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(54) **AEROSOL PROVISION DEVICE**

(57) Aspects disclosed herein include an aerosol provision system comprising an aerosol provision device; and a power provision unit configured for charging or electrically powering the aerosol provision device, comprising a longitudinal cavity configured for receiving and partly enclosing the aerosol provision device; wherein at least one of an inner surface of the cavity facing and contacting the aerosol provision device when the aerosol provision device is received in the cavity and an outer surface of the aerosol provision device facing and contacting the cavity when the aerosol provision device is received in the cavity is at least partly provided as a structured surface comprising structuring elements.

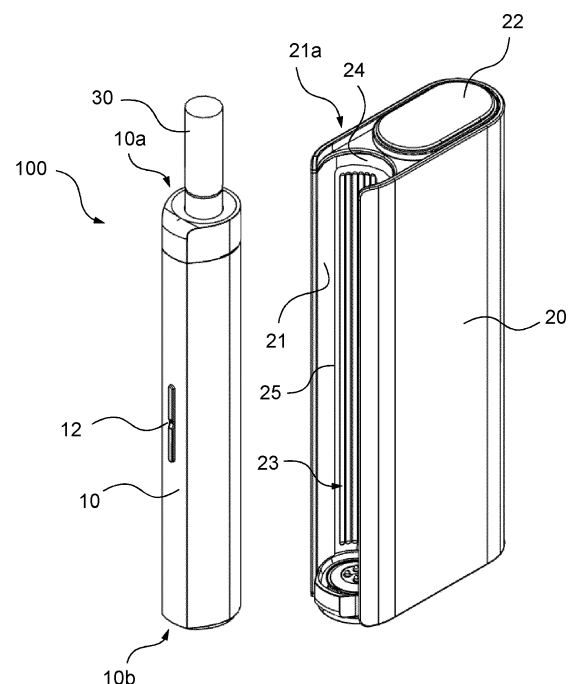


Fig. 4

Description

FIELD

[0001] The present disclosure relates to the field of providing aerosols. In particular, the present disclosure relates to an aerosol provision system. The present disclosure also relates to an aerosol provision device and a power provision unit for an aerosol provision system as well as to a method of generating an aerosol.

BACKGROUND

[0002] Smoking items such as cigarettes, cigars and the like traditionally burn tobacco during use, producing tobacco smoke. Efforts are being made to create alternatives to such items. In this regard, it may be envisaged in particular to heat, but not burn, a suitable material to release certain compounds, particularly in an inhalable aerosol. A suitable material may or may not contain tobacco and may or may not contain nicotine. Such a material may, e.g., be provided in a cylindrical unit or, more generally, a consumable comprising an aerosol generating material.

SUMMARY

[0003] According to an aspect, there is provided an aerosol provision system comprising:

an aerosol provision device for generating aerosol from aerosol generating material; and

a power provision unit configured for charging or electrically powering the aerosol provision device, comprising a longitudinal cavity configured for receiving and partly enclosing the aerosol provision device;

wherein at least one of an inner surface of the cavity facing and contacting the aerosol provision device when the aerosol provision device is received in the cavity and an outer surface of the aerosol provision device facing and contacting the cavity when the aerosol provision device is received in the cavity is at least partly provided as a structured surface comprising structuring elements.

[0004] In an embodiment of any of the above, the structured surface may be provided at least in part from a friction reducing material.

[0005] In an embodiment of any of the above, the friction reducing material may be selected to provide a dry friction coefficient from 0.15 to 0.8 or 0.3 to 0.5, such as determined according to ISO 8295, between the inner surface of the cavity and the outer surface of the aerosol provision device.

[0006] In an embodiment of any of the above, the

friction reducing material may be, or include, at least one of polyoxymethylene and polyamide.

[0007] In an embodiment of any of the above, the structuring elements of the structured surface may extend along at least a majority of a length of the cavity.

[0008] In an embodiment of any of the above, the structuring elements of the structured surface may be, or include, ridges and grooves.

[0009] In an embodiment of any of the above, the structuring elements of the structured surface may provide air channels along whole at least a majority of a length of the cavity.

[0010] In an embodiment of any of the above, the majority of the length of the cavity may be at least 50%, 60%, 70%, 80%, 90% of the length of the cavity.

[0011] In an embodiment of any of the above, air entries and exits may be at a distal end and at a proximal end of the cavity.

[0012] In an embodiment of any of the above, the structured surface may be provided by a lining element attached or attachable to a support surface.

[0013] In an embodiment of any of the above, the lining element may be provided as being removable from the support surface.

[0014] In an embodiment of any of the above, a scratch hardness of the lining element may be provided to be lower than of a further material of the system.

[0015] In an embodiment of any of the above, the aerosol provision device may comprise a receptacle configured to at least partly receive an article comprising the aerosol generating material and a heater for heating the article.

[0016] In an embodiment of any of the above, the heater may be a resistive heating heater. Optionally, the heater may comprise a resistive heating element in the housing. Optionally, the resistive heating element may comprise a resistive heating coil.

[0017] In an embodiment of any of the above, the heater may be an inductive heating heater. Optionally, the heater may comprise an inductive heating element in the housing. Optionally, the inductive heating element may comprise an inductive heating coil.

[0018] In an embodiment of any of the above, the heater may protrude into the receptacle. Optionally, the peripheral wall of the receptacle may at least partially extend around the heater. Optionally, the receptacle may define at least a portion of a chamber, and the heater may be exposed to the chamber.

[0019] In an embodiment of any of the above, the inner surface of the peripheral wall of the receptacle may be provided as or associated with a reflecting surface configured to reflect electromagnetic radiation towards the article.

[0020] According to a further aspect, there is provided an aerosol provision device configured to be inserted into a longitudinal cavity of a power provision unit for charging or electrically powering the aerosol provision device; wherein an outer surface of the aerosol provision device

facing and contacting the cavity when the aerosol provision device is received in the cavity is at least partly provided as a structured surface comprising structuring elements.

