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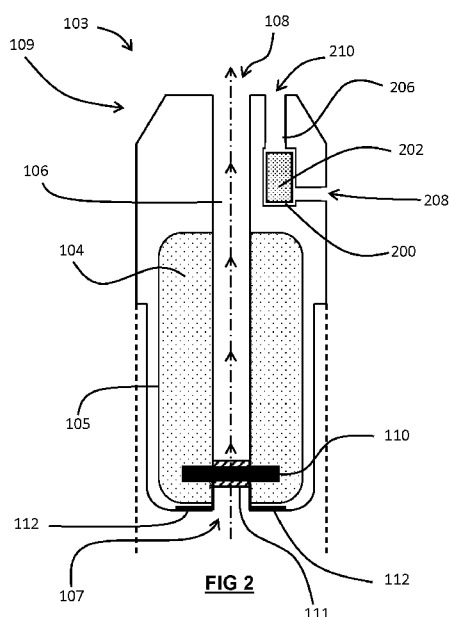
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(57) Abstract: A smoking substitute apparatus comprising a reservoir (105) for containing a vaporisable e-liquid, an aerosol-generator configured to vaporise said e-liquid to produce an aerosol vapour, and a flavour cavity (200) containing a powder (202). The powder comprises a flavourant. A first flow passage (106) is for guiding said aerosol vapour from the aerosol-generator to an outlet (108) of the first flow passage and a second flow passage (206) is for guiding ambient air through the flavour cavity to an outlet (210) of said second flow passage. Said outlet of the first flow passage and said outlet of the second flow passage are both located at a mouthpiece (109) of the apparatus, and flow of ambient air through said second flow passage is effective to entrain powder from said flavour cavity for inhalation by a user of the smoking substitute apparatus.

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SMOKING SUBSTITUTE APPARATUS

Field of the Invention

The present invention relates to a smoking substitute apparatus and, in particular, a smoking substitute apparatus that is able to deliver flavour to a user.

5 *Background*

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.

10 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.

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.

15 Smoking substitute systems include electronic systems that permit a user to simulate the act of smoking by producing an aerosol (also referred to as a "vapour") that is drawn into the lungs through the mouth (inhaled) and then exhaled. The inhaled aerosol typically bears nicotine and/or a flavourant without, or with fewer of, the odour and health risks associated with traditional smoking.

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

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. There are a number
25 of different categories of smoking substitute systems, each utilising a different smoking substitute approach.

One approach 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 heating device (referred to herein as an electronic cigarette or "e-cigarette" device) to produce an aerosol vapour which is inhaled by a user. The e-liquid typically
30 includes a base liquid as well as nicotine and/or a flavourant. The resulting vapour therefore also typically contains nicotine and/or a flavourant. The base liquid may include propylene glycol and/or vegetable glycerine.

A typical e-cigarette device includes a mouthpiece, a power source (typically a battery), a tank for containing e-liquid, as well as a heating device. In use, electrical energy is supplied from the power

source to the heating device, which heats the e-liquid to produce an aerosol (or “vapour”) which is inhaled by a user through the mouthpiece.

E-cigarettes can be configured in a variety of ways. For example, there are “closed system” vaping smoking substitute systems, which typically have a sealed tank and heating element. The tank 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 main body which includes the power source, wherein the main body is configured to be physically and electrically coupled to a consumable including the tank and the heating element. In this way, when the tank of a consumable has been emptied, that consumable is disposed of. The main body can be reused by connecting it to a new, replacement, consumable. Another subset of closed system vaping smoking substitute systems are completely disposable, and intended for one-use only.

There are also “open system” vaping smoking substitute systems which typically have a tank that is configured to be refilled by a user. In this way the entire device can be used multiple times.

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

For a smoking substitute device it is desirable to deliver nicotine into the user’s lungs, where it can be absorbed into the bloodstream. As explained above, in the so-called “vaping” approach, e-liquid is heated by a heating device to produce an aerosol vapour which is inhaled by a user. Many e-cigarettes also deliver flavour to the user to enhance the experience. In such e-cigarettes, flavour compounds are contained in the e-liquid that is heated. However, toxicology restrictions are placed on the amount of flavour that can be contained in the e-liquid, and this can result in some e-liquid flavours delivering a weak and underwhelming taste sensation to consumers in the pursuit of safety. Further, there is a view that providing a flavourant as part of the e-liquid, such that the flavourant is vaporised with the e-liquid, may be disadvantageous.

There may be a need for improved design of smoking substitute systems, in particular in regards to the delivery of flavour to a user.

The present disclosure has been devised in the light of the above considerations.

Summary of the Invention

At its most general, the present invention relates to a smoking substitute apparatus capable of delivering flavour to a user.

According to a first aspect there is provided a smoking substitute apparatus comprising a reservoir for
5 containing a vaporisable e-liquid, an aerosol-generator configured to vaporise said e-liquid to produce an aerosol vapour, a flavour cavity containing a powder, the powder comprising a flavourant, a first flow passage for guiding said aerosol vapour from the aerosol-generator to an outlet of the first flow passage, and a second flow passage for guiding ambient air through the flavour cavity to an outlet of said second flow passage, wherein said outlet of the first flow passage and said outlet of the second flow passage are
10 both located at a mouthpiece of the apparatus, and wherein flow of ambient air through said second flow passage is effective to entrain powder from said flavour cavity for inhalation by a user of the smoking substitute apparatus.

