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(54) **Title:** SOFT TIP FOR AN ELECTRONIC CIGARETTE

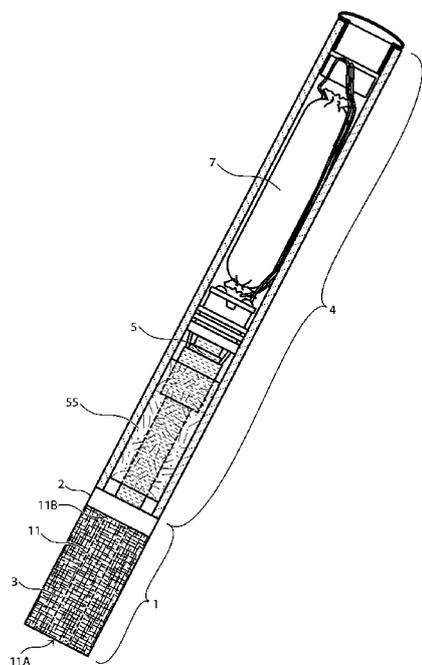


FIG. 4

(57) **Abstract:** A soft-tip for an electronic cigarette. The device is a soft mouthpiece for an electronic cigarette, having the tactile feel of a filter similar to a traditional cigarette without actually filtering or obstructing the aerosol created by the atomizer in the electronic cigarette. The device is a soft tip extending from an end of an electronic cigarette shell, the soft tip having a small vapor passage tube through it, the vapor passage tube being sealed with the body or shell of the electronic cigarette, the vapor passage tube being wrapped in sponge-like material and the sponge-like material being covered with paper or a sticker.

Title

Soft Tip for an Electronic Cigarette

[0001] This application claims priority to U.S. Provisional Application No. 61/768,240, filed February 22, 2013, the contents of which are incorporated herein by reference in their entirety.

Background of the Invention

[0002] The present invention relates to soft tips for electronic cigarettes. More specifically, to a mouthpieces that emulate the look and feel of a traditional cigarette filter without actually filtering the vapor flavoring or the nicotine vapor solution.

[0003] Current electronic cigarettes and other electronic smoking devices lack many of the aesthetic features common to traditional cigarettes, and to which many smokers are accustomed. Electronic cigarettes also function much differently than traditional cigarettes, having an electronic atomizer rather than relying on combustion. Traditional cigarettes typically employ a sponge-like filter to prevent ash and other combustion by-products from being inhaled by a smoker, while electronic cigarettes do not have such by-products and typically employ a hard plastic or metal tube as a mouthpiece without a filter. These electronic cigarettes do not have the same tactile feel as traditional cigarettes and, as a result, many smokers who are accustomed to the feel of traditional cigarettes have been hesitant to adopt them. It is also not ideal to place an actual filter on the end of an electronic cigarette because it may disrupt operation and impede the flow of vapor to the smoker's mouth.

[0004] One of the significant problems presented in making an electronic cigarette feel like a traditional cigarette is that the internal circuitry, sensors and atomizer assembly for an electronic cigarette are not crushable. Additionally, electronic cigarettes have a nicotine liquid or gel that must be kept from leaking. The simplest way to resolve these two issues is to use a sealed, hard shell for the electronic cigarette, sacrificing tactile feel of the electronic cigarette for functionality.

[0005] Several prior art electronic cigarettes have attempted to introduce features to make electronic cigarettes feel to a smoker more like a traditional cigarette. For example, in U.S. Pub. No. 2012/0312313, the inventor describes adhering a padded moisture barrier around the hard

shell of an electronic cigarette. This solution provides a padded feel to an electronic cigarette, but does not allow a person to crush or chew the tip without damaging the components in the electronic cigarette.

[0006] Another approach, shown in U.S. Pub. No. 2011/0232654, is to create a removable tip that can be attached to the body of an electronic cigarette, the tip containing a liquid storage chamber wrapped in a sponge-like material. This approach does not resolve the issue of providing a crushable/chewable tip and may increase the potential for leakage because the person would be chewing directly on the liquid storage container.

