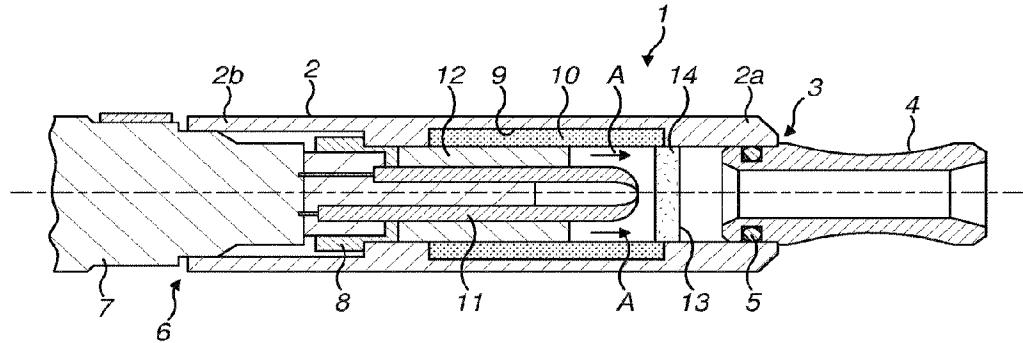




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(54) Titre : DISPOSITIF DE GENERATION D'UN MILIEU INHALABLE, SON UTILISATION POUR FOURNIR UNE ADMINISTRATION PROLONGEE DE NICOTINE, CARTOUCHE ET DOSETTE DE COMPOSITION DE TABAC ADAPTEE A L'UTILISATION DANS CELUI-CI
(54) Title: DEVICE FOR GENERATING AN INHALABLE MEDIUM, ITS USE TO PROVIDE SUSTAINED NICOTINE DELIVERY, CARTRIDGE AND TOBACCO COMPOSITION POD SUITABLE FOR USE THEREIN



(57) Abrégé/Abstract:

Disclosed herein is a device (1) for generating an inhalable medium, the device comprising: a container (9) for holding a liquid (10); a heater (11) for volatilising liquid held in the container; a chamber (13) containing a tobacco composition (14); and an outlet (4); the arrangement being such that in use, an inhalable medium passes out of the outlet, the medium comprising (i) volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition; wherein the tobacco composition comprises a tobacco material and an encapsulated base.

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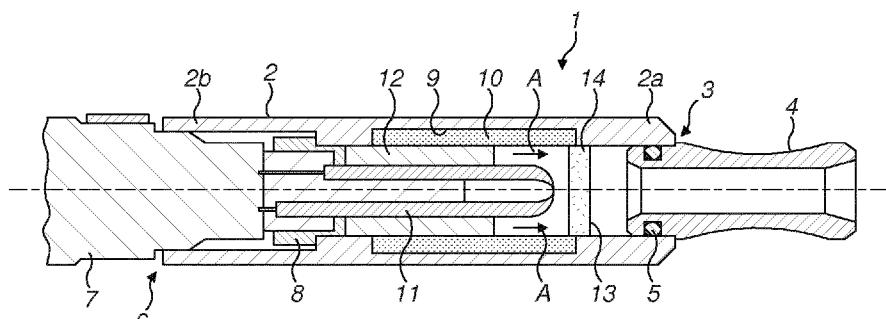


FIG. 1

(57) Abstract: Disclosed herein is a device (1) for generating an inhalable medium, the device comprising: a container (9) for holding a liquid (10); a heater (11) for volatilising liquid held in the container; a chamber (13) containing a tobacco composition (14); and an outlet (4); the arrangement being such that in use, an inhalable medium passes out of the outlet, the medium comprising (i) volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition; wherein the tobacco composition comprises a tobacco material and an encapsulated base.

DEVICE FOR GENERATING AN INHALABLE MEDIUM, ITS USE TO PROVIDE SUSTAINED NICOTINE DELIVERY, CARTRIDGE AND TOBACCO COMPOSITION POD SUITABLE FOR USE THEREIN

Technical Field

The present invention relates, without limitation, to a device for generating an
5 inhalable medium, a cartridge for use in a device for generating an inhalable medium,
a method of generating an inhalable medium, a kit and a tobacco composition pod.

Background

10 Smoking articles such as cigarettes, cigars and the like burn tobacco during use
to create tobacco smoke. Alternatives to these types of articles, release compounds
without burning to form an inhalable medium.

15 Examples of such products are heating devices include e-cigarette / heat-not-burn hybrid devices, also known as electronic tobacco hybrid devices. These hybrid
devices contain a liquid which is vaporised by heating to produce an inhalable vapour
or aerosol. The liquid may contain flavourings and/or aerosol-generating substances,
such as glycerol and in some instances, nicotine. The vapour or aerosol passes through
material in the device and entrains one or more constituents of a substrate material to
produce the inhaled medium. The substrate material may be, for example, tobacco,
20 other non-tobacco products or a combination, such as a blended mix, which may or may
not contain nicotine.

Summary

25 In some embodiments described herein, the invention provides a device for
generating an inhalable medium, the device comprising:

a container for holding a liquid;
a heater for volatilising liquid held in the container;
a chamber containing a tobacco composition; and
an outlet;
30 the arrangement being such that in use, an inhalable medium passes out of the
outlet, the medium comprising (i) volatilised liquid in the form of a vapour and/or an
aerosol and (ii) one or more constituents of the tobacco composition;

wherein the tobacco composition comprises a tobacco material and an encapsulated base.

5 The device described herein may be referred to as an electronic tobacco hybrid device.

10 The invention also provides a cartridge for use in a device for generating an inhalable medium, the cartridge comprising a volatilisable liquid in a first chamber and a tobacco composition in a second chamber, wherein the tobacco composition comprises a tobacco material and an encapsulated base.

Suitably, the cartridge may be adapted for use in the device for generating an inhalable medium described herein.

15 The invention also provides a method of generating an inhalable medium using a device comprising a container holding a liquid, a heater for volatilising the liquid, a chamber containing a tobacco composition and an outlet, the method comprising:

volatilising the liquid held in the container;

20 forming an inhalable medium, the inhalable medium comprising (i) the volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition; and

passing the inhalable medium out of the outlet;

wherein the tobacco composition comprises a tobacco material and an encapsulated base.

25

The invention also provides for the use of an encapsulated base in a tobacco composition to provide sustained nicotine delivery in use, wherein the tobacco composition is provided in a device, the device comprising;

30 a container for holding a liquid;

a heater for volatilising liquid held in the container;

a chamber containing the tobacco composition; and

an outlet;

the arrangement being such that in use, an inhalable medium passes out of the outlet, the medium comprising (i) volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition.

5 The invention also provides a method of providing sustained release of nicotine from a device for generating an inhalable medium, the device comprising;

a container for holding a liquid;
a heater for volatilising liquid held in the container;
a chamber containing a tobacco composition; and

10 an outlet;

the arrangement being such that in use, an inhalable medium passes out of the outlet, the medium comprising (i) volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition;

15 wherein the tobacco composition comprises a tobacco material and an encapsulated base;

the method comprising releasing the base from its encapsulation in use in order to liberate nicotine from the tobacco material.

The invention also provides a kit comprising:

20 (i) a liquid pod containing a volatilisable liquid; and
(ii) a tobacco composition pod, containing a tobacco composition comprises a tobacco material and an encapsulated base;

25 wherein the liquid and tobacco composition pod are configured for use in a device for use in generating an inhalable medium, the device being such that in use, an inhalable medium is generated, the medium comprising (i) volatilised liquid from the liquid pod in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition.

30 The invention also provides a tobacco composition pod, containing a tobacco composition that comprises a tobacco material and an encapsulated base; wherein the tobacco composition pod is configured for use in a device for use in generating an inhalable medium, the device being such that in use, an inhalable medium is generated,

the medium comprising (i) volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition.

5 In some cases, the device, cartridge or tobacco composition pod is configured such that in use, liquid volatilised by the heater passes, in the form of at least one of a vapour and an aerosol, through the tobacco composition to thereby entrain one or more constituents from the tobacco composition to produce the inhalable medium which passes out of the outlet.

10 In some instances, the base comprises one or more hydroxides or carbonates of sodium, potassium or calcium or other soluble bases.

15 In some instances, the base is encapsulated by an encapsulating material that melts, decomposes, reacts, degrades, swells, dissolves or deforms to release the base at a temperature above room temperature but at or below the temperature reached during use.

20 In some instances, the base is encapsulated by an encapsulating material selected from a polysaccharide or cellulosic barrier material, a gelatin, a gum, a gel, a wax or a mixture thereof. In some cases, the encapsulating material is selected from one or more of alginates, dextran, maltodextrin, cyclodextrin, pectin, methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, cellulose ethers, gum Arabic, gum ghatti, gum tragacanth, Karaya, locust bean, acacia gum, guar, quince seed, xanthan gums, agar gel, agarose gel, carrageenans, 25 furoidan, furcellaran and carnauba wax.

30 In some cases, only the base is encapsulated. In some cases, tobacco material is encapsulated with the base. In some cases, this may be the only tobacco material that is include in the tobacco composition. In other cases, the encapsulated tobacco material may be included alongside un-encapsulated tobacco material in the tobacco composition.

