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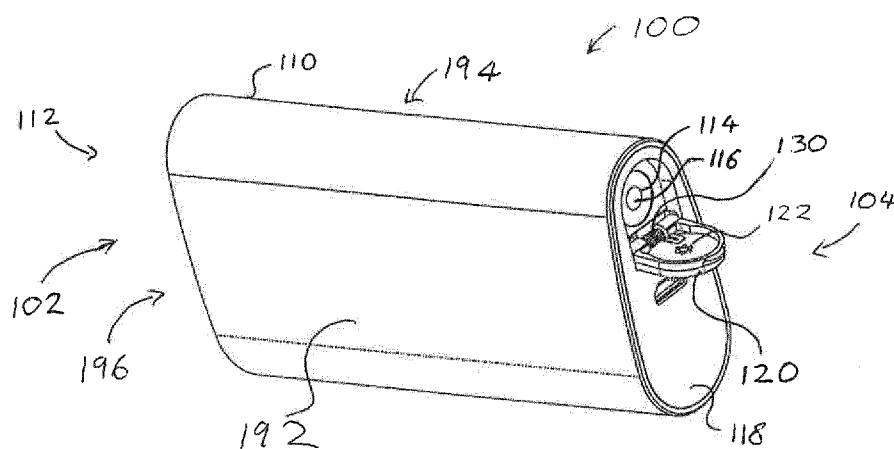


Fig. 1

(57) Abstract: Apparatus [100] for receiving smokable material to enable at least one component of the smokable material to be volatilised is described. In an example, the apparatus [100] comprises a housing [110] comprising a chamber [116] for receiving smokable material, the housing [110] having an opening [114] to the chamber; a cover [120] arranged to at least partially cover the opening [114] to the chamber [116], the cover [120] being pivotally mounted to the housing [110]; and, a biasing member [130] arranged between the cover [120] and the housing [110]. The arrangement is such that: the cover [120] is movable relative to the housing [110] between an open position and a closed position via an intermediate position; the cover [120] is biased from the intermediate position towards the open position by a first bias of the biasing member [130]; the cover [120] is moved from the open position to the intermediate position by a rotational movement in a first, closing direction against the first bias of the biasing member [130]; and the cover [120] is moved from the intermediate position to the closed position by a linear movement in a second, locking direction due at least in part to a second bias of the biasing member [130].

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APPARATUS FOR RECEIVING SMOKABLE MATERIAL

Cross Reference to Related Application

Reference is made to US provisional patent application no. 62/185,227, filed on
5 June 26, 2015, the entire content of which is incorporated herein by reference.

Technical Field

The present invention relates to apparatus for receiving smokable material.

10 Background

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 types of articles, which burn tobacco, by creating products that release compounds without burning. Examples of such products are so-called heat-not-burn products, also known
15 as tobacco heating products or tobacco heating devices, which release compounds by heating, but not burning, the material. The material may be for example tobacco or other non-tobacco products or a combination, such as a blended mix, which may or may not contain nicotine. Similarly, there are also so-called e-cigarette devices, which typically vaporise a liquid, which may or may not contain nicotine.

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Summary

According to a first aspect of the present invention, there is provided apparatus for receiving smokable material to enable at least one component of the smokable material to be volatilised, the apparatus comprising:

25 a housing comprising a chamber for receiving smokable material, the housing having an opening to the chamber;

a cover arranged to at least partially cover the opening to the chamber, the cover being pivotally mounted to the housing; and,

a biasing member arranged between the cover and the housing;

30 the arrangement being such that the cover is movable relative to the housing between an open position and a closed position via an intermediate position;

the arrangement being such that the cover is biased from the intermediate position towards the open position by a first bias of the biasing member;

the arrangement being such that the cover is moved from the open position to the intermediate position by a rotational movement in a first, closing direction against
5 the first bias of the biasing member,

the arrangement being such that the cover is moved from the intermediate position to the closed position by a linear movement in a second, locking direction due at least in part to a second bias of the biasing member.

10 In an embodiment, the arrangement is such that the cover is engaged by the housing in the closed position to lock the cover in the closed position.

In an embodiment, the arrangement is such that the cover is moved from the closed position to the intermediate position by a linear movement;

15 wherein the linear movement is in a third, unlocking direction against the second bias of the biasing member,

wherein the linear movement releases the cover from being engaged by the housing.

20 In an embodiment, the arrangement is such that the cover is moved from the intermediate position to the open position by a rotational movement;

wherein the rotational movement is in a fourth, opening direction due to the first bias of the biasing member.

25 In an embodiment, the housing comprises a recess, and

the biasing member comprises a coil spring portion and at least one leg projecting from the coil spring portion,

wherein the at least one leg projects into the recess,

30 wherein the at least one leg abuts a side wall of the recess when the cover is in the open position, and

wherein the at least one leg pushes against the side wall of the recess when the cover is in the intermediate position to drive the cover to the closed position.

In an embodiment, the side wall of the recess has a cam surface against which the at least one leg of the biasing member bears. In an embodiment, the cam surface is a curved portion of the side wall of the recess.

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In an embodiment, the at least one leg projects from a first end of the coil spring portion, the biasing member comprising a second leg projecting from a second end of the coil spring portion and bearing against the cover.

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In an embodiment, the apparatus comprises:

a rod around which the coil spring portion of the biasing member is arranged, the rod having two ends; and

two channels in which the two ends of the rod are respectively arranged, the two channels being arranged on either side of the cover;

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wherein the rod moves linearly in the channels when the cover is moved from the intermediate position to the closed position.

In an embodiment, the coil spring portion is arranged around the rod substantially centrally to the longitudinal axis of the rod.

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In an embodiment, the housing comprises a retainer; and,

the cover comprises a retaining portion, wherein

the retainer is arranged on the housing for engaging the retaining portion of the cover,

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the arrangement being such that the cover is releasably held in the closed position by the retainer.