In this way, flavour can be delivered to a user of the smoking substitute device. The flavour is provided in a solid powder form, which requires less storage volume in the smoking substitute apparatus than other
15 states of flavourant, such as flavourant in a liquid or gas state. Accordingly, the size of the flavour cavity can be reduced, thereby reducing the overall size of the smoking substitute apparatus.

The powder itself is entrained through the mouthpiece into the mouth of a user during each use of the smoking substitute apparatus (i.e. during each puff) to deliver flavour to the user. The delivery of the powder itself into a user's mouth can provide a strong and/or intense flavour. Furthermore, a flavoured
20 powder can travel deeper into the airways of a user than a flavoured liquid (i.e. in the form of liquid droplets or otherwise), thereby providing a better taste experience for a user.

Optionally, the outlet of the first flow passage is distinct from the outlet of the second flow passage.

Powders may congeal if they come into contact with liquid, creating lumps and even blockages. By separating the first flow passage outlet from the second flow passage outlet, the entrained powder is
25 separated from the vaporised e-liquid (i.e. the aerosol vapour) in the mouthpiece. Accordingly, the number and size of lumps and/or blockages of congealed powder in the mouthpiece can be reduced or even prevented. Thus, the possibility of a user breathing in an unpleasant lump of congealed powder is also reduced or eliminated. Additionally, the possibility of the mouthpiece becoming blocked (or partially blocked/obstructed) by congealed powder is reduced. This improves the experience for a user of the
30 smoking substitute apparatus.

Preferably, the second flow passage may be fluidly isolated from the first flow passage.

Accordingly, the first and second flow passages are separate and distinct from each other along their entire length. As the entrained flavoured powder does not come into contact with the aerosol vapour, the possibility of the formation of lumps or blockages of congealed powder is reduced or eliminated.
35 Furthermore, as the flavourant is not mixed with the e-liquid, which may or may not contain nicotine, the strength and or taste of the flavour may be improved.

The second flow passage may extend from an inlet, through the flavour cavity, to the outlet of said second flow passage wherein said inlet is in an outer wall of the smoking substitute apparatus

In this way, ambient air on the outside of (i.e. surrounding) the smoking substitute apparatus can be efficiently and effectively drawn through the inlet and into the second flow passage during each use (i.e. puff) of the smoking substitute apparatus. The ambient air can flow through the flavour cavity to entrain (i.e. draw in and transport in the flow of ambient air) flavoured powder from the flavour cavity to the mouthpiece, and therefore into the mouth of the user.

Optionally, the inlet of the second flow passage may be in an outer side wall of the smoking substitute apparatus.

10 This provides a simple configuration in which ambient air can be drawn in through a side wall of the smoking substitute apparatus. This configuration of the second flow passage may also be simple to manufacture.

The second flow passage may be non-linear. For example, the second flow passage may be tortuous (i.e. follow a twisting and turning and/or winding path). The second flow passage may follow a serpentine, undulating or meandering path.

15 In this way, an enhanced amount of flavoured powder may be entrained in the ambient air for delivery to a user. In other words, providing such a non-linear second flow passage may provide an improved dosage of flavoured powder into a mouth of a user relative to the dosage of vaporised e-liquid. The non-linear path of the second flow passage may also result in increased air turbulence in the second flow passage which may affect the amount of powder entrained to the mouthpiece, thereby affecting the flavour dosage and flavour strength received by a user.

20 Optionally, the second flow passage may be shaped as a spiral. The second flow passage may spiral around the first flow passage and the reservoir for containing the vaporisable e-liquid.

Such a configuration may further improve dosage of flavoured powder into a mouth of a user, which in turn affects the strength and/or depth of flavour received by a user.

25 The width of the first flow passage may be larger than the width of the second flow passage. In other words, a cross-section of the first flow passage may be larger than a cross-section of the second flow passage.

In this way, the ratio of amount of flavoured powder and the amount of vaporised e-liquid received by the user through the mouthpiece may be improved to provide an enhanced strength and/or depth of flavour.

30 The width of the second flow passage may vary along its length. In other words, the cross-section of the first flow passage may vary along the length of the second flow passage.

Accordingly, an improved dosage of flavoured powder may be delivered to a user.

Alternatively, the first and section flow passages may each have a consistent cross-section along their respective lengths.

The first flow passage may be linear.

5 In this way, the vaporised e-liquid may be guided in a direct route from the aerosol generator to the mouthpiece for efficient delivery to a user of the smoking substitute apparatus.

The size and/or shape of the second flow passage inlet may be adjustable. Alternatively or additionally, the size and/or shape of the second flow passage outlet may be adjustable.

10 Adjusting the size and/or shape of the inlet or outlet of the second flow passage may result in a change in the amount of flavoured powder entrained in the air flow during each use (i.e. each puff) of the smoking substitute apparatus.

Optionally, the smoking substitute apparatus may comprise a flow passage obstructer, which may be extendable across the second flow passage to block the second flow passage and prevent the entrainment of powder to the mouthpiece.

15 For example, the flow passage obstructer may be a cap or lid for positioning over the inlet of the second flow passage to prevent the entrainment of powder to the mouthpiece.