In some cases, the methods of the invention comprise:
volatilising the liquid held in the container;
entraining one or more constituents from the tobacco composition in at least one
5 of a vapour and an aerosol formed by the volatilised liquid by passing the at least one
of a vapour and an aerosol through the tobacco composition to generate the inhalable
medium; and
passing the inhalable medium out of the outlet.

10 Further features and advantages of the invention will become apparent from the
following description of preferred embodiments of the invention, given by way of
example only, which is made with reference to the accompanying drawings.

Brief Description of the Drawings

15 Examples of devices for generating an inhalable medium according to the
invention are described below with reference to the accompanying drawings, in which:

Figure 1 shows a schematic longitudinal cross-sectional view of an example of
a device for generating an inhalable medium;

20 Figure 2 shows a schematic longitudinal cross-sectional view of another
example of a device for generating an inhalable medium;

Figure 3 shows a schematic longitudinal cross-sectional view of another
25 example of a device for generating an inhalable medium;

Figure 4 shows a schematic longitudinal cross-sectional view of an example of
a cartridge having a liquid container and an integral container for solid material; and.

30 Figure 5 shows a schematic longitudinal cross-sectional view of an example of
a cartridge having a liquid container and a detachable container for solid material.

Detailed Description

Tobacco can be treated with base and water in order to liberate nicotine from the tobacco. Nicotine in the tobacco reacts with the base; this reaction deprotonates the nicotine, increasing its volatility and releases it from its bound state within the tobacco.

5

The inventors have determined that if base-treated tobacco is used in known electronic tobacco hybrid devices, nicotine delivery per puff significantly drops during the use. The reaction between base and nicotine occurs quickly; the deprotonated nicotine is then liberated quickly once heating commences and is therefore consumed 10 rapidly.

The present invention provides improved consistency of nicotine delivery per puff through encapsulating the base. The inventors have determined that through encapsulating the base, the rate of release of base can be controlled; this in turn provides 15 control of the rate of pH treatment of the tobacco and therefore controls the rate of nicotine liberation by the pH treatment.

Moreover, pH treatment of tobacco results in the liberation of ammonia. Control of the rate of pH treatment controls the rate of release of ammonia, and this can 20 improve the organoleptic properties of the tobacco (since the smell of ammonia is less strong).

The release of base from the encapsulation may be triggered by pressure, temperature or contact with the vapour or aerosol formed from the volatilised liquid.

25 For example, where the release is temperature triggered, the base may be encapsulated by an encapsulating material that melts, decomposes, reacts, degrades, swells, dissolves or deforms to release the base at a temperature above room temperature but at or below the temperature reached during use.

30 In some cases, the invention provides a device for generating an inhalable medium or a cartridge for use in a device for generating an inhalable medium, wherein

the device or cartridge includes a tobacco composition. The tobacco composition comprises a tobacco material and an encapsulated base.

5 In some cases, the tobacco composition may be porous, such that an aerosol or vapour can pass through the tobacco composition. Thus, components of the tobacco composition are efficiently entrained in the aerosol/vapour as it passes through the tobacco composition.

10 As used herein, the term “tobacco material” refers to any material comprising tobacco or derivatives therefore. The term “tobacco material” may include one or more of tobacco, tobacco derivatives, expanded tobacco, reconstituted tobacco or tobacco substitutes. The tobacco material may comprise one or more of ground tobacco, tobacco fibre, cut tobacco, extruded tobacco, tobacco stem, reconstituted tobacco, agglomerated tobacco, spheronised tobacco and/or tobacco extract.

15

The tobacco used to produce tobacco material may be any suitable tobacco, such as single grades or blends, cut rag or whole leaf, including Virginia and/or Burley and/or Oriental. It may also be tobacco particle ‘fines’ or dust, expanded tobacco, stems, expanded stems, and other processed stem materials, such as cut rolled stems. The 20 tobacco material may be a ground tobacco or a reconstituted tobacco material. The reconstituted tobacco material may comprise tobacco fibres, and may be formed by casting, a Fourdrinier-based paper making-type approach with back addition of tobacco extract, or by extrusion.

25

The tobacco composition may additionally comprise flavourings and/or aerosol generating agents.

30

The tobacco composition may additional comprise one or more casings, such as invert sugar, molasses, cane sugar, honey, cocoa, liquorice, polyols such as glycerol and propylene glycol and acids such as malic acid.

The tobacco composition comprises an encapsulated base. Any suitable base may be used. Suitable bases may be non-toxic and preferably tasteless or palatable. GRAS water-soluble bases are particularly suitable. Other suitable bases may be oil-soluble. Examples of suitable basic substances to be incorporated in the tobacco 5 compositions according to the invention are ammonia, carbonates or hydroxides of sodium, potassium or calcium, suitably sodium bicarbonate, sodium carbonate or sodium hydroxide.

As noted above, release of base from the encapsulation may be triggered by 10 pressure, temperature or contact with the vapour or aerosol formed from the volatilised liquid. For example, where the release is pressure triggered, this may be effected by the user applying pressure directed to the capsule, or by activating an actuator. Where the release is temperature triggered, the base may be encapsulated by an encapsulating material that melts, decomposes, reacts, degrades, swells, disintegrates or deforms to 15 release the base at a temperature above room temperature but at or below the temperature reached during use. Where the release is triggered through contact with the vapour or aerosol formed from the volatilised liquid, the release may be effected by a chemical reaction between the vapour/aerosol and the encapsulating material.

20 In some cases, the base is encapsulated by an encapsulating material selected from a polysaccharide or cellulosic barrier material, a gelatin, a gum, a gel, a wax or a mixture thereof. In some cases, the encapsulating material is selected from one or more of alginates, dextran, maltodextrin, cyclodextrin, pectin, methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, 25 cellulose ethers, gum Arabic, gum ghatti, gum tragacanth, Karaya, locust bean, acacia gum, guar, quince seed, xanthan gums, agar gel, agarose gel, carrageenans, furoidan, furcellaran and carnauba wax.

30 In some embodiments, the encapsulating material comprises a polysaccharide. An alginate is particularly suitable due to its encapsulation properties. The alginate may be, for instance, a salt of alginic acid, an esterified alginate or glyceryl alginate. Salts of alginic acid include ammonium alginate, triethanolamine alginate, and group I

or II metal ion alginates like sodium, potassium, calcium and magnesium alginate. Esterified alginates include propylene glycol alginate and glyceryl alginate. In some cases, the barrier material is sodium alginate and/or calcium alginate.

5 The release temperature of the encapsulated base may be, for example, above 50°C, suitably above 60°C, 70°C, 80°C or 90°C. The release temperature of the encapsulated base may be suitably above room temperature or ambient temperature.

10 Release of the base may be staggered in use by, for example, dispersing the encapsulated base through the tobacco composition, so that different portions of the encapsulated base reach their release temperatures at different times. Alternatively or 15 additionally, release of the base may be staggered through encapsulating different portions of the encapsulated base differently; for instance, the thickness of the encapsulating material may differ between different portions of the encapsulated base, and/or the encapsulating material itself may differ between different portions of the encapsulated base.

20 Staggered release of the base further improves the consistency of nicotine delivery, since the rate of pH treatment of the nicotine is controlled. This also controls the rate of ammonia release, improving the organoleptic properties of the tobacco.

In some cases, the encapsulated base may be encapsulated using two or more encapsulating materials, for example in separate layers.

25 The encapsulated base may be incorporated into the tobacco composition in a number of ways. In some cases, the encapsulated base may be applied to the tobacco material, and this may be achieved by spray-drying for example. In some cases, the encapsulated base may be provided as a film which is applied to a wrapper arranged around other components of the tobacco composition. In some cases, the encapsulated 30 base may be provided in the form of granular capsules, which may be dispersed through other components of the tobacco composition. In some cases, the encapsulated base may be provided as part of a method of tobacco processing; for example, included in a

method of producing extruded tobacco material or a method of producing a reconstituted tobacco material. In some cases, the encapsulated base may be provided in a combination of these ways.

5 The tobacco composition may additionally comprise un-encapsulated base.

In some cases, other components of the tobacco composition may be encapsulated alongside the base. For example, some or all of the tobacco material may be encapsulated. Where present, some or all of the flavouring and/or aerosol generating 10 agent may be encapsulated.

In some examples, tobacco material and base are co-encapsulated. Suitably, the tobacco composition may comprise further tobacco material that is not encapsulated. Alternatively, all of the tobacco material in the tobacco composition may be co- 15 encapsulated with the base.

In other examples, there is no tobacco material encapsulated alongside the base. In some cases, there is no encapsulated tobacco material in the tobacco composition. Suitably, the encapsulation only encapsulates base (and optionally, solvent).

20

The device comprises a container for holding a volatilisable liquid. In some cases, the device comprises a container which is holding a volatilisable liquid. Suitable liquids include those conventionally used in e-cigarette devices. In some cases, the volatilisable liquid may comprise nicotine and/or a tobacco extract and/or flavourings 25 and/or aerosol-generating agents, such as propylene glycol and/or glycerol. The liquid is typically volatilised at around 150-250°C.

30

The device according to some examples of the invention may be configured such that in use, liquid volatilised by the heater passes, in the form of at least one of a vapour and an aerosol, through the tobacco composition to thereby entrain one or more constituents from the tobacco composition to produce the inhalable medium which passes out of the outlet.

