



(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.08.2024 Bulletin 2024/32

(51) International Patent Classification (IPC):
A24F 40/485^(2020.01) A24F 40/20^(2020.01)

(21) Application number: 23154655.7

(52) Cooperative Patent Classification (CPC):
A24F 40/485; A24F 40/20

(22) Date of filing: 02.02.2023

(84) Designated Contracting States: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR Designated Extension States: BA Designated Validation States: KH MA MD TN (71) Applicant: JT International SA 1202 Geneva (CH) (72) Inventors: • BORNE, Patrice 74500 Publier (FR) • BLANCHARD, Euge ne 1272 Genolier (CH) (74) Representative: Appleyard Lees IP LLP 15 Clare Road Halifax HX1 2HY (GB)

(54)

AEROSOL GENERATION DEVICE

(57) An aerosol generation device (100) comprising a chamber (200) for receiving a consumable article (300) comprising aerosol precursor material is disclosed. The chamber comprises a proximal end (202) and a distal end (204), an opening (206) at the proximal end for receiving the consumable article, a stop (208) at the distal

end for abutting the consumable article when received in the chamber; and one or more side walls (210) arranged between the proximal end and the distal end. The one or more side walls comprise one or more through holes (212) for allowing ventilation air into the chamber.

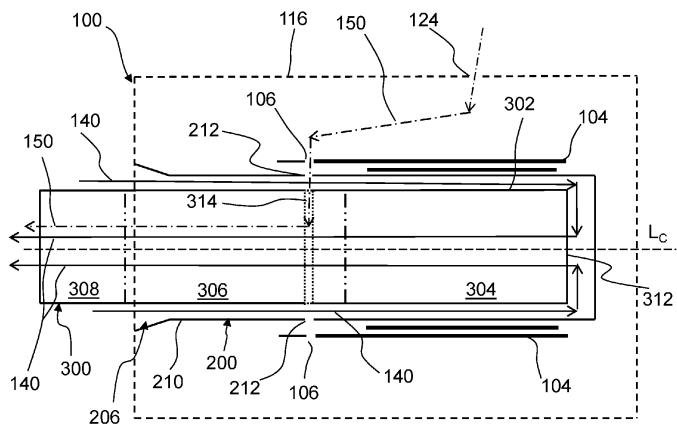


Figure 3

Description

Technical Field

[0001] The present disclosure relates to an aerosol generation device, such as a heat-not-burn device. The present disclosure also relates to a chamber for an aerosol generation device, a system comprising an aerosol generation device and an article, and a method of operating thereof.

Background

[0002] Various devices and systems are available that heat an aerosol precursor material of a consumable article to release aerosol (i.e. vapour) for inhalation, rather than relying on burning the aerosol precursor material. For example, a solid consumable article may be heated to release an inhalable vapour.

[0003] A challenge associated with heating aerosol precursor material rather than burning is that the aerosol may become too hot during the aerosol generation process and be unpleasant for a user if inhaled. To help alleviate this problem, heat-not-burn consumable articles are usually provided with a cooling section arranged between an aerosol substrate containing part of the article and a mouthpiece part of the article. That cooling section allows aerosol generated upon heating of the aerosol substrate to cool down and condensate before reaching the mouthpiece, and it may comprise perforations. These perforations are preferably situated outside of the aerosol generation device, in use, to provide an accessible air inlet to the consumable article outside of the aerosol generation device, which helps to allow air circulation through the consumable article.

[0004] One problem caused by these perforations is that when a user draws on the consumable article, the user's lips may accidentally cover the perforations, thus reducing the flow of cool air within the consumable article. In addition, the position of the perforations in the article is limited to a region of the consumable article that protrudes out of the aerosol generation device, in use, which may not be optimal for maximizing the cooling effect of the aerosol before inhalation by a user.

[0005] It is the object of the invention to overcome or avoid at least some of the above-referenced problems, or to provide an alternative approach.

Summary

[0006] According to the present disclosure, there is provided an aerosol generation device, a chamber, a system including an aerosol generation device and a consumable article, and a method of operating an aerosol generation device including the features as set out in the claims.

[0007] According to one aspect, there is provided an aerosol generation device comprising a chamber for re-

ceiving a consumable article comprising aerosol precursor material. The chamber comprises a proximal end and a distal end, an opening at the proximal end for receiving the consumable article, a stop at the distal end for abutting the consumable article when received in the chamber; and one or more side walls arranged between the proximal end and the distal end, wherein the one or more side walls comprise one or more through holes for allowing ventilation air into the chamber.

[0008] By providing through holes in a side wall of the chamber, ventilation air may more easily mix with the generated aerosol and ventilate a consumable article, therefore increasing the cooling effect provided by the ventilation air. Furthermore, because the through holes are present in the side walls of the chamber, air may be drawn into the chamber from within the device itself.

[0009] More generally, a consumable article within the chamber may be more efficiently cooled, reducing the temperature of generated aerosol, thus providing a better user experience.

[0010] The aerosol generation device may comprise a heater arranged about or formed of an outer wall of the chamber and configured to heat the aerosol precursor material of the consumable article.

[0011] By providing a heater about or formed of the outer wall of the chamber, heat may be directly applied to an aerosol precursor material section of a consumable article, thus allowing aerosol to be generated more quickly, and increasing the efficiency of the heater.

[0012] The aerosol generation device may comprise a collar towards the proximal end of the chamber to guide the insertion of the consumable article in the chamber in use.

[0013] A user may more easily insert a consumable article into the chamber of the aerosol generation device. The collar also allows more air to enter the chamber, around the consumable article.

[0014] The one or more through holes may be provided on a region of the chamber side wall between the collar and the heater. Alternatively, the one or more through holes may be provided in the collar. That is, the one or more through holes may be provided on a region of the chamber side wall between the proximal end of the chamber and the heater.

[0015] By providing the through holes between the collar and the heater, air may be more efficiently drawn into the chamber. Furthermore, the through holes may align with the cooling section of a consumable article.

