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(54) AEROSOL GENERATING DEVICE WITH IMPROVED MODULARITY

(57) The invention concerns an aerosol generating device (12) comprising:

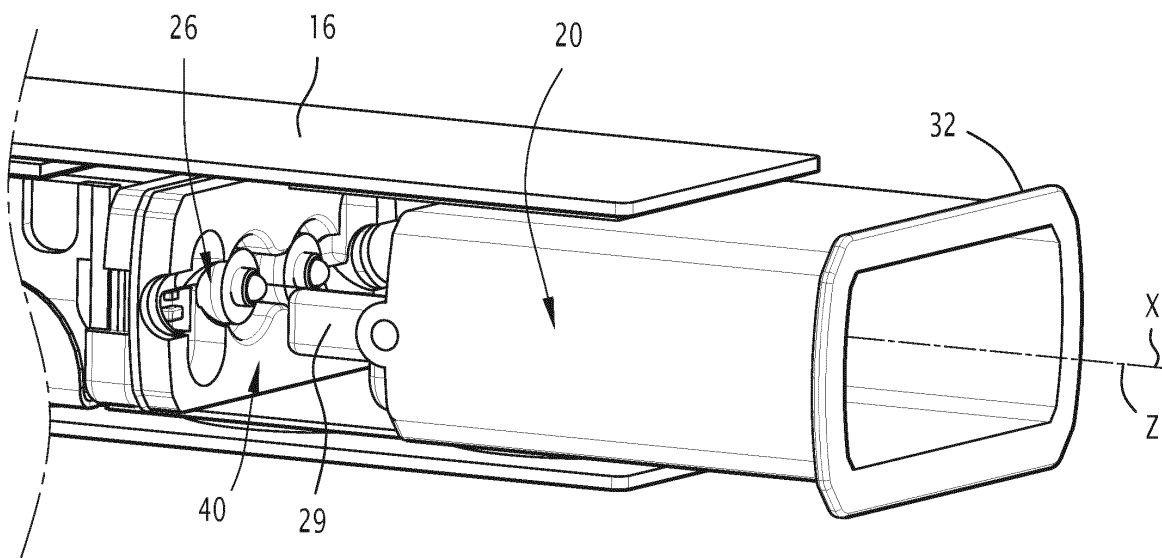
- an outer casing (16);
- a receiving cavity (18) ;
- a power supply (22);
- power connectors (26) arranged in the receiving cavity (18) for connecting a cartridge (14) to the power supply (22), the cartridge comprising a precursor storage portion (31) delimited transversally by a storage portion wall;
- a socket (20) delimited transversally by a socket lateral

wall.

The socket is configured to be in a disengaged configuration in which the socket is away from the receiving cavity and in an engaged configuration in which the socket is inserted at least partially in the receiving cavity.

The socket housing is adapted to receive said cartridge so as the storage portion wall faces at least partially the socket inner surface (35).

The socket is adapted to guide said cartridge for electrical connection to the power connectors.

**FIG.7****EP 4 154 738 A1**

Description

FIELD OF THE INVENTION

[0001] The present invention concerns an aerosol generating device with improved modularity.

BACKGROUND OF THE INVENTION

[0002] Different types of aerosol generation device are already known in the art. Generally, such devices comprise a storage portion for storing an aerosol forming precursor, which can comprise for example a liquid or a solid. A heating system is formed of one or more electrically activated resistive heating elements arranged to heat said precursor to generate the aerosol. The aerosol is released into a flow path extending between an inlet and outlet of the device. The outlet may be arranged as a mouthpiece, through which a user inhales for delivery of the aerosol.

[0003] In some aerosol generating devices, the precursor is stored in a removable cartridge. The aerosol generating device comprises then an outside casing defining a cavity in which the cartridge may be inserted. In order to attach the removable cartridge to the device body, a screw-threaded or magnetic connection or any other connection means can for example be used. When the cartridge is assembled to the aerosol generation device, the cartridge is said to be in an operation position and the device is able to generate the aerosol. When the precursor is consumed, the cartridge can be easily removed and replaced.

[0004] However, the shape of the cavity in which the cartridge may be inserted cannot be modified and therefore only one type of cartridge may be inserted. Thus, if the cartridge presents for example a change of shape, a change of diameter to increase the capacity of precursor storage or a different electrical connectivity, the cavity is no more able to receive this new type of cartridge. In consequence, a new device will have to be designed and the user will have to purchase a new device adapted to the new cartridge. Therefore, existing aerosol generating device lacks versatility to accommodate cartridge of different sizes and/or shapes.

SUMMARY OF THE INVENTION

[0005] One of the aims of the present invention is to provide an aerosol generating device which solves the above-mentioned issues. Particularly, the device according to the invention aims to improve its modularity.

[0006] For this purpose, the invention concerns an aerosol generating device extending along a longitudinal axis and comprising:

- an outer casing defining an internal volume;
- a receiving cavity arranged in the outer casing and delimited by a cavity inner surface extending along

the longitudinal axis;

- a power supply arranged in the internal volume;
- power connectors arranged in the receiving cavity for connecting a cartridge to the power supply, the cartridge extending along a cartridge axis and comprising a precursor storage portion for storing an aerosol precursor, the precursor storage portion being delimited transversally by a storage portion wall extending along the cartridge axis;
- a socket comprising a socket housing extending along a socket axis, the socket housing delimited transversally by a socket lateral wall extending along the socket axis, the socket lateral wall defining a socket outer surface and a socket inner surface opposite to the socket outer surface;

the socket being configured to be in a disengaged configuration in which the socket is away from the receiving cavity and in an engaged configuration in which the socket is inserted at least partially in the receiving cavity so as the socket axis coincides with the longitudinal axis and the cavity inner surface faces the socket outer surface;

the socket housing being adapted to receive said cartridge so as the storage portion wall face at least partially the socket inner surface;

the socket being adapted to guide said cartridge for electrical connection to the power connectors.

[0007] Using these features, the device according to the invention is able to provide a more accurate and reliable mechanical and electrical connection of the cartridge in the device. It may further accommodate cartridges of different sizes and/or shapes thanks to the socket. The socket acts as an adapter which enables a good mechanical and electrical connection between the device and the cartridge. It is therefore possible to use a single device to cooperate with different types of cartridge. The modularity of the device is thus improved.

[0008] According to some embodiments, the socket is able to be switched from the disengaged configuration to the engaged configuration by a movement of translation along the longitudinal axis without possible rotation in respect with the receiving cavity.

[0009] By implementing this feature, the socket is easily inserted in the receiving cavity by a user, without having to screw the socket in the receiving cavity.

[0010] According to some embodiments, the cartridge comprises an interfacing bottom, the socket comprising an interfacing wall extending perpendicularly to the socket axis and adapted to be in contact with the interfacing bottom of said cartridge.

[0011] According to some embodiments, the interfacing wall comprises at least a through-passage arranged to allow the power connectors to traverse the interfacing wall and be uncovered in the socket housing when the socket is in the engaged configuration.

[0012] By implementing these features, the cartridge may be easily electrically connected to the power supply.

The power connectors are able to traverse the through-passages and connect directly with the associated connectors of the cartridge. In this embodiment, the socket does not comprise any electrical connections. This facilitates its design and prevents electrical contact failures.

[0013] According to some embodiments, the socket comprises electrical connectors traversing the interfacing wall of the socket, the electrical connectors being arranged to provide electrical contact between the power connectors of the aerosol generating device and the cartridge.

[0014] By implementing this feature, the socket acts as an electrical adapter between the power connectors and the cartridge and enables therefore to use different type of cartridges presenting different electrical connection, the socket enabling to adapt to the power connectors of the device.

[0015] According to some embodiments, the socket comprises magnetic attachment members arranged on the interfacing wall, the magnetic attachment members being adapted to magnetically engage with complementary magnetic engagement members of the cartridge.

[0016] By implementing these features, the cartridge is easily fitted in the receiving cavity and is maintained magnetically in position. It is also possible for the user of the device to remove easily the cartridge from the socket, in particular when the said cartridge is empty.

[0017] According to some embodiments, the outer casing comprises an end edge defining an opening to the receiving cavity, the socket comprises an outward flange arranged for abutting on the end edge of the outer casing.

[0018] By implementing this feature, when the socket is inserted in the receiving cavity, the outward flange enables to determine easily to the user when the socket is in right position. It prevents material damaging of the power connectors for example if the socket is inserted with too much effort.