5 In other examples, the flow path from the liquid container may be combined with a separate flow path which runs from the tobacco composition so as to form the inhalable medium. In other words, in some example devices, the volatilised liquid does not pass through the chamber retaining the tobacco composition.

10 In some cases, the device comprises means for heating the tobacco composition to volatilise components of the tobacco and form a first aerosol and/or vapour. The liquid may be volatilised to form a second vapour and/or aerosol, which may be combined with the first vapour and/or aerosol to form the inhalable medium. In some cases, one heater may heat both the liquid and the tobacco composition. In some cases, the device may be configured such that the heater only heats the liquid composition directly and the tobacco composition is heated by warmth carried in the vapour/aerosol formed from the volatilised liquid (thereby volatilising components of the tobacco 15 composition which are then entrained in the vapour/aerosol flow).

20 In an embodiment, the device comprises a cooler or cooling zone downstream of the heater and upstream of the chamber, the cooler or cooling zone being arranged to cool vaporised liquid to form an aerosol of liquid droplets which in use passes through the tobacco composition in the chamber. The cooler may be arranged in effect to act as a heat exchanger, allowing for recovery of heat from the vapour. The recovered heat can be used for example to pre-heat the tobacco composition and/or to assist in heating the liquid.

25 In an embodiment, the device comprises a second heater for heating the tobacco composition in the chamber. This enables the tobacco composition to be heated by the heater, which encourages release of compounds from the tobacco composition, and optionally allows a lower temperature to be used for the heated liquid.

30 In an embodiment, the device is battery-operated.

In an embodiment, the or each heater is an electrically resistive heater.

5 In an embodiment, the liquid container is removable. The liquid container may be in the form of a pot or the like (which in some embodiments may be annular for example), and/or an absorbent wadding or the like. The whole liquid container containing the liquid may in effect be a disposable item which is replaced as a whole after use. As an alternative, the arrangement may be such that the user removes the liquid container from the device, replaces used liquid or tops up liquid in the container, and then places the container back in the device.

10 In some cases, the liquid container may be non-removable from the device. In such an embodiment, the user may just replace used liquid or top up liquid in the container after use as necessary.

15 In some cases, the liquid container and the chamber are an integral unit. In some cases, the integral unit is a cartridge that can be removed from the device.

20 In some cases, the chamber is removable from the device. The chamber may be, for example, in the form of a cartridge or the like which contains the tobacco composition before use. The whole chamber containing the tobacco composition may in effect be a disposable item which is replaced as a whole after use. As an alternative, the arrangement may be such that the user removes the chamber from the device, replaces used material in the chamber, and then places the chamber back in the device.

25 In some embodiments described herein, the invention provides a cartridge for use in a device for generating an inhalable medium, the cartridge comprising a volatilisable liquid in a first chamber and a tobacco composition in a second chamber, wherein the tobacco composition comprises a tobacco material and an encapsulated base. Suitably, the cartridge may be adapted for use in the device for generating an inhalable medium described herein.

30

To the extent that they are compatible, features described in relation to the device are explicitly disclosed in combination with the cartridge and vice versa.

Specifically, features of the tobacco composition or volitisable liquid described herein are explicitly disclosed in combination with the device and cartridge embodiments of the invention.

5 Examples of devices for generating an inhalable medium according to the some embodiments of the invention will now be described, with reference to the accompanying drawings. Referring to Figure 1, there is shown an example of a device 1 for generating an inhalable medium. In broad outline, the device 1 volatilises a liquid to form a vapour or an aerosol which passes through a material so as to produce an 10 inhalable medium that contains one or more constituents derived from the material.

15 In this respect, first it may be noted that, in general, a vapour is a substance in the gas phase at a temperature lower than its critical temperature, which means that for example the vapour can be condensed to a liquid by increasing its pressure without reducing the temperature. On the other hand, in general, an aerosol is a colloid of fine solid particles or liquid droplets, in air or another gas. A “colloid” is a substance in which microscopically dispersed insoluble particles are suspended throughout another substance.

20 Returning to Figure 1, the device 1 of this example has a generally hollow cylindrical outer housing 2. The housing 2 has an open end 3. In this example, a tubular mouthpiece 4 is provided in the open end 3. The mouthpiece 4 in this example is removable by a user from the housing 2. An O-ring or other seal 5 assists in sealing the mouthpiece 4 in the housing 2. At or towards the other end 6 of the housing 2 is a 25 battery 7 for powering various components of the device 1, as will be discussed further below. The battery 7 may be a rechargeable battery or a disposable battery. A controller 8 is also provided in the housing 2 for controlling the operation of various components of the device 1, as will be discussed further below.

30 The housing 2 has a container 9 for holding or containing a liquid 10. Various different forms for the container 9 may be used. In the example of Figure 1, the container 9 is in the form of an annular chamber 9 provided in the housing 2 between

the open end 3 and the other end 6. In this particular example, the housing 2 is in two parts, a first part 2a being towards the open end 3 and a second part 2b towards the other end 6. The first and second parts 2a,2b of the housing 2 may connect to each other via a screw thread, a bayonet fitting or the like. In use, a user can separate the first and 5 second parts 2a,2b of the housing 2 to allow the liquid 10 to be replenished or replaced as necessary. Alternatively, the mouthpiece 4 can be removed to provide access to the container 9. It will be understood however that other arrangements are possible. For example, the liquid 10 may be provided in a discrete annular pot-like container which can be removed as a whole from the housing 2. Such a discrete container may be 10 disposable so that the user replaces the liquid 10 by fitting a new container with liquid 10 in the housing 2. Alternatively, such a container may be reusable. In such a case, the user may replenish or replace liquid 10 in the container whilst it has been removed from the housing 2 and then replace the refilled container in the housing 2. It will be understood that the housing 2 need not be in two parts and that other arrangements 15 enabling access for the user may be provided, for example, to enable refilling in situ.

A heater 11 is provided generally centrally of the housing 2, that is, centrally along the length and width of the housing 2 in this example. In this example, the heater 11 is powered by the battery 7 and is therefore electrically connected to the battery 7. 20 The heater 11 may be an electrically resistive heater, including for example a nichrome resistive heater, a ceramic heater, etc. The heater 11 may be for example a wire, which may for example be in the form of a coil, a plate (which may be a multi-layer plate of two or more different materials, one or more of which may be electrically conductive and one or more of which may be electrically non-conductive), a mesh (which may be 25 woven or non-woven for example, and which again may be similarly multi-layer), a film heater, etc. Other heating arrangements may be used, including non-electrical heating arrangements.

This heater 11 is provided for volatilising the liquid 10. In the example shown, 30 an annular wick 12 surrounds the heater 11 and is in (thermal) contact with the heater 11. The outermost surface of the annular wick 12 is in contact with liquid 10 contained in the liquid container 9. The wick 12 is generally absorbent and acts to draw in liquid

10 from the liquid container 9 by capillary action. The wick 12 is preferably non-woven and may be for example a cotton or wool material or the like, or a synthetic material, including for example polyester, nylon, viscose, polypropylene or the like. Whilst this will be described more fully below, it may be noted here that in use, liquid 10 drawn
5 into the wick 12 is heated by the heater 11. The liquid 10 may be volatilised so as to produce an aerosol of liquid droplets or sufficiently heated to produce a vapour. The aerosol or vapour so produced exits the wick 12 and passes towards the mouthpiece 4 as shown by the arrows A under the action of the user drawing on the mouthpiece 4. The heater 11 and wick 12 may be provided as a single, effectively integral item,
10 sometimes referred to as an “atomiser”, such that the heating and wicking is effectively carried out by a single unit.

The housing 2 further contains a chamber 13 which holds or contains a tobacco composition 14 in the device 1. The tobacco composition 14 comprises tobacco material and an encapsulated base. In use, a user can access the chamber 13 to replace or replenish the tobacco composition 14 through the open end 3 of the housing 2 by removing the mouthpiece 4 and/or by separating the two parts 2a,2b of the housing 2.
15 Various different forms for the chamber 13 may be used. For example, the chamber 13 may be a tube which is completely open at both ends and which contains the tobacco composition 14. As another example, the chamber 13 may be a tube which has one or more end walls which have through holes through which a vapour or aerosol can pass. The chamber 13 may remain in situ within the housing 2 whilst the user removes and replaces the tobacco composition 14. Alternatively, the chamber 13 containing the tobacco composition 14 may be a discrete item which in use is inserted into and
20 removed from the housing 2 as a whole. A removable chamber 13 of this type may be disposable so that the user replaces the tobacco composition 14 by fitting a new chamber 13 containing fresh tobacco composition 14 into the housing 2. As an alternative, the chamber 13 may be reusable. In such a case, the user may replace the tobacco composition 14 in the chamber 13 whilst the chamber 13 has been removed
25 from the housing 2 and then replace the refilled chamber 13 in the housing 2. In yet another example, the chamber 13 may comprise clips or the like provided internally of the housing 2 and which retain the tobacco composition 14 in position. In some
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examples, the tobacco composition 14 could simply fit snugly within the chamber 13. As another alternative, the container 9 for containing the liquid 10 may itself be arranged to support or carry the tobacco composition 14. For example, the container 9 may have one or more clips or a tube or the like for receiving and holding the tobacco 5 composition 14 in position. Such a dual function container 9/chamber or receptacle 13 for both containing the liquid 10 and receiving the tobacco composition 14 may be in the form of a cartridge or the like and may be a disposable item or may be re-useable, with the liquid 10 and tobacco composition 14 being replaced or topped up by the user as required. In some cases, it may be that the user only needs to top up or replace the 10 tobacco composition 14 from time to time, with sufficient liquid 10 being provided for several uses. Once the liquid 10 has been consumed, the user disposes of the dual function container 9/receptacle 13 and uses a new one. Likewise, it may be that the user only needs to top up or replace the liquid 10 from time to time, with sufficient tobacco composition 14 being provided for several uses. Once the tobacco composition 15 14 has been consumed, the user disposes of the dual function container 9/receptacle 13 and uses a new one. Specific examples of dual function containers/receptacles are discussed further below.

