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(54) **ATOMIZER AND ELECTRONIC ATOMIZATION DEVICE**

(57) Provided in this application is a vaporizer and an electronic vaporization device. The vaporizer includes: a liquid storage cavity; a liquid guide element, configured to extend in a direction perpendicular to a longitudinal direction of the vaporizer and to be in fluid communication with the liquid storage cavity to suck a liquid substrate; a heating element, at least partially surrounding the liquid guide element and used for heating at least part of the liquid substrate in the liquid guide element to generate an aerosol; a vaporization chamber, at least partially surrounding the heating element; and liquid temporary storage spaces, configured to at least partially surround the liquid guide element and avoid the heating element, and configured to store the liquid substrate to adjust efficiency of transferring the liquid substrate to the heating element. According to the above vaporizer, the liquid temporary storage spaces keep saturation of the liquid substrate in the liquid guide element in a suitable state, thus eliminating or slowing down oil frying.

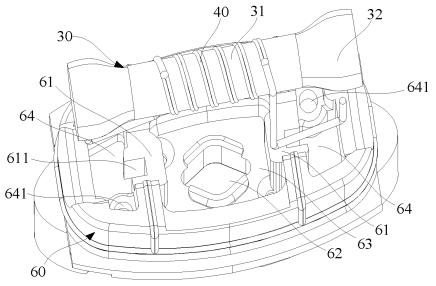

FIG. 7

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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202120315009.7, entitled "vaporizer and electronic vaporization device" and filed with the China National Intellectual Property Administration on February 2, 2021, the entirety of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] Embodiments of this application relate to the technical field of electronic vaporization devices, and in particular, to a vaporizer and an electronic vaporization device.

BACKGROUND

[0003] Tobacco products (e.g., cigarettes, cigars, etc.) burn tobacco in a using process to generate tobacco smoke. Attempts are made to replace these tobacco-burning products by manufacturing products that release compounds without burning.

[0004] An example of such products is a heating device that releases compounds by heating rather than burning materials. For example, the materials may be tobacco or other non-tobacco products, where the non-tobacco products may or may not contain nicotine. As another example, there are aerosol-providing products, e.g., so-called electronic vaporization devices. These devices usually contain vaporizable liquid, and the liquid is heated to be vaporized, so as to generate an inhalable aerosol. A known electronic vaporization device includes a liquid guide element, and during use, a liquid substrate is sucked by one part of the liquid guide element and then transferred to a part coupled with a heating element for heating and vaporization. According to the above electronic vaporization device, the liquid guide element transfers the liquid substrate too much or too quickly to the part coupled with the heating element, thus forming frying oil in a heating process.

SUMMARY

[0005] Provided in an embodiment of this application is a vaporizer, configured to vaporize a liquid substrate to generate an aerosol, and including:

a liquid storage cavity, used for storing the liquid substrate;

a liquid guide element, configured to extend in a direction perpendicular to a longitudinal direction of the vaporizer and to be in fluid communication with the liquid storage cavity to suck a liquid substrate;

a heating element, at least partially surrounding the liquid guide element and used for heating at least part of the liquid substrate in the liquid guide element to generate the aerosol; and

a first support, at least partially defining a vaporization chamber and liquid temporary storage spaces, the vaporization chamber at least partially surrounding the heating element, and the liquid temporary storage spaces being configured to at least partially surround the liquid guide element and avoid the heating element, and used for storing the liquid substrate to adjust efficiency of transferring the liquid substrate to the heating element.

[0006] In a preferred implementation, the vaporizer further includes:

air pressure balance channels, the liquid temporary storage spaces being in airflow communication with the vaporization chamber through the air pressure balance channels, and thus being kept substantially same as the atomization chamber in air pressure.

[0007] In a preferred implementation, the vaporizer further includes:

at least one air inlet, used for allowing air to enter the vaporization chamber,

the air pressure balance channels having one ends communicating with the liquid temporary storage spaces and other ends communicating with the at least one air inlet, thus keeping an air pressure of the liquid temporary storage spaces substantially the same as an air pressure of the vaporization chamber.

[0008] In a preferred implementation, the liquid temporary storage spaces are configured to avoid the heating element.

