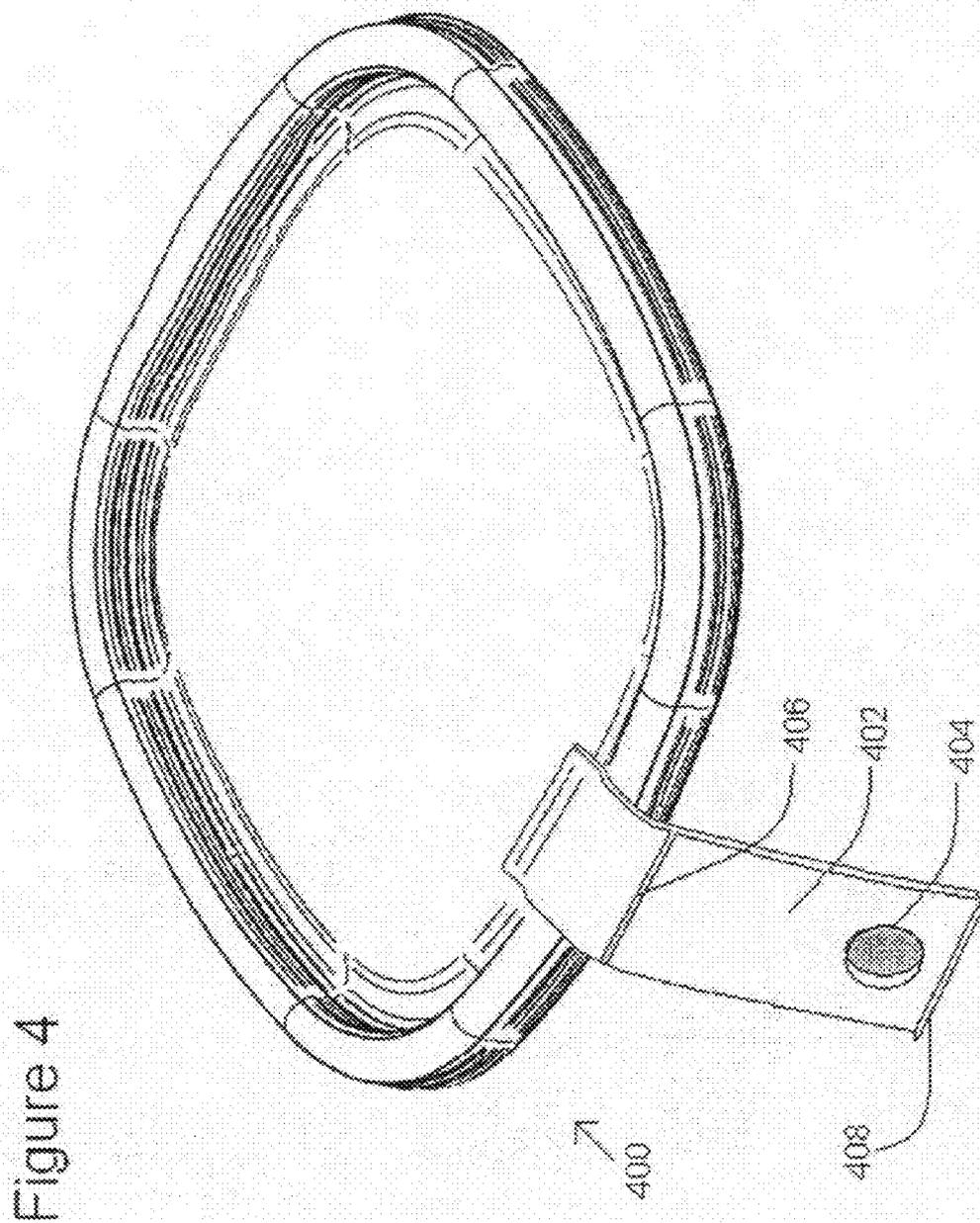


Figure 5

