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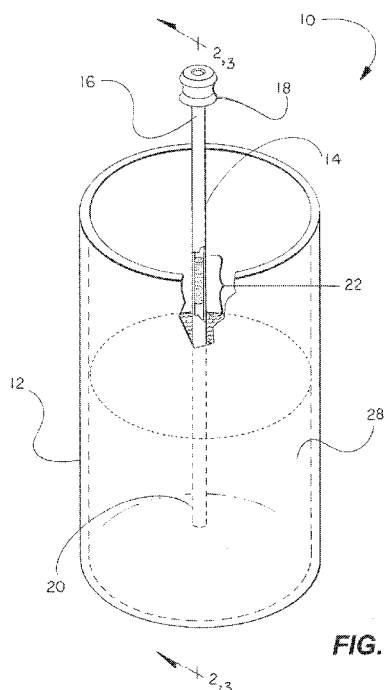
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- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

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(54) Title: HICCUP RELIEVING APPARATUS



(57) Abstract: The hiccup relieving apparatus includes a tube with a first end having a mouthpiece, a second end for immersion in water or other potable liquid in a container, and an obstruction in the tube between the first end and the second end. The obstruction requires an adult user, using the mouthpiece, to produce a threshold suction of at least 20 cm of water before water can flow from the water in the water container, through the tube, through the mouthpiece, and to the user. The obstruction can take the form of a threshold valve in the tube, a sized orifice in the immersed end of the tube, or a wad of cellulosic material in the tube.

HICCUP RELIEVING APPARATUS

CROSS REFERENCE TO RELATED PATENT APPLICATIONS

[0001] This invention claims priority from United States Provisional Patent Application No. 62/619,196, filed January 19, 2018, which is hereby incorporated by reference.

FIELD OF THE INVENTION

[0002] This invention relates to an apparatus for alleviating hiccups.

BACKGROUND OF THE INVENTION

[0003] A hiccup is an involuntary spasm of the diaphragm muscle resulting in an involuntary inhalation that is abruptly interrupted by the involuntary closing of the glottis and resulting in the familiar and characteristic sound of a hiccup. The exact anatomic and physiological mechanism responsible for causing hiccups remains unknown. Currently, there are several simple cures that involve Vagal nerve stimulation and can include drinking a glass of water rapidly, swallowing dry bread or crushed ice, inducing vomiting, applying traction on the tongue, or applying pressure on the eyeballs.

SUMMARY OF THE INVENTION

[0004] The hiccup relieving apparatus of the present invention addresses the need for a simple device for facilitating a cure for hiccups. The present invention is simple, inexpensive to construct, and easy to use. The hiccup relieving apparatus comprises a tube with a first end having a mouthpiece, a second end for immersion in water or other portable liquid, and an obstruction in the tube between the first end and the second end. The obstruction requires the user, using the mouthpiece, to produce a threshold suction of at least 20 cm of water typically for adults and a threshold suction of at least 10 cm of water typically for children before water can flow from the container, through the tube, through the mouthpiece, and to the user. The obstruction can take the form of a threshold valve in the tube, a wad of cotton, a wad of other cellulosic material, restricting orifices adjacent the second end of the tube, or restricting orifices adjacent the second end of the tube in combination with serpentine channels extending from the orifices to the mouthpiece.

[0005] Further objects, features and advantages will become apparent upon consideration of the following detailed description of the invention when taken in conjunction with the drawings and the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

5 [0006] Fig. 1 is a perspective elevation view of a first embodiment of a hiccup relieving apparatus in accordance with the present invention.

[0007] Fig. 2 is a section view of the first embodiment of the hiccup relieving apparatus along line 2-2 in Fig. 1 in accordance with the present invention.

10 [0008] Fig. 3 is a section view of a second embodiment of the hiccup relieving apparatus along the line 3-3 in Fig. 1 in accordance with the present invention.

[0009] Fig. 4 is a perspective view of a third embodiment of the hiccup relieving apparatus in accordance with the present invention.

[0010] Fig. 5 is a front elevation view of the third embodiment of the hiccup relieving apparatus in accordance with the present invention.

