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(54) AEROSOL GENERATING SYSTEM

(57) An aerosol generating system comprising a tank (102) configured to contain a liquid aerosol precursor, a heating element (104) configured to aerosolise liquid aerosol precursor fed from the tank to the heating element, and a liquid transfer element (108) comprising one or more primary feed passages (110), the one or more primary feed passages each providing at least a portion of a liquid flow path between the tank and the heating element, each of the one or more primary feed passages having a primary passage inlet (1102) on a tank-facing side of the liquid transfer element and a primary passage outlet (1101) on a heating element-facing side of the liquid transfer element, wherein an outlet cross-sectional area of the primary passage outlet is larger than an inlet cross-sectional area of the primary passage inlet.

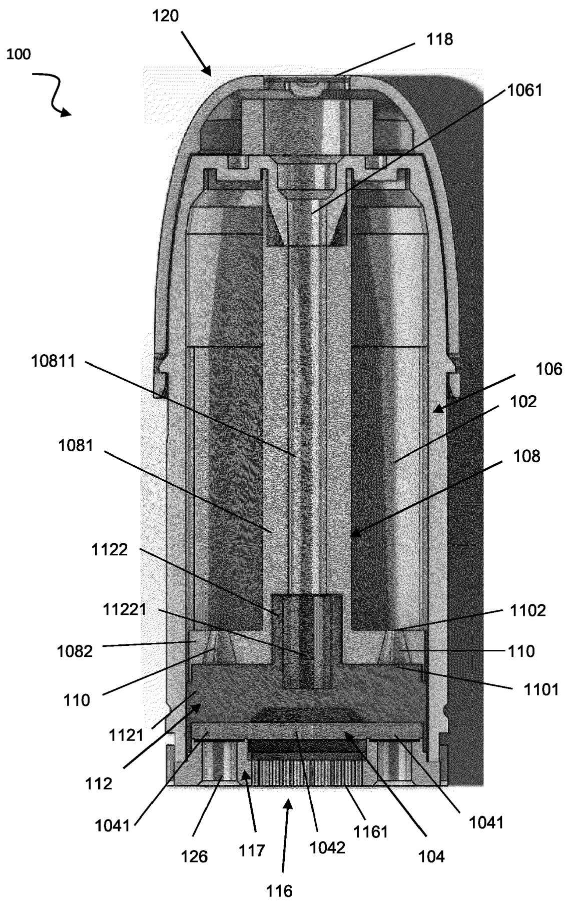

Fig. 4

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Description

FIELD

[0001] The present disclosure relates to an aerosol generating system.

BACKGROUND

[0002] A typical aerosol generating system may comprise a power supply, an aerosol generating unit that is driven by the power supply, an aerosol precursor, which in use is aerosolised by the aerosol generating unit to generate an aerosol, and a delivery system for delivery of the aerosol to a user.

[0003] A drawback with known aerosol generating system is that liquid aerosol precursor may leak out of the aerosol generating system.

[0004] In spite of the effort already invested in the development of aerosol generating systems further improvements are desirable.

SUMMARY

[0005] According to a first aspect, there is provided an aerosol generating system comprising a tank configured to contain a liquid aerosol precursor, a heating element configured to aerosolise liquid aerosol precursor fed from the tank to the heating element, and a liquid transfer element comprising one or more primary feed passages, the one or more primary feed passages each providing at least a portion of a liquid flow path between the tank and the heating element, each of the one or more primary feed passages having a primary passage inlet on a tank-facing side of the liquid transfer element and a primary passage outlet on a heating element-facing side of the liquid transfer element, wherein each of the one or more primary feed passages includes a primary passage inlet and a primary passage outlet, and wherein an outlet cross-sectional area of the primary passage outlet is larger than an inlet cross-sectional area of the primary passage inlet.

[0006] Advantageously, by including such a feed passage, which has a larger outlet cross-sectional area and a smaller inlet cross-sectional area, in the liquid transfer element, leakage of liquid aerosol precursor from the aerosol generating system may be reduced whilst allowing good wetting of the heating element.

[0007] In more detail, the smaller inlet cross-sectional area of the primary feed passage may allow a suitable flow rate of liquid to flow out of the tank through the primary feed passage, such that leakage of the aerosol generating system may be reduced. The larger outlet cross-sectional area of the primary feed passage may allow enough liquid to flow through the primary feed passage to the heating element such that the aerosol generating system may operate effectively. Thus, the rate at which liquid aerosol may flow from the tank to the heating element may be controlled precisely by setting an inlet cross-sectional area and a larger outlet cross-sectional area. Additionally, or alternatively, the larger cross-sectional area of the primary feed passage may provide that the area over which the heating element can be wetted by the liquid aerosol precursor may be increased.

[0008] The tank-facing side and the heating element-facing side of the liquid transfer element may be on opposite sides of the liquid transfer element. The tank-facing side and/or the heating element-facing side of the liquid transfer element may be transverse to a longitudinal axis of the aerosol generating system and/or may be transverse to a longitudinal axis of the tank.

[0009] The aerosol generating system may be elongate, e.g. it may extend elongately along a longitudinal axis of the aerosol generating system. The tank may be elongate, e.g. it may extend elongately along a longitudinal axis of the tank.

[0010] Each of the one or more primary feed passages may extend along a respective passage axis. At least one of, or each of, the passage axes may be aligned with a longitudinal axis of the aerosol generating system and/or with a longitudinal axis of the tank.

[0011] In some examples, at least one of the one or more primary feed passages may be frustoconical, i.e. smoothly tapered. In some examples, all of the one or more primary feed passages may be frustoconical. In this way, flow of liquid through the primary feed passage may be undisturbed by step changes in cross-sectional area. Further, the primary feed passage being frustoconical may facilitate the manufacture of the primary feed passage, e.g. if the liquid transfer element is formed by machining.

[0012] However, in some examples, at least one of the one or more primary feed passages may be stepped. In some examples, all the one or more primary feed passages may be stepped.

[0013] In some examples, the liquid transfer element may comprise two or more primary feed passages. Advantageously, having two or more primary feed passages may enable the heating element to be wetted by the liquid aerosol precursor more uniformly and/or over a larger surface area of the heating element. Advantageously, having only two primary feed passages may help to achieve an optimal balance between good wetting of the heating element, and reduced leakage..

[0014] However, the liquid transfer element may comprise only one primary feed passage.

[0015] In some examples, the diameter of at least one of, or each of, the primary passage inlets may be less than 2 mm, for example, 1 mm. The diameter of at least one of, or each of, the primary passage inlets may be less than 1.5 mm. The diameter of at least one of, or each of, the primary passage inlets may be greater than 0.5 mm, for example, 1 mm.

[0016] In some examples, the diameter of at least one of, or each of, the primary passage outlets may be greater than 1 mm, for example, 2 mm. The diameter of at least one of, or each of, the primary passage outlets may be greater than 1.5 mm. The diameter of at least one of, or each of, the primary passage outlets may be less than 3 mm, for example, 2 mm.

[0017] In some examples, the length at least one of, or each of, the primary feed passages along the respective liquid flow path from the passage inlet to the passage outlet may be less than 3 mm, for example 2 mm. In some examples, said length may be greater than 1 mm, for example, 2 mm.

[0018] In some examples, the liquid transfer element may be formed of liquid impermeable material. In this way, liquid aerosol precursor may only flow through the liquid transfer element via the primary feed passages.

[0019] In some examples, the liquid transfer element may form a wall of the tank. In some examples, each of the primary passage inlets may open directly into the tank. In this way, liquid aerosol precursor may pass out of the tank through the primary feed passages.

[0020] In some examples, the aerosol generating system may comprise a tank housing. The tank housing may be formed of polycarbonate.

[0021] The liquid transfer element and the tank housing may form respective walls of the tank. The liquid transfer element may sit within the tank housing. The liquid transfer element may engage with the tank housing. The liquid transfer element may engage with the tank housing to define the tank between the tank housing and the liquid transfer element. Engage with may mean contact.

[0022] In some examples, the volume of the tank may be greater than 0.5 ml. The volume of the tank may be greater than 1 ml. The volume of the tank may be less than 10 ml. The volume of the tank may be less than 5 ml.