[0016] The heater may comprise a resistive heater. A resistive heater allows for easy, reliable and efficient control of the heating of the device.

[0017] The heater may comprise an induction coil and a susceptor. The susceptor may be the chamber. Inductive heating with an induction coil and susceptor is providing a more direct heat source to a consumable article, which may provide better heat efficiency for aerosol generation.

[0018] The susceptor may be arranged within the

chamber and configured to project into the chamber. Alternatively, the susceptor may be formed by part or the entirety of the chamber's internal walls.

[0019] By providing a susceptor that projects into the chamber, heat may be provided from within an inserted consumable article, thus heating aerosol substrate material in the consumable article directly. When the susceptor is provided as part or the entirety of the chamber's internal walls, this may provide more homogenous heating about the section of the consumable article comprising the aerosol substrate material.

[0020] The aerosol generation device may define a first air flow path and a second air flow path, the first air flow path extending from the opening of the chamber, inside the chamber, but outside the consumable article, along a wall extending from the proximal end of the chamber to the distal end and into a distal end of the consumable article, the second air flow path extending from outside the chamber, through the one or more through holes in the chamber and into the consumable article.

[0021] Multiple air paths mean that a first air path may be provided to draw air through an aerosol precursor material of a consumable article, to aid the generation of aerosol; meanwhile, a second air path can provide fresh, cooler, ventilation air downstream of the aerosol precursor material, thus providing an increased cooling effect.

[0022] The aerosol generation device may comprise one or more air inlets for the second air flow path located remote and distinct from the chamber opening, to provide an air inlet into the device for the second air flow path.

[0023] The advantage of providing air inlets remote from the chamber opening is that a second source of air is provided, thus increasing the ventilation effect on the consumable article.

[0024] The aerosol generation device may comprise insulation arranged around the chamber and configured to insulate heat dissipation from the chamber towards a body of the device.

[0025] Insulation around the chamber increases the efficiency of the device, by reducing the waste heat dissipation from the heater.

[0026] The insulation may comprise one or more insulation air inlets at least partially aligned with the one or more through holes of the chamber.

[0027] By aligning an insulation air inlet with the through holes of the chamber, the heater and chamber may be insulated while allowing ventilation air to enter the chamber and help cool the generated aerosol.

[0028] According to one aspect, there is provided a chamber for use in an aerosol generation device and for receiving a consumable article comprising aerosol precursor material, the chamber comprising a proximal end and a distal end, an opening at the proximal end for receiving the consumable article, a stop at the distal end for abutting the consumable article when received in the chamber; and one or more side walls arranged between the proximal end and the distal end, wherein the one or more side walls comprise one or more through holes for

allowing ventilation air into the chamber.

[0029] By providing through holes in a side wall of the chamber, ventilation air may more easily ventilate a consumable article, therefore increasing the cooling effect provided by the chamber. Furthermore, because the through holes are present in the side walls of the chamber, air may be drawn into the chamber from within the device the chamber is housed in.

[0030] According to one aspect, there is provided a system comprising an aerosol generation device and a consumable article comprising aerosol precursor material, the consumable article comprising perforations and the aerosol generation device comprising a chamber for receiving the consumable article. The chamber comprising a proximal end and a distal end, an opening at the proximal end for receiving the consumable article, a stop at the distal end for abutting the consumable article when received in the chamber; and one or more side walls arranged between the proximal end and the distal end. The one or more side walls comprise one or more through holes for allowing ventilation air into the chamber, and, in use, the one or more through holes at least partially align with the perforations in the consumable article.

[0031] The system may offer greater ventilation downstream of the aerosol precursor material of the consumable article. Ventilation air may be provided through the through holes of the chamber and into the consumable article through the perforations. In particular, the ventilation air is provided directly to a cooling section of the consumable article. Furthermore, because the through holes are present in the side walls of the chamber, air may be drawn into the chamber from within the device itself.

[0032] According to one aspect, there is provided a method of using an aerosol generation device comprising the step of inserting a consumable article comprising aerosol precursor material into a chamber of an aerosol generation device, the chamber comprising one or more through holes and the consumable article comprising perforations. When the consumable article is fully inserted into the chamber, the perforations of the consumable article at least partially align with the one or more through holes of the chamber.

[0033] The method may offer greater ventilation downstream of the aerosol precursor material of the consumable article. Ventilation air may be provided through the through holes of the chamber and into the consumable article through the perforations. In particular, the ventilation air is provided directly to a cooling section of the consumable article. Furthermore, because the through holes are present in the side walls of the chamber, air may be drawn into the chamber from within the device itself.

[0034] Further advantages, objectives and features of the present invention will be described, by way of example only, in the following description with reference to the figures. In the figures, like components in different embodiments can exhibit the same reference symbols.

Brief Description of the Drawings

[0035] Examples of the present disclosure will now be described with reference to the accompanying drawings.

Figure 1 shows a schematic cross-sectional view of an aerosol generation device with a consumable article inserted;

Figure 2a shows a schematic cross-sectional view of a consumable article;

Figure 2b shows a schematic cross-sectional view of another example of a consumable article;

Figure 3 shows an example of the air flow paths in an aerosol generation device with a consumable article inserted; and

Figure 4 shows a flow diagram of a method of using an aerosol generation device.

Detailed Description

[0036] As used herein, the term "aerosol precursor material", "vapour precursor material" or "vaporizable material" may refer to a material and/or composition, which may for example comprise nicotine or tobacco and a vaporising agent. The aerosol precursor material is configured to release an aerosol when heated or otherwise mechanically stimulated (such as by vibrations). Tobacco may take the form of various materials such as shredded tobacco, granulated tobacco, tobacco leaf and/or reconstituted tobacco. Nicotine may be in the form of nicotine salts. Suitable vaporising agents include: a polyol such as sorbitol, glycerol, and glycols like propylene glycol or triethylene glycol; a non-polyol such as monohydric alcohols, acids such as lactic acid, glycerol derivatives, esters such as triacetin, triethylene glycol diacetate, triethyl citrate, glycerin or vegetable glycerin. In some examples, the aerosol precursor material is substantially a liquid that holds or comprises one or more solid particles, such as tobacco.