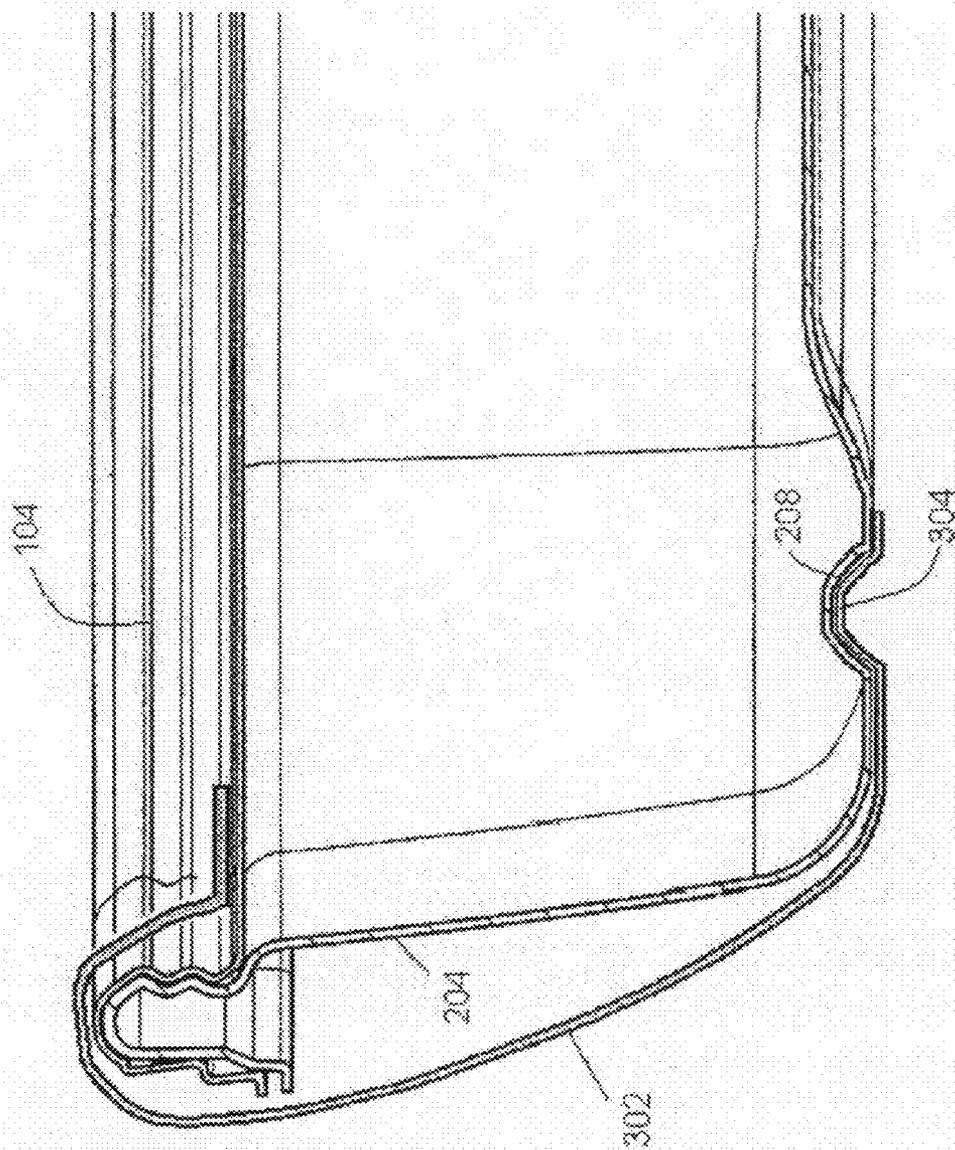
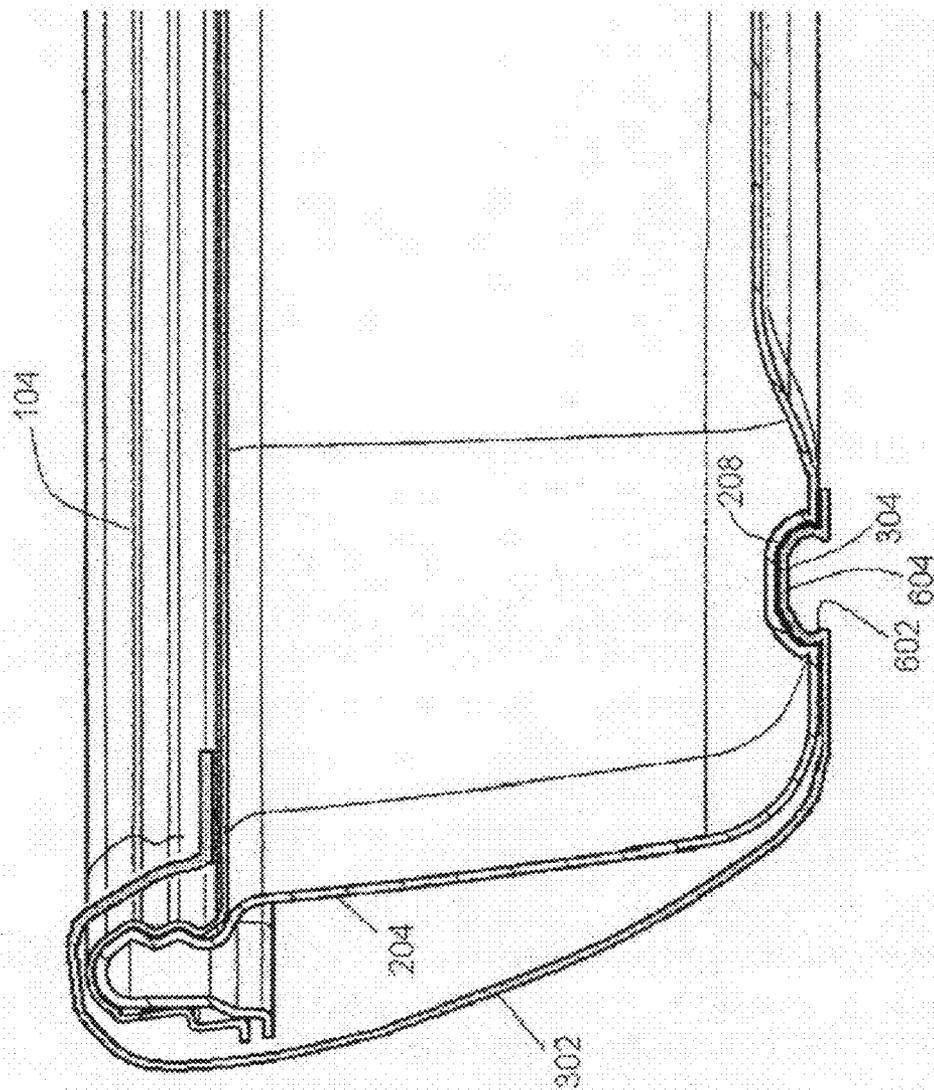


