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(54) **ELECTRONIC VAPORIZATION DEVICE AND VAPORIZER THEREOF**

(57) The present disclosure discloses an electronic vaporization device and a vaporizer thereof. The vaporizer includes a first air outlet channel and a vaporization cavity that are in communication with each other, and further includes a liquid guide member. The liquid guide member is arranged on the end of the first air outlet channel that is close to the vaporization cavity; and the liquid guide member is configured to be in contact with condensate falling off from the first air outlet channel, to destroy surface tension of condensate through a downward pulling force, and to guide condensate into the vaporization cavity. Therefore, generation of condensate is prevented or reduced, and secondary vaporization may be performed on condensate falling off from the first air outlet channel, thereby improving the user experience.

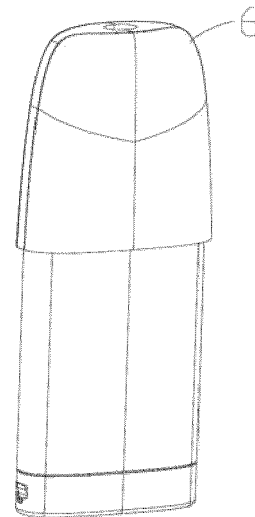


FIG. 1

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Description

FIELD

[0001] The present disclosure relates to the technical field of electronic vaporization devices, and in particular, to an electronic vaporization device and a vaporizer thereof.

BACKGROUND

[0002] In an existing electronic vaporization device, for a liquid aerosol-generation substrate that is not completely vaporized during heating, with the increase of the number of times of inhalation, some condensed droplets or liquid surfaces are generated on a side wall of an air-flow channel during inhalation, and a liquid column is formed with the continuous increase of condensate. As a result, the liquid column is easily taken out to a suction nozzle end along with later inhalation, which brings bad use experience to consumers, and the formed liquid surfaces block output of aerosols.

SUMMARY

[0003] The technical problem to be resolved by the present disclosure is to provide an electronic vaporization device and a vaporizer thereof for the defects in the related art.

[0004] A technical solution adopted by the present disclosure to resolve the technical problem is to construct a vaporizer, including a first air outlet channel and a vaporization cavity that are in communication with each other, and further including a liquid guide member; wherein the liquid guide member is arranged on the end of the first air outlet channel that is close to the vaporization cavity; and wherein the liquid guide member is configured to be in contact with condensate falling off from the first air outlet channel, so as to destroy surface tension of condensate through a downward pulling force, and to guide condensate into the vaporization cavity.

[0005] Preferably, in the vaporizer of the present disclosure, the liquid guide member includes at least one liquid guide plate that is vertically arranged.

[0006] Preferably, in the vaporizer of the present disclosure, the at least one liquid guide plate abuts against at least one side of the end of the first air outlet channel that is close to the vaporization cavity.

[0007] Preferably, in the vaporizer of the present disclosure, the at least one liquid guide plate is arranged in an abutting manner in the circumferential direction of the end of the first air outlet channel that is close to the vaporization cavity, and extends for a distance toward the central axis of the first air outlet channel.

[0008] Preferably, in the vaporizer of the present disclosure, the at least one liquid guide plate crosses two sides of the end of the first air outlet channel that is close to the vaporization cavity, and abuts against the two sides

of the end of the first air outlet channel that is close to the vaporization cavity.

[0009] Preferably, in the vaporizer of the present disclosure, the at least one liquid guide plate is arranged on the central axis of the first air outlet channel.

[0010] Preferably, in the vaporizer of the present disclosure, the at least one liquid guide plate includes a plurality of liquid guide plates, and the plurality of liquid guide plates are spaced.

[0011] Preferably, in the vaporizer of the present disclosure, the liquid guide member includes a liquid guide column.

[0012] Preferably, in the vaporizer of the present disclosure, the liquid guide column is arranged in the hollow of the end of the first air outlet channel that is close to the vaporization cavity.

[0013] Preferably, in the vaporizer of the present disclosure, the liquid guide column is arranged on the central axis of the first air outlet channel.

[0014] Preferably, in the vaporizer of the present disclosure, the end surface of the liquid guide column that is close to the first air outlet channel is flush with or higher than the end surface of the first air outlet channel that is close to the vaporization cavity.

