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(54) Title: CASE FOR A VAPOUR PROVISION DEVICE

(57) Abstract: A case for a cartridge for a vapour provision device is configured such that opening the case involves a coordinated action using both hands. In some implementations, the case comprises a first housing portion and a second housing portion which come together to contain and enclose the cartridge when the case is shut and separate to open the case to allow access to the cartridge.

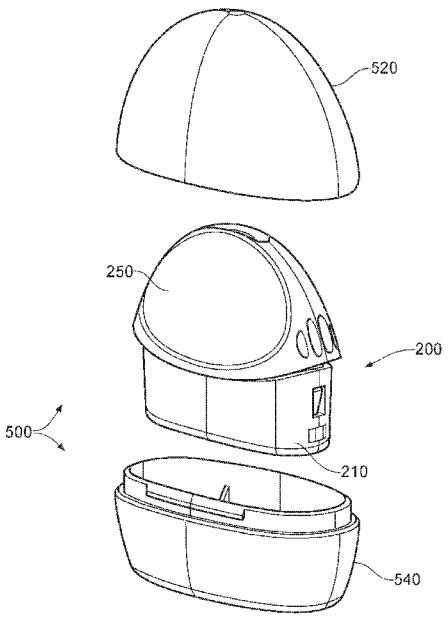

FIG. 5

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CASE FOR A VAPOUR PROVISION DEVICE

TECHNICAL FIELD

The present disclosure relates to a case for a vapour provision device, e.g. an e-cigarette, and other similar devices.

BACKGROUND

Many electronic vapour provision systems, such as e-cigarettes and other electronic nicotine delivery systems, are formed from two main components – a cartomiser and a control unit. The cartomiser generally includes a reservoir of liquid and an atomiser for vaporising the liquid. The atomiser is often implemented as an electrical (resistive) heater, such as a coil of wire. The control unit generally includes a battery for supplying power to the atomiser. In operation, the control unit may be activated, for example by detecting when a user inhales on the device and/or when the user presses a button, to provide electrical power from the battery to the heater. This activation causes the heater to vaporise a small amount of liquid from the reservoir, which is then inhaled by the user.

This type of e-cigarette therefore generally incorporates two consumables, firstly the liquid to be vaporised, and secondly power in the battery. Regarding the former, once the reservoir of liquid has been exhausted, the cartomiser may be discarded to allow replacement with a new cartomiser. Regarding the latter, the control unit may provide some form of electrical connector for receiving power from an external source, thereby allowing the battery within the e-cigarette to be re-charged.

Although e-cigarettes and their ancillaries have developed rapidly over the past few years, there remain areas where it is desirable to improve the operability and user experience for such devices.

SUMMARY

The disclosure is defined in the appended claims.

Provided herein is a case for a cartridge for a vapour provision device, said case being configured such that opening the case involves a coordinated action using both hands. Also provided herein is a case for a cartridge for a vapour provision device, said case comprising a first housing portion and a second housing portion which separate to open the case to allow access to the cartridge, wherein the case is configured such that the cartridge is held in the first housing portion after the case is opened. Also provided herein is a case for a cartridge for a vapour provision device, said case configured to provide a substantially rigid housing that fits closely around the cartridge when detached from the electronic vapour

provision device, said housing when closed providing a sealed environment for the cartridge. It will be appreciated that these different features may all be implemented in the same case.

BRIEF DESCRIPTION OF THE DRAWINGS

Various embodiments of the invention will now be described in detail by way of example only with reference to the following drawings:

Figure 1 is a cross-section through an e-cigarette comprising a cartomiser and a control unit.

Figure 2 is an isometric external view of the cartomiser of the e-cigarette of Figure 1.

Figure 3 is a collection of five external views of the cartomiser of Figure 2. In particular, the bottom view shows the cartomiser from underneath, the top view shows the cartomiser from above, the central view shows a face view of the cartomiser (from front or back), and on either side of the central view are respective side views of the cartomiser.

Figure 4 is an exploded view of the cartomiser of the e-cigarette of Figure 1.

Figure 5 shows an exploded (open) view of a case in accordance with some embodiments for a cartomiser such as shown in Figures 1-4.

Figures 6A and 6B show a front view and a side view respectively of the case of Figure 5 in a closed configuration in accordance with some embodiments. Figure 6C shows a section through the case of Figures 6A and 6B and a cartomiser located inside the case. The section is taken through the centre of the case and cartomiser in a plane extending from one side of the case/cartomiser to the opposite side.

Figures 7A and 7B show more details of the bottom housing and top housing respectively of the case in accordance with some embodiments. Figure 7C shows a section through the case of Figures 6A and 6B and a cartomiser located inside the case. The section is taken through the centre of the case and cartomiser in a plane extending from the front face to the back face of the case/cartomiser.

Figure 8A is a section through the case and cartomiser therein corresponding to the section of Figure 6C, but additionally illustrating a method of opening the case. Figure 8B is a section through the case and cartomiser therein corresponding to the section of Figure 7C, but additionally illustrating a method of opening the case.

DETAILED DESCRIPTION

Figure 1 is a cross-section through an e-cigarette 100. The e-cigarette comprises two main components, namely a cartomiser 200 and a control unit 300. The cartomiser includes a chamber 270 containing a reservoir of liquid, a heater to act as an atomiser or

vaporiser, and a mouthpiece. The liquid in the reservoir (sometimes referred to as the e-liquid) typically includes nicotine in an appropriate solvent, and may include further constituents, for example, to aid aerosol formation, and/or for additional flavouring. The cartomiser 200 further includes a wick/heater assembly 500, which includes a wick or similar facility to transport a small amount of liquid from the reservoir to a heating location on or adjacent the heater. The control unit 300 includes a re-chargeable cell or battery 350 to provide power to the e-cigarette 100, a printed circuit board (PCB) for generally controlling the e-cigarette (not shown in Figure 1), and a microphone 345 for detecting a user inhalation (via a pressure drop). When the heater receives power from the battery, as controlled by the PCB in response to the microphone 345 detecting a user puff on the e-cigarette 100, the heater vaporises the liquid from the wick and this vapour is then inhaled by a user through the mouthpiece.

For ease of reference, the x and y axes are marked in Figure 1. The x axis will be referred to herein as the width of the device (from side to side), while the y axis will be referred to herein as the height axis, where the cartomiser 200 represents the upper portion of the e-cigarette 100 and the control unit 300 represents the lower portion of the e-cigarette. Note that this orientation reflects how a user holds the e-cigarette 100 during normal operation of the device, given that the wick is located in the lower part of the reservoir in the cartomiser 200. Therefore holding the e-cigarette 100 in this orientation ensures that the wick is in contact with liquid at the bottom of the reservoir.

We further assume a z axis (not shown in Figure 1) which is perpendicular to the x and y axes shown in Figure 1. The z axis will be referred to herein as the depth axis. The depth of e-cigarette 100 is significantly less than the width of the e-cigarette, thereby resulting in a generally flat or planar configuration (in the x-y plane). Accordingly, the z axis can be considered as extending from face to face of the e-cigarette 100, where one face may be regarded (arbitrarily) as the front face of the e-cigarette and the opposing face as the back face of the e-cigarette 100.

The cartomiser 200 and the control unit 300 are detachable from one another by separating in a direction parallel to the y-axis, but are joined together when the device 100 is in use so as to provide mechanical and electrical connectivity between the cartomiser 200 and the control unit 300. When the e-liquid in cartomiser reservoir 270 has been depleted, the cartomiser 200 is removed and a new cartomiser is attached to the control unit 300. Accordingly, the cartomiser 200 may sometimes be referred to as the disposable portion of the e-cigarette 100, while the control unit 300 represents the re-usable portion.

Figure 2 is an isometric external view of the cartomiser of the e-cigarette of Figure 1. This external view confirms that the depth of the cartomiser 200 (and the e-cigarette 100 as a whole), as measured parallel to the z axis, is significantly less than the width of the cartomiser 200 (and the e-cigarette 100 as a whole), as measured parallel to the x axis. Note that overall, the external appearance of the cartomiser 200 is relatively smooth and uncluttered.

The cartomiser 200 comprises two main portions (at least from an external viewpoint). In particular, there is a lower or base portion 210 and an upper portion 220. The upper portion 220 provides the mouthpiece 250 of the e-cigarette, as described in more detail below. When the cartomiser 200 is assembled with the control unit 300, the base portion 210 of the cartomiser sits within the control unit 300, and hence is not externally visible, whereas the upper portion 220 of the cartomiser protrudes above the control unit 300, and hence is externally visible. Accordingly, the depth and width of the base portion 210 are smaller than the depth and width of the upper portion 220, to allow the base portion to fit within the control unit 300. The increase in depth and width of the upper portion 220 compared with the base portion 210 is provided by a lip or rim 240. When the cartomiser 200 is inserted into the control unit 300, this lip or rim 240 abuts against the top of the control unit.

As shown in Figure 2, the side wall of base portion 210 includes a notch or indentation 260 for receiving a corresponding latching member from the control unit 300. The opposite side wall of the base portion 210 is provided with a similar notch or indentation to likewise receive a corresponding latching member from the control unit 300. It will be appreciated that this pair of notches 260 on the base portion 200 (and the corresponding latching members of the control unit) provide a latch or snap fit connection for securely retaining the cartomiser 200 within the control unit 300 during operation of the device. Adjacent to the notch 260 is a further notch or indentation 261, which is utilised in the formation of the cartomiser 200, as described in more detail below.

As also shown in Figure 2, the bottom wall 211 of the base portion 210 includes two larger holes 212A, 212B on either side of a smaller hole 214 for air inlet. The larger holes 212A and 212B are used to provide positive and negative electrical connections from the control unit 300 to the cartomiser 200. Thus when a user inhales through the mouthpiece 250 and the device 100 is activated, air flows into the cartomiser 200 through the air inlet hole 214. This incoming air flows past the heater (not visible in Figure 2), which receives electrical power from the battery in the control unit 300 so as to vaporise liquid from the reservoir (and more especially from the wick). This vaporised liquid is then incorporated or

entrained into the airflow through the cartomiser, and hence is drawn out of the cartomiser 200 through mouthpiece 250 for inhalation by the user.

