

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
26.06.2024 Bulletin 2024/26

(51) International Patent Classification (IPC):
A24F 40/46 (2020.01)

(21) Application number: **24174746.8**

(52) Cooperative Patent Classification (CPC):
A24F 40/57; A24F 40/20; A24F 40/46

(22) Date of filing: **23.09.2019**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR

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(30) Priority: **24.09.2018 GB 201815522**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
19780182.2 / 3 855 965

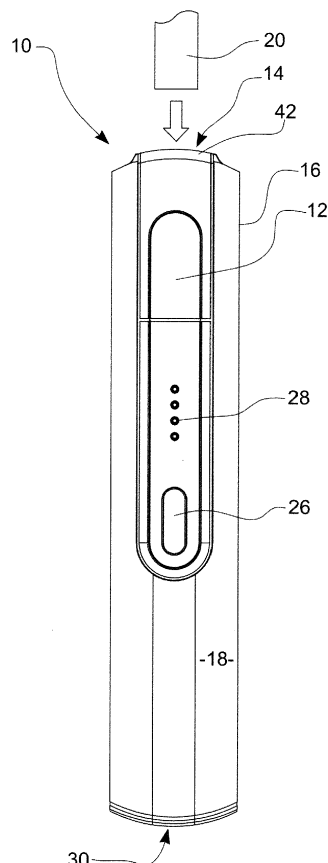
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(54) **SMOKING SUBSTITUTE DEVICE**

(57) The present disclosure relates to the field of smoking tobacco. In particular, the present disclosure relates to smoking substitute systems and particularly, although not exclusively, to a heat-not-burn (HNB) smoking substitute system. Further in particular, the present disclosure relates to a smoking substitute system having at least two different modes of operation. Accordingly, there is provided a smoking substitute device (10) comprising a heating element (12), wherein the smoking substitute device (10) is adapted for receiving a smoking substitute consumable (20), wherein the heating element (12) is adapted for heating the smoking substitute consumable (20), wherein the smoking substitute device (10) comprises at least two modes of operation and wherein the smoking substitute device (10) is a heat-not-burn smoking substitute device.



Description

Field of the Disclosure

[0001] This application claims priority to GB 1815522.6 filed 24 September 2018, the contents and elements of which are herein incorporated by reference for all purposes.

[0002] The present disclosure relates to the field of smoking tobacco. In particular, the present disclosure relates to smoking substitute systems and particularly, although not exclusively, to a heat-not-burn (HNB) smoking substitute system. Further in particular, the present disclosure relates to a smoking substitute system having at least two different modes of operation.

Background

[0003] 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.

[0004] Conventional combustible smoking articles, such as cigarettes, typically comprise a cylindrical rod of tobacco comprising shreds of tobacco which is surrounded by a wrapper, and usually also a cylindrical filter axially aligned in an abutting relationship with the wrapped tobacco rod. The filter typically comprises a filtration material which is circumscribed by a plug wrap. The wrapped tobacco rod and the filter are joined together by a wrapped band of tipping paper that circumscribes the entire length of the filter and an adjacent portion of the wrapped tobacco rod. A conventional cigarette of this type is used by lighting the end opposite to the filter, and burning the tobacco rod. The smoker receives mainstream smoke into their mouth by drawing on the mouth end or filter end of the cigarette.

[0005] Combustion of organic material such as tobacco is known to produce tar and other potentially harmful byproducts. There have been proposed various smoking substitute systems (or "substitute smoking systems") in order to avoid the smoking of tobacco.

[0006] 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.

[0007] 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 flavourings without, or with fewer of, the odour and health risks associated with traditional smoking.

[0008] In general, smoking substitute systems are in-

tended 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 with combustible tobacco products. Some smoking substitute systems use smoking substitute articles that are designed to resemble a traditional cigarette and are cylindrical in form with a mouthpiece at one end.

[0009] 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.

[0010] There are a number of different categories of smoking substitute systems, each utilising a different smoking substitute approach.

[0011] One approach for a smoking substitute system is the so-called "heat not burn" ("HNB") approach in which tobacco (rather than an "e-liquid") is heated or warmed to release vapour. The tobacco may be leaf tobacco or reconstituted tobacco. The vapour may contain nicotine and/or flavourings. In the HNB approach the intention is that the tobacco is heated but not burned, i.e. the tobacco does not undergo combustion.

[0012] A typical HNB smoking substitute system may include a device and a consumable. The consumable may include the tobacco material. The device and consumable may be configured to be physically coupled together. In use, heat may be imparted to the tobacco material by a heating element of the device, wherein airflow through the tobacco material causes moisture in the tobacco material to be released as vapour. A vapour may also be formed from a carrier in the tobacco material (this carrier may for example include propylene glycol and/or vegetable glycerine) and additionally volatile compounds released from the tobacco. The released vapour may be entrained in the airflow drawn through the tobacco.

