



(51) International Patent Classification:

A23L 2/395 (2006.01) A47G 21/18 (2006.01)
A23L 2/54 (2006.01) A23L 1/212 (2006.01)

(21) International Application Number:

PCT/US2017/017739

(22) International Filing Date:

13 February 2017 (13.02.2017)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

15/050,034 22 February 2016 (22.02.2016) 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, DJ, 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, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA,

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(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, ST, 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).

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))
- of inventorship (Rule 4.17(iv))

Published:

- with international search report (Art. 21(3))

(54) Title: A SINGLE USE TUBULAR STRAW

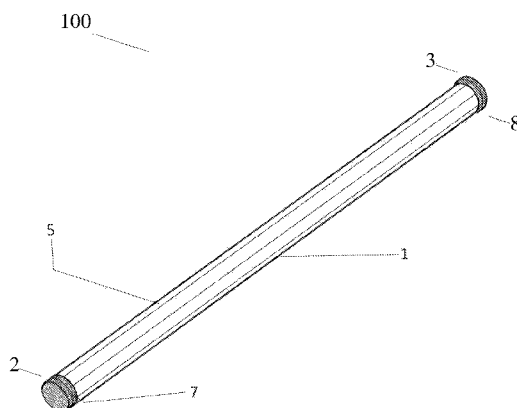


FIG. 1

(57) Abstract: The present invention relates to a single use tubular straw apparatus and method for conditioning of a liquid with a liquid conditioning material. The apparatus includes a hollow body, openings, seals, and a liquid conditioning material which provides efficiency, portability, and convenience to individuals who wish to add materials such as vitamins, flavorings, stimulants, and medicines to their portable drinks in a convenient and cost effective manner.

5 A Single Use Tubular Straw
Inventor: Rebecca Peterson

(A) BACKGROUND OF THE INVENTION

(1) FIELD OF THE INVENTION

10 The present invention relates to flavored drinking straws and more particularly pertains to a new flavoring delivery drinking straw.

(2) BACKGROUND OF THE INVENTION

Manufacturers of beverages are continually pursuing innovative marketing programs to enhance consumer preference for particular products. The use of flavored drinking straws, that is a straw
15 coupled with a conditioning material, such as a flavoring, is one such program that has been investigated over the years. While there is no lack of evidence that consumers enjoy flavored drinking straws, the market for these items is limited due to difficulties in manufacturing, packaging, and storage.

Some prior solutions have used soluble pellets or granules, retained by perforated end caps
20 within an elongate tubular body in the form of a straw, to progressively disperse flavoring agents or other ingredients into a carrier liquid drawn through the straw by oral suction, at the point of consumption. U.S. Patents 6,482,451; 8,334,003; 9,017,749; and U.S. Patent Publication 2014/0017360 discloses such devices. However, such straws may be ineffective in their operation, unnecessarily complicated, and costly to produce, particularly in disposable form.

25 Another solution has been to coat the interior of a straw by melting flavor ingredients and incorporating it into a solution consisting of a plasticizer, monoglyceride, and water. U.S. Patent Publication U.S. 2004/0109932 provides such a solution.

All of these and other similar alternatives display inherent shortcomings, which have hitherto prevented their widespread adoption or commercial success. As such, a solution is desirable.

30 (B) SUMMARY

5 The present invention provides a new single use liquid conditioning apparatus comprises an elongated tubular body with at least one elongated hollow section and at least two openings located on either side of the hollow section, a liquid conditioning material enclosed within the hollow section, and at least two seals, or caps, configured over each opening to enclose the conditioning material within the tubular body. At least one opening of the elongated tubular body
10 is adapted to receive the liquid flavor imparting material. At least one opening of the elongated tubular body is adapted to receive a liquid. At least one opening is adapted for a user to provide suction to draw the liquid through the tubular body.

A technical advantage of the invention is to provide a convenient way to condition a liquid and to drink to conditioned liquid.

15 Another technical advantage of the invention is to provide an inexpensive way to produce a flavored drinking straw.

Another technical advantage of the invention is to decrease the reliance on plastic bottles used for transporting drinks.