Figure 3 is a collection of five external views of the cartomiser 200 of Figure 2. In particular, the bottom view shows the cartomiser from underneath, the top view shows the cartomiser from above, the central view shows a face view of the cartomiser (from front or back), and on either side of the central view are respective side views of the cartomiser. Note that since the cartomiser is symmetric front/back (i.e. with respect to the z axis), the front face of the cartomiser and the back face of the cartomiser both correspond to the central view of Figure 3. In addition, the cartomiser is also symmetric in the width direction (i.e. with respect to the x axis), hence the two side views to the left and right of the central view are the same.

Figure 3 illustrates the various features of the cartomiser already discussed above with respect to Figure 2. For example, the central view clearly shows the top portion 220 and the bottom portion 210 of the cartomiser. The lower view shows the bottom wall of the base portion 211, including the two larger holes 212A and 212B, which are used to provide positive and negative electrical connections from the control unit 300 to the cartomiser 200, plus the smaller hole 214 for air inlet into the cartomiser. In addition, the two side views show the two notches in each side wall, an upper notch 261A, 261B, and a lower notch 260A, 260B, the latter being used to fasten the cartomiser 200 to the control unit 300.

The top view further shows a hole 280 in the mouthpiece 250 which represents the air outlet from the cartomiser 200. Thus in operation, when a user inhales, air enters the cartomiser at the bottom through inlet 214, flows through the atomiser, including past the heater, where it acquires vapour, and then travels up the centre of the cartomiser to exit through air outlet 280.

Figure 3 provides dimensions of the cartomiser 200, showing a maximum height (in the y direction) of 31.3mm, a maximum width (in the x direction) of 35.2mm, and a maximum depth of 14.3 mm (parallel to the z direction). Note that these maximum width and depth measurements relate to the upper portion 220 of the cartomiser; the width and depth of the base portion 210 are somewhat smaller, in order to allow the base portion to be received into the control unit 300. The difference in width and depth between the upper portion 220 and the base portion 210 is accommodated by the rim or flange 240, as described above.

It will be appreciated that the dimensions shown in Figure 3 are provided by way of example only, and may vary between embodiments. Nevertheless, the dimensions given do confirm that the e-cigarette 100, including the cartomiser, has an approximately flat or planar shape, with one relatively small dimension (the z direction) perpendicular to the planar

shape. This planar shape is extended by the control unit 300, which in effect extends the height (y dimension of the cartomiser), but shares substantially the same width and depth.

Figure 3 also gives a clear indication of the size and shape of the mouthpiece 250. In contrast to many e-cigarettes, which provide a circular mouthpiece akin to a straw or conventional cigarette, the mouthpiece 250 has a very different and distinctive shape. In particular, the mouthpiece comprises a pair of large, relatively flat, opposing faces. One of these mouthpiece faces is denoted as face 251 in the central view of Figure 3, and there is a corresponding, opposing face to the rear of the device. (Note that the labelling of front and back for the cartomiser is arbitrary, since it is symmetric with respect to the z axis, and can be fitted either way around onto the control unit 300.)

The front and rear faces provide relatively large surfaces onto which the lips of a user can be placed. For example, we can consider the front face to provide a surface for engaging the upper lip, and the rear face to provide a surface for engaging the lower lip. In this configuration, we can regard the height (y axis) of the e-cigarette 100 defining a longitudinal axis extending away from the user's mouth, the width of the e-cigarette 100 (the x axis) as running parallel to the line between a user's upper and lower lips, and the depth of the e-cigarette 100 (the z axis) as running parallel to the direction of separation of the user's upper and lower lips.

The height of the front and rear mouthpiece faces (approximately 17 mm in the particular embodiment of Figure 3) is broadly comparable to the typical thickness of a lip, and therefore large enough to readily accommodate in this direction a lip placed on the surface. Similarly, the width of the front and rear mouthpiece faces (approximately 28 mm in the particular embodiment of Figure 3) represents a significant proportion (very approximately half) of the typical width of lips (from one side of the mouth to the other).

This shape and sizing of the mouthpiece 250 allows the lips of user to engage the mouthpiece for inhalation with much less distortion from the normal resting position of the mouth – e.g. there is no need to purse the lips, as for a straw or conventional cigarette having a small circular mouthpiece. This makes using the mouthpiece 250 of the e-cigarette 100 a more relaxing experience, and also may help to ensure a more consistent seal between the mouth and the mouthpiece.

In addition, e-cigarette 100 (like many other e-cigarettes) uses a sensor to detect airflow through the device, i.e. a user puff, which can then trigger operation of the heater to vaporise the liquid. The device has to discriminate between the airflow caused by a user puff, and other forms of airflow or pressure changes that arise due to other actions or circumstances – e.g. movement of the e-cigarette through the air, being on a railway train

which enters a tunnel etc. Having a consistent seal between the mouth and the mouthpiece 250 can help the device provide better discrimination of an actual inhalation, and so reduce the risk of unintentional activation of the heater.

Furthermore, some e-cigarettes use sensor measurements of the airflow through the device not only to initiate activation of the heater, but also to provide dynamic control of the heater (or other components of the e-cigarette). For example, as the measured airflow increases, the heater may be provided with more power, firstly to compensate for the cooling effect of the increased airflow, and/or secondly to vaporise more liquid into the increased airflow. Having a consistent seal between the mouth and the mouthpiece 250 can again help to improve the reliability and accuracy of this dynamic control.

In addition, with reference to the side views of Figure 3, it can be seen that the front and back faces of the mouthpiece generally slope towards one another at the top of the device. In other words, the depth or separation of the opposing faces (as measured in the z direction) decreases towards the air outlet hole 280 (i.e. as the y axis increases). This slope is relatively gentle – approximately 15 degrees with respect to the y axis. This incline helps to provide a natural and comfortable engagement between the faces of the mouthpiece 251 and the lips of a user.

As can be seen in Figure 3, the front and back faces 251 do not converge completely at the top of the mouthpiece, but rather overhang to provide a small valley 284 which extends in the x-direction of the device. The opening 280, which allows air and vapour to exit from the cartomiser 200, is formed in the centre of this valley 284. Having this small overhang, so that the mouthpiece opening 280 is located in the groove or valley 284, helps to protect the mouthpiece opening from physical contact, and hence from potential damage and dirt.

Figure 4 is an exploded view of the cartomiser 200 of the e-cigarette of Figure 1. The cartomiser includes a shell 410, a vent seal 420, an inner frame 430, a heating coil 450 located on a wick 440, a primary seal 460 (also referred to as the cartomiser plug), a printed circuit board (PCB) 470 and an end cap 480. The view of Figure 4 shows the above components exploded along the longitudinal (height or y) axis of the cartomiser 200.

The cap 480 is formed from substantially rigid plastic such as polypropylene and provides the base portion 210 of the cartomiser. The cap is provided with two holes 260, 261 on each side (only one side is visible in Figure 4, but the side which is not visible is the same as the side that is visible). The lower hole 260 is for latching the cartomiser 200 to the control unit 300, while the upper hole 261 is for latching the end cap 480 to the shell 410. As described in more detail below, latching the cap 480 and the shell 410 in effect completes

the assembly of the cartomiser, and retains the various components shown in Figure 4 in the correct position.

Above the end cap is located the PCB 470, which includes a central air hole 471 to allow air to flow through the PCB into the atomiser (the end cap 480 is likewise provided with a central air hole, not visible in Figure 4) to support this air flow into the atomiser. In accordance with some embodiments, the PCB does not contain any active electrical components, but rather provides a circuit or conductive path between the control unit 300 and the heater 450.

Above the PCB 470 is located the primary seal 460, which has two main portions, an upper portion which defines (in part) an atomizer chamber 465, and a lower portion 462 which acts as an end seal for the reservoir 270. Note that in the assembled cartomiser 200, the reservoir of e-liquid is located around the outside of the atomizer chamber, and the e-liquid is prevented from leaving the cartomiser (at least in part) by the lower portion 462 of the cartomiser plug 460. The cartomiser plug is made from a material that is slightly deformable. This allows the lower portion 462 to be compressed a little when inserted into the shell 410, and hence provide a good seal to retain the e-liquid in reservoir 270.

Two opposing side walls of the atomiser chamber 465 are provided with respective slots 569 into which the wick 440 is inserted. This configuration thereby ensures that the heater 450, which is positioned on the wick, is located near the bottom of the atomiser chamber to vaporise liquid introduced into the atomiser chamber 465 by wick 440. In some embodiments, the wick 440 is made of glass fibre rope (i.e. filaments or strands of glass fibre twisted together), and the heater coil 450 is made of nichrome (an alloy of nickel and chromium). However, various other types of wick and heater are known and could be used in the cartomiser 200, such as a wick made out of porous ceramic, and/or some form of planar heater (rather than a coil). Note that although Figure 4 suggests that the heater coil 450 has a loop of wire dropping down from the wick at each end, in practice there is just a single lead at each end (as described in more detail below).

The cartomiser plug 460 and the wick/heater assembly are surmounted by the inner frame 430, which has three main sections. The inner frame is substantially rigid, and may be made of a material such as polybutylene terephthalate. The lowermost section 436 of the inner frame 430 covers the lower portion 462 of the cartomiser plug 460, while the middle section 434 completes the atomiser chamber 465 of the cartomiser plug. In particular, the inner frame provides the top wall of the atomiser chamber, and also two side walls that overlap with the two side walls of the atomising chamber 465 of the cartomiser plug. The final section of the inner frame is an airflow tube 432 that leads upwards from the top wall of

the atomising chamber (part of the middle section 434) and connects with the mouthpiece hole 280. In other words, tube 432 provides a passage for vapour produced in the atomising chamber 465 to be drawn out of the e-cigarette 100 and inhaled through mouthpiece 250.

Since the inner frame is substantially rigid, the vent seal 420 is provided at (inserted around) the top of the airflow tube 432 to ensure a proper seal between the inner frame and the mouthpiece exit hole 280. The vent seal 420 is made of a suitably deformable and resilient material such as silicone. Lastly, the shell 410 provides the external surface of the upper portion 220 of the cartomiser 200, including the mouthpiece 250, and also the lip or flange 240. The shell 410, like the end cap, is formed of a substantially rigid material, such as polypropylene. The lower section 412 of the shell 410 (i.e. below the lip 240) sits inside the end cap 480 when the cartomiser has been assembled. The shell is provided with a latch tab 413 on each side to engage with hole 261 on each side of the end cap 480, thereby retaining the cartomiser 200 in its assembled condition.

