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(54) **SMOKING SUBSTITUTE COMPONENT**

(57) Disclosed is a smoking substitute component comprising a housing 105 having a base portion 106, a mouthpiece portion 107, one or more walls extending longitudinally from the base portion to the mouthpiece portion, and an air inlet 121 formed in a wall of the housing and spaced longitudinally from the base portion. The component further comprises an air outlet 122 formed in the mouthpiece portion and an airflow path 124 extending from the air inlet to the air outlet. The airflow path comprises a first portion 125a downstream of the air inlet and extending longitudinally towards the base portion of the housing, and a transversely extending second portion 127 that is downstream of the first portion. The component further comprises a vaporiser 120 comprising a wick 128 and a heating element 129 for heating the wick, the wick extending across the first portion of the airflow path.

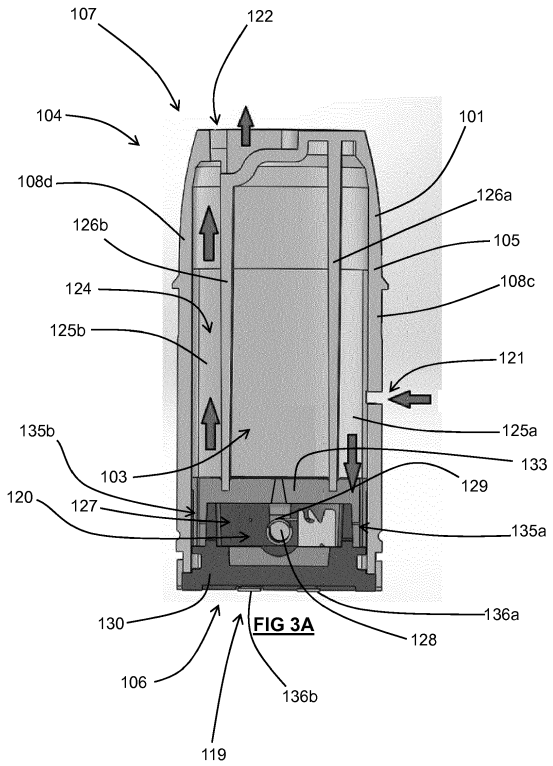

FIG 3A

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Description

Technical field

[0001] The present disclosure relates to an aerosol-delivery component, which may be a consumable for receipt in an aerosol-delivery device to form an aerosol-delivery system (e.g. a smoking substitute system).

Background

[0002] The smoking of tobacco is generally considered to expose a smoker to potentially harmful substances. It is generally thought that a significant amount of the potentially harmful substances are generated through the heat caused by the burning and/or combustion of the tobacco and the constituents of the burnt tobacco in the tobacco smoke itself.

[0003] Combustion of organic material such as tobacco is known to produce tar and other potentially harmful by-products. There have been proposed various smoking substitute systems in order to avoid the smoking of tobacco.

[0004] Such smoking substitute systems can form part of nicotine replacement therapies aimed at people who wish to stop smoking and overcome a dependence on nicotine.

[0005] Smoking substitute systems, which may also be known as electronic nicotine delivery systems, may comprise electronic systems that permit a user to simulate the act of smoking by producing an aerosol, also referred to as a "vapour", which is drawn into the lungs through the mouth (inhaled) and then exhaled. The inhaled aerosol typically bears nicotine and/or flavourings without, or with fewer of, the odour and health risks associated with traditional smoking.

[0006] In general, smoking substitute systems are intended to provide a substitute for the rituals of smoking, whilst providing the user with a similar experience and satisfaction to those experienced with traditional smoking and tobacco products.

[0007] The popularity and use of smoking substitute systems has grown rapidly in the past few years. Although originally marketed as an aid to assist habitual smokers wishing to quit tobacco smoking, consumers are increasingly viewing smoking substitute systems as desirable lifestyle accessories. Some smoking substitute systems are designed to resemble a traditional cigarette and are cylindrical in form with a mouthpiece at one end. Other smoking substitute systems do not generally resemble a cigarette (for example, the smoking substitute device may have a generally box-like form).

[0008] There are a number of different categories of smoking substitute systems, each utilising a different smoking substitute approach. A smoking substitute approach corresponds to the manner in which the substitute system operates for a user.

[0009] One approach for a smoking substitute system is the so-called "vaping" approach, in which a vaporisable liquid, typically referred to (and referred to herein) as "e-liquid", is heated by a heater to produce an aerosol vapour which is inhaled by a user. An e-liquid typically includes a base liquid as well as nicotine and/or flavourings. The resulting vapour therefore typically contains nicotine and/or flavourings. The base liquid may include propylene glycol and/or vegetable glycerine.

[0010] A typical vaping smoking substitute system includes a mouthpiece, a power source (typically a battery), a tank or liquid reservoir for containing e-liquid, as well as a heater. In use, electrical energy is supplied from the power source to the heater, which heats the e-liquid to produce an aerosol (or "vapour") which is inhaled by a user through the mouthpiece.

[0011] Vaping smoking substitute systems can be configured in a variety of ways. For example, there are "closed system" vaping smoking substitute systems which typically have a heater and a sealed tank which is pre-filled with e-liquid and is not intended to be refilled by an end user. One subset of closed system vaping smoking substitute systems include a device which includes the power source, wherein the device is configured to be physically and electrically coupled to a consumable including the tank and the heater. In this way, when the tank of a consumable has been emptied, the device can be reused by connecting it to a new consumable. Another subset of closed system vaping smoking substitute systems are completely disposable, and intended for one-use only.

[0012] There are also "open system" vaping smoking substitute systems which typically have a tank that is configured to be refilled by a user, so the system can be used multiple times.

[0013] An example vaping smoking substitute system is the myblu™ e-cigarette. The myblu™ e cigarette is a closed system which includes a device and a consumable. The device and consumable are physically and electrically coupled together by pushing the consumable into the device. The device includes a rechargeable battery. The consumable includes a mouthpiece, a sealed tank which contains e-liquid, as well as a vaporiser, which for this system is a heating filament coiled around a portion of a wick which is partially immersed in the e-liquid. The system is activated when a microprocessor on board the device detects a user inhaling through the mouthpiece. When the system is activated, electrical energy is supplied from the power source to the vaporiser, which heats e-liquid from the tank to produce a vapour which is inhaled by a user through the mouthpiece.

[0014] Another example vaping smoking substitute system is the blu PRO™ e-cigarette. The blu PRO™ e cigarette is an open system which includes a device, a (refillable) tank, and a mouthpiece. The device and tank are physically and electrically coupled together by screwing one to the other. The mouthpiece and refillable tank are physically coupled together by screwing one into the other, and detaching the mouthpiece from the refillable

tank allows the tank to be refilled with e-liquid. The system is activated by a button on the device. When the system is activated, electrical energy is supplied from the power source to a vaporiser, which heats e-liquid from the tank to produce a vapour which is inhaled by a user through the mouthpiece.

[0015] As the vapour passes through the consumable (entrained in the airflow) from the location of vaporization to an air outlet of the consumable (e.g. a mouthpiece), the vapour cools and condenses to form an aerosol for inhalation by the user. The aerosol may contain nicotine and/or flavour compounds.