[0019] According to some embodiments, the socket comprises removable fastening means configured to removably fix the socket in the receiving cavity in the engaged configuration.

[0020] According to some embodiments, the device comprises a frame arranged in the internal volume of the outer casing and adapted for attachment of the power supply; the socket comprising at least a clipping member, such as a tab, adapted to engage with a complementary clipping member, such as a side recess, arranged on the outer casing and/or the frame.

[0021] By implementing these features, the frame provides a mechanical stiffness to the device and enables to fix the power supply in the device. The socket is easily and automatically fixed to the outer casing and/or the frame when the socket is inserted in the receiving cavity. It is also possible for the user of the device to remove easily the socket from the socket, for example to insert a first type of cartridge.

[0022] According to some embodiments, the device further comprises an electronic circuit board arranged in

the internal volume, the power connectors being attached to the electronic circuit board; the device further comprising a sealing member arranged between the electronic circuit board and the receiving cavity. In particular, the sealing member is arranged to contact the socket housing in the engaged configuration.

[0023] According to some embodiments, the sealing member comprises through-passages adapted to receive the power connectors, the through-passages being arranged to prevent liquid ingress from the receiving cavity to the electronic circuit board.

[0024] By implementing these features, the sealing member protects the electronic circuit board from the liquid which could leak into the receiving cavity. Thus, the sealing member prevents damaging the electronic circuit board with the liquid. The through-passages enable to connect the device to the cartridge while ensuring the sealing and the protection of the electronic circuit board.

[0025] According to some embodiments, the sealing member comprises shape-fitting means complementary to shape-fitting means arranged on the interfacing wall of the socket.

[0026] By implementing this feature, the socket is engaged in a complementary way in the receiving cavity providing a good mechanical and electrical connection.

[0027] According to some embodiments, the socket housing extends at least according to the half, advantageously the three quarter, in particular of the whole length of the receiving cavity according to the longitudinal axis, when the socket is in the engaged configuration.

[0028] By implementing this feature, the socket is cooperating with the receiving cavity on a sufficient length to provide a good fitting of the socket and an efficient cooperation between the socket and the rest of the device.

[0029] According to some embodiments, the socket housing is in a tight contact with the cavity inner surface, when the socket is in the engaged configuration.

[0030] By implementing this feature, the mechanical cooperation between the socket and the receiving cavity is improved and prevents any leakage from the outside in the receiving cavity towards the power connectors.

[0031] According to some embodiments, the receiving cavity is adapted to receive a first type cartridge when the socket is in the disengaged configuration; and the socket housing is adapted to receive a second type cartridge when the socket is in the engaged configuration.

[0032] By implementing this feature, the device is able to receive both a first type cartridge and a second type cartridge. The first type cartridge is received directly in the receiving cavity without using the socket. The second type cartridge is received by using the socket which is fitted in the receiving cavity and acts as an adapter for different types of cartridge.

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] The invention and its advantages will be better

understood upon reading the following description, which is given solely by way of non-limiting example and which is made with reference to the appended drawings, in which:

- Figure 1 is a partially exploded perspective view of a first embodiment of an aerosol generating device without a socket and of a first-type cartridge designed to be inserted in the device;
- Figure 2 is a perspective view of the aerosol generating device of Figure 1 comprising a socket in an engaged configuration and of second-type cartridge designed to be inserted in the device;
- Figure 3 is a perspective view of the socket of Figure 2;
- Figure 4 is another perspective view of the socket of Figure 2;
- Figure 5 is a side partial view of the device of Figure 2 in a disengaged configuration;
- Figure 6 is a perspective view of the device of Figure 5;
- Figure 7 is a perspective view of the device of Figure 6 with the socket of Figure 2;
- Figure 8 is a side partial view of the device of Figure 2 in an engaged configuration; and
- Figure 9 is a perspective view of a second embodiment of the aerosol generating device with a socket in a disengaged configuration.

DETAILED DESCRIPTION OF THE INVENTION

[0034] Before describing the invention, it is to be understood that it is not limited to the details of construction set forth in the following description. It will be apparent to those skilled in the art having the benefit of the present disclosure that the invention is capable of other embodiments and of being practiced or being carried out in various ways.

[0035] As used herein, the term **"aerosol generating device"** or **"device"** may include a vaping device to deliver an aerosol to a user, including an aerosol for vaping, by means of aerosol generating unit (e.g. an aerosol generating element which generates vapor which condenses into an aerosol before delivery to an outlet of the device at, for example, a mouthpiece, for inhalation by a user). The device may be portable. "Portable" may refer to the device being for use when held by a user. The device may be adapted to generate a variable amount of aerosol, e.g. by activating a heater system for a variable amount of time (as opposed to a metered dose of aerosol), which

can be controlled by a trigger. The trigger may be user activated, such as a vaping button and/or inhalation sensor. The inhalation sensor may be sensitive to the strength of inhalation as well as the duration of inhalation to enable a variable amount of vapor to be provided (so as to mimic the effect of smoking a conventional combustible smoking article such as a cigarette, cigar or pipe, etc.). The device may include a temperature regulation control to drive the temperature of the heater and/or the heated aerosol generating substance (aerosol precursor) to a specified target temperature and thereafter to maintain the temperature at the target temperature that enables efficient generation of aerosol.

[0036] As used herein, the term **"aerosol"** may include a suspension of precursor as one or more of: solid particles; liquid droplets; gas. Said suspension may be in a gas including air. Aerosol herein may generally refer to/include a vapor. Aerosol may include one or more components of the precursor.

[0037] As used herein, the term **"aerosol-forming precursor"** or **"precursor"** or **"aerosol-forming substance"** or **"substance"** or **"vaporizable material"** is used to designate any material that is vaporizable in air to form aerosol. Vaporisation is generally obtained by a temperature increase up to the boiling point of the vaporization material, such as at a temperature up to 400°C, preferably up to 350°C. The vaporizable material may, for example, comprise or consist of an aerosol-generating liquid, gel, or wax or the like or an aerosol-generating solid that may be in the form of a rod, which contains processed tobacco material, a crimped sheet or oriented strips of reconstituted tobacco (RTB), or any combination of these. The vaporizable material may comprise one or more of: nicotine; caffeine or other active components. The active component may be carried with a carrier, which may be a liquid. The carrier may include propylene glycol or glycerin. A flavoring may also be present. The flavoring may include Ethylvanillin (vanilla), menthol, Isoamyl acetate (banana oil) or similar.

DESCRIPTION OF A FIRST EMBODIMENT OF THE INVENTION

[0038] An aerosol generating assembly 10 according to a first embodiment of the invention is shown on Figures 1 and 2. The aerosol generating assembly 10 comprises an aerosol generating device 12 and a cartridge 14. Advantageously, the aerosol generating assembly 10 further comprises a mouthpiece 15 which can be a part of the aerosol generating device 12 or the cartridge 14.

[0039] The aerosol generating device 12 comprises an outer casing 16 extending along a longitudinal device axis X. The outer casing 16 defines an internal volume 19. The aerosol generating device 12 also comprises a receiving cavity 18 arranged in the outer casing 16 and delimited by a cavity inner surface extending along the longitudinal device axis X. In particular, the outer casing 16 comprises an end edge 21 defining an opening to the

receiving cavity 18. The receiving cavity 18 is designed to receive a cartridge 14 in an advantageous embodiment. In a variant, the receiving cavity 18 is not able to receive directly a cartridge 14, as it will be explained below. As it will be further explained below, the cartridge 14 may be a first type cartridge 14A received directly in the receiving cavity 18, as shown on Figure 1, or a second type cartridge 14B received in the receiving cavity 18 via a socket 20, as shown on Figure 2. The cartridge 14 defines an operation position wherein the cartridge 14 is received in the receiving cavity 18 and is able to operate with the aerosol generating device 12 to generate aerosol. Particularly, in the operation position, the cartridge 14 is connected to the device 12 and is able to heat the precursor to generate aerosol.

[0040] Referring to Figure 1, the internal volume 19 of the device is able to receive internal components, notably a power supply 22 and a printed circuit board 24, also called PCB. In particular, the device 12 comprises a frame arranged in the internal volume of the outer casing 16. The frame is adapted for attachment of the power supply 22 and of the printed circuit board 24. According to other examples, the elements 22, 24 are directly attached to the outer casing 16.