The airflow passage through the cartomiser enters a central hole in the cap 480 (not visible in Figure 4) and then passes through a hole 471 in the PCB. The airflow next passes up into the atomiser chamber 465, which is formed as part of the cartomiser plug 460, flows around the wick and heater assembly 500 and through the tube 432 of the inner frame 430 (and through vent seal 420), and finally exits through the hole 280 in the mouthpiece 250.

The reservoir 270 of e-liquid is contained in the space between this airflow passage and the outer surface of the cartomiser 200. Thus shell 410 provides the outer walls (and top) of the housing for the reservoir 270, while the lower section 436 of the inner frame in conjunction with the base portion 462 of the primary seal 460 and end cap 480 provide the bottom or floor of the housing for the reservoir of e-liquid. The inner walls of this housing are provided by the atomising chamber 465 of the primary seal 460, in cooperation with the middle section 434 of the inner frame, and also the airflow tube 432 of the inner frame 430 and the vent seal 420. In other words, the e-liquid is stored in the reservoir space between the outer walls and the inner walls. However, the e-liquid should not penetrate inside the inner walls, into the airflow passage, except via wick 440, otherwise there is a risk that liquid would leak out of the mouthpiece hole 280.

The capacity of this space is typically of the order of 2ml in accordance with some embodiments, although it will be appreciated that this capacity will vary according to the particular features of any given design. Note that unlike for some e-cigarettes, the e-liquid reservoir 270 is not provided with any absorbent material (such as cotton, sponge, foam, etc) for holding the e-liquid. Rather, the reservoir chamber only contains the liquid, so that the liquid can move freely around the reservoir 270. This has certain advantages, such as

generally supporting a larger capacity, and also making the filling procedure less complex. One potential disadvantage with having a free liquid in the reservoir (i.e. not holding the liquid in a sponge or other absorbent structure) is that the liquid can flow more easily, and hence might be more likely to leak in an undesirable manner from the reservoir 270 into the airflow passage. However, such leakage is generally prevented by the vent seal 420 and the primary seal 460.

Figure 5 shows the cartomiser 200 and a case 500 for the cartomiser. The case comprises two components, a top housing 520 and a bottom housing 540 (adopting the same orientation as above for the cartomiser 200, whereby the mouthpiece 250 is located at the top of the cartomiser 200). The top housing 520 and the bottom housing 540 join together to provide an overall housing or case 500 for the cartomiser, and separate from one another to allow the cartomiser to be inserted into, or removed from, the case 500. The case 500 is intended to hold a single cartomiser by itself (i.e. detached from an e-cigarette) in a sealed and secure environment.

The case 500 may be used to hold the cartomiser prior to use by a consumer – e.g. for distribution through a retail supply chain, mail order delivery, etc. The case 500 may also be used by a consumer to hold the cartomiser when removed from the control unit 300. For example, cartomisers may be supplied with different flavours of e-liquid, and a user may wish to swap between such cartomisers without necessarily first exhausting one of the cartomisers of e-liquid. Accordingly case 500 used to store a cartomiser 200 which is partly used, but which is not currently being used (and so is detached from control unit 300).

The case may therefore be provided with the cartomiser 200 when initially purchased – e.g. the cartomiser might be initially received by a consumer in the case. However, another possibility is that the case may be separately acquired by the user, e.g. as a standalone item, for use with a cartomiser that has been acquired separately from the case 500.

As can be seen from Figure 5, the case 500 has a shape and dimensions that correspond generally to those of the cartomiser 200 (but slightly larger than the cartomiser, so that the cartomiser can be accommodated in the case). Accordingly, the case 500 can retain a single cartomiser (when detached from the control unit or other component of the e-cigarette). Having the case fit snugly around the cartomiser 200 allows the case 500 to be generally as small as the cartomiser permits - e.g. to make for ease of carrying, reduced material consumption etc.

The case 500 is typically made of plastic material, such as polypropylene. The case is generally rigid so as to provide some protection for the cartomiser against mechanical

damage (such as being dropped). However, the case retains sufficient flexibility to allow for a resilient latching operation as described in more detail below. The case is also substantially airtight (when closed) – protecting against the egress of e-liquid (and vapour from the e-liquid) from the cartomiser. Thus a low residual level of e-liquid vaporisation occurs even if the cartomiser is not activated, however, by retaining any such vapour in the case, this acts to suppress or inhibit further vaporisation. The case further protects against the ingress of substances that might damage the cartomiser or contaminate the mouthpiece 250. More generally, the case acts as a shield or cover to protect the mouthpiece from contact with such potential contaminants.

Although Figure 5 (and the other drawings) shows the case 500 as having smooth, opaque walls, in some embodiments, the case 500 may be transparent and/or have a textured surface. For example, a transparent (or partly transparent) housing may be provided to allow a user to see the cartomiser inside the case – this may be helpful, e.g. if different flavour cartomisers are colour-coded according to flavour. A textured (or partly textured) outer surface for the case may be helpful for holding the case, especially for gripping the top and bottom housings to open the case (as described in more detail below).

The case 500 primarily has gently curved, convex sides with rounded edges and corners. Since the case 500 will frequently be carried by a user, these curved sides and rounding of edges and corners helps to reduce the risk of the case being snagged in clothing (or causing any fraying). The curved sides and rounded edges and corners also help to distribute stress more evenly, thereby making the case more robust, and also supporting the operation of a latch as described in more detail below. The case has two major faces which oppose one another, i.e. front and back, and hence has a generally planar structure. Having these two large faces supports a certain degree of flexing, which again support the operation of the latch as described below.

Figure 6 provides further illustrations of the case 500, showing the case with the top housing 520 engaged with the bottom housing. In particular, Figure 6A is a front view of the case 500, using the same axes as shown in Figure 1 for the e-cigarette 100. (Like the cartomiser, the case 500 is also front-back symmetric, so the allocation of front/back is arbitrary). Figure 6B provides a side view of the cartomiser, again using the same axes as shown in Figure 1. Figure 6C shows a section through the case 500, and also through a cartomier 200 contained therein, in respect of the plane denoted A-A in Figure 6B.

Figure 6 includes dimensions of the case 500, whereby it is indicated that the case 500 is 41.50 mm in width, 35.71 mm in height, and 21.00 mm in depth. The top housing 520 has a height of 23.46 mm while the bottom housing 540 has height of 15.25 mm. This

implies 3.00 mm of overlap between the top housing 520 and the bottom housing 540 to provide a sealed enclosure within case 500. It will be appreciated that the dimensions shown in Figure 6 are presented by way of example only, and other implementations may have different dimensions. Note however that the width of the case 500 is greater than the height of the case, and also significantly greater (by a factor of nearly 2, more generally, by a factor of at least 1.5) than the depth of the case.

The join between the top and bottom housings 520, 540 is formed at the point of greatest width of the cartomiser 200. This allows the case 500 to fit snugly around the cartomiser 200 as noted above, while still allowing the cartomiser to be readily removed from the case 500 once opened (i.e. with the top housing 520 and the bottom housing 540 disengaged from one another).

As can be seen in Figure 6C, the top housing 520 includes an inwardly directed protrusion or plug 524, approximately in the shape of a tapered cylinder, while the bottom housing likewise includes an inwardly directed protrusion or plug 544, again approximately in the shape of a tapered cylinder. Both protrusions are located along the path of the central airflow through the cartomiser, and extend in towards the centre of the case (i.e. downwards for protrusion 524, upwards for protrusion 544.

Protrusion 524 is shown fitting into hole 280 of the mouthpiece 250 (see Figure 3), while protrusion 544 fits into hole 214 on the underside of the base portion 210 of the cartomiser 200 (see Figure 2). In this configuration, the protrusions 524, 544 not only retain the cartomiser 200 in position within the case, but also help to prevent leakage or other loss of e-liquid from the cartomiser. For example, by preventing airflow along the central air passage (from hole 214 to hole 280), this helps to minimise residual (room temperature) vaporisation of the e-liquid. In addition, if any e-liquid escapes from the cartomiser, this is likewise held within the case 500 (rather than spilling out).

Figure 7 provides further illustrations of the case 500. In particular, Figure 7A is a view of the bottom housing 540 of the case, while Figure 7B is a view of the top housing 520 of the case (depicted bottom up to show certain internal details). Figure 7C shows a section through the case 500, and also through a cartomiser 200 contained therein, in respect of a plane which is perpendicular to the plane denoted A-A in Figure 6B (i.e. Figure 7C shows the Z-Y plane using the orientation shown in Figure 1).

As shown in Figure 7A, the rim of the bottom housing 540 comprises a stepped arrangement. In particular, if we consider the housing wall to comprise an inner portion and an outer portion, then the inner portion extends higher than outer portion. This forms at the rim a ledge 547 where the outer portion of the wall terminates, and a raised portion 546,

where the inner portion of the wall extends beyond the ledge 547 to form a step or raised portion 546. The front of the raised portion 546 is provided with an outwardly directed ridge 548 on its outside face (i.e. the ridge is raised in the Y direction away from the centre of the device). This ridge generally extends in the X direction around the front of the rim. There is a corresponding ridge on the rear face of the bottom housing 540 (not visible in Figure 7A, but as mentioned above, the case 500 is front/back symmetric).

Also visible in Figure 7A is guide 551, which is also visible (more clearly) in Figure 7C. The guide 551 is generally U- shaped (but with the bottom corners squared off, as shown in Figure 7C). The base of the U is attached to the floor of the bottom housing 540, and is aligned with the front-back (Z) direction of the case. The two arms of the guide 551 extend upwards (approximately on either side of the central air passage through the cartomiser). The top of each arm of the guide is tapered, with a face 552A, 552B that slopes inwards towards the centre of the case. When the cartomiser 200 is inserted into the bottom housing 540, the base portion 210 of the cartomiser may first make contact with the guide 551. The tapered surfaces 552A, 552B of the guide 551 then direct the cartomiser into a central position (in the Z-direction) with respect to the case, and thereby help to ensure that the plug 544 is properly received into hole 214 on the underside of the cartomiser.