[0021] According to a further aspect, there is provided a power provision unit configured for charging or electrically powering an aerosol provision device, comprising a longitudinal cavity configured for receiving and partly enclosing the aerosol provision device; wherein an inner surface of the cavity facing and contacting the aerosol provision device when the aerosol provision device is received in the cavity is at least partly provided as a structured surface comprising structuring elements.

[0022] According to a further aspect, there is provided a method of generating an aerosol, including:

providing an aerosol provision system as indicated above; and

operating the aerosol provision system.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] Various embodiments will now be described, by way of example only, and with reference to the accompanying drawings, in which:

Figure 1 shows a perspective view of an aerosol provision system in a first operational configuration;

Figure 2 shows a perspective view of the aerosol provision system as shown in Figure 1 in a second operational configuration;

Figure 3 shows a perspective view of the aerosol provision system as shown in Figures 1 and 2 in a third operational configuration;

Figure 4 shows a perspective view of an aerosol provision system as shown in Figures 1 to 3 in a fourth operational configuration;

Figure 5 shows different views of a lining element used to provide a structured surface in a longitudinal cavity of a power provision unit;

Figure 6 shows a perspective cross-sectional view of certain parts part of the aerosol provision system as shown in Figures 1 to 4;

Figure 7 shows a perspective cross-sectional view of certain parts part of the aerosol provision system as shown in Figures 1 to 4;

Figure 8 shows a perspective view of certain elements of an aerosol provision system as shown in Figures 1 to 4.

Figure 9 shows a schematic longitudinal-sectional view of an aerosol provision device which may be used in a system as illustrated before.

DETAILED DESCRIPTION

[0024] As used herein, the term "aerosol-generating material" is a material that is capable of generating aerosol, for example when heated, irradiated or energized in any other way. Aerosol-generating material may, for example, be in the form of a solid, liquid or gel which may or may not contain an active substance and/or flavourants. Aerosol-generating material may include any plant based material, such as tobacco-containing material and may, for example, include one or more of tobacco, tobacco derivatives, expanded tobacco, reconstituted tobacco or tobacco substitutes. Aerosol-generating material also may include other, non-tobacco, products, which, depending on the product, may or may not contain nicotine. Aerosol-generating material may for example be in the form of a solid, a liquid, a gel, a wax or the like. Aerosol-generating material may for example also be a combination or a blend of materials. Aerosol-generating material may also be known as "smokable material".

[0025] The aerosol-generating material may comprise a binder and an aerosol former. Optionally, an active and/or filler may also be present. Optionally, a solvent, such as water, is also present and one or more other components of the aerosol-generating material may or may not be soluble in the solvent. In some embodiments, the aerosol-generating material is substantially free from botanical material. In some embodiments, the aerosol-generating material is substantially tobacco free.

[0026] The aerosol-generating material may comprise or be an "amorphous solid". The amorphous solid may be a "monolithic solid". In some embodiments, the amorphous solid may be a dried gel. The amorphous solid is a solid material that may retain some fluid, such as liquid, within it. In some embodiments, the aerosol-generating material may, for example, comprise from about 50wt%, 60wt% or 70wt% of amorphous solid, to about 90wt%, 95wt% or 100wt% of amorphous solid.

[0027] The aerosol-generating material may comprise an aerosol-generating film. The aerosol-generating film may comprise or be a sheet, which may optionally be shredded to form a shredded sheet. The aerosol-generating sheet or shredded sheet may be substantially tobacco free.

[0028] According to the present disclosure, a "non-combustible" aerosol provision system is one where a constituent aerosol-generating material of the aerosol provision system (or component thereof) is not combusted or burned in order to facilitate delivery of at least one substance to a user.

[0029] In some embodiments, the delivery system is a non-combustible aerosol provision system, such as a powered non-combustible aerosol provision system.

[0030] In some embodiments, the non-combustible

aerosol provision system is an electronic cigarette, also known as a vaping device or electronic nicotine delivery system (END), although it is noted that the presence of nicotine in the aerosol-generating material is not a requirement.

[0031] In some embodiments, the non-combustible aerosol provision system is an aerosol-generating material heating system, also known as a heat-not-burn system. An example of such a system is a tobacco heating system.

[0032] In some embodiments, the non-combustible aerosol provision system is a hybrid system to generate aerosol using a combination of aerosol-generating materials, one or a plurality of which may be heated. Each of the aerosol-generating materials may be, for example, in the form of a solid, liquid or gel and may or may not contain nicotine. In some embodiments, the hybrid system comprises a liquid or gel aerosol-generating material and a solid aerosol-generating material. The solid aerosol-generating material may comprise, for example, tobacco or a non-tobacco product.

[0033] Typically, the non-combustible aerosol provision system may comprise a non-combustible aerosol provision device and a consumable for use with the non-combustible aerosol provision device.

[0034] In some embodiments, the disclosure relates to consumables comprising aerosol-generating material and configured to be used with non-combustible aerosol provision devices. These consumables are sometimes referred to as articles throughout the disclosure.

[0035] In some embodiments, the non-combustible aerosol provision system, such as a non-combustible aerosol provision device thereof, may comprise a power source and a controller. The power source may, for example, be an electric power source or an exothermic power source. In some embodiments, the exothermic power source comprises a carbon substrate which may be energised so as to distribute power in the form of heat to an aerosol-generating material or to a heat transfer material in proximity to the exothermic power source.

[0036] In some embodiments, the non-combustible aerosol provision system may comprise an area for receiving the consumable, an aerosol generator, an aerosol generation area, a housing, a mouthpiece, a filter and/or an aerosol-modifying agent.

[0037] In some embodiments, the consumable for use with the non-combustible aerosol provision device may comprise aerosol-generating material, an aerosol-generating material storage area, an aerosol-generating material transfer component, an aerosol generator, an aerosol generation area, a housing, a wrapper, a filter, a mouthpiece, and/or an aerosol-modifying agent.

[0038] An aerosol generating device can receive an article comprising aerosol generating material for heating. An "article" in this context is a component that includes or contains in use the aerosol generating material, which is heated to volatilise the aerosol generating ma-

terial, and optionally other components in use. A user may insert the article into the aerosol generating device before it is heated to produce an aerosol, which the user subsequently inhales. The article may be, for example, of a predetermined or specific size that is configured to be placed within a heating chamber of the device which is sized to receive the article.