[0041] The power supply 22 comprises a battery, for example a rechargeable lithium-ion battery known in the art. The printed circuit board 24 comprises a plurality of electronic components configured to control the operation of the aerosol generating device 12. Particularly, the printed circuit board 24 comprises a controller (not shown) configured to control for example a voltage provided by the battery to the cartridge 14, and notably to a heater arranged in the cartridge 14 as it will be explained below. As visible on Figures 5 to 7, the device 12 comprises power connectors 26 arranged in the receiving cavity 18 and connected to the power supply 22. The power connectors 26 are designed for electrically connecting the power supply 22 and the printed circuit board 24 to the cartridge 14.

[0042] The device 12 may further comprise a tag reader (not shown) arranged on the cavity surface. The tag reader is able to send a request signal towards at least an associated tag on the cartridge 14, for example by creating an electromagnetic field around, and to receive a data signal from the tag in response to the request signal, for example by analyzing modifications of the electromagnetic field created by the tag. In alternative, the tag reader is able to communicate with the associated tag via an NFC protocol (Near-Field Communication protocol) or an RFID protocol (Radio-frequency identification protocol).

[0043] The first type of cartridge 14A and the second type of cartridge 14B present a similar design. The below description of a cartridge 14 concerns both types of cartridge 14A, 14B. By a different type of cartridge, it is meant a cartridge presenting a different external shape and/or a different transversal section and/or a different diameter and/or a different electrical connection, etc.

[0044] Referring to Figures 1 and 2, the cartridge 14 comprises a cartridge body extending along a cartridge axis Y. The cartridge axis Y coincides with the device axis X when the cartridge 14 is in the operation position. In particular, the cartridge body presents a first part 27 and a second part 28. The first part 27 is generally parallelepiped with two pairs of parallel side walls forming each a pair of parallel sides of the parallelepiped. The first part 27 is designed to be inserted in the receiving cavity 18 in the operation position. The second part 28 presents a convergent shape extending between the first parallelepiped part 27 and an end of the cartridge 14 along the cartridge axis Y. The second part 28 corresponds here to the mouthpiece 15. The second part 28 presents at the interface with the first part 27 a greater transversal section than the first part transversal section. In particular, the said transversal section of the second part 28 is substantially the same as the transversal section of the outer casing 16 of the device 12. Therefore, in the operation position, the first part 27 is inserted in the receiving cavity 18 and the second part 28 is abutting on the outer casing 16 of the device 12.

[0045] The cartridge comprises a precursor storage portion 31 delimited transversally by a storage portion wall extending along the cartridge axis Y. The precursor storage portion 31 is able to store an aerosol precursor. The precursor storage portion 31 may be arranged in both first and second parts 27, 28 of the cartridge body. The aerosol precursor can be an aerosolizable liquid such as propylene glycol and/or glycerol containing aroma and/or nicotine.

[0046] The cartridge 14 further comprises a heater able to heat the precursor to generate aerosol. The heater of the cartridge 14 is connected electrically to the power supply 22 of the device 12 through a pair of contacts arranged in the first part 27 end in contact with the power connectors 26 of the device. According to another embodiment of the invention, not shown, the heater of the cartridge may be coupled with a heating element arranged in the device 12 and powered by the power source of this device 12. In this case, heat is transmitted directly from the heating element of the device to the heater of the cartridge. Various heaters can be contemplated such as a coil-and-wick heater or a ceramic heater or an induction heater.

[0047] Referring to Figures 2 and 5, the socket 20 is adapted to fit in the receiving cavity 18 in an engaged configuration. The socket 20 is advantageously removably fixed in the receiving cavity 18. The socket 20 is therefore able to move from an engaged configuration in which the socket 20 is inserted in the receiving cavity 18 to a disengaged configuration in which the socket 20 is away from the receiving cavity 18 and is not in contact with the outer casing 16 of the device 12. For this purpose, the socket 20 may comprise removable fastening means configured to attach it inside the receiving cavity 18. These attaching means may comprise at least a clipping or press fitting member 29, in particular two clipping or

press fitting members 29 arranged on both sides of the socket 20, as shown on Figures 4 and 5. Each clipping or press-fitting member 29 is for example a tab. Each clipping or press-fitting member 29 is adapted to engage with a complementary clipping member, such as a side recess, arranged on the outer casing 16 and/or the frame of the device 12, as shown on Figure 8. In this way, the socket 20 is easily and automatically fixed to the outer casing 16 and/or the frame when the socket 20 is inserted in the receiving cavity 18. The provided tabs are so configured that the socket slidably guided in the secured position during insertion. A rotation of the socket relative to the cavity or a biased engagement is essentially prevented. According to another example, the socket 20 may be attached inside the cavity 18 without attaching means, for example by friction force. The socket 20 is able to be switched from the disengaged configuration to the engaged configuration by a movement of translation along the longitudinal axis X without rotation with reference to the receiving cavity 18. The socket 20 is therefore inserted in the receiving cavity 18 easily without having to be screwed relatively to the receiving cavity 18 for example.

[0048] As it is shown on Figures 3 and 4, the socket 20 may comprise a socket housing 30 adapted to receive a second-type cartridge 14B. The socket housing 30 extends along a socket axis Z. The socket housing 30 is delimited transversally by a socket lateral wall extending along the socket axis Z. The socket lateral wall defines a socket outer surface 33 and a socket inner surface 35, facing each other. In the engaged configuration, the socket axis Z coincides with the longitudinal axis X and the cavity inner surface of the device 12 is facing the socket outer surface 33. When the cartridge 14 is inserted in the socket housing 30, the precursor storage portion 31 is facing at least partially the socket inner surface 34. Therefore, in the engaged configuration of the socket 20 and in the operation position of the cartridge 14, the cavity inner surface, the socket lateral wall and the storage portion wall are facing each other.

[0049] The socket housing 30 of the socket 20 extends at least according to the half, advantageously the three quarter, in particular of the whole length of the receiving cavity 18 according to the longitudinal axis X. The socket housing 30 presents a complementary shape with respect to the first part 27 of the second type cartridge 14B. In this way, the socket housing 30 is in a tight contact with the internal surface of the receiving cavity 18 in the engaged configuration. Here, as visible on the Figures 4 and 5, the socket housing 30 presents a generally parallelepiped shape. The socket 20 comprises an outward flange 32 arranged on an end of the socket housing 30. The outward flange 32 is designed for abutting on the end edge 21 of the outer casing 16 in the engaged configuration. The outward flange 32 defines an opening to the internal volume of the socket housing 30 in which the second type of cartridge 14B may be inserted. The thickness of the outward flange and/or the shape of the upper surface of the outward flange may vary from a first socket

to a second socket so as to be able to adapt to different sizes of cartridges.

[0050] On the opposite end, the socket 20 comprises an interfacing wall 34 adapted to contact with the interfacing bottom of the second-type cartridge 14B, as visible on Figure 4. The interfacing wall 34 is extending orthogonally to the socket axis Z and forms a bottom wall of the socket. The socket 20 is arranged to guide the second-type cartridge 14B for electrical connection to the power connectors 26. The interfacing wall 34 comprises at least a through-passage 36 arranged for the power connectors 26 to traverse the interfacing wall 34 and be uncovered inside the socket housing 30 of the socket 20 in the engaged configuration. As visible on Figure 5, two through-passages 36 are here arranged in the interfacing wall 34. When the second type of cartridge 14B is inserted in the socket housing 30, the pair of contacts arranged in the first part 27 of the cartridge cooperates with the power connectors 26 of the device 12.

[0051] In a particular example, the socket 20 can comprise magnetic attachment members arranged on the interfacing wall 34. The magnetic attachment members are adapted to magnetically engage with complementary magnetic engagement members of the second-type cartridge 14B. The second type of cartridge 14B is therefore easily fitted in the receiving cavity 18 and is maintained magnetically in position. Thus, it is possible for the user to easily remove the second type of cartridge 14B from the socket 20.

[0052] Referring to Figures 5 to 8, the device 12 may further comprise a sealing member 40 arranged between the electronic circuit board 24 and the receiving cavity 18. The sealing member 40 comprises through-passages adapted to receive the power connectors 26 in the engaged configuration. The sealing member 40 is tightly arranged with the electronic circuit board to prevent liquid ingress from the receiving cavity 18 to the electronic circuit board 24 in the engaged configuration of the socket in the receiving cavity, as shown on Figure 8. In such a way, the sealing member 40 protects the electronic circuit board 24 from any potential liquid leakage from the cartridge into the receiving cavity 18. Thus, the sealing member 40 prevents damaging the electronic circuit board 24 with fluid. In particular, the sealing member 40 comprises shape-fitting means complementary to shape-fitting means arranged on the interfacing wall 34 of the socket 20. The socket 20 is therefore engaged in a complementary way in the receiving cavity 18 via the sealing member 40 which provides a good mechanical and electrical connection. The sealing member may be made of silicone rubber material or equivalent.