[0007] Another approach, shown in U.S. Pub. No. 2013/0061861, is to place a padded material at the tip of the electronic cigarette in the location where a person's teeth would naturally close around the electronic cigarette. Inside the padded material is a deformable component that flattens when a person's teeth close on it and open when the person's teeth release it. When the deformable component is not being clamped by a person's teeth, the deformable component is open and allows a vapor outlet to remain open into the electronic cigarette. While this device allows a person to crush or chew the tip, the padded material is in direct contact with the vapor, which would saturate the padded material after repeated use and may increase the chance for leakage. Additionally, the device is complicated and may be prone to malfunction.

[0008] An earlier approach, as shown in U.S. Pub. No. 2006/0254604 simply place a crushable filter on the end of a simulated cigarette. As mentioned above, this approach is not ideal because it places an actual filter in the path of the vapor exiting the electronic cigarette.

[0009] What is needed is a soft tip for an electronic cigarette, which is crushable, feels like a filter but is separated from the liquid storage area to prevent leakage, and does not allow the soft padded tip material to contact or absorb any of the liquid vapor exiting the electronic cigarette.

Summary of Invention

[0010] The device is a soft mouthpiece for an electronic cigarette, having the tactile feel of a filter similar to a traditional cigarette without actually filtering or obstructing the aerosol created by the atomizer in the electronic cigarette. The device is a soft tip extending from an end of an electronic cigarette shell, the soft tip having a small impermeable vapor passage tube through it, the vapor passage tube being sealed with the body or shell of the electronic cigarette, the vapor passage tube being wrapped in sponge-like material and the sponge-like material being covered with paper or a sticker.

Brief Description of Drawings

- [0011] **Figure 1** shows a completely assembled electronic cigarette with a soft tip.
- [0012] **Figure 2** shows the proximal end of the soft tip in an assembled electronic cigarette and the vapor passage tube.
- [0013] **Figure 3** shows the vapor passage tube and seal apart from the soft tip.
- [0014] **Figure 4** shows a cutaway view of the electronic cigarette and soft tip.
- [0015] **Figure 5A** shows a disassembled and exploded view of the electronic cigarette and soft tip, with the internal components removed from the shell.
- [0016] **Figure 5B** shows a cutaway view of the assembled electronic cigarette and soft tip.
- [0017] **Figure 6** shows a disassembled view of a soft tip with a two-piece seal and vapor passage tube.
- [0018] **Figure 7** shows a disassembled view of the soft tip with a single-piece seal and vapor passage tube.

Detailed Description of the Invention

[0019] As shown in **Figure 1**, the device comprises a soft tip **1** for an electronic cigarette that feels like a traditional cigarette filter in a person's mouth, which electronic cigarette, as shown in **Figure 4**, has an atomizer **5** and a shell **4**, the atomizer **5** being inside the shell **4**. As shown in **Figure 1**, the shell **4** has two ends, a proximal end **4A** near the person's mouth and a distal end **4B** away from the person's mouth. The device further comprises a seal cap or a gasket ("seal" **2**) which fits in and closes the proximal end **4A** of the shell **4**. As shown in **Figures 2 and 3**, the soft tip **1** further comprises a vapor passage tube **11**, also having a proximal end **11A** and a distal end **11B**. The seal **2** has a hole or valve **2A** in it, which receives and encircles the distal end **11B** of the vapor passage tube **11**. As shown in **Figure 4**, the distal end **11B** of vapor passage tube **11** connects to the atomizer **5** located inside the shell **4**. The atomizer **5** is functionally connected to a battery **7** and to a reservoir **55** or supply area for nicotine solution. The atomizer **5** vaporizes the nicotine solution as it passes from the reservoir **55**. In one embodiment, as shown in **Figures 5A and 5B**, the atomizer **5** is aligned with the vapor passage tube **11**. The vapor passage tube **11** extends through the hole **2A** in the seal **2** outward from the proximal end **4A** of the shell **4**. In