According to a second aspect of the present invention, there is provided apparatus for receiving smokable material to enable at least one component of the smokable material to be volatilised, the apparatus comprising:

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a housing comprising a chamber for receiving smokable material, the housing having an opening to the chamber;

a cover arranged to at least partially cover the opening to the chamber, the cover being pivotally mounted to the housing; and,

a coil spring having a coil spring portion and at least one leg projecting from the coil spring portion;

5 the housing comprising a recess into which the leg projects;

the arrangement being such that the cover is movable relative to the housing between an open position and a closed position via an intermediate position;

the arrangement being such that the cover is biased from the intermediate position towards the open position by a first bias of the coil spring;

10 the arrangement being such that the cover is moved from the open position to the intermediate position by a rotational movement in a first, closing direction against the first bias of the coil spring; and,

the arrangement being such that the cover is moved from the intermediate position to the closed position by a linear movement in a second, locking direction due at least in part to a second bias of the coil spring;

15 the at least one leg abutting a side wall of the recess when the cover is in the open position, and

the at least one leg pushing against the side wall of the recess when the cover is in the intermediate position to drive the cover to the closed position

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In an embodiment, the side wall of the recess has a cam surface against which the at least one leg of the biasing member bears. In an embodiment, the cam surface is a curved portion of the side wall of the recess.

25 In an embodiment, the coil spring comprises two legs projecting from the coil spring portion, a first of the legs projecting from a first end of the coil spring portion and a second of the legs projecting from a second end of the coil spring portion. In an embodiment, the first leg projects from a first end of the coil spring portion and the second leg projects from a second end of the coil spring portion and bears against the
30 cover.

Further features and advantages of the invention will become apparent from the following description of preferred embodiments of the invention, given by way of example only, which is made with reference to the accompanying drawings.

5 Brief Description of the Drawings

Figure 1 shows a perspective view of an example of an apparatus for receiving smokable material with a cover in an open position;

10 Figure 2 shows a perspective view of the apparatus of Figure 1 with the cover in a closed position;

Figure 3 shows a lateral cross-sectional view of the apparatus of Figure 1 with smokable material inserted;

15 Figure 4 shows a lateral cross-sectional view of a portion of the apparatus of Figure 1 with the cover in an open position; and

Figure 5 shows a lateral cross-sectional view of the portion of the apparatus of Figure 1 with the cover in a closed position.

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Detailed Description

As used herein, the term “smokable material” includes materials that provide volatilised components upon heating, typically in the form of an aerosol. “Smokable material” includes any tobacco-containing material and may, for example, include one or more of tobacco, tobacco derivatives, expanded tobacco, reconstituted tobacco or tobacco substitutes. “Smokable material” also may include other, non-tobacco, products, which, depending on the product, may or may not contain nicotine. “Smokable material” may for example be in the form of a solid, a liquid, a gel or a wax or the like. “Smokable material” may for example also be a combination or a blend of materials.

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Apparatus is known that heats smokable material to volatilise at least one component of the smokable material, typically to form an aerosol which can be inhaled, without burning or combusting the smokable material. Such apparatus is sometimes described as a “heat-not-burn” apparatus or a “tobacco heating product” or “tobacco heating device” or similar. Similarly, there are also so-called e-cigarette devices, which typically vaporise a smokable material in the form of a liquid, which may or may not contain nicotine. The smokable material may be in the form of or provided as part of a rod, cartridge or cassette or the like which can be inserted into the apparatus. A heater for heating and volatilising the smokable material may be provided as a “permanent” part of the apparatus or may be provided as part of the smoking article or consumable which is discarded and replaced after use. A “smoking article” in this context is a device or article or other component that includes or contains in use the smokable material, which in use is heated to volatilise the smokable material, and optionally other components.

Referring to the drawings, there is shown an example of an apparatus 100 arranged to receive smokable material to enable at least one component of the smokable material to be volatilised. (As will be discussed further below, in some specific examples discussed herein the smokable material is provided as a rod 250 which includes smokable material 251 and optionally other components.) The apparatus 100 has a first or proximal or mouth end 102 and a second or distal end 104.

The apparatus 100 has a housing 110 for receiving smokable material 251. The housing 110 has at least one opening through which smokable material 251 can pass. In the particular example shown, there are two openings. A first opening 112 is provided to allow smokable material 251 to be introduced into and removed from the housing 110. A second opening 114 is provided to allow a user access to the inside of the housing 110, for example to allow the inside of the housing 110 to be cleaned. In the specific example shown in the drawings, the openings 112, 114 are arranged at the mouth end 102 and distal end 104 respectively. The housing 110 also has a chamber 116 arranged between the mouth end 102 and the distal end 104. As most clearly shown in Figure 3, the openings 112, 114 are arranged at either end of the chamber 116 in the

housing 110. Smokable material 251 is received in the chamber 116 in use. Prior to use a user may insert smokable material 251 through the first opening 112 into the chamber 116. After use, the user may remove the smokable material 251 from the chamber 116 and clean the chamber 116 by inserting for example a pipe cleaner through
5 the second opening 114.

Referring particularly to Figure 3, there is shown inter alia a cylindrical rod 250 which has or contains smokable material 251 at one end (which is the distal end) which is inserted into the housing 110 in use. In this example, the rod 250 has at the other end
10 (which is the mouth end) a mouthpiece assembly which includes one or more of a filter for filtering aerosol and/or a cooling element 252 for cooling aerosol. The filter/cooling element 252 is spaced from the smokable material 251 by a space 253 and is also spaced from the mouth end by a further space 254.

15 The apparatus 100 has at least one door or cover 120 to allow and prevent entry to the housing 110. The cover 120 is mounted on the housing 110. In the specific example shown, the cover 120 is pivotally mounted to the housing 110. One or both of the openings 112, 114 may have a cover 120 for covering that opening 112, 114. Figures 1 and 2 show an example of apparatus 100 with a cover 120 arranged on the
20 distal end 104 in the open and closed positions respectively. The cover 120 can move between the open position and the closed position via an intermediate position. When the cover 120 is in the closed position, as shown in Figure 2, the opening 114 is at least partially covered by the cover 120. In the closed position the cover 120 is engaged by the housing 110 to lock the cover 120 in the closed position. When the cover 120 is in
25 the open position, as shown in Figure 1, the cover 120 does not cover the opening 114. In the intermediate position, as will be discussed further below, the cover 120 has been slid back in a linear direction from the closed position but has not yet been rotated to the open position. The opening 114 and cover 120 in the specific example shown in Figure 1 are arranged towards an upper portion of an end wall 118 of the housing 110.
30 The closed position may also be referred to as a locked position and the intermediate position as a retracted position. The cover 120 may be formed of for example a plastics material, including for example ABS (acrylonitrile butadiene styrene).