The tobacco composition 14 is located in the housing 2 downstream of the 20 location where the aerosol or vapour is produced from the liquid 10 and upstream of the open end 3 of the housing 2 and the mouthpiece 4. In this particular example, the tobacco composition 14 is effectively provided in the same portion or chamber of the housing 2 as the wick 12. The aerosol or vapour produced from the liquid 10 exits the wick 12 and passes as shown by the arrows A towards the tobacco composition 14 under the action of the user drawing on the mouthpiece 4. In particular embodiments, the 25 tobacco composition 14 is porous so that the aerosol or vapour passes through the tobacco composition 14 and then through the open end 3 of the housing 2 and the mouthpiece 4. The heat carried by the aerosol or vapour releases the base from its encapsulation in the tobacco composition 14, suitably by melting or any other temperature-dependent release mechanism discussed above. The base increases the 30 tobacco pH, liberating nicotine which is then more readily entrained in the passing vapour/aerosol.

5 In some embodiments, the tobacco composition 14 and/or its chamber 13 are arranged so that there is no air gap between the tobacco composition 14/chamber 13 and the interior of the housing 2 so that the aerosol or vapour flows entirely through the tobacco composition 14.

10 The liquid 10 is suitably a liquid that is volatilisable at reasonable temperatures, preferably in the range of 100-300°C or more particularly around 150-250°C, as that helps to keen down the power consumption of the device 1. Suitable materials include those conventionally used in e-cigarette devices, including for example propylene glycol and glycerol (also known as glycerine).

15 The tobacco composition 14 imparts a flavour to the aerosol or vapour produced from the liquid 10 as the aerosol or vapour passes through the tobacco composition 14. As the aerosol or vapour passes through and over the tobacco composition 14, the hot aerosol or vapour entrains organic and other compounds or constituents from the tobacco material 14 that lend tobacco its organoleptic properties, thus imparting the flavour to the aerosol or vapour as it passes to the mouthpiece 4.

20 The device 1 provides nicotine for the user. The nicotine may be provided in the liquid 10, may be obtained from the tobacco composition 14, may be provided as a coating or the like on the tobacco composition 14, or any combination of these. Likewise, flavourings may be added to the tobacco composition 14 and/or to the liquid 10.

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In the example shown in Figure 1, the only heat source for heating the tobacco composition 14 in the device 1, which is required so as to generate the organic and other compounds or constituents from the tobacco composition 14, is the hot aerosol or vapour produced from heating the liquid 10.

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Referring now to Figure 2, there is shown another example of a device for generating an inhalable medium. In the following description and in Figure 2,

components and features that are the same as or similar to the corresponding components and features of the example described with reference to Figure 1 have the same reference numeral but increased by 200. For the sake of brevity, the description of those components and features will not be repeated in its entirety here. It will be
5 understood that the arrangements and alternatives, etc. described above in relation to the example of Figure 1 are also applicable to the example of Figure 2. Again, in broad outline, the device 201 of Figure 2 heats a liquid to form a vapour or an aerosol which passes through a tobacco composition 214 so as to produce an inhalable medium that contains one or more constituents derived from the tobacco composition 214.

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The device 201 of this example has a generally hollow cylindrical outer housing 202 with an open end 203 and a tubular mouthpiece 204. The mouthpiece 204 in this example is removable by a user from the housing 202 and an O-ring or other seal 205 assists in sealing the mouthpiece 204 in the housing 202. A battery 207 for powering
15 various components of the device 201 and a controller 208 are provided at or towards the other end 206 of the housing 202. The housing 202 of this example is in two parts, a first part 202a being towards the open end 203 and a second part 202b towards the other end 206.

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The housing 202 has a container 209 for holding or containing a liquid 210. The container 209 may be of any of the types described above in relation to the example of Figure 1. A heater 211 is provided generally centrally (lengthwise and widthwise) of the housing 202 for volatilising the liquid 210. In this example, the heater 211 is powered by the battery 207 and is therefore electrically connected to the battery 207.
25 The heater 211 may be an electrically resistive heater, a ceramic heater, etc. The heater 211 may be for example a wire, which may for example be in the form of a coil, a plate (which may be a multi-layer plate of two or more different materials, one or more of which may be electrically conductive and one or more of which may be electrically non-conductive), a mesh (which may be woven or non-woven for example, and which again may be similarly multi-layer), a film heater, etc. Other heating arrangements may be used, including inductive heating arrangements or non-electrical heating arrangements. An annular wick 212 surrounds the heater 211 and is in (thermal) contact
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with the heater 211. The outermost surface of the annular wick 212 is in contact with liquid 210 contained in the liquid container 209. The liquid 210 may be heated so as to produce an aerosol of liquid droplets or sufficiently heated to produce a vapour. The aerosol or vapour so produced exits the wick 212 and passes towards the mouthpiece 5 204 as shown by the arrows A under the action of the user drawing on the mouthpiece 204. The heater 211 and wick 212 may be provided as a single, effectively integral item such that the heating and wicking is effectively carried out by a single unit.

The housing 202 further contains a chamber 213 which holds or contains a 10 tobacco composition 214 in the device 201. The tobacco composition 214 comprises tobacco material and an encapsulated base. The chamber 213 may be of any of the types described above in relation to the example of Figure 1. The tobacco composition 214 is located in the housing 202 downstream of the location where the aerosol or vapour is produced from the liquid 210 and upstream of the open end 203 of the housing 15 202 and the mouthpiece 204. In this particular example, the tobacco composition 214 is effectively provided in the same portion or chamber of the housing 202 as the wick 212. The aerosol or vapour produced from the liquid 210 exits the wick 212 and passes as shown by the arrows A towards the tobacco composition 214 under the action of the user drawing on the mouthpiece 204. In particular embodiments, the tobacco 20 composition 214 is porous so that the aerosol or vapour passes through the tobacco composition 214 and then through the open end 203 of the housing 202 and the mouthpiece 204. The heat carried by the aerosol or vapour releases the base from its encapsulation in the tobacco composition 14, suitably by melting or any other temperature-dependent release mechanism discussed above. The base increases the 25 tobacco pH, liberating nicotine which is then more readily entrained in the passing vapour/aerosol.

In some embodiments, the tobacco composition 214 and/or its chamber 213 are arranged so that there is no air gap between the tobacco composition 214/chamber 213 and the interior of the housing 202 so that the aerosol or vapour flows entirely through 30 the tobacco composition 214. As the aerosol or vapour passes through and over the tobacco composition 214, the hot aerosol or vapour entrains organic and other

compounds or constituents from the tobacco composition 214 that lend tobacco its organoleptic properties, thus imparting the flavour to the aerosol or vapour as is passes to the mouthpiece 204.

5 The container 209 for containing the liquid 210 may itself be arranged to support or carry the tobacco composition 214. For example, the container 209 may have one or more clips or a tube or the like for receiving and holding the tobacco composition 214 in position. Such a dual function container 209/chamber or receptacle 213 for both containing the liquid 210 and receiving the tobacco composition 214 may be in the form 10 of a cartridge or the like and may be a disposable item or may be re-useable, with the liquid 210 and tobacco composition 214 being replaced or topped up by the user as required. In some cases, it may be that the user only needs to top up or replace the tobacco composition 214 from time to time, with sufficient liquid 210 being provided for several uses. Once the liquid 210 has been consumed, the user disposes of the dual 15 function container 209/receptacle 213 and uses a new one. Likewise, it may be that the user only needs to top up or replace the liquid 210 from time to time, with sufficient tobacco composition 214 being provided for several uses. Once the tobacco composition 214 has been consumed, the user disposes of the dual function container 209/receptacle 213 and uses a new one.

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 In the example device 201 of Figure 2, a second heater 215, such as an oven heater, is provided in thermal contact with the tobacco composition 214 to pre-heat the tobacco composition 214 and/or provide additional heat to the tobacco composition 214 throughout use of the device 201. This encourages release of constituents from the 25 tobacco composition 214 as the vapour or aerosol passes through the tobacco composition 214 in use. The amount of heated liquid 210 to achieve desirable heating of the tobacco composition 214 may be reduced. The second heater 215 may be an electrically resistive heater, a ceramic heater, etc., powered by for example the battery 207. The second heater 215 may be for example a wire, which may for example be in 30 the form of a coil, a plate (which may be a multi-layer plate of two or more different materials, one or more of which may be electrically conductive and one or more of which may be electrically non-conductive), a mesh (which may be woven or non-woven

for example, and which again may be similarly multi-layer), a film heater, etc. The second heater 215 may be an inductive heater powered by for example the battery 207. Tobacco composition 214 may include materials susceptible to inductive heating. Other heating arrangements may be used for the second heater 215, including non-electrical heating arrangements.