[0015] Preferably, in the vaporizer of the present disclosure, the end of the liquid guide member that is close to the first air outlet channel is a tip end.

[0016] Preferably, in the vaporizer of the present disclosure, a plurality of liquid guide grooves are provided on the outer side wall of the liquid guide member.

[0017] Preferably, in the vaporizer of the present disclosure, the vaporizer further includes a vaporization base; and

an air outlet that is in communication with and corresponds to the first air outlet channel is provided on the vaporization base, the air outlet is in communication with the vaporization cavity, and the liquid guide member is arranged in the air outlet.

[0018] The present disclosure further discloses an electronic vaporization device, including a power supply device, and the vaporizer of any one of the foregoing.

[0019] Through implementation of the present disclosure, the following beneficial effects are achieved:

the vaporizer disclosed in the present disclosure includes a liquid guide member, and the liquid guide member is arranged on the end of the first air outlet channel that is close to the vaporization cavity, and is configured to be in contact with condensate falling off from the first air outlet channel, so as to destroy surface tension of condensate through a downward pulling force, and to guide condensate into the vaporization cavity, thereby preventing or reducing generation of condensate, and meanwhile, secondary vaporization may be performed on condensate falling off from the first air outlet channel, thereby improving the user experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The present disclosure is further described below with reference to the accompanying drawings and embodiments. In the accompanying drawings:

FIG. 1 is a schematic diagram of an overall structure of a vaporizer of the present disclosure;

FIG. 2 is an exploded view of a vaporizer of the present disclosure;

FIG. 3 is a schematic structural diagram of a first liquid guide plate of the present disclosure;

FIG. 4 is a schematic cross-sectional structural view of a first liquid guide plate of the present disclosure;

FIG. 5 is a schematic structural diagram of a second liquid guide plate of the present disclosure;

FIG. 6 is a schematic cross-sectional structural view of a second liquid guide plate of the present disclosure;

FIG. 7 is a schematic structural diagram of a liquid guide column of the present disclosure; and

FIG. 8 is a schematic cross-sectional structural view of a liquid guide column of the present disclosure.

DETAILED DESCRIPTION

[0021] In order to have a clearer understanding of the technical features, the objectives, and the effects of the present disclosure, specific implementations of the present disclosure are now illustrated in detail with reference to the accompanying drawings.

[0022] In the following description, it should be understood that orientation or position relationships indicated by the terms such as "front", "rear", "upper", "lower", "left", "right", "longitudinal", "transverse", "vertical", "horizontal", "top", "bottom", "inner", "outer", "head", and "tail" are based on orientation or position relationships shown in the accompanying drawings and structures and operations in specific orientations, and are used only for ease of description of the technical solution, rather than indicating that the mentioned apparatus or element must have a particular orientation. Therefore, such terms should not be construed as a limitation to the present disclosure.

[0023] As shown in FIG. 1 and FIG. 2, the present disclosure discloses a vaporizer, which includes a base 2, a vaporization assembly 4 arranged on the base 2, an electrode component 3 running through the base 2 to be electrically connected to the vaporization assembly 4, a vaporization base 5 engaged with the vaporization assembly 4, a shell 6 sleeved outside the vaporization base

5 and the base 2, a bottom cap 1 sleeved on the lower side portion and the bottom portion of the shell 6, and an airflow channel. The vaporization assembly 4 includes a porous substrate 41 and a heating body arranged on the porous substrate 41, and the vaporization base 5 supports the porous substrate 41. For example, the porous substrate 41 is a porous ceramic body, and the heating body is a heating film or a heating wire formed on the porous substrate 41 through thin-film printing, thick-film printing, or screen printing, which is not limited thereto. The airflow channel includes an air inlet channel, a vaporization cavity 7, and an air outlet channel, where the air outlet channel includes a first air outlet channel 61 provided on the shell 6 and a second air outlet channel 52 provided on the vaporization base 5. The vaporizer is configured to heat and vaporize a liquid aerosol-generation substrate to form aerosols, and the aerosols are inhaled to the mouth of a user through the airflow channel.

