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AEROSOL GENERATING DEVICE WITH AN INSULATOR

(57) An aerosol generating device (1), comprising: an insulator (102) comprising an interior wall (104) and an exterior wall (106) that are separated from one another, a cavity (110) defined within the interior wall (104) in which an aerosol forming substrate can be received, and a heater (112) positioned to heat the aerosol forming substrate when it is received in the cavity (110); a casing (10) that surrounds the insulator (102); and electrical contacts (116) that are connected to the heater (112), wherein at least one of the electrical contacts (116) is mechanically connectable to the casing (10) in order to hold the insulator (102) in place.

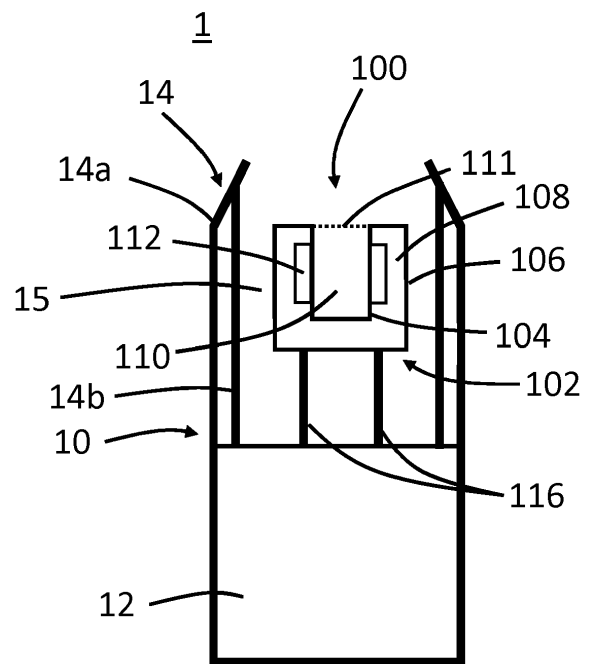


FIG. 1A

Description

FIELD OF THE INVENTION

[0001] The present invention relates to an aerosol generating device, and more specifically to an aerosol generating device with an insulator such as a vacuum insulator.

BACKGROUND

[0002] The popularity and use of aerosol-generating devices and systems (also known as vaporisers) has grown rapidly in the past few years as an alternative to traditional tobacco products such as cigarettes, cigars, cigarillos, and rolling tobacco. Various devices and systems are available that heat or warm aerosolisable substances, that may or may not comprise nicotine or other active substances, as opposed to burning tobacco in conventional tobacco products.

[0003] A commonly available aerosol-generating system is the heated substrate aerosol generation or heat-not-burn type. Systems of this type generate an aerosol or vapour by heating a consumable article (i.e. a "heat-not-burn stick") containing an aerosol forming substrate such as reconstituted tobacco to a temperature typically in the range of 150°C to 350°C. Heating an aerosol forming substrate, but not combusting or burning it, releases an aerosol that comprises the components sought by the user but not the undesirable by-products of combustion. In addition, the aerosol produced by heating the tobacco or other aerosolisable material does not typically comprise the burnt or bitter taste that may result from combustion which can be unpleasant for the user.

[0004] Typically, a heat-not-burn consumable article, for example in stick form, is inserted into a cavity of a heat-not-burn device, with an end of the stick left protruding from the device and forming an inhalation mouthpiece. A heater in the heat-not-burn device subsequently supplies heat to the stick to aerosolise aerosolisable material contained in the aerosol forming substrate in the stick, and the aerosol produced is supplied to the user from the protruding end of the stick.

[0005] Typically, not all the heat produced by the heater is transferred to the consumable article to generate the aerosol. This decreases the overall efficiency of the device and reduces the battery life. Furthermore, the losses may lead to heating of other components in the device, which may lead to damage and may cause discomfort to the user when holding the device.

[0006] It is an object of the present invention to address these problems.

SUMMARY OF INVENTION

[0007] According to an aspect of the invention, there is provided an aerosol generating device, comprising: an insulator comprising an interior wall and an exterior wall

that are separated from one another, a cavity defined within the interior wall in which an aerosol forming substrate can be received, and a heater positioned to heat the aerosol forming substrate when it is received in the cavity; a casing that surrounds the insulator; and electrical contacts that are connected to the heater, wherein at least one of the electrical contacts is mechanically connectable to the casing in order to hold the insulator in place.

[0008] Advantageously, since the electrical contacts also provide the mechanical connection between the insulator and the casing, the number of heat conduction paths therebetween is reduced. By reducing the amount of heat that is conducted from the insulator to the casing, the efficiency of the heater may be increased, since a greater proportion of the heat may be transferred to the aerosol forming substrate. Furthermore, heating of the casing is reduced, which may reduce damage to other components of the device located in the casing and may be desirable from the perspective of the user holding the casing.

[0009] The insulator and the heater may together be referred to as a heating apparatus. The heating apparatus may be received within a chamber of the casing, such as a chamber defined by a side portion of the casing that extends from a base portion of the casing. The heating apparatus may be received within the chamber such that an air gap is provided between the exterior wall of the insulator and the casing. The region between the interior and exterior wall of the insulator may be referred to as the insulating region.