Another technical advantage of the invention is to provide an environmentally friendly way to
20 produce a flavored drinking straw.

Another technical advantage of the invention is to provide a user an effective way to customize the flavor and compositional profile of a liquid anywhere, anytime.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to
25 the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

30 These together with other technical advantage of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the disclosure. For a better understanding of the invention, its operating advantages and the specific technical

5 advantages attained by its uses, reference should be had to the accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the invention.

(C) BRIEF DESCRIPTION OF THE DRAWINGS

To further clarify various aspects of some example embodiments of the present invention, a more
10 particular description of the invention will be rendered by reference to specific embodiments thereof which are illustrated in the appended drawing. It is appreciated that the drawing depicts only illustrated embodiments of the invention and are therefore not to be considered limiting of its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawing in which:

15 FIG. 1 shows a perspective view of an embodiment of the invention.

FIG. 2 shows a perspective view of an embodiment of the invention.

(D) DETAIL DESCRIPTION OF THE INVENTION

In the following detailed description, reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration specific embodiments in which
20 the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that the embodiments may be combined, or that other embodiments may be utilized and that structural and logical changes may be made without departing from the spirit and scope of the present invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of
25 the present invention is defined by the appended claims and their equivalents.

Referring now to the drawings, wherein like reference characters designate identical, or corresponding parts throughout the figures, and in particular FIGS. 1 & 2 show various embodiments of the single use tubular straw for conditioning of a liquid in accordance with the present invention.

30 Referring to FIG. 1 and FIG. 2, an embodiment of the present single use liquid conditioning apparatus 100 is shown. The apparatus 100 comprises an elongated tubular body 1 and at least two seals 7 and 8. Body 1 includes an elongated hollow section, a bottom opening 2 located on

5 one side of the hollow section centrally located within the body, a top opening 3 located on the
opposing side of the hollow opening, an outer surface 5, and an inner surface 4. Outer surface 5
is smooth, but can be textured if desired for aesthetic appeal or functional considerations, such as
to improve one's ability to grip the body. Inner surface 4 is preferably smooth to help the free
flow of material when it is poured out of the body. Openings 2 and 3 is adapted to receive a
10 liquid conditioning material 6. Further, top opening 3 is adapted to provide outflow of a liquid
and to allow a user to provide suction and to allow inflow of a liquid, or to draw a liquid into
body 1 through bottom opening 2, as long as bottom opening 2 is submersed in a liquid. Further,
the liquid conditioning material 6 is enclosed within body 1 two seals, first seal 7 and second seal
8. Seals 7 and 8 may be a cap, plug, or fitting made of natural material, edible material, water
15 soluble material, paper, wax, or other ways known in the art. Seals 7 and 8 may removably
connect or be adhered to outer surface 5 or removably connected or adhered to inner surface 4, or
both surfaces simultaneously. The seals provide a secure connection to body 1 so the liquid
conditioning material 6 to completely enclose material 6 within body 1. It is contemplated seals 7
and 8 may the same or may be different material or shape, depending on such factors as the
20 characteristics of the liquid flavor imparting material and the manner of manufacturing. The
liquid conditioning material is preferred to be a solid granular or free flowing material
composition and may comprise a single ingredient or be compounded and made of multiple
ingredients. The material may also combined with a liquid if desired and compatible with the
material composition of body 1 and seals 7 and 8. The liquid conditioning material could be used
25 for a variety of reasons, such as to flavor a liquid, provide functional components such as
caffeine for stimulation or melatonin for sleep, or to affect the potability of a liquid. Some
contemplated examples of liquid conditioning materials are sugar, food flavoring, fruit,
vegetables, a breath freshener such as mint, a stimulant such as caffeine or guarana seed extract,
vitamins such as vitamin C or D, herbs, medicines, and nutritional supplements such as protein
30 powder. Body 1 may be made of food grade biodegradable or recycled plastic, wax paper, paper
or other materials commonly used in straw production. The preferred dimensions of body 1 are a
length of 21.59 cm x width of 0.73 cm x height of 0.73 cm, similar to a normal straw
dimensions; however it is contemplated the dimensions of body 1 may be altered to
accommodate a smaller or larger desired quantity of conditioning material, for novelty,

5 manufacturing, or aesthetic desires. It is contemplated tubular body 1 is cylindrical in shape, but it may alternatively be a triangular, square, or pentagonal prism shape.