[0023] The aerosol generating system may include an airflow path therethrough, the airflow path extending from an airflow inlet to an airflow outlet. The airflow outlet may be configured to deliver aerosolised aerosol precursor to a user. The airflow outlet of the aerosol generating system may be within a mouthpiece of the aerosol generating system. Thus, a user may draw air into and along the airflow path by inhaling at the outlet (i.e., using the mouthpiece).

[0024] The airflow path may comprise an inlet portion extending from the airflow inlet to the heating element. The airflow path may comprise an outlet portion extending from the heating element to the airflow outlet.

[0025] References to "downstream" in relation to the airflow path are intended to refer to the direction towards the airflow outlet/mouthpiece portion. Conversely, references to "upstream" are intended to refer to the direction towards the airflow inlet. Thus, the outlet portion of the airflow path (and the airflow outlet / mouthpiece) is downstream of the inlet portion of the airflow path (and the airflow inlet). In other words, the inlet portion of the airflow path (and the airflow inlet) is upstream of the outlet portion of the airflow path (and the airflow outlet/mouthpiece).

[0026] In some examples, the liquid transfer element may comprise an airflow tube. The airflow tube may comprise, or may define, a first airflow passage. The airflow tube of the liquid transfer element, or the first airflow passage, may define at least a portion of the airflow path between the airflow inlet and the airflow outlet. The airflow tube of the liquid transfer element, or the first airflow passage, may define at least a portion of the outlet portion of the airflow path.

[0027] The tank housing may include a protruding portion. The protruding portion may comprise or may define a second airflow passage. The protruding portion, or the second airflow passage may define at least a portion of the airflow path between the airflow inlet and the airflow outlet. The protruding portion, or the second airflow passage, may define at least a portion of the outlet portion of the airflow path.

[0028] As discussed above, the liquid transfer element may engage with the tank housing. The liquid transfer element may engage with the tank housing such as to align the first airflow passage of the liquid transfer element with the second airflow passage of the tank housing. The liquid transfer element may be fixedly connected to the tank housing. There may be a liquid-impermeable seal between the liquid transfer element and the tank housing. The liquid transfer element may be interference fit to the tank housing. In this way, the liquid-impermeable seal may be created between the liquid transfer element and the tank housing.

[0029] In more detail, the airflow tube may of the liquid transfer element engage with the tank housing. The airflow tube may fixedly connect the liquid transfer element to the tank housing. There may be a liquid-impermeable seal between the airflow tube and the tank housing. The airflow tube may be interference fit to the tank housing. In this way, the liquid-impermeable seal may be created between the airflow tube and the tank housing.

[0030] The airflow tube of the liquid transfer element may engage with and/or be interference fit to the protruding portion of the tank housing. There may be a liquid impermeable seal between the airflow tube of the liquid transfer element and the protruding portion of the tank housing.

[0031] The liquid transfer element may comprise a liquid transfer portion which includes the one or more primary feed passages. The airflow tube of the liquid transfer element may extend from the liquid transfer portion. The liquid transfer portion and the airflow tube of the liquid transfer element may be integrally formed.

[0032] As discussed above, in some examples the liquid transfer element and the tank housing may form walls of the tank. In more detail, in some examples, the liquid transfer portion of the liquid transfer element, the airflow tube of the liquid transfer element and the tank housing may form walls of the tank.

[0033] Advantageously, such a liquid transfer element and tank housing may simplify the manufacture of the aerosol generating system. Assembly of an aerosol generating system according to an embodiment will be described in more detail below, but as can be understood from the above description, inserting the liquid transfer element into the tank housing may form the tank and may define a portion of the airflow path of the aerosol generating system.

[0034] The tank may be an annular tank. The airflow tube of the liquid transfer element may form an inner wall of the annular tank. The airflow tube of the liquid transfer element may extend through the annular tank. Thus, the first airflow passage of the liquid transfer element may extend through the annular tank.

[0035] There may be a clearance, or a gap, between the liquid transfer portion of the liquid transfer element and the tank housing. The clearance, or the gap, may be between a lateral surface of the liquid transfer portion and an opposing lateral surface of the tank housing. A lateral surface may refer to a surface aligned with a longitudinal axis of the aerosol generating system and/or a longitudinal axis of the tank and/or a longitudinal axis of the airflow tube of the liquid transfer portion. Advantageously, the clearance, or the gap, may improve the ease of manufacture of the aerosol generating system, because the liquid transfer element may be inserted into the tank housing with less force.

[0036] The liquid transfer element may be formed of a relatively high strength/ stiffness material such as PEEK. Advantageously, forming the liquid transfer element of such a material may enable the liquid transfer element to be interference fit to the tank housing. As another advantage, forming the liquid transfer element of such a material may provide that the one or more primary feed passages can be formed by machining, e.g., computer numerical control (CNC) machining.

[0037] In some examples, the aerosol generating system further comprises a heater mount located between the heating element and the liquid transfer element.

[0038] The heater mount may engage with at least a portion of the heating element. The heater mount may support the heating element.

[0039] The heater mount may be adjacent the liquid transfer element. Each of the one or more primary passage outlets of the liquid transfer element may be adjacent the heater mount. As will be described in further detail below, the heater mount may engage with at least a portion of the liquid transfer element.

[0040] In some examples, the heater mount may comprise one or more secondary feed passages. Each of the one or more secondary feed passages may extend along a respective passage axis.

[0041] Each of the one or more secondary feed passages may have a secondary passage inlet adjacent a primary passage outlet. In this way, each of the one or more secondary feed passages may be fluidly connected to a primary feed passage. Each of the one or more secondary feed passages may have a secondary passage outlet adjacent the heating element. In this way, each of the one or more secondary feed passages provide a portion of a liquid flow path between the tank and the heating element. A primary feed passage and a secondary feed passage may together form a liquid flow path between the tank and the heating element. The liquid flow path may extend from the tank to the heating element.

[0042] In some examples, the heater mount may be formed of liquid impermeable material. In this way, liquid aerosol precursor may only flow through the heater mount via the secondary feed passages.

[0043] In some examples, at least one, or each, of the secondary feed passages may have an inlet cross-sectional area and/or an outlet cross-sectional area smaller than the outlet cross-sectional area of the primary passage outlet which the secondary passage inlet is adjacent to. In this way, control of liquid flowing to the heating element may be permitted, such that leakage out of the aerosol generating system may be reduced.

[0044] In some examples, at least one, or each, of the secondary feed passages may have an inlet cross-sectional area and/or an outlet cross sectional area smaller than the inlet cross-sectional area of the primary feed passage which the secondary feed passage is fluidly connected to.

[0045] In some examples, at least one, or each, of the secondary feed passages may be cylindrical. Advantageously, cylindrical secondary feed passages may be easier to manufacture in the heater mount. The cylindrical secondary feed passages may be manufacturable by moulding, such as injection moulding.

[0046] In some examples, there may be two or more secondary feed passages fluidly coupled to each primary feed passage. Advantageously, this may allow the heating element to be wetted by the liquid aerosol precursor more uniformly and/or over a larger surface area of the heating element. Additionally, or alternatively, this may allow enough liquid to flow to the heating element such that the aerosol generating system may operate effectively. Advantageously, having only two secondary feed passages may help to achieve an optimal balance between good wetting of the heating element, and reduced leakage..

[0047] One or more, or each, of the secondary feed passages may be laterally displaced from the passage axis of the primary feed passage (which may be a central axis of the primary feed passage) to which the secondary feed passage is fluidly coupled. One or more, or each, of the passage axes of the secondary feed passages (which may be central axes of the secondary feed passages) may be laterally displaced from the passage axis of the primary feed passage (which may be a central axis of the primary feed passage) to which the secondary feed passage is fluidly coupled. In this way, the heating element may be wetted by the liquid aerosol precursor more uniformly and/or over a larger surface area of the heating element.

[0048] In some examples, the diameter of at least one of, or each of, the secondary passage inlets may be less than 1 mm, for example, 0.5 mm or 0.6 mm. The diameter of at least one of, or each of, the secondary passage inlets may be greater than 0.3mm, for example, 0.5 mm or 0.6 mm.