[0010] Preferably, the electrical contacts provide the only connection between the insulator and the casing. Advantageously, this reduces heat transferred between the insulator and the casing by minimizing the number of heat conduction paths therebetween. In other words, preferably the only way in which heat may be conducted between the insulator and the casing is through the electrical contacts.

[0011] Preferably, the interior wall and the exterior wall of the insulator are separated from one another by a vacuum, thereby providing a vacuum insulator. In this way, conduction and/or convection of heat between the interior and exterior wall of the insulator is further inhibited, which further reduces transfer of heat from the insulator to the casing. Alternatively, the interior wall and the exterior wall of the insulator may be separated from one another by an air gap, aerogel, foamed material, fibrous material, and/or any combination of the above.

[0012] Preferably, the insulator is removable from within the casing. In other words, at least one of the electrical contacts is mechanically disconnectable from the casing. For example, the heating apparatus that provides the insulator and the heater may be removable from the casing, such as from within the chamber. In this way, the insulator may be replaced, cleaned and/or repaired. Alternatively, the insulator may be permanently fixed within the casing, which may enable a stronger connection therebetween.

[0013] The cavity may comprise at least one opening at which the interior wall is joined to the exterior wall, and the one or more electrical contacts may be positioned on the insulator at a location that minimises heat flow between the at least one opening and the electrical contacts. In this way, the electrical contacts are made to the part of the exterior wall that remains coolest during use of the aerosol generating device. This reduces the transfer of heat between the insulator and the casing. For example, the electrical contacts may be positioned at a location that maximises the shortest distance between the at least one opening and the electrical contacts. In other words, where there are multiple openings to the cavity, the electrical contacts are not placed in proximity to any of them. The distance may be determined along the direct path between the opening and the electrical contacts. Preferably, the distance is determined along a thermal pathway between the opening and the electrical contacts; since heat flow is inhibited through the insulating portion of the insulator, the distance may be measured along a thermal pathway through the air surrounding the insulator, and/or along the external wall of the insulator.

[0014] The insulator may be cup-shaped such that the cavity has a single opening at which the interior wall is joined to the exterior wall, and wherein the electrical contacts are positioned at a base of the insulator that is opposite to the opening of the cavity. In other words, the insulator may be attached to the casing in a cantilever arrangement, where only one end of the insulator is connected to the casing. By providing the electrical contacts at the base of the insulator, the electrical contacts are made to the coolest part of the exterior wall during use, thereby reducing the transfer of heat from the insulator to the casing. In other words, the distance between the electrical contacts and the opening of the cavity is maximised.

[0015] Alternatively, the insulator may be tube-shaped such that the cavity has two openings at which the interior wall is joined to the exterior wall, and wherein the electrical contacts are positioned on a side of insulator that is spaced from both of the two openings. The electrical contacts may be arranged equidistant from both of the openings to the cavity, thereby maximising the shortest distance to both of the openings. Alternatively, if one of the openings is determined to produce more heat than the other, the electrical contacts may be moved further from that opening. In this way, the electrical contacts are made to the coolest part of the exterior wall during use, thereby reducing the transfer of heat from the insulator to the casing.

[0016] The electrical contacts may be mechanically connectable to a base portion of the casing. By connecting the electrical contacts to the base portion of the casing, transfer of the heat to a side portion (that may be held by the user) of the aerosol generating device is reduced. Alternatively, the electrical contacts may be mechanically connectable to a side portion of the casing. The side portion of the casing may comprise an inner

wall and an outer wall, and the electrical contacts may be mechanically connectable to the inner wall. An insulating material may be located between the inner and the outer wall, thereby further reducing transfer of heat from the insulator to the casing.

[0017] The electrical contacts may comprise a pair of pins. The pair of pins may be connectable to the casing with a lockable coupling. The pair of pins may be connectable to the casing using a bayonet connection or a screw thread.

[0018] The electrical contacts may comprise a pin and a threaded outer surface that is engageable with the casing to hold the insulator in place.

[0019] It will be understood by a skilled person that any device or apparatus feature described herein may be provided as a method feature. It will be understood that particular combinations of the various features described and defined in any aspects described herein can be implemented and/or supplied and/or used independently. Moreover, it will be understood that the present invention is described herein purely by way of example, and modifications of detail can be made within the scope of the invention.

BRIEF DESCRIPTION OF DRAWINGS

[0020] One or more embodiments will now be described, purely by way of example, with reference to the accompanying figures, in which:

Figure 1A shows a schematic cross section of a first embodiment of an aerosol generating device comprising a heating apparatus;

Figure 1B shows a cross section of the heating apparatus of the embodiment shown in Figure 1A;

Figure 2A shows a schematic cross section of a second embodiment of an aerosol generating device comprising a heating apparatus;

Figure 2B shows a cross section of the heating apparatus of the embodiment shown in Figure 2A; and Figures 3 and 4 show alternative heating apparatuses that may be used in an embodiment of an aerosol generating device.