[0037] As used herein, the term "aerosol generation device" is synonymous with "aerosol generating device" or "device" may include a device configured to heat an aerosol precursor material and deliver an aerosol to a user. The device may be portable. "Portable" may refer to the device being for use when held by a user. The device may be adapted to generate a variable amount of aerosol, which can be controlled by a user input.

[0038] As used herein, the term "aerosol" may include a suspension of vaporizable material as one or more of: solid particles; liquid droplets; gas. Said suspension may be in a gas including air. Aerosol herein may generally refer to/include a vapour. Aerosol may include one or more components of the vaporizable material.

[0039] Figure 1 shows a schematic cross-sectional view of an aerosol generation device 100. The aerosol generation device 100 is suitable for receiving a consumable article 300 therein. For example, the aerosol generation device 100 includes a chamber 200 in which the

consumable article 300 is received.

[0040] The invention is not limited to the specific aerosol generation device 100 or consumable article 300 described herein. That is, the description of the aerosol generation device 100 and consumable article 300 is provided for illustrative purposes only. The skilled person will appreciate that alternative constructions of aerosol generation devices and consumable articles will be compatible with the present invention. For example, the consumable article 300 may not extend out of the aerosol generation device 100.

[0041] The chamber 200 comprises a proximal end 202 and a distal end 204. The chamber 200 comprises an opening 206 at the proximal end 202 for receiving the consumable article 300. The chamber 200 comprises a stop 208 at the distal end 204 for abutting the consumable article 300 when received in the chamber 200. The chamber 200 comprises one or more side walls 210 arranged between the proximal end 202 and the distal end 204. The one or more side walls 210 comprise one or more through holes 212 for allowing ventilation air into the chamber 200.

[0042] The chamber 200 defines a longitudinal axis L_C . A consumable article 300 may be inserted and removed along the longitudinal axis L_C . In one example, the chamber 200 has an oval shaped (or non-circular) cross-section. The shape of the chamber 200 may enable air to flow into the chamber 200 along the consumable article 300.

[0043] The chamber 200 may be removably inserted or installed into the aerosol generation device 100. The chamber 200 may therefore be removed for repair and/or replacement, over time. The chamber 200 may be manufactured separately from the aerosol generation device 100.

[0044] The aerosol generation device 100 may comprise a collar 102 towards the proximal end 202 of the chamber 200. The collar 102 is configured to guide insertion of the article into the chamber 200, along the longitudinal axis L_C , in use. The collar 102 may be part of the chamber 200 and may be the most proximal point of the chamber 200.

[0045] When inserted, the consumable article 300 may protrude from the chamber 200 and the collar 102. The user may draw on a mouth end of the consumable article 300 (which may typically comprise a mouthpiece part such as a filter or tube segment) to inhale generated aerosol. Alternatively, when inserted, the consumable article 300 may be wholly contained within the chamber 200. In such embodiment where the consumable article 300 may be wholly received in the chamber 200, the collar 102 may also form a mouthpiece to allow user inhalation. The user may draw on the mouthpiece of the aerosol generation device 100 to inhale generated aerosol. In this example, the mouthpiece may include a filter. In this example, the chamber 200 may comprise an ejection mechanism to eject the consumable article 300 from the chamber 200.

[0046] The aerosol generation device 100 may comprise a heater 110 configured to provide heat to the aerosol precursor material of the consumable article 300, in use. Alternatively, the aerosol generation device 100 comprises a plurality of heaters 110. The heater 110 is positioned so as to be in thermal contact with the aerosol precursor material of the consumable article 300 to heat it, in use. The heater 110 may be a coil, an induction coil, a ceramic heater, a resistive heater (such as a flat resistive heater), a thin film heater, a thick film heater (for instance formed by additive-manufacturing technique on the outer wall of the chamber) or the like, configured to heat the aerosol precursor material of the consumable article 300. In the example shown in Figures 1 and 3, the heater 110 is substantially in contact with a wall of the chamber 200.

[0047] In the embodiment where the heater 110 is an induction coil, the chamber 200 may be or comprise the susceptor, for example as an internal particular metallic layer of the chamber. The susceptor may be arranged within the chamber 200 and configured to project into the chamber 200.

[0048] The heater 110 may be arranged about one of the one or more side walls 210 of the chamber 200. Alternatively, the heater 110 may be formed as part of the one or more side walls 210 of the chamber 200. In use, the heater 110 may substantially overlap with an aerosol precursor material section 304 of the consumable article 300.

[0049] The one or more through holes 212 may be provided on a region of the one or more side walls 210 that is not covered by the heater 110. The one or more through holes 212 may be provided on a region of the one or more side walls 210 of the chamber 200 between the collar 102 and the heater 110. The one or more through holes 212 may be provided in the collar 102. That is, the one or more through holes 212 may be provided on a region of the one or more side walls 210 of the chamber 200 between the proximal end 202 and the heater 110.

[0050] The aerosol generation device 100 may comprise insulation 104. The insulation 104 may be arranged around the chamber 200 and may be configured to insulate heat dissipation from the chamber 200 towards a body 116 of the aerosol generation device 100. The insulation 104 may be configured to overlap the heater 110. The insulation 104 may extend beyond the area of the chamber 200 covered by the heater 110.

[0051] The insulation 104 may overlap the one or more through holes 212 of the chamber 200. In this embodiment, the insulation 104 may comprise one or more insulation air inlets 106 that at least partially align with the one or more through holes 212 of the chamber 200. The insulation air inlets 106 may be a continuous or insulation air inlet 106.

[0052] Figure 2a shows a first schematic cross-sectional view of a consumable article 300. The consumable article 300 may comprise an outer body 302. The outer body 302 may be formed of a single paper wrapper or of

a plurality of paper wrappers, as well known in the art. The consumable article 300 may be substantially cylindrical.