The heater 215 may also effect release of the base from its encapsulation in the tobacco composition 214, suitably by melting or any other temperature-dependent release mechanism discussed above. The base increases the tobacco pH, liberating nicotine which is then more readily entrained in the passing vapour/aerosol.

In the example device 201 of Figure 2, the heater 215 for heating the tobacco composition 214 is provided externally of the tobacco composition 214 and heats the tobacco composition 214 by heat conduction from the exterior of the tobacco composition 214. The heater 215 in this example is generally cylindrical. The heater 215 may in effect be an integral part of the device 201 and be provided as part of the housing 202. As an alternative, the heater 215 may be provided integrally with the chamber 213 which holds or contains the tobacco composition 214. In this alternative, in the case that the chamber 213 is disposable, the heater 215 will be replaced when a new chamber 213 with fresh tobacco is loaded into the device 201 by the user.

Referring now to Figure 3, there is shown another example of a device for generating an inhalable medium. In the following description and in Figure 3, components and features that are the same as or similar to the corresponding components and features of the example described with reference to Figure 1 have the same reference numeral but increased by 300. For the sake of brevity, the description of those components and features will not be repeated in its entirety here. It will be understood that the arrangements and alternatives, etc. described above in relation to the examples of Figure 1 and Figure 2 are also applicable to the example of Figure 3. Again, in broad outline, the device 301 of Figure 3 heats a liquid to form a vapour or an aerosol which passes through a tobacco composition 314 so as to produce an

inhalable medium that contains one or more constituents derived from the tobacco composition 314.

The device 301 of this example again has a generally hollow cylindrical outer housing 302 with an open end 303 and a tubular mouthpiece 304, which is removable by a user from the housing 302. O-ring or other seal 305 assists in sealing the mouthpiece 304 in the housing 302. A battery 307 for powering various components of the device 301 and a controller 308 are provided at or towards the other end 306 of the housing 302. The housing 302 of this example is again in two parts, a first part 302a 10 being towards the open end 303 and a second part 302b towards the other end 306.

The housing 302 has a container 309 for holding or containing a liquid 310. The container 309 may be of any of the types described above in relation to the examples of Figures 1 and 2. A heater 311 is provided generally centrally of the housing 302 for heating the liquid 310. The heater 311 may be any of the types described above. In this example, the heater 311 is powered by the battery 307 and is therefore electrically connected to the battery 307. An annular wick 312 surrounds the heater 311 and is in (thermal) contact with the heater 311. The outermost surface of the annular wick 312 is in contact with liquid 310 contained in the liquid container 309. The liquid 310 may 15 be heated so as to produce an aerosol of liquid droplets or sufficiently heated to produce a vapour. The aerosol or vapour so produced exits the wick 312 and passes towards the mouthpiece 304 as shown by the arrows A under the action of the user drawing on the mouthpiece 304. The heater 311 and wick 312 may be provided as a single, effectively 20 integral item such that the heating and wicking is effectively carried out by a single unit.

The housing 302 further contains a chamber 313 which holds or contains a tobacco composition 314 in the device 301. The tobacco composition 314 comprises a tobacco material and an encapsulated base. The chamber 313 may be of any of the 30 types described above in relation to the examples of Figures 1 and 2. (In the example shown in Figure 3, the chamber 313 is in the form of a tube which has end walls 316 which have through holes 317 through which a vapour or aerosol can pass, which was

mentioned as an option above.) The tobacco composition 314 is located in the housing 302 downstream of the location where the aerosol or vapour is produced from the liquid 310 and upstream of the open end 303 of the housing 302 and the mouthpiece 304. In this particular example, again, the tobacco composition 314 is effectively provided in 5 the same portion or chamber of the housing 302 as the wick 312. The aerosol or vapour produced from the liquid 310 exits the wick 312 and passes as shown by the arrows A towards the tobacco composition 314 under the action of the user drawing on the mouthpiece 304. In particular embodiments, the tobacco composition 314 is porous so that the aerosol or vapour passes through the tobacco composition 314 and then through 10 the open end 303 of the housing 302 and the mouthpiece 304. The heat carried by the aerosol or vapour releases the base from its encapsulation in the tobacco composition 314, suitably by melting or any other temperature-dependent release mechanism discussed above. The base increases the tobacco pH, liberating nicotine which is then more readily entrained in the passing vapour/aerosol.

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In some embodiments, the tobacco composition 314 and/or its chamber 313 are arranged so that there is no air gap between the tobacco composition 314/chamber 313 and the interior of the housing 302 so that the aerosol or vapour flows entirely through the tobacco composition 314. As the aerosol or vapour passes through and over the 20 tobacco composition 314, the hot aerosol or vapour entrains organic and other compounds or constituents from the tobacco composition 314, thus imparting tobacco flavour to the aerosol or vapour as it passes to the mouthpiece 304. The container 309 for containing the liquid 310 may itself be arranged to support or carry the tobacco composition 314. For example, the container 309 may have one or more clips or a tube 25 or the like for receiving and holding the tobacco composition 314 in position. Such a dual function container 309/chamber or receptacle 313 for both containing the liquid 310 and receiving the tobacco composition 314 may be in the form of a cartridge or the like and may be a disposable item or may be re-useable, with the liquid 310 and tobacco composition 314 being replaced or topped up by the user as required. In some cases, it 30 may be that the user only needs to top up or replace the tobacco composition 314 from time to time, with sufficient liquid 310 being provided for several uses. Once the liquid 310 has been consumed, the user disposes of the dual function container 309/receptacle

313 and uses a new one. Likewise, it may be that the user only needs to top up or replace the liquid 310 from time to time, with sufficient tobacco composition 314 being provided for several uses. Once the tobacco composition 314 has been consumed, the user disposes of the dual function container 309/receptacle 313 and uses a new one.

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In the example device 301 of Figure 3, a second heater 318 is again provided in thermal contact with the tobacco composition 314 to heat the tobacco composition 314 to encourage release of constituents from the tobacco composition 314 as the vapour or aerosol passes through the tobacco composition 314 in use. The second heater 318 may 10 be an electrically resistive heater, a ceramic heater, etc., powered by for example the battery 307. Other heating arrangements may be used for the second heater 318, including non-electrical heating arrangements.

In the example device 301 of Figure 3, the heater 318 for heating the tobacco 15 composition 314 is provided internally of the tobacco composition 314 and heats the tobacco composition 314 by heat conduction from the interior of the tobacco composition 314. The heater 318 in this example is generally in the form of a cylindrical rod located along the central longitudinal axis of the tobacco composition 314. In other arrangements, the heater 318 may be a wire, which may for example be 20 in the form of a coil, a plate (which may be a multi-layer plate of two or more different materials, one or more of which may be electrically conductive and one or more of which may be electrically non-conductive), a mesh (which may be woven or non-woven for example, and which again may be similarly multi-layer), a film heater, etc. The tobacco composition 314 in this case is generally tubular or otherwise has an internal 25 aperture for receiving the heater 318. The heater 318 may in effect be an integral part of the device 301 and be provided as part of the housing 302. In this case, as the tobacco composition 314 is loaded into the device 301 (for example, as the chamber 313 containing the tobacco composition 314 is loaded into the device 301), the tobacco composition 314 surrounds the second heater 318. As an alternative, the heater 318 30 may be provided integrally with the chamber 313 which holds or contains the tobacco composition 314. In this alternative, in the case that the chamber 313 is disposable, the

heater 318 will be replaced when a new chamber 313 with fresh tobacco is loaded into the device 301 by the user.

5 In another example, plural internal heaters 318 may be provided, so as to provide for more efficient heating of the tobacco composition 314. In another example, the tobacco composition 314 may be heated by both one or more external heaters (like the second heater 215 of the example of Figure 2) and by one or more internal heaters (like the second heater 318 of the example of Figure 3).

10 The one or more heaters 318 configured to heat the tobacco composition may effect the release of the base from its encapsulation in the tobacco composition 314, suitably by melting or any other temperature-dependent release mechanism discussed above. The base increases the tobacco pH, liberating nicotine which is then more readily entrained in the passing vapour/aerosol.

15 Referring now to Figure 4, there is shown a schematic longitudinal cross-sectional view of an example of a cartridge 600 having a liquid container 601 for containing liquid 602 and a receptacle or container 603 for tobacco composition 604. In this example, the liquid container 601 and the tobacco composition container 603 are provided as one integral component, either by being formed integrally initially or being formed initially of two parts which are then assembled in a substantially permanent fashion. The cartridge 600 is arranged so that as the liquid 602 is volatilised so as to produce an aerosol of liquid droplets or sufficiently heated to produce a vapour, at least some and preferably all or substantially all of the aerosol or vapour passes through the 20 tobacco composition 604 to pick up flavour from the tobacco composition 604.