[0024] The vaporizer further includes a liquid guide member, and the liquid guide member is arranged on the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7. The liquid guide member is configured to be in contact with condensate falling off from the first air outlet channel 61. The liquid guide member destroys the continuity, namely, surface tension of the condensate through a downward pulling force, and guides the condensate into the vaporization cavity 7. Therefore, secondary vaporization is performed on the condensate during inhalation, and the condensate remained in the vaporizer is reduced.

[0025] An air outlet 51 that is in communication with the bottom portion of the first air outlet channel 61 and corresponds to the first air outlet channel is further provided on the vaporization base 5, the air outlet 51 is in communication with the vaporization cavity 7, and the liquid guide member is arranged in the air outlet 51. In some embodiments, the air outlet 51 is in communication with the vaporization cavity 7 through the second air outlet channel 52.

[0026] In some embodiments, to further perform secondary vaporization on the condensate, the air outlet 51 is further in communication with the porous substrate 41, and the liquid guide member guides the condensate into the porous substrate 41 for absorption, so that secondary vaporization is performed on the condensate during inhalation.

[0027] As shown in FIG. 3 and FIG. 4, in a first embodiment, the liquid guide member includes at least one vertically arranged liquid guide plate 53. The liquid guide plate 53 abuts against at least one side of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7.

[0028] In some embodiments, the liquid guide plate 53 is arranged in an abutting manner in the circumferential direction of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7, and extends for a distance toward the direction of the central axis of the first air outlet channel 61. Preferably, the liquid guide

member includes at least two liquid guide plates 53 that are arranged opposite to each other.

[0029] In some embodiments, the liquid guide plate 53 crosses two sides of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7, and abuts against the two sides of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7. That is, a cross section of the liquid guide plate 53 intersects with a cross section of the first air outlet channel 61. Preferably, the liquid guide plate 53 is arranged on the central axis of the first air outlet channel 61.

[0030] Based on the foregoing embodiments, the liquid guide member may include a plurality of liquid guide plates 53, and the plurality of liquid guide plates 53 are spaced. Preferably, the plurality of liquid guide plates are uniformly spaced. It should be noted that, the foregoing embodiments may be randomly combined for use. For example, the embodiment that the liquid guide plate 53 is arranged in an abutting manner in the circumferential direction of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7 and extends for a distance toward the central axis of the first air outlet channel 61 and the embodiment that the liquid guide plate 53 crosses two sides of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7 and abuts against the two sides of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7 may be combined for use, and the two liquid guide plates are spaced alternately.

[0031] As shown in FIG. 7 and FIG. 8, in a second embodiment, the liquid guide member includes a liquid guide column 55. The liquid guide column 55 is arranged in a hollow portion of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7.

[0032] To destroy the surface tension of the condensate falling off from the first air outlet channel 61 in time, the end surface of the liquid guide column 55 that is close to the first air outlet channel 61 is flush with or higher than the end surface of the first air outlet channel 61 that is close to the vaporization cavity 7. Preferably, the liquid guide column 55 is arranged on the central axis of the first air outlet channel 61.

[0033] In some other embodiments, the liquid guide member may include a liquid guide column 55 and at least one liquid guide plate 53 vertically extending outward in the circumferential direction of the liquid guide column 55. The liquid guide column 55 is arranged in the hollow portion of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7, the liquid guide plate 53 abuts against the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7, and the at least one liquid guide plate 53 is arranged opposite to each other.

[0034] Based on the foregoing embodiments, to destroy the surface tension of the condensate more easily, the end portion of the liquid guide member that is close to the first air outlet channel 61 is a tip end portion, for example, an inclined surface.

[0035] In addition, to better guide the condensate into the vaporization cavity 7 after the surface tension of the condensate is destroyed, a plurality of liquid guide grooves are further provided on the outer side wall of the liquid guide member.

[0036] The present disclosure further discloses an electronic vaporization device, including a power supply device and the vaporizer of any one of the foregoing embodiments.

