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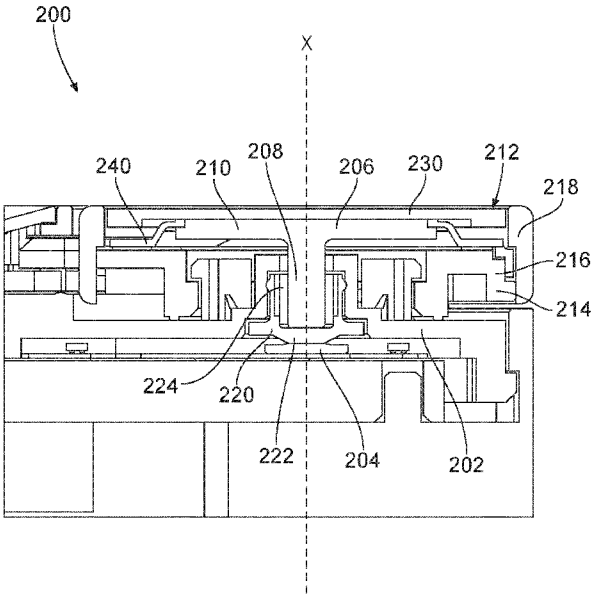

FIG. 3

(57) Abstract: An aerosol provision device button assembly is provided. The aerosol provision device button assembly comprises: a body;an electrical switch in the body; a push member configured to move relative to the body in response to a user action; and an intermediate member; wherein the intermediate member is configured to act between the push member and the switch such that the intermediate member is arranged to activate the switch upon movement of the push member towards the switch; and wherein the push member is configured to rotate about a rotational axis relative to the intermediate member. Also provided is a cover mechanism for an aerosol provision device, an aerosol provision device and an aerosol provision system comprising the aerosol provision device button assembly.

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AEROSOL PROVISION DEVICE BUTTON ASSEMBLY

Technical Field

The present invention relates to an aerosol provision device button assembly. The present invention also relates to a cover mechanism for an aerosol provision device, an aerosol provision device and an aerosol provision system.

Background

Smoking articles such as cigarettes, cigars and the like burn tobacco during use to create tobacco smoke. Attempts have been made to provide alternatives to these articles that burn tobacco by creating products that release compounds without burning. Examples of such products are heating devices which release compounds by heating, but not burning, the material. The material may be for example tobacco or other non-tobacco products, which may or may not contain nicotine.

Summary

In accordance with some embodiments described herein, there is provided an aerosol provision device button assembly comprising: a body; an electrical switch in the body; a push member configured to move along an axis relative to the body in response to a first user action; and an intermediate member; wherein the intermediate member is configured to act between the push member and the switch such that the intermediate member is arranged to activate the switch upon movement of the push member towards the switch; and wherein the push member is configured to rotate about the axis relative to the intermediate member in response to a second user action.

The push member may be configured to move linearly towards and away from the switch.

The push member may be configured to move along the rotational axis.

The intermediate member may be rotationally fixed relative to the body.

The intermediate member may be fixedly mounted to the body.

The intermediate member may be resiliently deformable.

The intermediate member may form a seal with the body. The seal may be a fluid seal.

The body may comprise an opening and the intermediate member may seal the opening.

The body may comprise a bore defining the opening, and the intermediate member may be at least partially received in the bore.

The intermediate member may define a cup.

The intermediate member may comprise a base and a peripheral wall.

The base may act on the switch.

A free end of the peripheral wall is fixedly mounted to the body. The free end may be the end distal to the base.

The intermediate member may form a bearing surface with the push member.

The push member may be movable between an activation position and a deactivation position.

The push member may be configured to deform the intermediate member in the activation position.

The push member may be spaced from the intermediate member in the deactivation position.

The intermediate member may bias the push member towards the deactivation position.

The intermediate member may be free from contact with the push member in the deactivation position.

The push member may be configured to rotate relative to the body.

The button assembly may comprise an actuating ring configured to rotate relative to the body.

The push member may be configured to rotate with the actuating ring.

The push member may be at least partially encircled by the actuating ring.

The button assembly may comprise an actuating member including the actuating ring and the push member.

The actuating ring may be rotationally mounted with the body.

The actuating ring may be retained by the body

The actuating ring may be translationally fixed relative to the body.

The actuating ring may be free from linear movement relative to the body.

The button assembly may comprise a peripheral member extending around at least a portion of the push member.

The peripheral member may extend between the push member and the actuating ring.

The peripheral member may be fixedly mounted with the actuating ring.

The peripheral member may be fixedly mounted with the push member.

The peripheral member may be resiliently deformable.

The peripheral member may form a fluid seal with the push member.

The peripheral member may form a fluid seal with the actuating ring.

The peripheral member may bias the push member towards the deactivation position.

The push member is may be configured to translate along the rotational axis to cause actuation of the switch.

The push member may comprise a push portion and a protruding portion.

The protruding portion may protrude through the opening of the body.

The protruding portion may extend in the intermediate member.

The protruding portion may be a leg.

The button assembly may comprise a cover member extending over the push member.

The button assembly may comprise a cover member rotationally fixed with the push member.

The cover member may cover the push member.

The cover member may cover the peripheral member.

The cover member may define a user engaging push surface.

Linear actuation of the actuating member may actuate the switch.