[0049] In some examples, the diameter of at least one of, or each of, the secondary passage outlets may be less than 1 mm, for example, 0.5 mm or 0.6 mm. The diameter of at least one of, or each of, the secondary passage outlets may be greater than 0.3mm, for example, 0.5 mm or 0.6 mm.

[0050] In some examples, the heater mount may comprise an airflow tube. The airflow tube may comprise, or may define, a third airflow passage. The airflow tube of the heater mount, or the third airflow passage, may define at least a portion of the airflow path between airflow inlet and the airflow outlet. The airflow tube of the heater mount, or the third airflow passage, may define at least a portion of the outlet portion of the airflow path.

[0051] The airflow tube and/or the third airflow passage of the heater mount may be upstream of the airflow tube and/or the first airflow passage of the liquid transfer element.

[0052] The heater mount may engage with the liquid transfer element such as to align the third airflow passage of the heater mount with the first airflow passage of the liquid transfer element.

[0053] In more detail, the airflow tube of the heater mount may engage with the airflow tube of the liquid transfer element. There may be a liquid-impermeable seal between the heater mount and the liquid transfer element. The airflow tube of the heater mount may form an interference fit with the airflow tube of the liquid transfer element.

[0054] The heater mount may comprise a heater mounting portion. The heater mounting portion may engage with one or more mounted portions of the heating element. The heater mounting portion of the heater mount may include the one or more secondary feed passages.

[0055] An exposed portion of the heating element may span an opening into the airflow tube of the heater mount. The exposed portion of the heating element may be exposed to an airflow path between an airflow inlet of the aerosol generating system and an airflow outlet of the aerosol generating system. An airflow path may pass over or around the exposed portion of the heating element.

[0056] The heating element may be permeable to air. Thus, an airflow path may pass through the exposed portion of the heating element. In this way, air may flow through the heating element.

[0057] The heating element may extend transversely relative to the airflow path. The heating element may be perpendicular to a longitudinal axis of the airflow tube of the liquid transfer element and/or to a longitudinal axis of the airflow tube of the heater mount.

[0058] In some examples, the heating element may be a wick heater. In other words, the heating element may be a combined wick and heater component. That is, the wick heater may be a component that is configured to convey liquid aerosol forming substrate within or on itself and which is also configured to be heated to vaporise at least a portion of the aerosol forming substrate contained within or on itself. Advantageously then, the heating element may wick liquid aerosol precursor received from the tank to the exposed portion of the heating element. In this way, aerosol precursor may enter the airflow path.

[0059] In some examples, the at least two primary feed passages may be located on either side of the exposed portion of the heating element. That is, the at least two primary feed passages may be located on opposite sides of the exposed portion of the heating element. In some example, the at least two primary feed passages may be located on either side of the airflow tube of the heater mount. That is, the at least two primary feed passages may be located on opposite sides of the airflow tube of the heater mount. In this way, the heating element may be wetted by the liquid aerosol precursor more uniformly and/or over a wider area of the heating element.

[0060] It follows that in some examples, the secondary feed passages may be located either side of the exposed portion of the heating element. That is, the secondary feed passages may be located on opposite sides of the exposed portion of the heating element. In some examples, the secondary feed passages may be located either side of the airflow tube of the heater mount. That is, the secondary feed passages may be located on opposite sides of the exposed portion of the heating element. In this way, the heating element may be wetted by the liquid aerosol precursor more uniformly and/or over a wider area of the heating element.

[0061] In some examples, the heater mount may seal the tank. The heater mount may engage with the tank housing to form a liquid-impermeable seal. The heater mount may be interference fit to the tank housing, and may achieve the liquid impermeable seal in this way. In this way, leakage of liquid aerosol precursor from the aerosol generating system may be reduced.

[0062] In some examples the heater mount may comprise one or more protruding ridges which engage with the tank housing to form the liquid-impermeable seal and/or the interference fit. In some examples, the heater mount may comprise two protruding ridges which engage with the tank housing to form the liquid-impermeable seal and/or the interference fit.

[0063] In some examples, the heater mount may be formed of silicone. Advantageously, forming the heater mount of silicone may enable the heater mount to be interference fit to the tank housing. Forming the heater mount of silicone may make the heater mount well suited to forming a seal with the tank housing.

[0064] In some examples, the aerosol generating system may include an end cap. The end cap may be fixedly coupled to the tank housing. The end cap may be interference fit to the tank housing.

[0065] In some examples, the heating element may sit between the heater mount and the end cap. As mentioned, the heating element may engage with the heater mount. In some examples, the heating element may engage with the end cap.

[0066] The end cap may include electrical contact through holes which each receive an electrical contact therethrough. The electrical contacts may be configured to electrically contact the heating element. The electrical contacts may be configured to deliver a current to the heating element. The electrical contacts may be configured to cause the heating element to heat up.

[0067] The end cap may include the airflow inlet. The airflow inlet may include a plurality of sub-inlets. The opening into the airflow tube of the heater mount may be downstream of the airflow inlet. The opening into the airflow tube of the heater mount may be configured to receive air from the airflow inlet.

[0068] The end cap may be formed of a rigid material, such as PEEK.

[0069] In some examples, the aerosol generating system may comprise a consumable and an aerosol generating device. The device may be configured to receive the consumable. The device and the consumable may be configured to be physically coupled together.

[0070] The consumable may include the tank, the heating element and the liquid transfer element. The consumable may include the heater mount. The consumable may include the end cap. The consumable may include the tank housing.

[0071] The aerosol generating device may include a power supply configured to supply power to the heating element. The power supply may be configured to supply power to the heating element via the electrical contacts in the end cap. The electrical contacts may extend from a body of the aerosol generating device.

[0072] In some examples, the aerosol generating system may have been assembled according to the following steps. The liquid transfer element may have been inserted into the tank housing, and may have been fixedly coupled to the tank housing. In this way, the tank may have been formed. The tank may then have been filled with liquid aerosol precursor through one or more of the primary feedholes. The primary feedholes may have been filled right to the top, to reduce trapped air in the tank. The heater mount may then have been inserted into the tank housing. The heater mount may have been inserted into the tank housing such as to be fixedly coupled to the liquid transfer element and/or the tank housing. The heating element may then have been placed on the heater mount. The end cap may have been inserted into the tank housing such as to engage with the heating element and/or to be fixedly coupled to the tank housing. The preceding summary is provided for purposes of summarizing some examples to provide a basic understanding of aspects of the subject matter described herein. Accordingly, the above-described features should not be construed to narrow the scope or spirit of the subject matter described herein in any way. Moreover, the above and/or proceeding examples may be combined in any suitable combination to provide further examples, except where such a combination is clearly impermissible or expressly avoided. Other features, aspects, and advantages of the subject matter described herein will become apparent from the following text and the accompanying drawings.

BRIEF DESCRIPTION OF THE FIGURES

[0073] Aspects, features and advantages of the present disclosure will become apparent from the following description of examples in reference to the appended drawings in which like numerals denote like elements.

Fig. 1 is a block system diagram showing an example aerosol generating system.

Fig. 2 is a block system diagram showing an example implementation of the apparatus of Fig. 1, where the aerosol generating system is configured to generate aerosol from a liquid precursor.

Figs. 3A and 3B are schematic diagrams showing an example implementation of the apparatus of Fig. 2.

Fig. 4 is a cross-sectional view of a consumable of an aerosol generating system.

Fig. 5 is a tilted cross-sectional view of the region around a heating element of the consumable of Fig.

4. DETAILED DESCRIPTION OF EMBODIMENTS

[0074] Before describing several examples implementing the present disclosure, it is to be understood that the present disclosure is not limited by specific construction details or process steps set forth in the following description and accompanying drawings. Rather, it will be apparent to those skilled in the art having the benefit of the present disclosure that the systems, apparatuses and/or methods described herein could be embodied differently and/or be practiced or carried out in various alternative ways.

[0075] Unless otherwise defined herein, scientific and technical terms used in connection with the presently disclosed inventive concept(s) shall have the meanings that are commonly understood by those of ordinary skill in the art, and known techniques and procedures may be performed according to conventional methods well known in the art and as described in various general and more specific references that may be cited and discussed in the present specification.