15 [0011] Fig. 6 is a side elevation view of the third embodiment of the hiccup relieving apparatus in accordance with the present invention.

[0012] Fig. 7 is a section view of the third embodiment of the hiccup relieving apparatus as seen along line 7-7 of Fig. 6 in accordance with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

20 [0013] Turning to Figs. 1-3, a hiccup relieving apparatus 10 includes a tube 14 having a first end 16 and a second end 20. A mouthpiece 18, similar to a snorkel mouth piece, is attached to the first end 16, and the second end 20 is immersed in water or other potable liquid 28 in a container 12. The water or other potable liquid 28 in the container 12 is exposed to atmospheric pressure.

25 [0014] The tube 14 is approximately 1.5 to 2 cm in diameter. An obstruction 22 is positioned in the tube 14 between the first end 16 and the second end 20. The obstruction 22 is configured so that the user must apply suction to the mouthpiece 18 in order to produce a threshold suction of at least 20 cm of water for adults and a section of at least 10 cm of water for children before

the water 28 in the water container 12 can be drawn through the tube 14 to the user. Typical suction pressure is between 20 cm water and 60 cm of water for adults.

[0015] In a first embodiment of the present invention, the obstruction is a wad 26 of cotton or other cellulosic material. For an adult user, the cotton wad 26 is of sufficient size and density to require user suction of at least 20 cm of water before water or other potable liquid 28 will flow from the container 12 through the cotton wad 26 to the user. The requisite threshold suction of at least 20 cm of water can be created by a cylindrical cotton wad 26 weighing approximately 5-10 grams and having a diameter to fit inside the tube 14. The tube 14 typically has a diameter of approximately 1.5 to 2 cm. In one variation, the cotton wad 26 is rolled inside a paper towel so that the construction is similar to a cigarette filter. Typically, paper towels have a pore size of less than 100 microns.

[0016] In a second embodiment of the present invention, the obstruction 22 is a threshold valve 24. The threshold valve 24 is configured so that the threshold valve 24 opens when a threshold suction is applied to the threshold valve 24. The threshold suction useful for the hiccup relieving apparatus 10 is at least 20 cm of water for an adult user. Once the threshold suction produced by the user is reached, the threshold valve 24 opens and allows free flow of the water or other potable liquid 28 from the container 12 to the user through the tube 14. A threshold valve, such as threshold valve 24, is disclosed in Ratner United States Patent No. 6,854,334, the disclosure of which is incorporated in its entirety by reference.

[0017] In a third embodiment of the present invention a hiccup relieving apparatus 110 is shown in Figs. 4-7. The hiccup relieving apparatus 110 includes a tube 114 with a first end 116 and a second end 120. A mouthpiece 118 is molded to the first end 116. One or more orifices 130 are positioned at the second end 120. The second end 120 of the tube 114 of the hiccup relieving apparatus 110 is configured to be immersed in water or other potable liquid in a container. The water or other potable liquid in the container is exposed to atmospheric pressure. The three orifices 130 have diameters of 0.5 mm to 3 mm. Particularly, the orifice diameters can be adjusted to control the amount of force required to suck the water or other potable liquid in the container into the user's mouth. Particular, the orifices are configured to assure that a suction of at least 20 cm of water is required for adult users.

[0018] The tube 114 is flat as shown in Figs. 4 and 6. While the tube 114 could be circular, oval, or other configuration as well as the flat configuration, the flat configuration lends itself to

molding the internal structure shown in Figs. 7. Fig. 7 shows two serpentine channels 132 that are connect to each other near the second end 120 and are connected the orifices 130. The two serpentine channels 32 are then connected to the mouthpiece 118. Water that is drawn by the user, enters through the orifices 130, pass through the serpentine channels 132 and is delivered
5 to the user through the mouthpiece 118. The serpentine channels 132 are pressure breakers to prevent water from reaching the mouthpiece 118 too quickly.

[0019] A honeycomb structure 134 is positioned between the first end 116 and the second end 120 of the tube 114. The honeycomb structure 134 can be used to support an additional obstruction such as a cellulosic wad 26 or a threshold valve 24 as previously described. The
10 honeycomb structure 134 therefore provides the options of the use of a cellulosic wad 26, a threshold valve 24, or no additional obstruction. In that way, the hiccup relieving apparatus 110 can be tuned to specific suction ranges with a combination of orifice size and/or specific obstruction.