A biasing member 130 is provided to bias or assist in controlling movement of the cover 120. In Figure 1, the biasing member 130 is arranged between the housing 110 and the cover 120. The arrangement is such that the cover 120 is biased from the intermediate position towards the open position by a first bias of the biasing member 130. The arrangement is also such that the cover 120 is biased from the intermediate position towards the closed position by a second bias of the biasing member 130. The biasing member 130 may be formed of a resilient material, preferably an elastically resilient material, including for example metal, rubber, plastics, etc. In the specific examples described herein, the first bias of the biasing member 130 is a rotational bias, to bias the cover 120 from the intermediate position towards the open position; and the second bias of the biasing member 130 is a linear bias, to bias the cover 120 from the intermediate position towards the closed position. Different arrangements are however possible.

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To move the cover 120 from the closed position to the open position, the cover 120 is moved from the closed position to the intermediate position by a linear movement in an unlocking direction against the second bias of the biasing member 130 by the user, for example by using a digit (that is, a finger or a thumb) pressed against the cover 120. The linear movement is a sliding movement which may be in a direction parallel to the end wall 118 of the housing 110 on which the cover 120 is mounted. The linear movement releases the cover 120 from being engaged by the housing 110. When the cover 120 is in the intermediate position, the first bias (in this example, a rotational bias of the cover 120 from the intermediate position towards the open position) dominates the second bias of the biasing member 130 (in this example, a linear bias of the cover 120 from the intermediate position towards the closed position). Accordingly, once the cover 120 has been moved to the intermediate position by the user, the user can remove their digit from the cover 120 and the cover 120 therefore rotates to the open position.

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To move the cover 120 from the open position to the closed position, the cover 120 is first moved from the open position to an intermediate position by a rotational movement in a closing direction. The rotational closing movement is against the first

bias of the biasing member 130 and is typically achieved by the user pressing against the cover 120. The cover 120 is then moved from the intermediate position to the closed position by a linear movement in a locking direction due at least in part to the second bias of the biasing member 130. In this example, the user assists this closing movement
5 by applying a digit to the cover 120 to assist in sliding the cover 120 to the closed position.

As shown most clearly in Figures 4 and 5, the biasing member 130 in an example comprises a coil spring. The biasing member 130 in this example has a coil
10 spring portion 132 with at least one leg 134 projecting at least approximately tangentially from the coil spring portion 132. The biasing member 130 may have a plurality of legs 134. In a specific example, the biasing member 130 has two legs 134, one leg at either end of the coil spring portion 132.

15 One leg 134 of the biasing member 130 bears against the cover 120. The other leg 134 projects into a portion of the housing 110. In the example shown, the housing 110 has a recess 140 for receiving this leg 134 of the biasing member 130. This leg 134 of the biasing member 130 abuts a side wall 142 of the recess 140. This leg 134 abuts the side wall 142 of the recess 140 at the “reaction” point. The reaction point may
20 move, depending on the position of the cover 120 relative to the recess 140. In this specific example, the reaction point may move, depending on the position of the shaft 150 of the cover 120 relative to the recess 140. The reaction point moves from a higher position on the side wall 142 to a lower position on the side wall 142 as the cover moves from the open position to the intermediate position. The leg 134 of the biasing member
25 130 pushes against the side wall 142 of the recess 140 to bias the cover 120 to the closed position. The leg 134 in the specific example shown in Figures 4 and 5 uses a cam surface from which to drive the cover 120 from the intermediate position to the closed position. In the specific example shown, the cam surface is a curved corner portion of the side wall 142 of the recess 140. As the leg 134 moves around the curved portion,
30 the reaction point moves, the biasing member 130 is moved forwards and the cover 120 is moved towards the closed position.

The apparatus 100 may be provided with a shaft or rod for mounting the biasing member 130. In a specific example the coil spring portion 132 of the biasing member 130 is arranged around a shaft 150. In this example, the apparatus 100 has one or more channels or elongate recesses 160 which receive the ends of the shaft 150. (The end of one of the channels can be seen most clearly in Figure 5.) The channels 160 are arranged in the housing 110 and are arranged on either side of the cover 120. The two ends 152 of the shaft 150 sit in the respective channels 160 which are arranged on opposite sides of the cover 120. The shaft 150 can be moved linearly along the channels 160. In a specific example, the shaft 150 is moved linearly along the channels 160 substantially towards the opening 114 by the action of the leg 134 of the biasing member 130 pushing against the side wall 142 of the recess 140. The shaft 150 is moved forward towards the opening 114 of the housing 110 as the cover 120 is moved from the intermediate position to the closed position at least in part due to the second bias of the biasing member 130. Conversely, the shaft 150 is moved rearwards away from the opening 114 of the housing 110 as the cover 120 is moved by the user from the closed position to the intermediate position. The interface between the shaft 150 and the channels 160 is smooth enough to enable a sliding movement or a rolling movement in the forward and rearward directions.

The channels 160 can have a length of for example 1.5 mm to 2 mm or so. The linear movement of the shaft 150 in the channels 160 leads to an offset X_1 in the position of the circular cross section of the spring coil portion 132 from the closed to the intermediate position of for example 1 mm or so. Similarly the shaft 150 will travel a distance X_2 of 0.5 mm to 1 mm in the channels 160 when moving from the closed position to the intermediate position. In a specific example, the two channels 160 are the same length and are arranged exactly opposite each other to prevent twisting of the shaft 150 as it moves forwards and rearwards in the channels 160.

The coil spring portion 132 of the biasing member 130 is coaxially arranged with the shaft 150 and, further, is arranged substantially centrally on the shaft 150. The coil spring portion 132 is also arranged substantially centrally to the width of the cover 120. This arrangement avoids the cover 120 twisting as it moves, which may otherwise

cause the cover 120 to bind or wedge itself against the surrounding walls of the housing 110. Binding or wedging of the cover 120 can lead to gaps forming around the cover 120 and the housing 110 when the cover 120 is in the closed position such that a seal over the chamber 116 is not maintained. In the specific example shown, the coil spring portion 132 is also arranged centrally in the space between the channels 160.