[0037] As shown in FIG. 1 and FIG. 2, the vaporizer includes a base 2, a vaporization assembly 4 arranged on the base 2, an electrode component 3 running through the base 2 to be electrically connected to the vaporization assembly 4, a vaporization base 5 engaged with the vaporization assembly 4, a shell 6 sleeved outside the vaporization base 5 and the base 2, a bottom cap 1 sleeved on the lower side portion and the bottom portion of the shell 6, and an airflow channel. The vaporization assembly 4 includes a porous substrate 41 and a heating body arranged on the porous substrate 41, and the vaporization base 5 supports the porous substrate 41. For example, the porous substrate 41 is a porous ceramic body, and the heating body is a heating film or a heating wire formed on the porous substrate 41 through thin-film printing, thick-film printing, or screen printing, which is not limited thereto. The airflow channel includes an air inlet channel, a vaporization cavity 7, and an air outlet channel, wherein the air outlet channel includes a first air outlet channel 61 provided on the shell 6 and a second air outlet channel 52 provided on the vaporization base 5. The vaporizer is configured to heat and vaporize a liquid aerosol-generation substrate to form aerosols, and the aerosols are inhaled to the mouth of a user through the airflow channel.

[0038] The vaporizer further includes a liquid guide member, and the liquid guide member is arranged on the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7. The liquid guide member is configured to be in contact with condensate falling off from the first air outlet channel 61. The liquid guide member destroys the continuity, namely, surface tension of the condensate through a downward pulling force, and guides the condensate into the vaporization cavity 7. Therefore, secondary vaporization is performed on the condensate during inhalation, and the condensate remained in the vaporizer is reduced.

[0039] An air outlet 51 that is in communication with the bottom portion of the first air outlet channel 61 and corresponds to the first air outlet channel is further provided on the vaporization base 5, the air outlet 51 is in communication with the vaporization cavity 7, and the liquid guide member is arranged in the air outlet 51. In some embodiments, the air outlet 51 is in communication with the vaporization cavity 7 through the second air outlet channel 52.

[0040] In some embodiments, to further perform secondary vaporization on the condensate, the air outlet 51 is further in communication with the porous substrate 41,

and the liquid guide member guides the condensate into the porous substrate 41 for absorption, so that secondary vaporization is performed on the condensate during inhalation.

[0041] As shown in FIG. 3 and FIG. 4, in a first embodiment, the liquid guide member includes at least one vertically arranged liquid guide plate 53. The liquid guide plate 53 abuts against at least one side of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7.

[0042] In some embodiments, the liquid guide plate 53 is arranged in an abutting manner in the circumferential direction of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7, and extends for a distance toward the central axis of the first air outlet channel 61. Preferably, the liquid guide member includes at least two liquid guide plates 53 that are arranged opposite to each other.

[0043] In some embodiments, the liquid guide plate 53 crosses two sides of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7, and abuts against the two sides of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7. That is, a cross section of the liquid guide plate 53 intersects with a cross section of the first air outlet channel 61. Preferably, the liquid guide plate 53 is arranged on the central axis of the first air outlet channel 61.

[0044] Based on the foregoing embodiments, the liquid guide member may include a plurality of liquid guide plates 53, and the plurality of liquid guide plates 53 are spaced. Preferably, the plurality of liquid guide plates are uniformly spaced. It should be noted that, the foregoing embodiments may be randomly combined for use. For example, the embodiment that the liquid guide plate 53 is arranged in an abutting manner in the circumferential direction of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7 and extends for a distance toward the central axis of the first air outlet channel 61 and the embodiment that the liquid guide plate 53 crosses two sides of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7 and abuts against the two sides of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7 may be combined for use, and the two liquid guide plates are spaced alternately.

[0045] As shown in FIG. 7 and FIG. 8, in a second embodiment, the liquid guide member includes a liquid guide column 55. The liquid guide column 55 is arranged in the hollow of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7.

[0046] To destroy the surface tension of the condensate falling off from the first air outlet channel 61 in time, the end surface of the liquid guide column 55 that is close to the first air outlet channel 61 is flush with or higher than the end surface of the first air outlet channel 61 that is close to the vaporization cavity 7. Preferably, the liquid guide column 55 is arranged on the central axis of the first air outlet channel 61.

[0047] In some other embodiments, the liquid guide member may include a liquid guide column 55 and at least one liquid guide plate 53 vertically extending outward in the circumferential direction of the liquid guide column 55. The liquid guide column 55 is arranged in the hollow of the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7, the liquid guide plate 53 abuts against the end portion of the first air outlet channel 61 that is close to the vaporization cavity 7, and the at least one liquid guide plate 53 is arranged opposite to each other.