Figure 6



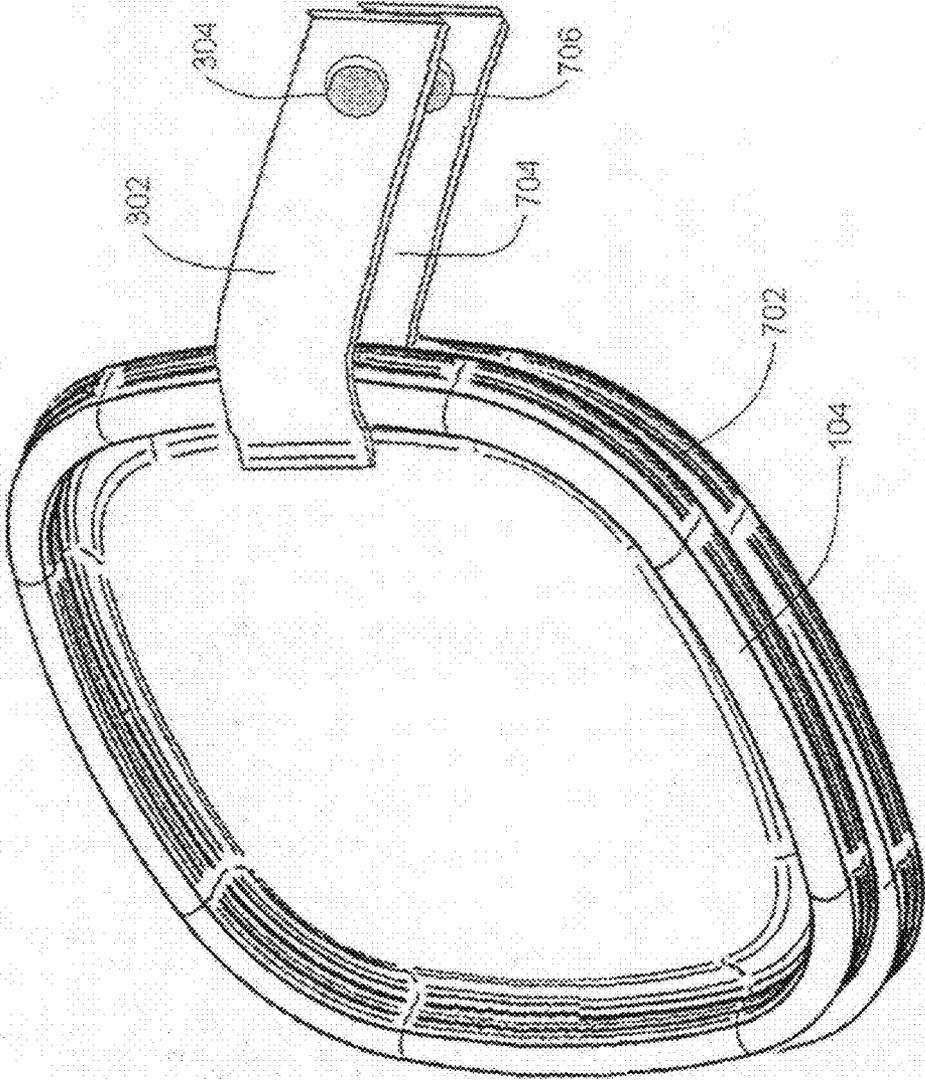


Figure 7a

Figure 7b

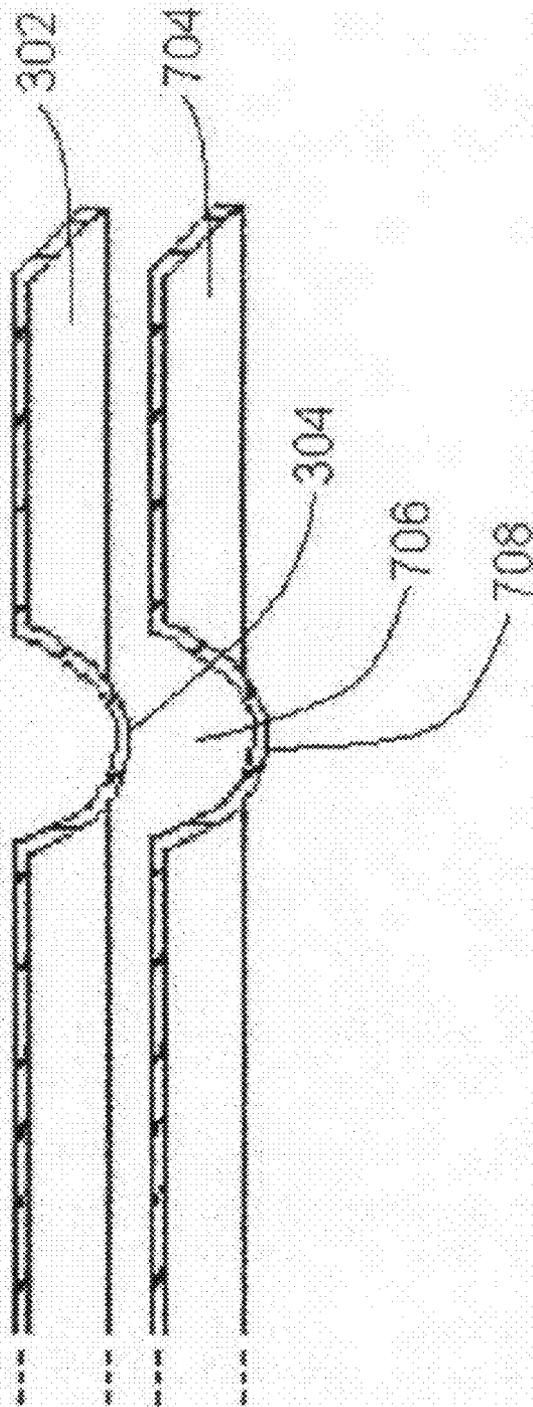
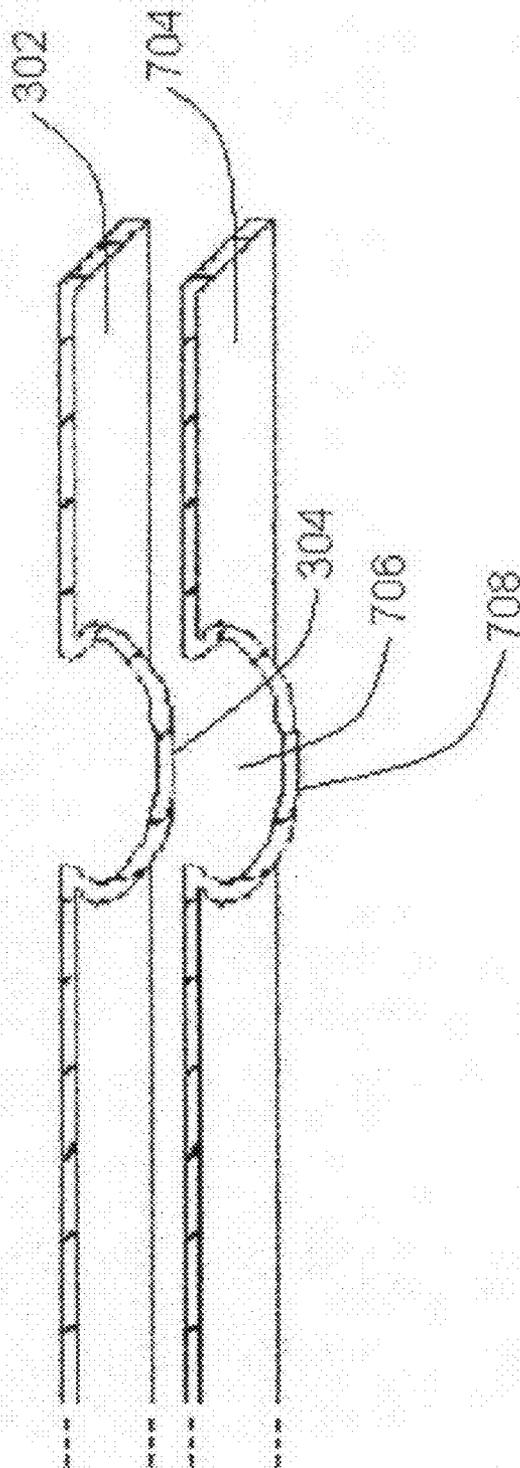


Figure 7c



CONTAINER WITH RELEASE ENGAGEMENT MEMBER

FIELD OF THE INVENTION

[0001] The present invention relates generally to containers, and more particularly, to containers having engaging features.