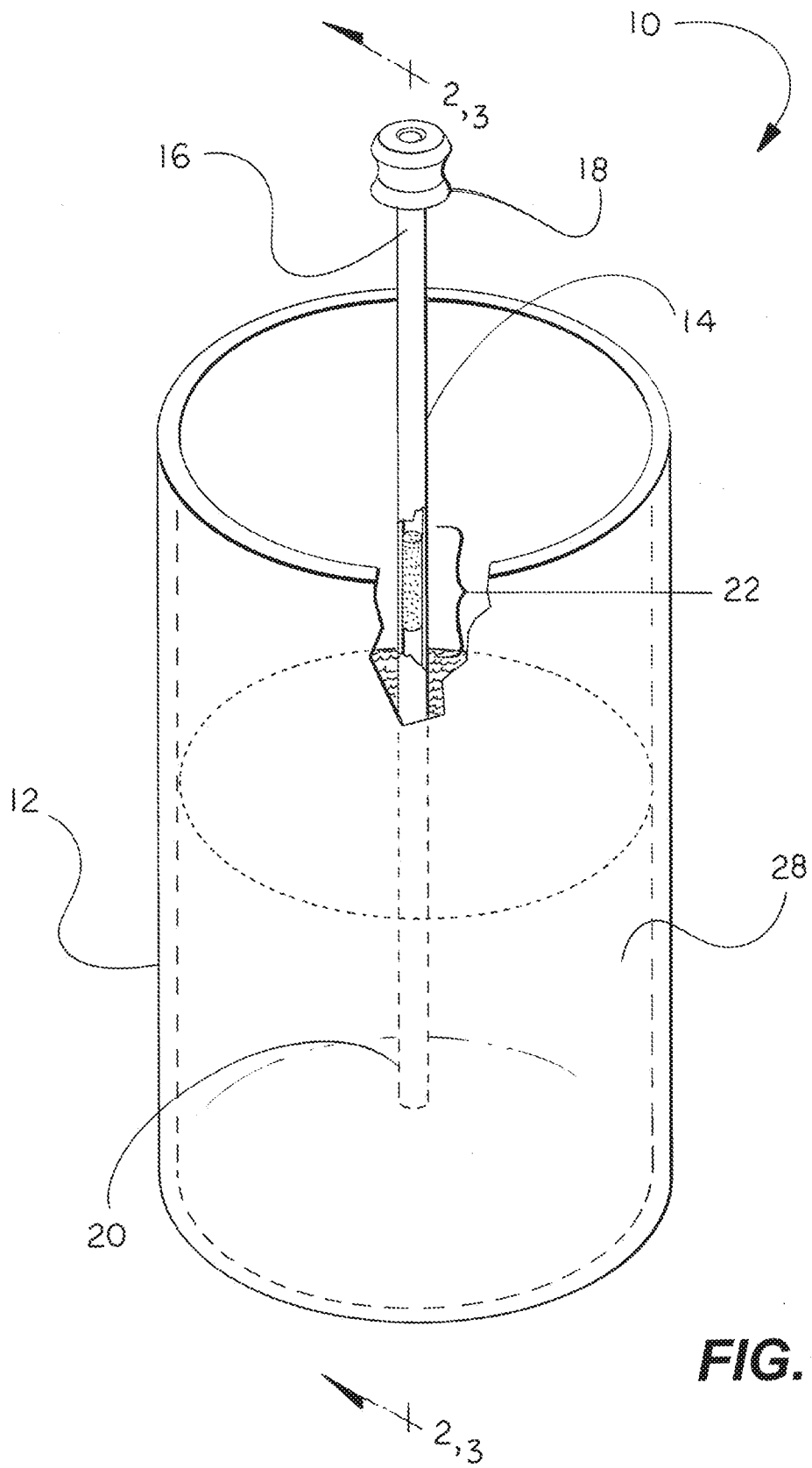
[0020] While this invention has been described with reference to preferred embodiments
15 thereof, it is to be understood that variations and modifications can be affected within the spirit and scope of the invention as described herein and as described in the appended claims.