[0016] One issue with such systems is that e-liquid in the vaporiser (i.e. received from the tank) can leak from the system via an air inlet or air outlet of the system. Such leakage may occur whilst the system is not in use. For example, leakage can occur when the system (e.g. consumable) is stored in a user's pocket, which may stain a user's clothing and is thus undesirable.

[0017] Thus, it may be desirable to provide an arrangement having reduced leakage of e-liquid from the system.

Summary

[0018] According to a first aspect, there is provided a smoking substitute component comprising:

a housing comprising a base portion, a mouthpiece portion, and one or more walls extending longitudinally from the base portion to the mouthpiece portion;

an airflow path extending from the air inlet formed in a wall of the housing and spaced longitudinally from the base portion to an air outlet formed in the mouthpiece portion, the airflow path comprising a first portion downstream of the air inlet and extending longitudinally towards the base portion of the housing, and a transversely extending second portion that is downstream of the first portion; and

a vaporiser comprising a wick and a heating element for heating the wick, the wick extending across the second portion of the airflow path.

[0019] The provision of an airflow path portion that extends towards the base portion of the housing to a transverse portion in which the vaporiser is provided may help to prevent or reduce leakage from the housing. Such an arrangement means that the airflow path includes at least two turns/deflections between the air inlet and the vaporiser. This makes it more difficult for any liquid in the vaporiser to pass from the vaporiser to the air inlet.

[0020] Further, the base portion may represent an in use lower end of the component and therefore, in a normal orientation of the component, gravity may prevent liquid from travelling up the first portion of the airflow path from the vaporiser to the air inlet.

[0021] Optional features will now be set out. These are applicable singly or in any combination with any aspect.

[0022] The first portion of the airflow path may extend longitudinally from the air inlet towards the base portion of the housing.

[0023] The air inlet may be longitudinally spaced from the base portion (e.g. from the lowermost surface of the base portion) of the housing by a distance that is greater than 8 mm. The distance may be greater than 10 mm, or e.g. greater than 13 mm.

[0024] The airflow path may comprise a third portion extending longitudinally from the second portion to the air outlet (formed in the mouthpiece portion). In this respect, a user may draw fluid (e.g. air) into and along the airflow path by inhaling at the air outlet (i.e. using the mouthpiece portion).

[0025] The third portion of the airflow path may be substantially parallel to the first portion of the airflow path. The third portion of the airflow path may be longer (i.e. in a longitudinal direction) than the first airflow path. The second portion of the airflow path may be substantially perpendicular to the first and/or third portions of the airflow path.

[0026] The airflow path may be generally U-shaped (the first and third portions forming stems of the "U" and the second portion forming the base of the "U"). In this respect, the second portion of the airflow path may connect the first and third portions of the airflow path. The airflow path may comprise at least two turns (e.g. each around 90°) between the vaporiser and the air inlet. The airflow path may comprise at least one turn between the vaporiser and the air outlet.

[0027] References to "downstream" in relation to the air flow path are intended to refer to the direction towards the air outlet/mouthpiece portion. Thus the second and third portions of the air flow path are downstream of the first portion of the air flow path. Conversely, references to "upstream" are intended to refer to the direction towards the air inlet. Thus the first portion of the air flow path (and the air inlet) is upstream of the second/third portions of the air flow path (and the air outlet/mouthpiece portion).

[0028] The component may comprise a tank for housing an aerosol precursor (e.g. a liquid aerosol precursor). The aerosol precursor may comprise an e-liquid, for example, comprising a base liquid and e.g. nicotine. The base liquid may include propylene glycol and/or vegetable glycerine. Hence, the component may be a vaping smoking substitute component.

[0029] The second portion of the airflow path may be disposed between (i.e. axially between) the tank and the base portion of the housing. The vaporiser may be disposed between the tank and the base portion of the housing. Thus, the wick may be disposed between the tank and the base portion of the housing.

[0030] The component (e.g. the housing) may comprise a width, length and depth dimensions. The depth may be smaller than each of the width and the length. The wick may be oriented in the direction of the depth

dimension of the component.

[0031] The length of the housing may be greater than the width of the housing. The housing may be elongate, and the elongate axis may be in the length direction.

[0032] The housing may comprise opposing front and rear walls spaced by opposing first and second side walls extending therebetween. The distance between the side walls of the housing may define a width of the housing. The distance between the front and rear walls may define a depth of the housing. The width of the housing may be greater than the depth of the housing. The wick may be oriented so as to extend in a direction from the front wall to the rear wall.

[0033] The first portion of the airflow path may be defined within a first passage between a wall of the tank and a wall of the housing. The wall of the housing partly defining the first portion of the airflow path may be the first side wall of the housing. The wall of the tank defining the first portion of the airflow path may be a first tank wall. Thus the first portion of the airflow path/first passage may be defined between the first tank wall and the first side wall. The first side wall and the first tank wall may be integrally formed with one another.

[0034] The third portion of the airflow path may be defined within a second passage between a wall of the tank and a wall of the housing. The wall of the housing partly defining the third portion of the airflow path may be the second side wall of the housing. The wall of the tank defining the third portion of the airflow path may be a second tank wall. Thus the third portion of the airflow path/second passage may be defined between the second tank wall and the second side wall. The second side wall and the second tank wall may be integrally formed with one another.

[0035] All of the first side wall, second side wall, first tank wall and second tank wall may all be integrally formed and may additionally be integrally formed with the mouthpiece portion. In that way, the component may be easily manufactured using injection moulding.

[0036] References to "upper", "lower", "above" or "below" are intended to refer to the component when in an upright/vertical orientation i.e. with elongate (longitudinal/length) axis of the component vertically aligned and with the mouthpiece portion vertically uppermost and the base portion lowermost.

[0037] The tank may be disposed between (in a transverse direction) the first and the third portions of the airflow path.

[0038] The first and second tank walls may be spaced from one another so as to define the tank therebetween. The first and second tank walls may extend longitudinally from the mouthpiece towards the base of the housing. The first and second tank walls may be substantially parallel. Each of the first and second tank walls may extend between (and span) the front and rear walls of the housing.

[0039] Each of the first and second tank walls may extend from the mouthpiece (i.e. internally in the housing). Each of the first and second tank walls may be integrally formed with the mouthpiece.

[0040] The tank may be partly defined by a wall of the housing (e.g. the front or rear wall). At least a portion of one of the walls defining the tank may be translucent. That is, the tank may comprise a window to allow a user to visually assess the quantity of e-liquid in the tank. The tank may be referred to as a "clearomizer" if it includes a window, or a "cartomizer" if it does not.

[0041] The vaporiser may be disposed in a vaporising chamber. The vaporising chamber may form part of the airflow path (i.e. the second portion of the airflow path).

[0042] The wick extends across the second (transverse) portion of the air flow path. The wick may be oriented so as to extend in a direction from the front wall to the rear wall of the housing, i.e. it may be oriented in the direction of the depth dimension of the component. Thus the wick may extend in a direction perpendicular to the direction of air flow in the second portion of the air flow path.