[0013] As the vapour passes through the consumable (entrained in the airflow) from an inlet to a mouthpiece (outlet), the vapour cools and condenses to form an aerosol for inhalation by the user. The aerosol will normally contain the volatile compounds.

[0014] In HNB smoking substitute systems, heating as opposed to burning the tobacco material is believed to cause fewer, or smaller quantities, of the more harmful compounds ordinarily produced during smoking. Consequently, the HNB approach may reduce the odour and/or health risks that can arise through the burning, combustion and pyrolytic degradation of tobacco.

[0015] There may be a need for improved design of smoking substitute systems, in particular HNB smoking substitute systems, to enhance the user experience and improve the function of the HNB smoking substitute system.

[0016] The present disclosure has been devised in the light of the above considerations.

Summary of the Disclosure

[0017] At least one such need may be met with the subject-matter of the independent claims. Preferred embodiments may be taken from the dependent claims and are explained in more detail in the following description in relation to the provided drawings.

[0018] At its most general, the present disclosure relates to an aerosol-forming delivery system, e.g. a smoking substitute system such as an HNB system. More specifically, the present disclosure relates to a smoking substitute device having multiple, different modes of operation.

[0019] According to a first aspect of the present disclosure, there is provided a smoking substitute device comprising a heating element, wherein the smoking substitute device is adapted for receiving a smoking substitute consumable, wherein the heating element is adapted for heating the smoking substitute consumable, wherein the smoking substitute device comprises at least two modes of operation and wherein the smoking substitute device is a heat-not-burn smoking substitute device.

[0020] According to a second aspect of the present disclosure, there is provided a smoking substitute system comprising a smoking substitute device and a smoking substitute consumable.

[0021] According to a third aspect of the present disclosure, there is provided a method for using a smoking substitute system, the method comprising inserting a smoking substitute consumable into a smoking substitute device and heating the smoking substitute consumable using a heating element.

[0022] Ideas and concepts of this disclosure may be considered to be based on the following observations and findings.

[0023] As mentioned before, the present disclosure is concerned with smoking substitute systems. A smoking substitute system may comprise a smoking substitute device or an aerosol-forming device, which may be a heat-not-burn (HNB) smoking substitute device. An HNB device is a device that is adapted for heating but not combusting the aerosol-forming substrate. This substrate may be made of tobacco material and may comprise additives assisting in the forming of the aerosol by the smoking substitute device. The smoking substitute device may comprise a main body for housing a heating element. The heating element may comprise an elongated, e.g. rod-shaped, tube-shaped or blade-shaped heating element. The heating element may project into or surround a cavity within the main body of the smoking substitute device, which cavity is for receiving a smoking substitute consumable.

[0024] The smoking substitute device may comprise an electrical power supply, e.g. a (rechargeable) battery for powering the heating element. It may further comprise a control unit to control the supply of power to the heating element.

[0025] In some embodiments, when a consumable is

inserted into the cavity within the main body, a portion of the smoking substitute consumable is penetrated by the heating element upon insertion of the smoking substitute consumable. In particular, the heating element may penetrate the smoking substitute consumable in an area of the consumable where the aerosol-forming substrate, e.g. tobacco material, is arranged.

[0026] The heating element is thus arranged inside of the smoking substitute consumable and in particular inside of the tobacco material. When energy is provided to the heating element, the heating element is heated to a target temperature, preferably in the range above the vaporization temperature of nicotine contained in the tobacco material, but below the temperature where the tobacco material would start to burn or combust. E.g., the heating element may be heated to a temperature of above 170°C, the vaporization temperature of nicotine, but below 400°C to avoid burning of the tobacco material in the consumable. Preferably, the target temperature may not exceed approx. 350°C.

[0027] In accordance with the present disclosure, the smoking substitute device is provided with at least two modes of operation, which may be, e.g., different temperatures of the heating element resulting in a different extraction behaviour of vapour in general or in particular nicotine from the tobacco material in the consumable. E.g., a first setting, e.g. a high setting, and a second setting, e.g. a low setting, may be conceivable.

[0028] The use of different modes of operation and thus different modes of extraction or different modes of vapour generation and delivery may allow to tailor nicotine delivery to a specific situation in which the smoking substitute device is to be used. In other words, using a defined and/or variable temperature may allow the control of the nicotine delivery from the consumable. Such may be referred to as a stealth mode, a cruise mode or boost mode, respectively. E.g. in a stealth mode, a temperature of the heating element may be lower than the temperature of the heating element in either a cruise mode or boost mode. In boost mode, the temperature of the heating element may be higher than either in stealth mode or cruise mode.