[0039] Figures 1 to 4 show an aerosol provision system 100 comprising an aerosol provision device 10 and a charging or power provision unit 20 in different views and operational configurations, wherein an "operational configuration" may result from certain components of system 100 being separated from each other or combined with each other or certain elements of system 100 being operated by a user.

[0040] Figures 1 to 4, in which like reference numerals indicate the same, essentially the same, functionally identical, or similar components, will be described together hereinbelow and repeated explanations are omitted for reasons of conciseness.

[0041] The power provision unit 20 comprises, as visible in Figure 4, a longitudinal cavity 21 into which the aerosol provision device 10 can be inserted via an opening 21a. Operational configurations in which the aerosol provision device 10 is inserted into the longitudinal cavity 21 of the power provision unit 20 is shown in Figures 1 to 3, while Figure 4 shows an operational configuration wherein the aerosol provision device 10 is removed therefrom.

[0042] The aerosol provision device 10 may be removably inserted into the power provision unit 20 in order to be charged, and the aerosol provision device 10 may be operated while separated from the power provision unit 20, while being inserted into the longitudinal cavity 21 of the power provision unit 20, or both.

[0043] The aerosol provision device 10 is configured to generate aerosol from an aerosol generating article, which is not shown in Figures 1 and 2 and which is shown and referred to with reference numeral 30 in Figures 3 and 4.

[0044] The aerosol provision device 10 is, as particularly visible from Figure 4, an elongate structure, extending along a longitudinal axis. The aerosol provision device 10 has a proximal end 10a, which will be closest to the user (e.g. the user's mouth) when in use by the user to inhale the aerosol generated by the aerosol provision device 10, as well as a distal end 10b which will be furthest from the user when in use. The proximal end may also be referred to as the "mouth end".

[0045] The aerosol provision device 10 also accordingly defines a proximal direction, which is directed towards the user when in use. Further, the aerosol provision device 10 also likewise defines a distal direction, which is directed away from the user when in use. The terms proximal and distal as applied to features of the device 10 will be described by reference to the relative positioning of such features with respect to each other in a proximal-distal direction along a longitudinal axis.

[0046] The aerosol generating article 30 may be inserted, in use, into the aerosol provision device 10. For this purpose, the aerosol provision device 10 comprises an opening to a receptacle 11 at the proximal end 10a, as shown in Figure 2, into which the aerosol generating article 30 may be inserted, and which resembles a heating chamber which is not fully shown for reasons of clarity. In certain embodiments, the aerosol generating article 30 may form part of the aerosol provision system 100.

[0047] One or more user-operable control elements 12, such as buttons, which can be used to operate the aerosol provision device 10, may be provided on a side of the aerosol provision device 10. In certain embodiments, the cavity 21 of the power provision unit 20 may have a cross-sectional profile which only permits that the aerosol provision device 10 be inserted into the power provision unit 20 in a single orientation to avoid malfunction. In other embodiments, the aerosol provision may have an alternative shape and size to that shown in Figures 1 to 4, and be received in a correspondingly shaped and dimensioned cavity in the power provision unit.

[0048] The power provision unit 20 includes a slidable lid 22. When the aerosol provision device 10 is inserted into the power provision unit 20 in order to be recharged, the slidable lid 22 may be closed so as to cover the opening to the receptacle 11 of the aerosol provision device 10 as shown in Figure 1. As shown in Figures 2 to 4, the slidable lid 22 may be opened to provide access to the cavity 21 and the opening to the receptacle 11. In other embodiments, the power provision unit 20 may have an alternative lid configuration, such as a hinged or pivoted lid, or no lid may be provided.

[0049] The longitudinal cavity 21 of the power provision unit 20 has a length that is substantially equal to or slightly greater than the length of the aerosol provision device 10 such that substantially the entire aerosol provision device 10 is received in the cavity 21 of the power provision unit 20. This means that the aerosol provision device 10 is protected. The power provision unit 20 may include a user interface such as display, which is not shown for reasons of clarity and which can be provided at any convenient location of the power provision unit 20.

[0050] As visible from Figure 4, an inner surface of the longitudinal cavity 21 facing and contacting the aerosol provision device 10 when the aerosol provision device is received in the cavity 21 is at least partly provided as a structured surface 23 comprising structuring elements. In certain embodiments, the structured surface 23 may be provided using a lining element 25 which may be attached to a surface 24 of a wall structure of the power provision unit 20 forming the cavity 21. In other embodiments, the structured surface 23 may be formed integrally with the wall structure. Optionally, a lining element 24 may be provided as being removable from the support surface, and may therefore be exchangeable when worn.

[0051] The structured surface 23 may be provided at least in part from a friction reducing material as mentioned before, such that the aerosol provision device 10

may be inserted into, and removed from, the cavity 21 with less force. The friction reducing material may also be provided so as to provide a certain friction coefficient, as also mentioned before. A friction reducing material may be, or include, at least one of polyoxymethylene and polyamide.

[0052] A scratch hardness of the lining element 25 may be provided to be lower than of a further material of the system, particularly any material contacting the lining element, so as to reduce the likelihood of scratches in operation.

[0053] While in embodiments shown in the Figures, the structured surface 23 is shown to be associated to an inner surface of the longitudinal cavity 21, other embodiments may include that a structured surface may be alternatively or additionally be provided at an outer surface of the aerosol provision device 10 facing and contacting a surface of the longitudinal cavity 21 when the aerosol provision device 10 when this is inserted into the longitudinal cavity 21.

[0054] Figure 5 shows three views of a lining element 25. While the left view corresponds to that of Figure 4, the central view is a front view and the right view is a back view. As indicated in Figure 5, the surface structuring elements 26 can be provided, in certain embodiments, as ridges forming grooves therebetween. Lining elements 25 may particularly be provided from materials such as polyoxymethylene or polyamide.

[0055] In certain embodiments, the structuring elements 26 of the structured surface formed by the lining element 25 may extend a major portion along the length of the cavity 21, as mentioned before.