25 In the example of Figure 4, the liquid container 601 is provided generally centrally of the cartridge 600. The liquid container 601 in the example shown is frustoconical in shape, but may have a different shape, such as conical, cylindrical, etc. The liquid container 601 is surrounded by an outer shell 605 which defines an annular channel 606 around the outside of the length of the liquid container 601 and which extends from one end of the liquid container 601 to the other. The outer shell 605

extends beyond a first end wall 607 of the liquid container 601 to define a chamber 608 beyond the first end wall 607 of the liquid container 601. In the example shown, both the chamber 608 and the annular channel 606 contain the tobacco composition 604 and so can be regarded as together providing the container 603 for the tobacco composition 604. In other examples, the tobacco composition 604 may be provided only in the chamber 608, which therefore defines the container 603 for the tobacco composition 604, and the annular channel 606 is empty. The chamber 608 is closed off by an end wall 609 which is spaced from the end wall 607 of the liquid container 601. The end wall 609 may be part of the outer shell 605 or may be a separate plastics or rubber cap or the like. In yet other examples, the annular channel 606 contains the tobacco composition 604 and there is no material in the chamber 608, and indeed the chamber 608 may be omitted and the channel 606 effectively terminates at the end wall 609. The channel 606 and/or chamber 608 may be entirely filled with tobacco composition 604 or may only contain a portion or plug of tobacco composition 604. The end wall 609 is porous and/or has one or more through holes 610 to enable the aerosol or vapour to exit the cartridge 600 to be inhaled by a user. The liquid container 601 and the solid container 603 may each be formed of rigid, watertight and airtight materials, such as metal, suitable plastics, etc.

The example cartridge 600 shown in Figure 4 is provided with a heater 611 and a wick 612 in (thermal) contact with the heater 611. In this example, the heater 611 and the wick 612 are provided as a single unit, often referred to as an “atomiser”. In this case, where the cartridge 600 includes an atomiser, such a cartridge is often referred to as a “cartomiser”. The orientation of the heater 611 is shown schematically and for example the heater 611 may be a coil having its longitudinal axis perpendicular to the longitudinal axis of the cartridge 600 rather than parallel as shown in Figure 4.

The wick 612 is in contact with the liquid 602. This may be achieved by for example the wick 612 being inserted through a through hole (not shown) in the second end wall 613 of the liquid container 601. Alternatively or additionally, the second end wall 613 may be a porous member (shown schematically in Figure 4 by dashed lines) which allows liquid to pass through from the liquid container 601, and the wick 612

may be in contact with the porous second end wall 613. The second end wall 613 may be for example in the form of a porous ceramic disk. A porous second end wall 613 of this type helps to regulate the flow of liquid onto the wick 612. The wick 612 is generally absorbent and acts to draw in liquid 602 from the liquid container 601 by capillary action. The wick 612 is preferably non-woven and may be for example a cotton or wool material or the like, or a synthetic material, including for example polyester, nylon, viscose, polypropylene or the like.

In use, the cartridge 600 is connected by the user to a battery section of a device (not shown) to enable the heater 611 to be powered. When the heater 611 of the atomiser is powered (which may be instigated for example by the user operating a button of the overall device or by a puff detector of the overall device, as is known per se), liquid 602 drawn in from the liquid container 601 by the wick 612 is heated by the heater 611 to volatilise or vaporise the liquid. As the user draws on a mouthpiece of the overall device, the vapour or aerosol passes into the annular channel 606 around the outside of the length of the liquid container 601 and into the chamber 608 as shown by the arrows A. The vapour or aerosol picks up flavour from the tobacco composition 604. The heat carried by the aerosol or vapour releases the base from its encapsulation in the tobacco composition 604, suitably by melting or any other temperature-dependent release mechanism discussed above. The base increases the tobacco pH, liberating nicotine which is then more readily entrained in the passing vapour/aerosol. The vapour or aerosol can then exit the cartridge 600 through the end wall 609 as shown by the arrow B. Optionally, a one way valve 614 may be provided inside the end wall 609 so that the vapour or aerosol can only exit the cartridge 600 and cannot back-flow to the heater 611 or the electronics of the device as a whole.

Referring now to Figure 5, there is shown a schematic longitudinal cross-sectional view of another example of a cartridge 700 having a liquid container 701 for containing liquid 702 and a container 703 which defines a chamber 708 for containing tobacco composition 704. In the following description and in Figure 5, components and features that are the same as or similar to the corresponding components and features of the example described with reference to Figure 4 have the same reference

numeral but increased by 100. For the sake of brevity, the description of those components and features will not be repeated in its entirety here.

In this example, the liquid container 701 and the tobacco composition container 5 703 of the cartridge 700 are provided as separate components, which are detachably connected to each other in use. The liquid container 701 and the tobacco composition container 703 may for example be clipped or otherwise detachably fixed to each other, or for example the tobacco composition container 703 may simply rest on or be a tight friction fit on the liquid container 701. The cartridge 700 is arranged so that as the 10 liquid 702 is volatilised so as to produce an aerosol of liquid droplets or sufficiently heated to produce a vapour, at least some and preferably all or substantially all of the aerosol or vapour passes through the tobacco composition 704 to pick up flavour from the tobacco composition 704.

15 In this example, the liquid container 701 is surrounded by an outer shell 705 which defines an annular channel 706 around the outside of the length of the liquid container 701 and which extends from one end of the liquid container 701 to the other. The outer shell 705 extends beyond a first end wall 707 of the liquid container 601 and terminates in an end wall 709. The end wall 709 may be a separate plastics or rubber 20 cap or the like. The end wall 709 is porous and/or has one or more through holes 710 to enable the aerosol or vapour to exit the annular channel 706. A one way valve 714 may be provided inside the end wall 709 so that the vapour or aerosol can only exit the annular channel 706 at the end remote from the heater 711 and wick 712 and cannot back-flow to the heater 711 or the electronics of the device as a whole. The tobacco 25 composition container 703 is located in use over the end wall 709 so that vapour or aerosol exiting through the end wall 709 passes into the tobacco composition container 703. The tobacco composition container 703 has an exit aperture and/or or a porous end wall 715 to enable the aerosol or vapour to exit the cartridge 700 to be inhaled by a user.

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In use, the cartridge 700 is connected by the user to a battery section of a device (not shown) to enable the heater 711 to be powered. When the heater 711 of the

atomiser is powered (which may be instigated for example by the user operating a button of the overall device or by a puff detector of the overall device as is known per se), liquid 702 drawn in from the liquid container 701 through the end wall 713 by the wick 712 is heated by the heater 711 to volatilise or vaporise the liquid. As the user 5 draws on a mouthpiece of the overall device, the vapour or aerosol passes into the annular channel 706 around the outside of the length of the liquid container 701 towards the end wall 709 of the outer shell 705 as shown by the arrows A. The vapour or aerosol then passes through the end wall 709 (via the one-way valve 714 if present) and into the tobacco composition container 703 where it picks up flavour from the tobacco 10 composition 704 contained in the container 703. Heat carried by the aerosol or vapour releases the base from its encapsulation in the tobacco composition 704, suitably by melting or any other temperature-dependent release mechanism discussed above. The base increases the tobacco pH, liberating nicotine which is then more readily entrained in the passing vapour/aerosol. The vapour or aerosol can then exit the cartridge 700 15 through the end wall 715 of the tobacco composition container 703 as shown by the arrow B.

The examples shown in Figures 4 and 5 are particularly suitable for use with so-called modular or “e-go” products, in which the cartomiser is fitted to a battery section 20 (not shown), typically by a screw thread, a bayonet fitting or the like. The cartomiser as a whole is typically discarded after use and a new, replacement cartomiser used. As an alternative, it may be possible for the user to re-use the cartridge by refilling the liquid and/or replacing the solid material from time to time as necessary.

25 The examples shown in Figures 4 and 5 may easily be adapted for use with other types of an electronic tobacco hybrid device, which are known per se. There are for example so-called “look alike e-cigarette” or “cig-alike” devices which are generally small and have a form and appearance similar to a conventional cigarette. In such devices, the liquid container typically includes some wadding material, of for example 30 cotton or the like, for holding the liquid. The cartridge or cartomiser in such known devices is typically disposable as a whole, but it may be possible to refill the liquid and/or replace the sold material in examples that use an embodiment of the present

invention. As another example, there are so-called tank devices or personal vaporisers which generally have large liquid containers for holding relatively large volumes of liquid and also provide for advanced functions that allow users to control a number of aspects of the device.

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As an alternative to any of the cartomiser arrangements discussed above, the atomiser (i.e. the heater and the wick) for the liquid may be provided separately of the liquid and material containers. The atomiser may for example be provided as part of the battery section of the overall device to which the cartridge is detachably fitted by 10 the user in use.

In any of the examples described above in relation to Figures 4 and 5, there may also be provided a heater for the tobacco composition so as to “pre-heat” it. This heater may be provided as part of the cartridge or as part of the battery section of the device 15 to which the cartridge is fitted in use. This heater for the tobacco composition effect release of the base from its encapsulation in the tobacco composition, suitably by melting or any other temperature-dependent release mechanism discussed above. The base increases the tobacco pH, liberating nicotine which is then more readily entrained in the passing vapour/aerosol.

