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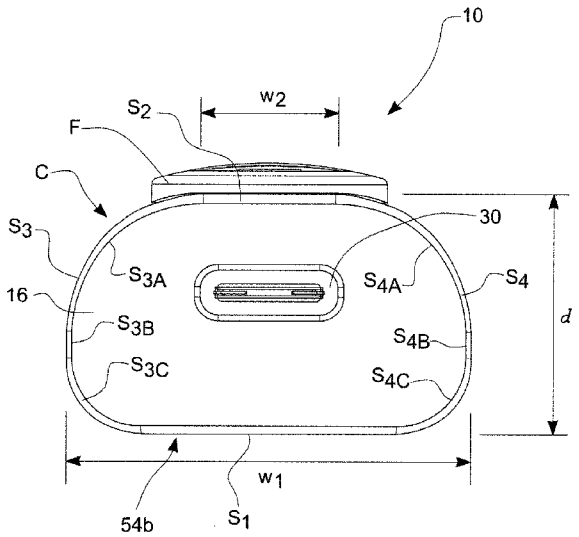

FIG. 2A

(57) Abstract: Smoking substitute device and system 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 device with an improved housing design.A smoking substitute device (10), comprising a main body (16) having a length (l) and a transverse cross-section (c), wherein the cross-section (c) comprises two at least partially parallel, substantially linear sides (S1, S2) of different width (w1,w2), wherein the cross-section (c) further comprises two sides (S3,S4) having a curved shape, wherein the curved sides (S3,S4) connect with the linear sides (S1, S2) for forming the cross-section.

WO 2020/064604 A1

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Smoking substitute device and system

This application claims priority to GB 1815525.9 filed 24 September 2018, the contents and elements of which are herein incorporated by reference for all purposes.

Field of the Disclosure

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 device with an improved housing design.

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.

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.

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 (or “substitute smoking 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.

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.

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

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 of different categories of smoking substitute systems, each utilising a different smoking substitute approach.

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.

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.

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.

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.

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.

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

Summary of the Disclosure

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.

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. In particular, the present disclosure relates to a smoking substitute device with an improved housing design.

According to a first aspect of the first disclosure, there is provided a smoking substitute device comprising a main body having a length and a transverse cross-section, wherein the cross-section comprises at least two partially parallel, substantially linear sides of different width, wherein the cross-section further comprises two sides having a curved shape and wherein the curved sides connect with the linear sides for forming the cross-section.

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.

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.

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

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.

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.

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.

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.

In accordance with the present disclosure, the smoking substitute device comprises a main body having a length and a transverse cross-section. The cross-section comprises a plurality of sides of different shapes forming the cross-section. In its most basic form, the cross-section comprises two at least partially parallel, substantially linear sides of different width, which are joined by two further sides having a curved shape and connecting the ends of the two substantially linear sides.

Substantially linear in the context of this disclosure may be understood as linear or flat. However, also a slight curvature having a comparably large radius of curvature falls within the meaning of “substantially linear”. In other words, substantially linear may be understood as having a radius of curvature which results is an almost linear or flat element, given the particular dimensions of the width of the substantially linear sides. An according radius of curvature may e.g. be in the range of 500 cm to 1000 cm and therefore may be almost unnoticeable to a user of a smoking substitute device.

In the context of the further description, substantially linear will be used in light of this definition, while the examples assume the substantially linear sides to be linear or flat sides.

Even in case of the substantially linear sides having a radius of curvature, the two substantially linear sides may be arranged to be parallel to one another, by comprising the substantially identical radius of curvature. They may be partially parallel in that they may be parallel in an area where the two widths of the substantially linear sides overlap in the cross-section. Since the two substantially linear sides are of a different width, the

remaining at least two sides connecting the substantially linear sides are preferably embodied as sides having a curved shape. In particular, the shape of the two sides is such that they provide a continuous transition from one substantially linear side to the other substantially linear side without bends or edges. This provides a user holding the smoking substitute device with an improved holding experience by providing a smooth and rounded continuous surface.

At the same time, the two substantially linear sides provide a preferred means to allow placement of the smoking substitute device on a substantially flat surface like e.g. a table top. Thus, the substantially linear sides provide a surface for placing the smoking substitute device, which effectively prevents rolling or sliding off. Likewise, in case the smoking substitute device is put on one of the two curved sides, it turns substantially without external force until a position is reached where it is again in contact with the substantially linear sides and the object where it is placed upon.