[0076] Any patents, published patent applications, and non-patent publications mentioned in the specification are hereby incorporated by reference in their entirety.

[0077] All examples implementing the present disclosure can be made and executed without undue experimentation in light of the present disclosure. While particular examples have been described, it will be apparent to those of skill in the art that variations may be applied to the systems, apparatus, and/or methods and in the steps or in the sequence of steps of the methods described herein without departing from the concept, spirit, and scope of the inventive concept(s). All such similar substitutions and modifications apparent to those skilled in the art are deemed to be within the spirit, scope, and concept of the inventive concept(s) as defined by the appended claims.

[0078] The use of the term "a" or "an" in the claims and/or the specification may mean "one," as well as "one or more," "at least one," and "one or more than one." As such, the terms "a," "an," and "the," as well as all singular terms, include plural referents unless the context clearly indicates otherwise. Likewise, plural terms shall include the singular unless otherwise required by context.

[0079] The use of the term "or" in the present disclosure (including the claims) is used to mean an inclusive "and/or" unless explicitly indicated to refer to alternatives only or unless the alternatives are mutually exclusive. For example, a condition "A or B" is satisfied by any of the following: A is true (or present) and B is false (or not present), A is false (or not present) and B is true (or present), and both A and B are true (or present).

[0080] As used in this specification and claim(s), the words "comprising, "having," "including," or "containing" (and any forms thereof, such as "comprise" and "comprises," "have" and "has," "includes" and "include," or "contains" and "contain," respectively) are inclusive or open-ended and do not exclude additional, unrecited elements or method steps.

[0081] Unless otherwise explicitly stated as incompatible, or the physics or otherwise of the embodiments, examples, or claims prevent such a combination, the features of examples disclosed herein, and of the claims, may be integrated together in any suitable arrangement, especially ones where there is a beneficial effect in doing so. This is not limited to only any specified benefit, and instead may arise from an "ex post facto" benefit. This is to say that the combination of features is not limited by the described forms, particularly the form (e.g. numbering) of example(s), embodiment(s), or dependency of claim(s). Moreover, this also applies to the phrase "in one embodiment," "according to an embodiment," and the like, which are merely a stylistic form of wording and are not to be construed as limiting the following features to a separate embodiment to all other instances of the same or similar wording. This is to say, a reference to 'an,' 'one,' or 'some' embodiment(s) may be a reference to any one or more, and/or all embodiments, or combination(s) thereof, disclosed. Also, similarly, the reference to "the" embodiment may not be limited to the immediately preceding embodiment. Further, all references to one or more embodiments or examples are to be construed as non-limiting to the claims.

[0082] The present disclosure may be better understood in view of the following explanations, wherein the terms used that are separated by "or" may be used interchangeably:

As used herein, an **"aerosol generating system"** (or **"electronic(e)-cigarette"**) may be an apparatus configured to deliver an aerosol to a user for inhalation by the user. An aerosol generated by the apparatus may comprise an aerosol with particle sizes of 0.2 - 7 microns, or less than 10 microns, or less than 7 microns. This particle size may be achieved by control of one or more of: heater temperature; cooling rate as the vapour condenses to an aerosol; flow properties including turbulence and velocity. The generation of aerosol by the aerosol generating system may be controlled by an input device. The input device may be configured to be user-activated, and may for example include or take the form of an actuator (e.g. actuation button) and/or an airflow sensor.

[0083] Each occurrence of the aerosol generating system being caused to generate aerosol for a period of time (which may be variable) may be referred to as an **"activation"** of the aerosol generating system. The aerosol generating system may be arranged to allow an amount of aerosol delivered to a user to be varied per activation (as opposed to delivering a fixed dose of aerosol), e.g. by activating an aerosol generating unit of the apparatus for a variable amount of time, e.g. based on the strength/-duration of a draw of a user through a flow path of the apparatus (to replicate an effect of smoking a conventional combustible smoking article).

[0084] The aerosol generating system may be portable. As used herein, the term **"portable"** may refer to the apparatus being for use when held by a user.

[0085] As used herein, an **"aerosol"** may include a suspension of precursor, including as one or more of: solid particles; liquid droplets; gas. Said suspension may be in a gas including air. An aerosol herein may generally refer to/include a vapour. An aerosol may include one or more components of the precursor.

[0086] As used herein, a **"precursor"** may include one or more of a: liquid; solid; gel; loose leaf material; other substance. The precursor may be processed by an aerosol generating unit of an aerosol generating system to generate an aerosol. The precursor may include one or more of: an active component; a carrier; a flavouring. The active component may include one or more of nicotine; caffeine; a cannabidiol oil; a non-pharmaceutical formulation, e.g. a formulation which is not for treatment of a disease or physiological malfunction of the human body. The active component may be carried by the carrier, which may be a liquid, including propylene glycol and/or glycerine. The term "flavouring" may refer to a component that provides a taste and/or a smell to the user. The flavouring may include one or more of: Ethylvanillin (vanilla); menthol, Isoamyl acetate (banana oil); or other. The precursor may include a substrate, e.g. reconstituted tobacco to carry one or more of the active component; a carrier; a flavouring.

[0087] As used herein, a **"storage portion"** may be a portion of the apparatus adapted to store the precursor. It may be implemented as fluid-holding reservoir.

[0088] As used herein, an **"airflow path"** may refer to a path or enclosed passageway through an aerosol generating system, e.g. for delivery of an aerosol to a user. The airflow path may be arranged to receive aerosol from an aerosol generating unit. When referring to the airflow path, upstream and downstream may be defined in respect of a direction of airflow in the airflow path, e.g. with an outlet being downstream of an inlet.

[0089] As used herein, a **"delivery system"** may be a system operative to deliver an aerosol to a user. The delivery system may include a mouthpiece and a flow path.

[0090] As used herein, an **"airflow"** may refer to an airflow in an airflow path. An airflow may include aerosol generated from the precursor. The airflow may include air, which may be induced into the airflow path via a puff by a user.

[0091] As used herein, a **"puff"** (or **"inhale"** or **"draw"**) by a user may refer to expansion of lungs and/or oral cavity of a user to create a pressure reduction that induces flow through the flow path.

[0092] As used herein, an **"aerosol generating unit"** may refer to a device configured to generate an aerosol from a precursor. The aerosol generating unit may include a unit to generate a vapour directly from the precursor (e.g. a heating system or other system) or an aerosol directly from the precursor (e.g. an atomiser including an ultrasonic system, a flow expansion system operative to carry droplets of the precursor in the flow without using electrical energy or other system). A plurality of aerosol generating units to generate a plurality of aerosols (for example, from a plurality of different aerosol precursors) may be present in an aerosol generating system.

[0093] As used herein, a **"heating system"** may refer to an arrangement of at least one heating element, which is operable to aerosolise a precursor once heated. The at least one heating element may be electrically resistive to produce heat from the flow of electrical current therethrough. The at least one heating element may be arranged as a susceptor to produce heat when penetrated by an alternating magnetic field. The heating system may be configured to heat a precursor to below 300 or 350 degrees C, including without combustion.

[0094] As used herein, a **"consumable"** may refer to a unit that includes a precursor. The consumable may include an aerosol generating unit, e.g. it may be arranged as a cartomizer. The consumable may include a mouthpiece. The consumable may include an information carrying medium. With liquid or gel implementations of the precursor, e.g. an e-liquid, the consumable may be referred to as a "capsule" or a "pod" or an "e-liquid consumable". The capsule/pod may include a storage portion, e.g. a reservoir or tank, for storage of the precursor.

[0095] Referring to Fig. 1, an example aerosol generating system 1 includes a power supply 2, for supply of electrical energy. The system 1 includes an aerosol generating unit 4 that is driven by the power supply 2. The power supply 2 may include an electric power supply in the form of a battery and/or an electrical connection to an external power source. The system 1 includes a precursor 6, which in use is aerosolised by the aerosol generating unit 4 to generate an aerosol. The system 1 includes a delivery system 8 for delivery of the aerosol to a user.

[0096] Electrical circuitry (not shown in Fig. 1) may be implemented to control the interoperability of the power supply 4 and aerosol generating unit 6.