Rotatable actuation of the actuating member may be configured to selectively actuate a cover mechanism.

In accordance with some embodiments described herein, there is provided a cover mechanism for an aerosol provision device, comprising an aerosol provision device button assembly as described in any of the above and a cover member arranged to selectively at least partially cover a chamber opening to a chamber arranged to receive at least a portion of an article comprising aerosol generating material, wherein rotation of the actuating member relative to the body causes the cover member to move between a relatively open position in which the at least a portion of an article is able to pass through the opening and a relatively closed position in which the at least a portion of an article is prevented from being able to pass through the opening.

The chamber opening may be offset from an axis of rotation of the actuating member.

In accordance with some embodiments described herein, there is provided an aerosol provision device comprising the aerosol provision device button assembly of any of the above.

In accordance with some embodiments described herein, there is provided an aerosol provision device comprising the cover mechanism of any of the above.

In accordance with some embodiments described herein there is provided an aerosol provision system comprising the aerosol provision device of any of the above and an article comprising aerosol generating material.

Brief Description of Drawings

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 exterior of an aerosol generating device and an article containing aerosol generating material;

Figure 2 shows an exploded perspective view of part of the aerosol generating device including a button assembly; and

Figure 3 shows a cross sectional view of the button assembly.

Detailed Description

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".

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.

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.

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.

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.

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

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.

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.

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.

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.

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.

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.

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.

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.

An aerosol provision 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 material, and optionally other components in use. A user may insert the article into the aerosol provision 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.

Figure 1 shows an aerosol provision device 100 for generating aerosol from an aerosol generating material. In broad outline, the device 100 may be used to heat a replaceable article 300 comprising the aerosol generating material, to generate an aerosol or other inhalable medium which is inhaled by a user of the device 100. The article 300 and the device 100 together form an aerosol provision system.

The device 100 comprises a main body 101. The main body 101 comprises a heating chamber to heat the aerosol generating material. A housing 102 surrounds and houses various components of the main body 101. An opening 103 is formed at one end of the main body 101, communicating with the heating chamber. The article 300 may be at least partially inserted through the opening 103 into the heating chamber for heating by an aerosol generator 150 that is housed in the housing 102. In use, the article 300 may be heated by one or more components of the aerosol generator 150.

The aerosol provision device 100 defines a longitudinal axis X.

The device 100 comprises an electrical component, such as a connector/port 160, which can receive a cable to charge the device 100. For example, the connector 160 may be a charging port, such as a USB charging port. In some examples the

connector 160 may be used additionally or alternatively to transfer data between the device 100 and another device, such as a computing device.

The device 100 comprises a power source 170, for example, a battery, such as a rechargeable battery or a non-rechargeable battery. Examples of suitable batteries include, for example, a lithium battery (such as a lithium-ion battery), a nickel battery (such as a nickel–cadmium battery), and an alkaline battery. The battery is electrically coupled to the aerosol generator 150 to supply electrical power when required and under control of a controller to heat the aerosol generating material.

The device 100 comprises an electronics module 112. The electronics module 112 may comprise, for example, a printed circuit board (PCB). The PCB may support at least one controller, such as a processor, and memory. The PCB may also comprise one or more electrical tracks to electrically connect together various electronic components of the device 100. For example, the battery terminals may be electrically connected to the PCB so that power can be distributed throughout the device 100.

The main body 101 defines ends of the device 100. The end of the device 100 closest to the opening 103 may be known as the proximal end (or mouth end) 104 of the device 100 because, in use, it is closest to the mouth of the user. In use, a user inserts an article 300 into the opening 103, operates the aerosol generator 150 to begin heating the aerosol generating material and draws on the aerosol generated in the device. This causes the aerosol to flow through the device 100 along a flow path towards the proximal end of the device 100.

The other end of the device furthest away from the aperture 103 may be known as the distal end 106 of the device 100 because, in use, it is the end furthest away from the mouth of the user. As a user draws on the aerosol generated in the device 100, the aerosol flows in a direction towards the proximal end of the device 100. The terms proximal and distal as applied to features of the device 100 will be described by reference to the relative positioning of such features with respect to each other in a proximal-distal direction along the longitudinal axis.

As used herein, the term one-piece component refers to a component of the device 100 which is not separable into two or more components following assembly of the device 100. Integrally formed relates to two or more features that are formed into a one piece component during a manufacturing stage of the component.

In one example, the aerosol generator 150 comprises an induction-type heating system, including a magnetic field generator. The magnetic field generator comprises an inductor coil assembly. The aerosol generator 150 comprises a heating element. The heating element is also known as a susceptor.

A susceptor is a material that is heatable by penetration with a varying magnetic field, such as an alternating magnetic field. The susceptor may be an electrically-conductive material, so that penetration thereof with a varying magnetic field causes induction heating of the heating material. The heating material may be magnetic material, so that penetration thereof with a varying magnetic field causes magnetic hysteresis heating of the heating material. The susceptor may be both electrically-conductive and magnetic, so that the susceptor is heatable by both heating mechanisms. The device that is configured to generate the varying magnetic field is referred to as a magnetic field generator, herein.