[0009] In a preferred implementation, the liquid guide element includes first portions and a second portion sequentially arranged in a length direction; where

the first portions are adjacent to the liquid temporary storage spaces; and

the heating element at least partially surrounds the second portion.

[0010] In a preferred implementation, the vaporizer further includes:

liquid channels, arranged between the liquid storage cavity and the first portions in the longitudinal direction of the vaporizer, and used for providing fluid paths for the liquid substrate in the liquid storage cavity to flow to the first portions.

[0011] In a preferred implementation, the liquid channels are substantially aligned with the liquid temporary storage spaces in the longitudinal direction of the vaporizer.

[0012] In a preferred implementation, the liquid channels are further internally provided with porous body materials to adjust a rate of transferring the liquid substrate to the liquid guide element via the liquid channels.

[0013] In a preferred implementation, the porous body materials are at least partially in contact with the liquid guide element.

[0014] In a preferred implementation, the vaporizer further includes:

the first support is configured to be located on a side of the liquid guide element facing away from the liquid storage cavity in the longitudinal direction of the vaporizer, and configured to at least partially support the liquid guide element.

[0015] In a preferred implementation, the first support includes support walls for supporting the liquid guide element; and

the vaporization chamber and the liquid temporary storage spaces are respectively located on two sides of the support walls.

[0016] In a preferred implementation, the vaporizer includes:

a liquid storage cavity, used for storing a liquid substrate;

a liquid guide element, configured to extend in a direction perpendicular to a longitudinal direction of the vaporizer and to be in fluid communication with the liquid storage cavity to suck the liquid substrate;

a heating element, at least partially surrounding the liquid guide element and used for heating at least part of the liquid substrate in the liquid guide element to generate the aerosol;

liquid channels, arranged between the liquid storage cavity and the liquid guide element in the longitudinal direction of the vaporizer, and used for providing fluid paths for the liquid substrate in the liquid storage cavity to flow to the first portions; and

liquid temporary storage spaces, arranged on a side of the liquid guide element facing away from the liquid storage cavity in the longitudinal direction of the vaporizer, and substantially aligned with the liquid temporary storage spaces in the longitudinal direction of the vaporizer, the liquid temporary storage spaces at least partially surrounding the liquid guide element and avoiding the heating element, and being used for storing the liquid substrate to adjust efficiency of transferring the liquid substrate to the heating element.

[0017] According to the above vaporizer, the liquid temporary storage spaces keep saturation of the liquid substrate in the liquid guide element in a suitable state, thus eliminating or slowing down oil frying.

[0018] Further provided in another embodiment of this application is an electronic vaporization device, including a vaporizer used for vaporizing a liquid substrate to generate an aerosol, and a power supply assembly supplying power to the vaporizer, the vaporizer including the vaporizer described above.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] One or more embodiments are exemplarily illustrated with reference to the corresponding figures in the accompanying drawings, and the exemplary illustrations are not to be construed as limiting the embodiments. Elements/modules and steps in the accompanying drawings that have same reference numerals are represented as similar elements/modules and steps, and unless otherwise particularly stated, the figures in the accompanying drawings are not drawn to scale.

FIG. 1 is a schematic structural diagram of an electronic vaporization device provided by an embodiment.

FIG. 2 is a schematic structural diagram of an embodiment of the vaporizer in FIG. 1.

FIG. 3 is a schematic exploded view of the vaporizer in FIG. 2 from a perspective.

FIG. 4 is a schematic exploded view of the vaporizer in FIG. 2 from another perspective.

FIG. 5 is a schematic cross-sectional diagram of the vaporizer in FIG. 2 along a width direction.

FIG. 6 is a schematic diagram of a vaporization assembly and a lower support in FIG. 5 after assembly from a perspective.

FIG. 7 is a schematic exploded view of the vaporization assembly and the lower support in FIG. 6 before assembly from a perspective.

FIG. 8 is a schematic diagram of the vaporization assembly and the lower support in FIG. 6 after assembly from another perspective.

FIG. 9 is a schematic cross-sectional diagram of a main housing and an upper support in FIG. 3 after assembly from a perspective.

