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(54) **UNIVERSAL THREADED BOTTLE CAP AND STRAW**

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(57) **ABSTRACT**

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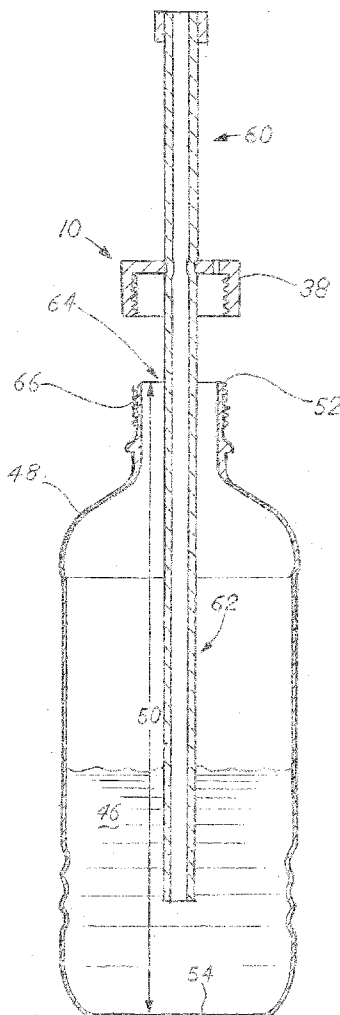
Related U.S. Application Data

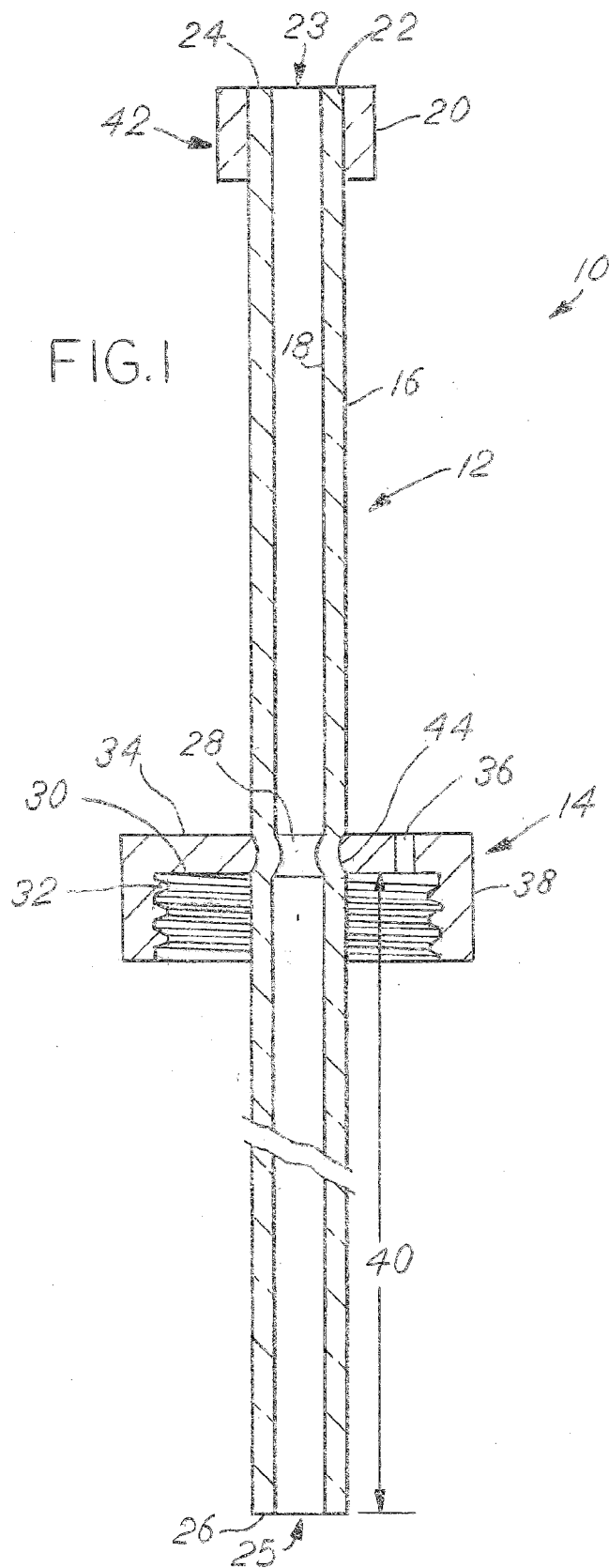
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A universal cap and straw drinking system is provided having a cap portion that is designed to thread onto an existing and readily-available drinking vessel. The cap portion has a first hole that interference fits to a flexible tube and prevents the tube from being slid relative to the cap portion. The cap portion has a second hole that is adjacent to the first hole and allows make-up air to enter the drinking vessel to make up for liquid being removed from the vessel through the flexible tube. The tube has a reinforced tip area where the wall thickness of the tube is doubled to increase the rigidity of the tube and reduce the ability of the user to pinch off the tube.