BACKGROUND OF THE INVENTION

[0002] Thermoplastic containers having bases and covers as components are generally known in the art. A cover engages with a base to define a storage volume into which food items or other articles can be placed. However, it is important that the engagement between the cover and the base is sufficiently secure in order to prevent the accidental spillage of the contents of the container.

[0003] Further, it is generally required to organize the bases and covers to utilize storage space and to avoid misplacement of these components of the containers. While the bases of the containers usually nest with each other and therefore take up less storage space, the covers generally do not stack together and are difficult to organize

[0004] Therefore, in light of the above, there is a need for an arrangement that provides additional security for the engagement between a cover and a base of a container. Further, there is a need for a method that allows the organization of container covers in a more organized and space saving manner.

SUMMARY OF THE INVENTION

[0005] In view of the foregoing, the present invention provides a container having engaging features for securing the contents of the container. The container comprises a cover and a base. The cover comprises a leash, which may be an integral part of the cover or may be fixedly or removably coupled to the cover. The leash comprises a protrusion and the base comprises a depression on the bottom surface of the base. When the cover is placed over the base, the protrusion of the leash may be engaged with the depression of the base. The engagement may be in the form of a friction-fit arrangement or a snap-fit arrangement. This engagement provides the required security to the container. The cover can be attached to or detached from the base by applying force.

[0006] In another embodiment of the invention, the container may have more than one leash and a corresponding number of depressions on the base, in order to enhance the engagement between the cover and the base. In yet another embodiment, the leash of the cover may comprise a living hinge to facilitate bending of the leash so as to allow the leash to reach the bottom surface of the base and get engaged with the base. Any number of living hinges may be provided as appropriate.

[0007] In another embodiment of the invention, the leash may comprise a depression in place of the protrusion and the bottom surface of the base may comprise a protrusion in place of the depression.

[0008] According to another aspect of the invention, multiple covers may be engaged with each other, separate from their bases, in order to stack the covers in a convenient way. A protrusion of a first leash of a first cover may be engaged with a depression of a second leash of a second cover, and so on, for additional covers. This arrangement helps in avoiding misplacement of the covers and also saves storage space.

[0009] The features of the present invention will become apparent to one of ordinary skill in the art upon reading the detailed description, in conjunction with the accompanying drawings, provided herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is an isometric view of a container, in accordance with an embodiment of the present invention;

[0011] FIG. 2 is an isometric view of the base of the container of FIG. 1;

[0012] FIG. 3a is an isometric view of the cover of the container of FIG. 1;

[0013] FIG. 3b is an isometric view of a cover of a container, in accordance with another embodiment of the present invention;

[0014] FIG. 4 is an isometric view of a cover of a container, in accordance with another embodiment of the present invention;

[0015] FIG. 5 is a cross-sectional view of the container of FIG. 1 depicting a friction-fit engagement between the cover and the base of the container;

[0016] FIG. 6 is a cross-sectional view of the container of FIG. 1 depicting a snap-fit engagement between the cover and the base of the container;

[0017] FIG. 7a is an isometric view of a stack of two covers, according to an embodiment of the present invention;

[0018] FIG. 7b is a cross-sectional view of the two covers of FIG. 7a depicting a friction-fit engagement between the two covers; and

[0019] FIG. 7c is a cross-sectional view of the two covers of FIG. 7a depicting a snap-fit engagement between the two covers.

DETAILED DESCRIPTION OF THE INVENTION

[0020] FIG. 1 illustrates an isometric view of a container 100, in accordance with an embodiment of the present invention. In an embodiment of the invention, the container 100 is made of a plastic material. Examples of the plastic material include, but are not limited to, polystyrene, Crystalline Polyethylene Terephthalate (CPET), Amorphous Polyethylene Terephthalate (APET), Low Density Polyethylene (LDPE), High Density Polyethylene (HDPE), Polyvinyl Chloride (PVC), Polycarbonate (PC), and foamed polypropylene. However, suitable materials other than plastic may also be used to manufacture the container 100. Examples of processes employed for manufacturing the container 100 include, but are not limited to, thermoforming, blow molding, injection molding, and combinations thereof.