The aerosol generator 150 is an inductive heating assembly and comprises various components to heat the aerosol generating material of the article 300 via an inductive heating process. Induction heating is a process of heating an electrically conducting object (such as a susceptor) by electromagnetic induction. An induction heating assembly may comprise an inductive element, for example, one or more inductor coils, and a device for passing a varying electric current, such as an alternating electric current, through the inductive element. The varying electric current in the inductive element produces a varying magnetic field. The varying magnetic field penetrates a susceptor suitably positioned with respect to the inductive element, and generates eddy currents inside the susceptor. The susceptor has electrical resistance to the eddy currents, and hence the flow of the eddy currents against this resistance causes the susceptor to be heated by Joule heating. In cases where the susceptor comprises ferromagnetic material such as iron, nickel or cobalt, heat may also be generated by magnetic hysteresis losses in the susceptor, i.e. by the varying orientation of magnetic dipoles in the magnetic material as a result of their alignment with the varying magnetic field. In inductive heating, as compared to heating by conduction for example, heat is generated inside the susceptor, allowing for rapid heating. Further, there need not be any physical contact between the inductive heater and the susceptor, allowing for enhanced freedom in construction and application.

The inductor coil assembly includes an inductor coil. In embodiments, the number of inductor coils differs. In embodiments, a two or more inductor coils are

used. The inductor coil assembly also comprises a coil support. The coil support is tubular.

The heating element is part of a heating assembly. The heating element of this example is hollow and therefore defines at least part of a receptacle within which aerosol generating material is received. For example, the article 300 can be inserted into the heating element. The heating element is tubular, with a circular cross section. The heating element has a generally constant diameter along its axial length.

In embodiments, the heating assembly defines the receptacle and the heating element upstands in the receptacle. The heating element may comprise a pin or blade arranged to penetrate the consumable. In embodiments, the consumable comprises the heating element and the aerosol provision device comprises an inductor coil arranged to inductively heat the heating element in the consumable.

The heating element is formed from an electrically conducting material suitable for heating by electromagnetic induction. The susceptor in the present example is formed from a carbon steel. It will be understood that other suitable materials may be used, for example a ferromagnetic material such as iron, nickel or cobalt.

In other embodiments, the feature acting as the heating element may not be limited to being inductively heated. The feature, acting as a heating element, may therefore be heatable by electrical resistance. The aerosol generator 150 may therefore comprise electrical contacts for electrical connection with the apparatus for electrically activating the heating element by passing a flow of electrical energy through the heating element.

The receptacle and article 300 are dimensioned so that the article 300 is received by the heating element. This helps ensure that the heating is most efficient. The article 300 of this example comprises aerosol generating material. The aerosol generating material is positioned within the receptacle. The article 300 may also comprise other components such as a filter, wrapping materials and/or a cooling structure.

Figure 2 shows an exploded perspective view of a user interaction assembly 180 for an aerosol provision device. The user interaction assembly 180 comprises a cover mechanism 181 and a button assembly 200. The user interaction assembly 180 may be used with the aerosol provision device 100 of Figure 1 and will be described

by reference to that device. In embodiments, the user interaction assembly 180 is used with other device arrangements.

A body 202 is disposed at one end of the device 100. The body 202 is a portion of the main body 101 of the device 100. The body 202 is a rigid member. In embodiments, the body 202 may be integrally formed with other components of the device 100.

The body 202 defines the opening 103 of the device 100. The opening 103 communicates with the heating chamber. The opening 103 is dimensioned to receive at least a portion of an article comprising aerosol generating material, such as the article 300. The cover mechanism 181 comprises a cover element 182 arranged to selectively cover the opening 103. The button assembly 200 comprises an actuating member 212. The actuating member 212 is a substantially annular member. The actuating member 212 is provided to selectively actuate the cover element 182. The cover element 182 pivots between open and closed positions to selectively block the opening 103. In embodiments the cover member 182 slides between open and closed positions, for example linearly.

A cam mechanism 183 is provided to drive the cover element 182 in response to action of the actuating member 212. The cam mechanism 183 acts as a drive mechanism. In embodiments, another mechanism is provided to act as the drive mechanism, for example a gear mechanism.

Inner and outer cover elements 184, 185 extend over at least part of the body 202. The inner and outer cover elements 184, 185 at least partially define the opening 103. One or both of the inner and outer cover elements 184, 185 may be omitted.

The actuating member 212 is arranged to rotate on the body 202 to actuate the cover element 182. The actuating member 212 covers part of the body 202. Part of the body 202 extends in the actuating member 212. The axis of rotation of the actuating member 212 is parallel with the longitudinal axis of the heating chamber. The axis of rotation of the actuating member 212 is spaced from the longitudinal axis of the heating chamber. The opening 103 is spaced from the actuating member 212. The opening 103 is spaced from the actuating member 212 in a radial direction relative to the axis of rotation of the actuating member 212. The opening 103 does not overlap the actuating member 212 in a plane perpendicular to the axis of rotation of the actuating member 212.

Referring to Figures 2 and 3, the aerosol provision device button assembly 200 is shown in an exploded view in Figure 2 and in a cross-sectional view in Figure 3. The aerosol provision device button assembly 200 is at the proximal end 104 of the device 100.