[0043] The vaporising chamber may be defined by one or more chamber walls. The wick may extend between first and second opposing chamber walls. The first and second chamber walls may separate (i.e. partially separate) the vaporising chamber from aerosol precursor in the tank. The first and second chambers walls may each comprise a respective opening through which a respective end of the wick projects such that the wick is fluid communication with aerosol precursor in the tank. In this way a central portion of the wick may be exposed to fluid flow in airflow path and end portions of the wick may be in contact with aerosol precursor (e.g. e-liquid) stored in the tank. The wick may comprise a porous material. Thus, aerosol precursor may be drawn (e.g. by capillary action) along the wick, from the tank to the exposed portion of the wick.

[0044] A transverse chamber wall (e.g. a third wall) may separate the vaporising chamber from aerosol precursor in the tank. In this respect, the transverse chamber wall may partly define the tank. An opening may be provided in the transverse chamber wall for the flow of air into the aerosol precursor tank (i.e. so as to allow for pressure equalisation in the tank).

[0045] The vaporising chamber may be defined by an insert received into an open (e.g. lower) end of the housing. The chamber walls may be walls of the insert.

[0046] The wick may have an elongate shape. The wick may be cylindrical. The heating element may be in the form of a filament wound about the wick (e.g. the filament may extend helically about the wick). The filament may be wound about the exposed portion of the wick (i.e. the portion of the wick extending across the airflow path). The heating element may be electrically connected (or connectable) to a power source. Thus, in operation, the power source may supply electricity to (i.e. apply a voltage across) the heating element so as to heat the heating element. This may cause liquid stored in the wick (i.e. drawn from the tank) to be heated so as

to form a vapour and become entrained in fluid flowing along the airflow path. This vapour may subsequently cool to form an aerosol in the airflow path (e.g. the third portion of the airflow path).

[0047] In a second aspect there is provided an aerosol-delivery system (e.g. a smoking substitute system) comprising a component according to the first aspect and an aerosol-delivery (e.g. smoking substitute) device.

[0048] The component may be an aerosol-delivery (e. g. a smoking substitute) consumable i.e. in some embodiments the component may be a consumable component for engagement with the aerosol-delivery (e.g. a smoking substitute) device to form the aerosol-delivery (e.g. s smoking substitute) system.

[0049] The device may be configured to receive the consumable component. For example the device and the consumable component may be configured to be physically coupled together. For example, the consumable component may be at least partially received in a recess of the device, such that there is snap engagement between the device and the consumable component. Alternatively, the device and the consumable component may be physically coupled together by screwing one onto the other, or through a bayonet fitting.

[0050] Thus, the consumable component may comprise one or more engagement portions for engaging with the device. In this way, one end of the consumable component (i.e. the inlet end) may be coupled with the device, while an opposing end (i.e. the outlet end) of the consumable component may define a mouthpiece.

[0051] The consumable component may comprise an electrical interface for interfacing with a corresponding electrical interface of the device. One or both of the electrical interfaces may include one or more electrical contacts. Thus, when the device is engaged with the consumable component, the electrical interface may be configured to transfer electrical power from the power source to a heating element of the consumable component. The electrical interface may also be used to identify the consumable component from a list of known types. The electrical interface may additionally or alternatively be used to identify when the consumable component is connected to the device.

[0052] The device may alternatively or additionally be able to detect information about the consumable component via an RFID reader, a barcode or QR code reader. This interface may be able to identify a characteristic (e. g. a type) of the consumable. In this respect, the consumable component may include any one or more of an RFID chip, a barcode or QR code, or memory within which is an identifier and which can be interrogated via the interface.

[0053] In other embodiments, the component may be integrally formed with the aerosol-delivery (e.g. a smoking substitute) device to form the aerosol-delivery (e.g. s smoking substitute) system.

[0054] In such embodiments, the aerosol former (e.g. e-liquid) may be replenished by re-filling a tank that is integral with the device (rather than replacing the consumable). Access to the tank (for re-filling of the e-liquid) may be provided via e.g. an opening to the tank that is sealable with a closure (e.g. a cap).

[0055] Further features of the device are described below. These are applicable to both the device for receiving a consumable component and to the device integral with the component.

[0056] The device may comprise a power source. The device may comprise a controller.

[0057] A memory may be provided and may be operatively connected to the controller. The memory may include non-volatile memory. The memory may include instructions which, when implemented, cause the controller to perform certain tasks or steps of a method. The device may comprise a wireless interface, which may be configured to communicate wirelessly with another device, for example a mobile device, e.g. via Bluetooth®. To this end, the wireless interface could include a Bluetooth® antenna. Other wireless communication interfaces, e.g. WiFi®, are also possible. The wireless interface may also be configured to communicate wirelessly with a remote server.

[0058] An airflow (i.e. puff) sensor may be provided that is configured to detect a puff (i.e. inhalation from a user). The airflow sensor may be operatively connected to the controller so as to be able to provide a signal to the controller that is indicative of a puff state (i.e. puffing or not puffing). The airflow sensor may, for example, be in the form of a pressure sensor or an acoustic sensor. The controller may control power supply to a heating element in response to airflow detection by the sensor. The control may be in the form of activation of the heating element in response to a detected airflow. The airflow sensor may form part of the device.

[0059] In a third aspect there is provided a method of using the aerosol-delivery (e.g. smoking substitute) consumable component according to the first aspect, the method comprising engaging the consumable component with an aerosol-delivery (e.g. smoking substitute) device (as described above) having a power source so as to electrically connect the power source to the consumable component (i.e. to the vaporiser of the consumable component).

[0060] The invention includes the combination of the aspects and preferred features described except where such a combination is clearly impermissible or expressly avoided.

BRIEF DESCRIPTION OF THE DRAWINGS

[0061] So that further aspects and features thereof may be appreciated, embodiments will now be discussed in further detail with reference to the accompanying figures, in which:

- Fig. 1A is a front schematic view of a smoking substitute system;

- Fig. 1B is a front schematic view of a device of the system;
- Fig. 1C is a front schematic view of a consumable of the system;
- Fig. 2A is a schematic of the components of the device;
- Fig. 2B is a schematic of the components of the consumable;
- Fig. 3A is a front section view of the consumable;
- Fig. 3B is a perspective section view of the consumable; and
- Fig. 3C is a side section view of the consumable.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0062] Aspects and embodiments will now be discussed with reference to the accompanying figures. Further aspects and embodiments will be apparent to those skilled in the art.

[0063] Fig. 1A shows a smoking substitute system 100. In this example, the smoking substitute system 100 includes a device 101 and an aerosol delivery consumable component 102. The consumable component 102 may alternatively be referred to as a "pod", "cartridge" or "cartomizer". It should be appreciated that in other examples (i.e. open systems), the device may be integral with the consumable. In such systems, a tank of the aerosol delivery system may be accessible for refilling the device.

[0064] In this example, the smoking substitute system 100 is a closed system vaping system, wherein the consumable component 102 includes a sealed tank 103 and is intended for single-use only. The consumable component 102 is removably engageable with the device 101 (i.e. for removal and replacement). Fig. 1A shows the smoking substitute system 100 with the device 101 physically coupled to the consumable component 102, Fig. 1B shows the device 101 of the smoking substitute system 100 without the consumable component 102, and Fig. 1C shows the consumable component 102 of the smoking substitute system 100 without the device 101.