[0053] The consumable article 300 may comprise the aerosol precursor material section 304 and a cooling section 306. The consumable article 300 may comprise a filter section 308 and potentially a further cooling section (not shown). The aerosol precursor material section 304, cooling section 306 and filter section 308 may be arranged along a longitudinal axis L_A . In use, the longitudinal axis L_A aligns with the longitudinal axis L_C . These components may be arranged adjacent to each other and in sequence by wrapping individually and or collectively with plug wrappers and the outer wrappers forming the outer body 302.

[0054] Figure 2b shows a schematic cross-sectional view of a second exemplary embodiment consumable article 300. Compared to the embodiment of Figure 2a, this second embodiment further comprises a front member or plug 313 at the distal end 312. This front member 313 may be formed of filtration material such as cellulose acetate or paper and is air permeable. It is providing means to retain the aerosol substrate material 304 in the article 300 in use, thereby preventing aerosol substrate material falling off the consumable in the chamber 200 of the aerosol generation device 100 and contaminating the chamber.

[0055] In another embodiment, the consumable article 300 may not have a filter section 308.

[0056] The cooling section 306 may be formed of at least a paper tube segment and be located between the aerosol precursor material section 304 and the filter section 308. The filter section 308 may form the proximal end 310 of the consumable article 300. It may comprise one or several segments of adjacent segments comprising filtration material, such as cellulose acetate or paper. The filter section 308 may comprise additives such as activated charcoal, flavorant materials and/or breakable capsules, inserted in the filtration material or arranged in a cavity between filter material segments. The filter section 308 may comprise one or several tubular segments of filtration material and/or paper. In the embodiment where a filter section 308 is not present, the cooling section 306 may form the proximal end 310 of the consumable article 300. Alternatively, a second stopper member similar to stopper 313 of figure 2b may be provided at the proximal end of the cooling section to close it and provide increased mechanical strength of that proximal end in use, in particular in lateral compression.

[0057] The aerosol precursor material section 304 may comprise an aerosol precursor material. The term aerosol precursor material is a label used to mean a medium that generates an aerosol or vapour when heated. For example, the aerosol precursor material may be tobacco.

[0058] The cooling section 306 may be substantially internally free of material. Alternatively, the cooling section 306 may be filled with a filler material such as fibres, preferably made of a natural material, for example, cel-

lulose fibres, plant fibres or the like. The cooling section 306 may comprise perforations 314 in the outer body 302 and tubular body of the cooling section 306 and any wrapper layer surrounding it underneath the outer body 302. The perforations 314 may allow for the passage of air. The perforations 314 may be circumferential perforations. The perforations 314 may be located along the longitudinal axis L_C substantially away from the aerosol precursor material section 304. The perforations 314 may allow air to enter the cooling section 306 from outside of the consumable article 300. The cooling section 306 may be configured to allow generated aerosol from the aerosol precursor material section 304 to mix with air entering the cooling section 306 through the perforations 314.

[0059] The length of the consumable article 300 may be defined by the length of the aerosol precursor material section 304, the cooling section 306 and, when present, the filter section 308.

[0060] When inserted into the chamber 200 of the aerosol generation article 100, an end of the consumable article 300 (namely, an end of the aerosol precursor material section 304 or stopper 313) abuts the stop 208 of the chamber 200. The length of the chamber 200 and the length of the consumable article 300 are arranged such that when the consumable article 300 is inserted into the chamber 200, the perforations 314 of the consumable article 300 align with the through holes 212 of the chamber 200. In this way, when a user draws on the consumable article 300, air from inside the aerosol generation article 100 (e.g. air that entered the aerosol generation article 100 through the one or more air inlets) is drawn through the through holes 212 and through the perforations 314 of the consumable article 300. The ventilation air then enters the cooling section 306 of the consumable article 300 and may mix with aerosol generated from the aerosol precursor material section 304. In one example, the perforations 314 of the consumable article are located relatively close to the aerosol precursor material section 304 to provide more cooling in the cooling section.

[0061] The perforations 314 may be positioned on the consumable article 300 such that, when the consumable article 300 is inserted into the chamber 200 of the aerosol generation device 300, the perforations 314 are inaccessible to a user.

[0062] Figure 3 shows an example of the air flow paths in the aerosol generation device 100 with a consumable article 300 inserted. Whilst the term "air-flow paths" has been used, this is used to encompass the flow of aerosol along the path.

[0063] The aerosol generation device 100 may define a first air flow path 140 and a second airflow path 150. The first air flow path 140 may extend from the opening 206 of the chamber 200, inside the chamber 200 (but outside of the consumable article 300), along the one or more side walls 210 of the chamber 200 and into a distal end 312 of the consumable article 300. That is, air from outside the aerosol generation device 100 may flow into

the opening 206, along the inside of the chamber 200 and into the distal end 312 (e.g. into the aerosol precursor material section 304) of the consumable article 300.

[0064] The shape of the chamber 200 enables air to flow into the chamber 200 along the first air flow path. That is, air may flow along the gap between the consumable article 300 and the chamber 200 due to the different cross-sections of the chamber 200 and the consumable article 300.

[0065] The second air flow path 150 may extend from outside of the chamber 200, through the one or more through holes 212 of the side walls 210 of the chamber 200 and into the consumable article 300. The through hole 212 may be a continuous circumferential through hole 212 or smaller through holes arranged circumferentially around the chamber 200. The one or more through holes 212 may be one or more slits. The one or more through holes 212 or slits may form ventilation windows in the chamber 200.

[0066] That is, air from the second air flow path 150 (i.e. ventilation air) flows into the consumable article 300 downstream of the aerosol precursor material section 304, and, therefore, the aerosol precursor material. Air from the second air flow path 150 does not flow through the aerosol precursor material.

[0067] That is, air for the second air flow path 150 is drawn into the chamber 200 from within the aerosol generation device 100. The aerosol generation device 100 may comprise one or more device air inlets 124 located remote and distinct from the opening 206 of the chamber 200. The one or more device air inlets 124 of the aerosol generation device 100 may provide an air inlet into the aerosol generation device 100 for the second air flow path 150.