The button assembly is arranged to be operated in response to two distinct user interactions. A first interaction is a push interaction. A second interaction is a rotational interaction. The push interaction causes a push actuation of the button assembly 200 and the rotational interaction causes a rotational actuation of the button assembly 200. The push actuation is configured to cause an electrical change of state of the device 100, for example to send a signal to the controller to cause a change in an operating state of the device, for example at least one of starting operation of the aerosol generator and changing an operating mode of the aerosol generator. The rotational actuation is configured to cause a mechanical change of state of the device 100, for example to mechanical operate the cover mechanism 180.

An electrical switch 204 is provided in the body 202. The electrical switch 204 is provided to be actuated in response to user interaction of the button assembly 200. The electrical switch 204 is in electrical communication with the electronics module 112. The electrical switch 204 is operable in response to a biasing force being applied.

The switch 204 may be a mechanical switch that is operable in response to a mechanical movement in the direction of the longitudinal axis. In embodiments, the switch 204 may be a sensor. The switch 204 may be a pressure sensor that is operable in response to pressure being applied to the sensor.

The button assembly 200 comprises a push member 206. An intermediate member 220 is disposed between the push member 206 and the switch 204. A cover member 230 extends over the push member 206.

The push member 206 forms part of the actuating member 212. The actuating member 212 comprises an actuating ring 214. The actuating ring 214 comprises an inner actuating component 216 and an outer actuating component 218.

The outer actuating component 218 is rotationally fixed to the inner actuating component 216. The outer actuating component 218 surrounds the inner actuating component 216. The outer actuating component 218 partially defines an exterior surface of the aerosol provision device 100. The outer actuating component 218 is a

tubular body. The outer actuating component 218 forms a peripheral wall around the inner actuating component 216. In embodiments, the outer and inner actuating components 218, 216 are combined as a single integral component.

The inner and outer actuating components 216, 218 are formed of different materials. The inner actuating component 216 is formed of a relatively low friction material. Advantageously, this reduces wear.

The body 202 comprises an actuating member mount 203. The inner actuating component 216 is rotatably engaged with the actuating member mount 203. The actuating member mount 203 restricts linear movement of the actuating member 212 relative to the body. The inner actuating component 216 comprises a shoulder 217, acting as a locating feature in engagement with the actuating member mount 203. The shoulder 217 circumferentially extends around an inner surface of the actuating member 420.

The actuating member mount 203 comprises a mounting configuration 219. The mounting configuration 219 is resilient. In this embodiment, the actuating member mount 203 comprises four clips. As the actuating member 212 rotates on the body 402, the clips slide along the shoulder 217. The engagement of the clips with the shoulder 217 prevents axial, translational, movement of the actuating ring 214.

The actuating ring 214 defines a central recess 225. The actuating member mount 203 extends in the central recess 225. The push member extends in the central recess 225. The push button extends in the actuating member mount 203 of the body.

The push member 206 is a rigid member. The push member 206 is formed as a linear actuating member comprising a disc portion, acting as proximal portion 210 and a column portion, acting as a distal protruding portion 208. The disc portion 210 is a push portion that, in use, receives a biasing force. The column portion 208 is a leg that extends perpendicularly from the top surface 210 along the axis X of the button assembly 200.

The disc portion 210 of the push member 206 is generally circular. The actuating ring 214 encircles the push member 206 The outer actuating component 218 encircles the disc portion 210 of the push member 206. In embodiments, part or all of the actuating ring 214 may encircle the part or all of the push member 206 for form the actuating member 212.

The actuating ring 214 is configured to rotate relative to the fixed body 202 around the rotational axis X. The push member 206 is configured to rotate relative to the body 202.

A peripheral member 240 extends around the push member 206. The peripheral member 240 extends from the disc portion 210. The peripheral member 240 is arranged around the peripheral edge of the top surface 210 of the push member 206. The peripheral member 240 is a resiliently deformable member. The peripheral member 240 is fixedly mounted with the push member 206. In embodiments the peripheral member 240 is integrally formed with the push member 206. The peripheral member may form a fluid seal with the push member 206. An inner side 241 of the peripheral member 240 mounts with an edge of the push member 206. The peripheral member 240 is peripherally and fixedly mounted with the actuating ring 214. The peripheral member 240 may form a fluid seal with the actuating ring 214. An outer peripheral side 242 of the peripheral member 240 is seated on the inner actuating component 216. The proximal side of the inner actuating component 216 forms a peripheral member seat 241. The push member 206 is configured to rotate with the actuating ring about the rotational axis X. The peripheral member 240 is configured to rotate with the actuating ring about the rotational axis X. The peripheral member 240 forms a seal between the push member 206 and the actuating ring 214. The peripheral member 240 aids the restriction of ingress into the device.

The peripheral member 240 comprises an inclined portion between the respective mountings with the push member 206 and the actuating ring 214. The inclined portion of the peripheral member 240 is deformable and aids relative movement between the push member 206 and the actuating ring 214 along the longitudinal axis X. The peripheral member 240 is made of a resiliently deformable material such that the relative movement is biased into an original, unactuated, position.

In embodiments, the peripheral member 240 may extend around only part of the top surface 210 of the push member 206. In embodiments, the peripheral member extends fully around the whole circular edge of the top surface 210 of the push member 206. In embodiments, the peripheral member may be mounted to the outer actuating component 218 of the actuating ring 214.