[0048] Based on the foregoing embodiments, to destroy the surface tension of the condensate more easily, the end portion of the liquid guide member that is close to the first air outlet channel 61 is a tip end portion, for example, an inclined surface.

[0049] In addition, to better guide the condensate into the vaporization cavity 7 after the surface tension of the condensate is destroyed, a plurality of liquid guide grooves are further provided on the outer side wall of the liquid guide member.

[0050] Through implementation of the present disclosure, the following beneficial effects are achieved:

The vaporizer designed in the present disclosure includes a liquid guide member, and the liquid guide member is arranged on the end portion of the first air outlet channel that is close to the vaporization cavity. The liquid guide member is configured to be in contact with condensate falling off from the first air outlet channel, destroy surface tension of the condensate through a downward pulling force, and guide the condensate into the vaporization cavity. Therefore, generation of condensate is prevented or reduced, and secondary vaporization may also be performed on the condensate falling off from the first air outlet channel, thereby improving the user experience.

[0051] While the invention has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive. It will be understood that changes and modifications may be made by those of ordinary skill within the scope of the following claims. In particular, the present invention covers further embodiments with any combination of features from different embodiments described above and below. Additionally, statements made herein characterizing the invention refer to an embodiment of the invention and not necessarily all embodiments.

[0052] The terms used in the claims should be construed to have the broadest reasonable interpretation consistent with the foregoing description. For example, the use of the article "a" or "the" in introducing an element should not be interpreted as being exclusive of a plurality of elements. Likewise, the recitation of "or" should be interpreted as being inclusive, such that the recitation of "A or B" is not exclusive of "A and B," unless it is clear from the context or the foregoing description that only one of A and B is intended. Further, the recitation of "at

least one of A, B and C" should be interpreted as one or more of a group of elements consisting of A, B and C, and should not be interpreted as requiring at least one of each of the listed elements A, B and C, regardless of whether A, B and C are related as categories or otherwise. Moreover, the recitation of "A, B and/or C" or "at least one of A, B and C" should be interpreted as including any singular entity from the listed elements, e.g., A, any subset from the listed elements, e.g., A and B, or the entire list of elements A, B and C.

Claims

1. A vaporizer, **characterized by** comprising:

a first air outlet channel (61);
a vaporization cavity (7) in communication with the first air outlet channel (61); and
a liquid guide member;
wherein the liquid guide member is arranged on the end of the first air outlet channel (61) that is close to the vaporization cavity (7); and
wherein the liquid guide member is configured to be in contact with condensate falling off from the first air outlet channel (61), so as to destroy surface tension of condensate through a downward pulling force, and to guide condensate into the vaporization cavity (7).

2. The vaporizer of claim 1, wherein the liquid guide member comprises at least one liquid guide plate (53) that is vertically arranged.

3. The vaporizer of claim 2, wherein the at least one liquid guide plate (53) abuts against at least one side of the end of the first air outlet channel (61) that is close to the vaporization cavity (7).

4. The vaporizer of claim 3, wherein the at least one liquid guide plate (53) is arranged in an abutting manner in the circumferential direction of the end of the first air outlet channel (61) that is close to the vaporization cavity (7), and extends for a distance toward the central axis of the first air outlet channel (61).

5. The vaporizer of claim 3, wherein the at least one liquid guide plate (53) crosses two sides of the end of the first air outlet channel (61) that is close to the vaporization cavity (7), and abuts against the two sides of the end of the first air outlet channel (61) that is close to the vaporization cavity (7).

6. The vaporizer of claim 5, wherein the at least one liquid guide plate (53) is arranged on the central axis of the first air outlet channel (61).

7. The vaporizer of claim 2, wherein the at least one

liquid guide plate (53) comprises a plurality of liquid guide plates (53), and
wherein the plurality of liquid guide plates (53) are spaced.

8. The vaporizer of claim 1, wherein the liquid guide member comprises a liquid guide column (55).

9. The vaporizer of claim 8, wherein the liquid guide column (55) is arranged in the hollow of the end of the first air outlet channel (61) that is close to the vaporization cavity (7).

10. The vaporizer of claim 9, wherein the liquid guide column (55) is arranged on the central axis of the first air outlet channel (61).