DETAILED DESCRIPTION

[0021] In the following description and accompanying drawings, corresponding features may preferably be identified using corresponding reference numerals to avoid the need to describe said common features in detail for each and every embodiment.

[0022] Figure 1A depicts a schematic cross section of a first embodiment of an aerosol generating device 1. The device 1 has a casing 10 with a base portion 12 and a side portion 14. More specifically, the side portion 14 extends from the base portion 12 to define a chamber 15. In this embodiment the side portion 14 comprises an outer wall 14a and an inner wall 14b, though it will be

appreciated that the side portion 14 may also comprise only a single wall.

[0023] The device 1 comprises a heating apparatus 100 held within the casing 10, such as within the chamber 15. In this way, the casing 10 surrounds the heating apparatus 100. Further detail of the heating apparatus 100 is shown in the cross section in Figure 1B. The heating apparatus 100 comprises an insulator 102. The insulator 102 comprises an internal wall 104 and an external wall 106, which are spaced apart from one another so that an insulating region 108 is enclosed in the space between them. Preferably the insulating region 108 comprises a vacuum, thereby providing a vacuum insulator 102. Alternatively or additionally, the insulating region 108 may comprise an air gap, aerogel, foamed material, fibrous material and/or any combination of the above.

[0024] The heating apparatus 100 comprises a cavity 110 that is provided adjacent the internal wall 104 and is configured to receive an aerosol forming substrate. For example, a consumable 5 may be inserted into the cavity 110 where the consumable 5 contains an aerosol forming substrate such as tobacco 6. The consumable 5 is typically an elongate rod or stick that can be inserted into the cavity 110 by a user via an opening 111 to the cavity 110. The insulator 102 has a substantially cylindrical shape that enables the insulator 102 to fully surround the consumable 5 to maximise the effectiveness of the insulation. In this example, the insulator 102 comprises an opening 111 for receiving the consumable 5 at one longitudinal end and is closed at the opposite end. Thus, when viewed perpendicularly to its longitudinal axis, the insulator 102 has a cross section that is cup-shaped. In other words, the cavity 110 has a single opening 111 at which the interior wall 104 is joined to the exterior wall 106.

[0025] A heater 112 is provided within the insulating region 108 and on the internal wall 104. The heater 112 is configured to heat the internal wall 104 by conduction so that the internal wall 104 heats the consumable 5 and the air inside the cavity 110 by conduction and radiation. The heater 112 is powered by a power source such as a battery (not shown) located in the base portion 12 of the casing 10 of the device 1.

[0026] By providing an insulator 102 in the heating apparatus 100, the amount of heat that is wasted is reduced, since the insulating region 108 inhibits conduction or convection of heat from the heater 112 directly to the external wall 106. Nonetheless, during use of the device 1 the external wall 106 may heat up, such as due to convection of air from the opening 111 of the cavity 110, or due to conduction between the internal wall 104 and the external wall 106 at the opening 111. By providing the heating apparatus 100 within a chamber 15 of the device 1, an air gap is provided between the external wall 106 of the heating apparatus 100 and the casing 10 of the device 1. Advantageously, this may reduce heating of the casing 10, thereby increasing efficiency of the device 1 and preventing discomfort to a user holding the casing 10 of the

device 1.

[0027] The heating apparatus 100 comprises one or more electrical contacts 116 connected to the heater 112, such as by a first wire connector 114a and a second wire connector 114b. The electrical contacts 116 are mechanically connectable to the casing 10 of the device 1. In this embodiment, the electrical contacts 116 are mechanically connectable to the base portion 12 of the casing 10. By providing both the mechanical and electrical connection between the insulator 102 and the casing 10 using the same means, the number of heat conduction pathways is reduced. Advantageously, this may further reduce heating of the casing 10, thereby increasing efficiency of the device 1 and preventing discomfort to a user holding the casing 10 of the device 1.

[0028] Preferably, the electrical contacts 116 provide the only connection between the insulator 102 and the casing 10. In this way, the number of heat conduction pathways is minimized, which further reduces the transfer of heat between the insulator 102 and the casing 10. To achieve this, the materials and shape of the electrical contacts 116 are chosen to provide sufficient strength to keep the heating apparatus 100 in place within the chamber 15 during use of the device 1, without the need for additional contact points between the heating apparatus 100 and the casing 10. In other words, the electrical contacts 116 provide a rigid connection whereby movement of the insulator 102 relative to the casing 10 is inhibited.

[0029] Preferably, the electrical contacts 116 are also mechanically disconnectable from the casing 10, such that the heating apparatus 100 is removable from the casing 10. Advantageously, by providing a heating apparatus 100 that is removable from the casing 10, parts of the heating apparatus 100 may be easily repaired and/or replaced without the need to replace the entire device 1.

[0030] In this example, the electrical contacts 116 comprise a pair of pins. The pins may be connectable to the casing 10 with a lockable coupling. The pins may be inserted into the base portion 12 and locked in place via a small rotation or translation.