The actuating ring 214 is retained by the body 202. In embodiments, the actuating ring 214 is translationally fixed relative to the body 202. As such, the actuating ring 214 is able to rotate relative to the body 202 and is prevented from substantially moving axially with respect to the body.

The push member 206 extends in the intermediate member 220. The column portion 208 of the push member 206 extends into the intermediate member 220, with the distal, free, end of the column portion 208 being received in the intermediate member 220.

The intermediate member 220 is formed as a cup. In embodiments, the intermediate member may have a different configuration. The protruding member 208 extends in a cavity defined by the cup. The cup comprises a base 222. The base 222 has an inner surface which contacts the free end of the column portion 208 of the push member 206. The base 222 has an outer surface which is configured to abut or be biased into abutment with the switch 204. The base 222 acts on the switch.

The intermediate member 220 comprises a peripheral wall 224 which extends substantially perpendicular to the base 222. The peripheral wall encircles the free end of the protruding portion 208 distal to the top 210 of the push member 206. The free end of the peripheral wall 224 is fixedly mounted to the body 202.

The intermediate member 220 is rotationally fixed relative to the body 202. The intermediate member 220 is fixedly mounted to the body. The intermediate member is resiliently deformable relative to the body.

The fixed body 202 comprises an opening 205. The intermediate member 220 seals the opening 205. The intermediate member 220 is formed of a deformable material. The intermediate member is formed of a flexible or resilient material. As such, the intermediate member 220 is able to deform to act on the switch 204 and actuate the switch 204.

The intermediate member forms a fluid seal with the body 202 to close the opening 205. This may be beneficial to prevent, for example, condensation or debris from passing through the opening 205. A bore of the body 202 defines the opening 205. The intermediate member 220 is at least partially received in the bore. The bore may provide contact with the body about the switch 204 to provide the seal.

The protruding portion 208 of the push member 206 protrudes through the opening 205 of the body 202.

A cover member 230 is provided on the push member 206. The cover member 230 defines a user engaging push surface. The cover member 230 is provided across an inner proximal extent of the actuating ring 214. The cover member is received in the actuating ring 214. The cover member 230 extends over the push member 206. The cover member 230 covers the push member 206. The cover member covers the peripheral member. The cover member 230 may be integrally formed with the push member 206 or omitted.

The cover member 230 is a rigid member. The cover member is movable with the push member 206. The cover member 230 is movable in an axial direction. Engagement with the push member biases the push member 206. The cover member 230 is rotationally fixed with the push member 206 such that it rotates with the push member 206.

In use, a user engages with the user engaging push surface of the cover member 230. This may be referred to as a first user action. The push member 206 is pushed and moves along the axis X. When urged in an axial direction, the push member 206 translates towards the switch 204. The intermediate member 220 is configured to act between the push member 206 and the switch 204. When the push member 206 moves towards the switch 204, the intermediate member 220 deforms to act on and activate the switch 204.

The user may also engage with the button assembly 200 with a rotational interaction. This may be referred to as a second user action. The rotational actuation is configured to cause a mechanical change of state of the device 100. The push member 206 is configured to rotate about the rotational axis X relative to the intermediate member 220. The push member 206 forms a bearing surface with the intermediate member 220. The resistance between the push member and the intermediate member 220 is reduced at the bearing surface such that the push member rotates relative to the intermediate member.

Rotation of the push member 206 causes rotation of the actuating member 212. The actuating member rotates on the body 202 to actuate the cover mechanism 180. The cover mechanism 180 is rotationally operated. The cover element 182 is

rotated by the cover mechanism 180 between a relatively open position and a relatively closed position to block the opening 103. The push member 206 is movable between an activation and a deactivation position. Linear actuation of the actuating member 212 from an activation and a deactivation position actuates the switch 204.

As the push member 206 is moved to the activation position, the push member 206 deforms the intermediate member 220. The distal end of the protruding portion 208 of the push member 206 contacts the intermediate member 220. The protruding portion 208 of the push member 206 forms a bearing surface with the intermediate member 220. The intermediate member 220 acts on the switch 204 to activate the switch 204.

In the deactivation position, the push member 206 is in contact with the intermediate member 220. The protruding portion 208 of the push member 206 forms a bearing surface with the intermediate member 220 to aid relative rotation. In embodiments, the base 222 of the intermediate member 220 is free from contact from the distal end of the protruding portion 208 in the deactivation position. In embodiments, the intermediate member 220 may be entirely free from contact with the push member 206 in the deactivation position.

In embodiments, the intermediate member 220 is configured to bias the push member 206 towards the deactivation position. The intermediate member 220 being made of a resilient material provides resistance to activation of the switch 204.

In embodiments, the peripheral member 240 is configured to bias the push member 206 to the deactivation position. The inclined portion of the peripheral member 240 spaces the distal end the protruding portion 208 from the base 222 of the intermediate member 220. When the push member 206 is pushed, the biasing force is overcome and the peripheral member 240 deforms.

The electrical switch 204 is configured to perform an action of the aerosol provision device. In embodiments, the device 100 may turn on when the switch 204 is activated. For example, a predetermined session of use of the aerosol provision device may be initiated. In embodiments, the aerosol provision device 100 may be configured to operate in a first, standard or base mode of operation in response to the switch 204 being activated. In embodiments, the switch 204 being activated a second time within a predetermined period by a user action may change the mode of use of

the device. In embodiments, the switch 204 being activated again by a user action may could the device to turn off. In embodiments, the switch 204 may be required to be continually activated by a user action while a session of use is in progress.