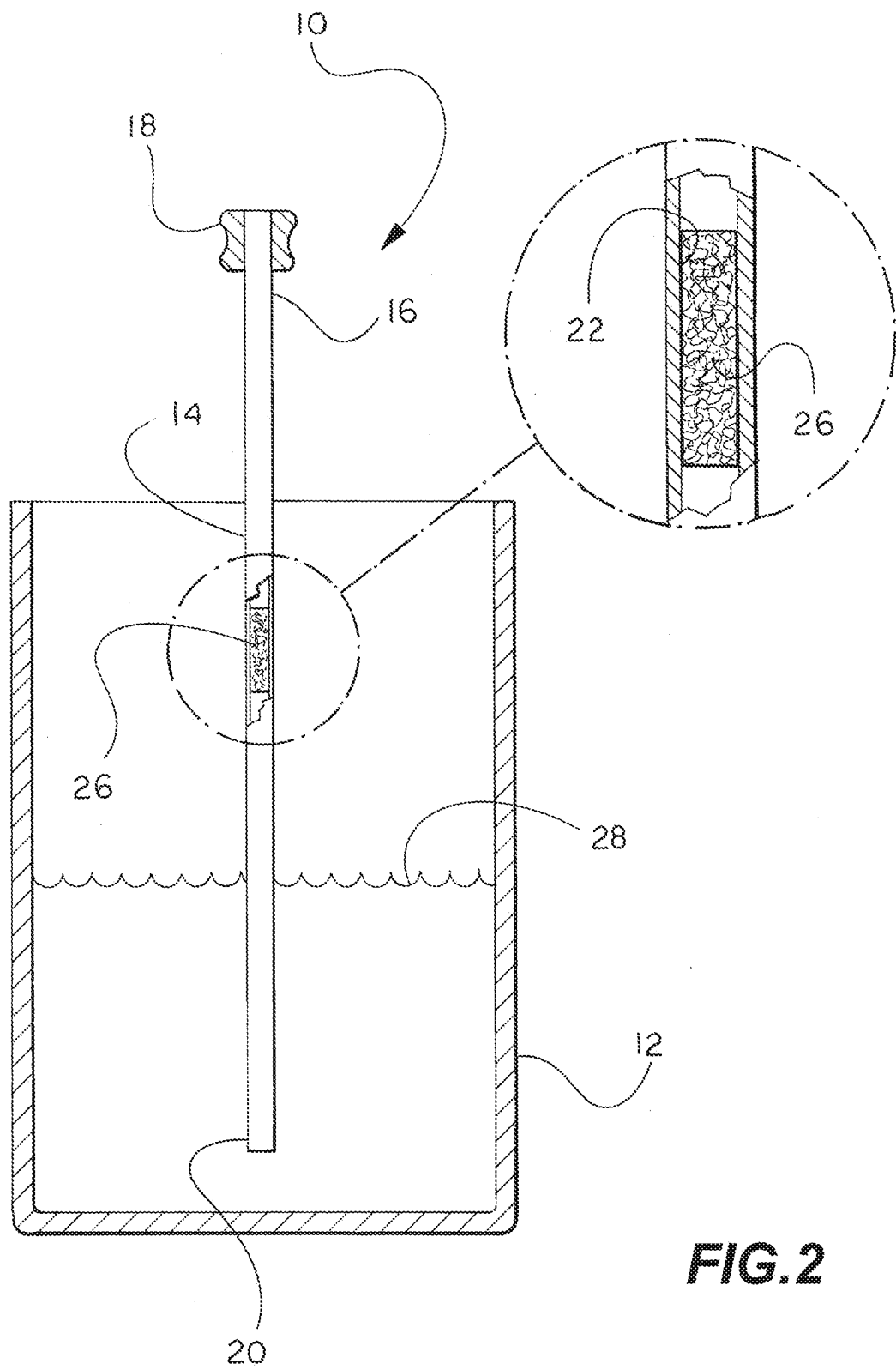
I claim:

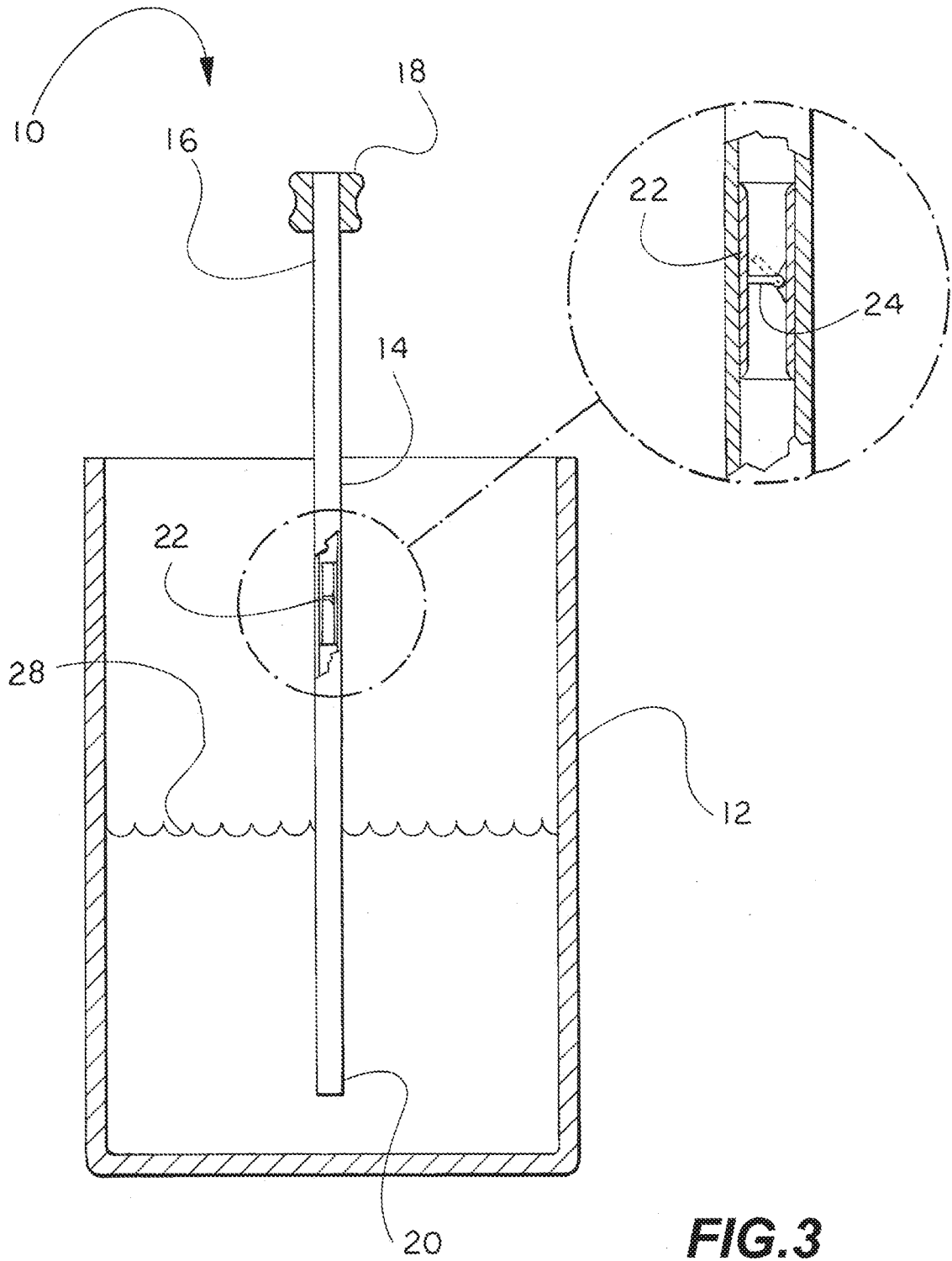
1. A hiccup relieving apparatus comprising:
 - a. a tube;
 - b. a mouthpiece attached to a first end of the tube;
 - c. a second end of the tube for submersion in a potable liquid in a container; and
 - d. an obstruction in the tube between the first end and the second end, wherein the obstruction requires a user to exert a suction of at least 10 cm of water in order to draw the potable liquid from the container through the tube and the mouthpiece.
2. The hiccup relieving apparatus of Claim 1, wherein the obstruction is a threshold valve with a suction threshold of at least 10 cm of water.
3. The hiccup relieving apparatus of Claim 1, wherein the obstruction is a wad of cellulosic material requiring the user to exert a suction of at least 10 cm of water in order to draw the potable liquid from the container through the tube and the mouthpiece.
4. The hiccup relieving apparatus of Claim 3, wherein the wad of cellulosic material is cotton.
5. A hiccup relieving apparatus comprising:
 - a. a tube;
 - b. a mouthpiece attached to a first end of the tube;
 - c. a second end of the tube for submersion in a potable liquid in a container; and
 - d. an obstruction in the tube between the first end and the second end, wherein the obstruction requires a user to exert a suction of at least 20 cm of water in order to draw the potable liquid from the container through the tube and the mouthpiece.
6. The hiccup relieving apparatus of Claim 1, wherein the obstruction is a threshold valve with a suction threshold of at least 20 cm of water.
7. The hiccup relieving apparatus of Claim 1, wherein the obstruction is a wad of cellulosic material requiring the user to exert a suction of at least 20 cm of water in order to draw the potable liquid from the container through the tube and the mouthpiece.