An advantage of the present invention is that the use of a single biasing member 130 as part of the opening and closing mechanism of the cover 120 results in easier assembly of the apparatus 100 during the manufacturing process. Furthermore, this minimises the number of components required for the opening and closing mechanism. By reducing the total number of components in the mechanism, the chance of failure of the mechanism as a whole is reduced.

The housing 110 may have an arrangement for retaining the cover 120 when the cover 120 is in the closed position. In the specific example shown, this is provided by a projecting nib or ridge or other projection 170 on the housing 110 and a recess 172 below the projecting nib 170 on the one hand, and a projecting nib or ridge or other projection 180 on the cover 120 which projects into the recess 172 on the other hand. This arrangement is most clearly shown in Figures 4 and 5. The projecting nib 170 and recess 172 arrangement engages the projection 180 of the cover 120 when the cover 120 is moved into the closed position to releasably hold the cover 120 in the closed position. The projection 180 is disengaged from the projecting nib 170 and recess 172 arrangement when the cover 120 is moved to the intermediate position from the closed position. In other examples, the projecting nib and recess arrangement may be provided on the cover 120 to engage with a recess on the housing. Other arrangements for locking the cover 120 to the housing 110 may be used. As examples of other alternatives, a magnetic lock or corresponding hook and loop fastener sections, etc., may be used

In the example show, the cover 120 has a number of apertures 122 which allow air into the apparatus 100. Other air inlets may be provided, either instead of or in

addition to the apertures 122 in the cover 120. Air may also escape through such apertures.

Referring now in particular to the cross-sectional view of Figure 3, the housing 110 is used to locate and protect various internal components of the apparatus 100. In the example shown, the housing 110 is formed of one or more “chassis” parts and one or more side panels. In the particular example shown here, the apparatus 100 has one main chassis 190 and two side panels 192, 194. During assembly of the apparatus 100, various internal components of the apparatus 100 are located in and/or fixed to the chassis 190 and the one or more side panels 192, 194 are then fixed to the chassis 190. The one or more side panels 192, 194 may be removably fixed to the chassis 190, to permit easy access to the interior of the apparatus 100, or may be “permanently” fixed to the chassis 190, for example to deter a user from accessing the interior of the apparatus 100. In the particular example shown here, the chassis 190 provides at least in part the front wall 196 of the apparatus 100 at the first or mouth end 102 and also provides at least in part the rear wall 118 of the apparatus 100 at the second or distal end 104. In an example the chassis 190 and two side panels 192, 194 are made of a plastics material, including for example glass-filled nylon formed by injection moulding, though other materials and other manufacturing processes may be used.

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The chassis 190 has located or fixed therein a heater 200, control circuitry 210 and a power source 220. In this example, the heater 200, the control circuitry 210 and the power source 220 are laterally adjacent (that is, adjacent when viewed from an end), with the control circuitry 210 being located generally between the heater 200 and the power source 220, though other locations are possible. The control circuitry 210 may include a controller, such as a microprocessor arrangement, configured and arranged to control the heating of the smokable material 251 as discussed further below. The power source 220 may be for example a battery, which may be a rechargeable battery or a non-rechargeable battery. Examples of suitable batteries include for example a lithium-ion battery, a nickel battery (such as a nickel–cadmium battery), an alkaline battery and/ or the like. The battery 220 is electrically coupled to the heater 200 to supply electrical power when required and under control of the control circuitry 210 to heat the smokable

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material 251 (as discussed, to volatilise the smokable material 251 without causing the smokable material 251 to burn). An advantage of locating the power source 220 laterally adjacent to the heater 200 is that a physically large power source 220 may be used without causing the apparatus 100 as a whole to be unduly lengthy. As will be understood, in general a physically large power source 220 has a higher capacity (that is, the total electrical energy that can be supplied, often measured in Amp-hours or the like) and thus the battery life for the apparatus 100 can be longer.

In one example, the heater 200 is generally in the form of a hollow cylindrical tube, having a hollow interior heating chamber 230 into which smokable material 251 is inserted for heating in use. Different arrangements for the heater 200 are possible. For example, the heater 200 may be formed of a single heating element or may be formed of plural heating elements aligned along the longitudinal axis of the heater 200. The or each heating element may be annular or tubular, or at least part-annular or part-tubular around its circumference. In an example, the or each heating element may be a thin film heater. In another example, the or each heating element may be made of a ceramics material. Examples of suitable ceramics materials include alumina and aluminium nitride and silicon nitride ceramics, which may be laminated and sintered. Other heating arrangements are possible, including for example inductive heating, infrared heater elements, which heat by emitting infrared radiation, or resistive heating elements formed by for example a resistive electrical winding. In one particular example, the heater 200 is formed of a polyimide substrate on which is formed one or more heating elements and which is supported by a stainless steel support tube. The heater 200 is dimensioned so that substantially the whole of the smokable material 251 when inserted is located within the heating element(s) of the heater 200 so that substantially the whole of the smokable material 251 is heated in use. The or each heating element may be arranged so that selected zones of the smokable material 251 can be independently heated, for example in turn (over time) or together (simultaneously) as desired.

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The heater 200 in this example is surrounded along at least part of its length by a thermal insulator 240. The insulator 240 helps to reduce heat passing from the heater

200 to the exterior of the apparatus 100. This helps to keep down the power requirements for the heater 200 as it reduces heat losses generally. The insulator 240 also helps to keep the exterior of the apparatus 100 cool during operation of the heater 200. In one example, the insulator 240 may be a double-walled sleeve which provides
5 a low pressure region between the two walls of the sleeve. That is, the insulator 240 may be for example a “vacuum” tube, i.e. a tube that has been at least partially evacuated so as to minimise heat transfer by conduction and/or convection. Other arrangements for the insulator 240 are possible, including using heat insulating materials, including for example a suitable foam-type material, in addition to or instead
10 of a double-walled sleeve.