[0029] Two or more different modes of operation are conceivable. In the context of this disclosure, it has been discovered that the temperature of the heating element also affects the production of visible vapour from the consumable and thus influences visible vapour delivery. Further, the amount of vapour generated by the smoking substitute device in turn affects the experience of a user when using the smoking substitute device. E.g., an increased level of vapour results in an increase in mixing of vapour with nicotine released from the consumable and the tobacco material, respectively, prior to mouth delivery and thus results in a smoother substitute smoking experience. It has been found out, that nicotine levels are generally not greatly affected by different temperatures of the heating element as long as the heating temperature is higher than 170°C, the vaporization temper-

ature of nicotine.

[0030] Also, by varying the temperature of the heating element, the intensity of flavour may be affected. E.g. with higher temperature, more flavour components are released from the aerosol-forming substrate.

[0031] A control element like an actuator or activation switch to start the operation of the smoking substitute device may be provided. The mode of operation may further directly influence a possible battery life and may thus allow the user to tailor the overall handling of the smoking substitute device to one's preference. A single control element may be sufficient to choose a certain mode of operation. As a result of different temperatures of the heating element, a certain smoking substitute consumable may last longer in normal mode or stealth mode and shorter in boost mode or normal mode.

[0032] As mentioned before, the temperature of the heating element may influence the amount of generated visible vapour. Accordingly, the mode of operation may be set upon a certain use situation or use scenario. E.g., using the smoking substitute device outside or inside a closed space, like a car or a room, may require different modes of operation to minimize the impact of the smoking substitute system on non-users.

[0033] Optional features will now be set out. These are applicable singly or in any combination with any aspect of the present disclosure.

[0034] According to an embodiment of the present disclosure, the smoking substitute device may further comprise a main body and a cavity, wherein the cavity may be arranged in the main body, wherein the heating element may be arranged in the cavity, wherein the cavity may be adapted for receiving the smoking substitute consumable and wherein the heating element may be adapted for penetrating the smoking substitute consumable to get into contact with tobacco material located inside the smoking substitute consumable upon insertion of the smoking substitute consumable into the smoking substitute device for heating of the tobacco material.

[0035] The heating element of the smoking substitute device may thus be arranged within the smoking substitute device, in particular within its main body, thus protecting a user from injury by heat or a sharp or pointy edge of the heating element. At the same time, the heating element may easily penetrate the smoking substitute consumable, e.g. to open up the smoking substitute consumable, to get access to the tobacco material located inside. A smoking substitute consumable may thus be easily operable without the risk of a user coming in direct contact with the tobacco material.

[0036] According to a further embodiment of the present disclosure, the smoking substitute device may further comprise a control element operable by a user of the smoking substitute device, wherein the control element is adapted for setting a desired mode of operation.

[0037] According to a further embodiment of the present disclosure, there is provided a smoking substitute device wherein for setting a desired mode of oper-

ation, the control element is actuated by the user of the smoking substitute device and wherein different modes of operation are settable depending on a duration of the actuation of the control element by the user.

[0038] By using a control element like an actuator or an activation switch, a user may easily set a desired mode of operation, e.g. by pressing the control element for a certain duration to activate a certain mode of operation.

[0039] According to a further embodiment of the present disclosure, the desired mode of operation may be settable for the duration of consuming a smoking substitute consumable.

[0040] In other words, a user determines or chooses a desired mode of operation at the beginning of consuming a smoking substitute consumable. E.g., the user may decide to operate the smoking substitute device in normal mode and may thus press the control element for a duration associated with the normal mode. This may result in a defined, e.g. timed heating of the heating element to the temperature linked with the mode of operation and for a certain duration without requiring the user to activate the control element again. Possibly, another press of the control element may terminate the current mode of operation, e.g. when the user decides that a consumable is depleted. Alternatively, the operation may seize after a defined duration, which duration may depend on the set mode of operation.

[0041] According to a further embodiment of the present disclosure, a mode of operation may relate to a heating temperature of the tobacco material during the consumption of the smoking substitute consumable.

[0042] In other words, the heating element may produce a certain target heating temperature to the tobacco material. Setting a desired temperature may affect generation and delivery of visible vapour to a user.

[0043] According to a further embodiment of the present disclosure, the temperature may be in a range between substantially 170°C and 400°C, in particular, wherein in a first mode of operation, the temperature is between substantially 170°C and 300°C and in a second mode of operation, the temperature may be between substantially 250°C and 400°, further in particular, wherein in a first mode of operation, the temperature may be between substantially 225°C and 275°C and in a second mode of operation, the temperature may be between substantially 275°C and 350°C, further in particular, wherein in a first mode of operation, the temperature is substantially 250°C and in a second mode of operation, the temperature is substantially 350°C.