As shown in Figure 7B, the rim of top housing 520 also comprises a stepped arrangement. Again, if we consider the housing wall to comprise an inner portion and an outer portion, then the outer portion extends higher than inner portion (the opposite configuration to that shown in Figure 7A for the bottom housing 540). This forms at the rim a ledge 527 where the inner portion of the wall terminates, and a raised portion 526, where the outer portion of the wall extends beyond the ledge 527 to form a step or raised portion 526. The front of the raised portion 526 is provided with an outwardly directed groove 528 on its inside face (i.e. sunk in the Y direction away from the centre of the device). This groove generally extends in the X direction around the front of the rim. There is a corresponding groove on the rear face of the top housing 520 (not visible in Figure 7B, but as mentioned above, the case 500 is front/back symmetric).

Each inside face of the top housing 520 includes a pair of inwardly directed fins 531A, 531B. Only the fins on one face are visible in Figure 7B but there is a corresponding pair of fins on the opposing face; this symmetric configuration is visible in Figure 7C. The fins 531 have an inner edge (i.e. furthest to their point of attachment to the housing) which slopes inwards towards the top of the case 500, such as shown in Figure 7C. Accordingly, these fins 531 also act as a guide, in a similar manner to guide 551 in the bottom housing 540. In particular, when a cartomiser 200 is inserted into the top housing 520, the

mouthpiece 250 may first make contact with the inner edge of the fins, which then guide the mouthpiece 250 into a central position (in the Z-direction) with respect to the case 500, and thereby help to ensure that the plug 524 is properly received into hole 280 on the top of the mouthpiece 250.

Figure 7C shows how, when the case is shut, the raised portion 526 of the top housing overlaps and fits outside the raised portion 546 of the bottom housing. In particular, the raised portion 526 of the top housing abuts the ledge 547 of the bottom housing. This overlap acts to form the closed, sealed environment within the case 500 when the top housing 520 is engaged with the bottom housing 540.

Furthermore, Figure 7C shows that the case includes a latch mechanism to hold the case securely in the closed position, with the top housing 520 engaged with the bottom housing 540. In particular, the ridge 548 on the outside of the raised portion 546 of the rim of the bottom housing 540 sits inside the corresponding groove 528 formed on the inside of the raised portion 526 of the rim of the top housing 520. Therefore, ridge 548 and groove 528 form a latch mechanism, in that the top housing 520 cannot be readily removed from the bottom housing 540 because the ridge 548 is, in effect, locked into the groove 528. In other words, in the configuration shown in Figure 7C, the bottom side of the groove 528 abuts against the underside of the ridge 548, and so prevents the top housing 520 being removed directly from the bottom housing 540. Accordingly, this latch mechanism retains the cartomiser securely within the sealed environment of the case 500.

As noted above, the case is generally rigid, but includes sufficient flexibility and resilience to accommodate the operation of the latch mechanism. In particular, the case is sufficiently flexible to allow the front and back faces to deform resiliently to allow the ridge and groove to engage and disengage (this implies an ability for the faces to flex a distance corresponding approximately to the height/depth of the ridge and groove).

The engagement of the latch is supported by the top of the ridge 548 having a surface 549 which slopes in a downward, outward direction. Accordingly, when the case is being shut, whereby the top housing and the bottom housing are being pushed together, the rim of the raised portion 526 of the top housing encounters this sloping surface 549 of the ridge. The sloping surface therefore converts the closing force (in the Y direction) into a displacing force in the Z direction, in particular, urging the raised portion 526 on the front/back faces of the top housing outwards, and conversely urging the raised portion 546 on the front/back faces of the bottom housing inwards. This outward displacement of the top housing and inward displacement of the bottom housing allows the ridge 548 to pass along the inside of the raised portion 526 of the top housing until the ridge 548 encounters the

groove 528. At this point, the resilience of the inwardly deformed bottom housing and the outwardly deformed top housing urge the ridge 548 and the groove 528 together, so that the ridge 548 is pushed inside the groove 528. In this configuration, the top housing and bottom housing are held latched together.

The case 500 supports two main methods for disengaging the latch mechanism to allow the case 500 to be opened by separating the top housing and the bottom housing. A first, primary method is illustrated in Figure 8A, which represents a section through the case and cartomiser therein, analogous to that of Figure 6C. A second, secondary method is illustrated in Figure 8B, which represents a section through the case and cartomiser therein, analogous to that of Figure 7C.

In the method shown in Figure 8A, the latch mechanism is released by pushing in simultaneously on the opposing sides of the top housing 520 of the case (as indicated by the two "Press" arrows). Note that as the sides of the case are pressed together in the method of Figure 8A, this pushes together the overlapping raised portion 526 of the top housing 520 and raised portion 546 of the lower housing 540. However, the latch mechanism formed by ridges 548 and grooves 528 is located only on the front and back faces, rather than on the sides, so these sides surfaces can still directly slide over one another (albeit with slightly increased friction) in order to separate the top housing from the bottom housing.

In contrast, the ridge 548 and groove 528 are located only on the front and back faces of the case (but not the sides). This location of the ridges and grooves on the front/back faces arises because these surfaces are larger than the sides, and so have more scope to flex to engage (or disengage) the latch. Moreover, the front/back faces can accommodate longer grooves/ridges than the sides, and so can provide longer, and hence more secure, engagement for the latch mechanism.

One the latch is engaged, and the ridges and grooves are interlocked (as shown in Figure 7C), the latch mechanism must be overcome to open the case. Pushing inwards the sides of the top housing 520, such as shown in Figure 8A, does indeed unlatch the case, because this tends to deform (resiliently) the shape of the top housing, such that the front and back faces of the top housing 520 separate slightly from one another. This increased separation of the front and back faces of the top housing displaces the grooves 528 outwards as well, in effect lifting them away front and back from the corresponding ridges 548. In other words, the ridges 548 on the front and back faces are no longer latched into the grooves 528, thereby allowing the top housing 520 to be separated from bottom housing 540. Once the case has been opened, and the pressure released on the sides of the top housing 520, the top housing will return to its original (undeformed) size and shape,

Note that opening the case 500 in this manner to access the cartomiser is a relatively complex operation – one hand is used to hold the top housing 520 on its sides, and then to compress the top housing as shown in Figure 8A, while a second hand is used to hold the bottom housing 540, thereby allowing the top housing and bottom housing to be pulled away from one another in order to open the case. However, the pressing on the sides and the pulling to open the case, such as shown in Figure 8A, must be performed simultaneously. Otherwise, if the pressure on the sides is released before the top housing and the bottom housing are separated from one another, the top housing returns to its original (undeformed) shape, whereby the latching mechanism of the ridges 548 and grooves 528 re-engages, hence latching the case 500 back in the closed position. It will be appreciated that this relatively complex opening operation, involving the use of both hands, helps to provide some protection against unintended or undesired opening of the case (e.g. by small children).

In the method shown in Figure 8B, the latch mechanism is released by pushing in simultaneously on the opposing faces of the bottom housing 540 of the case (as indicated by the two "Press" arrows). This cause the front and back faces of the bottom housing 540 to deflect inwards (resiliently), which in turn causes the front and back ridges 548 to withdraw from their respective grooves 528. This therefore releases the latch mechanism, thereby allowing the top housing to be separated from the bottom housing by pulling in the directions indicated in Figure 8B in order to open the case 500.

Again, opening the case 500 in the manner shown in Figure 8B to access the cartomiser is a relatively complex operation – one hand is used to hold the front and back faces of the bottom housing 540 on its sides, and then to press them inwards, while a second hand is used to hold the top housing 520, thereby allowing the top housing and bottom housing to be pulled away from one another in order to open the case. However, as for the method of Figure 8A, the pressing on the front and back faces and the pulling to open the case, such as shown in Figure 8B, must be performed simultaneously. Otherwise, if the pressure on the front and back faces is released before the top housing and the bottom housing are separated from one another, the bottom housing returns to its original (undeformed) shape, whereby the latching mechanism of the ridges 548 and grooves 528 re-engages, hence latching the case 500 back in the closed position. Again, it will be appreciated that this relatively complex opening operation, involving the use of both hands, helps to provide some protection against unintended or undesired opening of the case (e.g. by small children).

One potential issue with opening the case 500 to access the cartomiser 200 is that the cartomiser might fall directly out, e.g. to the floor, which is especially undesirable for a

device that is to be used orally. This problem is particularly relevant for a case such as described above, in which both hands are used simultaneously to open the case 500 (so that neither hand is available to hold the cartomiser 200 as the case is opened).

In order to address this issue, the fins 531 are used to grip the cartomiser 200 by the mouthpiece 250. In other words, the spacing between the opposing fins on the front and back faces of the top housing is slightly less than the depth (from front to back) of the mouthpiece 250. Accordingly, when the cartomiser is inserted into the top housing 520, there is a slight interference fit between fins 531 and the mouthpiece 250, whereby the fins and/or mouthpiece deform slightly (and resiliently) in order to allow the mouthpiece to be fully inserted into the top housing. Subsequently, when the case 500 is opened, the mouthpiece 250, and hence the cartomiser as a whole, is retained in position in the top housing (i.e. in the position shown in Figure 8B) even when the bottom housing 540 of the case is removed. Thus the interference fit is tight or strong enough to withstand the (relatively small) weight of the cartomiser, thereby prevent the cartomiser from falling out of the opened case. Rather the cartomiser remains attached to the top housing 520, which is already being held by a user in order to open the case. This allows the user to put down the bottom housing, thereby freeing a hand to then specifically pull the cartomiser out of the top housing (without the risk of the cartomiser accidentally falling out).

It will be appreciated that although various functionality has been described above in relation to certain particular implementations of a case and cartomiser, analogous functionality can be provided in different implementations. For example, other embodiments of the case may have a hinged lid (which might still be latched), a sliding door to open, etc. Furthermore various other forms of latching mechanism may be employed, rather than the interlocking ridge and groove described herein. Similarly, the facility to retain the cartomiser in a portion of the case even after opening of the case may be implemented in many other forms of case or for other forms of cartomiser.

Furthermore, although various embodiments and implementations have been described in detail herein, this is by way of example only, and it will be appreciated that a case such as described herein could be utilised with other forms of vapour provision system, for example, one that includes material derived from tobacco plants which is provided in any suitable form (powder, paste, shredded leaf material, etc, i.e. not liquid), and then heated to produce volatiles for inhalation by a user. More generally, the case may be used to store any cartridge that contains a consumable vapour precursor (e.g. e-liquid) for an e-cigarette or similar device. In some implementations, the cartridge may incorporate an atomiser or vaporiser (such a cartridge is often described as a cartomiser). The case may also be used

with electronic vapour provision systems that have different types of heater for the e-cigarette, various types of airflow configuration, various types of connection between the cartomiser and the control unit (such as screw or bayonet) etc. The skilled person will be aware of further forms of electronic vapour provision system which might utilise such a case as described herein.