The front wall 196 of the chassis 190 has an opening 112 at the mouth end 102 of the apparatus 100 through which in use smokable material 251 may be passed to be inserted into the apparatus 100 and removed from the apparatus 100 by a user. A cover
15 128 may be provided at the mouth end 102. The cover 128 can be opened so as to allow smokable material 251 to be passed through the opening 112 to be inserted into and removed from the apparatus 100 during periods of use and can be closed to close the opening 112 to keep the interior of the apparatus 100 clean during periods of non-use and avoiding damage to the interior of the apparatus 100. The cover 128 in this example
20 is a sliding door, which can be slid up and down to close and open the opening 112. In other examples, the cover 128 may be a hinged door or other arrangements may be provided. The cover 128 in this example is provided in conjunction with a mouthpiece component 232 which is fixed to the front wall 196 of the chassis 190 (for example by gluing) during manufacture of the apparatus 100 and which captures the cover 128 to
25 allow the cover 128 to slide open and closed. The mouthpiece component 232 and cover 128 may be formed of for example a plastics material, including for example glass-filled nylon. The mouthpiece component 232 in this example has an inwardly facing collar 233 which projects through the opening 112 into the interior of the apparatus 100 and which can assist in supporting and locating the heater 200, as will be
30 discussed further below. Referring here particularly to Figure 3, this shows a rod 250 which includes smokable material 251 inserted partly through the front opening 112 so that (at least) the smokable material 251 is located within the heating chamber 230 of

the heater 200 so that the smokable material 251 is heated when the heater 200 is energised.

5 In the assembled apparatus 100, the heater 200 generally in the form of a hollow cylindrical tube is located within the chassis 190 so that one end of the hollow tube 241 is in fluid communication with the opening 112 at the mouth end 102 and the other end of the hollow tube 241 is in communication with the opening 114 at the distal end 104.

10 In use, the user closes the cover 120 at the distal end 104 to close the opening 114 at the distal end 104 and opens the cover 128 at the mouth end 102 to open the opening 112 at the mouth end 102. The user then inserts the rod 250 that includes smokable material 251 through the opening 112 at the mouth end 102 into the heating chamber 230 of the heater 200, operates the apparatus 100 to heat the smokable material 251 to generate an aerosol for inhaling as desired, and then removes the rod 250 with
15 used smokable material 251 from the apparatus 100 through the opening 112 at the mouth end 102. The user can open the cover 120 at the distal end 104 to open the opening 114 at the distal end 104 after the apparatus 100 has been used. The opening 114 at the distal end 104 provides access for the user to the interior of the apparatus 100, particularly in the region of the opening 114 at the distal end 104. This allows the
20 user to clean within the interior of the apparatus 100 in the region of the opening 114 at the distal end 104 when necessary and as desired. This access at the distal end 104 particularly enables the user to clean within the heater 200 and the heating chamber 230 at the distal end 104. Indeed, as the heater 200 is located between the openings 112, 114 at the mouth end 102 and the distal end 104 respectively, and the hollow heater 200
25 in effect defines a straight through-bore through the whole apparatus 100 between the mouth end opening 112 and the distal end opening 114, the user is easily able to clean through substantially the whole of the interior hollow heating chamber 230. For this, the user can access the heating chamber 230 via either opening 112, 114 at choice. The user may use one or more various cleaning devices for this purpose, including for
30 example a classic pipe cleaner or a brush or the like.

Preferably the housing 110 is of a size that can be comfortably held in one hand such that a user can move the cover 120 from the closed position to the open position and back again using only a digit (that is, a finger or a thumb) on that hand. This enables convenient use of the apparatus 100. Furthermore, the user may then use one hand to
5 open cover 128 and use a different hand to insert smokable material 251 through the opening 114 into the chamber 116.

The various embodiments described herein are presented only to assist in understanding and teaching the claimed features. These embodiments are provided as
10 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
15 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. Apparatus for receiving smokable material to enable at least one component of the smokable material to be volatilised, the apparatus comprising:

5 a housing comprising a chamber for receiving smokable material, the housing having an opening to the chamber;

a cover arranged to at least partially cover the opening to the chamber, the cover being pivotally mounted to the housing; and,

a biasing member arranged between the cover and the housing;

10 the arrangement being such that the cover is movable relative to the housing between an open position and a closed position via an intermediate position;

the arrangement being such that the cover is biased from the intermediate position towards the open position by a first bias of the biasing member;

15 the arrangement being such that the cover is moved from the open position to the intermediate position by a rotational movement in a first, closing direction against the first bias of the biasing member,

the arrangement being such that the cover is moved from the intermediate position to the closed position by a linear movement in a second, locking direction due at least in part to a second bias of the biasing member.

20

2. Apparatus according to claim 1, the arrangement being such that the cover is engaged by the housing in the closed position to lock the cover in the closed position.

25 3. Apparatus according to claim 2, the arrangement being such that the cover is moved from the closed position to the intermediate position by a linear movement;

wherein the linear movement is in a third, unlocking direction against the second bias of the biasing member,

wherein the linear movement releases the cover from being engaged by the housing.

30

4. Apparatus according to any of claims 1 to 3, the arrangement being such that the cover is moved from the intermediate position to the open position by a rotational movement;
wherein the rotational movement is in a fourth, opening direction due to the first
5 bias of the biasing member.
5. Apparatus according to any of claims 1 to 4, wherein
the housing comprises a recess, and
the biasing member comprises a coil spring portion and at least one leg
10 projecting from the coil spring portion,
wherein the at least one leg projects into the recess,
wherein the at least one leg abuts a side wall of the recess when the cover is in
the open position, and
wherein the at least one leg pushes against the side wall of the recess when the
15 cover is in the intermediate position to drive the cover to the closed position.
6. Apparatus according to claim 5, wherein the side wall of the recess has a cam
surface against which the at least one leg of the biasing member bears.
- 20 7. Apparatus according to claim 6, wherein the cam surface is a curved portion of
the side wall of the recess.
8. Apparatus according to any of claims 5 to 7, wherein the at least one leg projects
from a first end of the coil spring portion, the biasing member comprising a second leg
25 projecting from a second end of the coil spring portion and bearing against the cover.
9. Apparatus according to any of claims 5 to 8, comprising:
a rod around which the coil spring portion of the biasing member is arranged,
the rod having two ends; and
30 two channels in which the two ends of the rod are respectively arranged, the two
channels being arranged in the housing on either side of the cover;

wherein the rod moves linearly in the channels when the cover is moved from the intermediate position to the closed position.