11. The vaporizer of claim 8, wherein the end surface of the liquid guide column (55) that is close to the first air outlet channel (61) is flush with or higher than the end surface of the first air outlet channel (61) that is close to the vaporization cavity (7).

12. The vaporizer of any one of claims 1 to 11, wherein the end of the liquid guide member that is close to the first air outlet channel (61) is a tip end.

13. The vaporizer of any one of claims 1 to 11, wherein a plurality of liquid guide grooves are provided on the outer side wall of the liquid guide member.

14. The vaporizer of any one of claims 1 to 11, further comprising:

a vaporization base (5);
wherein an air outlet (51) that is in communication with and corresponds to the first air outlet channel (61) is provided on the vaporization base (5),
wherein the air outlet (51) is in communication with the vaporization cavity (7), and
wherein the liquid guide member is arranged in the air outlet (51).

15. An electronic vaporization device, **characterized by** comprising:

a power supply device; and
the vaporizer of any one of claims 1 to 14.

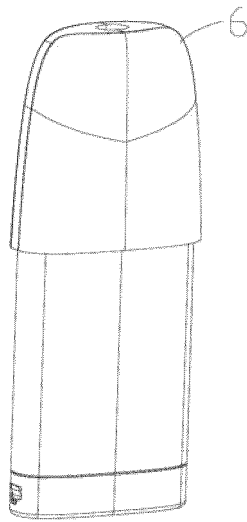


FIG. 1