[0068] Therefore, the air of the first air flow path 140 and the air of the second air flow path 150 may combine to form a single air flow path downstream of the aerosol precursor material. This is explained in more detail below. In other words, aerosol generated from heating the aerosol precursor material may mix with the ventilation air downstream of the aerosol precursor material.

[0069] The aerosol generation device 100 may comprise a control unit 108 (or control circuitry) for electronic management of the device 100. The control unit 108 may include a PCB or the like (not shown).

[0070] The control unit 108 is configured to control the heater 110. The control unit 108 is configured to receive data from various sensors/inputs and control the operation of the aerosol generation device 100 based on the received data.

[0071] The aerosol generation device 100 may comprise an activation input sensor 118. The activation input sensor 118 may be a button, a touchpad, or the like for sensing a user's input, such as a tap or swipe. In other examples, the activation input sensor 118 comprises an article sensor configured to detect if a consumable article 300 has been inserted into the aerosol generation device 100. For example, the activation input sensor 118 may

comprise an authenticity detector that is configured to detect if an authentic article 300 has been inserted into the aerosol generation device 100. Additionally, or alternatively, the user input may also comprise an inhalation action by a user.

[0072] The aerosol generation device 100 may comprise a puff sensor 120 (otherwise known as an inhalation sensor). The puff sensor 120 is configured to detect an inhalation action (or puff) by a user on the aerosol generation device 100. In one example, the puff sensor 120 comprises a microphone or a flow sensor configured to detect an airflow within the chamber 200 and/or the opening 206, the airflow being associated with a user's inhalation action. In other examples, the puff sensor 120 is configured to detect a change in pressure indicative of a beginning of an inhalation action on the aerosol generation device by the user. In this case, the puff sensor 120 may be located anywhere on the aerosol device 100 in which there would be a change in pressure due to an inhalation action of the user. In one example, the puff sensor 120 is located towards the distal end 204 of the chamber 200. The puff sensor 120 may also detect the end of an inhalation action by the user. For example, the puff sensor 120 may be configured to detect a further change in pressure due to the end of an inhalation action of a user.

[0073] The aerosol generation device 100 may include one or more temperature sensors 122 configured to directly or indirectly measure the temperature of the consumable article 300 in the aerosol generation device 100. The one or more temperature sensors 122 may comprise a temperature sensor, such as a thermocouple or thermistor, configured to be located within or adjacent to the consumable article 300 when it is received in the aerosol generation device 100. For example, the one or more temperature sensors 122 may be located on an external side of the one or more side walls 210 of the chamber 200. The one or more temperature sensors 122 may be located within the chamber 200 of the aerosol generation device 100. In other examples, the temperature of the consumable article 300 may be indirectly measured by the use of thermal imaging sensors. In other examples, the temperature sensors 122 may measure the temperature of the heater 110, and may be in contact with the heater 110.

[0074] The aerosol generation device 100 may include a power supply (not shown) such as a battery. The power supply may provide the aerosol generation device 100 with electrical energy providing a voltage in the range of 3 V and 4.2 V. In a preferred embodiment the voltage source is a lithium-ion secondary battery delivering a value of 3.7 V. Such a voltage source is particularly advantageous for a modern aerosol generation device in view of rechargeability, high energy density and large capacity.

[0075] The aerosol generation device 100 may comprise a controller 130. The controller 130 is connected to the control unit 108. The controller 130 is configured to

receive data from the control unit 108. In particular, the controller 130 is configured to receive data from the control unit 108 relating to various sensors/inputs (such as the activation input sensor 118, puff sensor 120 and/or temperature sensor 122) of the aerosol generation device 100.

[0076] The controller 130 and the control unit 108 may be integral with each other. In one example, a single component performs the function of the control unit 108 and controller 130. In other examples, the control unit 108 and the controller 130 are distinct components.

[0077] The body 116 may be configured to connect to the consumable article 300. Alternatively, the body 116 may be configured to receive or engage with the consumable article 300. The body 116 may comprise the one or more air inlets of the aerosol generation device 100.

[0078] The components of the aerosol generation device 100, the chamber 200 and the consumable article 300 may be further defined in terms of their relative 'upstream' and 'downstream' positions.

[0079] For example, as described above and shown in Figure 3, the first airflow path 140 may extend from the opening 206 of the chamber 200, inside the chamber 200 (but outside of the consumable article 300), along the one or more side walls 210 of the chamber 200 and into a distal end 312 of the consumable article 300. Air of the first air flow path 140 may then travel through the aerosol precursor material section 304, the cooling section 306 and the filter section 308 of the consumable article, to the mouth of a user.

[0080] That is, air flows from an upstream position to a downstream position. For example, in the consumable article 300, air from the first air flow path 140 may flow through the aerosol precursor material section 304, then through the cooling section 306, and, if present, through the filter section 308, before flowing into a user's mouth. Therefore, the aerosol precursor material section 304 may be said to be upstream of the cooling section 306, and the cooling section 306 may be said to be upstream of the filter section 308.

[0081] As explained above, the second air flow path 150 extends from outside of the chamber 200, through the one or more through holes 212 of the side walls 210 of the chamber 200 and into the cooling section 306 of the consumable article 300. Air may then flow to the user's mouth. The first air flow path 140 and the second air flow path 150 may become a single air flow path in the cooling section 306 of the consumable article 300 to be delivered to the user's mouth. That is, air from the second air flow path 150 (i.e. ventilation air) flows into the consumable article 300 downstream of the aerosol precursor material section 304, and, therefore, the aerosol precursor material. Air from the second air flow path 150 does not flow through the aerosol precursor material.

[0082] A method 400 of using an aerosol generation device 100 comprises the first step 410 of inserting a consumable article 300 comprising aerosol precursor

material into a chamber 200 of an aerosol generation device 100, the chamber 200 comprising one or more through holes 212 and the consumable article 300 comprising perforations 314. When the consumable article 300 is fully inserted into the chamber 200, the perforations 314 of the consumable article 300 at least partially align with the one or more through holes 212 of the chamber 200.