[0056] Figures 6 and 7 show, in a sectional view and a perspective partial view, how in certain configurations a lining element 25 may partly surround the aerosol provision device 10 when the latter is inserted into the power provision unit 20. As illustrated only in some cases with dashed arrows, hot air from around the aerosol provision device 10 may pass out of channels formed from the surface structuring elements 26 of the lining element 25, particularly when the structuring elements 26 of the structured surface 23 may provide air channels along whole at least a majority of a length of the cavity 21 and air channels are formed thereby.

[0057] Figure 8 shows an aerosol provision system 100 in a view generally corresponding to that of Figure 1. However, lid 22 and further parts of the power provision unit 20 are removed. As illustrated with solid and dashed arrows, cold air may enter the channels formed from the surface structuring elements 26 of the lining element 2, see Figure 7 for details, and hot air from around the aerosol provision device 10 may pass out of these channels. This is particularly the case when air entries and exits are provided at a distal end and at a proximal end of the cavity.

[0058] Figure 9 shows a longitudinal-sectional schematic view of an aerosol provision device 10 which was further shown in the same or different embodiments

before. Features described with reference to Figure 9 in embodiments are applicable to embodiments described above. The aerosol provision device 10 comprises a power source 110, a controller 120 and the receptacle 11 in which the aerosol generating article 30 is removably received.

[0059] The device of Figure 9 shows the power source 110 aligned along the longitudinal axis of the receptacle. In another embodiment an aerosol generating device, the power source 110 may also be aligned along a second longitudinal axis, parallel to the longitudinal axis of the receptacle 11. Be it known that the power source 110 of the aerosol provision device 10 may be electrically connected to certain components of a power provision unit 20 which is shown in dashed outline in Figure 9 in order to be charged, for example. The power provision unit 20 may comprise a main power source 210.

[0060] A heater 130 is provided as a part of the device 10, comprising an elongate heating member in the form of a pin. The heater 130 may, in embodiments, comprise other elongate configurations, such as a blade. The heater 130 is provided in the receptacle 11. The heater 130 extends or projects into the receptacle 11.

[0061] The heater 130 may be inserted, in use, into a distal end of the aerosol generating article 30 which is received within the receptacle in order to internally heat the aerosol generating article 30.

[0062] The heater 130 may be part of a heating arrangement and may comprise a heating element arranged within the heater in the form of a resistive heating coil. In this case, an electrical current is directly applied to a resistive heating element, and the resulting flow of current in the heating element, acting as a heating component, causes the heating element to be heated by Joule heating. The resistive heating element may comprise resistive material configured to generate heat when a suitable electrical current passes through it, and the heating arrangement may comprise electrical contacts for supplying electrical current to the resistive material.

[0063] A lining element which was referred to by reference numeral 25 before is indicated as a dashed line in Figure 9.

[0064] The various embodiments described herein are presented only to assist in understanding and teaching the claimed features. These embodiments are provided as a representative sample of embodiments only, and are not exhaustive and/or exclusive. It is to be understood that advantages, embodiments, examples, functions, features, structures, and/or other aspects described herein are not to be considered limitations on the scope of the invention as defined by the claims or limitations on equivalents to the claims, and that other embodiments may be utilised and modifications may be made without departing from the scope of the claimed invention. Various embodiments of the invention may suitably comprise, consist of, or consist essentially of, appropriate combinations of the disclosed elements, components, features, parts, steps, means, etc, other than those spe-

cifically described herein. In addition, this disclosure may include other inventions not presently claimed, but which may be claimed in future.

Claims

1. An aerosol provision system comprising:
 - an aerosol provision device for generating aerosol from aerosol generating material; and
 - a power provision unit configured for charging or electrically powering the aerosol provision device, comprising a longitudinal cavity configured for receiving and partly enclosing the aerosol provision device;
 - wherein at least one of an inner surface of the cavity facing and contacting the aerosol provision device when the aerosol provision device is received in the cavity and an outer surface of the aerosol provision device facing and contacting the cavity when the aerosol provision device is received in the cavity is at least partly provided as a structured surface comprising structuring elements.
2. The system according to claim 1, wherein the structured surface is provided at least in part from a friction reducing material, particularly being, or including, at least one of polyoxymethylene and polyamide and/or particularly being selected to provide a friction coefficient from 0.15 to 0.8 between the inner surface of the cavity and the outer surface of the aerosol provision device.
3. The system according to claim 1 or 2, wherein the structuring elements of the structured surface extend along at least a majority of a length of the longitudinal cavity.
4. The system according to any of claims 1 to 3, wherein the structuring elements of the structured surface are, or include, ridges and grooves and/or provide air channels along at least a majority of a length of the cavity.
5. The system according to any of claims 1 to 4, wherein air entries and exits are provided at a distal end and at a proximal end of the cavity.
6. The system according to any of claims 1 to 5, wherein the structured surface is provided by a lining element attached or attachable to a support surface, wherein the lining element is particularly provided as being removable from the support surface.
7. The system according to any of claims 1 to 6, wherein a scratch hardness of the lining element may be

provided to be lower than of a further material of the system.

8. The system according to any of claims 1 to 7, wherein the aerosol provision device comprises a receptacle configured to at least partly receive an article comprising aerosol generating material and a heater for heating the article. 5
9. The system of claim 8, wherein the heater is a resistive heating heater and/or wherein the heater comprises a housing and a resistive heating element in the housing and/or wherein the heater protrudes into the receptacle. 10
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10. The system of any of claims 8 or 9, wherein a peripheral wall of the receptacle at least partially extends around the heater.
11. The system of any of claims 8 to 10, wherein the receptacle defines at least a portion of a chamber, and wherein the heater is exposed to the chamber. 20
12. The system of any of claims 8 to 11, wherein an inner surface of the peripheral wall of the receptacle is provided as or associated with a reflecting surface configured to reflect electromagnetic radiation towards the article. 25
13. An aerosol provision device configured to be inserted into a longitudinal cavity of a power provision unit for charging or electrically powering the aerosol provision device; 30
wherein an outer surface of the aerosol provision device facing and contacting a surface of the cavity when the aerosol provision device is received in the cavity is at least partly provided as a structured surface comprising structuring elements. 35
14. A power provision unit configured for charging or electrically powering an aerosol provision device, comprising a longitudinal cavity configured for receiving and partly enclosing the aerosol provision device; 40
wherein an inner surface of the cavity facing and contacting the aerosol provision device when the aerosol provision device is received in the cavity is at least partly provided as a structured surface comprising structuring elements. 45
50
15. A method of generating an aerosol, including:
providing an aerosol provision system as claimed in any one of claims 1 to 13; and 55
operating the aerosol provision system.