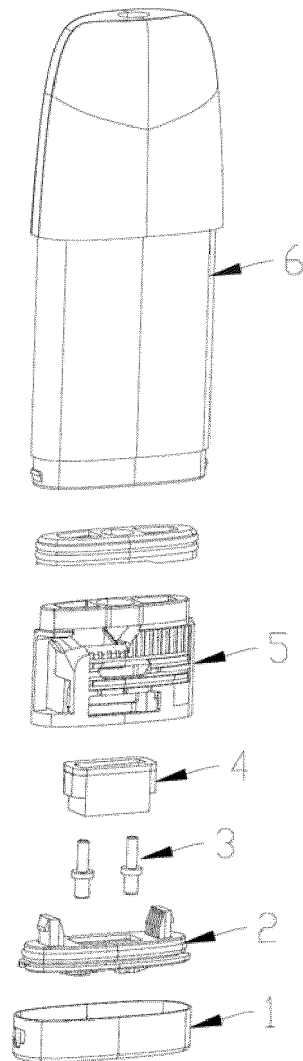


FIG. 2

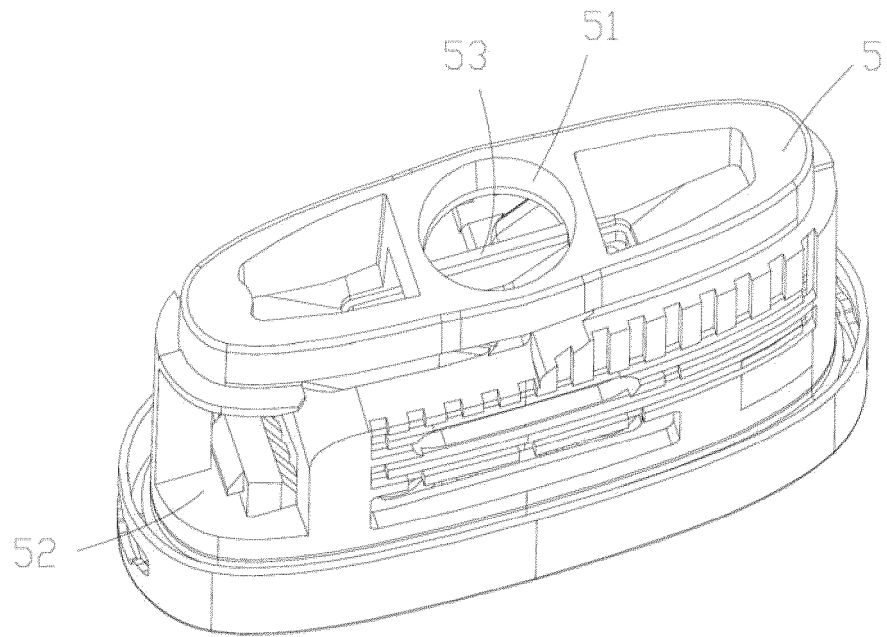


FIG. 3

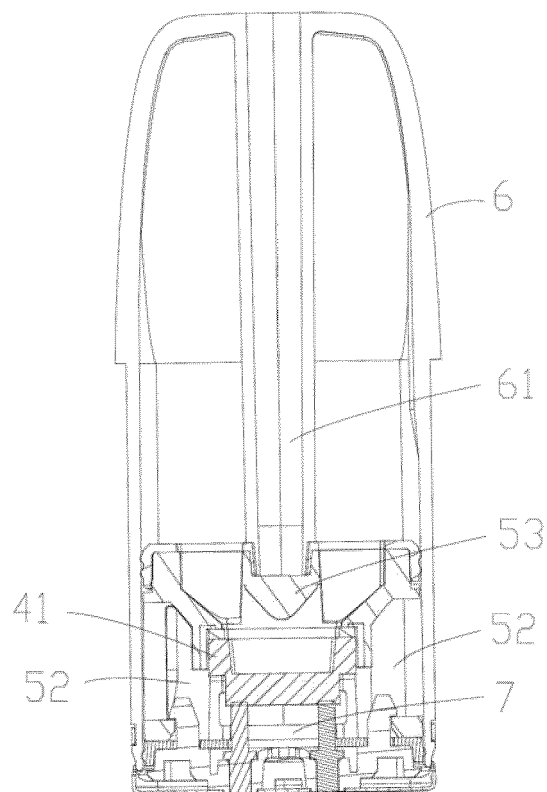


FIG. 4

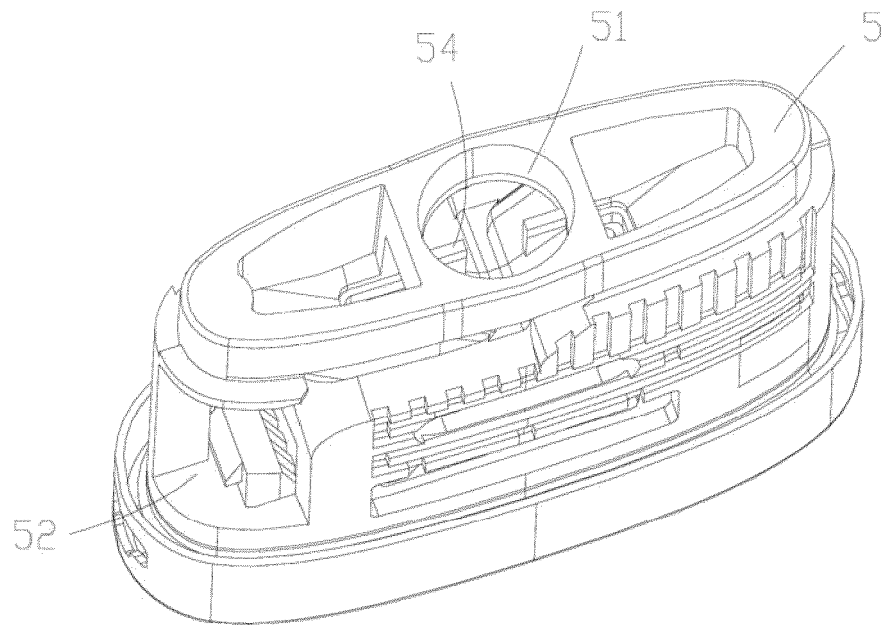


FIG. 5

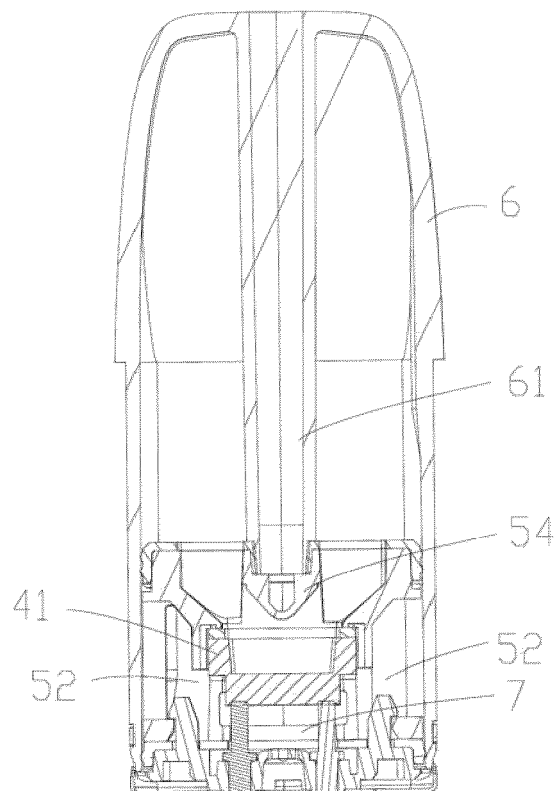


FIG. 6

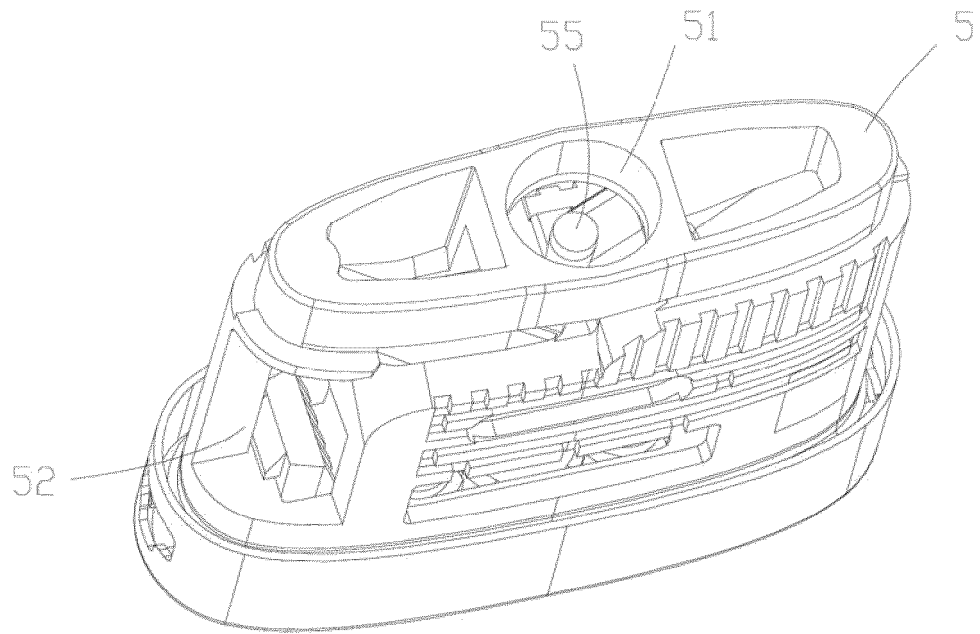


FIG. 7

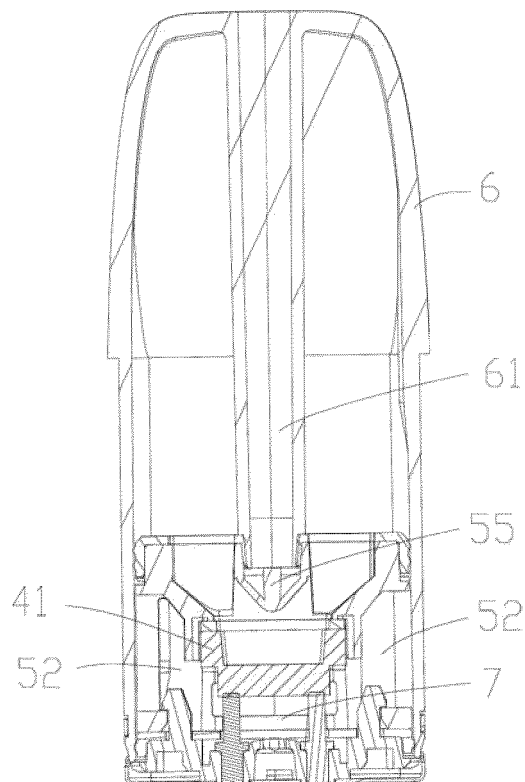


FIG. 8



EUROPEAN SEARCH REPORT

Application Number

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 December 2022	Examiner Fyhr, Jonas
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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