[0031] In one implementation, the connection between the pins and the base portion 12 may correspond to the connection used between a fluorescent starter and its corresponding socket. More specifically, the pins may comprise a flanged portion that retains the pins within an overhung groove in the base portion 12, where movement of the pins through the groove (e.g. by rotation of the heating apparatus 100) allows them to be removed from the base portion 12 at an opening. The electrical and mechanical connection between the heating apparatus 100 and the casing 10 may be provided in other ways. For example, the heating apparatus 100 may be connected to the casing 10 with a bayonet connector, where radial pins connected to the heating apparatus 100 engage within a pair of L-shaped slots on the casing 10. Alternatively, a screw connector may be provided, where the heating apparatus 100 comprises a threaded

outer surface that is engageable with a corresponding thread in the base portion 12 of the casing 10. As a further alternative, the electrical contacts 116 may comprise a (single) pin as well as a threaded outer surface that is engageable with the casing 10 to hold the insulator 102 in place. Such arrangements enable a strong mechanical connection between the heating apparatus 100 and the casing 10 while also providing a consistent supply of electrical power to the heating apparatus 100 via the electrical contacts 116.

[0032] The electrical contacts 116 are preferably located at a position on the insulator 102 that minimises heat flow between the opening 111 and the electrical contacts 116. In this way, the electrical contacts 116 are made to the part of the exterior wall 106 that remains coolest during use of the aerosol generating device 1. This reduces the transfer of heat between the insulator 102 and the casing 10. The electrical contacts 116 may be located at a position on the insulator 102 that maximises their distance from the opening 111 of the cavity 110. The maximum distance may correspond to the direct path between the opening 111 and the electrical contacts 116. Preferably, the maximum distance is determined to be the maximum distance along a thermal pathway between the opening 111 and the electrical contacts 116; since heat flow is inhibited through the insulating region 108 of the insulator 102, the distance may be measured along a thermal pathway through the air surrounding the insulator 102, and/or along the external wall 106 of the insulator 102.

[0033] In the cup-shaped insulator 102 shown in Figures 1A and 1B, the electrical contacts 116 may be located at a base of the insulator 102 that is opposite to the opening 111 of the cavity 110. In other words, the insulator 102 is attached to the casing 10 in a cantilever arrangement, where only one end of the insulator 102 is connected to the casing 10. In this way, the distance along the thermal pathway between the opening 111 and the electrical contacts 116 is maximized, thereby reducing transfer of heat therebetween. In other words, the electrical contacts 116 are made to the coolest part of the exterior wall 106 during use, which reduces the amount of heat transferred from the insulator 102 to the casing 10 of the device 1.

[0034] Figure 2A depicts a schematic cross section of a second embodiment of an aerosol generating device 1. The device 1 is similar to the device 1 described above in that it comprises a casing 10 with a base portion 12 and a side portion 14 enclosing a chamber 15. However, the device 1 comprises an alternative heating apparatus 200, which is shown in more detail in Figure 2B. In Figure 2B, the heating apparatus 200 is depicted with a consumable 5 inserted, where the consumable 5 comprises tobacco 6 and a filter 7.

[0035] Unlike the embodiment shown in Figures 1A and 1B, the insulator 202 in this embodiment is open at both longitudinal ends such that it has a tube-shaped cross-section when viewed perpendicularly to its longi-

tudinal axis. More specifically, the cavity 210 has a first opening 211a at a first longitudinal end, and a second opening 211b at a second longitudinal end. The first opening 211a is configured to receive the consumable 5. A plug 236 may be provided within the second opening 211b to prevent the consumable 5 from being inserted too far into the cavity 210. The plug 236 may comprise PEEK, rubber, or other suitable heat resistant materials.

[0036] The insulator 202 also comprises one or more electrical contacts 216 connected to the heater 212. The electrical contacts 216 are mechanically connectable to the casing 10 of the device 1. In this embodiment, the electrical contacts 216 are mechanically connectable to the side portion 14 of the casing 10. More specifically, the electrical contacts 216 are mechanically connectable to the inner wall 14b of the side portion 14 of the casing 10. It will be appreciated that where the side portion 14 only has a single wall, the electrical contacts 216 may be mechanically connectable to the single (e.g. outer) wall. By providing both the mechanical and electrical connection between the insulator 202 and the casing 10 using the same means, the number of heat conduction pathways is reduced. Preferably, the electrical contacts 216 provide the only connection between the insulator 202 and the casing 10. In this way, the number of heat conduction pathways is minimised, which further reduces the transfer of heat between the insulator 202 and the casing 10. To achieve this, the materials and shape of the electrical contacts 216 are chosen to provide sufficient strength to keep the heating apparatus 200 in place within the chamber 15 during use of the device 1, without the need for additional contact points between the heating apparatus 200 and the casing 10. In other words, the electrical contacts 216 provide a rigid connection whereby movement of the insulator 202 relative to the casing 10 is inhibited.

[0037] Preferably, the electrical contacts 216 are also mechanically disconnectable from the casing 10, such that the heating apparatus 200 is removable from the casing 10. Advantageously, by providing a heating apparatus 200 that is removable from the casing 10, parts of the heating apparatus 200 may be easily repaired and replaced without the need to replace the entire device 1.