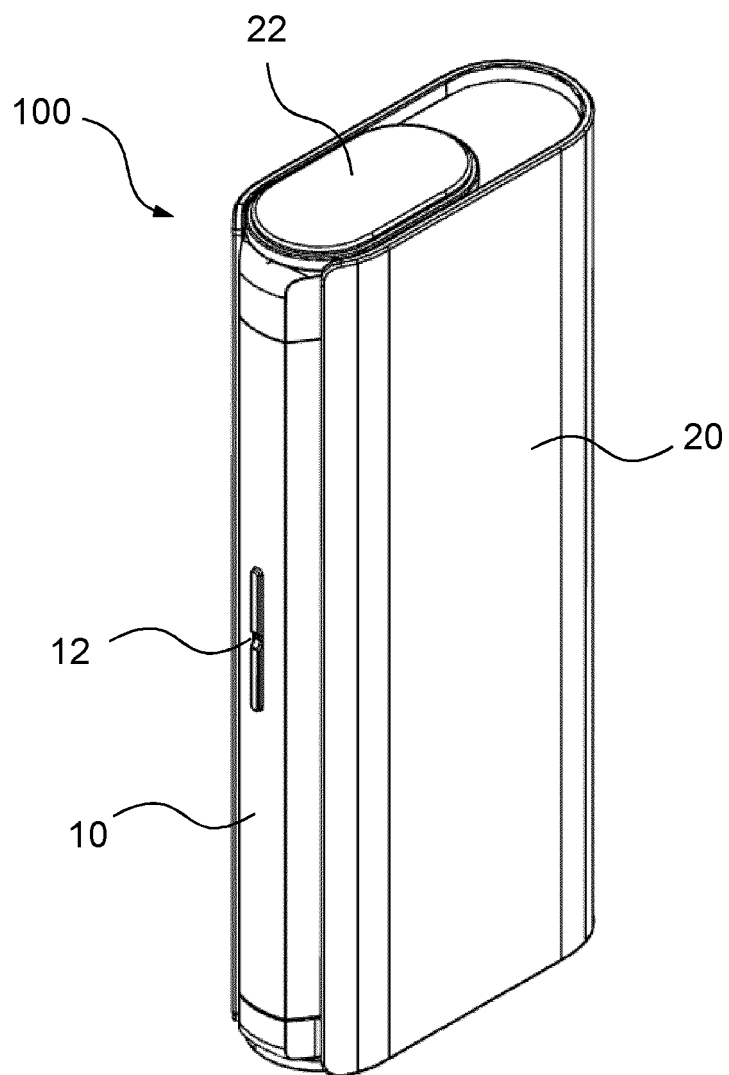


Fig. 1

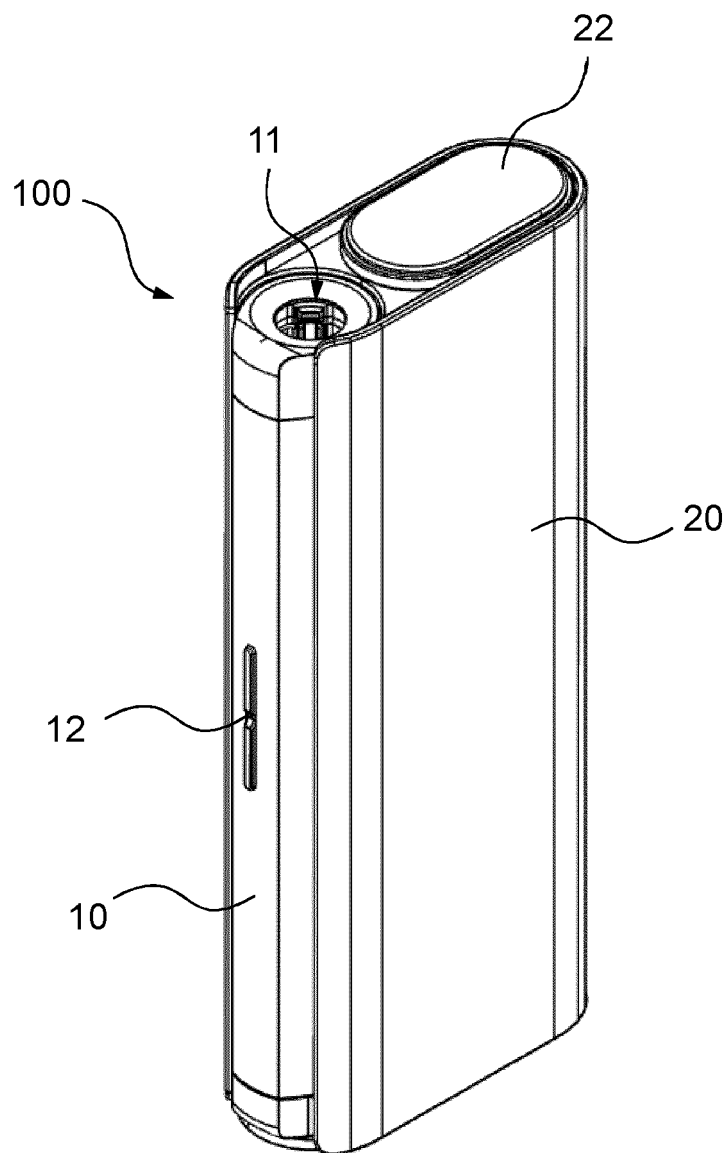


Fig. 2

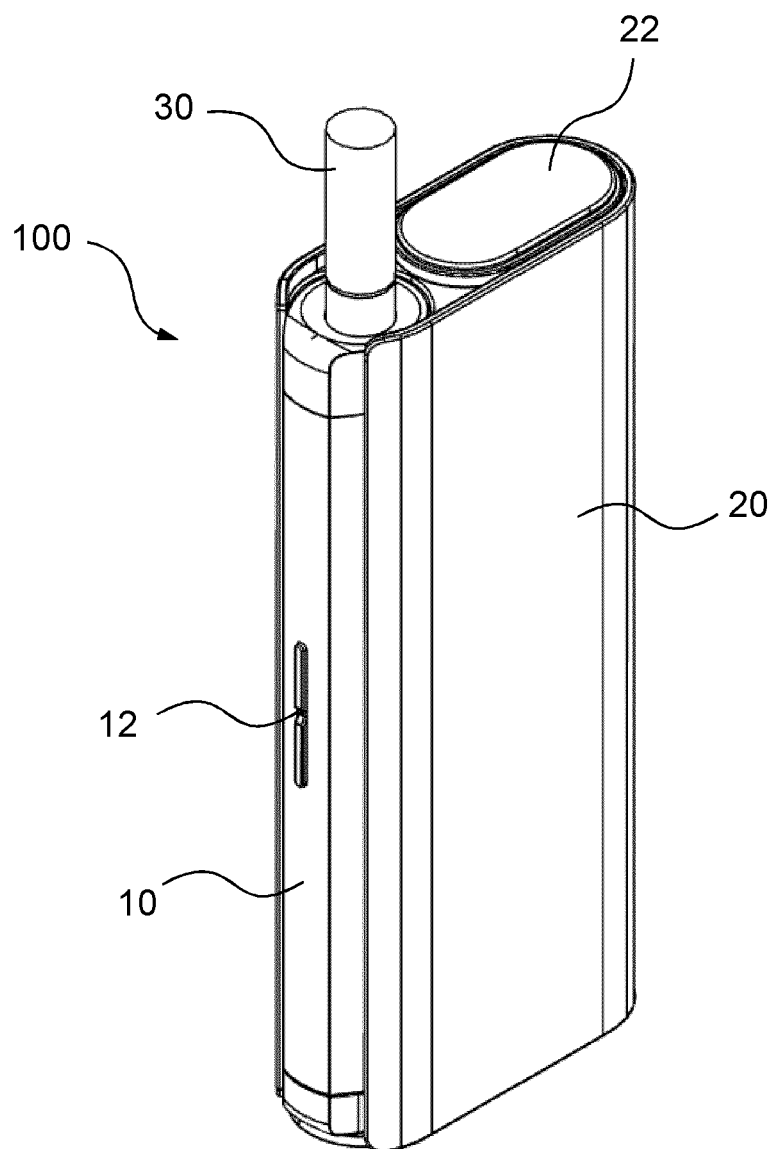


Fig. 3

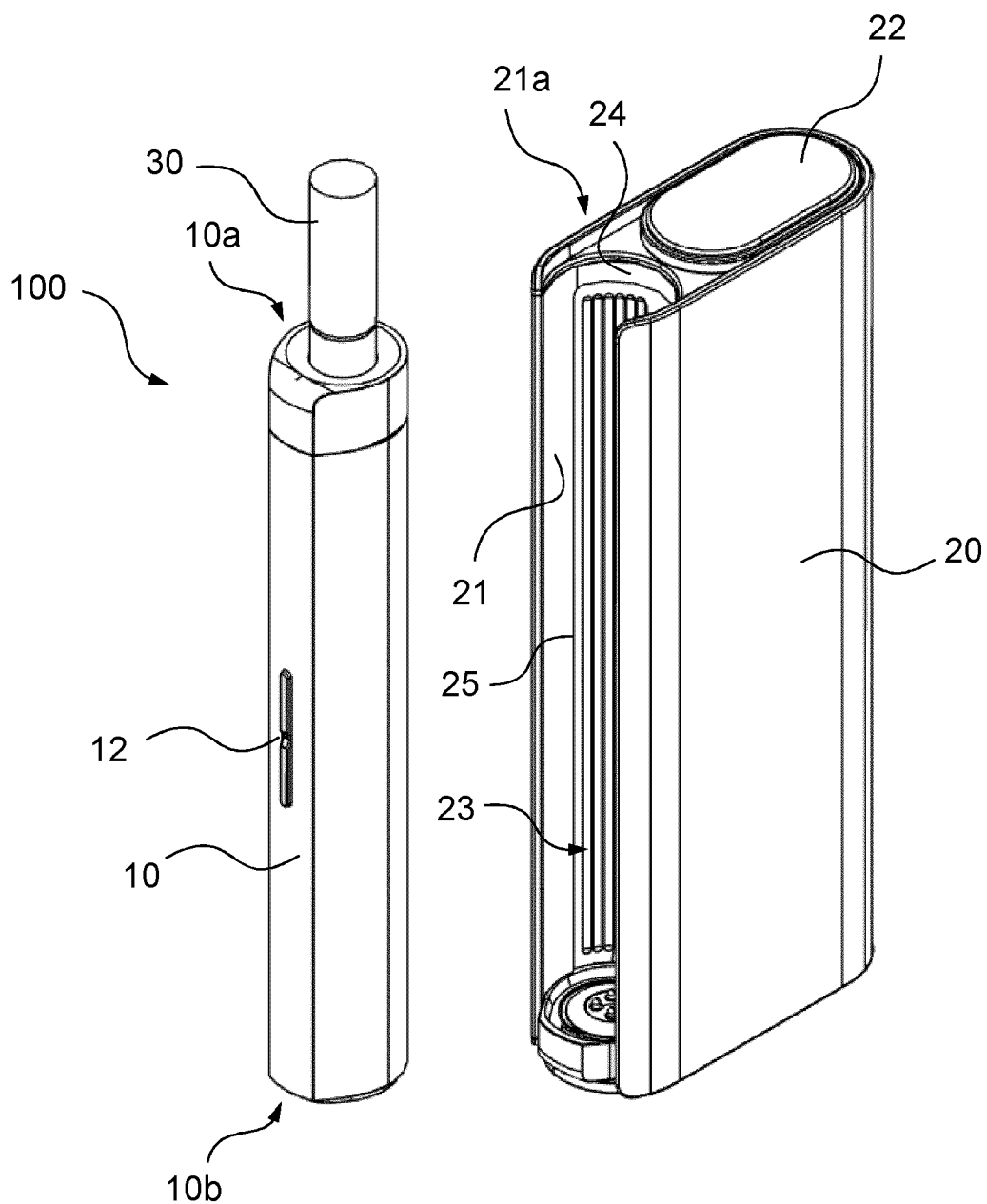


Fig. 4

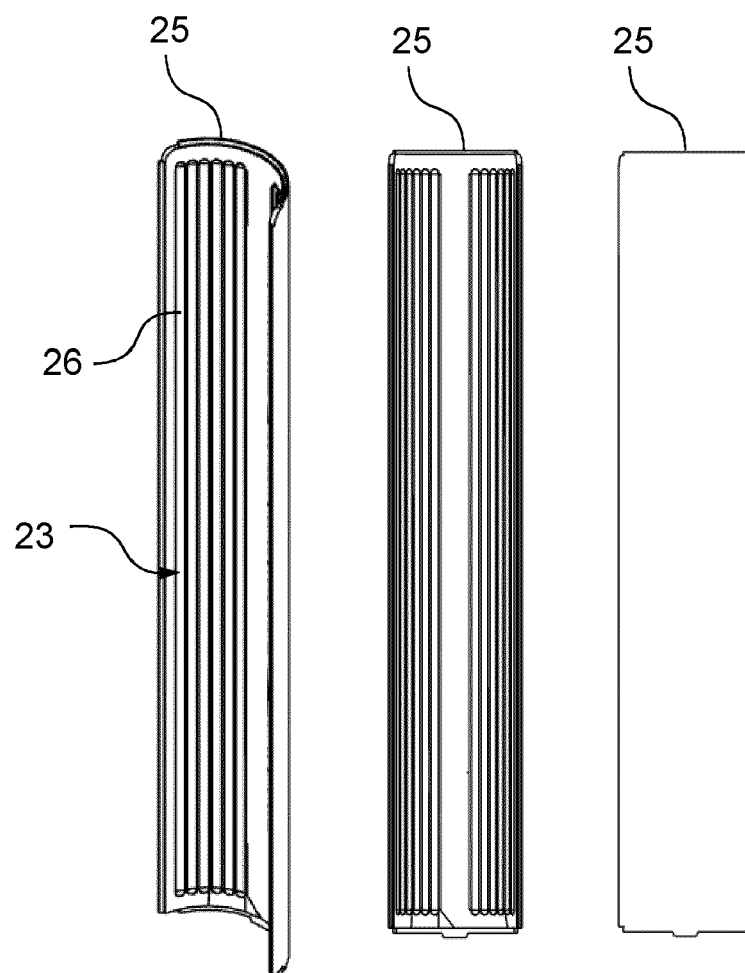


Fig. 5

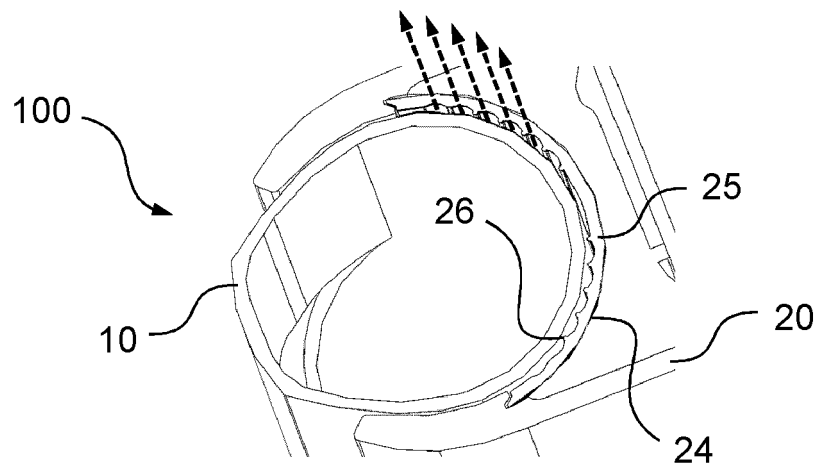


Fig. 6

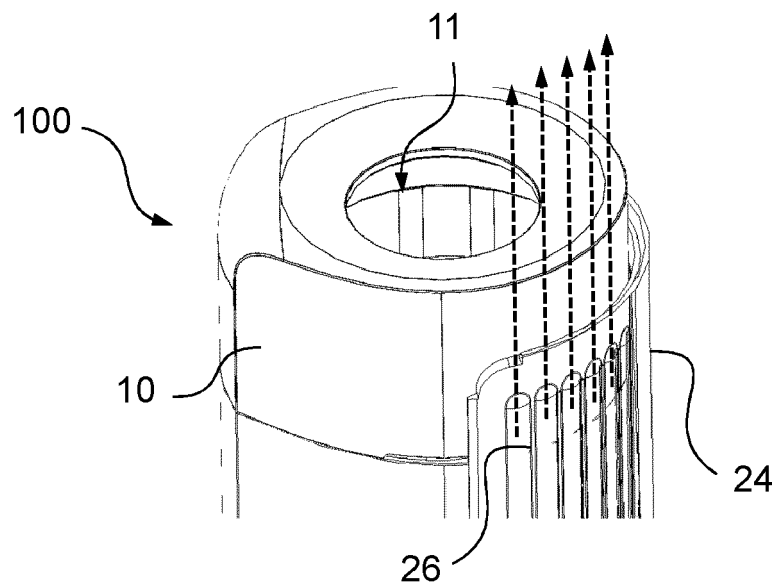


Fig. 7