10. Apparatus according to claim 9, wherein the coil spring portion is arranged
5 around the rod substantially centrally to the longitudinal axis of the rod.
11. Apparatus according to any of claims 1 to 10, wherein
the housing comprises a retainer; and,
the cover comprises a retaining portion, wherein
10 the retainer is arranged on the housing for engaging the retaining portion of the
cover,
the arrangement being such that the cover is releasably held in the closed
position by the retainer.
12. Apparatus for receiving smokable material to enable at least one component of
15 the smokable material to be volatilised, the apparatus comprising:
a housing comprising a chamber for receiving smokable material, the housing
having an opening to the chamber;
a cover arranged to at least partially cover the opening to the chamber, the cover
20 being pivotally mounted to the housing; and,
a coil spring having a coil spring portion and at least one leg projecting from the
coil spring portion;
the housing comprising a recess into which the leg projects;
the arrangement being such that the cover is movable relative to the housing
25 between an open position and a closed position via an intermediate position;
the arrangement being such that the cover is biased from the intermediate
position towards the open position by a first bias of the coil spring;
the arrangement being such that the cover is moved from the open position to
the intermediate position by a rotational movement in a first, closing direction against
30 the first bias of the coil spring; and,

the arrangement being such that the cover is moved from the intermediate position to the closed position by a linear movement in a second, locking direction due at least in part to a second bias of the coil spring;

5 the at least one leg abutting a side wall of the recess when the cover is in the open position, and

the at least one leg pushing against the side wall of the recess when the cover is in the intermediate position to drive the cover to the closed position

10 13. Apparatus according to claim 12, wherein the side wall of the recess has a cam surface against which the at least one leg of the biasing member bears.

14. Apparatus according to claim 13, wherein the cam surface is a curved portion of the side wall of the recess.

15 15. Apparatus according to any of claims 12 to 14, wherein the coil spring comprises two legs projecting from the coil spring portion, a first of the legs projecting from a first end of the coil spring portion and a second of the legs projecting from a second end of the coil spring portion.

20 16. Apparatus according to claim 15, wherein the first leg projects from a first end of the coil spring portion and the second leg projects from a second end of the coil spring portion and bears against the cover.

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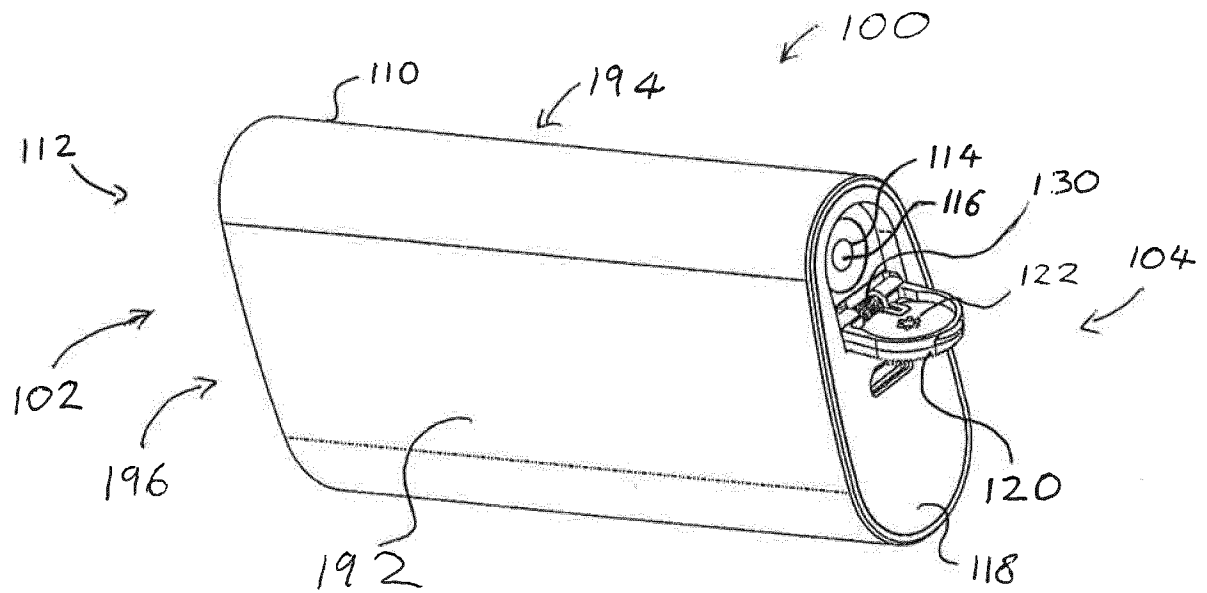