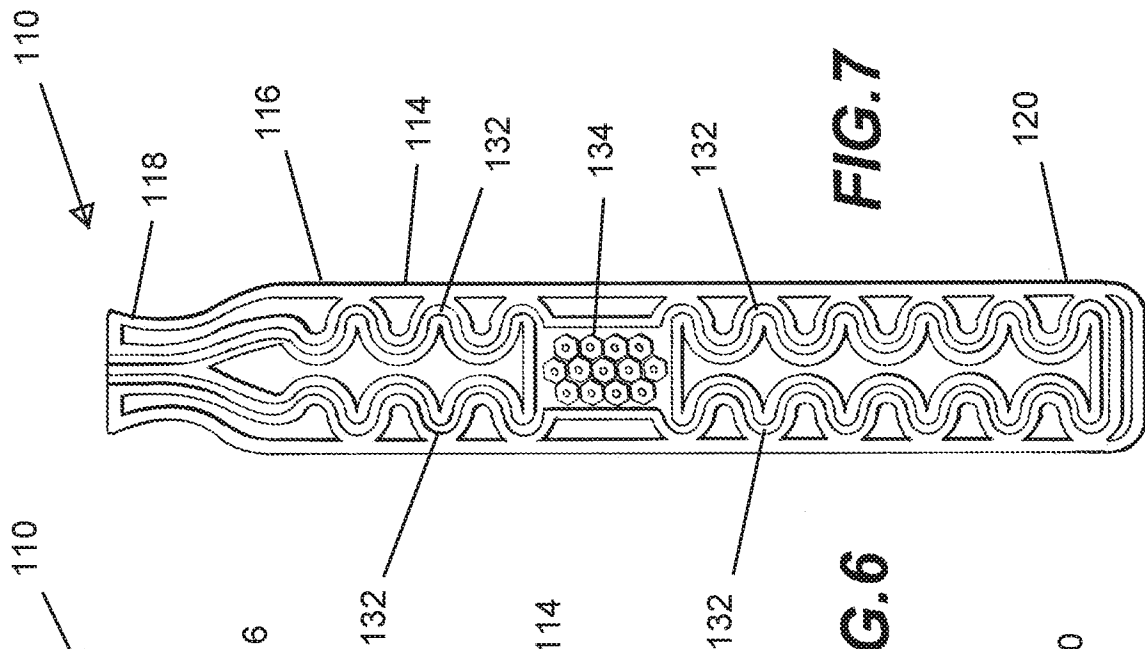
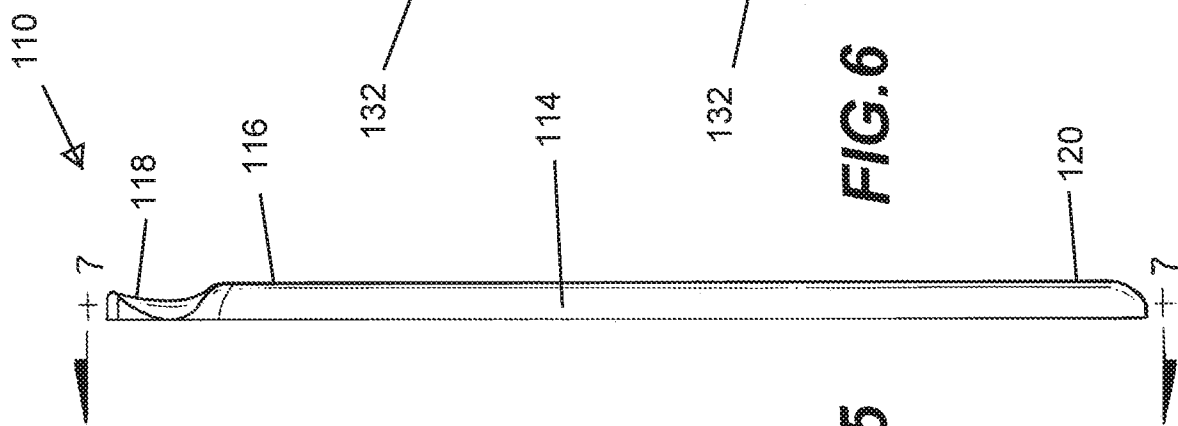
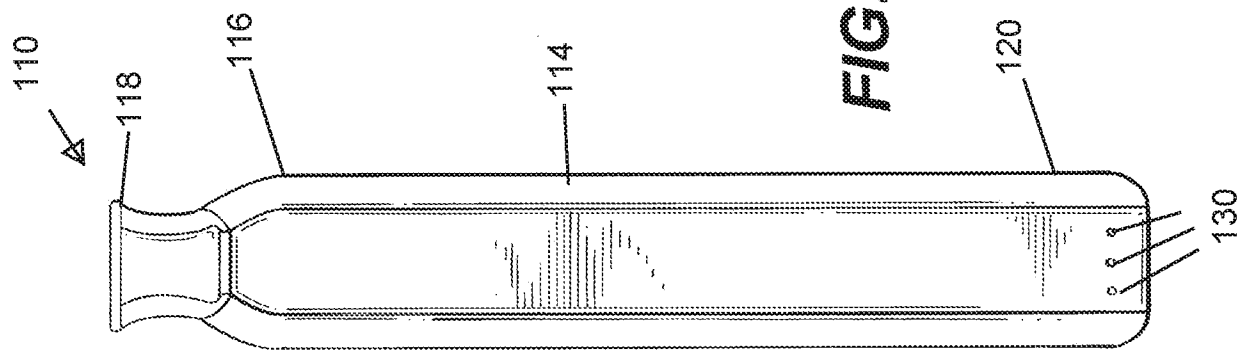
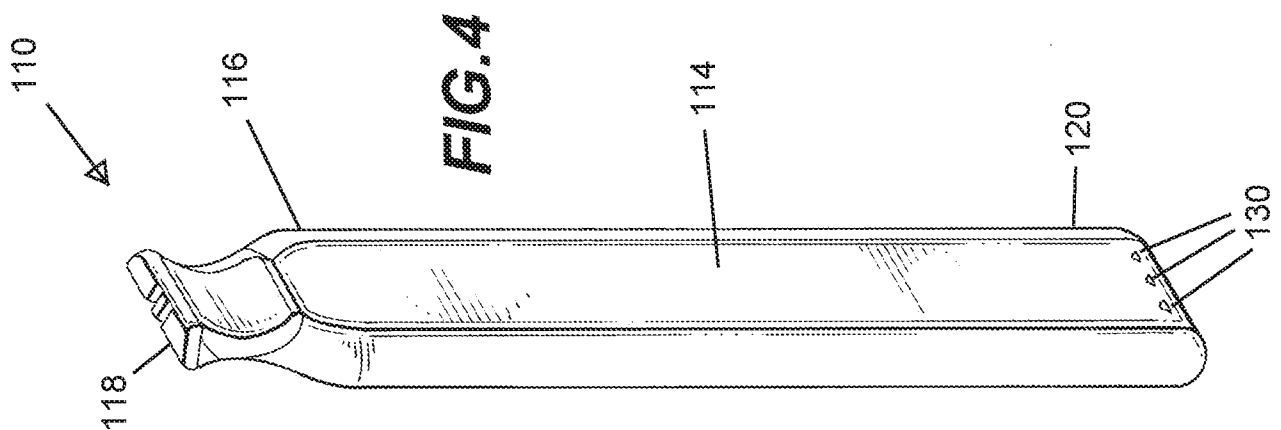
8. The hiccup relieving apparatus of Claim 7, wherein the wad of cellulosic material is cotton.
9. The hiccup relieving apparatus of Claim 8, wherein the wad of cotton weighs approximately 5-10 grams.
10. The hiccup relieving apparatus of Claim 8, wherein the wad of cotton is rolled inside a paper towel.
11. The hiccup relieving apparatus of Claim 10, wherein the paper towel has a pore size of less than 100 microns.
12. A hiccup relieving apparatus comprising:
 - a. a tube;
 - b. a mouthpiece attached to a first end of the tube; and
 - c. a second end of the tube for submersion in a potable liquid in a container and having sized orifices to require a suction of at least 10 cm of water before the potable liquid is delivered through the tube to a user.
13. The hiccup relieving apparatus of the Claim 12, wherein the tube further has serpentine channels connecting the orifices to the mouthpiece.
14. The hiccup relieving apparatus of Claim 12, wherein the tube further has a support structure for supporting an obstruction between the orifices and the mouthpiece.
15. A hiccup relieving apparatus comprising:
 - a. a tube;
 - b. a mouthpiece attached to a first end of the tube; and
 - c. a second end of the tube for submersion in a potable liquid in a container and having sized orifices to require a suction of at least 20 cm of water before the water is delivered through the tube to a user.
16. The hiccup relieving apparatus of the Claim 15, wherein the tube further has serpentine channels connecting the orifices to the mouthpiece.