In case the substantially linear sides comprise a radius of curvature, one side of the substantially linear sides may be concave while the other side may be convex thereby providing a preferred surface for holding the smoking substitute device by conforming to the surface of fingers of a hand. E.g., a thumb may preferably be situated on the concave surface while at least one of the remaining fingers of the same hand is located on the convex surface. The aforementioned rolling resistance is still provided in case the substantially linear sides comprise a radius of curvature in accordance with the present disclosure, in particular if it is a substantially large radius of curvature.

Likewise, flat substantially linear sides or also sides with a radius of curvature, may provide an improved experience to a user in case the smoking substitute device is inserted into a pocket, e.g. a jacket pocket, a shirt breast pocket or a trouser pocket, by conforming of one of the substantially linear sides with the surface of the body underneath the clothing.

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

According to an embodiment of the present disclosure, the curved sides may be non-circular sides.

Non-circular curved sides may provide a preferred means of providing a transition from one of the substantially linear sides to the other of the substantially linear sides due to the different width of the substantially linear sides. Also, a non-circular shape of the curved sides may provide an improved user experience when holding or handling the device. E.g., in case the smoking substitute device is held not between the thumbs but within the full hand, e.g. one of the substantially linear sides resting against the palm of the closed hand, providing non-linear curved sides provides an even further improved holding experience.

According to a further embodiment of the present disclosure, one of the substantially linear sides may be a front side of the smoking substitute device and the other one of the substantially linear sides may be a back side of the smoking substitute device.

Providing the substantially linear sides as front and back sides provides an improved positioning, e.g. of the hand of a user when operating the device. In particular together with the different width of the substantially linear sides, a user of the smoking substitute device may operate the device without actually looking at the device. In other words, the proposed shape allows a user to feel the orientation of the device in one's hand thereby providing an increased user experience and ease of use.

According to a further embodiment of the present disclosure, the front side of the smoking substitute device may comprise at least one of a display element for indicating a mode of operation and a control element for controlling operation of the smoking substitute device.

When a user is operating the smoking substitute device, the shape of the cross-section allows easy determination of a correct positioning or placement of the smoking substitute device, thereby providing an automatic correct alignment of the front side of the smoking substitute device with a regular holding position so that the control element, the display element or both are arranged in the direction pointing to the user for ease of operation.

According to a further embodiment of the present disclosure, the smoking substitute device may further comprise a front face element, wherein at least one of the display element and the control element may be arranged on the front face element and wherein the front face element may in particular protrude from the front side.

In particular a protruding front face element provides haptic feedback to a user for correctly positioning the device during use. Using a dedicated front face element, which may be separate from the main body of the smoking substitute device, allows the use of the identical main body design with different front face elements, thereby providing an improved way of manufacturing a variety of smoking substitute devices.

According to a further embodiment of the present disclosure, the curved sides each may comprise a plurality of curved subsections, wherein each curved side may comprise two curved subsections or wherein each curved side may comprise two curved subsections and a substantially linear subsection arranged between the curved subsections.

Such an arrangement provides a main body of the smoking substitute device built from a plurality of separate side elements, allowing easy manufacturing of the smoking substitute device and facilitates repair in case of damage or defect.

According to a further embodiment of the present disclosure, the smoking substitute device may comprise a first end section and a second end section, where the end sections may be non-linear in shape, in particular may comprise a curvature.

In other words, the end sections may be non-flat or non-linear to the extent that the smoking substitute device may not be positioned upright on either end section. This effectively prevents the positioning of the smoking substitute device in a position with reduced stability, thereby preventing tumbling of the smoking substitute device, which could result in damage to the smoking substitute device.

According to a further embodiment of the present disclosure, the length of the smoking substitute device may be in the range of 5 cm to 20 cm, in particular in the range of 7 cm to 15 cm, further in particular in the range of 10 cm to 16 cm, further in particular in a range of 12 cm to 13 cm, further in particular substantially 12.7 cm.