Further a method is disclosed for using apparatus 100 by first opening one end of the apparatus by removing a seal, pouring the liquid conditioning material contained within the apparatus into a container of liquid. Next the other seal is removed from apparatus 100. Next one end of
10 apparatus 100 is submersed in the liquid and liquid conditioning material mixture, whereby the mixture is thoroughly blended by moving the partially submersed apparatus 100 in a stirring fashion. Once the liquid is completely mixed a user can withdraw the mixed liquid into their mouth by sucking on the non-submersed end of the apparatus.

It is to be understood that the above description is intended to be illustrative, and not restrictive.
15 For example, the above-discussed embodiments may be used in combination with each other. Many other embodiments will be apparent to those of skill in the art upon reviewing the above description.

While the present invention has been described with reference to particular embodiments, it should be understood that the embodiments are illustrative and that the scope of the invention is
20 not limited to these embodiments. Many variations, modifications, additions and improvements to the embodiments described above are possible. It is contemplated that these variations, modifications, additions and improvements fall within the scope of the invention.

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CLAIMS

What is claimed is:

1. A single use liquid conditioning apparatus comprising;
 - a tubular body comprising an inner surface and an outer surface;
 - a hollow section located centrally within the body;
 - 10 a top opening located on one side of the hollow section, the top opening further adapted to provide outflow of a liquid;
 - a bottom opening located on the other side of the hollow section, the bottom opening further adapted to provide inflow of a liquid;
 - a removable first seal configured to close the bottom opening;
 - 15 a removable second seal configured to the top opening; and
 - a liquid conditioning material located within the hollow section of the body;
2. A single use liquid conditioning apparatus according to claim 1, wherein the tubular body is a triangular prism shape.
3. A single use liquid conditioning apparatus according to claim 1, wherein the tubular body
20 is a square prism shape.
4. A single use liquid conditioning apparatus according to claim 1, wherein the tubular body is a pentagonal prism shape.
5. A single use liquid conditioning apparatus according to claim 1, wherein the tubular body is made of biodegradable food grade material.
- 25 6. A single use liquid conditioning apparatus according to claim 2, wherein the biodegradable food grade material is wax-coated food safe paper.
7. A single use liquid conditioning apparatus according to claim 1, wherein the conditioning material is water soluble.
8. A single use liquid conditioning apparatus according to claim 1, wherein the first and
30 second seals are plugs.
9. A single use liquid conditioning apparatus according to claim 1, wherein the liquid conditioning material is a food flavoring.
10. A single use liquid conditioning apparatus according to claim 1, wherein the liquid conditioning material makes the liquid potable.

- 5 11. A single use liquid conditioning apparatus according to claim 1, wherein the liquid conditioning material includes a stimulant.
12. A single use liquid conditioning apparatus according to claim 1, wherein the liquid conditioning material includes vitamins.
- 10 13. A single use liquid conditioning apparatus according to claim 1, wherein the liquid conditioning material includes vegetables.
14. A single use liquid conditioning apparatus according to claim 1, wherein the liquid conditioning material includes fruits.
15. A single use liquid conditioning apparatus according to claim 1, wherein the liquid conditioning material includes a breath freshener.
- 15 16. A single use liquid conditioning apparatus according to claim 1, wherein the liquid conditioning material includes medicine.
- 20 17. A method for using a single use liquid conditioning apparatus comprising: removing a first seal; pouring a liquid conditioning material contained within the apparatus into a container of liquid; removing a second seal; submersing a portion of the apparatus in the liquid and liquid conditioning material mixture; stirring the mixture with the apparatus until the liquid and the liquid conditioning material are completely mixed; and drinking the liquid through the apparatus.