one embodiment, the vapor passage tube **11** extends between half an inch and three quarters of an inch from the proximal end **4A** of the shell **4**. As shown in **Figures 6 and 7**, the vapor passage tube **11** and seal **2** may be manufactured as two separate pieces, a single piece, or in the shape of a nipple. In one embodiment, the vapor passage tube **11** is impermeable to liquid, air, vapor and aerosol. In one embodiment, the vapor passage tube **11** is incollapsible. In one embodiment, the vapor passage tube **11** is wrapped in a cotton batting, polyester fiber (e.g. EV Polyester fiber) or some other sponge-like or spongy material ("sponge-like material") **3**. During operation, vapor travels from the atomizer **5** through the vapor passage tube **11**. The vapor passage tube **11** does not need to be in the center of the sponge-like material **3**. The sponge-like material **3** may be glued or adhered to the vapor passage tube **11** to hold the sponge-like material **3** in place. The entire assembled electronic cigarette (shell **4** and soft mouthpiece) is wrapped in paper, a sticker, plastic or some other outer covering **6** creating a soft mouthpiece for the electronic cigarette extending from the proximal end **4A** of the shell **4** that simulates the feel of a traditional cigarette filter and simulates the overall feel/aesthetic of a traditional cigarette. The soft tip **1** may also be wrapped separately from the shell **4** of the electronic cigarette. Alternatively, the soft tip **1** device may be used with other smoking devices other than an electronic cigarette, such as an inhaler or a pipe.

[0020] During operation of the electronic cigarette, when a person sucks on the soft tip **1**, the aerosol passes from the reservoir **55** to the electronic cigarette's atomizer **5** to the person through the vapor passage tube **11**. The vapor passage tube **11** protrudes from electronic cigarette through a seal **2**, the seal having a hole **2A**, and being located on the proximal end **4A** of the shell **4**. The seal **2** only permits liquids, air, vapor and aerosol to exit the electronic cigarette through the vapor passage tube **11** and prevents them from passing through the impermeable walls of the vapor passage tube **11**.

[0021] The device may be any height and any width, so long as it is proportional to the electronic cigarette to which it is attached. The seal **2** may be made of metal, plastic, stainless steel and elastomers or other materials that will keep a seal inside the shell **4** between the shell **4** and the vapor passage tube **11**. The vapor passage tube **11** may be made of metal, plastic, stainless steel, PVC or any other materials that are incollapsible or that will not crush easily.

The outer covering 6 may also be treated with glitter, fur, leather or other decorative or non-slip grip elements.

[0022] Embodiments of this invention are described herein. Variations of those embodiments may become apparent to those having ordinary skill in the art upon reading the foregoing description. The inventors expect that skilled artisans will employ such variations as appropriate, and the inventors intend for the invention to be practiced other than as specifically described herein. Accordingly, this invention includes all modifications and equivalents of the subject matter recited in the claims appended hereto as permitted by applicable law. Moreover, any combination of the above-described elements in all possible variations hereof is encompassed by the invention unless otherwise indicated herein or otherwise clearly contradicted by context.

[0023] While the disclosure above sets forth the principles of the present invention, with the examples given for illustration only, one should realize that the use of the present invention includes all usual variations, adaptations and/or modifications within the scope of the claims attached as well as equivalents thereof.

[0024] All references, including publications, patent applications, and patents cited herein are hereby incorporated by reference to the same extent as if each reference was individually and specifically indicated to be incorporated by reference and was set forth in its entirety herein.

[0025] The use of the terms "a" and "an" and "the" and similar referents in the context of describing an invention (especially in the context of the following claims) are to be construed to cover both the singular and the plural, unless otherwise indicated herein or clearly contradicted by context. The terms "comprising," "having," "including," and "containing" are to be construed as open-ended terms (i.e., "including, but not limited to,") unless otherwise noted. Recitation of ranges as values herein are merely intended to serve as a shorthand method of referring individually to each separate value falling within the range, unless otherwise indicated herein, and each separate value is incorporated into the specification as if it was individually recited herein. All methods described herein can be performed in any suitable order unless otherwise indicated herein or otherwise clearly contradicted by context. The use of any and all examples, or exemplary language (e.g., "such as") provided herein, is intended merely to better illuminate the invention and does not pose a limitation on the scope of the invention (i.e., "such

as, but not limited to,") unless otherwise claimed. No language in the specification should be construed as indicating any non-claimed element as essential to the practice of the invention.

[0026] Those skilled in the art will appreciate from the foregoing that various adaptations and modifications of the just described embodiments can be configured without departing from the scope and spirit of the invention. Therefore, it is to be understood that, within the scope of the appended claims, the invention may be practiced other than as specifically described herein.