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 specifically 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 device button assembly comprising:

a body;

an electrical switch in the body;

a push member configured to move along an axis relative to the body in response to a first user action;

and

an intermediate member configured to act between the push member and the switch such that the intermediate member is arranged to activate the switch upon movement of the push member towards the switch; and

wherein the push member is configured to rotate about the axis relative to the intermediate member in response to a second user action.

2. The aerosol provision device button assembly of claim 1, wherein the push member is configured to move linearly towards and away from the switch.

3. The aerosol provision device button assembly of claim 1 or 2, wherein the intermediate member is rotationally fixed relative to the body.

4. The aerosol provision device button assembly of any of claims 1 to 3, wherein the intermediate member is resiliently deformable.

5. The aerosol provision device button assembly of any of claims 1 to 4, wherein the intermediate member forms a seal with the body.

6. The aerosol provision device button assembly of claim 5, wherein the body comprises an opening and the intermediate member seals the opening.

7. The aerosol provision device button assembly of any of claims 1 to 6, wherein the intermediate member defines a cup.

8. The aerosol provision device button assembly of any of claims 1 to 7, wherein the intermediate member comprises a base and a peripheral wall, and the base acts on the switch.

9. The aerosol provision device button assembly of claim 8, wherein a free end of the peripheral wall distal to the base is fixedly mounted to the body.

10. The aerosol provision device button assembly of any of claims 1 to 9, wherein the intermediate member forms a bearing surface with the push member.

11. The aerosol provision device button assembly of any of claims 1 to 10, wherein the push member is movable between an activation position and a deactivation position, and the push member is configured to deform the intermediate member in the activation position.

12. The aerosol provision device button assembly of any of claims 1 to 11, wherein the push member is movable between an activation position and a deactivation position, and the intermediate member biases the push member towards the deactivation position.

13. The aerosol provision device button assembly of any of claims 1 to 12, wherein the push member comprises a push portion and a protruding portion.

14. The aerosol provision device button assembly of claim 13, wherein the protruding portion protrudes through the opening of the body

15. The aerosol provision device button assembly of claim 13 or 14, wherein the protruding portion extends in the intermediate member.

16. The aerosol provision device button assembly of any of claims 1 to 15, comprising an actuating member configured to rotate on the body, wherein the actuating member comprises the push member.

17. The aerosol provision device button assembly of claim 16, wherein the actuating ring is translationally fixed relative to the body.

18. The aerosol provision device button assembly of claim 16 or 17, comprising a peripheral member extending between the push member and the actuating ring.

19. The aerosol provision device button assembly of claim 18, wherein the peripheral member is resiliently deformable.

20. The aerosol provision device button assembly of claim 18 or 19, wherein the peripheral member forms a fluid seal.

21. The aerosol provision device button assembly of any of claims 1 to 20, comprising a cover element extending over the push member

22. A cover mechanism for an aerosol provision device, comprising the aerosol provision device button assembly of any of claims 16 to 20 and a cover member arranged to selectively at least partially cover a chamber opening to a chamber arranged to receive at least a portion of an article comprising aerosol generating material, wherein rotation of the actuating member relative to the body causes the cover member to move between a relatively open position in which the at least a portion of an article is able to pass through the opening and a relatively closed position in which the at least a portion of an article is prevented from being able to pass through the opening.

23. The cover mechanism of claim 22, wherein the chamber opening is offset from an axis of rotation of the actuating member.

24. An aerosol provision device comprising the aerosol provision device button assembly of any of claims 1 to 21 or the cover mechanism for an aerosol provision device of claim 22 or 23.

25. An aerosol provision system comprising the aerosol provision device of claim 24 and an article comprising aerosol generating material.