[0038] In this example, the electrical contacts 216 comprise a pair of pins. The pins may be connectable to the casing 10 with a lockable coupling. The pins may be inserted into the side portion 14 of the casing 10 and locked in place via a small rotation or translation. As previously described in relation to the heating apparatus 100, various connection arrangements may be used in order to provide both a strong mechanical connection and an electrical connection between the heating apparatus 200 and the casing 10 via the electrical contacts 216.

[0039] The electrical contacts 216 are preferably located at a position on the insulator 202 that minimises heat flow between the openings 211a, 211b and the electrical contacts 216. In this way, the electrical contacts 216 are made to the part of the exterior wall 206 that remains

coolest during use of the aerosol generating device 1. This reduces the transfer of heat between the insulator 202 and the casing 10.

[0040] In the tube-shaped insulator 202 shown in Figures 2A and 2B, the electrical contacts 216 may be located at a side of the insulator 202 that is spaced from the first opening 211a and the second opening 211b of the cavity 210. For example, the electrical contacts 216 may be located at a side of the insulator 202 that is substantially equidistant from both the first opening 211a and the second opening 211b of the cavity 210. At this location, the shortest distance between the electrical contacts 216 to either of the openings 211a, 211b is maximised, thereby reducing the transfer of heat from either of the openings 211a, 211b to the electrical contacts 216. Alternatively, if one of the openings 211a, 211b is determined to produce more heat than the other (such as due to the insulative properties of the plug 236), the position of the electrical contacts 216 may be adjusted accordingly (such as by moving them closer to the opening 211b with the plug 236). In other words, the electrical contacts 216 are made to the coolest part of the exterior wall 206 during use, which reduces the amount of heat transferred from the insulator 202 to the casing 10 of the device 1. In any of the embodiments described herein, the coolest part of the exterior wall 206 may be calculated such as by a computer simulation, in order to determine the optimum placement for the electrical contacts 216.

[0041] It will be appreciated that the electrical contacts 116, 216 described above may be located at other positions on the insulator 102, 202 in order to provide the mechanical connection to the casing 10 of the device 1. Figures 3 and 4 show alternative embodiments of heating apparatuses 300, 400 that may be used in the device 1. The heating apparatus 300 is similar to the cup-shaped heating apparatus 100 described previously but differs in that the electrical contacts 316 are located at an end of the insulator 302 that is adjacent to the opening 311 of the cavity 310. The heating apparatus 400 is similar to the cup-shaped heating apparatuses 100, 300 described previously but differs in that the electrical contacts 416 are located on the side of the insulator 402 near the opening 411 of the cavity 410. This may enable easier inspection, and/or repair of the heating apparatus 300, 400 and may be preferable for certain types of device 1. As previously described, the electrical contacts 316, 416 are mechanically connectable to the casing 10 of the device 1, and preferably provide the only connection between the insulator 302, 402 and the casing 10.

[0042] While the foregoing is directed to exemplary embodiments of the present invention, it will be understood that the present invention is described herein purely by way of example, and modifications of detail can be made within the scope of the invention. Furthermore, one skilled in the art will understand that the present invention may not be limited by the embodiments disclosed herein, or to any details shown in the accompanying figures that are not described in detail herein or defined in the claims.

[0043] Moreover, other and further embodiments of the invention will be apparent to those skilled in the art from consideration of the specification and may be devised without departing from the basic scope thereof, which is determined by the claims that follow.

Claims

1. An aerosol generating device, comprising:
 - an insulator comprising an interior wall and an exterior wall that are separated from one another, a cavity defined within the interior wall in which an aerosol forming substrate can be received, and a heater positioned to heat the aerosol forming substrate when it is received in the cavity;
 - a casing that surrounds the insulator; and
 - electrical contacts that are connected to the heater, wherein at least one of the electrical contacts is mechanically connectable to the casing in order to hold the insulator in place.
2. The aerosol generating device of claim 1, wherein the electrical contacts provide the only connection between the insulator and the casing.
3. The aerosol generating device of claim 1 or claim 2, wherein the interior wall and the exterior wall of the insulator are separated from one another by a vacuum, thereby providing a vacuum insulator.
4. The aerosol generating device of any preceding claim, wherein the insulator is removable from within the casing.
5. The aerosol generating device of any preceding claim, wherein the cavity comprises at least one opening at which the interior wall is joined to the exterior wall, and the one or more electrical contacts are positioned on the insulator at a location that minimises heat flow between the at least one opening and the electrical contacts.
6. The aerosol generating device of claim 5, wherein the insulator is cup-shaped such that the cavity has a single opening at which the interior wall is joined to the exterior wall, and wherein the electrical contacts are positioned at a base of the insulator that is opposite to the opening of the cavity.
7. The aerosol generating device of claim 5, wherein the insulator is tube-shaped such that the cavity has two openings at which the interior wall is joined to the exterior wall, and wherein the electrical contacts are positioned on a side of insulator that is spaced from both of the two openings.