What Claimed Is:

- Claim 1:** An electronic cigarette device comprising:
a shell with a proximal end and a distal end;
a reservoir of nicotine solution;
an atomizer assembly to aerosolize the nicotine solution,
a battery functionally connected to the atomizer,
a soft tip at the proximal end of the shell, said soft tip comprising
an impenetrable vapor passage tube having a proximal and distal end and a seal having a hole, said seal encircling the distal end of the vapor passage tube and said vapor passage tube passing through the seal and connected to the atomizer; and
a sponge-like material wrapped around the vapor passage tube to simulate the feel of a filter of a tobacco-based cigarette.
- Claim 2:** The device of claim 1, further comprising an outer covering.
- Claim 3:** The device of claim 1, wherein the outer covering is paper.
- Claim 4:** The device of claim 1, wherein the outer covering is a sticker.
- Claim 5:** The device of claim 1, wherein the sponge-like material is polyester fiber.
- Claim 6:** The device of claim 1, wherein the vapor passage tube is incollapsible.
- Claim 7:** The device of claim 1, wherein the vapor passage tube is impermeable.
- Claim 8:** The device of claim 1, wherein the seal and the vapor passage tube are a single piece.
- Claim 9:** The device of claim 1, wherein the seal and the vapor passage tube are two separate pieces.
- Claim 10:** The device of claim 1, wherein the seal and the vapor passage tube form the shape of a nipple.
- Claim 11:** The device of claim 1, wherein the vapor passage tube is between half an inch and three quarters of an inch long.
- Claim 12:** The device of claim 1, further comprising a permanent attachment between the sponge-like material and the vapor passage tube.
- Claim 13:** The permanent attachment of claim 12, wherein the attachment comprises glue.

Claim 14: The device of claim 1, wherein the outer covering is in two pieces to wrap the sponge-like material and the shell separately.

Claim 15: The device of claim 1, wherein the atomizer assembly is located within the shell.

Claim 16: The device of claim 1, further comprising an LED light to simulate a lit cigarette.

Claim 17: The device of claim 1, further comprising an end cap removably attached to the distal end of the shell.

Claim 18: The device of claim 1, further comprising an outer covering surrounding the sponge-like material.

Claim 19: The device of claim 2, the outer cover further comprising a non-slip grip.

Claim 20: A method of simulating the look and feel of a tobacco-based cigarette comprising:
Wrapping an impermeable vapor passage tube of an electronic cigarette in a sponge-like material, said electronic cigarette comprising
a shell with a proximal end and a distal end;

a reservoir of nicotine solution;

an atomizer assembly to aerosolize nicotine, said atomizer connected to the vapor passage tube,
a battery functionally connected to the atomizer,

a seal having a hole, said seal encircling the distal end of the vapor passage tube,

an outer covering surrounding the sponge-like material and shell tube;

Wherein the electronic cigarette simulates the look and feel of a tobacco-based cigarette.

Claim 21: The method of claim 20, further comprising an outer covering.

Claim 22: The method of claim 20, wherein the outer covering is paper.

Claim 23: The method of claim 20, wherein the outer covering is a sticker.

Claim 24: The method of claim 20, wherein the sponge-like material is polyester fiber.

Claim 25: The method of claim 20, wherein the seal and the vapor passage tube are a single piece.

Claim 26: The method of claim 20, wherein the seal and the vapor passage tube are two separate pieces.

Claim 27: The method of claim 20, wherein the seal and the vapor passage tube form the shape of a nipple.

Claim 28: The method of claim 20, wherein the vapor passage tube is between half an inch and three quarters of an inch long.

Claim 29: The method of claim 20, further comprising a permanent attachment between the sponge-like material and the vapor passage tube.

Claim 30: The device of claim 29, wherein the attachment comprises glue.

Claim 31: The device of claim 20, wherein the outer covering is in two pieces to wrap the sponge-like material and shell separately.

Claim 32: The method of claim 20, wherein the atomizer assembly is located within the shell.

Claim 33: The device of claim 20, further comprising an LED light to simulate a lit cigarette,

Claim 34: The device of claim 20, further comprising an end cap removably attached to the distal end of the shell.

Claim 35: The device of claim 20, further comprising an outer covering surrounding the sponge-like material.

Claim 36: The device of claim 20, the outer covering further comprising a non-slip grip.