In conclusion, in order to address various issues and advance the art, this disclosure shows by way of illustration various embodiments in which the claimed invention(s) may be practiced. The advantages and features of the disclosure are of a representative sample of embodiments only, and are not exhaustive and/or exclusive. They are presented only to assist in understanding and to teach the claimed invention(s). It is to be understood that advantages, embodiments, examples, functions, features, structures, and/or other aspects of the disclosure are not to be considered limitations on the disclosure 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 claims. Various embodiments may suitably comprise, consist of, or consist essentially of, various combinations of the disclosed elements, components, features, parts, steps, means, etc other than those specifically described herein. The disclosure may include other inventions not presently claimed, but which may be claimed in future.

CLAIMS

1. A case for a cartridge for a vapour provision device, said case being configured such that opening the case involves a coordinated action using both hands.

2. The case of claim 1, wherein the case comprises a first housing portion and a second housing portion which come together to contain and enclose the cartridge when the case is shut and separate to open the case to allow access to the cartridge.

3. The case of claim 1 or 2, further comprising a latch mechanism for holding the case in a closed position.

4. The case of claim 3, wherein said coordinated action comprises using a first hand for releasing the latch mechanism and at the same time using a second hand for opening the case.

5. The case of claim 4, wherein releasing the latch mechanism includes pressing on opposite sides of the case.

6. The case of any of claims 3 to 5 as dependent on claim 2, wherein the latch mechanism holds the first housing portion and the second housing portion together in the closed position.

7. The case of claim 6, wherein the first housing portion and the second housing portion separate completely from one another when the case is opened.

8. The case of claim 6 or 7, wherein the first and second housing portions are made of moulded plastic, and the latch mechanism is formed integrally with the moulded plastic of the first and second housing portions.

9. The case of claim 8, wherein the latch mechanism is based on resilient deformation of the moulded plastic.

10. The case of any of claims 6 to 9, wherein the first and second housing portions are configured to separate in an axial direction, and wherein the latch mechanism operates by preventing movement in said axial direction.

11. The case of claim 10, wherein one of the first or second housing portions comprises a male member for the latch mechanism, and the other of the first and second housing portions comprises a female portion for the latch mechanism, and wherein the male and female member engage one in a direction orthogonal to the axial direction to hold the case in the closed position.

12. The case of claim 11, wherein the first and second housing portions form an overlapping region of the case, in which the a rim of the first housing portion overlaps outside a rim of the second housing portion, and wherein the latch mechanism is formed in the overlapping region.

13. The case of claim 12, wherein the male or female member of the latch mechanism is formed on an outward facing surface of a first side of the second housing portion, and wherein the latch mechanism is opened by pressing on the first side of the second housing portion outside the overlapping region.

14. The case of claim 12 or 13, wherein the male or female member of the latch mechanism is formed on an inward facing surface of a first side of the first housing portion, and wherein the latch mechanism is opened by pressing on a second side of the first housing portion outside the overlapping region, wherein the second side of the first housing portion is orthogonal to the first side of the first housing portion.

15. The case of claim 14, wherein the second side of the first housing portion is smaller than the first side of the first housing portion.

16. A case for a cartridge for a vapour provision device, said case comprising a first housing portion and a second housing portion which separate to open the case to allow access to the cartridge, wherein the case is configured such that the cartridge is held in the first housing portion after the case is opened.

17. The case of claim 16, wherein the case is held in the first housing portion sufficiently tightly to resist a force at least corresponding to the weight of the cartridge.

18. The case of claim 17, wherein the cartridge may be removed by applying a force of more than approximately 250 grams, preferably more than 100 grams, preferably more than 50 grams.

19. The case of any of claims 16 to 18, wherein the first housing portion is provided with retaining means that deform resiliently when the cartridge is inserted into the case, and wherein said resilient deformation acts to hold the cartridge in the first housing portion.

20. The case of claim 19, wherein the retaining means comprises one or more fins that extend inwardly into the first housing portion.

21. The case of claim 20, wherein the one or more fins comprise at least a pair of opposing fins, wherein one fin of said pair is located on one side of the first housing portion, and the other fin of said pair is located on an opposite side of the first housing portion.

22. The case of any of claims 19 to 21, wherein first housing portion is made of moulded plastic, and the retaining means are moulded integrally with the first housing portion.

23. The case of any of claims 19 to 22, wherein the retaining means is also configured to guide the cartridge into a predetermined position when the cartridge is inserted into the first housing portion.

24. A case for a cartridge for a vapour provision device, said case configured to provide a substantially rigid housing that fits closely around the cartridge when detached from the electronic vapour provision device, said housing when closed providing a sealed environment for the cartridge.

25. The case of claim 24, wherein said sealed environment acts to prevent egress of vapour from the cartomiser and to prevent ingress of potential contaminants.

26. The case of claim 24 or 25, wherein the housing comprises a first housing portion and a second housing portion that separate to allow access to the cartridge.

27. The case of any of claims 24 to 26, wherein the case further includes a latch mechanism to hold the case in a closed position.

28, The case of claim 27, wherein the housing is sufficiently deformable to accommodate operation of the latch mechanism.

29. The case of any of claims 24 to 28, wherein the case is formed of moulded plastic.

30. The case of claim 29, wherein the case is formed of polypropylene.

31. The case of any of claims 24 to 30, wherein the case comprises two opposing major surfaces which are gently curved.

32. The case of any of claims 24 to 31, wherein all edges and corners of the case are curved or rounded.

33. The case of any of claims 24 to 32, wherein the case has a width direction which represents the largest dimension (D1) of the case and extends from side to side of the case.

34. The case of claim 33, wherein the case is symmetric with respect to a plane that is normal to the width direction.

35. The case of claim 33 or 34, wherein a first edge of the case which extends from side to side of the case is broadly curved, and a second edge of the case, opposite to said first edge, extends from side to side of the case is substantially straight.

36. The case of claim 35, wherein the case has a height direction which extends from the first edge to the second edge and which represents the second largest dimension (D2) of the case.

37. The case of claim 36, wherein the case is substantially planar in shape, lying in a plane corresponding to the height and width directions.

38. The case of claim 36 or 37, wherein the case has a depth direction orthogonal to the height and width direction and which represents the smallest dimension (D3) of the case, wherein (D2*D2)/(D1*D3) > 1 and preferably > 1.4.

39. The case of any of claims 1 to 38, wherein the case has a smooth outer surface.

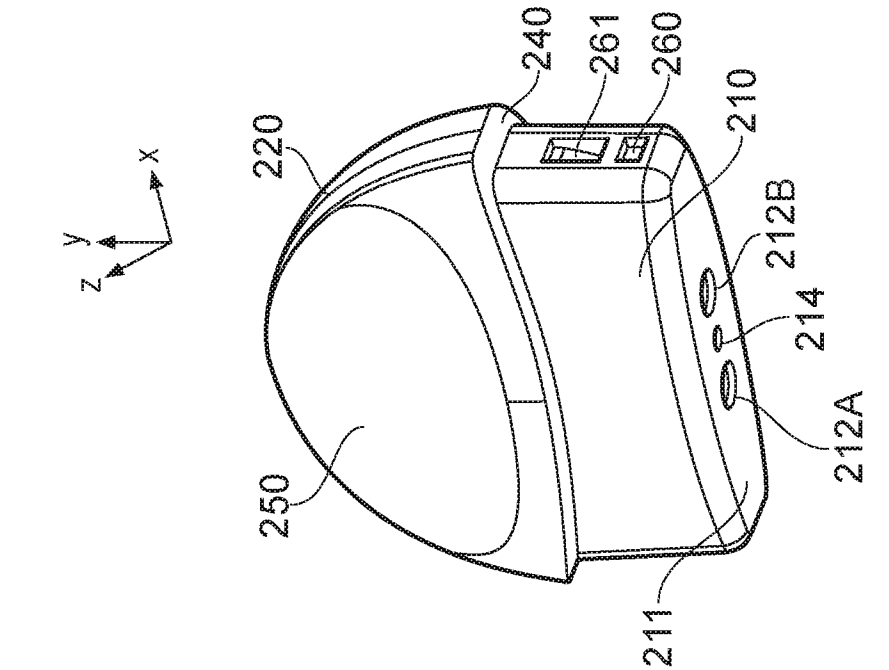
39. The case of any of claims 1 to 38, wherein the case has an outer surface which is textured at least in part to allow a user to grip better.

40. A case according to the combination of two or more of claims 1, 16 and 24, and optionally including one or more of the dependent claims thereof.

41. A combination of a case according to any of claims 1 to 40 and a cartridge contained with the case.

42. The combination of claim 41, wherein the cartridge comprises a cartomiser.

43. A case for a cartridge for a vapour provision device substantially as described herein with reference to the accompanying drawings.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212A
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y
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FIG. 2