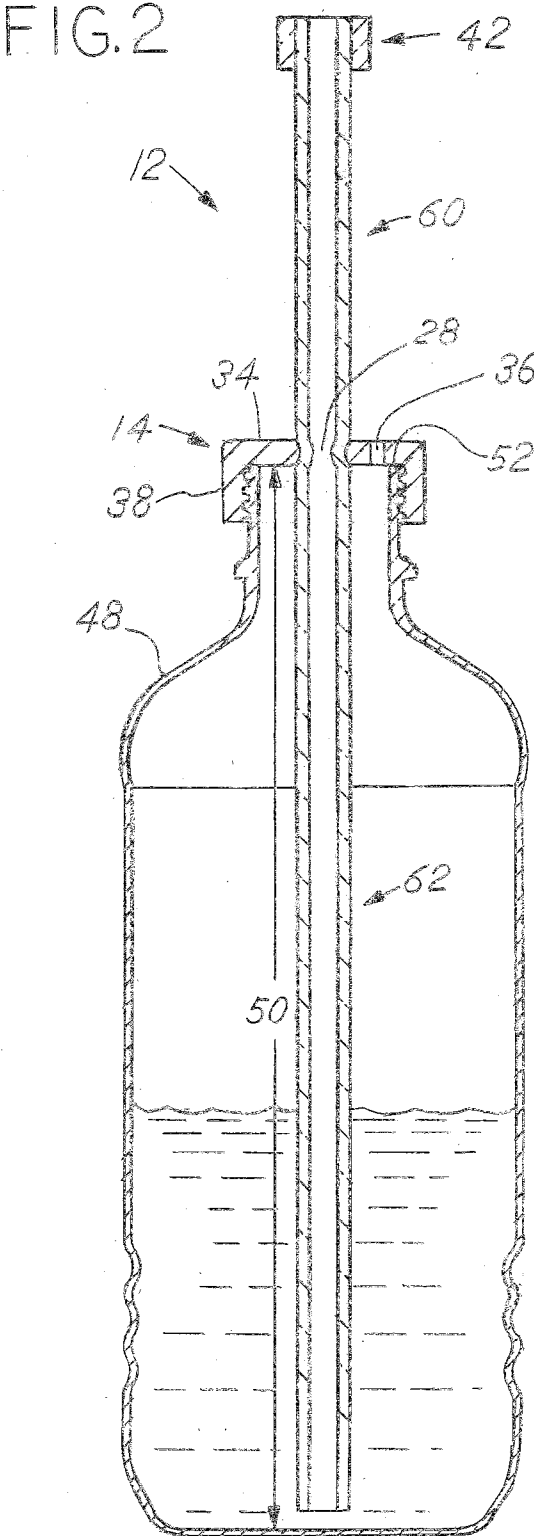
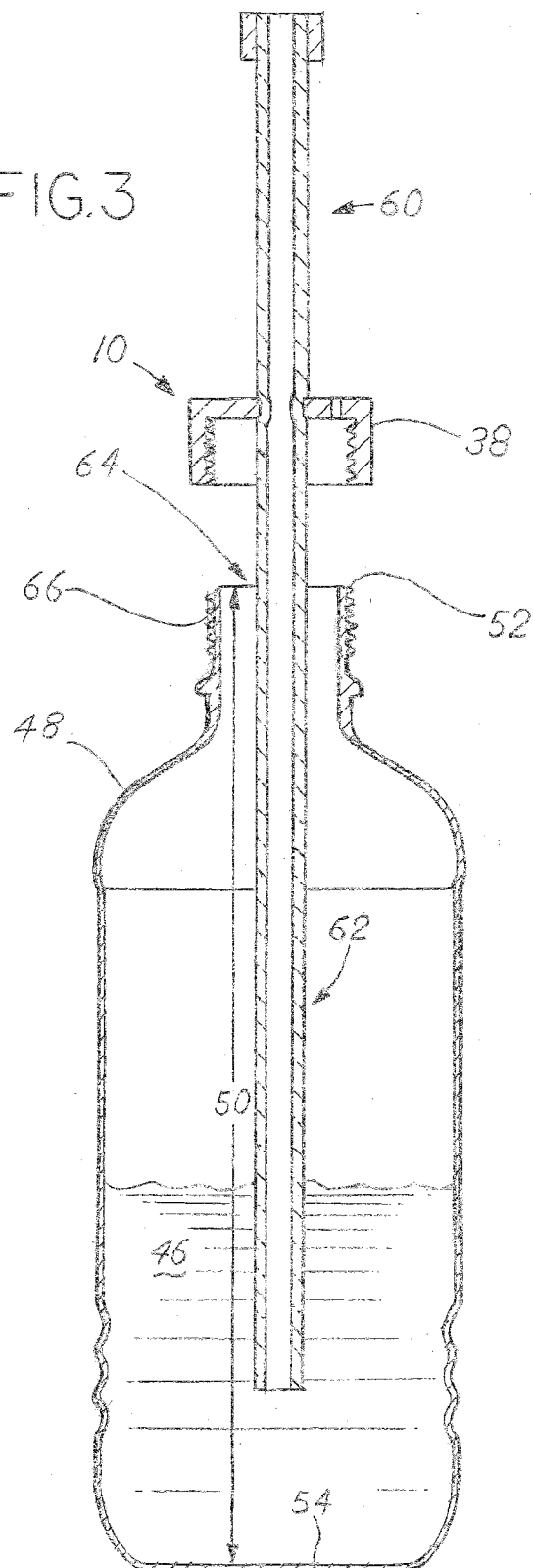