[0021] FIG. 1 depicts the container 100 as substantially square with rounded corners. However, the container 100 may have other shapes, such as rectangular, circular, or elliptical. The container 100 comprises a base 102 and a cover 104, as shown in FIG. 1. The cover 104 engages with the base 102 to define a storage volume. The storage volume can be used to store food items and other articles.

[0022] FIG. 2 illustrates an isometric view of the base 102 of the container 100 of FIG. 1. The base 102 comprises a bottom surface 202, an upright sidewall 204 extending from the bottom surface 202, and an open top 206. The bottom surface 202 of the base 102 comprises a depression 208. In this embodiment of the invention, the depression 208 is located near an edge of the bottom surface 202.

[0023] FIG. 3a illustrates an isometric view of the cover 104 of the container 100 of FIG. 1. The cover 104 comprises a leash 302. In this embodiment of the invention, one end of the leash 302 is located on an edge of the cover 104. The leash 302 is located on the cover 104 such that when the cover 104 is placed on the base 102, the position of the leash 302 corresponds to the location of the depression 208 on the bottom surface 202. The other end of the leash 302, which is farthest from the point of coupling of the leash 302 and the cover 104, comprises a protrusion 304 as seen from the underside of the leash 302 (not visible in FIG. 3a). The shape of the leash 302 shown in FIG. 3a is substantially rectangular. However, the leash 302 can have any other suitable shape. For example, the leash 302 may be wing-shaped or elliptical. The leash may also be configured as a string or tape.

[0024] FIG. 3b illustrates an isometric view of a cover 306, in accordance with another embodiment of the invention. The cover 306 comprises a first leash 308 and a second leash 310. In other embodiments of the invention, the cover 306 may have any number of leashes as appropriate. In such embodiments, a base corresponding to the cover 306 will have an equal number of depressions at corresponding locations on its bottom surface.

[0025] In an embodiment of the present invention, a leash may be manufactured as an integral part of a cover. In another embodiment, the leash may be manufactured independently as a separate component and then be fixedly coupled to the cover at one end, using techniques such as, adhesive bonding, thermo-bonding, riveting, plastic welding, heat-staking, or ultrasonic bonding. In yet another embodiment, the leash may be manufactured as a separate component and then be removably coupled to the cover at one end in a friction-fit or a snap-fit arrangement. In such arrangements, a user is able to detach and attach the leash to the cover, as desired. Further, these arrangements help in convenient stacking of leashes separate from their covers.

[0026] In conjunction with FIGS. 1 through 3a, when the cover 104 is engaged with the open top 206 of the base 102, the protrusion 304 of the leash 302 can be releasably engaged with the depression 208 of the base 102 to improve and secure the engagement between the cover 104 and the base 102. The leash 302 can be engaged with and released from the depression 208 by applying force. The leash 302 is flexible enough to allow the protrusion 304 on the leash 302 to bend and engage with the depression 208 located on the bottom surface 202 of the base 102. Examples of the suitable plastic material include, but are not limited to, polystyrene, Crystalline Polyethylene Terephthalate (CPET), Amorphous Polyethylene Terephthalate (APET), Low Density Polyethylene (LDPE), High Density Polyethylene (HDPE), Polyvinyl Chloride (PVC), Polycarbonate (PC), and foamed polypropylene

[0027] The protrusion 304 and the depression 208 are about the same size and configuration to provide for a strong and releasably locking engagement. In an embodiment of the invention, the protrusion 304 and the depression 208 are engaged with each other in either a friction-fit or a snap-fit arrangement as illustrated in conjunction with FIG. 5 and FIG. 6 described later.

[0028] FIG. 4 is an isometric view of a cover 400 of a container, in accordance with another embodiment of the present invention. The cover 400 comprises a leash 402 and a protrusion 404. According to this embodiment, the leash 402 comprises a living hinge 406, preferably near the point of coupling of the cover 400 and the leash 402, as shown in FIG.

4. The living hinge 406 is provided for easy bending of the leash 402 and thereby, facilitating the engagement of the protrusion 404 on the leash 402 with a corresponding depression on the bottom surface of a base corresponding to the cover 400. In other embodiments of the invention, more than one living hinge may be provided on the leash 402. Further, the leash 402 may additionally comprise an overhang tab 408 as depicted in FIG. 4. In this embodiment of the invention, the overhang tab is located along an edge of the leash 402, farthest from the point of coupling of the leash 402 to the cover 400. The overhang tab 408 facilitates a user to release the leash 402 engaged with the bottom surface of the base corresponding to the cover 400, by applying a small amount of force using a finger.

[0029] As mentioned earlier, the engagement between the protrusion 304 of the leash 302 of the cover 104 and the depression 208 of the base 102 can have either a friction-fit or a snap-fit arrangement as illustrated in the following FIGS. 5 and 6.