[0083] The method 400 of using an aerosol generation device 100 may comprise a second step 420 of removing the consumable article 300 from the chamber 200 of the aerosol generation device 100.

[0084] Although preferred embodiments have been shown and described, it will be appreciated by those skilled in the art that various changes and modifications might be made without departing from the scope of the invention, as defined in the appended claims and as described above.

Claims

1. An aerosol generation device (100) comprising a chamber (200) for receiving a consumable article (300) comprising aerosol precursor material, wherein the chamber (200) comprises:

a proximal end (202) and a distal end (204);
an opening (206) at the proximal end (202) for receiving the consumable article (300);
a stop (208) at the distal end (204) for abutting the consumable article (300) when received in the chamber (200); and
one or more side walls (210) arranged between the proximal end (202) and the distal end (204), wherein the one or more side walls (210) comprise one or more through holes (212) for allowing ventilation air into the chamber (200).

2. The aerosol generation device (100) according to claim 1, comprising a heater (110) arranged about or formed of an outer wall of the chamber (200) and configured to heat the aerosol precursor material of the consumable article (300).

3. The aerosol generation device (100) according to claim 2, comprising a collar (102) towards the proximal end (202) of the chamber (200) to guide insertion of the consumable article (300) in the chamber (200) in use.

4. The aerosol generation device (100) according to claim 3, wherein the one or more through holes (212) are provided on a region of the chamber (200) side wall (210) between the collar (102) and the heater (110).

5. The aerosol generation device (100) according to

any one of claims 2 to 4, wherein the heater (110) comprises a resistive heater.

6. The aerosol generation device (100) according to any one of claims 2 to 4, wherein the heater (110) comprises an induction coil and a susceptor.

7. The aerosol generation device (100) according to claim 6, wherein the susceptor is the chamber (200).

8. The aerosol generation device (100) according to claim 6, wherein the susceptor is arranged within the chamber (200) and configured to project into the chamber (200).

9. The aerosol generation device (100) of any one of the preceding claims, wherein the aerosol generation device (100) defines a first air flow path and a second air flow path, the first air flow path extending from the opening (206) of the chamber (200), inside the chamber (200), along a wall extending from the proximal end (202) of the chamber (200) to the distal end (204) and into a distal end (312) of the consumable article (300), the second air flow path extending from outside the chamber (200), through the one or more through holes (212) in the chamber (200) and into the consumable article (300).

10. The aerosol generation device (100) of claim 9, wherein the aerosol generation device (100) comprises one or more air inlets for the second air flow path located remote and distinct from the opening (206) of the chamber (200), to provide an air inlet into the device (100) for the second air flow path.

11. The aerosol generation device (100) of any one of the preceding claims, further comprising insulation (104) arranged around the chamber (200) and configured to insulate heat dissipation from the chamber (200) towards a body (116) of the device (100).

12. The aerosol generation device (100) of claim 11, wherein the insulation (104) comprises one or more insulation air inlets at least partially aligned with the one or more through holes (212) of the chamber (200).

13. A chamber (200) for use in an aerosol generation device (100) and for receiving a consumable article (300) comprising aerosol precursor material, the chamber (200) comprising:

a proximal end (202) and a distal end (204);
an opening (206) at the proximal end (202) for receiving the consumable article (300);
a stop (208) at the distal end (204) for abutting the consumable article (300) when received in

the chamber (200); and
one or more side walls (210) arranged between
the proximal end (202) and the distal end (204),
wherein the one or more side walls (210) com- 5
prise one or more through holes (212) for allow-
ing ventilation air into the chamber (200).

14. A system comprising the aerosol generation device
(100) of any of claims 1 to 12 and a consumable 10
article (300) comprising aerosol precursor material,
the consumable article (300) comprising perfora-
tions (314)
wherein, in use, the one or more through holes (212)
at least partially align with the perforations (314) in
the consumable article (300). 15

15. A method of using an aerosol generation device
(100) comprising the step of:

inserting a consumable article (300) comprising 20
aerosol precursor material into a chamber (200)
of an aerosol generation device (100), the cham-
ber (200) comprising one or more through holes
(212) and the consumable article (300) compris-
ing perforations (314); 25
wherein, when the consumable article (300) is
fully inserted into the chamber (200), the perfo-
rations (314) of the consumable article (300) at
least partially align with the one or more through
holes (212) of the chamber (200). 30