Fig. 1

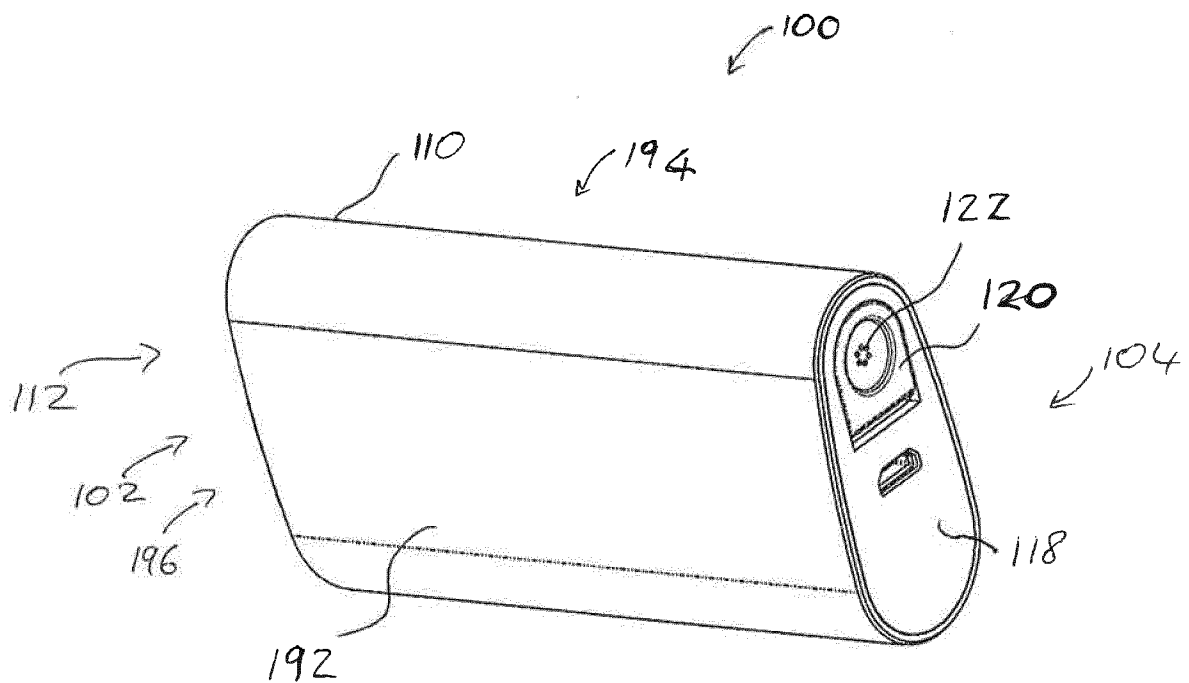


Fig. 2

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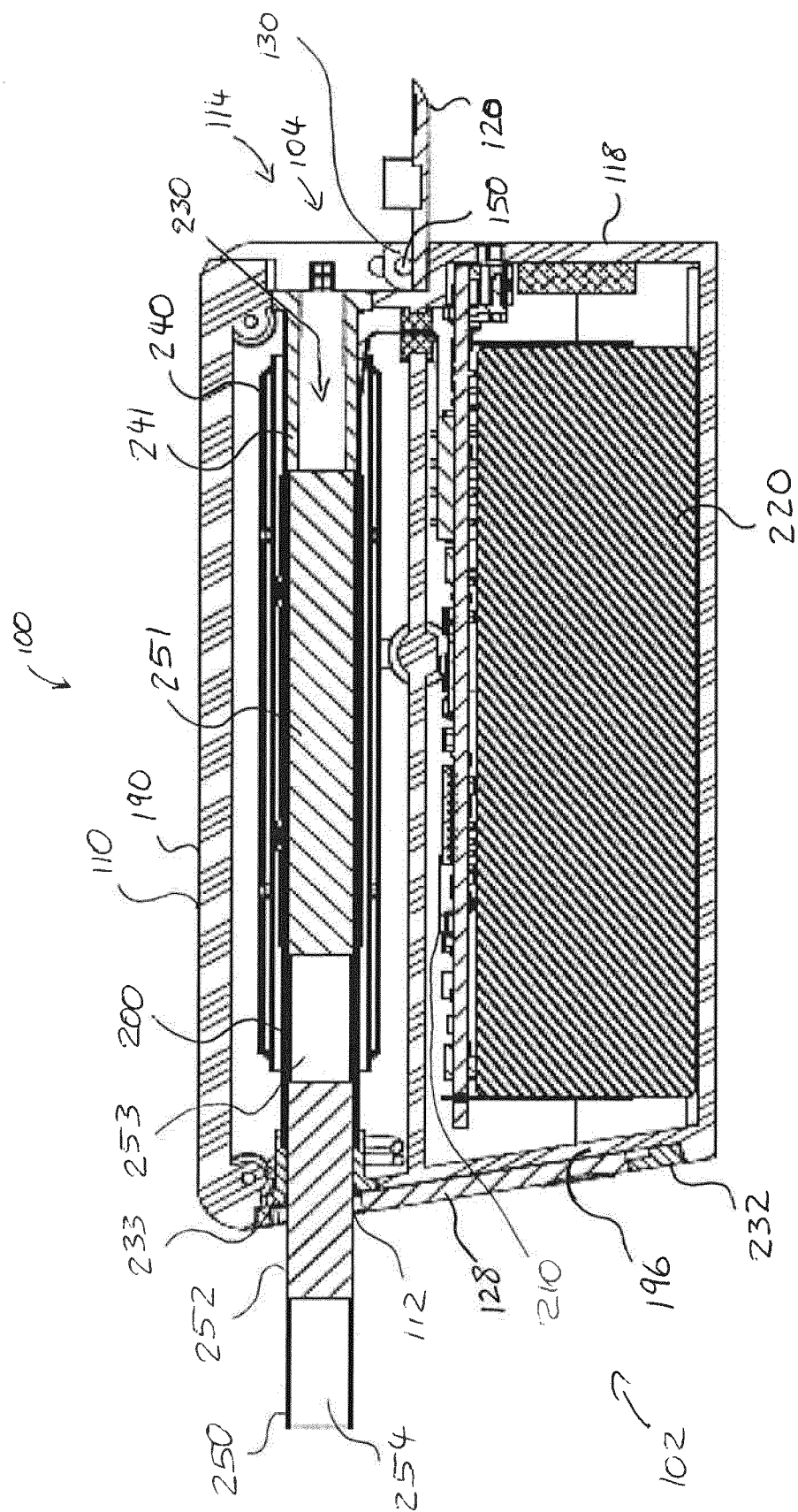