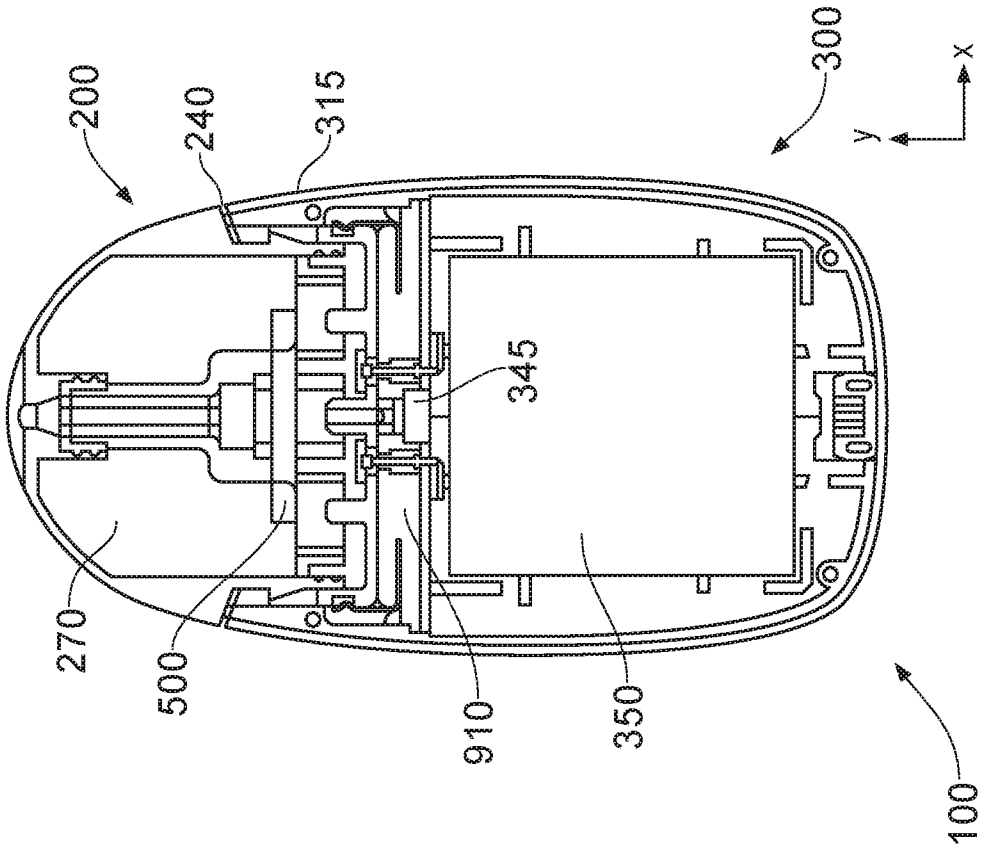
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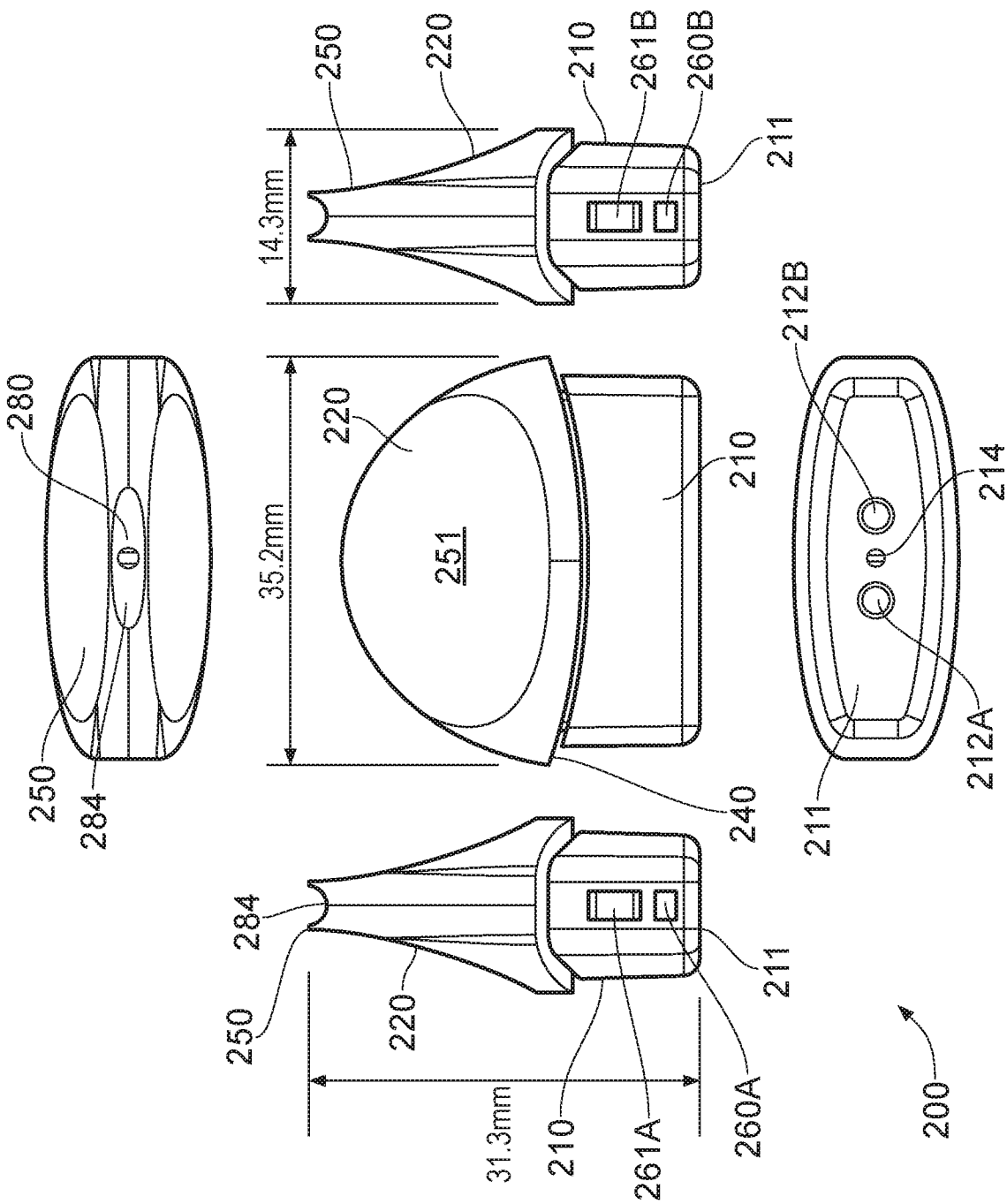
FIG. 1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260A
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FIG. 3

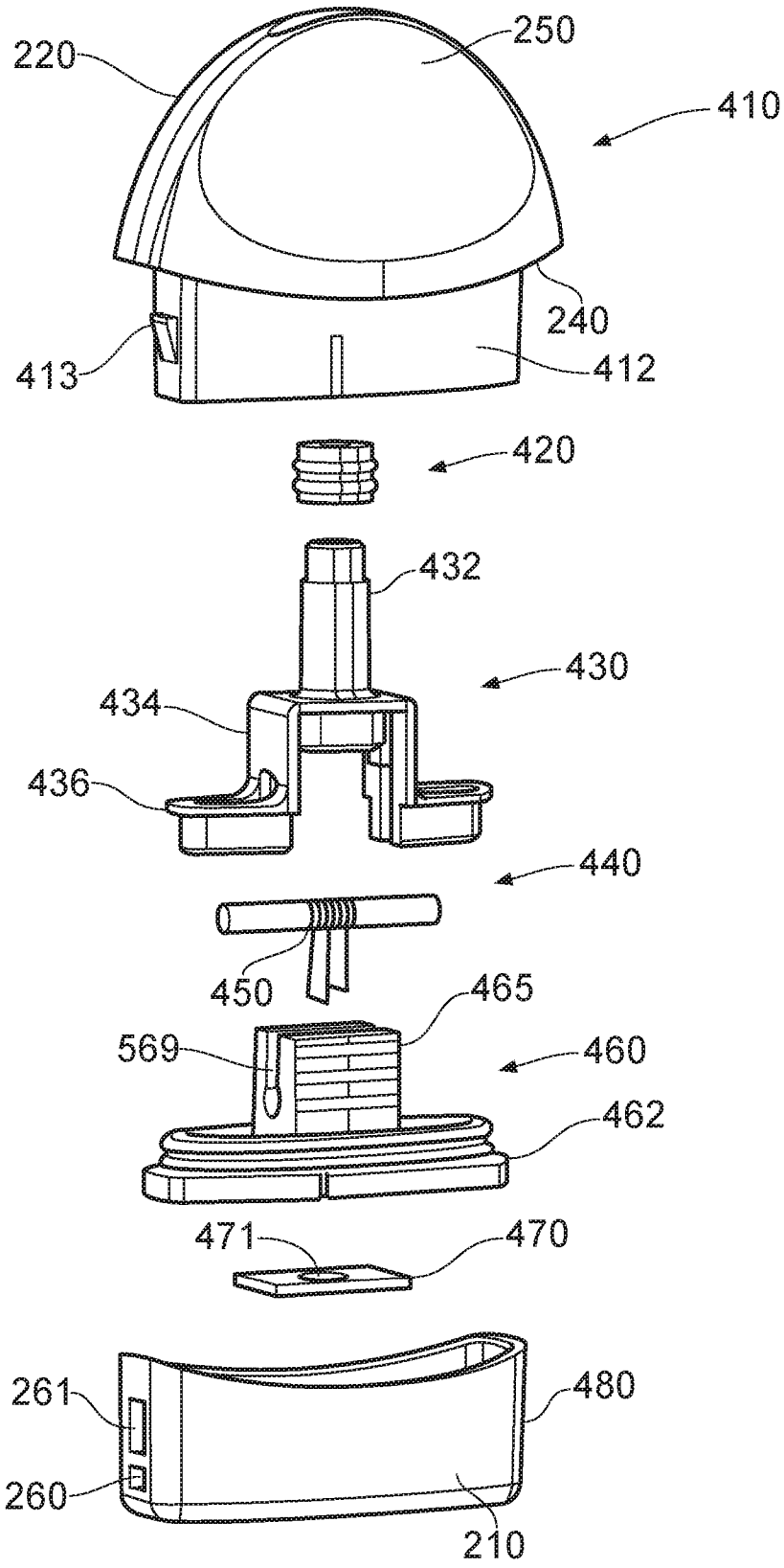
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FIG. 4