[0053] Referring to Figure 5 to 8, the device 12 may further comprise a puff sensor 42. The power connectors 26 and the puff sensor 42 are fixed on the same PCB board, attached to the electronic circuit board 24. The sealing member 40 is arranged with a chamber sealingly in contact with the circuit board to receive the puff sensor 42. The puff sensor 42 is in particular a pressure sensor

configured to detect an airflow flowing from an airflow path arranged in the cartomizer 14 and directed to the mouthpiece 15. The sealing member 40 with its sealing chamber enables to isolate the puff sensor 42 from the other electronic components of the electronic circuit board 24.

DESCRIPTION OF A SECOND EMBODIMENT OF THE INVENTION

[0054] An aerosol generating assembly according to a second embodiment of the invention is shown on Figure 9. The aerosol generating assembly comprises an aerosol generating device 112 and a cartridge, not shown here. The aerosol generating device 112 is similar to the aerosol generating device 12 explained above except the features described below.

[0055] As in the first embodiment, the device 112 comprises an outer casing 116 defining an internal volume comprising a cavity 118. In particular, the outer casing 116 comprises an end edge 121 defining an opening to the cavity 118.

[0056] A power supply and an electronic circuit board, not shown on Figure 9, are arranged in the internal volume. The device 112 comprises power connectors 126 arranged in the cavity 118 for connecting a cartridge to the power supply.

[0057] As visible on Figure 9, a socket 120 is adapted to fit in the cavity 118 in an engaged configuration. The socket 120 comprises a socket housing 130 adapted to receive a cartridge. The socket housing 130 defines a socket outer surface 133 and a socket inner surface 135, facing each other. In the engaged configuration, the cavity inner surface is facing the socket outer surface 133. When the cartridge is inserted in the socket housing 130, the precursor storage wall faces at least partially the socket inner surface 134. Therefore, in the engaged configuration of the socket 120 and in the operation position of the cartridge 14, the cavity inner surface, the socket lateral wall and the storage portion wall face each other. The socket 120 defines lateral holes 150 that complement with resilient legs 160 arranged in the receiving cavity 118 to maintain the socket 20 in the engaged configuration. Thereby, the socket 120 is arranged to guide said cartridge for electrical connection to the power connectors 126.

[0058] The socket 120 is advantageously made of metal. The socket 120 can present a diverging transversal section allowing the socket 120 to abut on the end edge 121 of the outer casing 116 in the engaged configuration. As in the previous case, the socket 120 can comprise a through-passage 136 arranged in the interfacing wall 134 to allow access to the power connectors 126. When the second type of cartridge is inserted in the socket housing 130, the pair of contacts arranged on the second type of cartridge cooperate with the power connectors 126 of the device 112, traversing the through-passage 136.

[0059] The device 112 can further comprise a sealing

member 140 arranged between the electronic circuit board and the receiving cavity 118, as it was explained in relation with the previous embodiment. The sealing member 140, e.g. made of silicone rubber, may comprise a through-passage adapted to receive the power connectors 126 in the engaged configuration. The power connectors may be further individually sealed by sealing rings, e.g. silicone rubber rings.

10 OTHER EMBODIMENTS OF THE INVENTION

[0060] It will be apparent to those skilled in the art that other embodiments, not shown on the figures, may be carried out in various ways by combining the previous embodiments.

[0061] For example, an aerosol generating device according to another embodiment may comprise a socket comprising electrical connectors traversing the interfacing wall of the socket. The electrical connectors may be arranged to provide electrical contact between the power connectors and the second-type cartridge in the engaged configuration. The socket acts then as an electrical adapter between the power connectors and the second-type cartridge and enables therefore to use a second-type cartridge presenting a different electrical connection than the first-type cartridge.

Claims

1. An aerosol generating device (12; 112) extending along a longitudinal axis (X) and comprising:

- an outer casing (16; 116) defining an internal volume;
- a receiving cavity (18; 118) arranged in the outer casing (16; 116) and delimited by a cavity inner surface extending along the longitudinal axis (X);
- a power supply (22; 122) arranged in the internal volume;
- power connectors (26; 126) arranged in the receiving cavity (18; 118) for connecting a cartridge (14) to the power supply (22), the cartridge (14) extending along a cartridge axis (Y) and comprising a precursor storage portion (31) for storing an aerosol precursor, the precursor storage portion (31) being delimited transversally by a storage portion wall extending along the cartridge axis (Y);
- a socket (20; 120) comprising a socket housing (30; 130) extending along a socket axis (Z), the socket housing (30; 130) delimited transversally by a socket lateral wall extending along the socket axis (Z), the socket lateral wall defining a socket outer surface (33; 133) and a socket inner surface (35; 135) opposite to the socket outer surface (33; 133);

- the socket (20; 120) being configured to be in a disengaged configuration in which the socket (20; 120) is away from the receiving cavity (18; 118) and in an engaged configuration in which the socket (20; 120) is inserted at least partially in the receiving cavity (18; 118) so as the socket axis (Z) coincides with the longitudinal axis (X) and the cavity inner surface faces the socket outer surface (33; 133);
the socket housing (30; 130) being adapted to receive said cartridge (14) so as the storage portion wall faces at least partially the socket inner surface (35; 135);
the socket (20; 120) being adapted to guide said cartridge (14) for electrical connection to the power connectors (26; 126).
2. The aerosol generating device (12; 112) according to claim 1, wherein the socket (20; 120) is able to be switched from the disengaged configuration to the engaged configuration by a movement of translation along the longitudinal axis (X) without possible rotation in respect with the receiving cavity (18; 118).
 3. The aerosol generating device (12; 112) according to claim 1 or 2, wherein the cartridge (14) comprises an interfacing bottom, the socket (20; 120) comprising an interfacing wall (34; 134) extending perpendicularly to the socket axis (Z) and adapted to be in contact with the interfacing bottom of said cartridge (14).
 4. The aerosol generating device (12; 112) according to claim 3, wherein the interfacing wall (34; 134) comprises at least a through-passage (36; 136) arranged to allow the power connectors (26; 126) to traverse the interfacing wall (34; 134) and be uncovered in the socket housing (30; 130) when the socket (20; 120) is in the engaged configuration.
 5. The aerosol generating device (12; 112) according to claim 3, wherein the socket (20; 120) comprises electrical connectors traversing the interfacing wall (34; 134) of the socket (20; 120), the electrical connectors being arranged to provide electrical contact between the power connectors (26; 126) of the aerosol generating device (12; 112) and the cartridge (14).
 6. The aerosol generating device (12; 112) according to any of claims 3 to 5, wherein the socket (20; 120) comprises magnetic attachment members arranged on the interfacing wall (34; 134), the magnetic attachment members being adapted to magnetically engage with complementary magnetic engagement members of the cartridge (14).
 7. The aerosol generating device (12; 112) according to any of the preceding claims, wherein the outer casing (16; 116) comprises an end edge (21; 121) defining an opening to the receiving cavity (18; 118), the socket (20; 120) comprises an outward flange (32) arranged for abutting on the end edge (21) of the outer casing (18; 118).
 8. The aerosol generating device (12; 112) according to any of the preceding claims, wherein the socket (20; 120) comprises removable fastening means configured to removably fix the socket (20; 120) in the receiving cavity (18; 118) in the engaged configuration.
 9. The aerosol generating device (12; 112) according to any of the preceding claims, wherein the device (12; 112) comprises a frame arranged in the internal volume of the outer casing (16; 116) and adapted for attachment of the power supply (22);
the socket (20; 120) comprising at least a clipping member (29), such as a tab, adapted to engage with a complementary clipping member, such as a side recess, arranged on the outer casing (16; 116) and/or the frame.
 10. The aerosol generating device (12; 112) according to any of the preceding claims, wherein the device (12; 112) further comprises an electronic circuit board (24) arranged in the internal volume, the power connectors (26; 126) being attached to the electronic circuit board (24);
the device (12; 112) further comprising a sealing member (40; 140) arranged between the electronic circuit board (24) and the receiving cavity (18; 118).
 11. The aerosol generating device (12; 112) according to claim 10, wherein the sealing member (40; 140) comprises through-passages adapted to receive the power connectors (26; 126), the through-passages being arranged to prevent liquid ingress from the receiving cavity (18; 118) to the electronic circuit board (24).
 12. The aerosol generating device (12; 112) according to claims 3 and 11, wherein the sealing member (40; 140) comprises shape-fitting means complementary to shape-fitting means arranged on the interfacing wall (34; 134) of the socket (20; 120).
 13. The aerosol generating device (12; 112) according to any one of the preceding claims, wherein the socket housing (30; 130) extends at least according to the half, advantageously the three quarter, in particular of the whole length of the receiving cavity (18; 118) according to the longitudinal axis (X), when the socket (20; 120) is in the engaged configuration.
 14. The aerosol generating device (12; 112) according

to any one of the preceding claims, wherein the socket housing (30; 130) is in a tight contact with the cavity inner surface, when the socket (20; 120) is in the engaged configuration.