[0065] The device 101 and the consumable component 102 are configured to be physically coupled together by pushing the consumable component 102 into a cavity at an upper end 104 of the device 101, such that there is an interference fit between the device 101 and the consumable component 102. In other examples, the device 101 and the consumable component 102 may be coupled by screwing one onto the other, or through a bayonet fitting.

[0066] The consumable component 102 comprises a housing 105 having a base 106 (at a lower end), a mouthpiece 107 (at an upper end), and walls extending longitudinally from the base 106 to the mouthpiece 107. In particular, the consumable component 102 comprises front 108a and rear walls spaced by opposing first 108c and second 108d side walls. The distance between the front 108a and rear 108b walls defines a depth of the housing 105 and the distance between the side walls 108c, 108d defines a width of the housing 105. The width of the housing 105 is greater than the depth of the housing 105.

[0067] The tank 103 of the consumable component 102 comprises a window 109, which allows the quantity of e-liquid remaining in the tank 103 to be visually assessed. The device 101 includes a slot 110 so that the window 109 of the consumable component 102 can be seen whilst the rest of the tank 103 is obscured from view when the consumable component 102 is inserted into the cavity at the upper end 108 of the device 102.

[0068] A lower end 111 of the device 101 includes a light 112 (e.g. an LED) located behind a small translucent cover. The light 112 may be configured to illuminate when the smoking substitute system 100 is activated. Whilst not shown, the consumable component 102 may identify itself to the device 101, via an electrical interface, RFID chip, or barcode.

[0069] Figs. 2A and 2B are schematic drawings of the device 101 and consumable component 102. These figures provide an overview of the components that form part of the consumable component 102 and device 101. As is apparent from Fig. 2A, the device 101 includes a power source 113, a controller 114, a memory 115, a wireless interface 116, an electrical interface 117, and, optionally, one or more additional components 118.

[0070] The power source 113 is a battery (e.g. a rechargeable battery). The controller 114 may, for example, include a microprocessor. The memory 115 may include non-volatile memory. The memory 115 may include instructions which, when implemented, cause the controller 114 to perform certain tasks or steps of a method.

[0071] The wireless interface 116 may be configured to communicate wirelessly with another device, for example a mobile device, e.g. via Bluetooth®. To this end, the wireless interface 116 could include a Bluetooth® antenna. Other wireless communication interfaces, e.g. WiFi®, are also possible. The wireless interface 116 may also be configured to communicate wirelessly with a remote server.

[0072] The electrical interface 117 of the device 101 may include one or more electrical contacts. The electrical interface 117 may be located in a base of the cavity formed in the upper end 104 of the device 101. When the device 101 is physically coupled to the consumable component 102, the electrical interface 117 of the device 101 is configured to transfer electrical power from the power source 113 to the consumable component 102 (i.e. upon activation of the smoking substitute system 100).

[0073] The electrical interface 117 may be configured to receive power from a charging station when the device 101 is not physically coupled to the consumable component 102 and is instead coupled to the charging station. The electrical interface 117 may also be used to identify the consumable component 102 from a list of known consumables. For example, the consumable component 102 may include e-liquid having a particular flavour and/or having a certain concentration of nicotine (which may be

identified by the electrical interface 117). This can be indicated to the controller 114 of the device 101 when the consumable component 102 is connected to the device 101. Additionally, or alternatively, there may be a separate communication interface provided in the device 101 and a corresponding communication interface in the consumable component 102 such that, when connected, the consumable component 102 can identify itself to the device 101.

[0074] The additional components 118 of the device 101 may comprise an indicator (e.g. the light 112 discussed above), a charging portion, a battery charging control circuit, a sensor or e.g. user input.

[0075] The charging port (e.g. USB or micro-USB port) may be configured to receive power from the charging station (i.e. when the power source 118 is a rechargeable battery). This may be located at the lower end 111 of the device 101. Alternatively, the electrical interface 117 discussed above may be configured to act as a charging port configured to receive power from the charging station such that a separate charging port is not required.

[0076] The battery charging control circuit may be configured for controlling the charging of the rechargeable battery. However, a battery charging control circuit could equally be located in the charging station (if present).

[0077] The sensor may be e.g. an airflow (i.e. puff) sensor for detecting airflow in the smoking substitute system 100, e.g. caused by a user inhaling through a mouthpiece 107 of the consumable component 102. The smoking substitute system 100 may be configured to be activated when airflow is detected by the airflow sensor. This sensor could alternatively be included in the consumable component 102. The airflow sensor can be used to determine, for example, how heavily a user draws on the mouthpiece 107 or how many times a user draws on the mouthpiece 107 in a particular time period.

[0078] The user input may be a button. The smoking substitute system 100 may be configured to be activated when a user interacts with the user input (e.g. presses the button). This provides an alternative to the airflow sensor as a mechanism for activating the smoking substitute system 100.

[0079] The consumable component 102, which is shown in Figure 2B, includes the tank 103, an electrical interface 119, a vaporiser 120, an air inlet 121, an air outlet 122 (e.g. formed in the mouthpiece 107), and one or more additional components 123.

[0080] The electrical interface 119 of the consumable component 102 may include one or more electrical contacts. The electrical interface 117 of the device 101 and the electrical interface 119 of the consumable component 102 may be configured to contact each other and thereby electrically couple the device 101 to the consumable component 102 when the base 106 of the consumable component 102 is inserted into the cavity formed in the upper end 104 of the device 101 (as shown in Fig. 1A). In this way, electrical energy (e.g. in the form of an electrical current) is able to be supplied from the power source 113 in the device 101 to the vaporiser 120 in the consumable component 102.

[0081] The vaporiser 120 is configured to heat and vaporise e-liquid contained in the tank 103 using electrical energy supplied from the power source 113. As will be described further below, the vaporiser 120 heats the e-liquid received from the tank 103 to vaporise the e-liquid. The air inlet 121 is configured to allow air to be drawn into the smoking substitute system 100 when a user inhales using the air outlet 122 formed in the mouthpiece 107, such that the vaporised e-liquid is drawn through the consumable component 102 for inhalation by the user.

[0082] In operation, a user activates the smoking substitute system 100, e.g. through interaction with a user input forming part of the device 101 or by inhaling through the air outlet 122 as described above. Upon activation, the controller 114 may supply electrical energy from the power source 113 to the vaporiser 120 (via electrical interfaces 117, 119), which may cause the vaporiser 120 to heat e-liquid drawn from the tank 103 to produce a vapour which is inhaled by a user through the mouthpiece 107.

[0083] An example of one of the one or more additional components 123 of the consumable component 102 is an interface for obtaining an identifier of the consumable component 102. As discussed above, this interface may be, for example, an RFID reader, a barcode, a QR code reader, or an electronic interface which is able to identify the consumable component 102. The consumable component 102 may, therefore include any one or more of an RFID chip, a barcode or QR code, or memory within which is an identifier and which can be interrogated via the electronic interface 117 in the device 101.

[0084] It should be appreciated that the smoking substitute system 100 shown in figures 1A to 2B is just one exemplary implementation of a smoking substitute system 100. For example, the system could otherwise be in the form of an entirely disposable (single-use) system or an open system in which the tank is refillable (rather than replaceable).