[0097] In variant examples, which are not illustrated, the power supply 2 may be omitted since, e.g. an aerosol generating unit implemented as an atomiser with flow expansion may not require a power supply.

[0098] Fig. 2 shows an implementation of the system 1 of Fig. 1, where the aerosol generating system 1 is configured to generate aerosol from a liquid precursor.

[0099] In this example, the system 1 includes a device body 10 and a consumable 30.

[0100] In this example, the body 10 includes the power supply 4. The body may additionally include any one or more of electrical circuitry 12, a memory 14, a wireless interface 16, one or more other components 18.

[0101] The electrical circuitry 12 may include a processing resource for controlling one or more operations of the body 10 and consumable 30, e.g. based on instructions stored in the memory 14.

[0102] The wireless interface 16 may be configured to communicate wirelessly with an external (e.g. mobile) device, e.g. via Bluetooth.

[0103] The other component(s) 18 may include one or more user interface devices configured to convey information to a user and/or a charging port, for example (see e.g. Fig. 3).

[0104] The consumable 30 includes a storage portion implemented here as a tank 32 which stores the liquid precursor 6 (e.g. e-liquid). The consumable 30 also includes a heating system 34, one or more air inlets 36, and a mouthpiece 38. The consumable 30 may include one or more other components 40.

[0105] The body 10 and consumable 30 may each include a respective electrical interface (not shown) to provide an electrical connection between one or more components of the body 10 with one or more components of the consumable 30. In this way, electrical power can be supplied to components (e.g. the heating system 34) of the consumable 30, without the consumable 30 needing to have its own power supply.

[0106] In use, a user may activate the aerosol generating system 1 when inhaling through the mouthpiece 38, i.e. when performing a puff. The puff, performed by the user, may initiate a flow through a flow path in the consumable 30 which extends from the air inlet(s) 36 to the mouthpiece 38 via a region in proximity to the heating system 34.

[0107] Activation of the aerosol generating system 1 may be initiated, for example, by an airflow sensor in the body 10 which detects airflow in the aerosol generating system 1 (e.g. caused by a user inhaling through the mouthpiece), or by actuation of an actuator included in the body 10. Upon activation, the electrical circuitry 12 (e.g. under control of the processing resource) may supply electrical energy from the power supply 2 to the heating system 34 which may cause the heating system 32 to heat liquid precursor 6 drawn from the tank to produce an aerosol which is carried by the flow out of the mouthpiece 38.

[0108] The heating filament may be configured to heat up liquid precursor 6 drawn out of the tank 32 by the wick to produce the aerosol. In some examples, the heating system may include a wick heater (i.e., a combined wick and heater component) which is configured to convey liquid aerosol forming substrate within or on itself and which is also configured to be heated to vaporise at least a portion of the aerosol forming substrate contained within or on itself..

[0109] In this example, the aerosol generating unit 4 is provided by the above-described heating system 34 and the delivery system 8 is provided by the above-described flow path and mouthpiece 38.

[0110] In variant embodiments (not shown), any one or more of the precursor 6, heating system 34, air inlet(s) 36 and mouthpiece 38, may be included in the body 10. For example, the mouthpiece 36 may be included in the body 10 with the precursor 6 and heating system 32 arranged as a separable cartomizer.

[0111] Figs. 3A and 3B show an example implementation of the aerosol generating device 1 of Fig. 2. In this example, the consumable 30 is implemented as a capsule/pod, which is shown in Fig. 3A as being physically coupled to the body 10, and is shown in Fig. 3B as being decoupled from the body 10.

[0112] In this example, the body 10 and the consumable 30 are configured to be physically coupled together by pushing the consumable 30 into an aperture in a top end 11 the body 10, with the consumable 30 being retained in the aperture via an interference fit.

[0113] In other examples (not shown), the body 10 and the consumable 30 could be physically coupled together in other ways, e.g. by screwing one onto the other, through a bayonet fitting, or through a snap engagement mechanism, for example.

[0114] The body 10 also includes a charging port (not shown) at a bottom end 13 of the body 10.

[0115] The body 10 also includes a user interface device configured to convey information to a user. Here, the user interface device is implemented as a light 15, which may e.g. be configured to illuminate when the system 1 is activated. Other user interface devices are possible, e.g. to convey information haptically or audibly to a user.

[0116] In this example, the consumable 30 has an opaque cap 31, a translucent tank 32 and a translucent window 33. When the consumable 30 is physically coupled to the body 10 as shown in Fig. 3A, only the cap 31 and window 33 can be seen, with the tank 32 being obscured from view by the body 10. The body 10 includes a slot 15 to accommodate the window 33. The window 33 is configured to allow the amount of liquid precursor 6 in the tank 32 to be visually assessed, even when the consumable 30 is physically coupled to the body 10.

[0117] Fig. 4 shows a consumable 100 of an aerosol generating system, which may be implemented in any of the preceding examples. The consumable 100 may be the consumable 30 described above with reference to Figs. 2, 3A and 3B.

[0118] The consumable 100 is configured to physically couple to an aerosol generating device of the aerosol generating system, which may be the device body 10 described above with reference to Figs. 2, 3A and 3B. In other embodiments, the consumable 100 may be integrally formed with the aerosol generating device to form the aerosol generating system.

[0119] The consumable 100 comprises a tank 102 configured to contain a liquid aerosol precursor, and a heating element 104 configured to aerosolise liquid aerosol precursor fed from the tank 102 to the heating element 104. The heating element 104 is a wick heater.

[0120] The tank 102 is largely defined by a tank housing 106. The tank housing 106 is formed of polycarbonate. The consumable 100 further comprises a liquid transfer element 108. The liquid transfer element 108 includes a liquid transfer portion 1082 and an airflow tube 1081. The liquid transfer element 108 sits within the tank housing 106 to define the tank 102 between the tank housing 106 and the liquid transfer element 108. In other words, the liquid transfer element 108 sits within the tank housing 106 and the liquid transfer element 108 and the tank housing 106 form walls of the tank 102. The tank 102 is an annular tank, the airflow tube 1081 of the liquid transfer element 108 forming an inner wall of the tank 102.

[0121] The liquid transfer element 108 includes two primary feed passages 110 formed in the liquid transfer portion 1082 of the liquid transfer element 108. Each of the primary feed passages 110 provides a portion of a liquid flow path between the tank 102 and the heating element 104. In the example shown in Fig. 4, each of the primary feed passages 110 is frustoconical in shape, such that the outlet cross-sectional area of the primary passage outlet 1101 on the heating element-facing side of the liquid transfer element 108 is larger than the inlet cross-sectional area of the primary passage inlet 1102 on the tank-facing side of the liquid transfer element 108. Each of the primary passage inlets 1102 opens into the tank 102 and liquid aerosol precursor may pass out of the tank 102 through the primary feed passages 110.

[0122] The frustoconical primary feed passages 110 may reduce leakage of liquid aerosol precursor from the consumable 100, whilst allowing good wetting of the heating element 104. In more detail, the smaller inlet cross-sectional area may allow a suitable flow rate of liquid to flow out of the tank 102 through the primary feed passage 110, while the larger outlet cross-sectional area may allow enough liquid to flow through the primary feed passage 110 to the heating element 104 such that the aerosol generating system may operate effectively and may allow the area over which the heating element 104 can be wetted by the liquid aerosol precursor to be increased.

[0123] The consumable 100 further comprises a heater mount 112 located between and engaging with the heating element 104 and the liquid transfer element 108. The heater mount 112 comprises a heater mounting portion 1121 which engages with mounted portions 1041 of the heating element 104.

[0124] Fig. 5 is a cross-sectional view of the region around the heating element 104 of the consumable 100 shown in Fig. 4. The cross-section of Fig. 5 is tilted off-axis relative to that of Fig. 4 to show inlets of secondary feed passages 114.