According to a further embodiment of the present disclosure, the first width may be in the range of 1 to 3 cm, in particular in the range of 1.2 cm to 2.5 cm, further in particular in the range of 1.3 cm to 2 cm, further in particular in the range of 1.4 cm to 1.6 cm, further in particular substantially 1.5 cm.

According to a further embodiment of the present disclosure, the second width may be in the range of 0.5 cm to 1.5 cm, in particular in the range of 1.6 cm to 1.2 cm, further in particular in the range of 0.65 cm to 1 cm, further in particular in the range of 0.7 cm to 0.85 cm, further in particular substantially 0.73 cm.

According to a further embodiment of the present disclosure, the width of the smoking substitute device may be in the range of 1 cm to 5 cm, in particular in the range of 1.5 cm to 4 cm, further in particular in the range of 2 cm to 3 cm, further in particular in the range of 2.2 cm to 2.6 cm, further in particular substantially 2.4 cm.

According to a further embodiment of the present disclosure a depth of the smoking substitute device may be in the range of 0.5 cm to 3 cm, in particular in the range of 0.8 cm to 2.5 cm, further in particular in the range of 1 cm to 2.2 cm, further in particular in the range of 1.3 cm to 2 cm, further in particular substantially 1.6cm.

According dimensions of the smoking substitute device provide a device, which is easy to hold and operate and additionally is of such a size that may conveniently be carried in clothing, e.g. pocketed appropriately, without unduly burdening a user or carrier and in particular without visual impact on the appearance of a carrier when pocketed.

According to a further embodiment of the present disclosure, the two substantially linear sides may comprise a radius of curvature in the range of 10 cm to 1000 cm, in particular in the range of 100 cm and 1000 cm, further in particular in the range of 500 cm and 1000 cm.

An according radius of curvature provides only a minor curvature in the substantially linear sides, in particular without impacting the actual visual appearance of a curved side. Further, a holding experience may be improved by providing a slight curvature, thus a comparably large radius of curvature, in the two substantially linear sides.

According to a further embodiment of the present disclosure, one of the two substantially linear sides may be concavely shaped and the other one of the two substantially linear sides may be convexly shaped, in particular wherein the two substantially linear sides may comprise a curvature with a substantially identical circle centre.

Substantially linear sides which are accordingly shaped may provide an improved holding experience to a user and may further improve pocketing of the smoking substitute device due to an improved resting against a body surface within the pocket.

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

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 an exemplary embodiment of a smoking substitute device in accordance with the present invention;

Figures 2A, B show a cross-section of a smoking substitute device in accordance with the present invention; and

Figure 3 shows a schematics of an exemplary embodiment of a smoking substitute device in accordance with the present disclosure.

Detailed Description of the Figures

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

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.

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.

At the bottom of smoking substitute device 10, a charging connector 30 is depicted. The charging connector 30 may be embodied as a standard USB connector, e.g. mini-USB or micro-USC. Preferably, the charging connector 30 is embedded 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.

The smoking substitute device 10 comprises a length l, and further has a first end section 54a and a second end section 54b.

Now referring to Fig. 2A, a cross-sectional view of the transverse cross-section of the smoking substitute device 10 is depicted.

The main body 16 comprises two at least partially parallel, substantially linear sides S1, S2 which are arranged on opposite sides of the cross-section. Side S1 comprises width w1 of the cross-section width w of the smoking substitute device 10/ the main body 16. Side S2 comprises width w2 of the cross-section width w.

Exemplary, width w1 may be twice the width w2 while the width w may be three times the width w2. The smoking substitute device further comprises a depth d and a length l, as depicted in Fig. 1. The view in Figure 2A indeed is the view on the cross-section c from the second end 54b, since electrical interface 30 is visible, e.g. a symmetrical connector like a USB-C or lightning connector.

The curved sides are depicted as non-circular. Indeed, the curved sides S3, S4 in Fig. 2A each comprise exemplarily three subsections S3A, S3B, S3C and S4A, S4B, S4C. As can be taken from Fig. 2A, subsections S3A, S3C, S4A and S4C are curved subsections, while subsections S3B and S4B are substantially linear subsections in accordance with the definition of substantially linear as used in this disclosure. It is likewise conceivable to extend subsections S3A, S3C, and S4A, S4C, thereby not requiring subsections S3B and S4B. Each of the subsections S3A, S3C, S4A, S4C are not required to correspond to a defined or uniform radius of curvature. However, as may be taken from Fig. 2A, the individual subsections of sides S3 and S4 as well as the two substantially linear sides S1 and S2 are shaped/curved in a way to provide a substantially continuous transition of the overall surface of the smoking substitute device 10, without any bends or edges, thereby improving a holding experience of a user. One of the substantially linear sides S1, S2 in embodied as a front side S2, while the other side is embodied as a back side S1 of the smoking substitute device 10.