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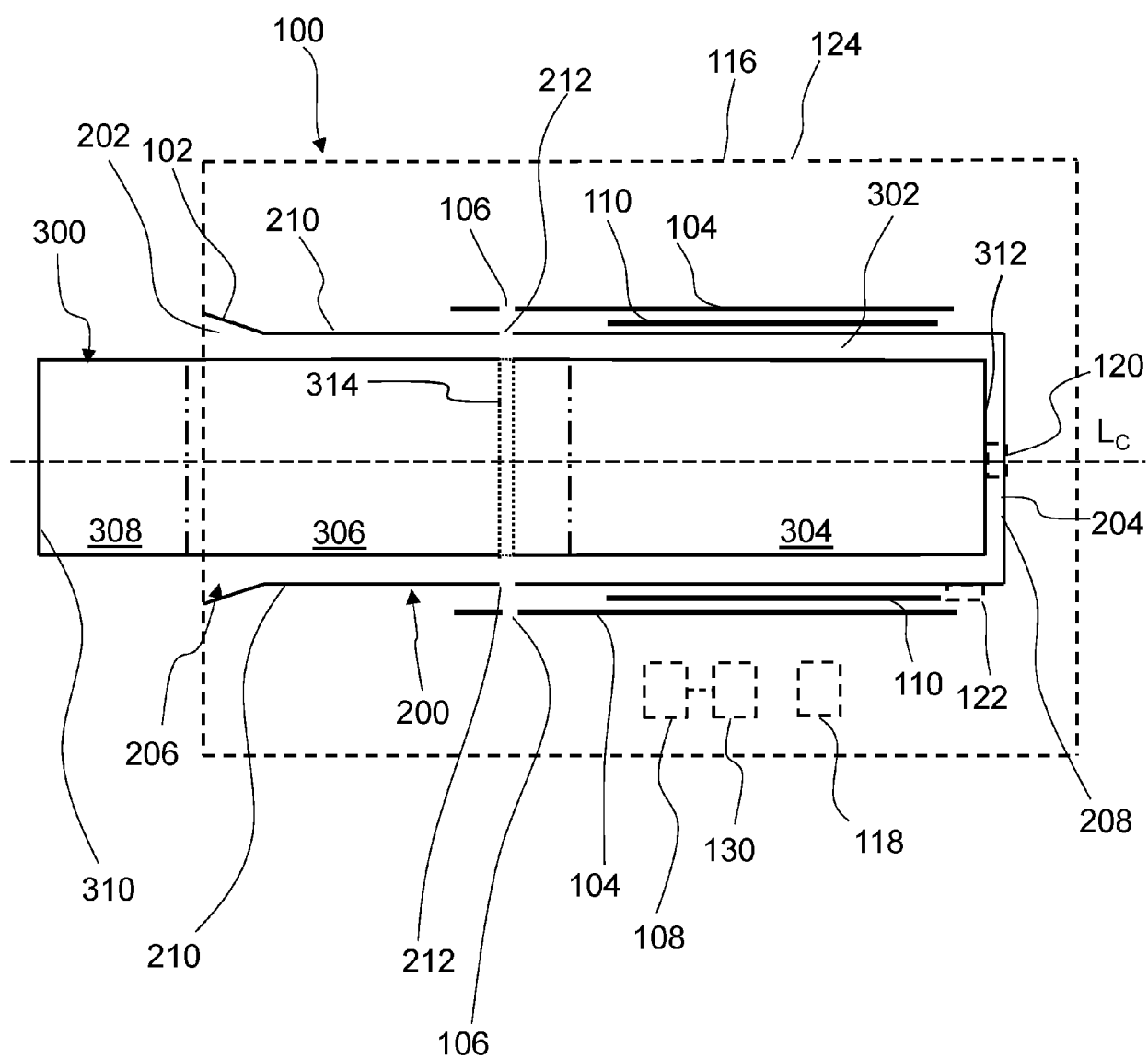