[0125] The heater mounting portion 1121 of the heater mount 112 comprises four secondary feed passages 114, each with a secondary passage inlet adjacent one of the primary passage outlets 1101 and a secondary passage outlet adjacent the heating element 104. Inlets of two secondary feed passages 114 can be seen in Fig. 5. The four secondary feed passages 114 are arranged such that there are two secondary feed passages 114 fluidly coupled to each primary feed passage 110. Each of the secondary feed passages 114 provides a portion of a liquid flow path between the tank 102 and the heating element 104. More particularly, a given primary feed passage 110 and one of its secondary feed passages 114 together form a respective liquid flow path between the tank 102 and the heating element 104. There are thus four such paths (i.e. one corresponding to each secondary feed passage) in this embodiment.

[0126] Each of the secondary feed passages 114 is cylindrical in shape. As shown in Fig. 5, the inlet cross-sectional area of each of the secondary feed passages 114 is smaller than both the inlet and the outlet cross-sectional areas of each of the primary feed passages 110.

[0127] The smaller cross-sectional area of the secondary feed passages 114 may allow a suitable flow rate of liquid to flow to the heating element 104, such that leakage out of the consumable 100 may be reduced. Having multiple secondary feed passages 114 coupled to each primary feed passage 110 may allow enough liquid to flow to the heating element 104 such that the aerosol generating system may operate effectively and may allow the area over which the heating element 104 can be wetted by the liquid aerosol precursor to be increased.

[0128] Without wishing to be bound by theory, it is believed that both the primary feed passages and the secondary feed passages contribute to affecting the flow rate of the liquid. For example, the walls of both the primary feed passages and the secondary feed passages may exert a frictional force on the liquid. Similarly, the liquid may experience capillary forces in both the primary feed passages and the secondary feed passages.

[0129] In the example shown in Figs. 4 and 5, the diameter of each of the primary passage inlets 1102 is 1 mm and the diameter of each of the primary passage outlets 1101 is 2 mm. The length of each of the primary feed passages 110 is 2 mm. Further, in the example shown in Fig. 4, the diameter of each of the secondary feed passage inlets and outlets is approximately 0.5 mm or 0.6 mm.

[0130] Although the embodiment described with reference to Figs. 4 and 5 has two primary feed passages 110 in the liquid transfer element 108, in other embodiments the liquid transfer element 108 may include a different number of primary feed passages 110. For example, the liquid transfer element 108 may include only one primary feed passage 110, or may include more than two primary feed passages 110. Similarly, although the heater mount 112 described with reference to Figs. 4 and 5 has four secondary feed passages 114, in other embodiments the heater mount 112 may have a different number of secondary feed passages 114. Further, although the embodiment described with reference to Figs. 4 and 5 has frustoconical primary feed passages 110, in other embodiments, the primary feed passages 110 may be stepped.

[0131] The consumable 100 includes an airflow path therethrough, the airflow path extending from an airflow inlet 116 (visible in the cross-section of Fig. 4, but not in the tilted cross-section of Fig. 5) in an end cap 117 of the consumable 100 (which is described in more detail below) to an airflow outlet 118 in a mouthpiece 120 of the consumable 100.

[0132] As shown in Fig. 4, the liquid transfer element 108 comprises an airflow tube 1081. The airflow tube 1081 extends from the liquid transfer portion 1082 of the liquid transfer element 108 which comprises the primary feed passages 110. The airflow tube 1081 of the liquid transfer element 108 includes a first airflow passage 10811, which defines at least a portion of the airflow path between the airflow inlet 116 and the airflow outlet 118.

[0133] The tank housing 106 includes a second airflow passage 1061 downstream of the first airflow passage 10811 of the liquid transfer element 108. The second airflow passage 1061 is aligned with and downstream of the first airflow passage 10811 of the liquid transfer element 108 and defines another portion of the airflow path between the airflow inlet 116 and the airflow outlet 118.

[0134] The heater mount 112 comprises an airflow tube 1122. The airflow tube of the heater mount 112 includes a third airflow passage 11221, which is upstream of the first airflow passage 10811 of the liquid transfer element 108. The third airflow passage 11221 of the heater mount 112 is aligned with the first airflow passage 10811 of the liquid transfer element 108 and defines another portion of the airflow path between the airflow inlet 116 and the airflow outlet 118.

[0135] An exposed portion 1042 of the heating element 104 spans an entrance into the airflow tube 1122 of the heater mount 112. Thus, the exposed portion 1042 of the heating element 104 sits within the airflow path between the airflow inlet 116 and the airflow outlet 118.

[0136] The primary feed passages 110 are located on opposite sides of the exposed portion 1042 of the heating element 104, and on opposite sides of the airflow tube 1122 of the heater mount 112. Thus, pairs of the secondary feed passages 114 are also located on opposite sides of the exposed portion 1042 of the heating element 104, and on opposite sides of the airflow tube 1122 of the heater mount 112.

[0137] The airflow tube 1081 of the liquid transfer element 108 is interference fit to a protruding portion of the tank housing 106, the protruding portion including the third airflow passage 1061 of the tank housing 106, to create a liquid impermeable seal between the airflow tube 1081 of the liquid transfer element 108 and the tank housing 106. As can be seen in Fig. 5, there may be a clearance between the liquid transfer portion 1082 of the liquid transfer element 108 and the tank housing 106.

[0138] The liquid transfer element 108 is formed of a liquid impermeable material such as PEEK, meaning liquid aerosol precursor may only flow through the liquid transfer element 108 via the primary feed passages 110. Forming the liquid transfer element 108 of relatively high strength/high stiffness material such as PEEK further allows the liquid transfer element 108 to be interference fit to the tank housing 106 at the end of the airflow tube 1081 where the tank housing 106 forms the second airflow passage 1061, rigidifies the airflow tube 1081, and allows the primary feed passages 110 to be formed by CNC machining.

[0139] The heater mount 112 engages with the tank housing 106 in an interference fit to form a liquid-impermeable seal, thus sealing the tank 102. As shown in Fig. 5, this seal can be achieved by two axially spaced, annular ridges 122 which protrude from the heater mount 112 to engage with the tank housing 106.

[0140] The heater mount 112 also engages with the liquid transfer element 108 to form a liquid-impermeable seal therebetween, such that liquid aerosol precursor cannot pass from any clearance between the liquid transfer element 108 and the tank housing 106 into the third airflow passage 11221 of the airflow tube 1122 and/or the first airflow passage 10811 of the airflow tube 1081.

[0141] The heater mount 112 can be formed of silicone. Forming the heater mount 112 of such a liquid impermeable material, means liquid aerosol precursor may only flow through the heater mount 112 via the secondary feed passages 114. It also allows the heater mount 112 to be interference fit to the tank housing 106 and facilitates liquid-impermeable seals.

[0142] Adjacent the heating element 104 is the end cap 117 of the consumable 100, which may also be formed of liquid impermeable material such as PEEK. The end cap 117 is fixedly coupled to the tank housing 106 by another interference fit. As mentioned above, the end cap 117 includes the airflow inlet 116. The airflow inlet 116 is made up of a plurality of sub-inlets 1161.

[0143] As mentioned above, the consumable 100 is configured to physically couple to an aerosol generating device of the aerosol generating system. The end cap 117 further includes electrical contact through-holes 124 (shown in Fig. 5) which each receive an electrical contact 126 (shown in Fig. 4) projecting from the body of the aerosol generating device to make electrical contact with the heating element 104. The aerosol generating device includes a power supply (which may be the power supply described above with reference to Figs. 2, 3A and 3B) configured to supply power to the heating element 104 of the consumable 100 via the electrical contacts 126, thereby causing the heating element 104 to heat up.

Claims

1. An aerosol generating system (100) comprising:

   a tank (102) configured to contain a liquid aerosol precursor;
   a heating element (104) configured to aerosolise liquid aerosol precursor fed from the tank (102) to the heating element (104); and,
   a liquid transfer element (108) comprising one or more primary feed passages (110), the one or more primary feed passages (110) each providing at least a portion of a liquid flow path between the tank (102) and the heating element (104), each of the one or more primary feed passages (110) having a primary passage inlet (1102) on a tank-facing side of the liquid transfer element (108) and a primary passage outlet (1101) on a heating element-facing side of the liquid transfer element (108),

   wherein each of the one or more primary feed passages (110) includes a primary passage inlet (1102) and a primary passage outlet (1101), and wherein an outlet cross-sectional area of the primary passage outlet (1101) is larger than an inlet cross-sectional area of the primary passage inlet (1101).