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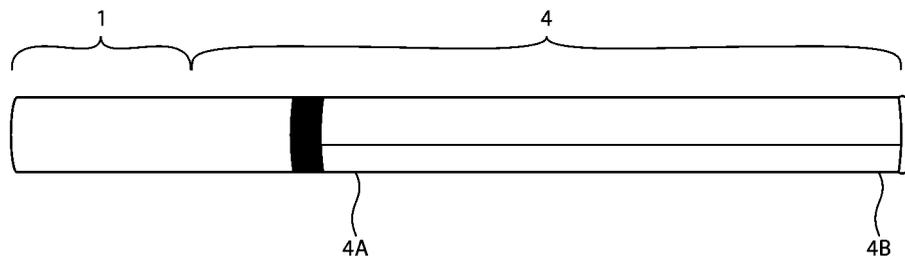


FIG. 1

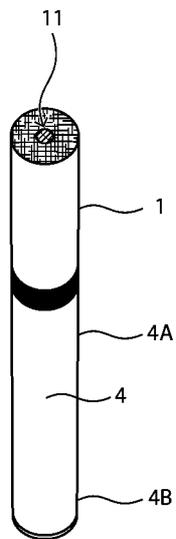


FIG. 2

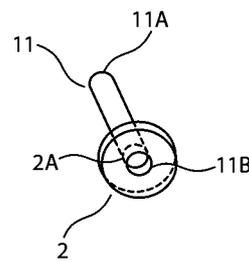


FIG. 3

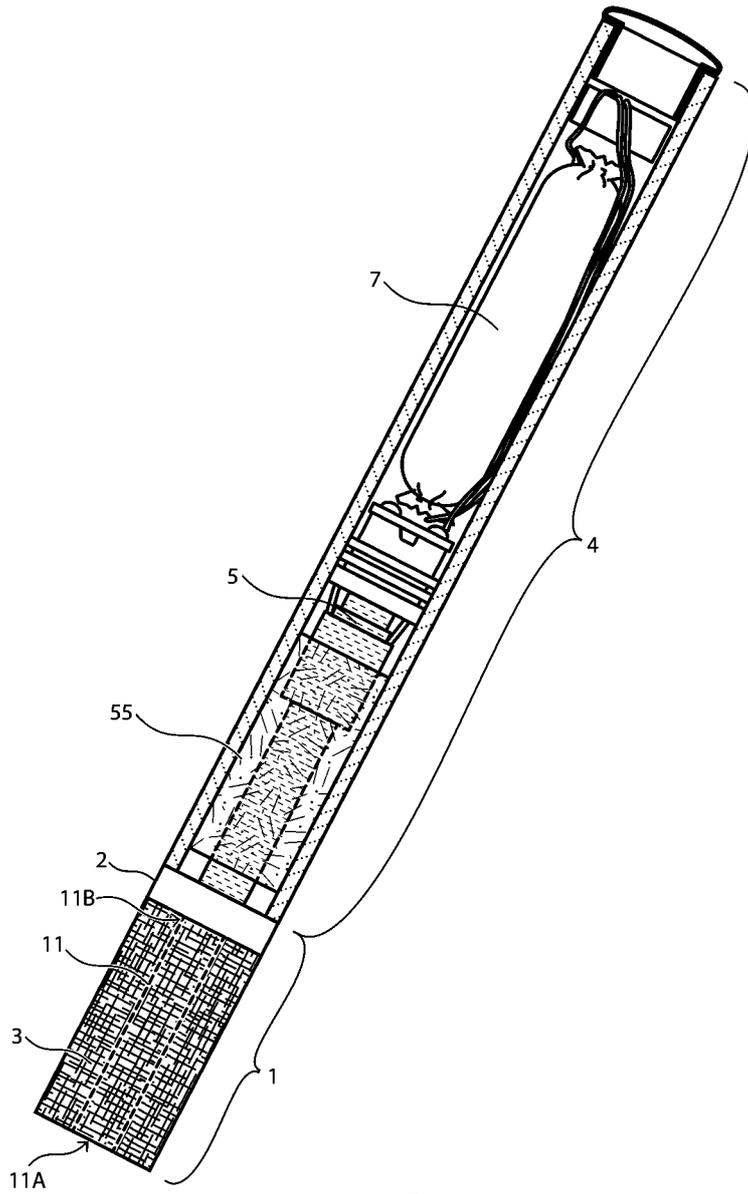


FIG. 4

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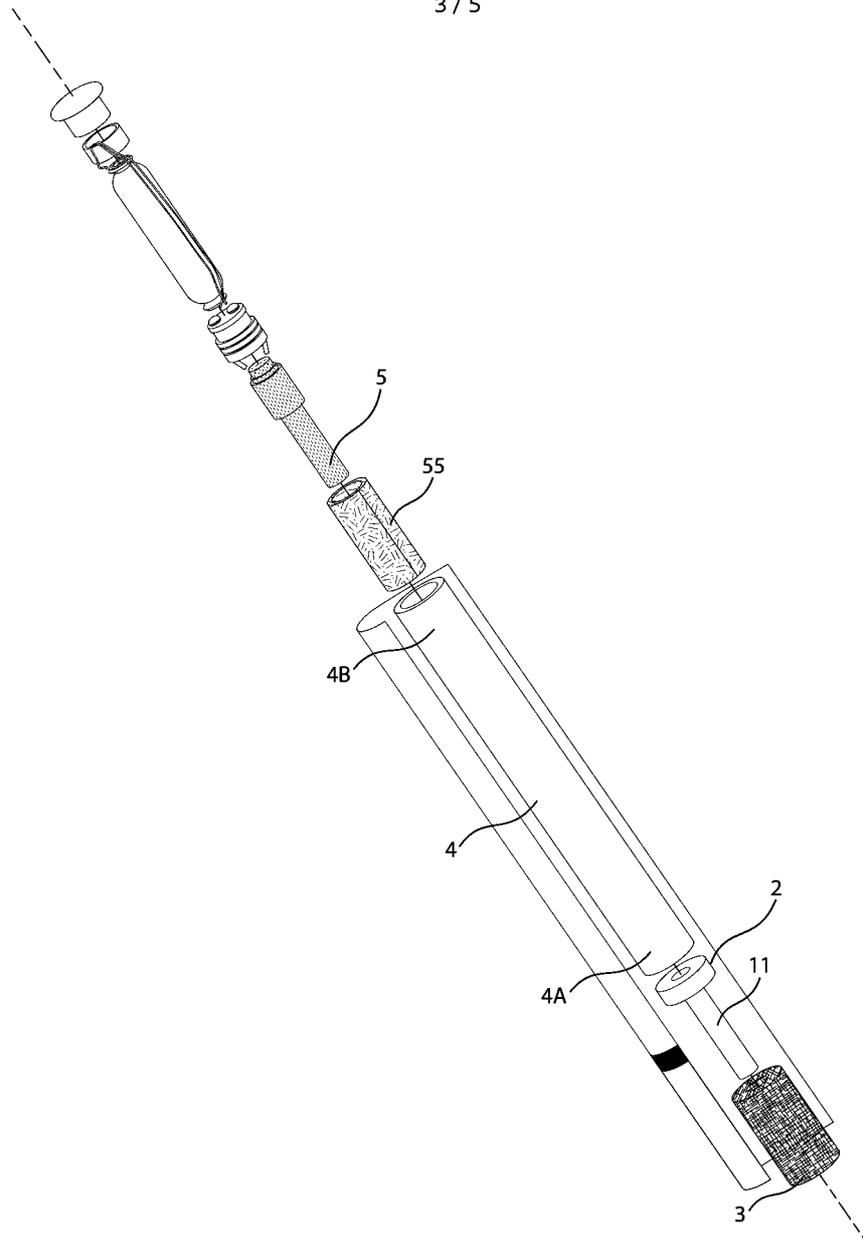