[0085] Figures 3A, 3B and 3C are section views of the consumable component 102 described above. The air inlet 121 of the consumable component 102 is in the form of an aperture formed in the first side wall 108c of the housing 105. In particular, the air inlet 121 is spaced along the first side wall 108c (in a longitudinal direction) from the base 106 of the housing 105 so as to be partway along the first side wall 108c from the base 106. The air outlet 122 is formed in the mouthpiece 107 and an airflow path 124 extends from the air inlet 121 to the air outlet 122, such that a user can draw air through the airflow path 124 by inhaling at the air outlet 122. As will be described in more detail below, the airflow path 124 follows a generally U-shaped path through the consumable component 102.

[0086] The airflow path 124 comprises first, second and third airflow path portions. The first airflow path por-

tion is defined by a first passage 125a extending longitudinally from the air inlet 121 towards the base 106 of the consumable component 102. This first passage 125a is defined between a first tank wall 126a that is laterally spaced from the first side wall 108c (in which the air inlet 121 is formed) and that extends longitudinally from an internal surface of the mouthpiece 107.

[0087] The third airflow path is similarly defined by a second passage 125b that is formed between a second tank wall 126b and the second side wall 108d. The second tank wall 126b extends longitudinally from an internal surface of the mouthpiece 107 and is laterally spaced from the second side wall 108d. Both the first 126a and second 126b tank walls span the front 108a and rear 108b (see Figure 3B) walls of the housing 105. In this way, the tank 103 is partly defined between the first and second tank walls 126a, 126b, the front 108a and rear 108b walls, and an internal surface of the mouthpiece 107.

[0088] The tank walls 126a, 126b and the mouthpiece 107 are integrally formed with each other so as to form a single unitary component that may e.g. be formed by way of an injection moulding process. Such a component may be formed of a thermoplastic material such as polypropylene. To facilitate this (e.g. to allow removal from a mould), each of the tank walls 126a, 126b is tapered from a proximal end at which it is connected to the mouthpiece 107 to an opposing distal end.

[0089] The second airflow path portion is in the form of a vaporising chamber 127 that extends transversely across the housing 105 so as to connect lower ends of the first 125a and second 125b passages. Thus, upon inhalation by a user, air may flow into the air inlet 121, through the first passage 125a, through the vaporising chamber 127 (where vapour may be entrained in the air) and subsequently through the second passage 125b where it is discharged (into a user's mouth) from the air outlet 122 at an upper end of the second passage 125b. Thus, the airflow path 124 comprises at least two turns (at the air inlet 121 and the connection between the vaporising chamber 127 and the first passage 125a) between the vaporiser chamber 127 and the air inlet 121. This may reduce the propensity for leakage of e-liquid out of the air inlet 121 (i.e. from the vaporising chamber 127).

[0090] The vaporiser 120 (briefly discussed with reference to Fig. 2B) is located in the vaporising chamber 127 and comprises a porous wick 128 and a heater filament 129 coiled around the porous wick 128. The wick 128 extends across the vaporising chamber 127 (perpendicular to the direction of airflow through the chamber 127). That is, the wick 128 extends in the depth direction of the housing 105.

[0091] The vaporising chamber 127 is formed within an insert 130 that is received in an open lower end of the housing 105 so as to define the base 106 of the consumable component 102. The insert 130 seals against the walls of the housing 105 so as to define a lower end of the tank 103. Thus, the walls of the insert 130 (defining the vaporising chamber 127) separate the vaporising chamber 127 from the tank 106. In particular, an upper transverse wall 133 of the insert 130 extends from the first tank wall 126a to the second tank wall 126b so as to separate the vaporising chamber 127 from the tank 103 (and so as to define a lower surface of the tank 103).

[0092] To form a seal with the tank walls 126a, 126b, the upper wall comprises grooves 134a, 134b that extend in a direction of the depth of the housing 105 and receive distal ends of the tank walls 126a, 126b. This arrangement also seals the tank 103 from the air passages 125a, 125b, which connect to the vaporising chamber 127 via respective channels 135a, 135b formed in the insert 130.

[0093] The insert 130 comprises two apertures 131a, 131b formed in opposing walls of the insert 130 for receipt of respective ends of the wick 128 therethrough. The insert 130 is spaced from each of the front 108a and rear 108b walls, such that gaps 132a, 132b are formed between the insert 130 and each of the front 108a and rear 108b walls. These gaps 132a, 132b are arranged such that the ends of the wick 128 projecting through the apertures 131a, 131b in the insert 134 are received in the gaps 132a, 132b. In this way, the ends of the wick 128 are in contact with aerosol precursor (e-liquid) stored in the tank 106. This e-liquid is transported along the wick 128 (e.g. by capillary action) to a central portion of the wick 128 that is exposed to airflow flowing through the vaporising chamber 127. The transported e-liquid is heated by the heater filament 129 (when activated e.g. by detection of inhalation), which causes the e-liquid to be vaporised and to be entrained in air flowing across the wick 128. This vaporised liquid may cool to form an aerosol in the passage 140, which may then be inhaled by a user.

[0094] The insert also 130 accommodates the electrical interface 119 of the consumable component 102. The electrical interface 119 comprises two electrical contacts 136a, 136b that are electrically connected to the heating filament 129. In this way, when the consumable component 102 is engaged with the device 101, power can be supplied from the power source 113 of the device to the heating filament 129.

[0095] While exemplary embodiments have been described above, many equivalent modifications and variations will be apparent to those skilled in the art when given this disclosure. Accordingly, the exemplary embodiments set forth above are considered to be illustrative and not limiting.

[0096] Throughout this specification, including the claims which follow, unless the context requires otherwise, the words "have", "comprise", and "include", and variations such as "having", "comprises", "comprising", and "including" will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

[0097] It must be noted that, as used in the specification

and the appended claims, the singular forms "a," "an," and "the" include plural referents unless the context clearly dictates otherwise. Ranges may be expressed herein as from "about" one particular value, and/or to "about" another particular value. When such a range is expressed, another embodiment includes from the one particular value and/or to the other particular value. Similarly, when values are expressed as approximations, by the use of the antecedent "about," it will be understood that the particular value forms another embodiment. The term "about" in relation to a numerical value is optional and means, for example, +/- 10%.

[0098] The words "preferred" and "preferably" are used herein refer to embodiments of the invention that may provide certain benefits under some circumstances. It is to be appreciated, however, that other embodiments may also be preferred under the same or different circumstances. The recitation of one or more preferred embodiments therefore does not mean or imply that other embodiments are not useful, and is not intended to exclude other embodiments from the scope of the disclosure, or from the scope of the claims.

Claims

1. An aerosol-delivery component comprising:

a housing comprising a base portion, a mouthpiece portion and one or more walls extending longitudinally from the base portion to the mouthpiece portion;
an air inlet formed in a wall of the housing and spaced longitudinally from the base portion;
an air outlet formed in the mouthpiece portion;
an airflow path extending from the air inlet to the air outlet, the airflow path comprising a first portion downstream of the air inlet and extending longitudinally towards the base portion of the housing, and a transversely extending second portion that is downstream of the first portion; and
a vaporiser comprising a wick and a heating element for heating the wick, the wick extending across the second portion of the airflow path.