[0044] In particular, the temperature range between approx. 170°C and 350°C may be a preferred temperature range for a heat-not-burn smoking substitute device with 170°C being the vaporization temperature of nicotine, while avoiding substantially exceeding 350°C avoids burning of the tobacco material in the smoking substitute consumable. Choosing defined temperatures between 170°C and 350°C may allow tailoring the smoking experience to the desires of a particular user and may

generally allow the provision of different modes of operation.

[0045] According to a further embodiment of the present disclosure, the smoking substitute device may comprise at least three modes of operation relating to the heating temperature of the tobacco material during the consumption of the smoking substitute consumable, wherein in a first mode of operation, the temperature may be between substantially 170°C and 250°C, in a second mode of operation, the temperature may be between substantially 200°C and 300°C and in a third mode of operation, the temperature may be between substantially 250°C and 400°C, in particular wherein in a first mode of operation, the temperature may be between substantially 170°C and 225°C, in a second mode of operation, the temperature may be between substantially 225°C and 275°C and in a third mode of operation, the temperature may be between substantially 275°C and 375°C, further in particular, wherein in a first mode of operation, the temperature is substantially 170°C, in a second mode of operation, the temperature is substantially 250°C and in a third mode of operation, the temperature is substantially 350°C.

[0046] The provision of three distinct temperatures or three modes of operation may allow the provision of e.g. a stealth mode, a cruise or normal mode, and a boost mode.

[0047] According to a further embodiment of the present disclosure, a mode of operation may relate to an amount of vapour generated during the consumption of the smoking substitute consumable, in particular in a first mode of operation, less vapour may be generated than in a second mode of operation.

[0048] Likewise, the different modes may exhibit different amounts of visible vapour delivered to a user. In particular, less vapour may be generated in a mode of operation having a lower temperature than in a second mode of operation having a higher temperature of the heating element.

[0049] According to a further embodiment of the present disclosure, a mode of operation may be dependent on a type of the smoking substitute consumable.

[0050] Different types of consumables may require different modes of operation or different temperature settings of the heating element. This may in particular be dependent upon the aerosol/releasing material in the smoking substitute consumable, e.g. in case of flavoured, non-nicotine-containing material, a different temperature may be required than with tobacco material containing nicotine.

[0051] According to a further embodiment of the present disclosure, the smoking substitute device may comprise a display element for indicating a mode of operation to the user.

[0052] The display element may e.g. be a light source displaying a certain mode of operation by varying colours. E.g. a first mode of operation may be symbolized by an orange colour whereas a second, higher mode of oper-

ation may be symbolized by a red colour. Other colour combinations are conceivable.

[0053] The skilled person will appreciate that except where mutually exclusive, a feature or parameter described in relation to any one of the above aspects may be applied to any other aspect. Furthermore, except where mutually exclusive, any feature or parameter described herein may be applied to any aspect and/or combined with any other feature or parameter described herein.

Summary of the Figures

[0054] 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 with reference to the accompanying figures, in which:

Figure 1 shows a view of an exemplary embodiment of a smoking substitute device in accordance with the present invention;

Figure 2 shows a schematics of an exemplary embodiment of a smoking substitute device in accordance with the present invention.

Detailed Description of the Figures

[0055] Fig. 1 shows a view of an exemplary embodiment of a smoking substitute device 10, here exemplarily an HNB device 10.

[0056] The HNB device 10 comprises a rod-shaped heating element 12, which projects into a cavity 14 within the main body 16 of the device 10. A smoking substitute consumable 20 may be inserted into the cavity 14 of the main body 12 of the device 10 such that the heating rod 12 penetrates an aerosol-forming substrate, e.g. tobacco material in one outer part, e.g. the lower part of the smoking substitute consumable 20, distal from an outward facing opening 42 of cavity 14. Heating of e.g. reconstituted tobacco in the aerosol-forming substrate is effected by powering the heating element 12, with a power source 18, e.g. a rechargeable battery 18 incorporated in the smoking substitute device 10. As the tobacco is heated, moisture and volatile compounds (e.g. nicotine) within the tobacco and possibly a humectant are released as a vapour and entrained within an airflow generated by inhalation by the user.

[0057] Heating of the tobacco by the heating element 12 may be activated by the user pressing an actuator 26, here exemplarily activation switch 26, on a side surface of the main body 16 of the smoking substitute device 10. Display element 28, here exemplarily a number of LEDs, is arranged in the vicinity of the activation switch 26 on the side surface of main body 16.

[0058] At the bottom of smoking substitute device 10, a charging connector 30 is depicted. The charging con-

connector 30 may be embodied as a standard USB connector, e.g. mini-USB or micro-USB. Preferably, the charging connector 30 is embodied as a symmetrical connector, like a USB-C connector. Alternatively, the charging connector 30 may be embodied as a lightning connector. The charging connector 30 may provide a connection for either energy or data or both.