[0030] FIG. 5 is a cross-sectional view of the container 100 of FIG. 1 depicting a friction-fit engagement between the cover 104 and the base 102 of the container 100. In this embodiment, the friction-fit engagement between the protrusion 304 and the depression 208 is depicted. The depression 208 is a part of a sphere and the circular cross-section of the depression 208 is depicted in FIG. 5. The protrusion 304 has a similar spherical configuration to frictionally engage with the depression 208 and to provide a secure engagement. However, in other embodiments, the protrusion 304 and the depression 208 may have other configurations and sizes. For example, they can be a part of a cuboid or a trapezoid, instead of a sphere.

[0031] FIG. 6 is a cross-sectional view of the container of FIG. 1 depicting a snap-fit engagement between the cover 104 and the base 102 of the container 100. In this embodiment, the snap-fit engagement between the protrusion 304 and the depression 208 is depicted. The depression 208 has two parts: one part is a taper 602, and the second part is a curvature 604 that is a part of a sphere, as shown in FIG. 6. The taper 602 can have any value ranging from 1° to 75°. The protrusion 304 has a similar configuration and size in order to be snap-fitted into the depression 208 and to provide a releasable locking engagement between the leash 302 and the bottom surface 202 of base 102.

[0032] FIG. 7a illustrates another aspect of the present invention. The embodiment of the invention depicted in FIG. 7a comprises the cover 104 and a second cover 702. As mentioned earlier, the cover 104 comprises the leash 302. The leash 302 comprises the protrusion 304, as best seen from a section of a cross-section of the leash 302 in FIG. 7b or FIG. 7c. The second cover 702 comprises a second leash 704. The second leash 704 comprises a depression 706, as best seen from the section of the cross-section of the second leash 704 in FIG. 7b or FIG. 7c. The protrusion 304 and the depression 706 can be engaged with each other, when it is desired to stack the cover 104 and the second cover 702 together. The engagement helps in stacking covers independent of their respective bases in a convenient way and also in saving storage space. Further, the engagement can help in avoiding misplacement of covers. In other embodiments of the present invention, additional covers can be engaged to the stack of covers illustrated in FIG. 7a, 7b or 7c, wherein a depression of a third leash of a third cover engages with the protrusion 708 (as best seen from the section of the cross-section of the second leash

704 in FIG. *7b* or FIG. *7c*) of the second leash **704** of the second cover **702**, and so on for yet additional covers. The engagement between the protrusion **304** and the depression **706** can be either a friction-fit engagement or a snap-fit engagement, similar to the leash-base engagements described earlier in conjunction with the description of FIG. **5** and FIG. **6**.

[0033] FIG. *7b* illustrates a cross-sectional view of the cover **104** and the second cover **702** of FIG. *7a*, depicting the friction-fit engagement between the leash **302** and the second leash **704**, in accordance with an embodiment of the present invention. The protrusion **304** and the depression **706** are about the same size and configuration to frictionally engage with each other, similar to the leash-base engagement as described for FIG. **5**. In this way, the covers can be attached to and detached from each other as desired, by applying force.

[0034] FIG. *7c* illustrates a cross-sectional view of the cover **104** and the second cover **702** of FIG. *7a*, depicting the snap-fit engagement between the leash **302** and the second leash **704**, in accordance with an embodiment of the present invention. The protrusion **304** and the depression **706** are about the same size and configuration to snap-fit into each other, similar to the leash-base engagement as described for FIG. **6**. Any number of covers can thus be lockably attached to each other to facilitate the stacking of covers.

[0035] In other embodiments of the invention, when the leashes are removably coupled to the covers, the leashes can be removed and separately stacked. These kinds of arrangements can further help in saving storage space.

[0036] In various embodiments of the present invention, a leash of a cover has been shown to comprise a protrusion and a base to comprise a depression. However, in other embodiments, the leash may comprise a depression in place of the protrusion, and the base may comprise a protrusion in place of the depression. The depression of the leash can then be engaged with the protrusion of the base using engagement techniques similar to those described earlier.

[0037] The present invention provides the required additional security between a cover and a base of a container by providing a leash on the cover as a releasable engagement member. The leash may be designed in any suitable manner so as to facilitate the attaching and detaching of the leash with the base of the container by applying minimum force. Moreover, the covers can be stacked and organized in a convenient way using the leashes of the covers. The organized stack consumes less storage space in a kitchen or a drawer, and also avoids misplacement of the covers. Further, when the leashes are coupled to the covers in a removable arrangement, the leashes may be separated from their covers and the covers may be engaged with the bases in the conventional way. Further, when additional security between the base and the cover is required, the leash of the cover may again be attached to the cover and be engaged with the base of the container. Also, the removable leashes may be stacked separately when not in use.