20 In this way, the transport of flavoured powder from the flavour cavity to the mouthpiece, and therefore the mouth of a user, can be controlled. Specifically, if the flow passage obstructer is in an extended state across the second flow passage, the entrainment of powder to the mouthpiece is prevented, thus preventing flavour delivery to the mouth of a user. Accordingly, if the delivery of flavour is not required, flavour delivery can be prevented. If the delivery of flavour is subsequently required, the flow passage obstructer can be retracted into a retracted state in which the obstructer does not extend across the second flow passage. Flavour delivery can then be resumed.

The flow passage obstructer may also prevent powder from undesirably leaking from the smoking substitute apparatus.

25 Optionally, the flavour cavity may be refillable.

In this way, powders having different flavours can be used with a single smoking substitute apparatus. A user of the smoking substitute apparatus is able to change the flavour delivered by the smoking substitute apparatus.

30 A particle size of the flavoured powder may also be chosen to alter and/or improve the impact or strength of flavour, and the amount of flavoured powder entrained into the air flow through the second flow passage.

The aerosol-generator may be a heating element for heating the vaporisable e-liquid.

According to a second aspect, there is provided a smoking substitute system comprising the smoking substitute apparatus according to the first aspect, and a main body comprising a power source.

The powder comprises a flavourant. The term "flavourant" is used to describe a compound or combination of compounds that provide flavour and/or aroma. For example, the flavourant may be configured to interact with a sensory receptor of a user (such as an olfactory or taste receptor). The flavourant may include one or more volatile substances.

- 5 The flavourant may be provided in solid particle form. The flavourant may be natural or synthetic. For example, the flavourant may include menthol, liquorice, chocolate, fruit flavour (including e.g. citrus, cherry etc.), vanilla, spice (e.g. ginger, cinnamon) and tobacco flavour. The flavourant may be evenly dispersed or may be provided in isolated locations and/or varying concentrations.

- 10 The smoking substitute apparatus may be in the form of a consumable. The consumable may be configured for engagement with a main body (i.e. so as to form a closed smoking substitute system). For example, the consumable may comprise components of the system that are disposable, and the main body may comprise non-disposable or non-consumable components (e.g. power supply, controller, sensor, etc.) that facilitate the delivery of aerosol by the consumable. In such an embodiment, the aerosol former (e.g. e-liquid) may be replenished by replacing a used consumable with an unused consumable.

Alternatively, the smoking substitute apparatus may be a non-consumable apparatus (e.g. that is in the form of an open smoking substitute system). In such embodiments an aerosol former (e.g. e-liquid) of the system may be replenished by re-filling e.g. a reservoir of the smoking substitute apparatus with the aerosol former (rather than replacing a consumable component of the apparatus).

- 20 In light of this, it should be appreciated that some of the features described herein as being part of the smoking substitute apparatus may alternatively form part of a main body for engagement with the smoking substitute apparatus (i.e. when the smoking substitute apparatus is in the form of a consumable).

- 25 Where the smoking substitute apparatus is in the form of a consumable, the main body and the consumable may be configured to be physically coupled together. For example, the consumable may be at least partially received in a recess of the main body, such that there is an interference fit between the main body and the consumable. Alternatively, the main body and the consumable may be physically coupled together by screwing one onto the other, or through a bayonet fitting.

- 30 Thus, the smoking substitute apparatus may comprise one or more engagement portions for engaging with a main body. In this way, one end of the smoking substitute apparatus may be coupled with the main body, whilst an opposing end of the smoking substitute apparatus may define a mouthpiece of the smoking substitute system.

- 35 The smoking substitute apparatus may comprise a reservoir configured to store an aerosol former, such as an e-liquid. The e-liquid may, for example, comprise a base liquid and e.g. nicotine. The base liquid may include propylene glycol and/or vegetable glycerine. The e-liquid may be flavourless (i.e. not contain

any flavourants) and may consist solely of a base liquid of propylene glycol and/or vegetable glycerine and nicotine.

The reservoir may be in the form of a tank. At least a portion of the tank may be translucent. For example, the tank may comprise a window to allow a user to visually assess the quantity of e-liquid in the tank. A housing of the smoking substitute apparatus may comprise a corresponding aperture (or slot) or window that may be aligned with a translucent portion (e.g. window) of the tank. The reservoir may be referred to as a "clearomizer" if it includes a window, or a "cartomizer" if it does not.

The smoking substitute apparatus may comprise a first flow passage for fluid flow therethrough. The first flow passage may extend through (at least a portion of) the smoking substitute apparatus, between openings that may define an inlet and an outlet of the passage. The outlet may be at a mouthpiece of the smoking substitute apparatus. In this respect, a user may draw fluid (e.g. air) into and through the passage by inhaling at the outlet (i.e. using the mouthpiece). The passage may be at least partially defined by the tank. The tank may substantially (or fully) define the passage. In this respect, the tank may surround the passage.

The aerosol generator may comprise a wick. The aerosol generator may further comprise a heater. The wick may comprise a porous material. A portion of the wick may be exposed to fluid flow in the passage. The wick may also comprise one or more portions in contact with liquid stored in the reservoir. For example, opposing ends of the wick may protrude into the reservoir and a central portion (between the ends) may extend across the passage so as to be exposed to fluid flow in the passage. Thus, fluid may be drawn (e.g. by capillary action) along the wick, from the reservoir to the exposed portion of the wick.

The heater may comprise a heating element, which 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. 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 through the passage. This vapour may subsequently cool to form an aerosol in the passage.