[0059] A certain mode of operation may result in different temperatures of the heating element 12 and thus different amounts of heat energy provided to the aerosol-forming substrate. Following, the substrate is heated to different temperatures depending on a certain mode of operation. E.g. in a first mode of operation, the aerosol-forming substrate may be heated to 250°C, while in a second mode of operation, the aerosol-forming substrate may be heated to 350°C. Different heat energies provided to the aerosol-forming substrate may result in a different release behaviour of both nicotine and vapour from the aerosol-forming substrate and thus in a different substitute smoking experience to a user.

[0060] Now referring to Fig. 2, which shows a schematics of an exemplary embodiment of a smoking substitute device in accordance with the present invention.

[0061] Smoking substitute device 10 comprises a main body 16 or housing and a power source 18, e.g. a rechargeable battery. Further provided is a control unit 32, which may include a microprocessor. Memory 34 is provided for storing e.g. control instructions for control unit 32 or the microprocessor. Memory 34 is preferably provided as non-volatile memory. Smoking substitute device 10 may further comprise a display element 28, which may be embodied as a single or a plurality of LEDs or organic LEDs. The LEDs are possibly adapted for displaying different colours in accordance with instructions from the control unit 32 and memory 34, depicting different modes of operation with different colours of smoking substitute device 10 or generally different information directed to the user operating the smoking substitute device 10. A control element 26 is provided, e.g. an actuator or activation switch, with which the smoking substitute device may be switched on and off, an operation may be initiated and/or a mode of operation may be set.

[0062] Further, an electrical interface 30 or charging connector 30 is provided, which may be incorporated in the main body 16 and which may include one or more electrical contacts. The electrical interface 30 may be located in, and preferably at the bottom of, an aperture in an end section of the main body 16. Electrical interface 30 may be adapted to be coupled with an external charging station to receive power for charging the power source 18. Alternatively, electrical interface 30 may be embodied as a charging connector 30, which may be a USB or lightning connection. Preferably, the charging connector 30 is embodied as a USB-C connector, which is an example of a symmetrical connector.

[0063] In short and using a different terminology, it is proposed to provide a heat-not-burn device for smoking a consumable. A heating element heats the tobacco ma-

terial in the consumable to a desired temperature, thereby releasing an aerosol containing nicotine for inhalation by a user. The HNB device is arranged to control the temperature of the heating element in a way to be able to provide different temperatures to the tobacco material in the consumable, thereby changing the release properties of the components in the consumable, e.g. nicotine. Different temperatures provide a changed release behaviour of the tobacco material thereby providing a different smoking experience to a user.

[0064] 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.

[0065] 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 scope of the invention.

[0066] 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.

[0067] Any section headings used herein are for organizational purposes only and are not to be construed as limiting the subject matter described.

[0068] 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.

[0069] 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%.

[0070] 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.

[0071] Elements that are described in conjunction with different embodiments may be combined. Reference signs in the claims shall not be construed as limiting the scope of the claims.

[0072] Features of embodiments of the invention are set out in the following clauses. Reference signs in the clauses shall not be construed as limiting the scope of the clauses.

[0073] Clause 1. A smoking substitute device (10), comprising a heating element (12); wherein the smoking substitute device (10) is adapted for receiving a smoking substitute consumable (20); wherein the heating element (12) is adapted for heating the smoking substitute consumable (20); wherein the smoking substitute device (10) comprises at least two modes of operation; and wherein the smoking substitute device (10) is a heat-not-burn smoking substitute device.

[0074] Clause 2. A smoking substitute device (10) according to the preceding clause, further comprising a main body (16); and a cavity (14); wherein the cavity (14) is arranged in the main body (16); wherein the heating element (12) is arranged in the cavity (14); wherein the cavity (14) is adapted for receiving the smoking substitute consumable (20); and wherein the heating element (12) is adapted for penetrating the outer surface of the smoking substitute consumable (20) to get into contact with tobacco material located inside the smoking substitute consumable (20) upon insertion of the smoking substitute consumable (20) into the smoking substitute device (10) for heating of the tobacco material.

[0075] Clause 3. A smoking substitute device (10) according to at least one of the preceding clauses, further comprising a control element (26) operable by a user of the smoking substitute device (10); wherein the control element (26) is adapted for setting a desired mode of operation.

[0076] Clause 4. A smoking substitute device (10) according to the preceding clause, wherein for setting a desired mode of operation the control element (26) is actuated by the user of the smoking substitute device (10); and wherein different modes of operation are settable depending on a duration of the actuation of the control element (26) by the user.

[0077] Clause 5. A smoking substitute device (10) according to at least one of the preceding clauses, wherein a desired mode of operation is settable for the duration of consuming a smoking substitute consumable (20).