8. The aerosol generating device of any of the preceding claims, wherein the electrical contacts are mechanically connectable to a base portion of the casing. 5
9. The aerosol generating device of any of claims 1 to 7, wherein the electrical contacts are mechanically connectable to a side portion of the casing.
10. The aerosol generating device of claim 9, wherein the side portion of the casing comprises an inner wall and an outer wall, and the electrical contacts are mechanically connectable to the inner wall. 10
11. The aerosol generating device of any of the preceding claims, wherein the electrical contacts comprise a pair of pins. 15
12. The aerosol generating device of claim 11, wherein the pair of pins are connectable to the casing with a lockable coupling. 20
13. The aerosol generating device of claim 12, wherein the pair of pins are connectable to the casing using a bayonet connection or a screw thread. 25
14. The aerosol generating device of any of claims 1 to 10, wherein the electrical contacts comprise a pin and a threaded outer surface that is engageable with the casing to hold the insulator in place. 30

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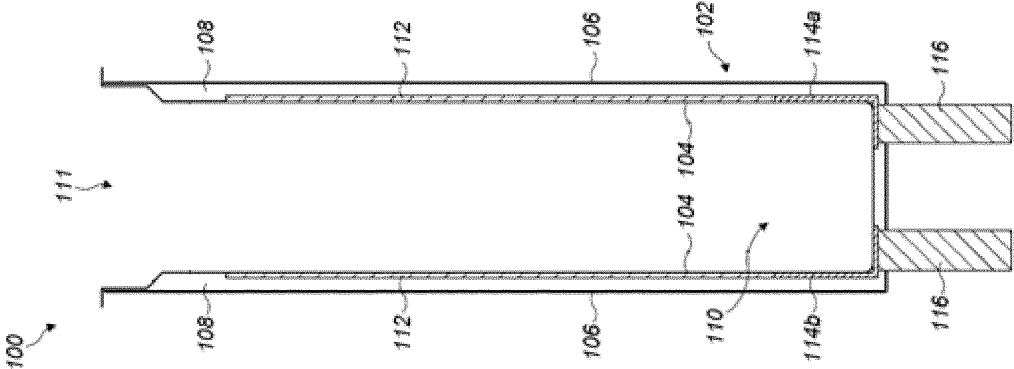