17. The hiccup relieving apparatus of Claim 15, wherein the tube further has a support structure for supporting an obstruction between the orifices and the mouthpiece.

**FIG.1**



**FIG. 3**



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US19/13728

A. CLASSIFICATION OF SUBJECT MATTER

IPC - A47G 21/18 (2019.01)

CPC - A47G 21/182, 21/185, 21/188

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See Search History document

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

See Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 5,518,613 A (KOCZUR, PM et al.) 21 May, 1996; figure 1; column 3, lines 55-57, 65-67; column 5, lines 7-10; column 6, lines 10-15	1, 5, 12, 14-15, 17 ----- 2-4, 6-9
Y	US 5,156,335 A (SMITH, ML et al.) 20 October, 1992; figure 1; column 1, lines 35-38; column 2, lines 18-19, 23-28, 64-68; column 4, lines 47-50	1, 5
Y	US 5,509,605 A (CRIPE, GD) 23 April, 1996; figures 1, 2-4; column 1, lines 65-66; column 2, lines 3-4, 33-34; column 3, lines 20-21	1, 5
Y	US 2004/0112826 A1 (CHIBA, A et al.) 17 June, 2004; figures 2, 6; paragraphs [0020], [0033], [0035], [0037]	1, 5
Y	US 2009/0314736 A1 (RIGERT, M et al.) 24 December, 2009; paragraph [0043]	2, 6
Y	US 1,314,374 A (STAIR, BA) 26 August, 1919; figure 1; page 1, lines 33-36, 110-111	3-4, 7-9
A	US 2,812,257 A (SCISOREK, MD) 05 November, 1957; claim 4	10-11
A	US 2006/0192025 A1 (WHITE, FJE et al.) 31 August, 2006; paragraph [0026]	13, 16
A	US 2,943,794 A (SUSSMAN, MV) 05 July, 1960; figure 1; column 2, lines 66-67	13, 16

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

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