DETAILED DESCRIPTION

[0020] For ease of understanding of this application, this application is illustrated below in more detail in conjunction with accompanying drawings and specific implementations.

[0021] Provided in an embodiment of this application is an electronic vaporization device. Reference can be made to FIG. 1, the electronic vaporization device includes a vaporizer 100 storing a liquid substrate and vaporizing the liquid substrate to generate an aerosol, and a power supply mechanism 200 supplying power to the vaporizer 100.

[0022] In an optional implementation, as shown in FIG. 1, the power supply mechanism 200 includes a receiving cavity 270 provided at an end in a length direction and used for receiving and accommodating at least part of the vaporizer 100, and first electrical contacts 230 at least partially exposed on a surface of the receiving cavity 270 and used for being electrically connected with the vaporizer 100 to supply power to the vaporizer 100 when at least part of the vaporizer 100 is received and accom-

modated in the power supply mechanism 200.

[0023] According to a preferred implementation shown in FIG. 1, second electrical contacts 21 are provided at an end of the vaporizer 100 opposite to the power supply mechanism 200 in the length direction, so that when at least part of the vaporizer 100 is received in the receiving cavity 270, the second electrical contacts 21 make contact with and abut against the first electrical contacts 230 to conduct electricity.

[0024] A seal member 260 is provided in the power supply mechanism 200, and at least part of an internal space of the power supply mechanism 200 is separated by the seal member 260 to form the above receiving cavity 270. In the preferred implementation shown in FIG. 1, the seal member 260 is configured to extend in a cross section direction of the power supply mechanism 200, and is preferably made of a flexible material such as silicone to prevent the liquid substrate seeping from the vaporizer 100 to the receiving cavity 270 from flowing towards components such as a controller 220 and a sensor 250 inside the power supply mechanism 200.

[0025] In the preferred implementation shown in FIG. 1, the power supply mechanism 200 further includes a battery cell 210 located at an other end facing away from the receiving cavity 270 in the length direction and used for supplying power; and the controller 220 provided between the battery cell 210 and the accommodating cavity, the controller 220 operably guiding a current between the battery cell 210 and the first electrical contacts 230.

[0026] During use, the power supply mechanism 200 includes the sensor 250, which is used for sensing an inhalation airflow generated by a suction nozzle cap 20 of the vaporizer 100 during inhalation, so that the controller 220 controls the battery cell 210 to output the current to the vaporizer 100 according to a detection signal of the sensor 250.

[0027] Further, in the preferred implementation shown in FIG. 1, a charging interface 240 is provided in the other end of the power supply mechanism 200 facing away from the receiving cavity 270, and used for supplying power to the battery cell 210.

[0028] FIGS. 2 to 5 are schematic structural diagrams of an embodiment of the vaporizer 100 in FIG. 1. The vaporizer 100 includes

a main housing 10. As shown in FIGS. 2 to 3, the main housing 10 is substantially in a flat cylinder shape, and certainly, a hollow interior of the main housing 10 is a necessary functional device for storing and vaporizing the liquid substrate. The main housing 10 has a near end 110 and a far end 120 opposite to each other in the length direction. According to requirements for common use, the near end 110 is configured as an end for a user to inhale the aerosol, and a suction nozzle A for the user to inhale is provided at the near end 110. The far end 120 is used as an end coupled with the power supply mechanism 200, and the far end 120 of the main housing 10 is an opening on which a detachable end cap 20 is mounted. The opening structure is used for mounting necessary functional components inside the main housing 10.

[0029] Further, in a specific implementation shown in FIGS. 2 to 4, the second electrical contacts 21 penetrate into the vaporizer 100 from a surface of the end cap 20, so that at least parts of the second electrical contacts 21 are exposed outside the vaporizer 100, so as to be able to make contact with the first electrical contacts 230 to conduct electricity. At the same time, the end cap 20 is further provided with a first air inlet 23, which is used for allowing outside air to enter the vaporizer 100 during inhalation.

[0030] Certainly, further referring to FIG. 3, assembling grooves 22 for accommodating the second electrical contacts 21 are formed in the surface of the end cap 20, so that after assembly, the second electrical contacts 21 are aligned with the surface of the end cap 20.