2. A component according to claim 1 wherein the first portion of the airflow path extends longitudinally from the air inlet towards the base portion of the housing.

3. A component according to claim 1 or 2 wherein the air inlet is longitudinally spaced from the base of the housing by a distance that is greater than 8 mm.

4. A component according to any one of the preceding claims wherein the airflow path comprises a third portion extending longitudinally from the second portion to the air outlet.

5. A component according to claim 4 comprising a tank for housing a liquid aerosol precursor, the tank disposed between the first and third airflow path portions.

6. A component according to claim 5 wherein the second airflow path portion is disposed between the tank and the base of the housing.

7. A component according to claim 5 or 6 wherein the housing comprises opposing front and rear walls spaced by opposing first and second side walls extending therebetween, the first portion of the airflow path being defined between the first side wall and a first longitudinally extending wall of the tank.

8. A component according to claim 7 wherein the distance between the front and rear walls defines a depth of the housing and the distance between the side walls defines a width of the housing that is greater than the depth of the housing.

9. A component according to claim 8 wherein the wick is elongate and extends in the direction of the depth of the housing.

10. A component according to claim 9 wherein the wick is cylindrical.

11. A component according to any one of claims 7 to 10 wherein the third portion of the airflow path is defined between the second side wall and a second longitudinally extending wall of the tank.

12. A component according to claim 11 wherein the first and second tank walls extend from, and are integrally formed with, the mouthpiece.

13. A component according to any one of claims 5 to 12 wherein the vaporiser is disposed in a vaporising chamber that forms part of the second portion of the airflow path, the vaporising chamber defined by an insert received in an open end of the housing.

14. A component according to any one of the preceding claims which a consumable component for receipt in a smoking substitute device.

15. An aerosol-delivery system comprising a component according to any one of the preceding claims and a device comprising a power source.