FIG. 1B

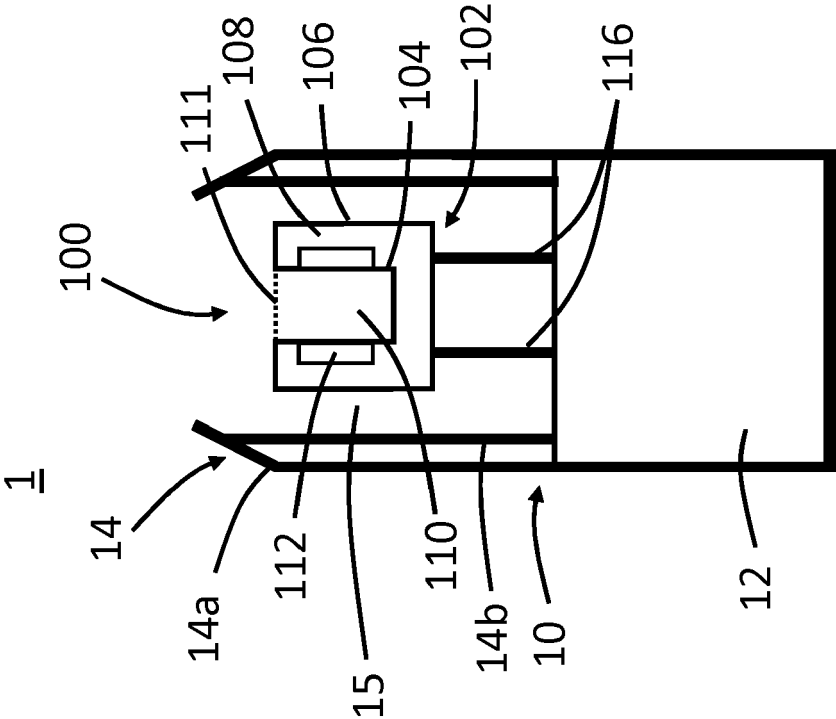
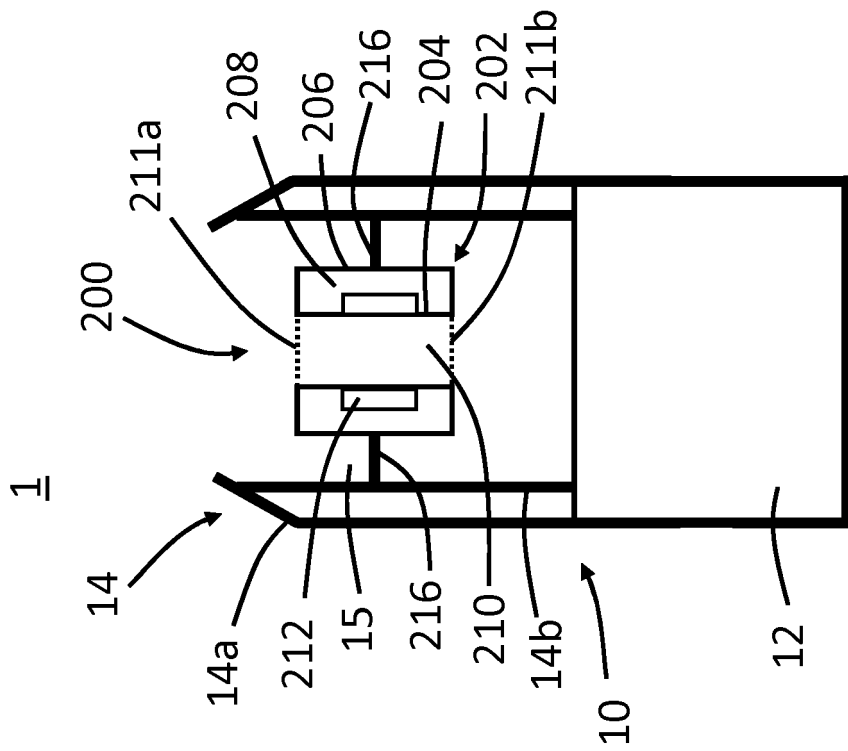
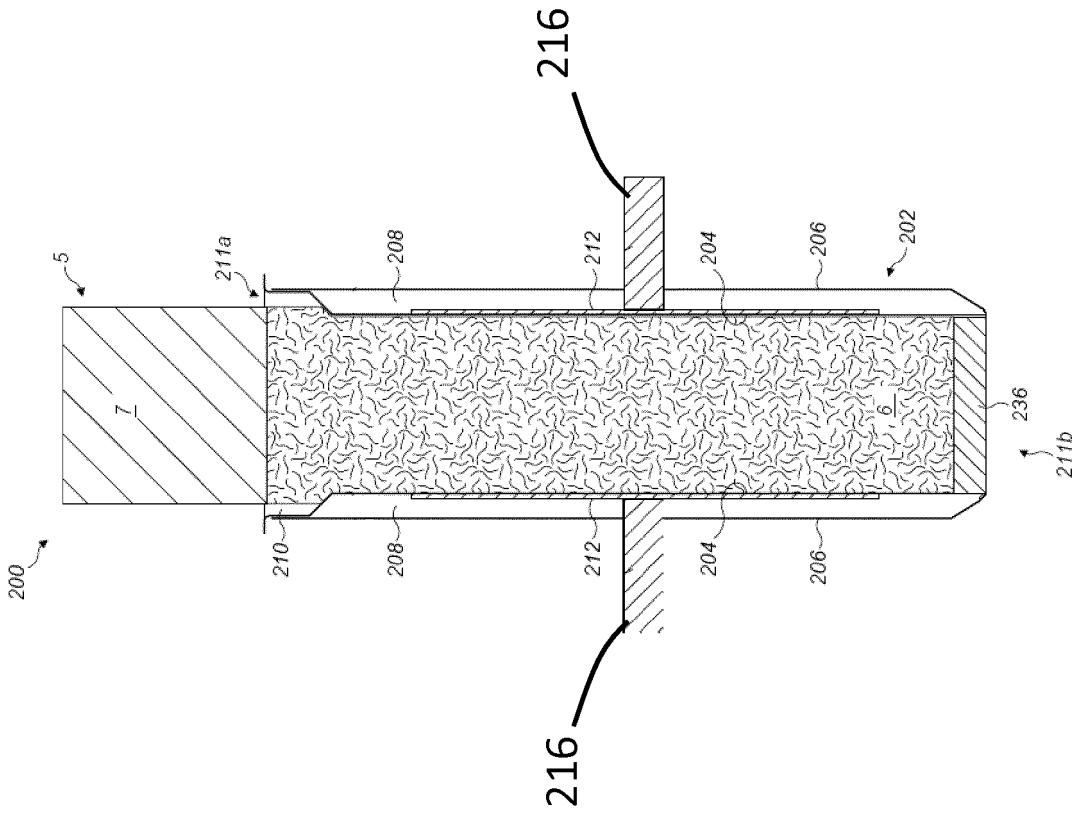