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As used herein, “aerosol generating agent” refers to a compound or mixture that promotes the generation of an aerosol. An aerosol generating agent may promote the generation of an aerosol by promoting an initial vaporisation and/or the condensation of a gas to an inhalable solid and/or liquid aerosol.

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In general, any suitable aerosol generating agent or agents may be included in the aerosol generating material of the invention. Suitable aerosol generating agents include, but are not limited to: a polyol such as sorbitol, glycerol, and glycols like propylene glycol or triethylene glycol; a non-polyol such as monohydric alcohols, high 30 boiling point hydrocarbons, acids such as lactic acid, glycerol derivatives, esters such as diacetin, triacetin, triethylene glycol diacetate, triethyl citrate or myristates including

ethyl myristate and isopropyl myristate and aliphatic carboxylic acid esters such as methyl stearate, dimethyl dodecanedioate and dimethyl tetradecanedioate.

As used herein, the terms "flavour" and "flavouring" refer to materials which, 5 where local regulations permit, may be used to create a desired taste or aroma in a product for adult consumers. They may include extracts (e.g., liquorice, hydrangea, Japanese white bark magnolia leaf, chamomile, fenugreek, clove, menthol, Japanese mint, aniseed, cinnamon, herb, wintergreen, cherry, berry, peach, apple, Drambuie, bourbon, scotch, whiskey, spearmint, peppermint, lavender, cardamom, celery, 10 cascara, nutmeg, sandalwood, bergamot, geranium, honey essence, rose oil, vanilla, lemon oil, orange oil, cassia, caraway, cognac, jasmine, ylang-ylang, sage, fennel, piment, ginger, anise, coriander, coffee, or a mint oil from any species of the genus Mentha), flavour enhancers, bitterness receptor site blockers, sensorial receptor site activators or stimulators, sugars and/or sugar substitutes (e.g., sucralose, acesulfame 15 potassium, aspartame, saccharine, cyclamates, lactose, sucrose, glucose, fructose, sorbitol, or mannitol), and other additives such as charcoal, chlorophyll, minerals, botanicals, or breath freshening agents. They may be imitation, synthetic or natural ingredients or blends thereof. They may be in any suitable form, for example, oil, liquid, or powder.

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For the avoidance of doubt, where in this specification the term "comprises" is used in defining the invention or features of the invention, embodiments are also disclosed in which the invention or feature can be defined using the terms "consists essentially of" or "consists of" in place of "comprises".

25

The above embodiments are to be understood as illustrative examples of the invention. Further embodiments of the invention are envisaged. It is to be understood that any feature described in relation to any one embodiment may be used alone, or in combination with other features described, and may also be used in combination with 30 one or more features of any other of the embodiments, or any combination of any other of the embodiments. Furthermore, equivalents and modifications not described above

may also be employed without departing from the scope of the invention, which is defined in the accompanying claims.

The various embodiments described herein are presented only to assist in understanding and teaching the claimed features. These embodiments are provided as a representative sample of embodiments only, and are not exhaustive and/or exclusive. It is to be understood that advantages, embodiments, examples, functions, features, structures, and/or other aspects described herein are not to be considered limitations on the scope of the invention as defined by the claims or limitations on equivalents to the claims, and that other embodiments may be utilised and modifications may be made without departing from the scope of the claimed invention. Various embodiments of the invention may suitably comprise, consist of, or consist essentially of, appropriate combinations of the disclosed elements, components, features, parts, steps, means, etc., other than those specifically described herein. In addition, this disclosure may include other inventions not presently claimed, but which may be claimed in future.

CLAIMS

1. A device for generating an inhalable medium, the device comprising:
 - a container for holding a liquid;
 - 5 a heater for volatilising liquid held in the container;
 - a chamber containing a tobacco composition; and
 - an outlet;

the arrangement being such that in use, an inhalable medium passes out of the outlet, the medium comprising (i) volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition;

10 wherein the tobacco composition comprises a tobacco material and an encapsulated base.
2. A device according to claim 1, wherein the device is configured such that in use, liquid volatilised by the heater passes, in the form of at least one of a vapour and an aerosol, through the tobacco composition to thereby entrain one or more constituents from the tobacco composition to produce the inhalable medium which passes out of the outlet.
- 15 3. A device according to claim 1 or 2, wherein the base comprises one or more hydroxides or carbonates of sodium, potassium or calcium or other soluble bases.
- 20 4. A device according to any one of claims 1 to 3, wherein the base is encapsulated by an encapsulating material that melts, decomposes, reacts, degrades, swells, dissolves or deforms to release the base at a temperature above room temperature but at or below the temperature reached during use.
- 25 5. A device according to any one of claims 1 to 4, wherein the base is encapsulated by an encapsulating material selected from a polysaccharide or cellulosic barrier material, a gelatin, a gum, a gel, a wax or a mixture thereof.

6. A device according to claim 5, wherein the encapsulating material is selected from one or more of alginates, dextran, maltodextrin, cyclodextrin, pectin, methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, cellulose ethers, gum Arabic, gum ghatti, gum tragacanth, 5 Karaya, locust bean, acacia gum, guar, quince seed, xanthan gums, agar gel, agarose gel, carrageenans, furcellaran and carnauba wax.

7. A device according to any one of claims 1 to 6, wherein tobacco material is encapsulated with the base.

10 8. A cartridge for use in a device for generating an inhalable medium, the cartridge comprising a volatilisable liquid in a first chamber and a tobacco composition in a second chamber, wherein the tobacco composition comprises a tobacco material and an encapsulated base.

15 9. A cartridge according to claim 8, wherein the base comprises one or more hydroxides or carbonates of sodium, potassium or calcium or other soluble bases.

10. A cartridge according to claim 8 or claim 9, wherein the base is encapsulated by 20 an encapsulating material that melts, decomposes, reacts, degrades, swells, dissolves or deforms to release the base at a temperature above room temperature but at or below the temperature reached during use.

11. A cartridge according to any one of claims 8 to 10, wherein the base is 25 encapsulated by an encapsulating material selected from a polysaccharide or cellulosic barrier material, a gelatin, a gum, a gel, a wax or a mixture thereof.

12. A cartridge according to claim 11, wherein the encapsulating material is selected 30 from one or more of alginates, dextran, maltodextrin, cyclodextrin, pectin, methyl cellulose, ethyl cellulose, hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose, cellulose ethers, gum Arabic, gum ghatti, gum tragacanth,

Karaya, locust bean, acacia gum, guar, quince seed, xanthan gums, agar gel, agarose gel, carrageenans, furoidan, furcellaran and carnauba wax.

13. A cartridge according to any one of claims 8 to 12, wherein tobacco material is
5 encapsulated with the base.

14. A method of generating an inhalable medium using a device comprising a container holding a liquid, a heater for volatilising the liquid, a chamber containing a tobacco composition and an outlet, the method comprising:

10 volatilising the liquid held in the container;
forming an inhalable medium, the inhalable medium comprising (i) the volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition; and
passing the inhalable medium out of the outlet;

15 wherein the tobacco composition comprises a tobacco material and an encapsulated base.

15. A method according to claim 14 comprising:

volatilising the liquid held in the container;
20 entraining one or more constituents from the tobacco composition in at least one of a vapour and an aerosol formed by the volatilised liquid by passing the at least one of a vapour and an aerosol through the tobacco composition to generate the inhalable medium; and
passing the inhalable medium out of the outlet.

25 16. Use of an encapsulated base in a tobacco composition to provide sustained nicotine delivery in use, wherein the tobacco composition is provided in a device, the device comprising:

a container for holding a liquid;
30 a heater for volatilising liquid held in the container;
a chamber containing the tobacco composition; and
an outlet;

the arrangement being such that in use, an inhalable medium passes out of the outlet, the medium comprising (i) volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition.

5 17. A method of providing sustained release of nicotine from a device for generating an inhalable medium, the device comprising;

a container for holding a liquid;

a heater for volatilising liquid held in the container;

a chamber containing a tobacco composition; and

10 an outlet;

the arrangement being such that in use, an inhalable medium passes out of the outlet, the medium comprising (i) volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition;

15 wherein the tobacco composition comprises a tobacco material and an encapsulated base;

the method comprising releasing the base from its encapsulation in use in order to liberate nicotine from the tobacco material.

18. A kit comprising

20 (i) a liquid pod containing a volatilisable liquid; and

(ii) a tobacco composition pod, containing a tobacco composition comprises a tobacco material and an encapsulated base;

25 wherein the liquid and tobacco composition pod are configured for use in a device for use in generating an inhalable medium, the device being such that in use, an inhalable medium is generated, the medium comprising (i) volatilised liquid from the liquid pod in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition.

19. A tobacco composition pod, containing a tobacco composition that comprises a tobacco material and an encapsulated base; wherein the tobacco composition pod is configured for use in a device for use in generating an inhalable medium, the device being such that in use, an inhalable medium is generated, the medium comprising (i)

volatilised liquid in the form of a vapour and/or an aerosol and (ii) one or more constituents of the tobacco composition.