2. The aerosol generating system (100) of claim 1 wherein the liquid transfer element (108) is formed of liquid impermeable material.

3. The aerosol generating system (100) of any of the preceding claims wherein each primary passage inlet (1102) opens directly into the tank (102).

4. The aerosol generating system (100) of any of the preceding claims wherein the aerosol generating

system (100) comprises a tank housing (106), and wherein the liquid transfer element (108) engages with the tank housing (106) such that the tank housing (106) and the liquid transfer element (108) form respective walls of the tank (102).

5. The aerosol generating system of claim 4 wherein the liquid transfer element (108) comprises an airflow tube (1081), the airflow tube (1081) defining at least a portion of an airflow path between the heating element (104) and an airflow outlet (118) of the aerosol generating system (100).

6. The aerosol generating system (100) of any of the preceding claims wherein at least one of the one or more primary feed passages (110) is frustoconical.

7. The aerosol generating system (100) of any of claims 1 to 5 wherein at least one of the one or more primary feed passages (110) is stepped.

8. The aerosol generating system (100) of any of the preceding claims, wherein the liquid transfer element (108) comprises only two primary feed passages (110).

9. The aerosol generating system (110) of any of the preceding claims further comprising a heater mount (112) located between the heating element (104) and the liquid transfer element (108).

10. The aerosol generating system (110) of claim 9 wherein the heater mount (112) comprises one or more secondary feed passages (114), each of the one or more secondary feed passages (114) having a secondary passage inlet adjacent a primary passage outlet (1101) and a secondary passage outlet adjacent the heating element (104).

11. The aerosol generating system (100) of claim 10 wherein at least one of the secondary passages (114) has an inlet cross-sectional area smaller than the outlet cross-sectional area of the primary passage outlet (1101) which the secondary passage inlet is adjacent to.

12. The aerosol generating system (100) of claim 10 or claim 11 wherein there are at least two secondary feed passages (114) fluidly coupled to each primary feed passage (110).

13. The aerosol generating system (100) of any of claims 9 to 12 wherein the heater mount (112) comprises an airflow tube (1122), and wherein an exposed portion (1042) of the heating element (104) spans an opening into the airflow tube (1122) in the heater mount (112).

14. The aerosol generating system (100) of any of the preceding claims wherein the heating element (104) is a wick heater.

15. The aerosol generating system (100) of any of the preceding claims comprising: a consumable (100) including the tank (102), the heating element (104) and the liquid transfer element (108); and an aerosol generating device including a power supply configured to supply power to the heating element (104).

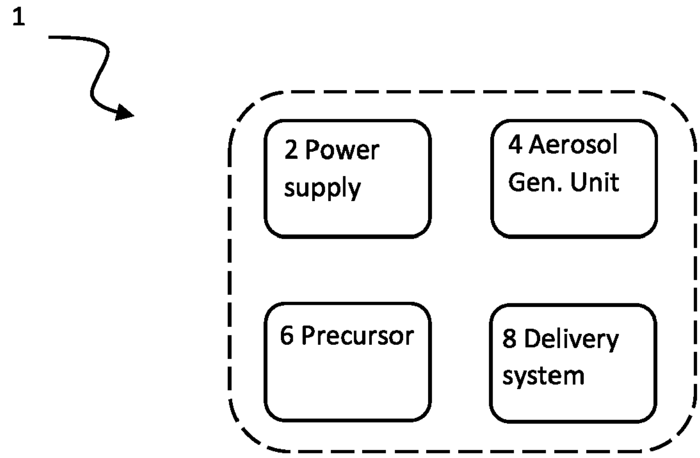
1
2 Power supply
4 Aerosol Gen. Unit
6 Precursor
8 Delivery system