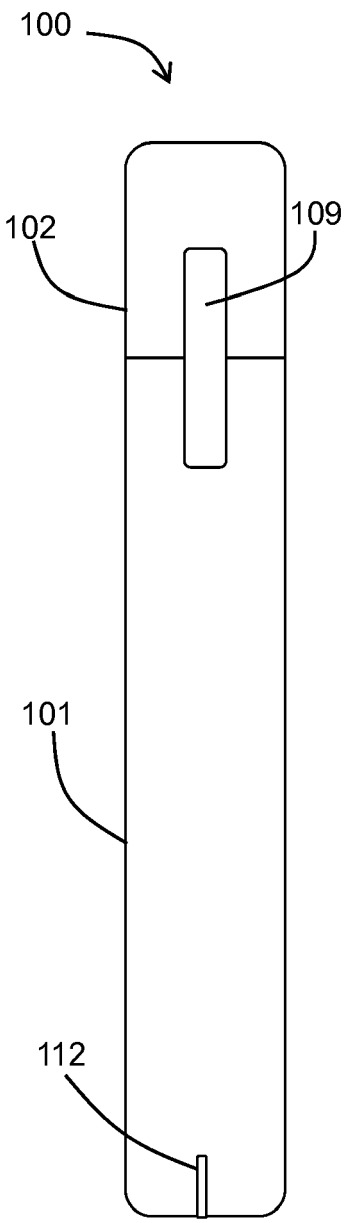

FIG 1A

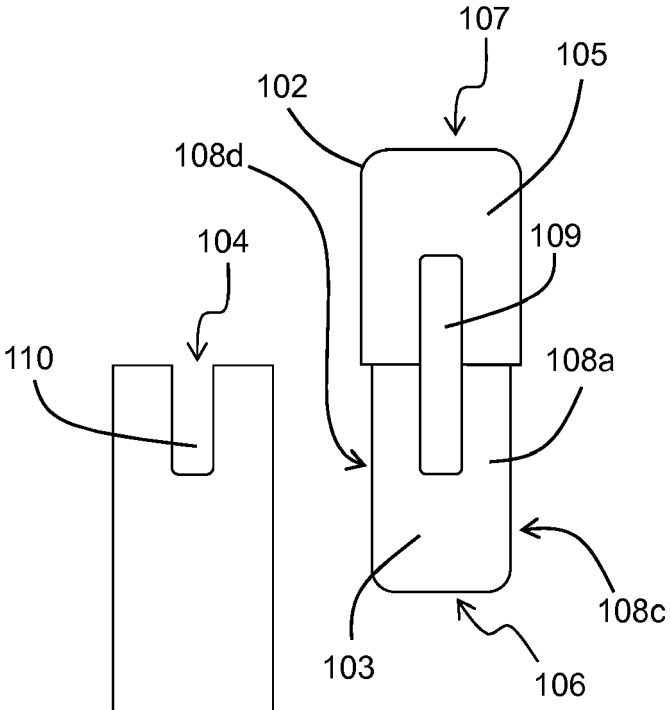

FIG 1C

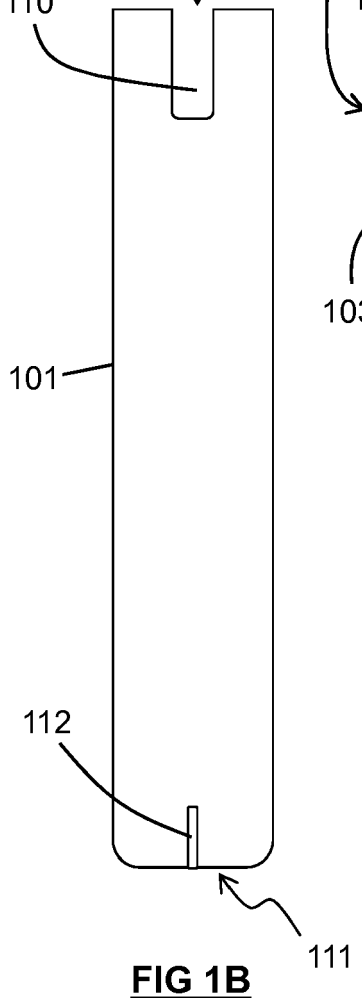

FIG 1B

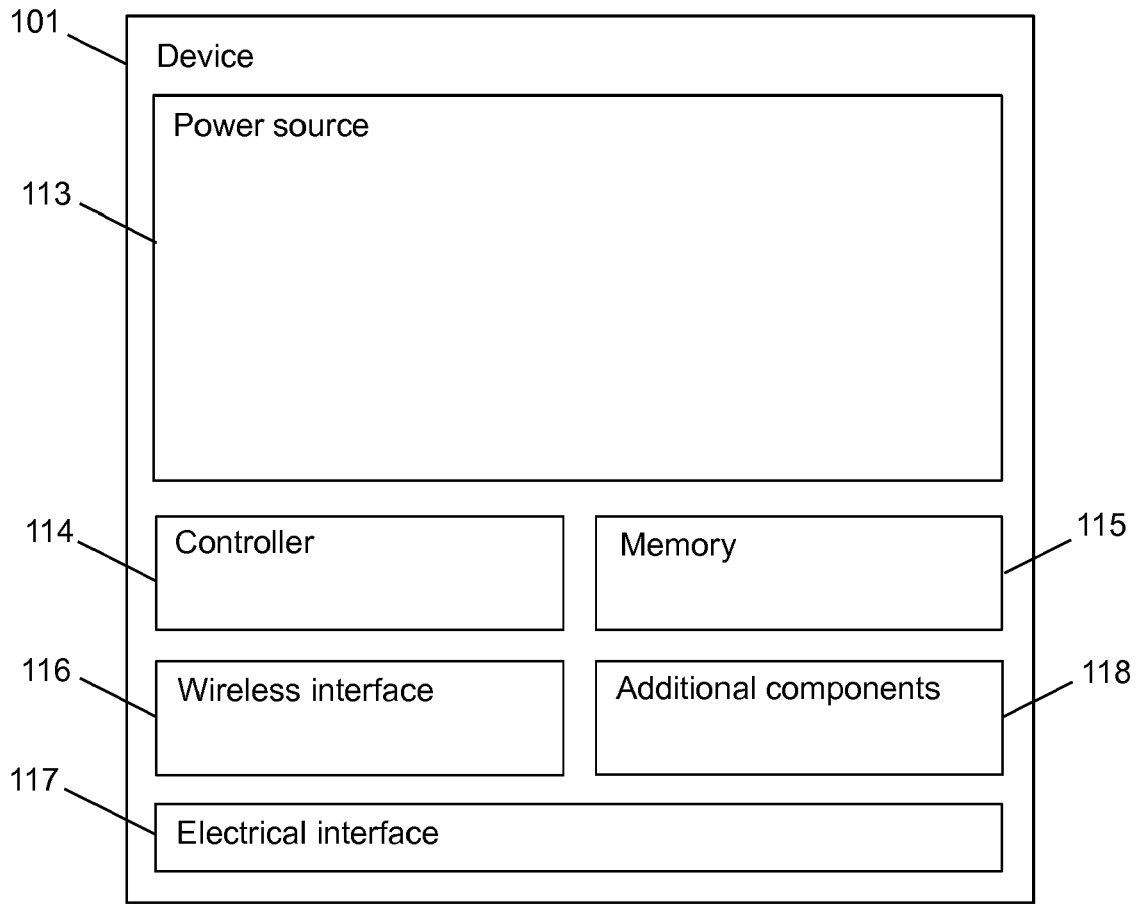
101
Device
Power source
113
114
Controller
Memory
115
116
Wireless interface
Additional components
118
117
Electrical interface

FIG 2A

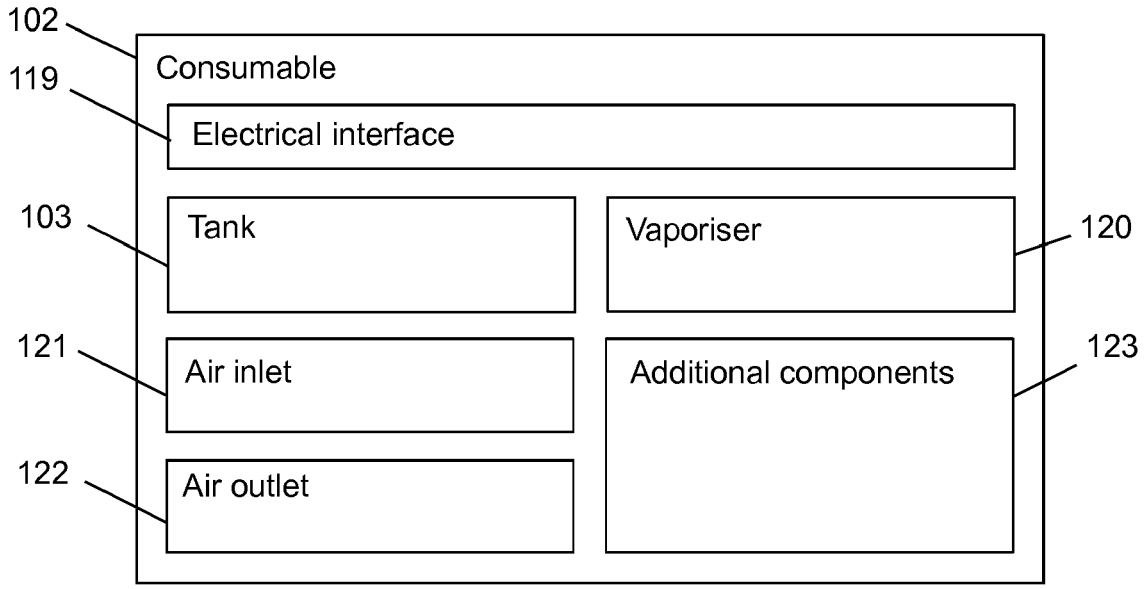
102
Consumable
119
Electrical interface
103
Tank
Vaporiser
120
121
Air inlet
Additional components
123
122
Air outlet

FIG 2B

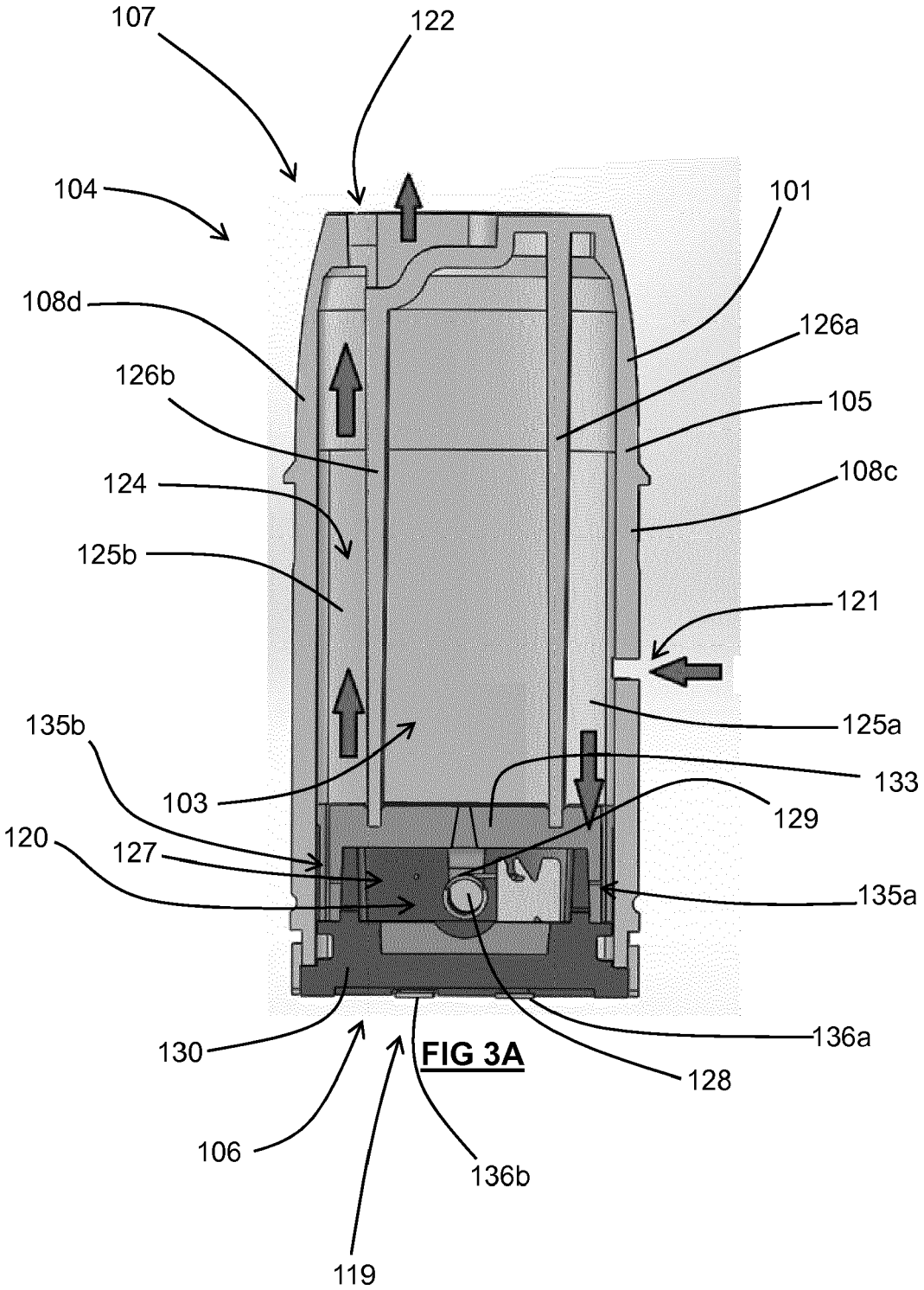
107
122
104
101
108d
126a
126b
105
124
108c
125b
121
125a
135b
133
103
129
120
127
135a
130
136a
128
106
136b
119