[0078] Clause 6. A smoking substitute device (10) according to at least one of the preceding clauses, wherein a mode of operation relates to a heating temperature of

the tobacco material during the consumption of the smoking substitute consumable (20).

[0079] Clause 7. A smoking substitute device (10) according to the preceding clause, wherein the temperature is in a range between substantially 170 °C and 400 °C; in particular, wherein in a first mode of operation, the temperature is between substantially 170 °C and 300 °C and in a second mode of operation the temperature is between substantially 250 °C and 400 °C; further in particular, wherein in a first mode of operation, the temperature is between substantially 225 °C and 275 °C and in a second mode of operation the temperature is between substantially 275 °C and 375 °C; further in particular, wherein in a first mode of operation, the temperature is substantially 250 °C and in a second mode of operation, the temperature is substantially 350 °C.

[0080] Clause 8. A smoking substitute device (10) according to at least one of clauses 7 and 8, wherein the smoking substitute device (10) comprises at least three modes of operation relating to the heating temperature of the tobacco material during the consumption of the smoking substitute consumable (20); wherein in a first mode of operation, the temperature is between substantially 170 °C and 250 °C, in a second mode of operation the temperature is between substantially 200 °C and 300 °C, and in a third mode of operation the temperature is between substantially 250 °C and 400 °C; in particular wherein in a first mode of operation, the temperature is between substantially 170 °C and 225 °C, in a second mode of operation the temperature is between substantially 225 °C and 275 °C, and in a third mode of operation the temperature is between substantially 275 °C and 375 °C; further in particular wherein in a first mode of operation, the temperature is substantially 170 °C, in a second mode of operation the temperature is substantially 250 °C, and in a third mode of operation the temperature is substantially 350 °C.

[0081] Clause 9. A smoking substitute device (10) according to at least one of the preceding clauses, wherein a mode of operation relates to an amount of vapour generated during the consumption of the smoking substitute consumable (20), in particular wherein in a first mode of operation less vapour is generated than in a second mode of operation.

[0082] Clause 10. A smoking substitute device (10) according to the preceding clause, further comprising a display element (28) for indicating a mode of operation to the user.

[0083] Clause 11. A smoking substitute system, comprising a smoking substitute device (10) according to at least one of the preceding clauses and a smoking substitute consumable (20).

[0084] Clause 12. A method of using the smoking substitute system according to the preceding clause, the method comprising: inserting the smoking substitute consumable (20) into the smoking substitute device (10); and heating the smoking substitute consumable (20) using the heating element (12).

[0085] Clause 13. A method according to the preceding clause, the method further comprising: inserting the smoking substitute consumable (20) into the cavity (14) within the main body (16) of the smoking substitute device (10); and penetrating the smoking substitute consumable (20) with the heating element (12) upon insertion of the smoking substitute consumable (20).

List of reference numerals

[0086]

10 smoking substitute device/HNB device
 12 heating element
 14 cavity
 16 main body
 18 power source/battery

 20 smoking substitute consumable
 26 control element/actuator/activation switch
 28 display element

 30 electrical interface/charging connector
 32 control unit/microprocessor
 34 memory

 42 outward facing opening of cavity

Claims

1. A smoking substitute device (10), comprising

a heating element (12); and
 a control element (26) operable by a user of the smoking substitute device (10);
 wherein the smoking substitute device (10) is adapted for receiving a smoking substitute consumable (20);
 wherein the heating element (12) is adapted for heating the smoking substitute consumable (20);
 wherein the smoking substitute device (10) comprises at least two modes of operation;
 wherein the control element (26) is adapted for setting a desired mode of operation;
 wherein the smoking substitute device (10) further includes a display element (28) for indicating a mode of operation to the user; and
 wherein the smoking substitute device (10) is a heat-not-burn smoking substitute device.

2. A smoking substitute device (10) according to the preceding claim, further comprising

a main body (16); and
 a cavity (14);
 wherein the cavity (14) is arranged in the main

body (16);
 wherein the heating element (12) is arranged in the cavity (14);
 wherein the cavity (14) is adapted for receiving the smoking substitute consumable (20); and
 wherein the heating element (12) is adapted for penetrating the outer surface of the smoking substitute consumable (20) to get into contact with tobacco material located inside the smoking substitute consumable (20) upon insertion of the smoking substitute consumable (20) into the smoking substitute device (10) for heating of the tobacco material.

3. A smoking substitute device (10) according to at least one of the preceding claims,

wherein for setting a desired mode of operation the control element (26) is actuated by the user of the smoking substitute device (10); and
 wherein different modes of operation are settable depending on a duration of the actuation of the control element (26) by the user.

4. A smoking substitute device (10) according to at least one of the preceding claims, wherein a desired mode of operation is settable for the duration of consuming a smoking substitute consumable (20).

5. A smoking substitute device according to at least one of the preceding claims, wherein the device is configured to seize operation after a defined duration that depends on the mode of operation.