Fig. 3

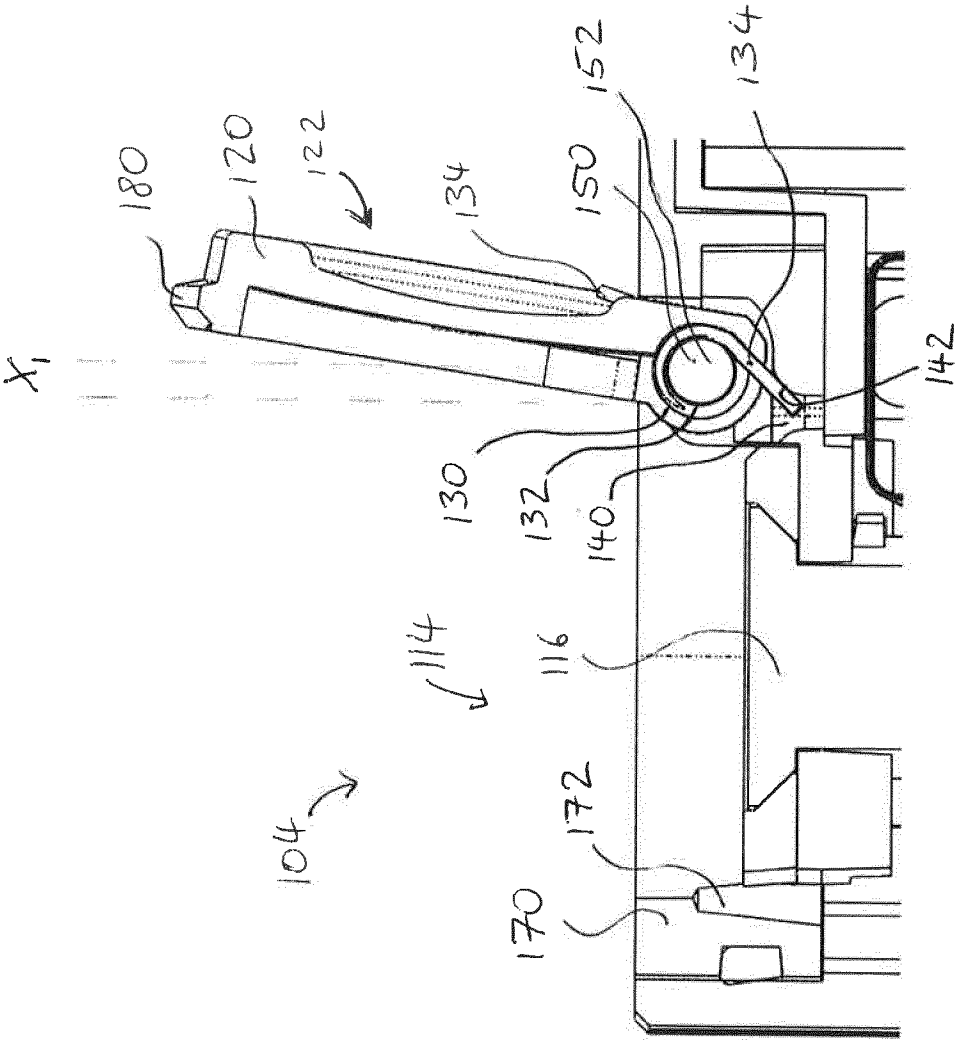


Fig. 4

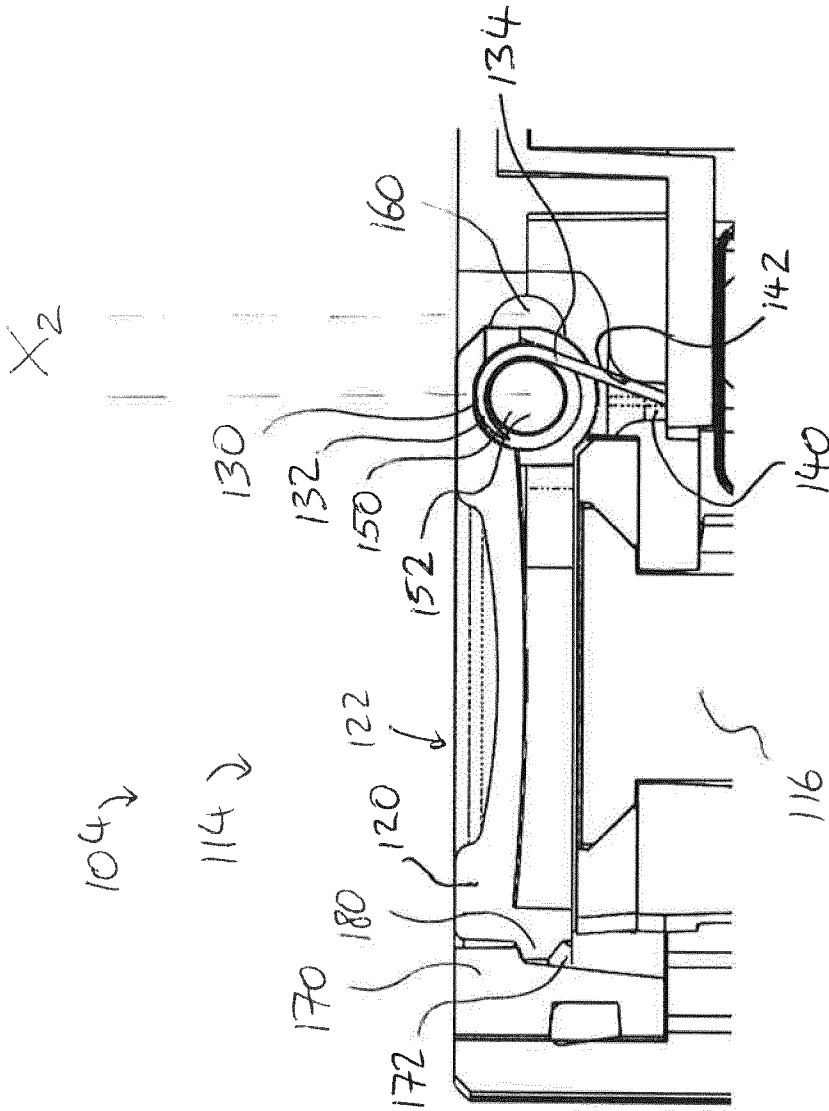


Fig. 5

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/061486

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24F15/12 A24F47/00
ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A24F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	US 1 032 326 A (ERICHSEN ADOLPH C E [US]) 9 July 1912 (1912-07-09) the whole document	1-16
A	US 2016/120218 A1 (SCHENNUM STEVE [US] ET AL) 5 May 2016 (2016-05-05) abstract paragraph [0004] paragraph [0012] paragraph [0027] - paragraph [0029] paragraph [0087] paragraph [0146] - paragraph [0161] figures 1-12 ----- -/-	1-16



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

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Date of the actual completion of the international search

20 July 2017

Date of mailing of the international search report

28/07/2017

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/061486

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International application No

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