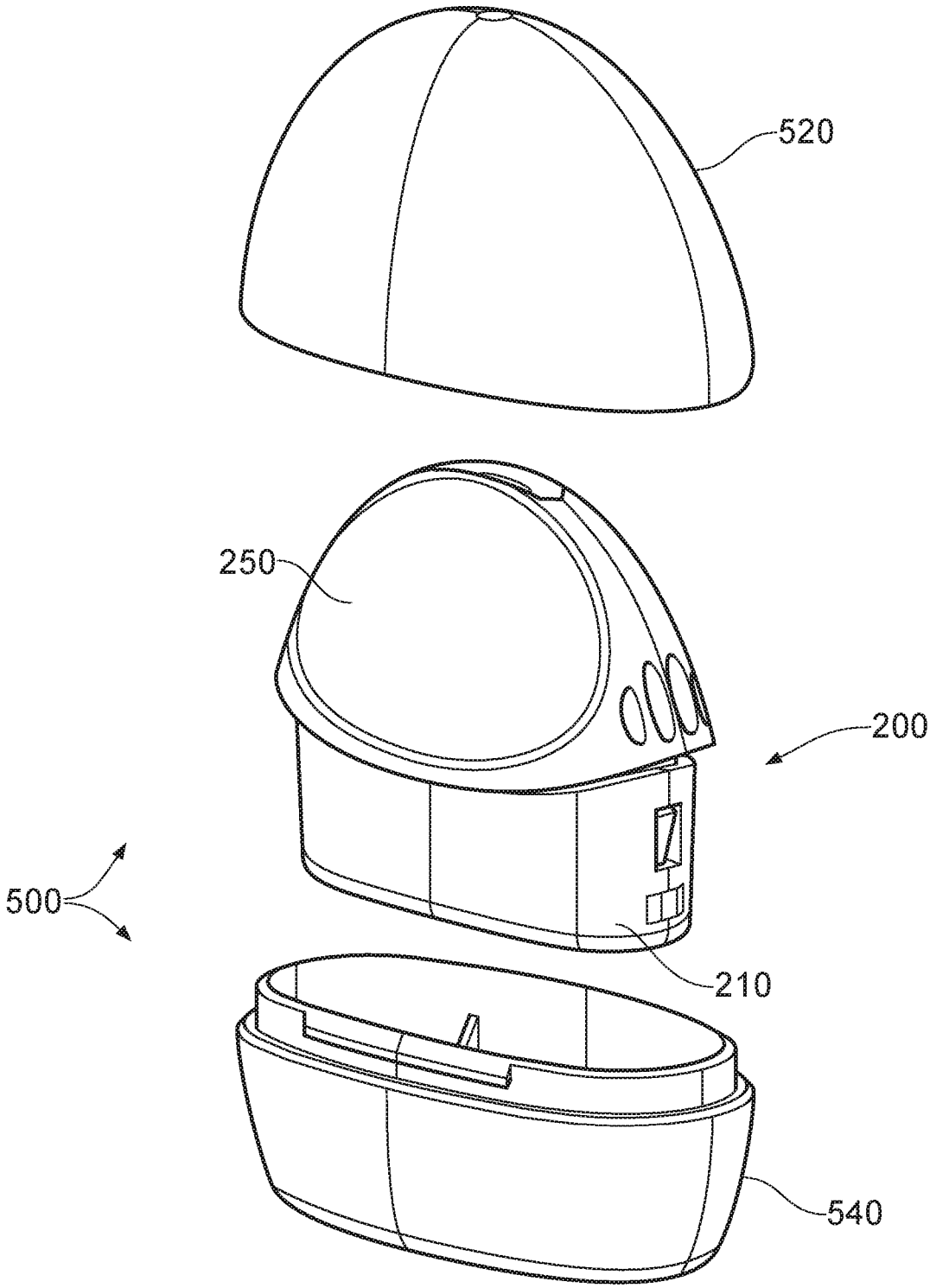

FIG. 5

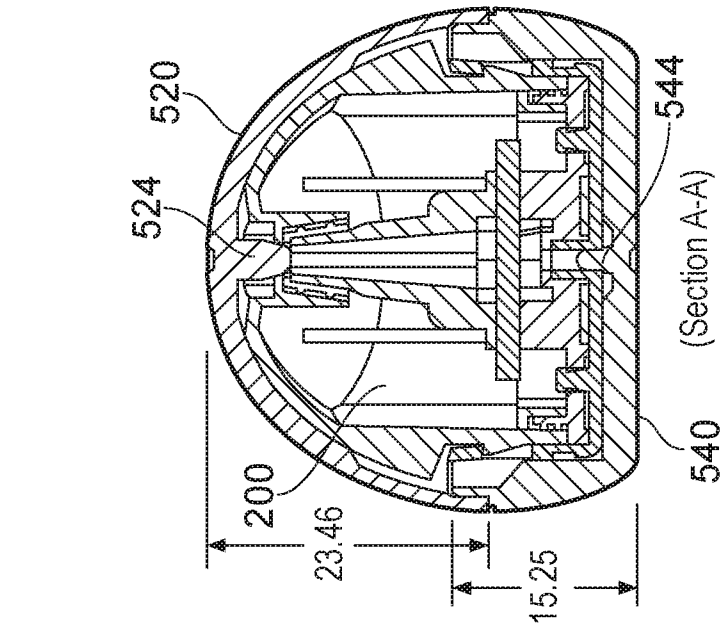

FIG. 6C

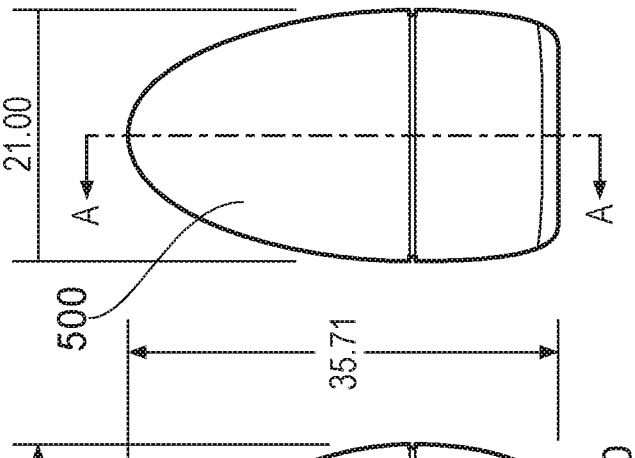

FIG. 6B

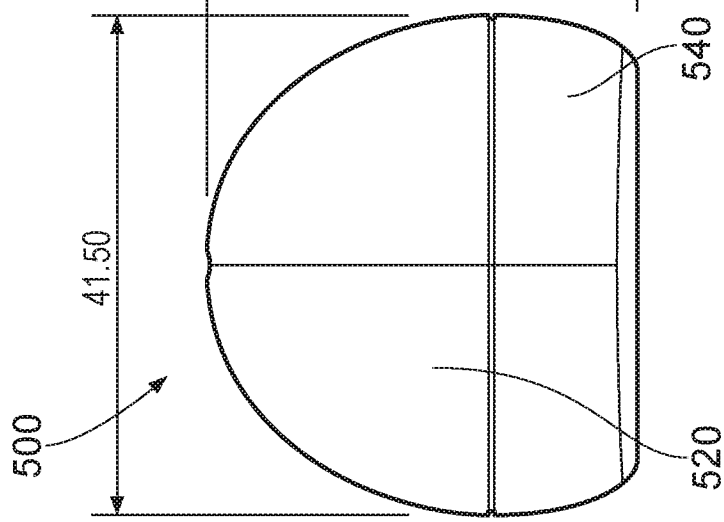

FIG. 6A

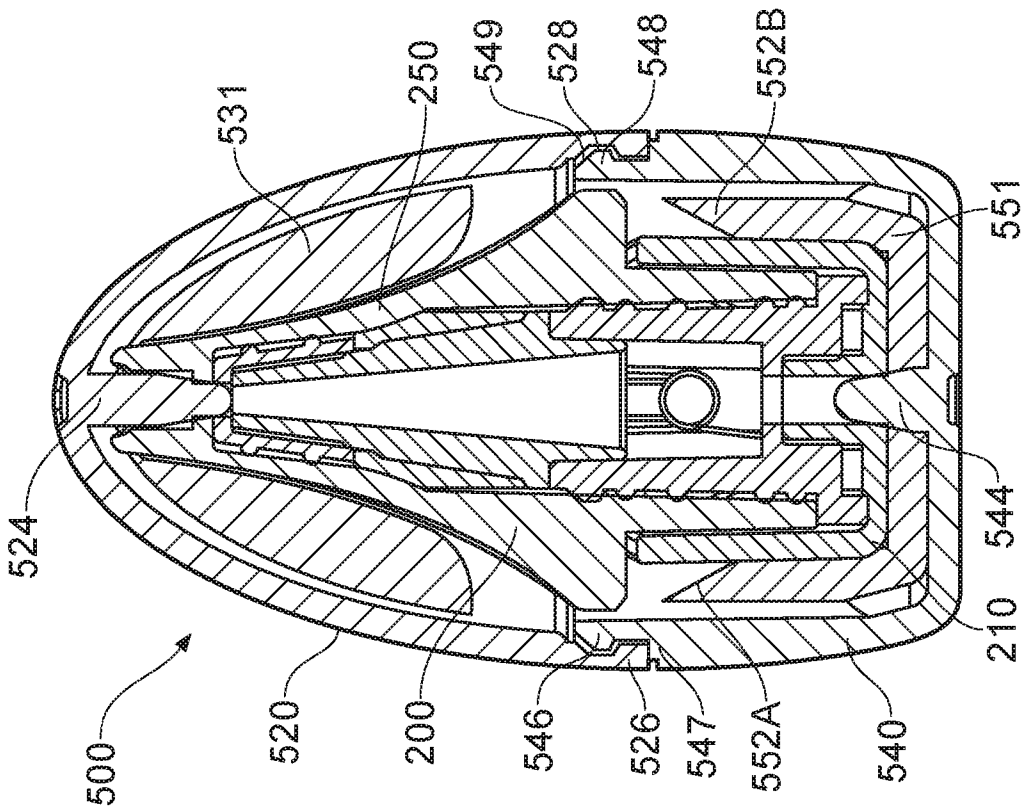

FIG. 7C

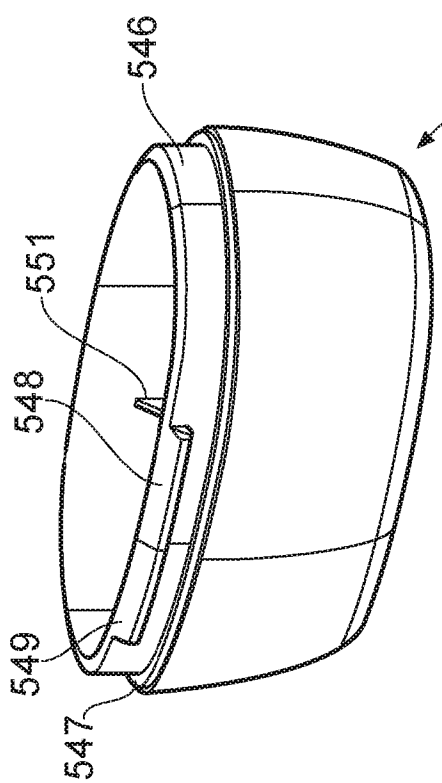

FIG. 7A

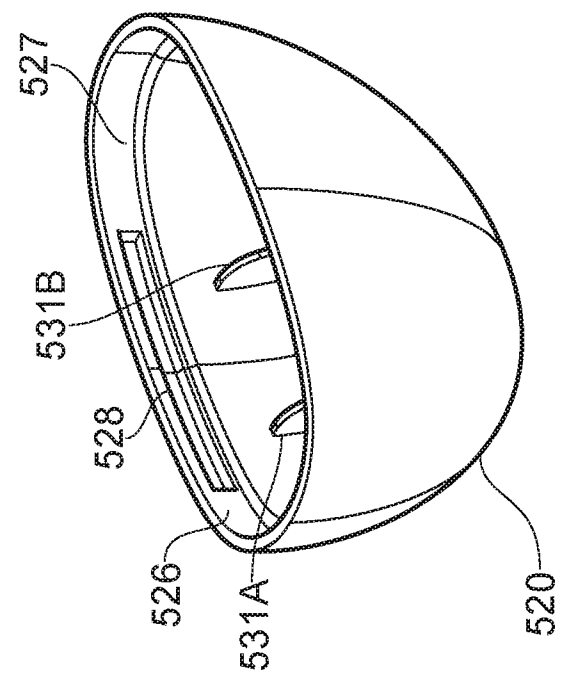

FIG. 7B

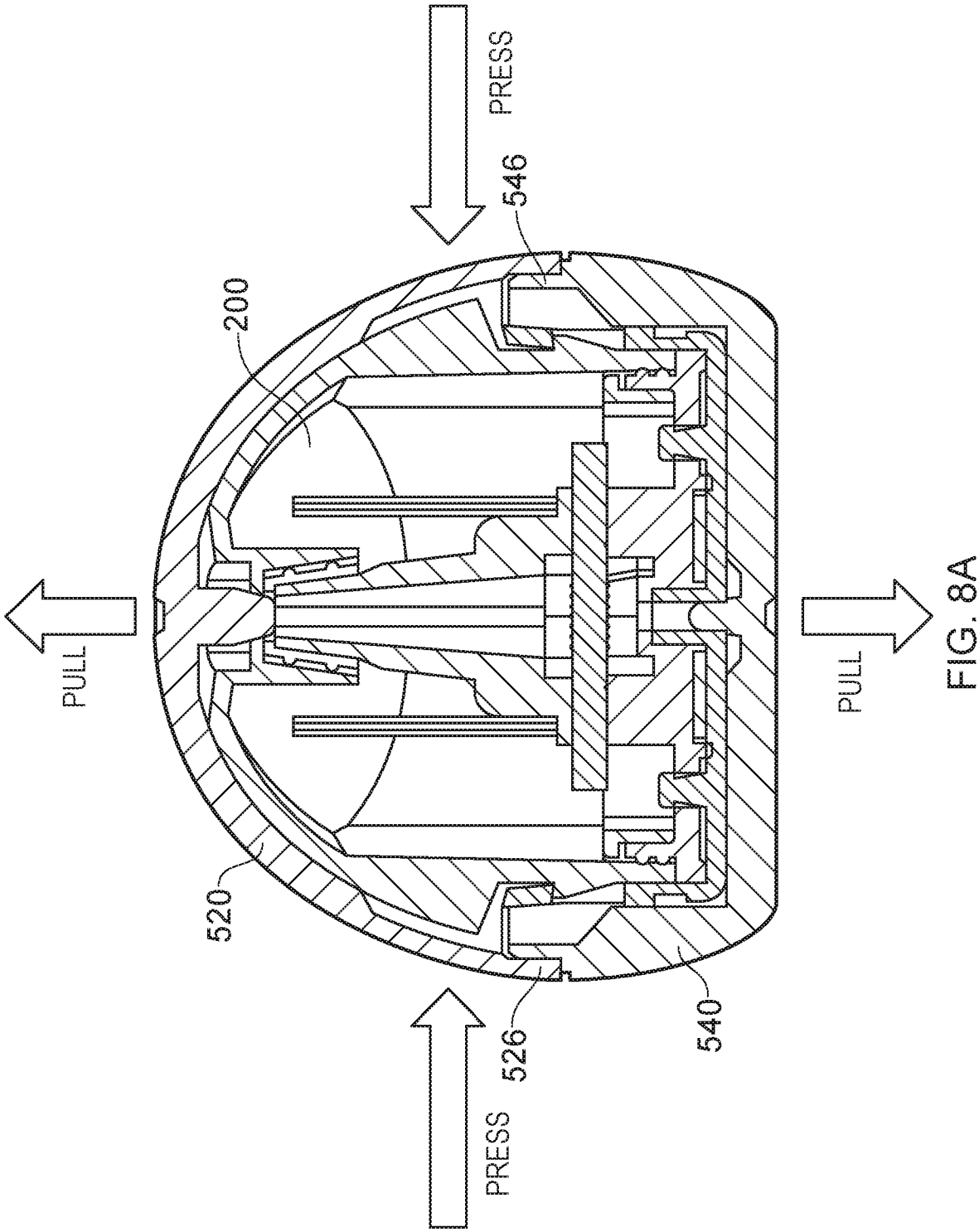

FIG. 8A

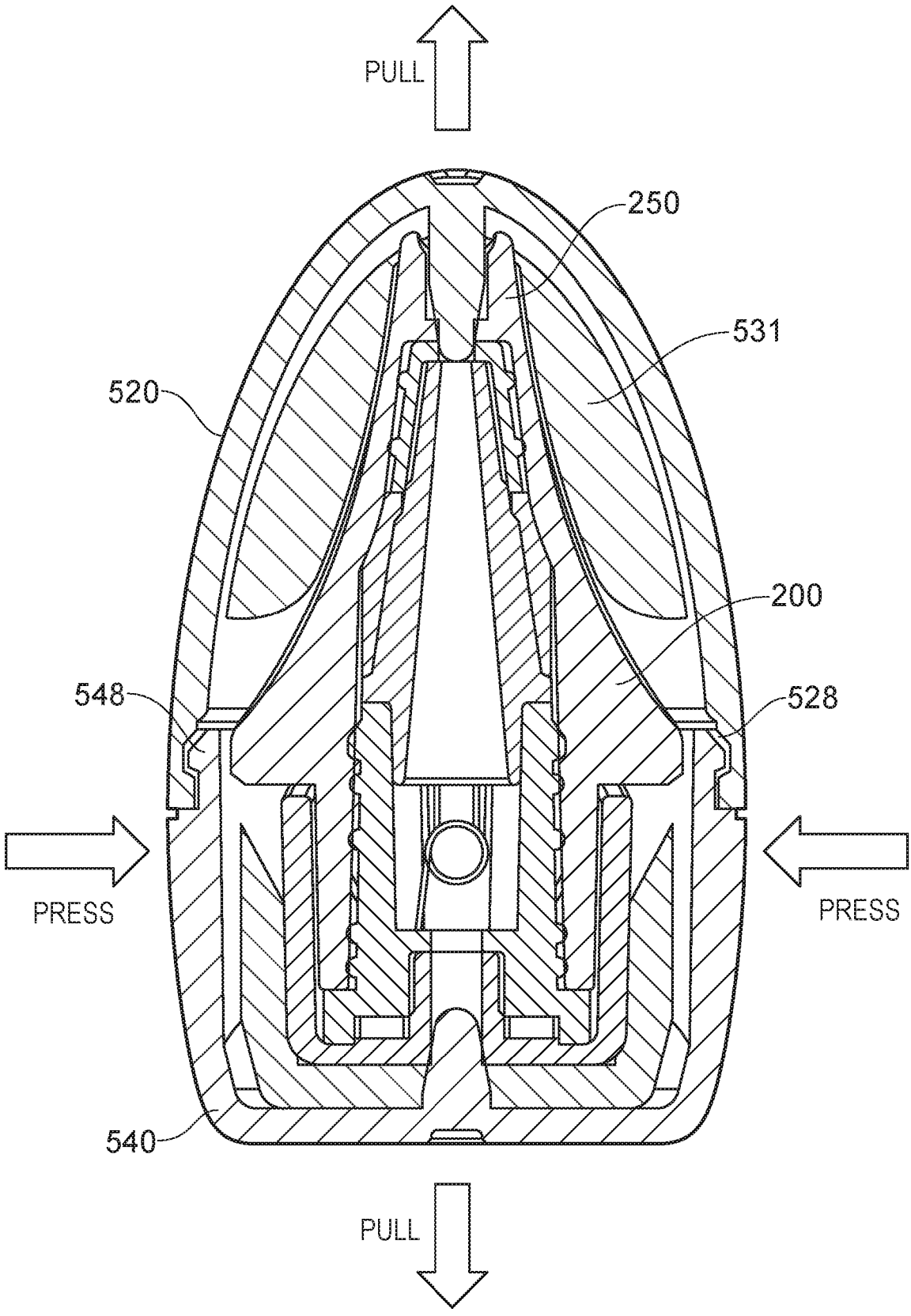

FIG. 8B

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2017/051992

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D50/04 A24F47/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D 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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2013/256163 A1 (COTTLE DAVID [GB] ET AL) 3 October 2013 (2013-10-03)	1-16
A	paragraph [0040] - paragraph [0106]; figures 1-11	17-23

X	WO 2015/111017 A1 (RITCHY EU S R O [CZ]) 30 July 2015 (2015-07-30) page 19, line 13 - page 21, line 5; figures 23-26	1-23

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A	paragraph [0037] - paragraph [0130]; figures 1A-5	1-15

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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
6 November 2017	15/11/2017

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	Lämmel, Gunnar

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2017/051992

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 2015/245654 A1 (MEMARI KAVEH [GB] ET AL) 3 September 2015 (2015-09-03) paragraph [0253] - paragraph [0344]; figures 5-11 -----	16-21,23 1-15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2017/051992

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☒ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

1-23

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-15

   A case for a cartridge for a vapour provision device, said case being configured such that opening the case involves a coordinated action using both hands.

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2. claims: 16-23

   A case for a cartridge for a vapour provision device, said case comprising a first housing portion and a second housing portion which separate to open the case to allow access to the cartridge, wherein the case is configured such that the cartridge is held in the first housing portion after the case is opened.

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3. claims: 24-43

   A case for a cartridge for a vapour provision device, said case configured to provide a substantially rigid housing that fits closely around the cartridge when detached from the electronic vapour provision device, said housing when closed providing a sealed environment for the cartridge.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2017/051992

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2017/051992

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