FIG. 3



UNIVERSAL THREADED BOTTLE CAP AND STRAW

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Application No. 62/063,082, filed Oct. 13, 2014, the disclosures of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

[0002] This present disclosure relates to bottles and various ways to dispense liquid from the bottle, specifically when the user must drink through a straw. Other inventions that are currently available are designed to be used only with a specific bottle or container. These usually involve a custom solution where the lid mates only to its specific container and a straw is either flipped up or inserted into the lid. However, larger and more bulky custom solutions that are currently available take up a considerable amount of space and can be very costly. An improved solution that works with existing commercially available pre-filled water bottles is needed.

SUMMARY OF THE INVENTION

[0003] The present disclosure describes an integral cap and straw solution that is easily transported, inexpensive, and disposable. The integral cap and straw is designed to mate with commercially available water bottles. Commonly available water bottles have a standard thread pitch and diameter that would allow the cap in this invention to thread and mate with the bottle. A threaded bottle cap has a pre-installed straw that fits tightly and sets a distance between the cap and the pickup of the straw. A reinforced area allows the user to grip the dispensing portion without easily pinching it off on the opposite end.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] A preferred embodiment of this invention has been chosen wherein:

[0005] FIG. 1 is a side section view of the invention;

[0006] FIG. 2 is a side section view of the invention of FIG. 1 as installed on a bottle; and

[0007] FIG. 3 is a side section view of the invention of FIG. 2 with the invention partially removed from the bottle.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0008] A dispensing cap assembly 10 is shown in FIG. 1. As shown in FIG. 2, the assembly 10 is designed to mate and seal to an existing bottle 48. In the embodiments shown, the cap assembly 10 threads onto threads of the existing bottle 48. The bottle 48 is a standard commercially available bottle that is typically made from plastic but it is contemplated the bottle is made from other materials such as glass or metal. The cap assembly 10 contains a straw portion 12 and a lid portion 14. The cap assembly 10 is adapted to be used with the existing bottle 48 to dispense liquid from the bottle 48 without having to tip it up to the user's mouth. The straw portion 12 is used to pull liquid 46 from the lower portion of the existing bottle 48 without having to tip the bottle 48 up. The liquid 46 is pulled from the bottom area of the bottle 48. The bottle 48 has a top sealing surface 52 around the opening 64 as shown in FIG. 3.

Adjacent to the sealing surface 52 is a threaded portion 66. The threaded portion 66 is a standard external thread.