Figure 1

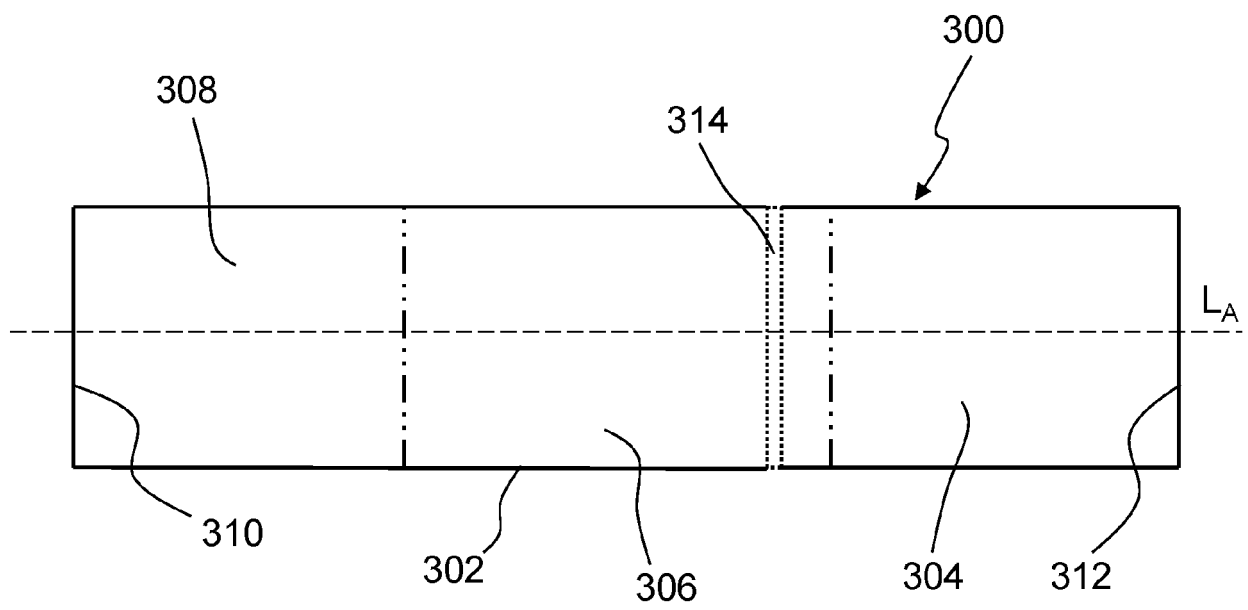


Figure 2a

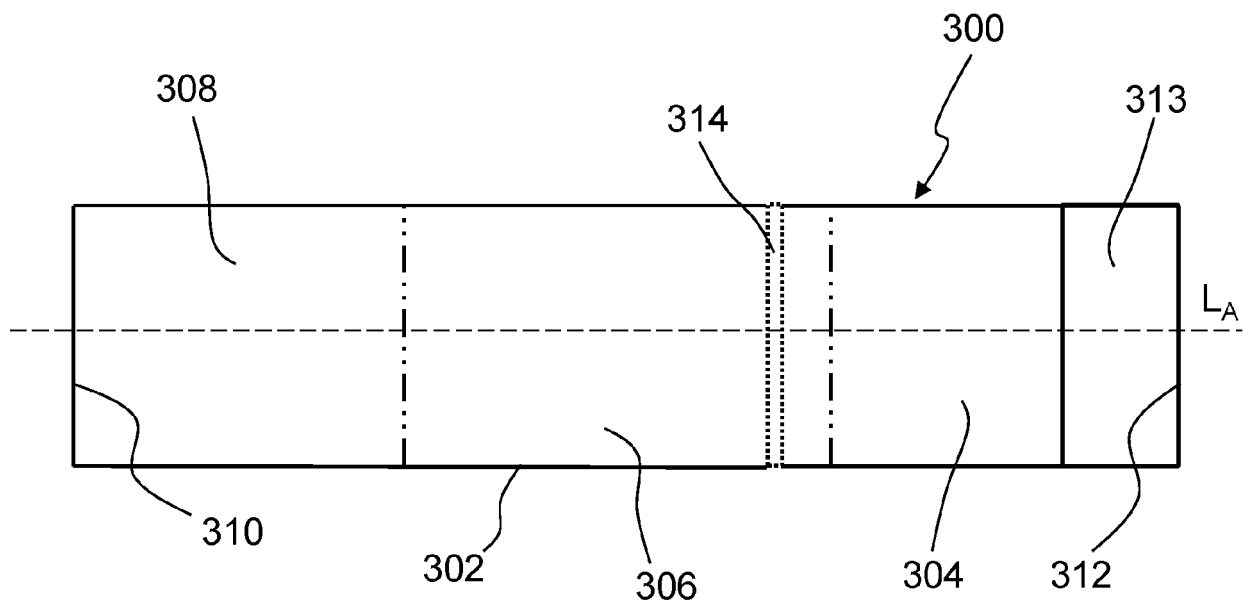


Figure 2b

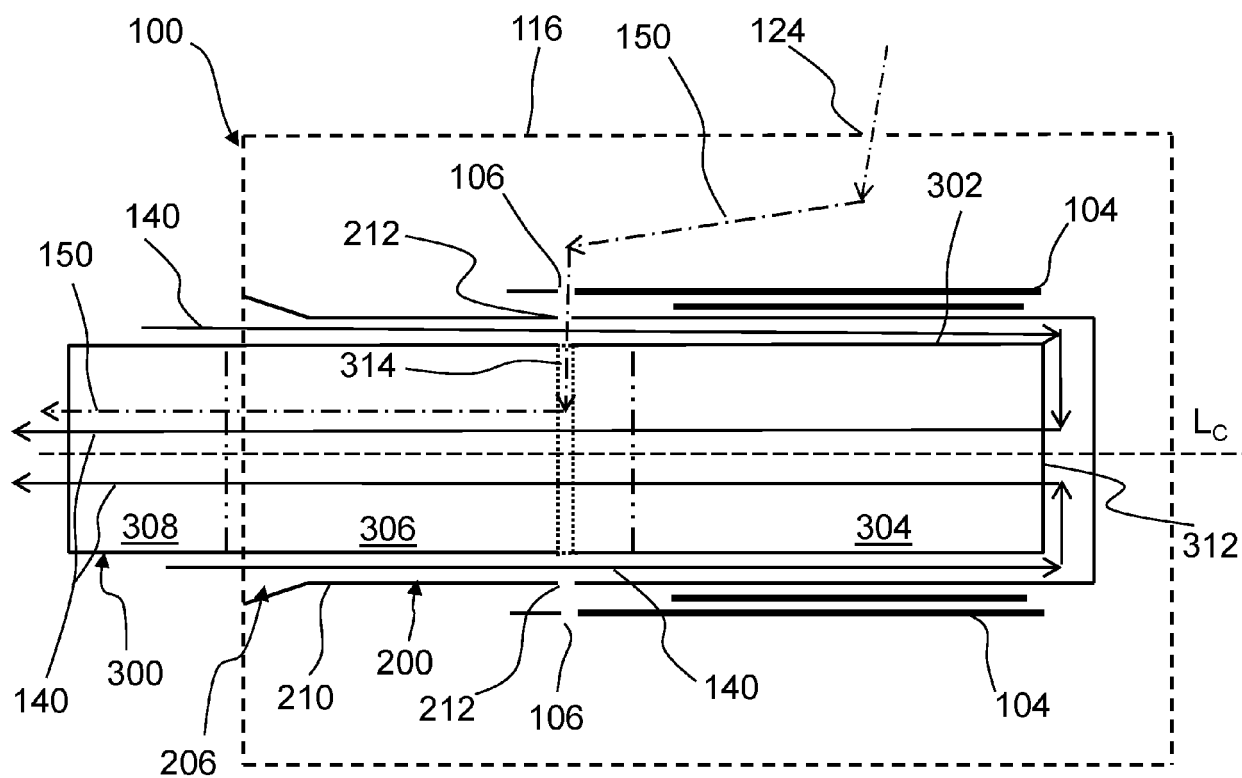


Figure 3

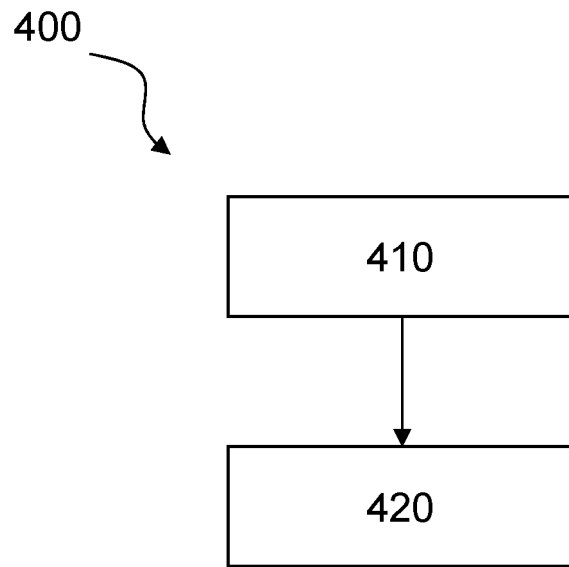


Figure 4



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Y	* figures 1, 2, 4, 5 *	3, 4	
A	* paragraph [0124] * * paragraph [0136] - paragraph [0138] * * paragraph [0142] - paragraph [0143] *	5, 9, 10, 14, 15	
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 July 2023	Examiner Kirchmayr, Katrin
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