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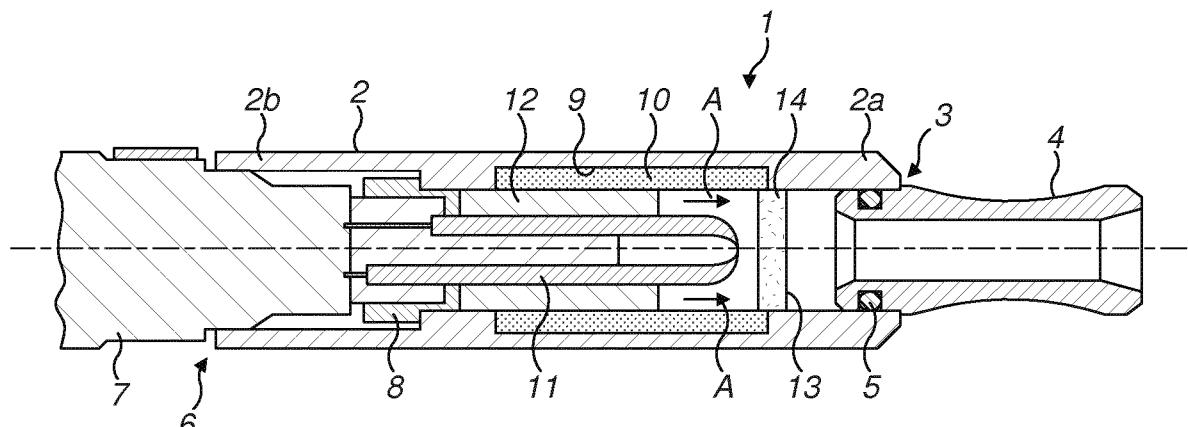


FIG. 1

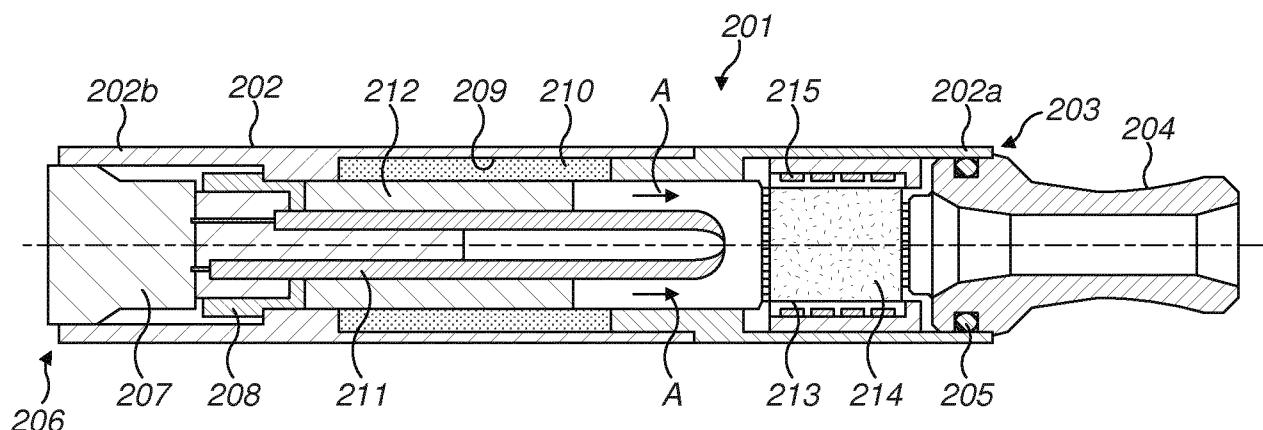


FIG. 2

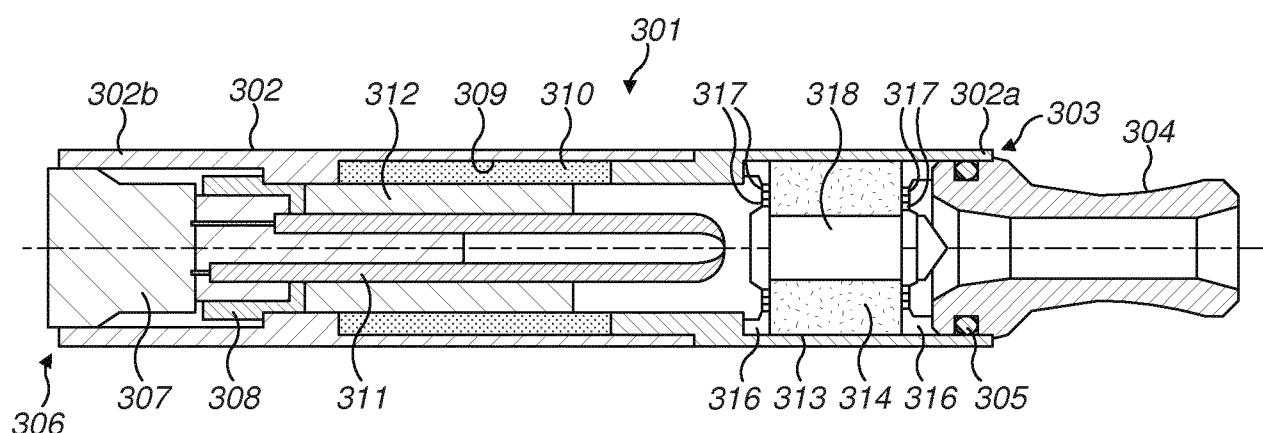


FIG. 3

2 / 2

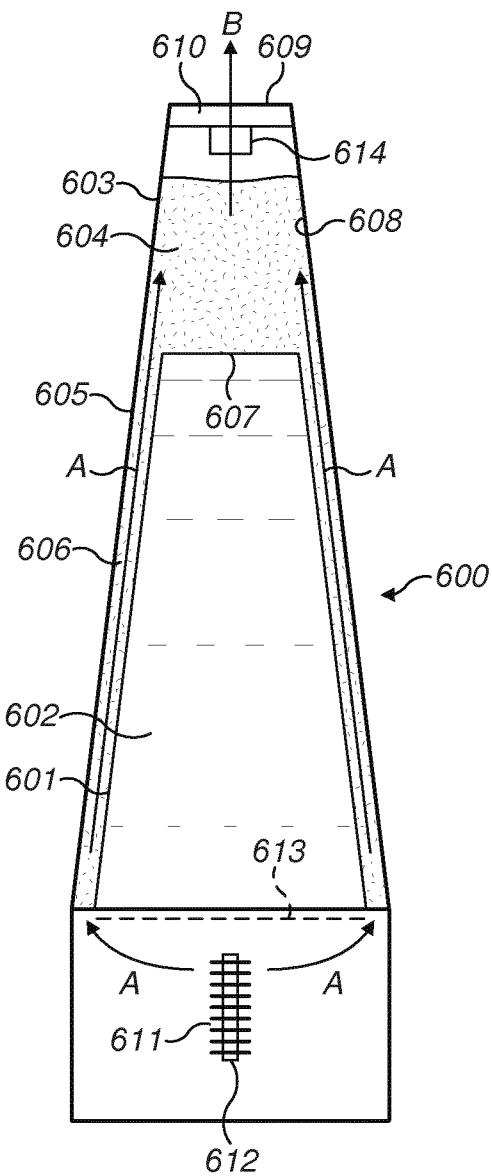


FIG. 4

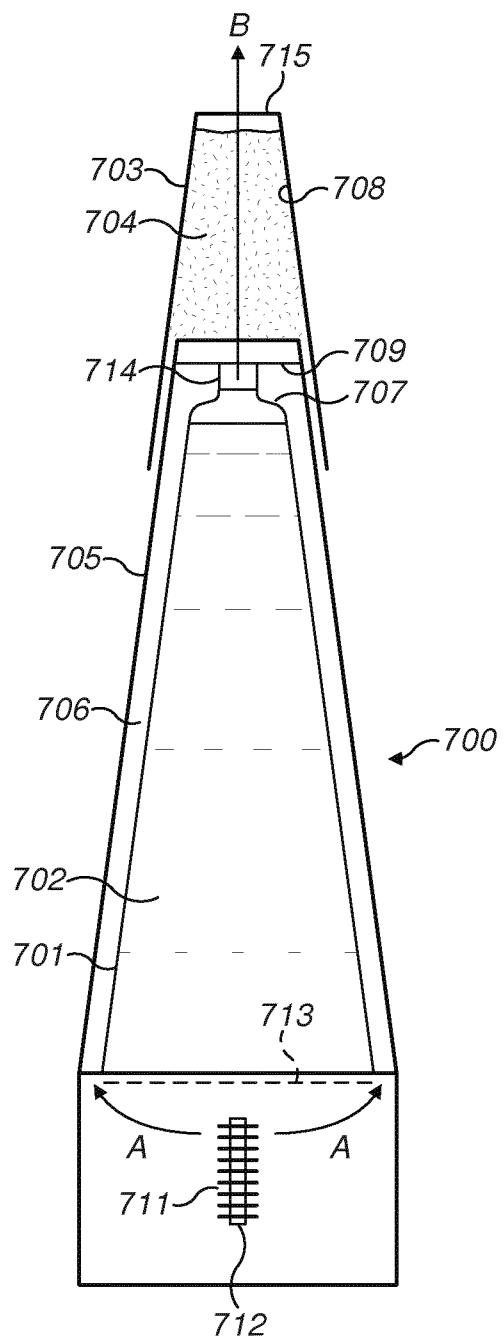


FIG. 5