[0009] The straw portion 12 is typically round and has an outside diameter 16 and an inside diameter 18 to define a wall thickness. The straw portion 12 is made from a resilient material that is suitable for food use. Commonly, the resilient food-grade material is transparent vinyl. The outside diameter 16 of the straw portion 12 can be compressed but the resilient material of the straw portion 12 is urged to return to its original diameter. As shown in FIG. 1, the straw portion 12 has an inlet 25 on a pickup end 26, and an outlet 23 on the opposite end at a top 24. A biting reinforcement 42 is positioned where the top of the biting reinforcement 42 is flush with the top 24. The biting reinforcement 42 has an outside diameter 20 and an inside diameter 22. The inside diameter 22 of the biting reinforcement is secured and sealed to the outside diameter 16 of the straw portion 12. The straw portion 12 is one continuous piece. The lid portion 14, specifically the opening 44 as shown in FIG. 1, defines the transition of the straw portion 12 into an exterior portion 60 and an interior portion 62 as shown in FIGS. 2 and 3. The exterior portion 60 is located above the lid portion 14. The interior portion 62 is located below the lid portion 14. When the cap assembly 10 is assembled to the existing bottle 48, the interior portion 62 is located inside the bottle. The distance between the lid portion 14 and the pickup end 26 is roughly the same as the distance between the sealing surface 52 and bottom 54 of the existing bottle 48.

[0010] The lid portion 14 has a standard internal thread 32 with an adjacent sealing surface 30. The sealing surface 30 is adapted to mate with the top sealing surface 52 and seal thereto. The internal thread 32 is adapted to mate with the threaded portion 66 and secure the lid portion 14 to the bottle 48. The lid portion 14 as described is typically made from a semi-rigid material such that it can be distorted but returns partially to its original shape once the force distorting it is removed. It is contemplated that other types of lid portions 14 are used, such as hard plastic or metal. An outside diameter 38 has knurls or other gripping features to allow the user to grip and rotate the lid portion 14 to seal it. The lid portion 14 contains a straw opening 44 adapted to receive the straw portion 12. The lid 14 optionally includes a vent 36 that allows fluid communication from the top surface 34 of the lid to the inside of the bottle 48. The straw opening 44 is smaller than the outside diameter 16 of the straw portion 12. The interference between the opening 44 and the outside diameter 16 creates a seal and maintains the position of the straw portion 12 to the lid portion 14 to prevent the straw portion 12 from longitudinal movement as it relates to the lid 14.

[0011] When inserted into the lid portion 14, the straw portion 12 is set to a distance 40 as shown in FIG. 1 as measured from the sealing surface 30 to the end 26. As is shown in FIG. 2, the inside distance 50 of the bottle 48 is measured from the top sealing surface 52 of the opening 64 to the bottom 54. Once inserted, the end 26 of the straw portion 12 has a sufficient gap to the bottom 54 such that liquid 46 can enter. As the user draws fluid from the outlet 23, the liquid 46 enters the inlet 25. As liquid 46 or other fluid travels through the inside of the straw portion 12, the vent 36 allows make-up air or other fluid to enter the interior of the bottle 48 to prevent the bottle 48 from collapsing. Optionally, the vent 36 may be omitted to allow the user to squeeze the bottle 48 to dispense liquid 46. As the inlet 25 is near the bottom 54, the bottle 48 can remain upright and still dispense liquid 46.

[0012] To assemble the lid portion 14 and straw portion 12 to each other, the opening 44 is formed in the lid portion 14. Because the lid portion 14 is made from a semi-resilient material, the opening 44 begins to shrink immediately after being formed. Before the opening 44 can excessively shrink and become too small to receive the straw portion 12, the straw portion 12 is inserted. The straw portion 12 is then moved to the correct position where the distance 40 between the end 26 and the sealing surface 30 is generated. As the opening 44 continues to shrink, it seals to the outside diameter 16 of the straw 12 and compresses it slightly, creating a restricted portion 28, as shown in FIG. 1. This fixes the straw portion 12 in relation to the lid portion 14, setting distance 40. The compression between the outside diameter 16 and the opening 44 maintain the position of the straw portion 12 and prevent the user from accidentally pulling it out. The resiliency of one or both of the components maintains the seal between the straw portion 12 and the lid portion 14.