An additional front face element F is provided in Fig. 2A, which may substantially be attached to the outer surface, or rather may be incorporated into the outer surface of the smoking substitute device, thereby providing means for variation of a front face element without the necessity to vary the main body of the smoking substitute device 10 itself. The front face element F may comprise a display element, a control element or both. It may further comprise additional elements like a second display element or further control elements.

Now referring to Fig. 2B, an exemplary holding position of the smoking substitute device 10 is depicted.

As can be taken from Fig.2B, a user of the smoking substitute device may conveniently hold the smoking substitute device 10 between the fingers with the thumb resting on one of the substantially linear sides, in Fig. 2B exemplary the substantially linear side S1, e.g. the front side, while some or all of the remaining fingers rest against the other one of the substantially linear sides, in Fig. 2B exemplary linear side S2, e.g. the back side. For ease of understanding, the front face element F is not depicted in Fig. 2B. The User may e.g. hold the smoking substitute device 10 in a region below the front face element F.

Not depicted in Fig. 2B but likewise conceivable is a preferred mode of holding the smoking substitute device with the complete hand of a user with, e.g. one substantially linear side resting against the palm of the user while some or all of the other fingers, possibly except the thumb, are used for holding the smoking substitute device10 on the opposite of the two substantially linear sides.

Now referring to Fig. 3, which shows a schematics of an exemplary embodiment of a smoking substitute device in accordance with the present invention.

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.

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.

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 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.

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

List of reference numerals

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
54a,b	first, second end section
c	cross-section
d	depth
l	length
w1,2	first, second width
S1,2,3,4	first, second, third, fourth side
F	Front face element

Claims:

1. A smoking substitute device (10), comprising
a main body (16) having a length (l) and a transverse cross-section (c);
wherein the cross-section (c) comprises two at least partially parallel, substantially linear sides (S1, S2) of different width (w1,w2);
wherein the cross-section (c) further comprises two sides (S3,S4) having a curved shape; and
wherein the curved sides (S3,S4) connect with the linear sides (S1, S2) for forming the cross-section.

2. A smoking substitute device (10) according to the preceding claim,
wherein the curved sides (S3,S4) are non-circular.

3. A smoking substitute device (10) according to at least one of the preceding claims,
wherein one of the substantially linear sides (S1, S2) is a front side (S2) of the smoking substitute device (10); and
wherein the other one of the substantially linear sides (S1, S2) is a back side (S1) of the smoking substitute device (10).

4. A smoking substitute device (10) according to the preceding claim, the front side (S2) comprising at least one of
a display element (28) for indicating a mode of operation, and
a control element (26) for controlling operation of the smoking substitute device (10).

5. A smoking substitute device (10) according to the preceding claim, further comprising
a front face element (F);
wherein at least one of the display element (28) and the control element (26) are arranged on the front face element (F); and
wherein the front face element (F) protrudes from the front side (S1).

6. A smoking substitute device (10) according to at least one of the preceding claims,
wherein the curved sides (S3,S4) each comprise a plurality of subsections (S3a, S3b, S3c,S4a, S3b, S3c);
wherein each curved side (S3,S4) comprises two curved subsections (S3a, S3c,S4a, S3c); or
wherein each curved side (S3,S4) comprises two curved subsections (S3a, S3c,S4a, S3c) and a substantially linear subsection (S3b,S4b) arranged between the curved subsections (S3a, S3c,S4a, S3c).

7. A smoking substitute device (10) according to at least one of the preceding claims, further comprising
a first end section (54a) and a second end section (54b),
wherein the end sections (54a,b) are non-linear in shape, in particular comprise a curvature.

8. A smoking substitute device (10) according to at least one of the preceding claims, wherein the length (l) is in the range of 5cm to 20cm, in particular in the range of 7cm to 15cm, further in particular in the range of 10cm to 15cm, further in particular in the range of 12cm to 13cm, further in particular substantially 12.7cm.