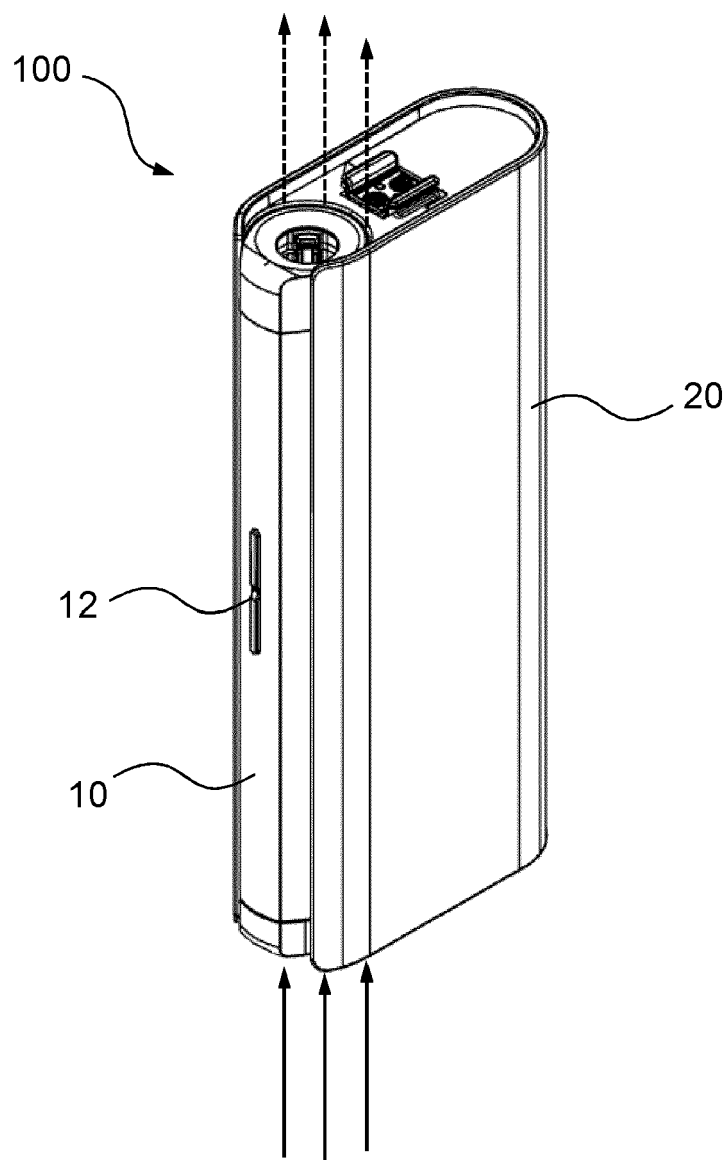


Fig. 8

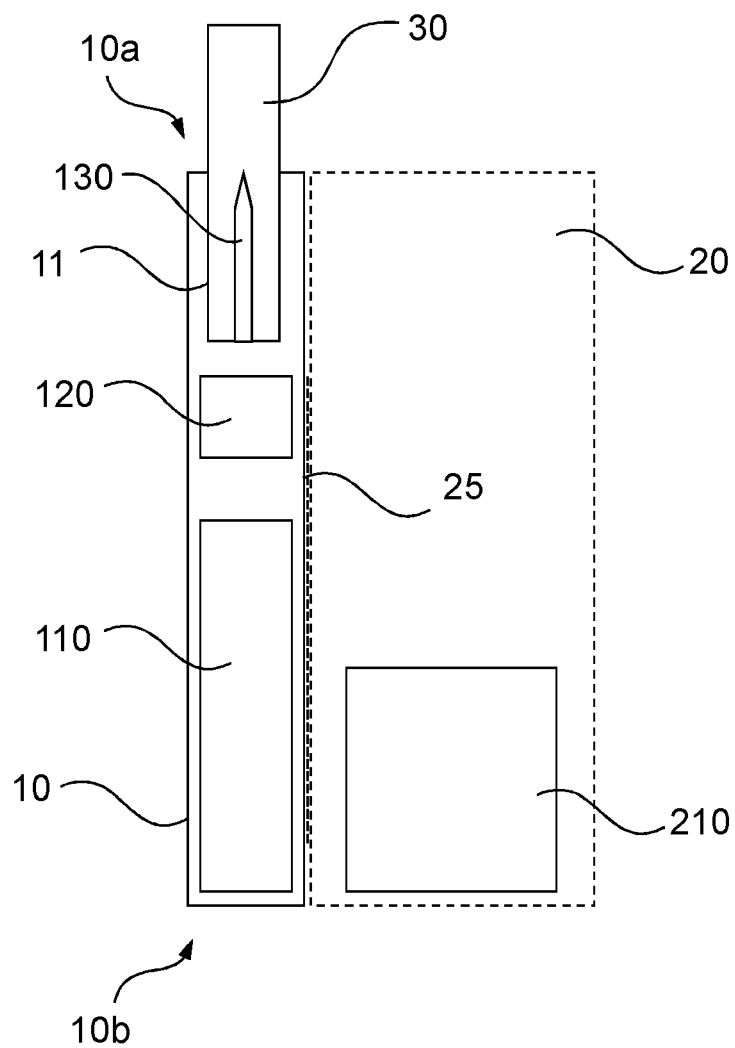


Fig. 9



EUROPEAN SEARCH REPORT

Application Number

EP 24 15 4011

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 10 548 350 B2 (PHILIP MORRIS PRODUCTS SA [CH]) 4 February 2020 (2020-02-04) * figures 1, 2, 4a, 4b, 5, 6a, 6b, 7a, 7b, 8, 15 * * column 13, line 7 - line 21 * * column 17, line 27 - line 59 * * column 23, line 43 - line 50 * * column 24, line 1 - line 4 * -----	1-4, 6-15	INV. A24F40/40 A24F15/01
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A	WO 2021/099423 A1 (JT INT SA [CH]) 27 May 2021 (2021-05-27) * claims 1,12,13; figure 2 * -----	12	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A24F
Place of search		Date of completion of the search	Examiner
Munich		4 July 2024	Schäfer, Lucas
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 24 15 4011

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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04 - 07 - 2024

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