The smoking substitute apparatus (or main body engaged with the smoking substitute apparatus) may comprise a power source. The power source may be electrically connected (or connectable) to a heater of the smoking substitute apparatus (e.g. when engaged with the main body). The power source may be a battery (e.g. a rechargeable battery). A connector in the form of e.g. a USB port may be provided for recharging this battery.

When the smoking substitute apparatus is in the form of a consumable, the smoking substitute apparatus may comprise an electrical interface for interfacing with a corresponding electrical interface of the main body. One or both of the electrical interfaces may include one or more electrical contacts. Thus, when the main body is engaged with the consumable, the electrical interface may be configured to transfer electrical power from the power source to a heater of the consumable.

The electrical interface may also be used to identify the smoking substitute apparatus (in the form of a consumable) from a list of known types. For example, the consumable may have a certain concentration of nicotine and the electrical interface may be used to identify this. The electrical interface may additionally or alternatively be used to identify when a consumable is connected to the main body.

- 5 Again, where the smoking substitute apparatus is in the form of a consumable, the main body may comprise an interface, which may, for example, be in the form of an RFID reader, a barcode or QR code reader. This interface may be able to identify a characteristic (e.g. a type) of a consumable engaged with the main body. In this respect, the consumable 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.
- 10 The smoking substitute apparatus or main body may comprise a controller, which may include a microprocessor. The controller may be configured to control the supply of power from the power source to the heater of the smoking substitute apparatus (e.g. via the electrical contacts). 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
- 15 certain tasks or steps of a method.

The main body or smoking substitute apparatus 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

20 communicate wirelessly with a remote server.

A puff sensor may be provided that is configured to detect a puff (i.e. inhalation from a user). The puff 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 puff sensor may, for example, be in the form of a pressure sensor or an acoustic sensor. That is, the controller may control power supply to the

25 heater of the consumable in response to a puff detection by the sensor. The control may be in the form of activation of the heater in response to a detected puff. That is, the smoking substitute apparatus may be configured to be activated when a puff is detected by the puff sensor. When the smoking substitute apparatus is in the form of a consumable, the puff sensor may form part of the consumable or the main body.

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

Summary of the Figures

So that the invention may be understood, and so that further aspects and features thereof may be appreciated, embodiments illustrating the principles of the invention will now be discussed in further detail

35 with reference to the accompanying figures, in which:

Figure 1A is a front view of a smoking substitute system in an engaged position;

Figure 1B is a front view of the smoking substitute system of Figure 1A in a disengaged position;

Figure 1C is a section view of a smoking substitute apparatus;

Figure 2 is a section view of a smoking substitute apparatus of an embodiment; and

Figure 3 is an enlarged section view of a smoking substitute apparatus of an embodiment.

5 ***Detailed Description of the Invention***

Aspects and embodiments of the present invention will now be discussed with reference to the accompanying figures. Further aspects and embodiments will be apparent to those skilled in the art. All documents mentioned in this text are incorporated herein by reference.

10 Figures 1A and 1B illustrate a smoking substitute system in the form of an e-cigarette system 101. The system 101 comprises an e-cigarette device defining a main body 102 of the system 101, and an smoking substitute apparatus in the form of an e-cigarette consumable (or “pod”) 103. In the illustrated embodiment the consumable 103 (smoking substitute apparatus) is removable from the main body (e-cigarette device), so as to be a replaceable component of the system 101. In other words, the e-cigarette system 101 is a closed system.

15 As is apparent from Figures 1A and 1B, the consumable 103 is configured to engage the main body 102. Figure 1A shows the main body 102 and the consumable 103 in an engaged state, whilst Figure 1B shows the main body 102 and the consumable 103 in a disengaged state. When engaged, a portion of the consumable 103 is received in a cavity of the main body 102 and is retained in the engaged position by way of a snap-engagement mechanism. In other embodiments, the main body 102 and consumable
20 103 may be engaged by screwing one into (or onto) the other, through a bayonet fitting, or by way of an interference fit.

The system 101 is configured to vaporise an aerosol-former, which in the illustrated embodiment, is in the form of a nicotine-based e-liquid 104. The e-liquid 104 comprises nicotine and a base liquid including propylene glycol and/or vegetable glycerine. In the present embodiment, the e-liquid 104 is flavourless
25 (and does not include any added flavourant). That is, if the e-liquid 104 were to be inhaled (i.e. in aerosol form) by a user, it would not have a particularly perceptible flavour or taste.

As is more apparent from Figure 1C, this e-liquid 104 is stored within a reservoir in the form of a tank 105 that forms part of the consumable 103. In the illustrated embodiment, the consumable 103 is a “single-use” consumable 103. That is, upon exhausting the e-liquid 104 in the tank 105, the intention is that the
30 user disposes of the entire consumable 103. In other embodiments, the e-liquid (i.e. aerosol former) may be the only part of the system that is truly “single-use”. That is, the tank may be refillable with e-liquid or the e-liquid may be stored in a non-consumable component of the system. For example, the e-liquid may be stored in a tank located in the main body or stored in another component that is itself not single-use (e.g. a refillable cartomizer).

The tank 105 surrounds, and thus defines a portion of, a passage 106 that extends between an inlet 107 and an outlet 108 at opposing ends of the consumable 103. In this respect, the passage comprises an upstream end at the end of the consumable 103 that engages with the main body 102, and a downstream end at an opposing end of the consumable 103 that comprises a mouthpiece 109 of the system 101.