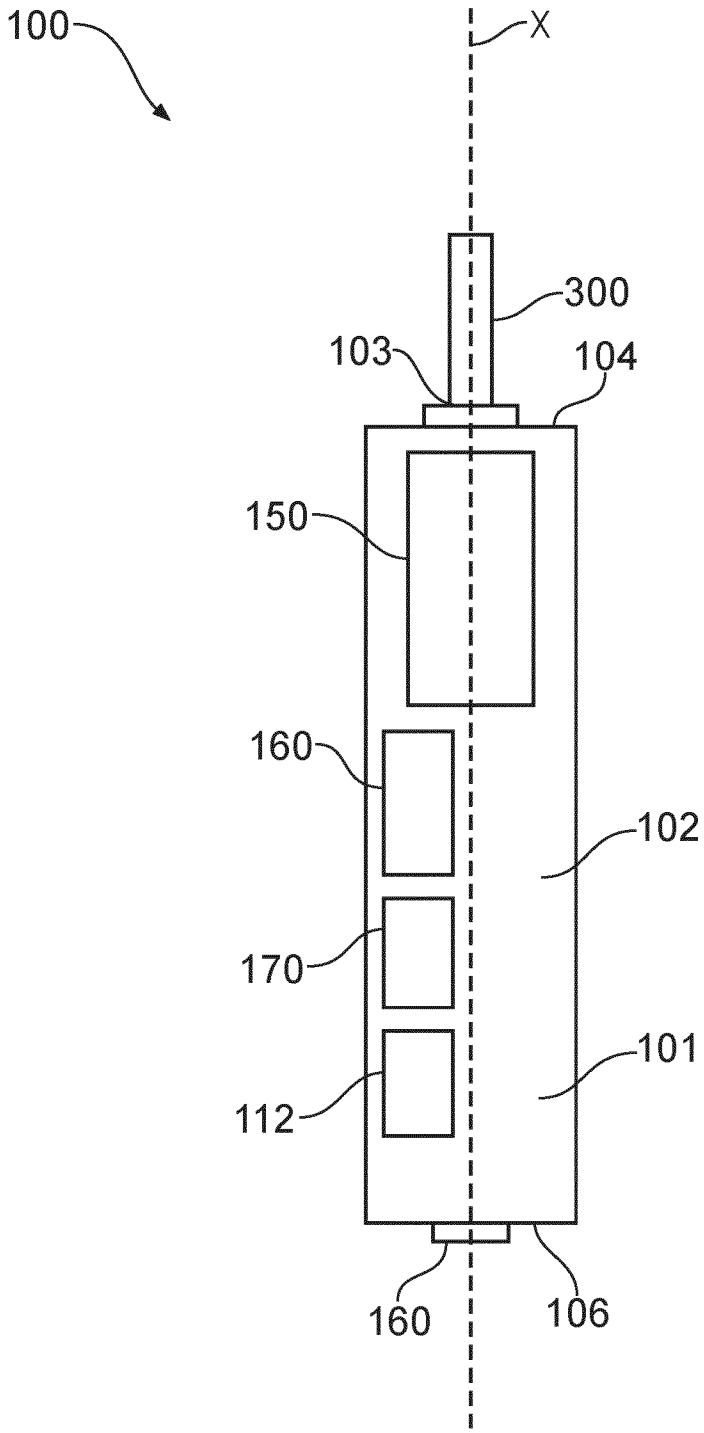

FIG. 1

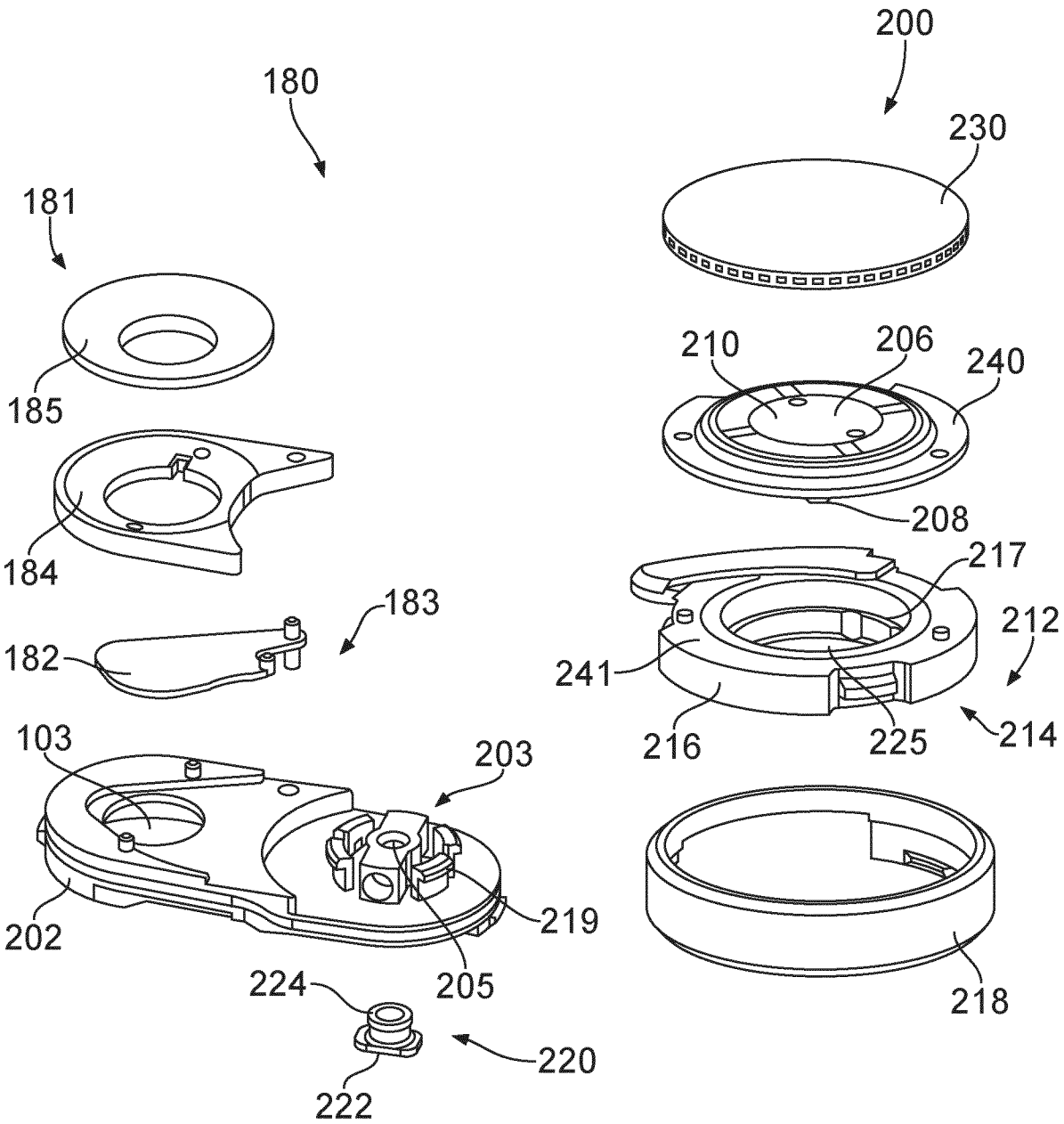
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FIG. 2