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15. The aerosol generating device (12; 112) according to any one of the preceding claims, wherein:

- the receiving cavity (18; 118) is adapted to receive a first type cartridge (14A) when the socket (20; 120) is in the disengaged configuration; 10
- the socket housing (30; 130) is adapted to receive a second type cartridge (14B) when the socket (20; 120) is in the engaged configuration.

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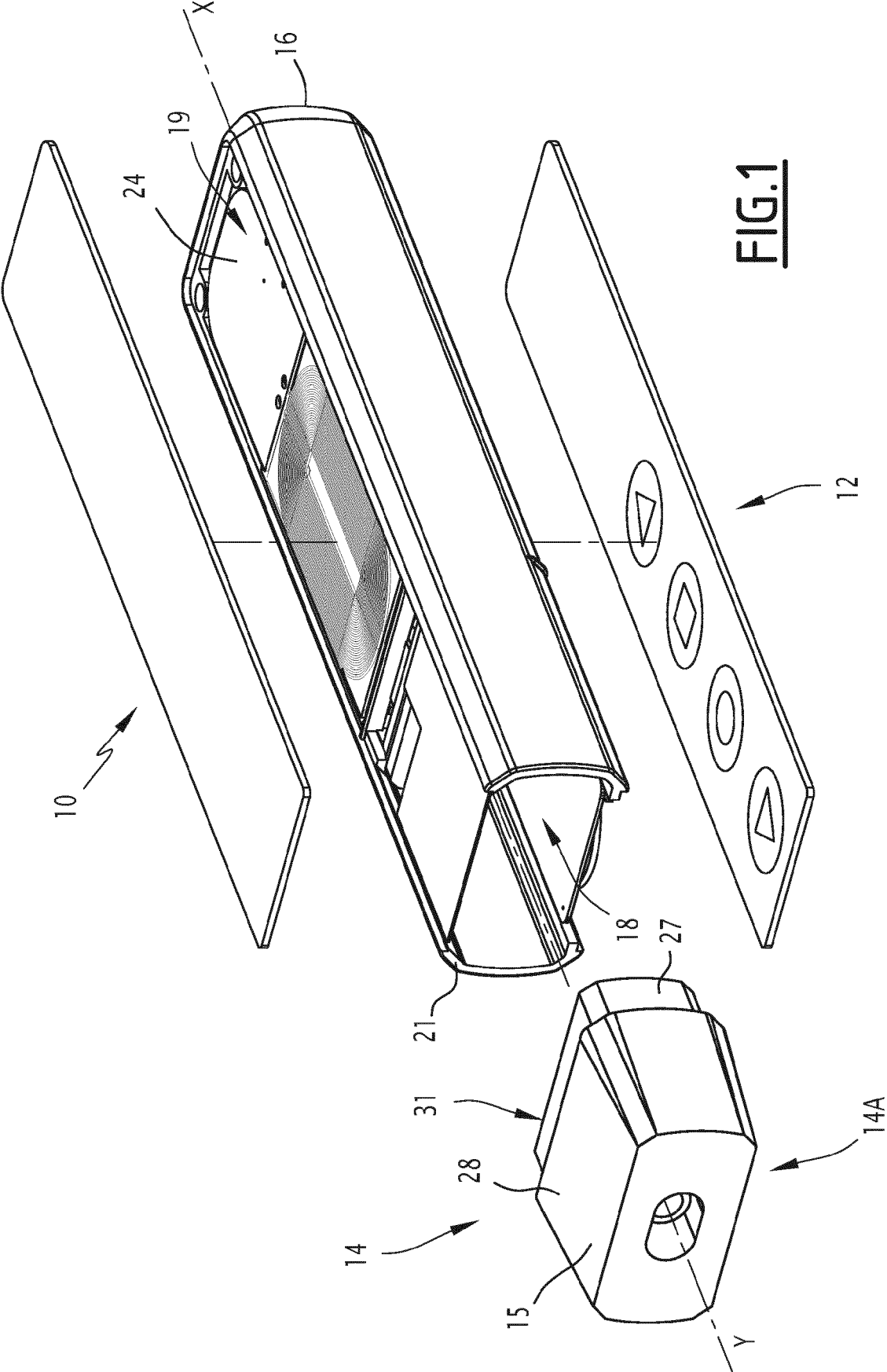
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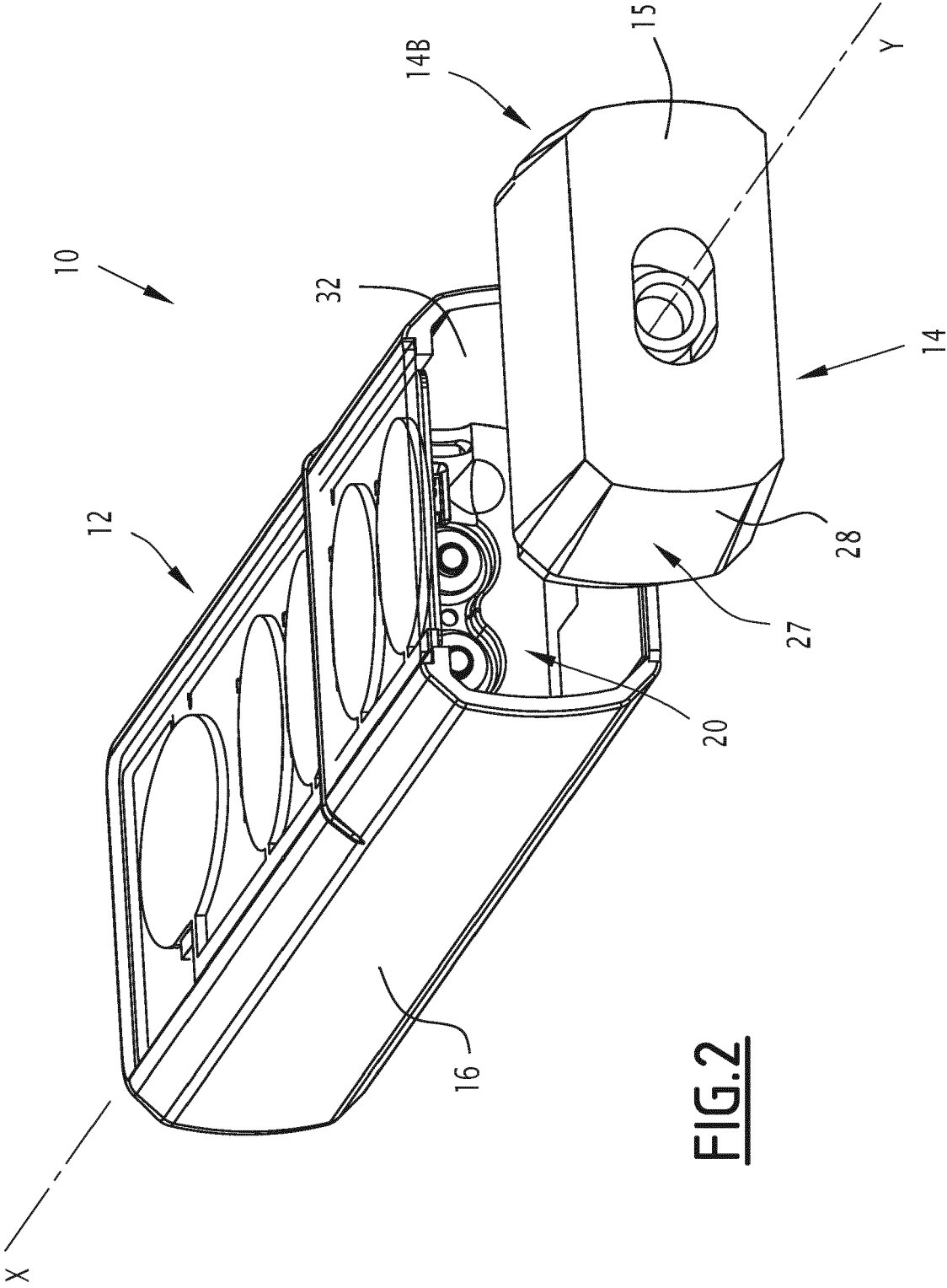
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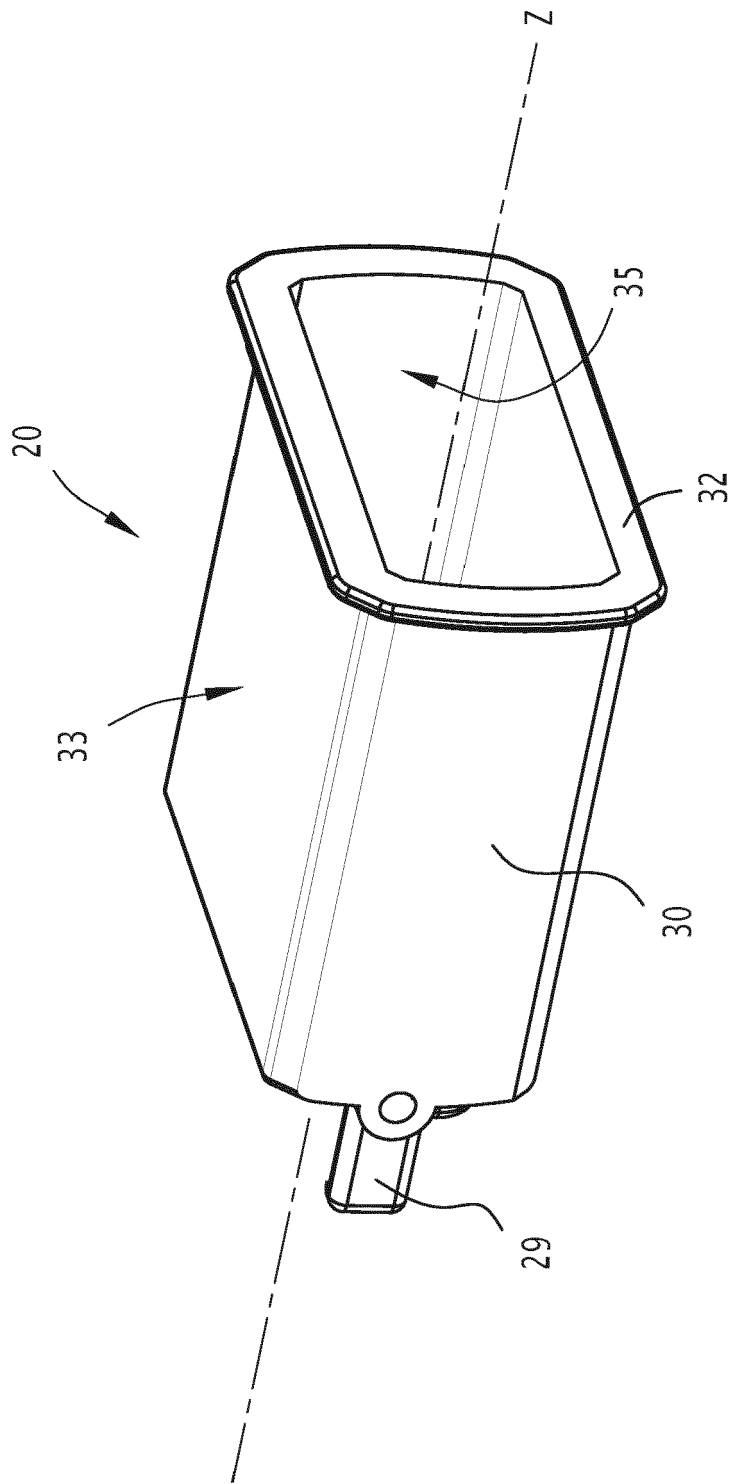