5 When the consumable 103 is engaged with the main body 102, a user can inhale (i.e. take a puff) via the mouthpiece 109 so as to draw air through the passage 106, and so as to form an airflow (indicated by arrows) in a direction from the inlet 107 to the outlet 108 of the passage 106. Although not illustrated, the passage 106 may be partially defined by a tube (e.g. a metal tube) extending through the consumable 103. The passage 106 is in fluid communication with a gap defined between the consumable 103 and the
10 main body 102 (when engaged) such that air outside of the system 101 is drawn into the passage 106 (during an inhale).

The smoking substitute system 101 is configured to vaporise the e-liquid 104 for inhalation by a user. To provide this, the consumable 103 comprises a heater having of a porous wick 110 and a resistive heating element in the form of a heating filament 111 that is helically wound around a portion of the porous wick
15 110. The porous wick 110 extends across the passage 106 (i.e. transverse to a longitudinal axis of the passage 106) and opposing ends of the wick 110 extend into the tank 105 (so as to be submerged in the e-liquid 104). In this way, e-liquid 104 contained in the tank 105 is conveyed from the opposing ends of the porous wick 110 to a central portion of the porous wick 110 so as to be exposed to the airflow in the passage 106 (i.e. caused by a user inhaling). In other embodiments the heating filament 111 and/or wick
20 110 may form part of the main body (but may engage the tank 105 during engagement of the main body 102 and the consumable 103).

The helical filament 111 is wound about this exposed central portion of the porous wick 110 and is electrically connected to an electrical interface in the form of electrical contacts 112 mounted at the end of the consumable that is proximate the main body 102 (when engaged). When the consumable 103 is
25 engaged with the main body 102, the electrical contacts 112 contact corresponding electrical contacts (not shown) of the main body 102. The main body electrical contacts are electrically connected to a power source (not shown) of the main body 102, such that (in the engaged position) the filament 111 is electrically connected to the power source. In this way, power can be supplied by the main body 102 to the filament 111 in order to heat the filament 111. This heat is transferred from the filament 111 to the
30 porous wick 110 which causes e-liquid 104 conveyed by the porous wick 110 to increase in temperature to a point at which it vaporises. The vaporised e-liquid becomes entrained in the airflow and, between the vaporisation point at the filament 111 and the outlet 108 of the passage 106, condenses to form an aerosol. This aerosol is then inhaled, via the mouthpiece 109, by a user of the system 101.

The power source of the main body 102 may be in the form of a battery (e.g. a rechargeable battery).
35 The main body 102 may comprise a connector in the form of e.g. a USB port for recharging this battery. The main body 102 may also comprise a controller that controls the supply of power from the power source to the main body electrical contacts (and thus to the filament 111). That, is the controller may be configured to control a voltage applied across the main body electrical contacts, and thus the voltage

applied across the filament 111. In this way, the filament 111 may only be heated under certain conditions (e.g. during a puff and/or only when the system is in an active state). In this respect, the main body 102 may include a puff sensor (not shown) that is configured to detect a puff (i.e. inhalation). The puff sensor may be operatively connected to the controller so as to be able to provide a signal, to the controller, which is indicative of a puff state (i.e. puffing or not puffing). The puff sensor may, for example, be in the form of a pressure sensor or an acoustic sensor.

Although not shown, the main body 102 and consumable 103 may comprise a further interface which may, for example, be in the form of an RFID reader, a barcode or QR code reader. This interface may be able to identify a characteristic (e.g. a type) of a consumable 103 engaged with the main body 102. In this respect, the consumable 103 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.

Figure 2 illustrates a smoking substitute apparatus which is similar to the smoking substitute apparatus of Figures 1A-1C, but additionally includes a flavour cavity 200. The flavour cavity 200 has a reservoir formed therein which contains a powdered flavourant 202. The smoking substitute apparatus is thus a hybrid pod which has both a tank 105 containing e-liquid 104 and a flavour cavity 200 containing a flavoured powder 202.

Similarly to in Figures 1A-1C, a first flow passage 106 extends between a first flow passage inlet 107 and a first flow passage outlet 108. The first flow passage outlet 108 is formed in the mouthpiece 109 of the consumable 103. The first flow passage 106 guides aerosol vapour of the e-liquid 104 from the tank 105 to the first flow passage outlet 108 in the mouthpiece 109, for inhalation by a user.

As shown in Figure 2, a second flow passage 206 extends between a second flow passage inlet 208 and a second flow passage outlet 210. The second flow passage 206 may be formed by one or more hollow tubes extending through the interior of the consumable 103. The second flow passage outlet 210 is formed in the mouthpiece 109, and the flavour cavity 200 containing the flavoured powder 202 is formed in a portion of the second flow passage 206. Thus, the second flow passage 206 acts to guide ambient air from an outside of the consumable 103 through the second flow passage inlet 208 and the flavour cavity 200, to the second flow passage outlet 210.

The flow of ambient air through the second flow passage 206 is shown in Figure 3 by a dashed arrow. When a user of the smoking substitute system draws on the mouthpiece 109, ambient air is sucked through the second flow passage 206, and thus through the flavour cavity 200. The flavoured powder 202 is entrained in the flow of ambient air through the second flow cavity 206 and is therefore carried through the second flow passage outlet 210 by the flow of air and into the mouth of the user for inhalation.