FIG. 1A



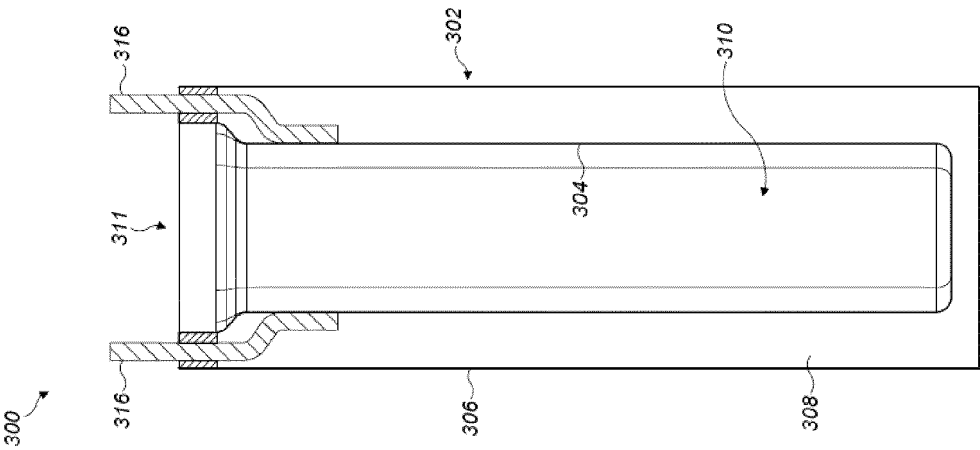


FIG. 3

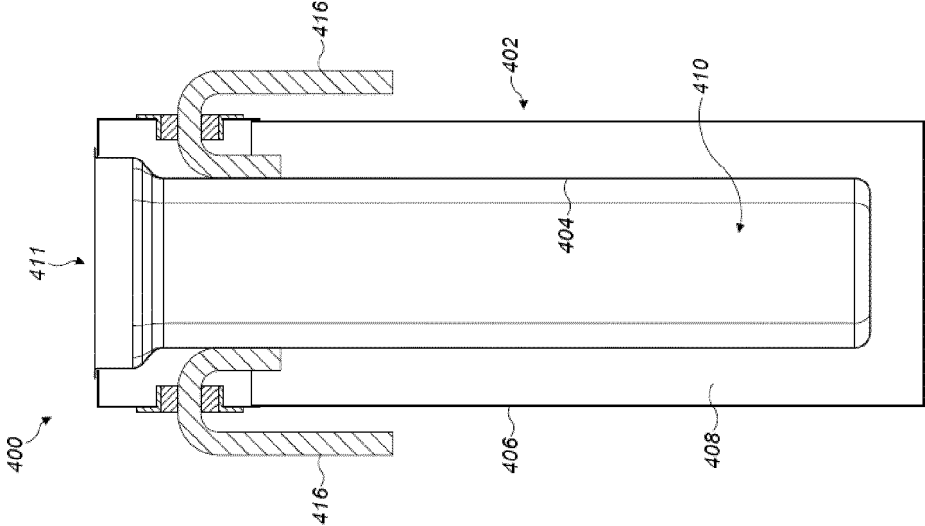


FIG. 4



EUROPEAN SEARCH REPORT

Application Number

EP 22 21 1645

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2021/139786 A1 (SHENZHEN FIRST UNION TECH CO [CN]) 15 July 2021 (2021-07-15) * page 4, line 4 - page 7, line 21; figure 2 *	1-14	INV. A24F40/40
A	WO 2020/218855 A2 (KT & G CORP [KR]) 29 October 2020 (2020-10-29) * paragraphs [0040], [0041], [0049] *	1-14	
A	WO 2022/012678 A1 (SHENZHEN FIRST UNION TECH CO [CN]) 20 January 2022 (2022-01-20) * page 7, line 26 - page 8, line 24; figures 2,9,10 *	1-14	
A	CN 113 729 288 A (SHENZHEN SMOORE TECHNOLOGY LTD) 3 December 2021 (2021-12-03) * figures 15-17 *	1-14	
A	WO 2022/188619 A1 (SHENZHEN SMOORE TECHNOLOGY LTD [CN]) 15 September 2022 (2022-09-15) * page 10, line 8 - line 23; figure 5 *	1	TECHNICAL FIELDS SEARCHED (IPC) A24F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 8 May 2023	Examiner Cardan, Cosmin
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	

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

EP 22 21 1645

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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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 2021139786 A1	A1	15-07-2021	CN	113080522 A		09-07-2021
			EP	4088596 A1		16-11-2022
			JP	2023509192 A		07-03-2023
			KR	20220124774 A		14-09-2022
			WO	2021139786 A1		15-07-2021

WO 2020218855 A2	A2	29-10-2020	CA	3091254 A1		25-10-2020
			CN	112135538 A		25-12-2020
			EP	3817587 A2		12-05-2021
			JP	2021523679 A		09-09-2021
			JP	2022145806 A		04-10-2022
			KR	20200125010 A		04-11-2020
			KR	20210120957 A		07-10-2021
			KR	20230020487 A		10-02-2023
			PH	12020500639 A1		07-06-2021
			TW	202045040 A		16-12-2020
			WO	2020218855 A2		29-10-2020

WO 2022012678 A1	A1	20-01-2022	CN	213344347 U		04-06-2021
			WO	2022012678 A1		20-01-2022

CN 113729288 A	A	03-12-2021	CN	113729288 A		03-12-2021
			JP	2023039407 A		20-03-2023
			KR	20230036958 A		15-03-2023
			WO	2023035853 A1		16-03-2023

WO 2022188619 A1	A1	15-09-2022	CN	215347054 U		31-12-2021
			WO	2022188619 A1		15-09-2022

EPO FORM P0459

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