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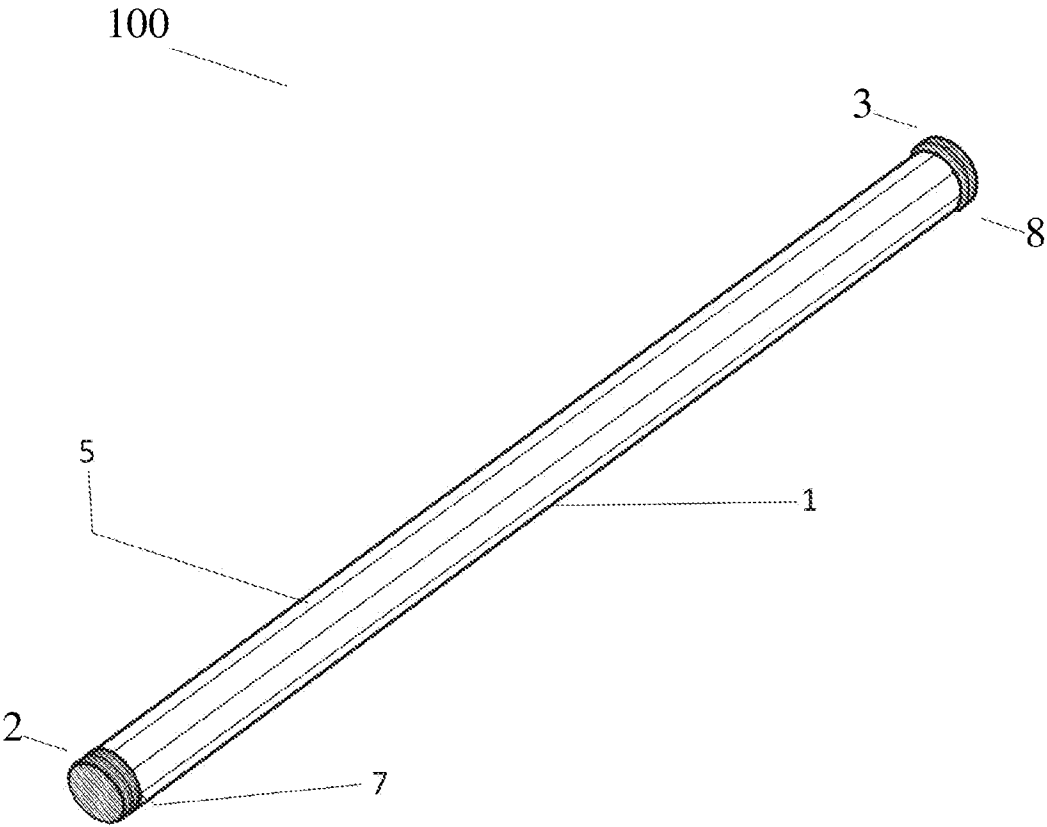