The first flow passage 106 and second flow passage 206 are fluidly isolated from one another along their entire length to avoid e-liquid 104 mixing with the powder 202. Thus, the second flow passage 206 is isolated from the tank 105 and the heating element.

The second flow passage 206 may be adjustable (i.e. tuneable) to alter the amount of powder entrained in the air flow into the mouth of a user. The size and/or shape of the second flow passage air inlet 208 or second flow passage air outlet 210 may be adjustable to change the amount of powder entrained through the second flow passage per use (i.e. per puff) of the smoking substitute system. A user may be able to control the size or shape of the second flow passage inlet 208 or outlet 210 by the use of a button, or slider. The button or slider may act to partially close the second flow passage inlet 208 or outlet 210.

Alternatively (or additionally), the first flow passage 106 may be adjustable to change the relative amount of powder 202 and aerosol vapour delivered to the mouth of a user through the mouthpiece 109.

Although not shown in the figures, there may be a flow passage obstructer extendable across the second flow passage 206. The flow passage obstructer may be formed as a flap, cap, lid or a sliding obstructer, and may be operable to partially, and/or completely block the second flow passage 206 so that ambient air cannot flow through the second flow passage 206. The second flow passage obstructer may be formed over the second flow passage inlet 208 as a cap or plug, or may be formed elsewhere in the second flow passage 206.

In other embodiments, the second flow passage 206 may be non-linear and/or tortuous, and follow a winding, meandering path. The second flow passage 206 may spiral around the first flow passage 106.

In Figures 2 and 3, the second flow passage air inlet 208 is formed in an outer side wall of the consumable 103. However, other configurations may be possible. For example, the first flow passage inlet 107 may be formed together with the second flow passage inlet 208 to form a combined flow inlet upstream of the tank 105 and the heating element. Air may travel through the combined flow inlet into a combined flow passage which branches into the first flow passage 106 and second flow passage 206 upstream of the heating element and tank 105. The flow of ambient air entering the consumable 103 may be split into two passages; the first guiding vaporised e-liquid 104 to the mouthpiece 109, and the second guiding powdered flavourant 202 to the mouthpiece 109. Similarly to the embodiment shown in Figures 2 and 3, the flavoured powder 202 does not mix or come into contact with the e-liquid 104.

The features disclosed in the foregoing description, or in the following claims, or in the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for obtaining the disclosed results, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

While the invention has been described in conjunction with the exemplary embodiments described above, many equivalent modifications and variations will be apparent to those skilled in the art when given this disclosure. Accordingly, the exemplary embodiments of the invention set forth above are considered to be illustrative and not limiting. Various changes to the described embodiments may be made without departing from the spirit and scope of the invention.

For the avoidance of any doubt, any theoretical explanations provided herein are provided for the purposes of improving the understanding of a reader. The inventors do not wish to be bound by any of these theoretical explanations.

Any section headings used herein are for organizational purposes only and are not to be construed as limiting the subject matter described.

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.

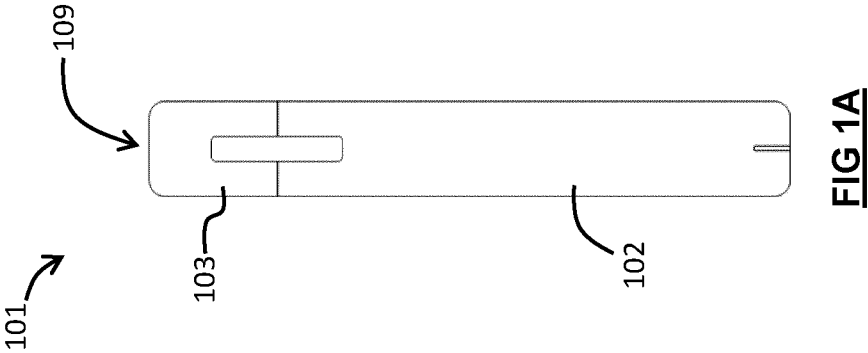
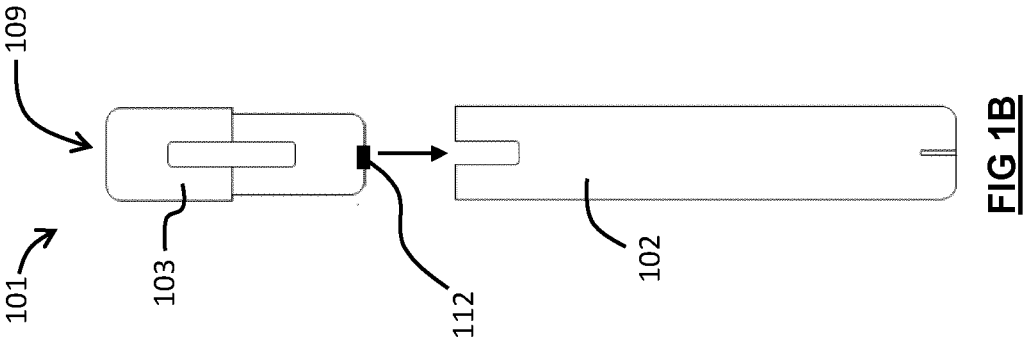
It must be noted that, as used in the specification and the appended claims, the singular forms "a," "an," and "the" include plural referents unless the context clearly dictates otherwise. Ranges may be expressed herein as from "about" one particular value, and/or to "about" another particular value. 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%.