[0013] Because different water bottles 48 are capable of having different thread sizes, it is contemplated that the lid portion 14 has a snap or clip feature that may or may not seal to the top of the existing bottle 48.

[0014] It is understood that while certain aspects of the disclosed subject matter have been shown and described, the disclosed subject matter is not limited thereto and encompasses various other embodiments and aspects. No specific limitation with respect to the specific embodiments disclosed herein is intended or should be inferred. Modifications may be made to the disclosed subject matter as set forth in the following claims.

What is claimed is:

1. A dispensing cap adapted to be affixed to a container having a closed bottom to define a chamber, said chamber adapted for holding a fluid, said container having a sealing surface adjacent to a threaded opening, said bottom spaced from said sealing surface by a first distance, said cap comprising:

a lid having a threaded portion adapted to threadably receive said container, and a sealing portion adapted to seal to said sealing surface, said lid having a first aperture and a second aperture, said second aperture being smaller than said first aperture;

a resilient tube having an inside diameter and an outside diameter to define a wall thickness, said tube having an inlet and an outlet, said inlet in fluid communication with said outlet, said tube including a reinforcing tip located adjacent to said outlet and encircling a portion of said tube, said reinforcing tip having a larger outside diameter than said outside diameter of said resilient tube;

said first aperture is smaller than said outside diameter of said tube, said tube inserted through said first aperture and sealably restrained from longitudinal movement with respect to said lid, said inlet spaced from said sealing portion by a second distance;

when said cap is affixed to said container, said tube is in fluid communication with said chamber, said inlet of said resilient tube being relatively close to said bottom of said container; and

when said fluid is drawn through said tube from said inlet to said outlet, fluid from outside said container is drawn into said chamber through said second aperture.

2. The dispensing cap of claim 1, said tip being a portion of a second resilient tube having an inside diameter smaller than

said outside diameter of said resilient tube, said inside diameter of said second resilient tube in sealable biased contact with said outside diameter of said resilient tube.

3. The dispensing cap of claim 2, said resilient tube and said second resilient tube formed from food-grade vinyl material.

4. The dispensing cap of claim 2, said first distance being substantially equal to said second distance.

5. The dispensing cap of claim 2, said inlet of said tube being adjacent to said bottom of said container when said cap is affixed to said threaded opening.

6. The dispensing cap of claim 2, said tube having a compressed portion where said tube passes through said first aperture.

7. A dispensing cap adapted to be affixed to a container having a closed bottom to define a chamber, said chamber adapted for holding a fluid, said container having a sealing surface adjacent to a threaded opening, said bottom spaced from said sealing surface by a first distance, said cap comprising:

a lid having a threaded portion adapted to threadably receive said container, and a sealing portion adapted to seal to said sealing surface, said lid having a first aperture and a second aperture;

a resilient tube having an inside diameter and an outside diameter to define a wall thickness, said tube having an inlet and an outlet, said inlet in fluid communication with said outlet, said tube including a reinforcing tip located adjacent to said outlet and encircling a portion of said tube;

said first aperture is smaller than said outside diameter of said tube, said tube inserted through said first aperture and sealably restrained from longitudinal movement with respect to said lid, said inlet spaced from said sealing portion by a second distance;

when said cap is affixed to said container, said tube is in fluid communication with said chamber, said inlet of said resilient tube being relatively close to said bottom of said container; and

when said fluid is drawn through said tube from said inlet to said outlet, said fluid from outside said container is drawn into said chamber through said second aperture.

8. The dispensing cap of claim 7, said second aperture being smaller than said first aperture.

9. The dispensing cap of claim 8, said reinforcing tip having a larger outside diameter than said outside diameter of said resilient tube.

10. The dispensing cap of claim 7, said tip being a portion of a second resilient tube having an inside diameter smaller than said outside diameter of said flexible tube, said inside diameter of said second resilient tube in sealed biased contact with said outside diameter of said resilient tube.

11. The dispensing cap of claim 10, said resilient tube and second resilient tube formed from food-grade vinyl material.

12. The dispensing cap of claim 7, said first distance being substantially equal to said second distance.

13. The dispensing cap of claim 7, said inlet of said tube being adjacent to said bottom of said container when said cap is affixed to said threaded opening.

14. The dispensing cap of claim 7, said tube having a compressed portion where said tube passes through said first aperture.