FIG. 1

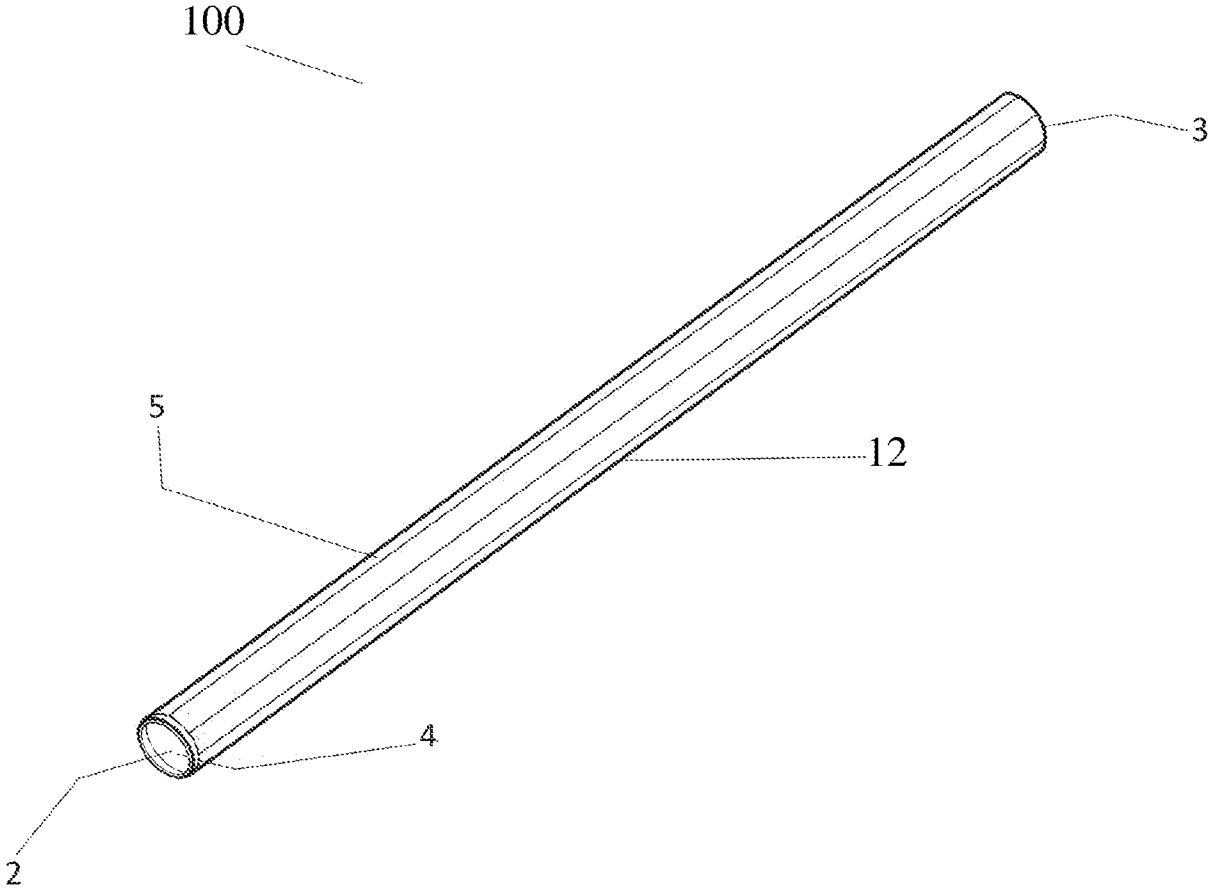


FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 17/17739

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A23L 2/395, A23L 2/54, A47G 21/18, A23L 1/212 (2017.01)

CPC - A23L2/395, A23L2/54, A47G21/18, A61J7/0038, A47G21/183, B29C66/43121, B29L2023/008, A23C9/156, A23F3/40, A23F5/46, A23L1/00, A23L1/03, A23L1/212, A23L1/05

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 2,867,536 A (Mead et al.) 06 January 1959 (06.01.1959), entire document, especially Fig. 1; col 1, ln 44-55; col 1, ln 58-62; col 1, ln 65-68; col 1, ln 69 to col 2, ln 1; col 2, ln 1-6;	1, 5-10, 17 ----- 2-4, 11-16
Y	US 2007/0059409 A1 (Catani et al.) 15 March 2007 (15.03.2007), entire document, especially Fig. 1, 6A, 6C; para[0001]; para[0060]; para[0054];	2-4
Y	US 2011/0135783 A1 (Piernick) 09 June 2011 (09.06.2011), entire document, especially para[0048]; para[0031]; para[0037]; para[0042]; para[0041];	11-16
A	US 8,334,003 B2 (Baron) 18 December 2012 (18.12.2012), entire document	1-17
A	US 2005/0249031 A1 (Morgese et al.) 10 November 2005 (10.11.2005), entire document	1-17
A	US 2004/0013772 A1 (Weiss et al.) 22 January 2004 (22.01.2004), entire document	1-17
A	US 6,482,451 B1 (Baron) 19 November 2002 (19.11.2002), entire document	1-17
A	US 2008/0197141 A1 (Felfoldi) 21 August 2008 (21.08.2008), entire document	1-17
A	US 2014/0017360 A1 (Ecseri et al.) 16 January 2014 (16.01.2014), entire document	1-17

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 11 April 2017	Date of mailing of the international search report 25 APR 2017
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774