FIG. 3

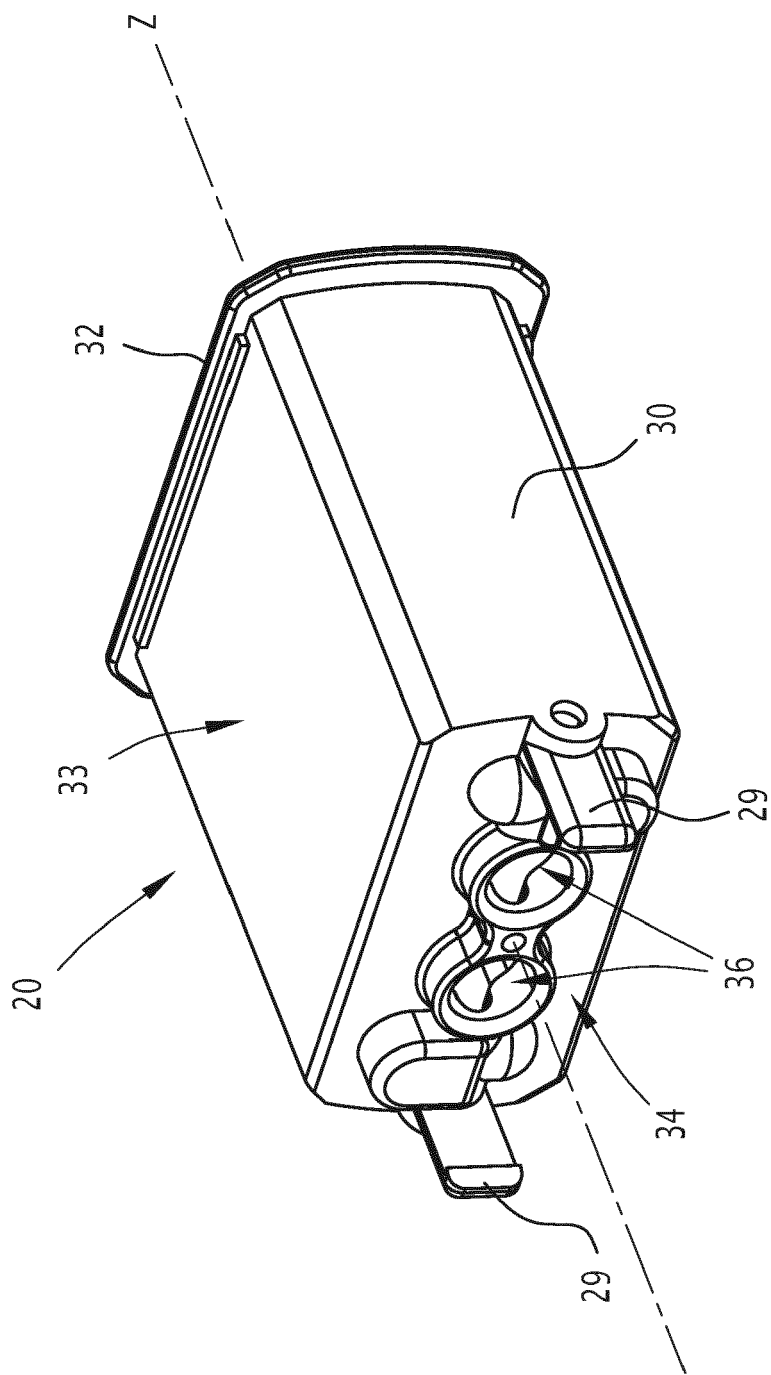


FIG. 4

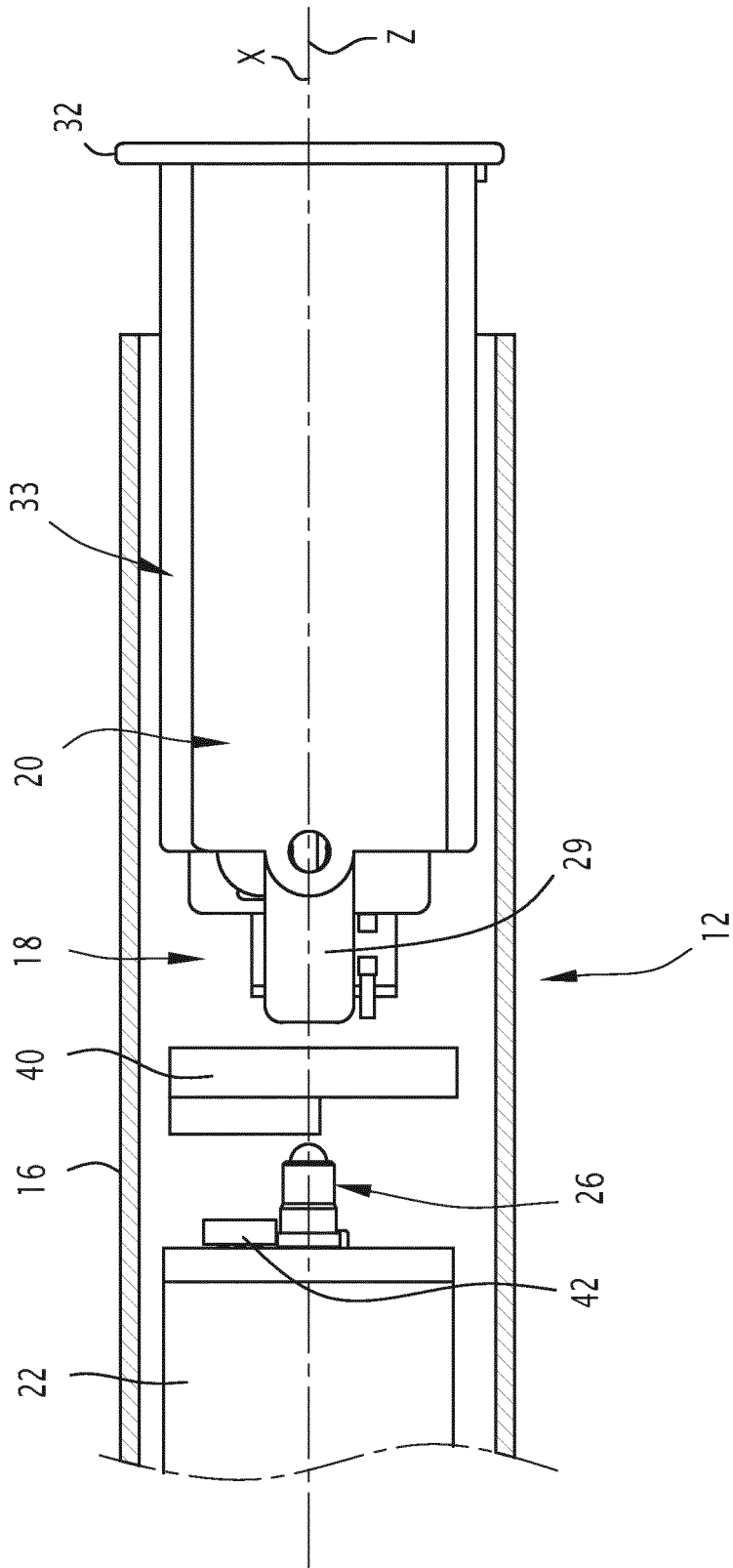


FIG. 5

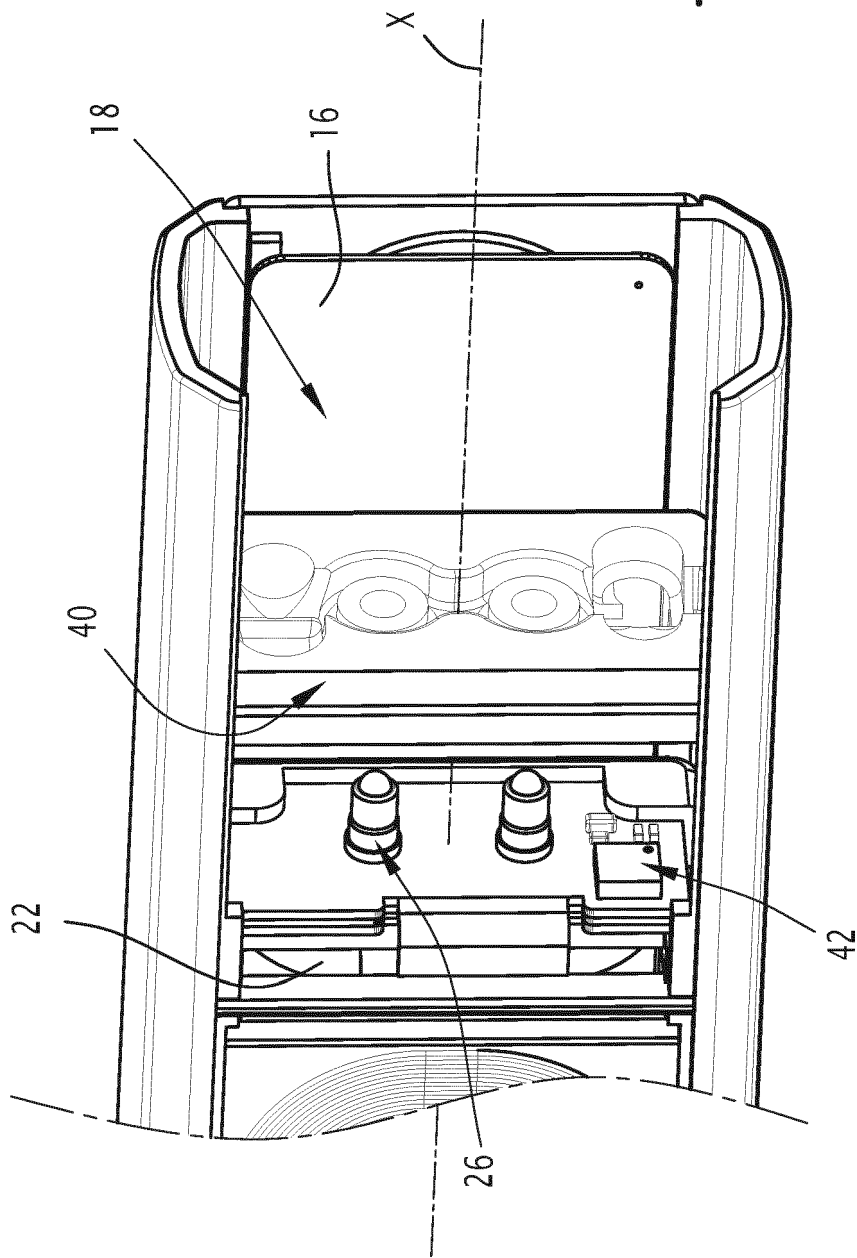


FIG. 6

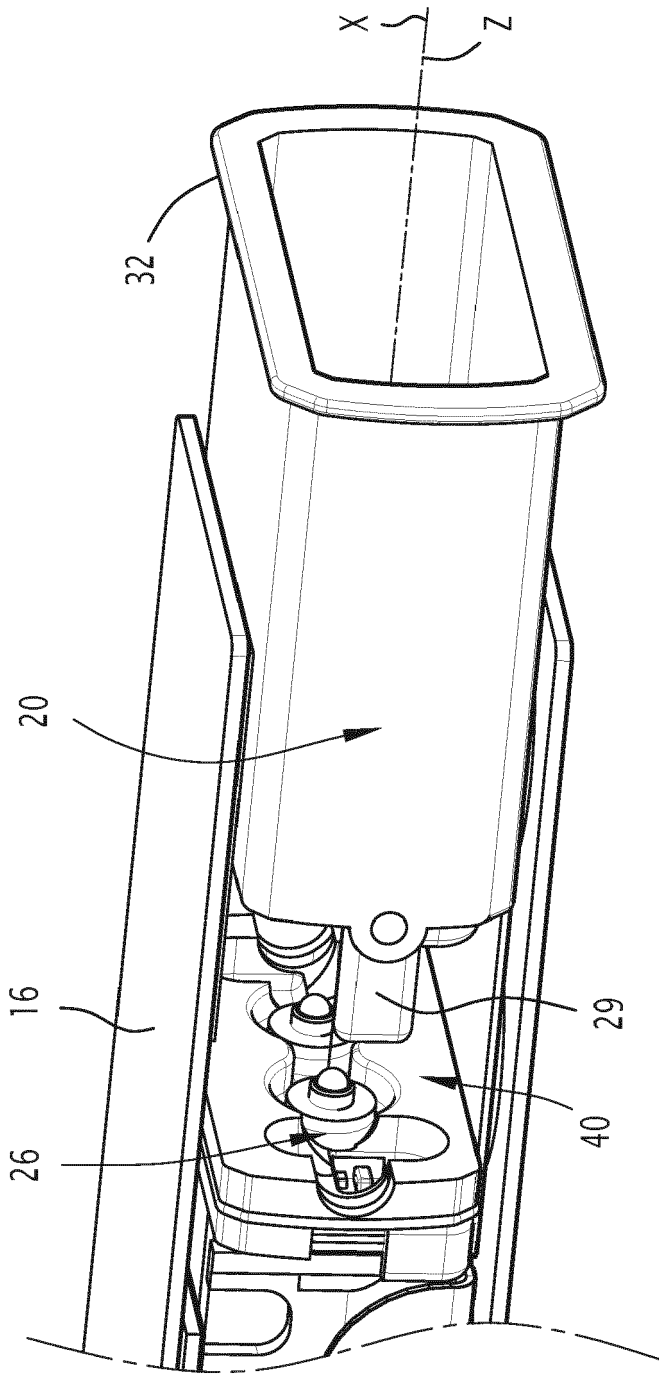