9. A smoking substitute device (10) according to at least one of the preceding claims, wherein the first width (w1) is in the range of 1 cm to 3 cm, in particular in the range of 1.2 cm to 2.5 cm, further in particular in the range of 1.3 cm to 2 cm, further in particular in the range of 1.4 cm to 1.6 cm, further in particular substantially 1.5 cm.

10. A smoking substitute device (10) according to at least one of the preceding claims, wherein the second width (w2) is in the range of 0.5 cm to 1.5 cm, in particular in the range of 0.6 cm to 1.2 cm, further in particular in the range of 0.65 cm to 1 cm, further in particular in the range of 0.7 cm to 0.85 cm, further in particular substantially 0.73 cm.

11. A smoking substitute device (10) according to at least one of the preceding claims, wherein a width (w) of the smoking substitute device (10) is in the range of 1 cm to 5 cm, in particular in the range of 1.5 cm to 4 cm, further in particular in the range of 2 cm to 3 cm, further in particular in the range of 2.2 cm to 2.6 cm, further in particular substantially 2.4 cm.

12. A smoking substitute device (10) according to at least one of the preceding claims, wherein a depth (d) of smoking substitute device (10) is in the range of 0.5 cm to 3 cm, in particular in the range of 0.8 cm to 2.5 cm, further in particular in the range of 1 cm to 2.2 cm, further in particular in the range of 1.3 cm to 2 cm, further in particular substantially 1.6 cm.

13. A smoking substitute device (10) according to at least one of the preceding claims, wherein the two substantially linear sides (S1, S2) have a radius of curvature in the range of 10 cm and 1000 cm, in particular in the range of 100 cm and 1000 cm, further in particular in the range of 500 cm and 1000 cm;

14. A smoking substitute device (10) according to the preceding claim, wherein one of the two substantially linear sides (S1, S2) is concavely shaped and the other one of the two substantially linear sides (S1, S2) is convexly shaped; in particular wherein the two substantially linear sides (S1, S2) comprise a curvature with a substantially identical circle centre.

15. 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).

16. 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).