FIG. 5A

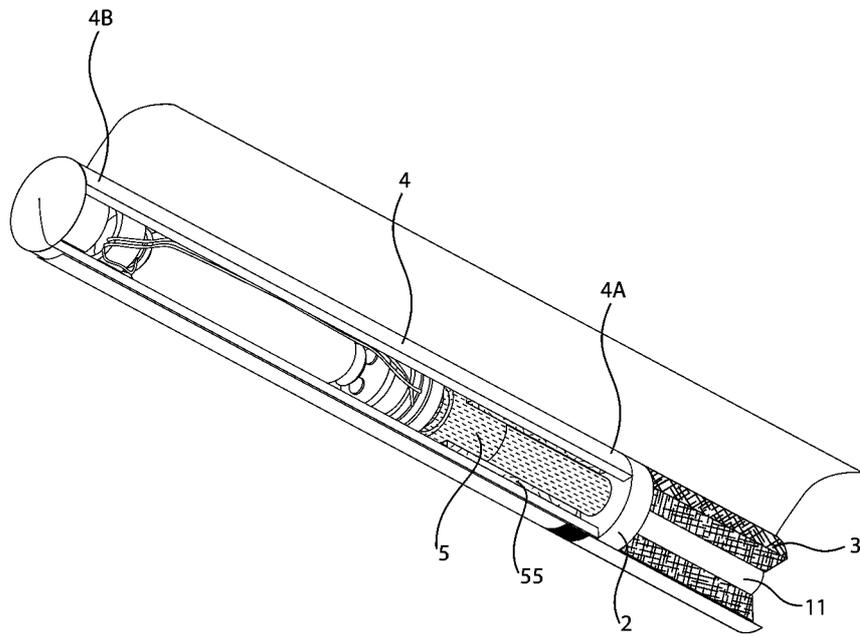


FIG. 5B

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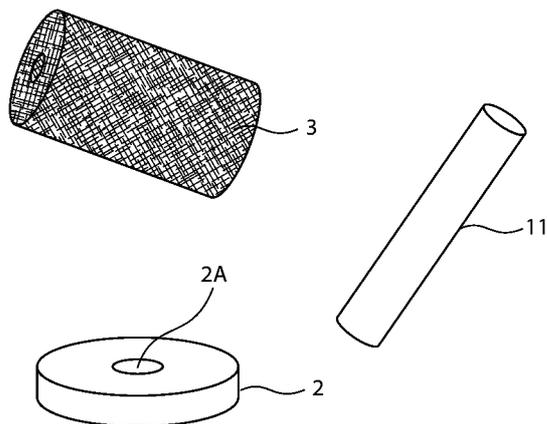


FIG. 6

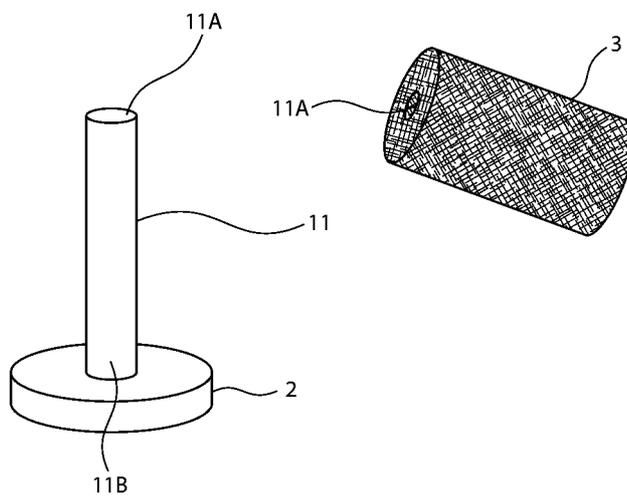


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US20 14/011677

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A61 M 15/06 (2014.01)
USPC - 131/273

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)
 IPC(8) - A24B 15/00, 15/16; A24F 47/00; A61 M 15/06 (2014.01)
 USPC - 128/202.21 ; 131/273, 329, 347, 359, 360

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 CPC - A24B 15/16, A24C 5/40; A24D 1/00; A24F 25/02, 47/002; A61 M 15/06 (2014.02)

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2012/0312313 A1 (FRIJA) 13 December 2012 (13.12.2012) entire document	1-4, 6-23, 25-36
Y		5, 24
Y	US 2009/0288669 A1 (HUTCHENS) 26 November 2009 (26.11.2009) entire document	5, 24
A	US 2010/0200008 A1 (TAIEB) 12 August 2010 (12.08.2010) entire document	1-36
A	US 2011/0232654 A1 (MASS) 29 September 2011 (29.09.2011) entire document	1-36
A,P	US 2013/0276802 A1 (SCATTERDAY) 24 October 2013 (24.10.2013) entire document	1-36

Further documents are listed in the continuation of Box C. 1

* 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 25 April 2014	Date of mailing of the international search report 14 MAY 2014
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