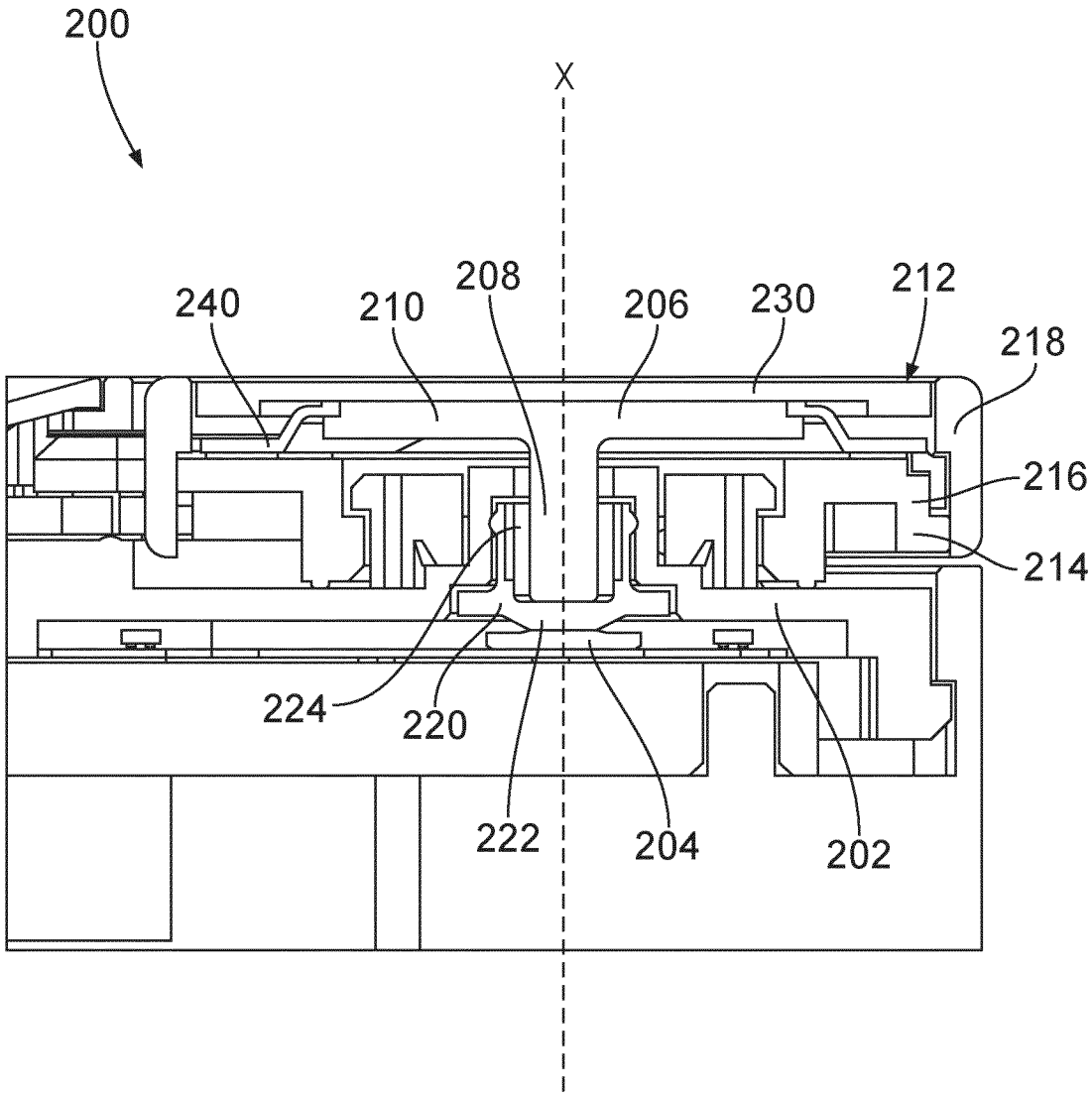

FIG. 3

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2024/050622

A. CLASSIFICATION OF SUBJECT MATTER
INV. H01H25/06
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)
H01H 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

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2017/097172 A1 (CHANGZHOU JWEI INTELLIGENT TECH CO LTD [CN] ET AL.) 15 June 2017 (2017-06-15) page 4, line 2 - line 8 page 9, line 4 - line 10 figures 1-4	1,2,8,9, 13-25
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X	EP 3 014 400 B1 (APPLE INC [US]) 3 June 2020 (2020-06-03) paragraph [0037] - paragraph [0041] figures 3, 4	1-18

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

☒ See patent family annex.

* Special categories of cited documents :

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
10 April 2024	19/04/2024

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Fribert, Jan

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2024/050622

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