17. A method according to the preceding claim, 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).

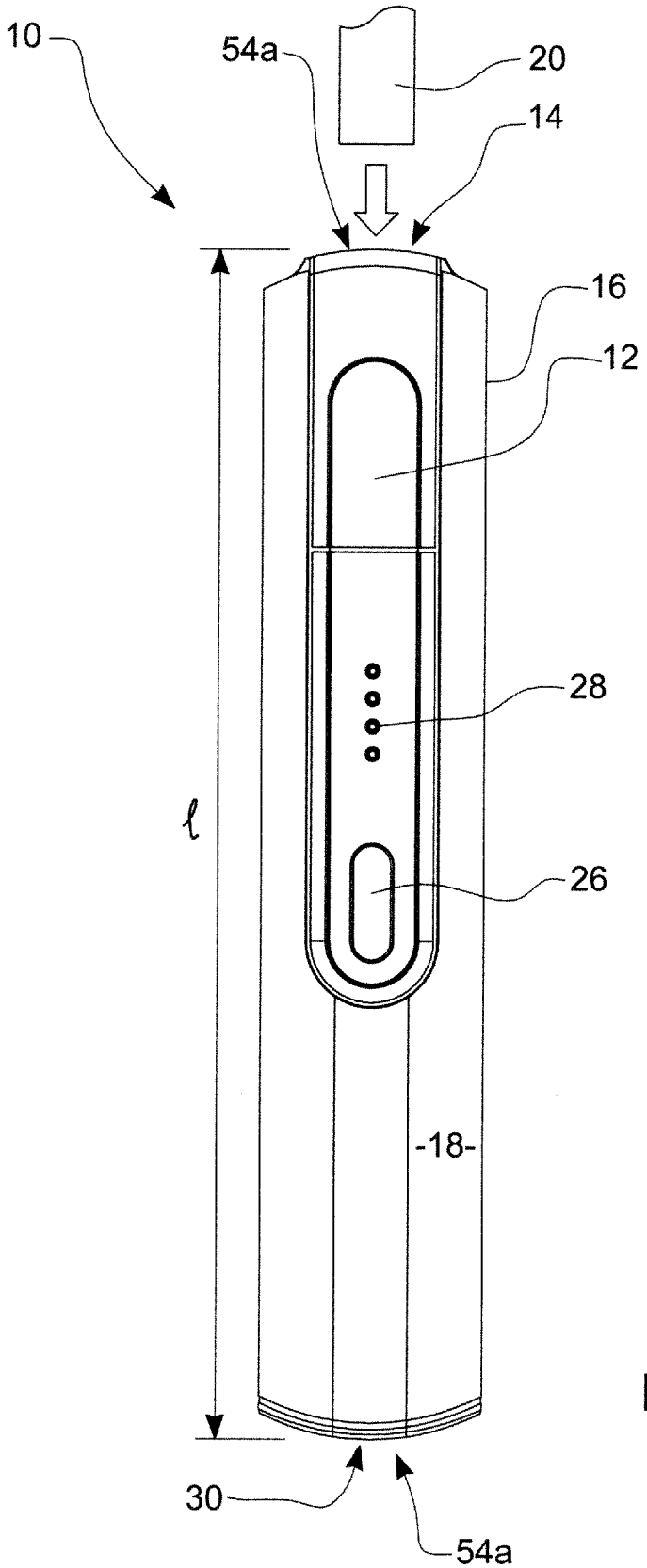

FIG. 1

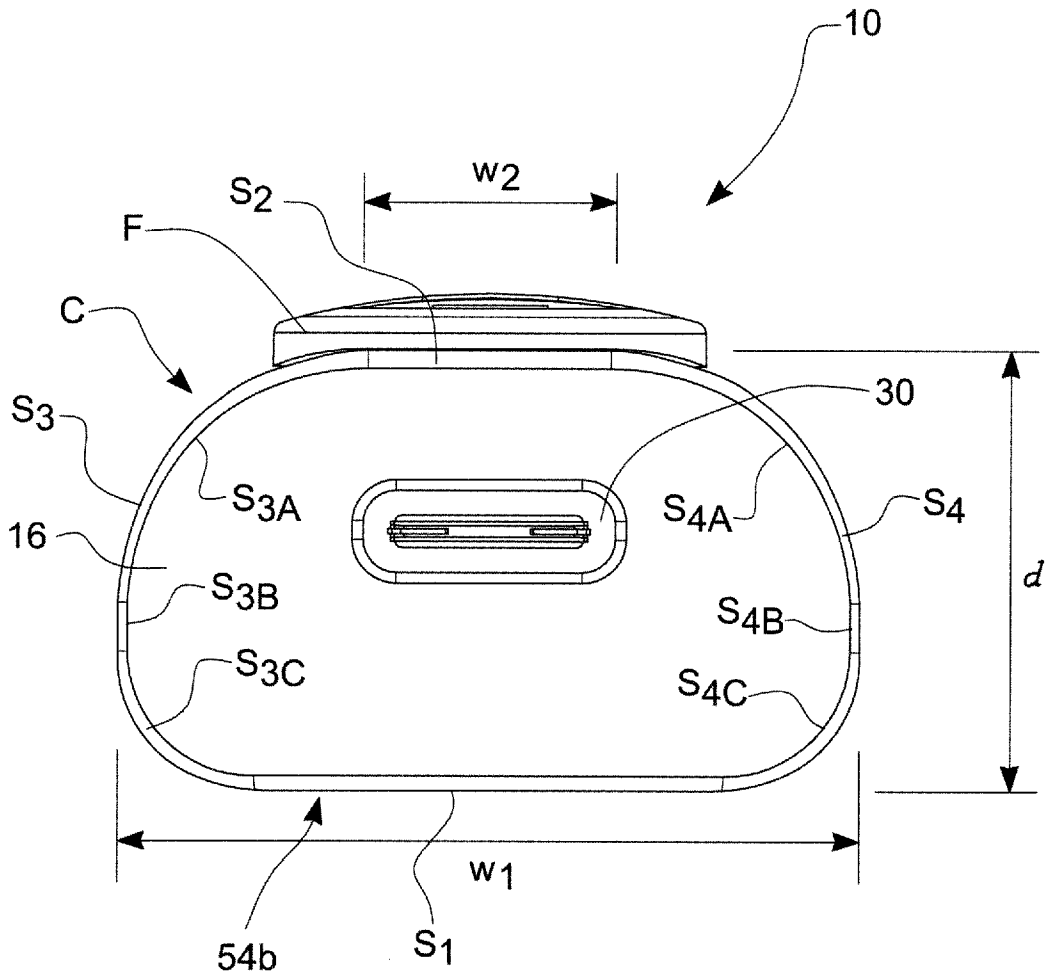

FIG. 2A

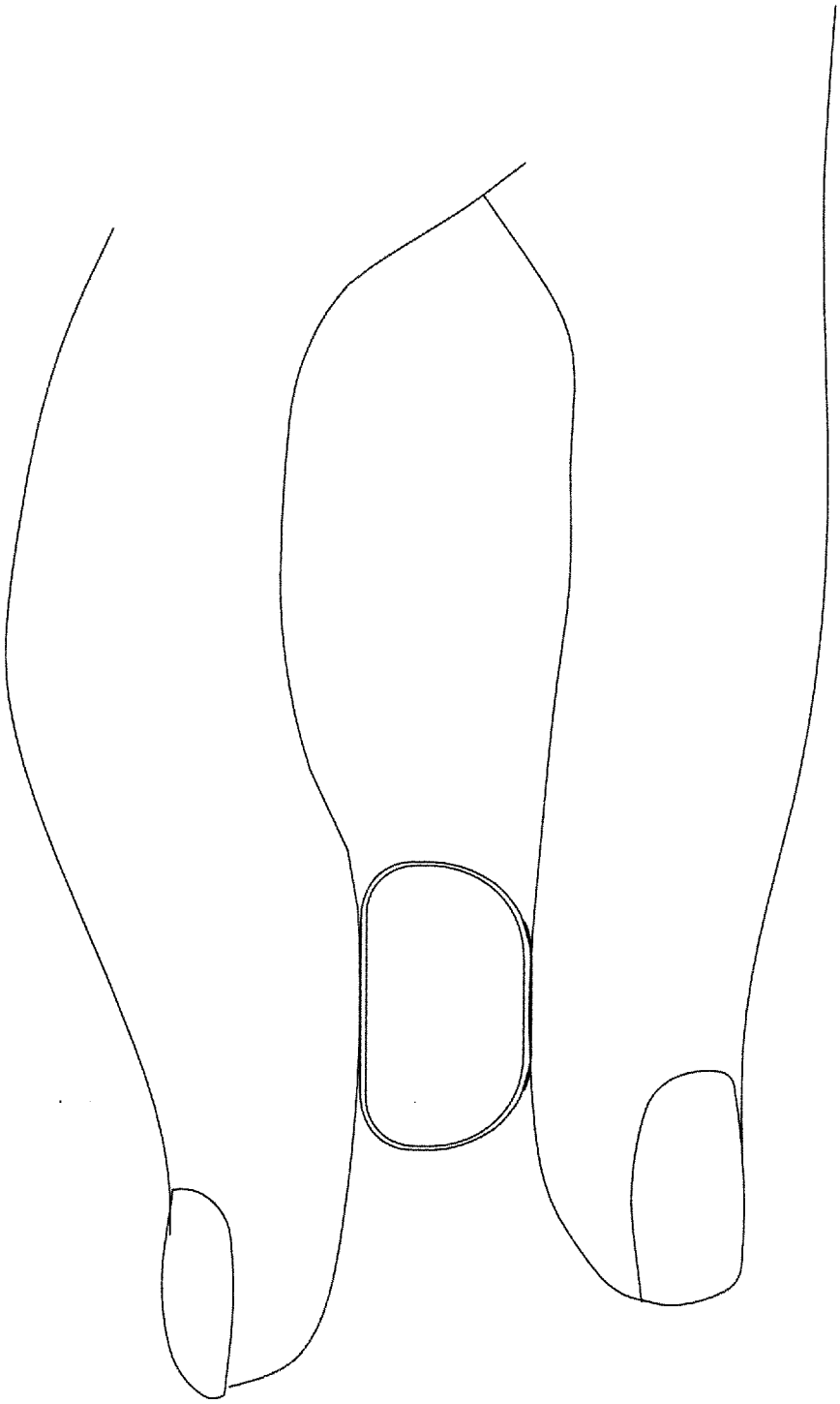

FIG. 2B

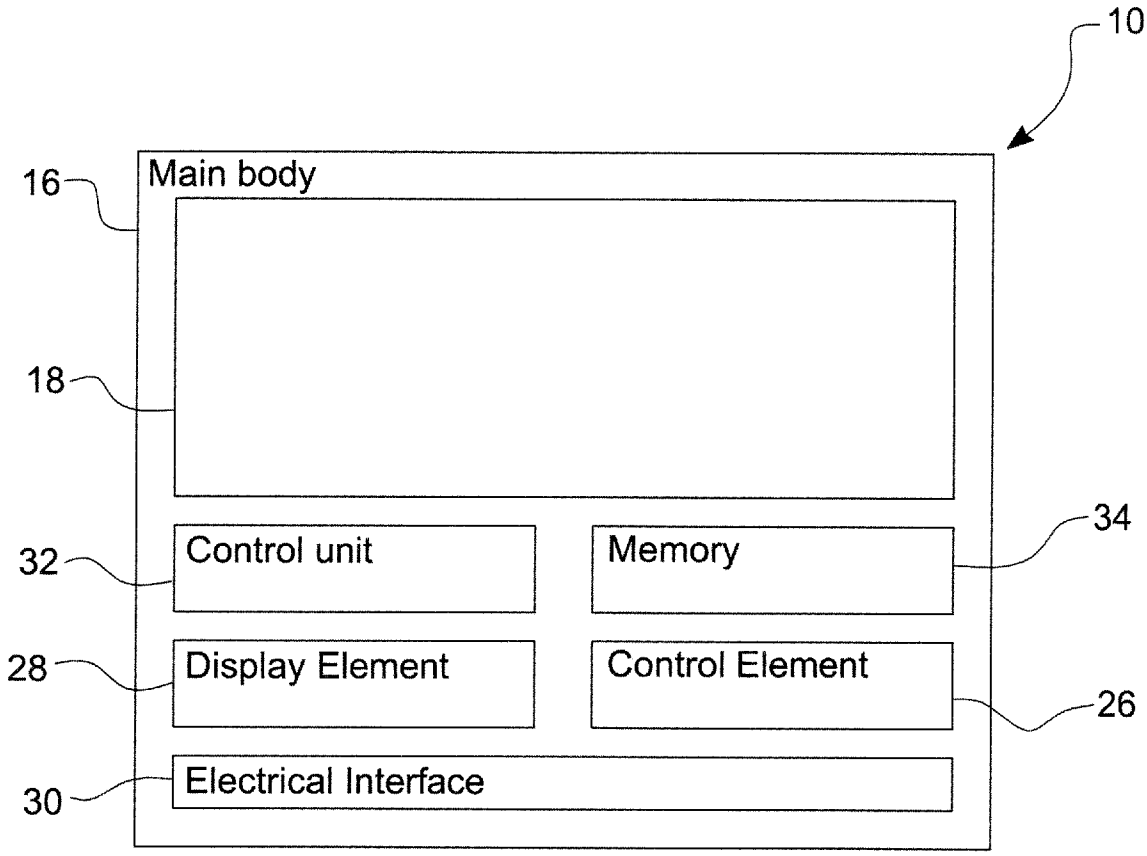
10
16
Main body
18
32
Control unit
Memory
34
28
Display Element
Control Element
26
30
Electrical Interface

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2019/075480

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24F47/00
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

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

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X	WO 2013/102613 A2 (PHILIP MORRIS PROD [CH]) 11 July 2013 (2013-07-11) page 3, line 14 - page 5, line 36; figures 1-7	1-17
X	US 2015/128967 A1 (ROBINSON ALEXANDER [US] ET AL) 14 May 2015 (2015-05-14) paragraph [0029] - paragraph [0034]; figures 1-12	1-17
A	US D 788 362 S1 (QIU WEIHUA [CN]) 30 May 2017 (2017-05-30) figures 1-7	1-17
A	US D 753 338 S1 (CHEN JIATAI [CN]) 5 April 2016 (2016-04-05) figures 1-7	1-17

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
2 December 2019	12/12/2019

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1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2019/075480

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