FIG 3A

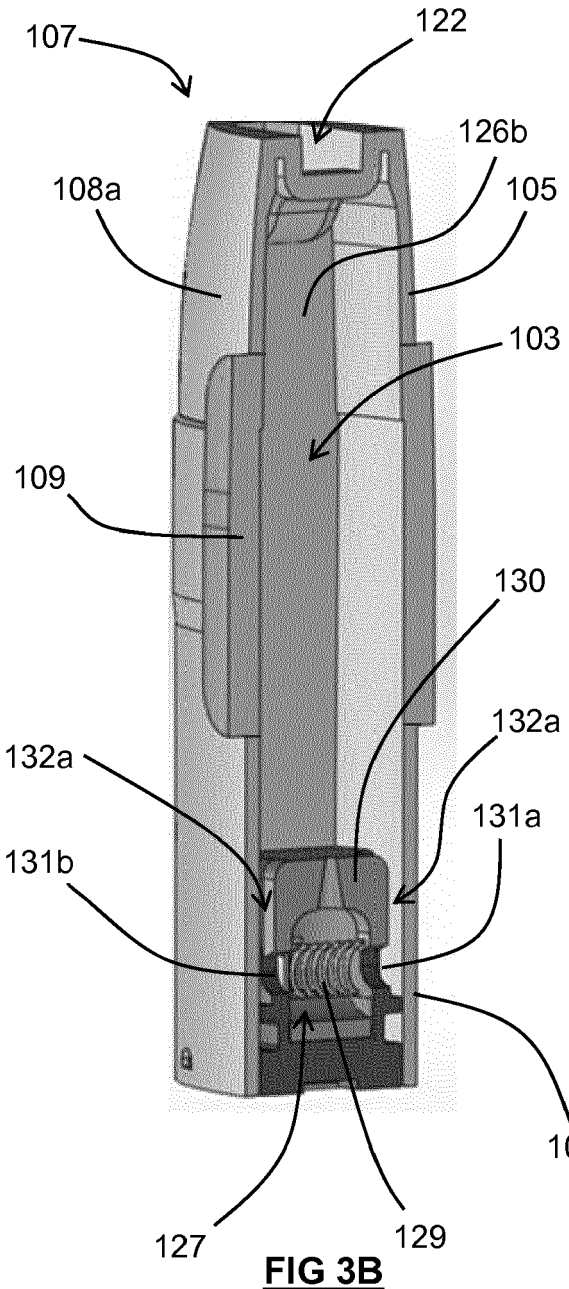
107
122
126b
108a
105
103
109
130
132a
132a
131a
131b
108b
127
129

FIG 3B

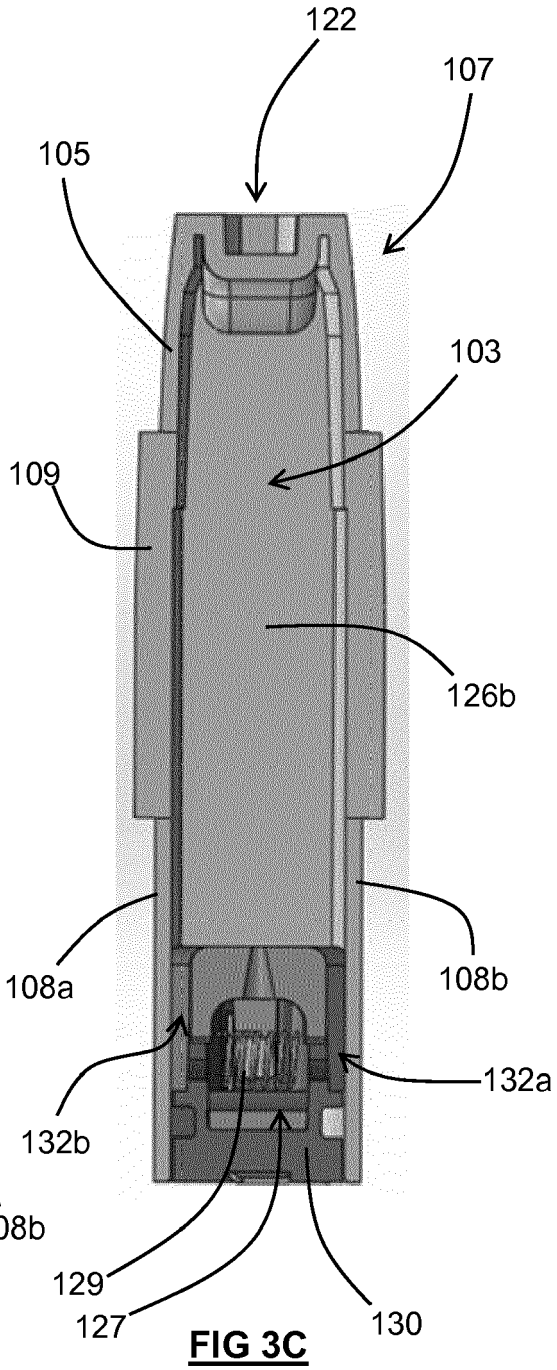
122
107
105
103
109
126b
108a
108b
132a
132b
129
127
130

FIG 3C

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EUROPEAN SEARCH REPORT

Application Number
EP 19 19 8612

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Y	* paragraph [0047] - paragraph [0060]; figure 2 *	5-14	

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Y	* paragraph [0028] - paragraph [0049]; figure 15B *	5-14	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 March 2020	Koob, Michael

CATEGORY OF CITED DOCUMENTS

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