FIG.7

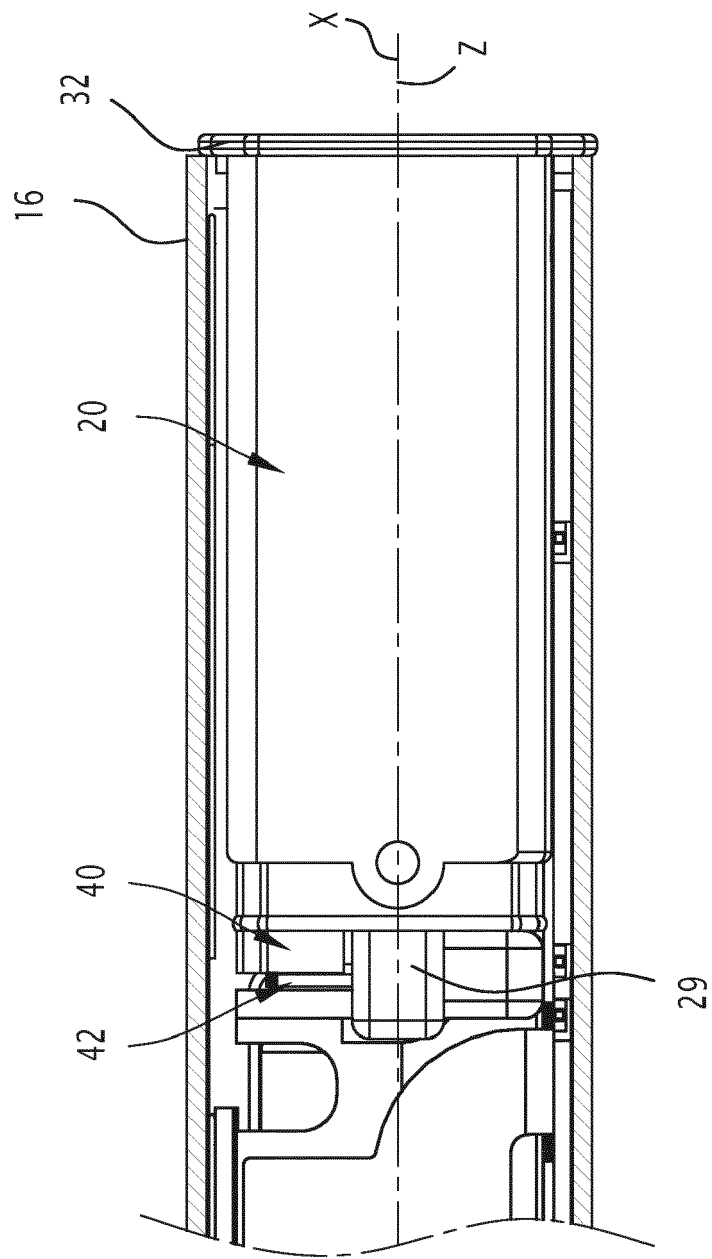


FIG.8

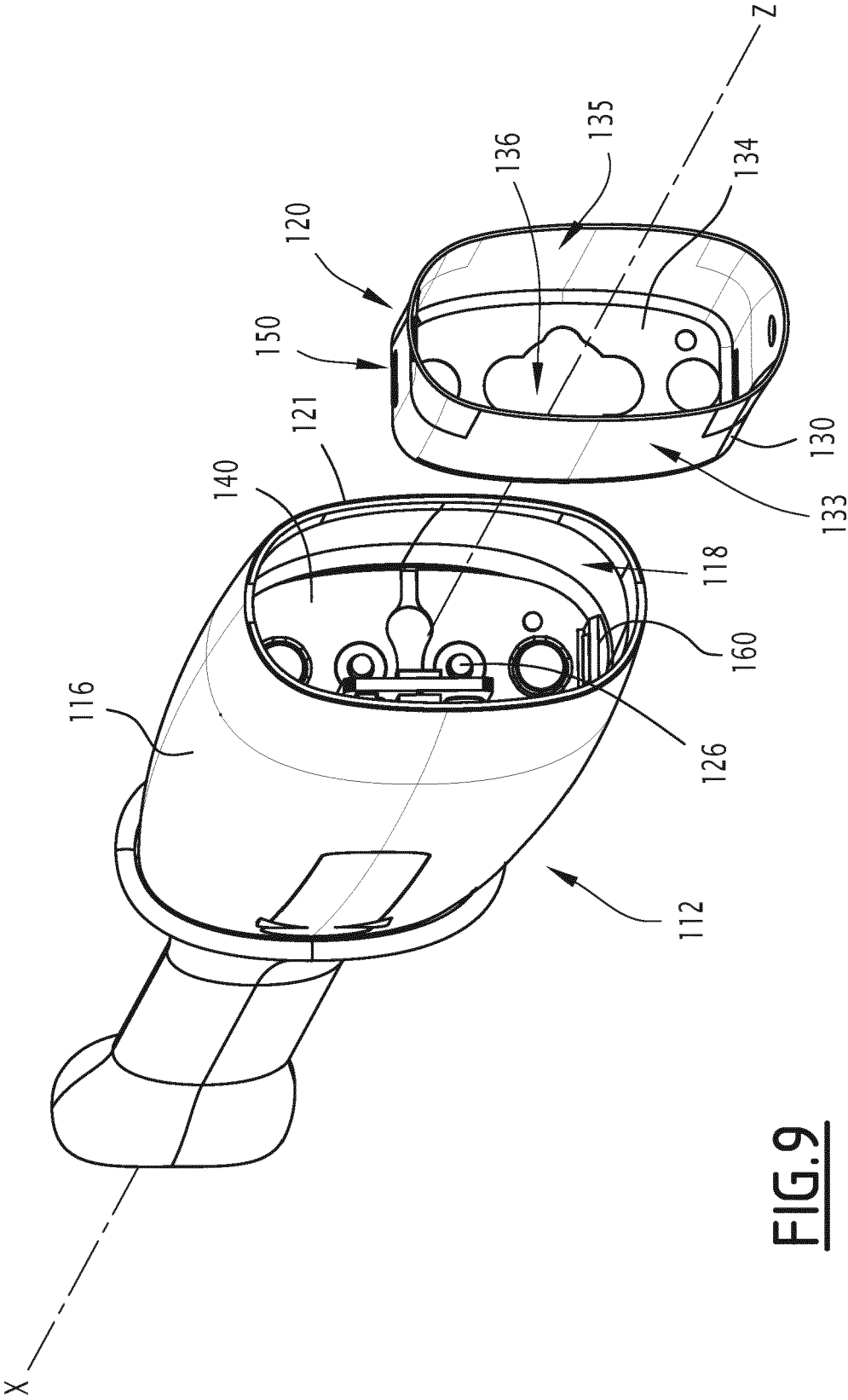


FIG. 9



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A	* paragraph [0095] - paragraph [0100] *	7, 8,	
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Place of search Munich		Date of completion of the search 24 February 2022	Examiner Anticoli, Claud
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