Fig. 1

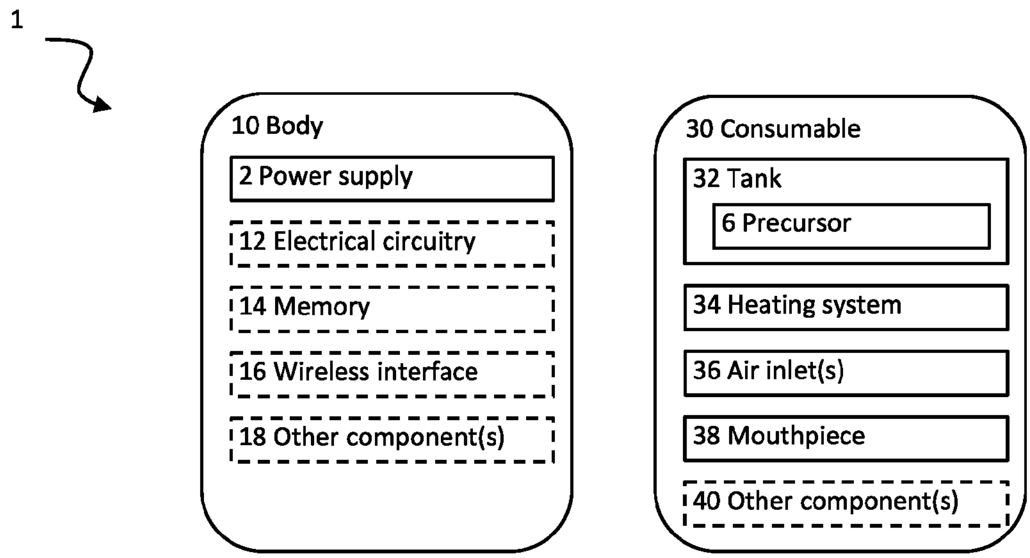

Fig. 2

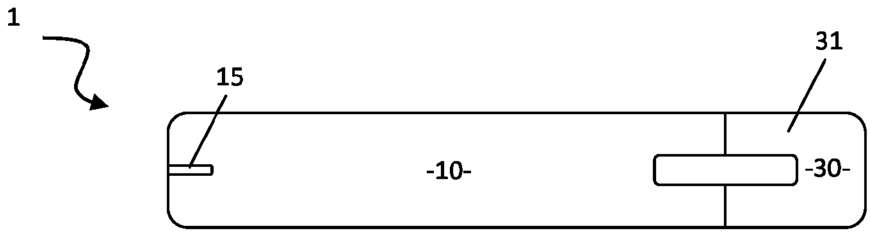

Fig. 3A

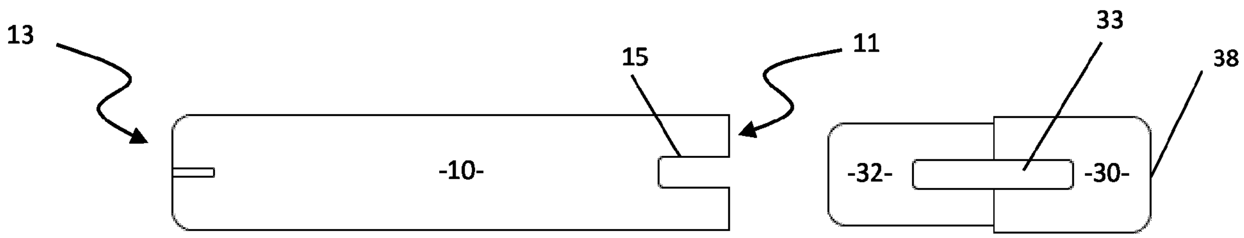

Fig. 3B

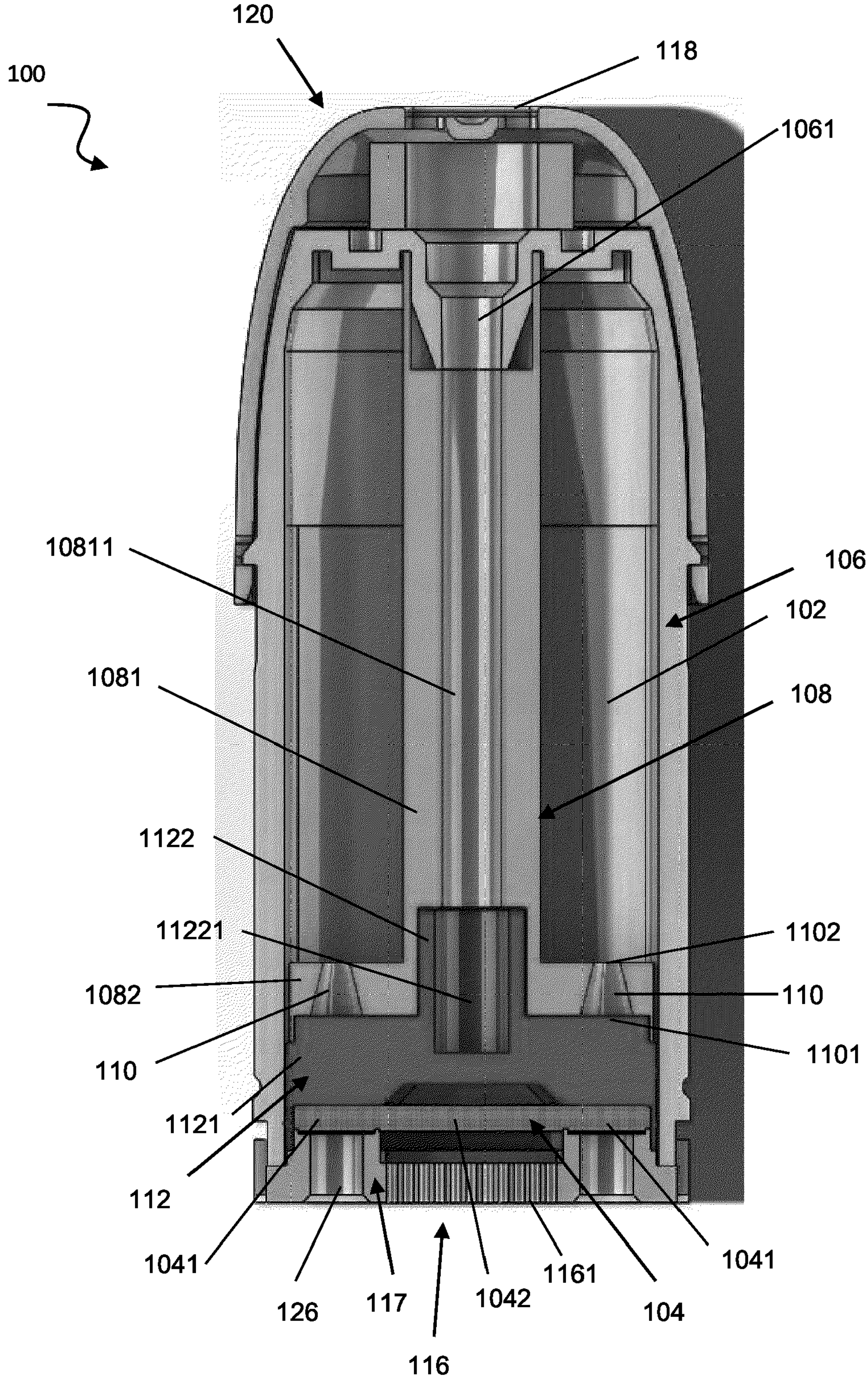
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Fig. 4

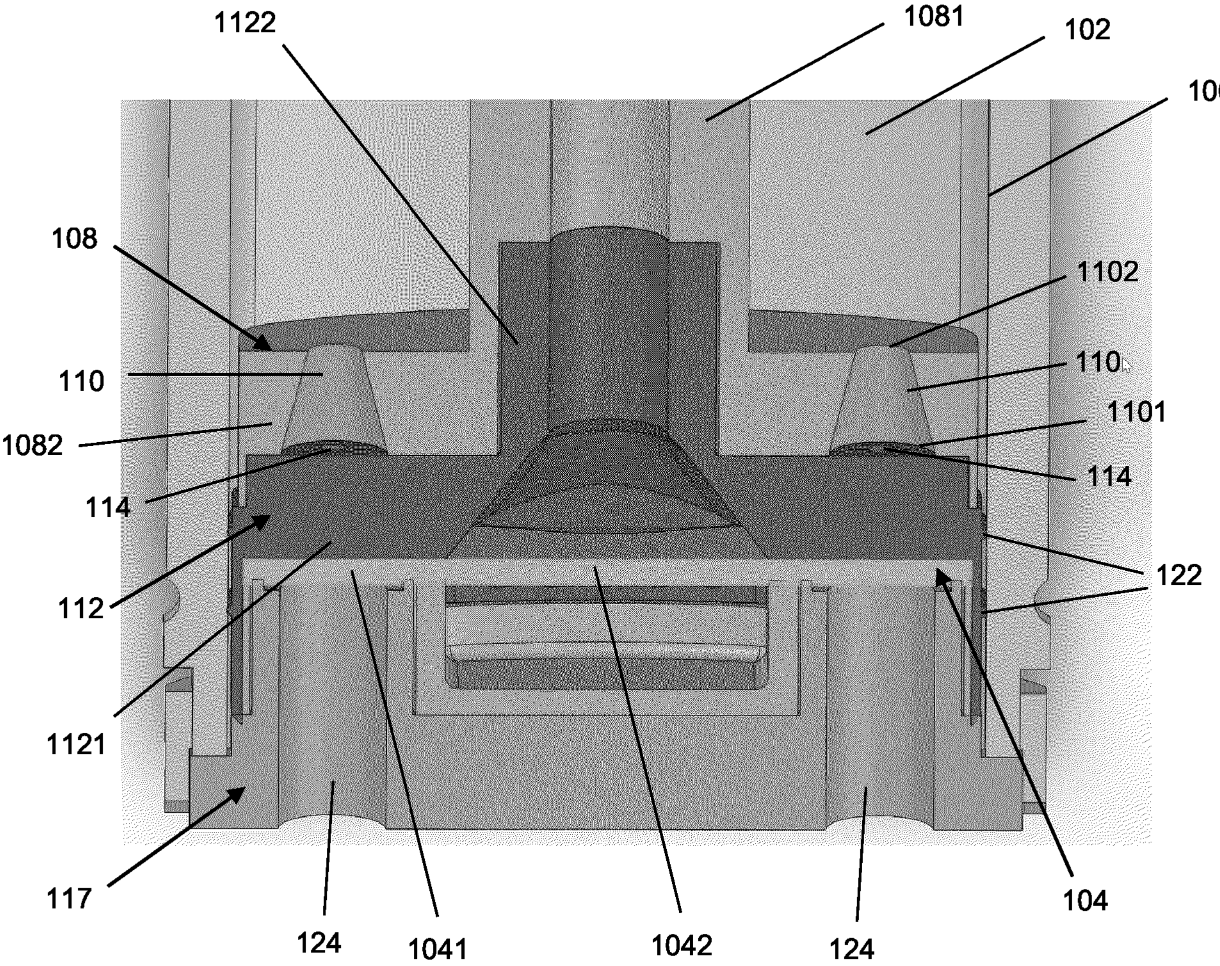
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Fig. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 23 20 1022

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	CN 115 462 561 A (JIANGMEN SIMOER NEW MATERIAL TECH CO LTD) 13 December 2022 (2022-12-13) * figures 1, 2, 6, 7, 13 * * paragraphs [0060], [0077] * -----	1-5, 7-10,14, 15 6,11-13	INV. A24F40/485 ADD. A24F40/10
X A	CN 217 218 195 U (SHENZHEN WOODY VAPES TECH CO LTD) 19 August 2022 (2022-08-19) * figures * * paragraphs [0005], [0017], [0036] * -----	1-3,7, 14,15 4-6,8-13	
A	CN 217 284 805 U (SHENZHEN WOODY VAPES TECH CO LTD) 26 August 2022 (2022-08-26) * figures * * the whole document * -----	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			A24F

The present search report has been drawn up for all claims

1

Place of search	Date of completion of the search	Examiner
Munich	6 March 2024	Kirchmayr, Katrin

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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& : member of the same patent family, corresponding document

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 23 20 1022

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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06-03-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN 115462561 A	13-12-2022	NONE	
CN 217218195 U	19-08-2022	NONE	
CN 217284805 U	26-08-2022	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82