[0038] While the invention is described herein in connection with certain preferred embodiments; there is no intent to limit the present invention to those embodiments. On the contrary, it is recognized that one of ordinary skill can make various changes and modifications to the described embodiments without departing from the scope and spirit of the invention.

What is claimed is:

1. A container comprising:

a base comprising a peripheral sidewall extending from the base, and an open top, the base further comprising at least one base engagement portion; and

a cover engageable with the open top of the base, the cover comprising at least one leash having a first end coupled to the cover and a second end, the second end of the leash having a leash engagement portion,

wherein the leash engagement portion of the leash is releasably engageable with the base engagement portion of the base when it is desired to tether the cover to the base, and

wherein the leash engagement portion of the leash is releasably engageable with a leash engagement portion of a leash coupled to a second cover when it is desired to tether the cover to the second cover.

2. The container of claim **1**, wherein the base and the cover are made from a process selected from the group consisting of thermoforming, blow molding, injection molding, and combinations thereof.

3. The container of claim **1**, wherein the base and the cover are made from a material selected from the group consisting of polystyrene, Crystalline Polyethylene Terephthalate (CPET), Amorphous Polyethylene Terephthalate (APET), Low Density Polyethylene (LDPE), High Density Polyethylene (HDPE), Polyvinyl Chloride (PVC), Polycarbonate (PC), and foamed polypropylene.

4. The container of claim **1**, wherein the first end of the leash is formed as an integral component of the cover.

5. The container of claim **1**, wherein the first end of the leash is fixedly coupled to the cover as a separate component by a technique selected from the group consisting of adhesive bonding, thermo-bonding, riveting, plastic welding, heat-staking, and ultrasonic bonding.

6. The container of claim **1**, wherein the leash is removably coupled to the cover by a coupling technique selected from the group consisting of snap-fitting and friction-fitting.

7. The container of claim **1**, wherein the cover further comprises a second leash coupled to the cover, and the base further comprises a second base engagement portion.

8. The container of claim **1**, wherein the base engagement portion comprises a protrusion, and the leash engagement portion comprises a depression.

9. The container of claim **1**, wherein the base engagement portion comprises a depression, and the leash engagement portion comprises a protrusion.

10. A system of container covers, the system comprising:

a first cover comprising a first leash, the first leash of the first cover having a first end coupled to the first cover and a second end, the second end of the first leash of the first cover having a leash engagement portion; and

a second cover comprising a first leash, the first leash of the second cover having a first end coupled to the second cover and a second end, the second end of the first leash of the second cover having a leash engagement portion,

wherein the leash engagement portion of the first leash of the second cover is engageable with the leash engagement portion of the first leash of the first cover when it is desired to tether the second cover to the first cover.

11. The system of claim **10**, wherein the first cover and the second cover are made from a process selected from the group consisting of thermoforming, blow molding, injection molding, and combinations thereof.

12. The system of claim **10**, wherein the first cover and the second cover are made from a material selected from the group consisting of polystyrene, Crystalline Polyethylene Terephthalate (CPET), Amorphous Polyethylene Terephthalate (APET), Low Density Polyethylene (LDPE), High Density Polyethylene (HDPE), Polyvinyl Chloride (PVC), Polycarbonate (PC), and foamed polypropylene.

13. The system of claim **10**, wherein the first leash of the first cover is formed as an integral component of the first cover.

14. The system of claim **10**, wherein the first end of the first leash of the first cover is fixedly coupled to the first cover as a separate component by a technique selected from the group consisting of adhesive bonding, thermo-bonding, riveting, plastic welding, heat-staking, and ultrasonic bonding.

15. The system of claim **10**, wherein the first end of the first leash of the first cover is removably coupled to the first cover by a coupling technique selected from the group consisting of snap-fitting and friction-fitting.

16. The system of claim **10**, wherein the first cover further comprises a second leash, the second leash of the first cover

having a leash engagement portion, and the second cover comprises a second leash, the second leash of the second cover having a leash engagement portion.

17. The system of claim **10**, wherein the leash engagement portion of the first leash of the first cover comprises a depression, and the leash engagement portion of the first leash of the second cover comprises a protrusion.

18. The system of claim **10**, wherein the leash engagement portion of the first leash of the first cover comprises a protrusion, and the leash engagement portion of the first leash of the second cover comprises a depression.

19. The system of claim **10** further comprising a third cover, the third cover comprising a first leash, the first leash of the third cover having a first end coupled to the third cover and a second end, the second end of the first leash of the third cover having a leash engagement portion, wherein the leash engagement portion of the first leash of the third cover is engageable with the leash engagement portion of the first leash of the second cover.

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