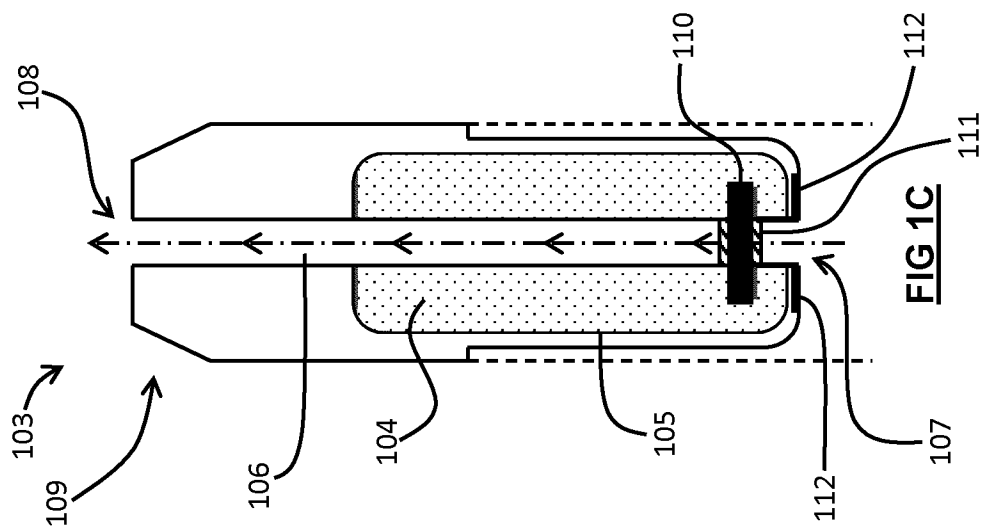
The words "preferred" and "preferably" are used herein refer to embodiments of the invention that may provide certain benefits under some circumstances. It is to be appreciated, however, that other embodiments may also be preferred under the same or different circumstances. The recitation of one or more 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.

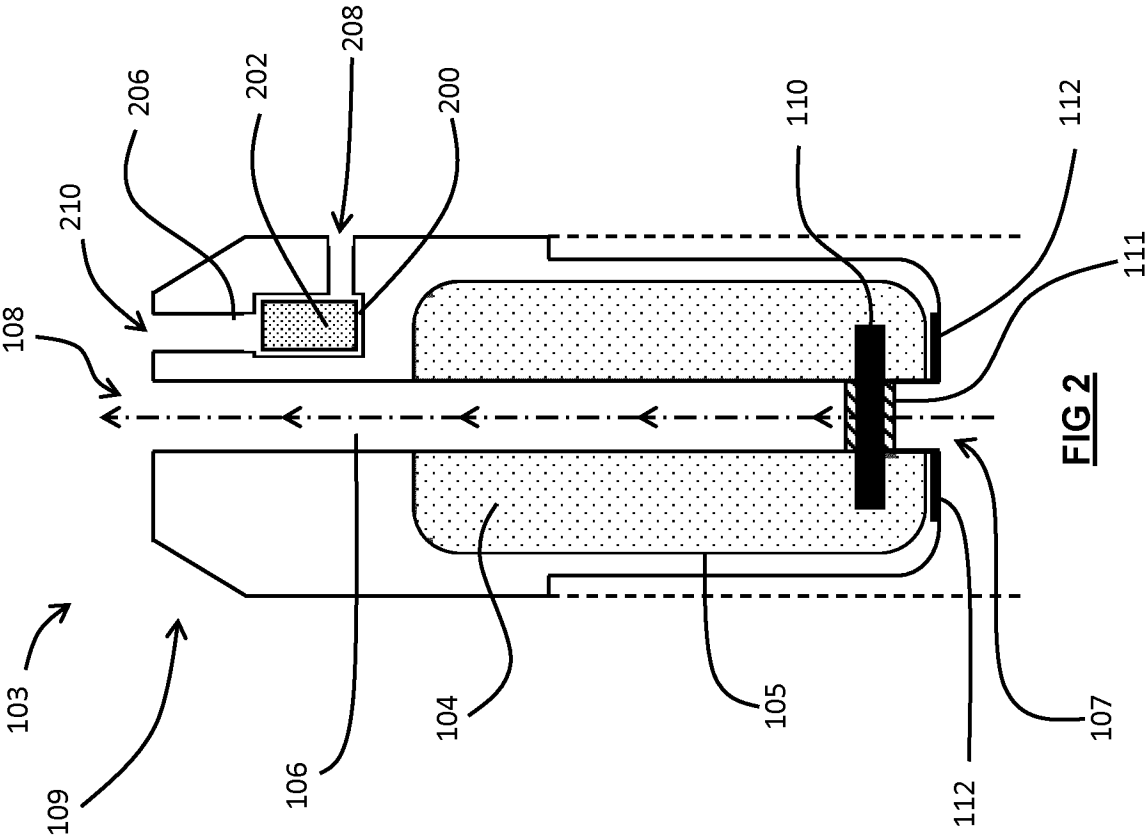
Claims:

1. A smoking substitute apparatus comprising:
 - a reservoir for containing a vaporisable e-liquid;
 - an aerosol-generator configured to vaporise said e-liquid to produce an aerosol vapour;
 - 5 a flavour cavity containing a powder, the powder comprising a flavourant;
 - a first flow passage for guiding said aerosol vapour from the aerosol-generator to an outlet of the first flow passage; and
 - a second flow passage for guiding ambient air through the flavour cavity to an outlet of said second flow passage;
 - 10 wherein said outlet of the first flow passage and said outlet of the second flow passage are both located at a mouthpiece of the apparatus, and wherein flow of ambient air through said second flow passage is effective to entrain powder from said flavour cavity for inhalation by a user of the smoking substitute apparatus.
2. The smoking substitute apparatus of claim 1, wherein said outlet of the first flow passage is distinct
15 from said outlet of the second flow passage.
3. The smoking substitute apparatus of claim 1 or claim 2, wherein the second flow passage is fluidly isolated from the first flow passage.
4. The smoking substitute apparatus of any preceding claim, wherein the second flow passage extends from an inlet, through the flavour cavity, to the outlet of said second flow passage, wherein said inlet
20 is in an outer wall of the smoking substitute apparatus.
5. The smoking substitute apparatus of claim 4, wherein said inlet of the second flow passage is in an outer side wall of the smoking substitute apparatus.
6. The smoking substitute apparatus of any preceding claim, wherein the second flow passage is non-linear.
- 25 7. The smoking substitute apparatus of any preceding claim, wherein the second flow passage is tortuous.
8. The smoking substitute apparatus of any preceding claim, wherein the second flow passage is shaped as a spiral.
9. The smoking substitute apparatus of any preceding claim, wherein the width of the first flow passage
30 is larger than the width of the second flow passage.
10. The smoking substitute apparatus of any preceding claim, wherein the width of the second flow passage is varied along its length.

11. The smoking substitute apparatus of any preceding claim, wherein the first flow passage is linear.
12. The smoking substitute apparatus of any preceding claim, further comprising a flow passage obstructor extendable across the second flow passage to block the second flow passage and prevent the entrainment of powder to the mouthpiece.
- 5 13. The smoking substitute apparatus of any preceding claim, wherein the flavour cavity is refillable.
14. The smoking substitute apparatus of any preceding claim, wherein the aerosol-generator is a heating element for heating the vaporisable e-liquid.
15. A smoking substitute system comprising:
the smoking substitute apparatus of any preceding claim; and
10 a main body comprising a power source.







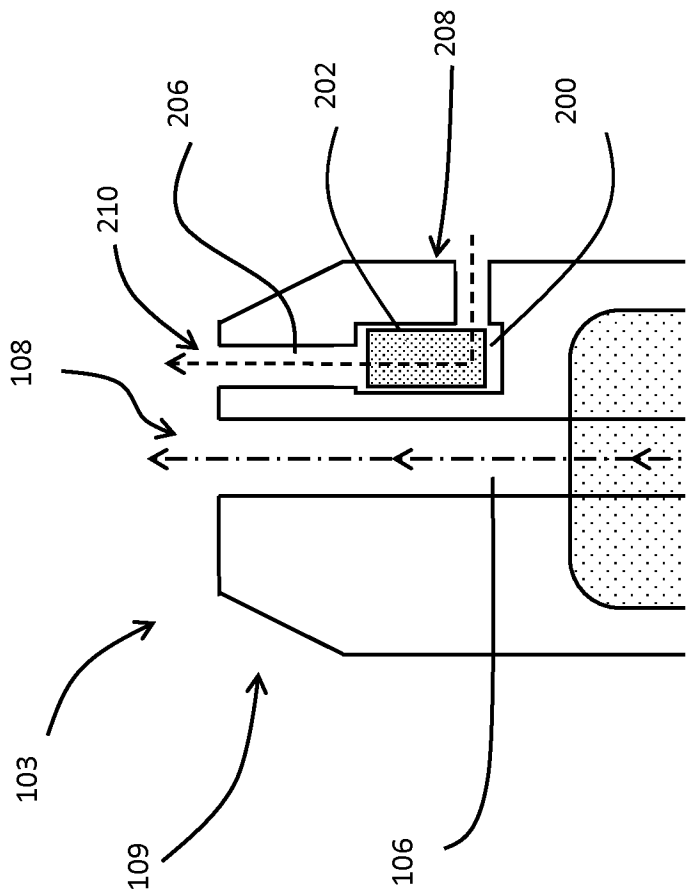


FIG 3

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2020/053141

A. CLASSIFICATION OF SUBJECT MATTER

INV. A24F47/00 A24F40/30
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24F A61M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2018/130391 A1 (BRITISH AMERICAN TOBACCO INVESTMENTS LTD [GB]) 19 July 2018 (2018-07-19)	1-6,9, 10,12-15
Y	page 6, line 10 - page 18, line 9; figure 1	5-8,11, 12
X	US 2018/263286 A1 (REEVELL TONY [GB]) 20 September 2018 (2018-09-20)	1-4,6, 10,11, 13-15
Y	paragraphs [0072], [0125] - paragraph [0168]; figure 11	5,7,8, 11,12
X	WO 2018/141466 A1 (PHILIP MORRIS PRODUCTS SA [CH]) 9 August 2018 (2018-08-09)	1-4,7, 10,12-15
Y	page 13, line 13 - page 15, line 18; figure 11	5,6,8, 11,12
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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

23 April 2020

Date of mailing of the international search report

06/05/2020

Name and mailing address of the ISA/

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INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2020/053141

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2007/267032 A1 (SHAN YANSONG [US]) 22 November 2007 (2007-11-22) paragraph [0065] -----	8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2020/053141

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