6. A smoking substitute device (10) according to at least one of the preceding claims, wherein a mode of operation relates to a heating temperature of the tobacco material during the consumption of the smoking substitute consumable (20).

7. A smoking substitute device (10) according to the preceding claim,

wherein the temperature is in a range between substantially 170 °C and 400 °C; in particular, wherein in a first mode of operation, the temperature is between substantially 170 °C and 300 °C and in a second mode of operation the temperature is between substantially 250 °C and 400 °C; or,
 wherein in a first mode of operation, the temperature is between substantially 225 °C and 275 °C and in a second mode of operation the temperature is between substantially 275 °C and 375 °C; or,
 wherein in a first mode of operation, the temper-

ature is substantially 250 °C and in a second mode of operation, the temperature is substantially 350 °C.

8. A smoking substitute device (10) according to at least one of claims 6 and 7, 5

wherein the smoking substitute device (10) comprises at least three modes of operation relating to the heating temperature of the tobacco material during the consumption of the smoking substitute consumable (20);
 wherein in a first mode of operation, the temperature is between substantially 170 °C and 250 °C, in a second mode of operation the temperature is between substantially 200 °C and 300 °C, and in a third mode of operation the temperature is between substantially 250 °C and 400 °C; or
 wherein in a first mode of operation, the temperature is between substantially 170 °C and 225 °C, in a second mode of operation the temperature is between substantially 225 °C and 275 °C, and in a third mode of operation the temperature is between substantially 275 °C and 375 °C; or
 wherein in a first mode of operation, the temperature is substantially 170 °C, in a second mode of operation the temperature is substantially 250 °C, and in a third mode of operation the temperature is substantially 350 °C. 10 15 20 25 30

9. A smoking substitute device (10) according to at least one of the preceding claims, 35

wherein a mode of operation relates to an amount of vapour generated during the consumption of the smoking substitute consumable (20), in particular
 wherein in a first mode of operation less vapour is generated than in a second mode of operation. 40

10. A smoking substitute device (10), according to at least one of the preceding claims, wherein the display element (28) comprises one or more LEDs. 45

11. A smoking substitute device (10) according to claim 10, wherein the one or more LEDs are arranged in the vicinity of the control element (26) on a side surface of the device (10). 50

12. A smoking substitute device (10) according to claim 10 or 11, wherein the one or more LEDs are configured to depict different modes of operation by providing different information in accordance with each mode, optionally by displaying different colours in accordance with each mode. 55

13. A smoking substitute device (10) according to at least one of the preceding claims, wherein the control element (26) is further adapted for additionally switching on and off the smoking substitute device.

14. A smoking substitute system, comprising a smoking substitute device (10) according to at least one of the preceding claims and a smoking substitute consumable (20).

15. A method of using the smoking substitute system according to the preceding claim, the method comprising:

inserting the smoking substitute consumable (20) into the smoking substitute device (10); and heating the smoking substitute consumable (20) using the heating element (12);

optionally wherein the method further comprises:

inserting the smoking substitute consumable (20) into the cavity (14) within the main body (16) of the smoking substitute device (10); and penetrating the smoking substitute consumable (20) with the heating element (12) upon insertion of the smoking substitute consumable (20).

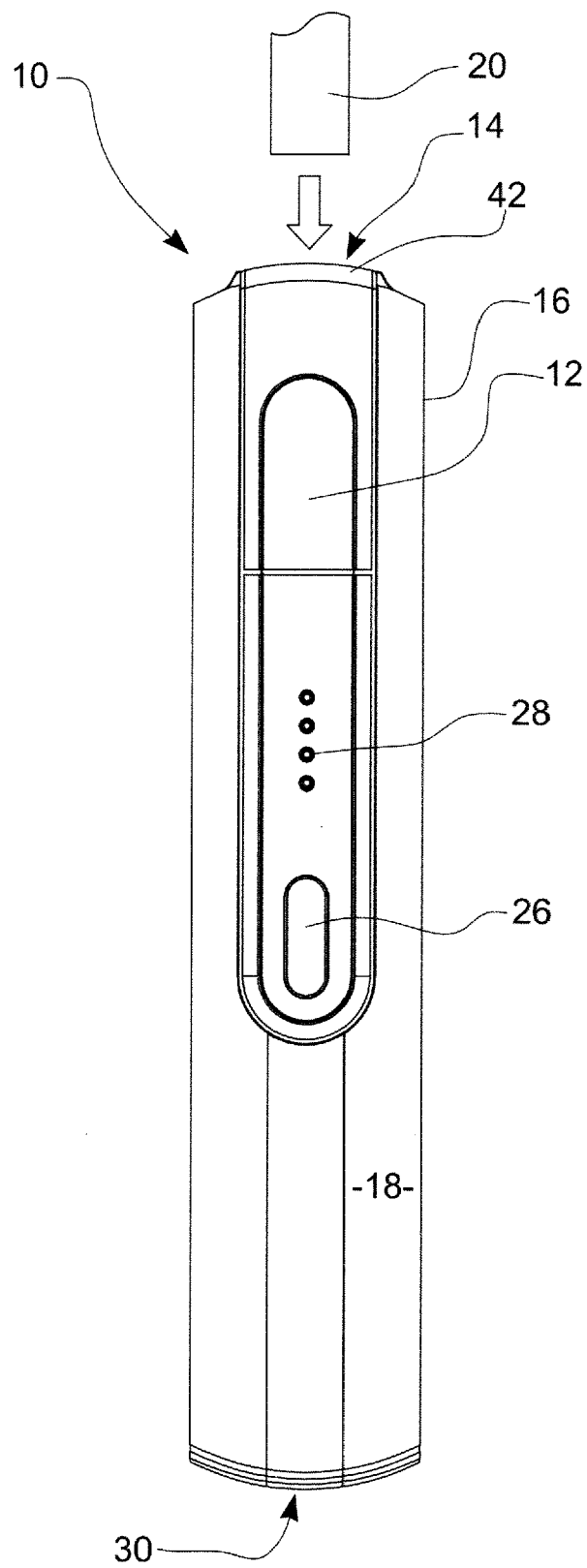


FIG. 1

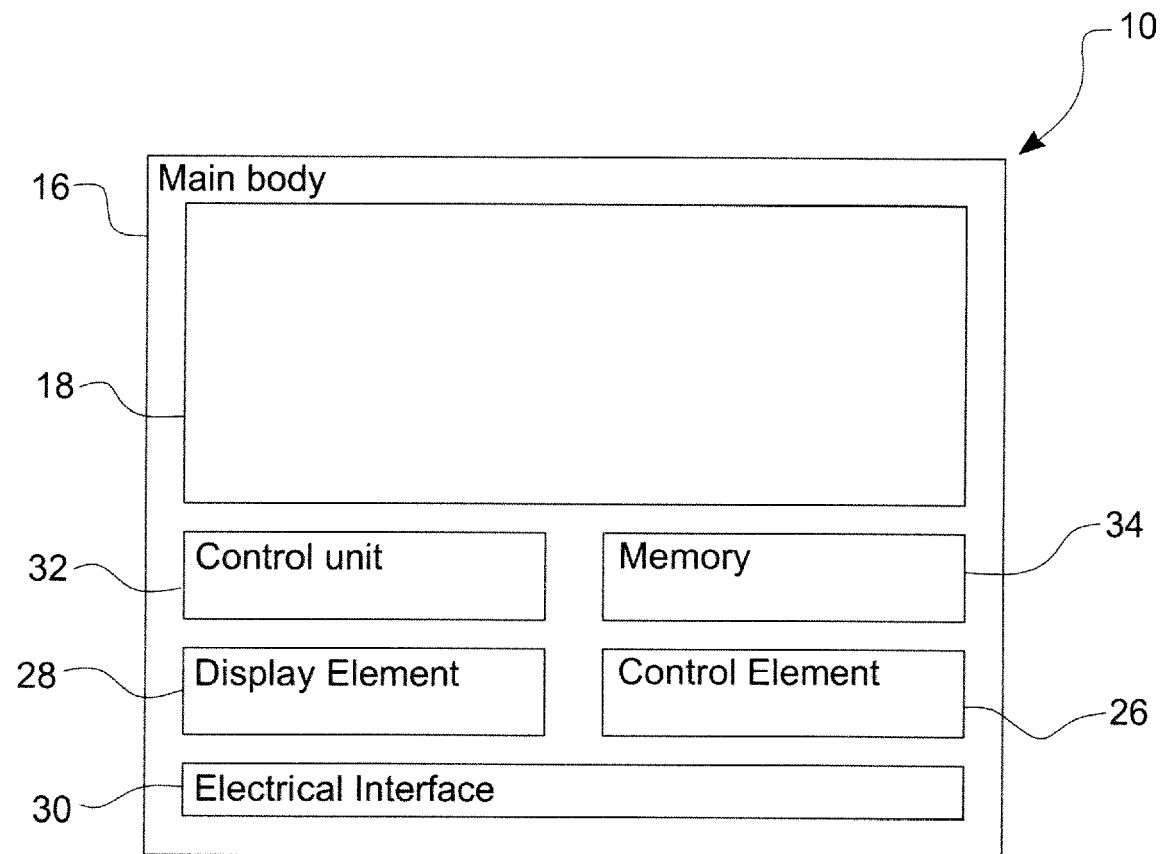


FIG. 2

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- GB 1815522 A [0001]