[0031] Further, FIGS. 3 to 5 show a schematic diagram of an internal structure of the vaporizer 100 in FIG. 2 and schematic exploded views of part of components of the vaporizer 100 in FIG. 2. According to FIGS. 3 to 5, the vaporizer 100 further includes:

a smoke output pipe 11, extending in an axial direction of the main housing 10, where an upper end of the smoke output pipe 11 is in airflow communication with a suction nozzle A located at an upper end of the main housing 100, so as to output the aerosol generated in the vaporizer 100 to the suction nozzle A for inhalation;

a liquid storage cavity 12, formed by a space between the smoke output pipe 11 and an inner wall of the main housing 10, and used for storing the liquid substrate; and

a vaporization assembly, used for sucking the liquid substrate from the liquid storage cavity 12 through capillary infiltration, and heating and vaporizing the sucked liquid substrate to generate the aerosol for inhalation. Specifically, the vaporization assembly includes a liquid guide element 30, and a heating element 40 at least partially surrounding the liquid guide element 30. According to FIGS. 3 to 5, the liquid guide element 30 is configured to extend in a width direction of the main housing 10 with two ends exposed or in fluid communication with the liquid storage cavity 12, and the liquid substrate in the liquid storage cavity 12 is sucked by the two ends of the liquid guide element 30 along arrow R1 in FIG. 3 and then transferred inwards. At least part of the heating element 40 surrounding or winding the liquid guide element 30 is used for heating at least part of the liquid substrate in the liquid guide element 30 to generate the aerosol for inhalation.

[0032] In an optional implementation, the liquid guide element 30 can be made of or include a porous ceramic body, fiber cotton, a fiber rope, a porous material, etc.; and the heating element 40 can be made of a resistive metal material, such as iron, nickel, chromium, or alloys

thereof.

[0033] Further, referring to FIGS. 3 to 5, the vaporization assembly is assembled and fixed in the main housing 10 through a rigid upper support 50 and a flexible lower support 60. Specifically, referring to FIGS. 3 to 5, the upper support 50 and the lower support clamp the liquid guide element 30 from an upper side and a lower side, respectively, so that the liquid guide element 30 is kept between the upper support 50 and the lower support 60.

[0034] For ease of sealing a gap between the upper support 50 and the liquid storage cavity 12, the vaporizer 100 further includes a seal element 70, at least part of the seal element 70 is located between the upper support 40 and the liquid storage cavity 12 to seal the liquid storage cavity 12. After assembly, the seal element 70 at least partially covers a surface of the upper support 50, so that the seal element 70 is supported by the upper support 50. A first insertion hole 72 for insertion of the smoke output pipe 11 is provided in the seal element 70.

[0035] For generation, release and output of the aerosol, the vaporizer 100 internally forms a vaporization chamber at least partially surrounding the vaporization assembly, and specifically, at least partially surrounding the liquid guide element 30 and/or the heating element 40. According to FIG. 5, the vaporization chamber is defined between the upper support 50 and the lower support 60. Specifically, the upper support 50 is provided with a first cavity 53 close to the heating element 40, and the lower support 60 is provided with a second cavity 63 close to the heating element 40, so that spaces of the first cavity 53 and the second cavity 63 jointly form the vaporization chamber for aerosol release. At the same time, a second air inlet 62 for air to enter the vaporization chamber is provided in the lower support 60. A first insertion hole 52 for connection of the smoke output pipe 11 is provided in the upper support 50. Thus, during inhalation, the outside air sequentially passes through the first air inlet 23 in the end cap 20 and the second air inlet 62 to enter the vaporization chamber, and carries the generated aerosol to be output from the smoke output pipe 11.

[0036] On transfer paths of the liquid substrate, first liquid guide holes 71 are provided in the seal element 70, and second liquid guide holes 51 are provided in the upper support 50. Thus, the liquid substrate in the liquid storage cavity 12 sequentially passes through the first liquid guide holes 71 and the second liquid guide holes 51 to be transferred to and sucked by the liquid guide element 30.

[0037] Specifically, in the implementation, further referring to FIG. 6, the liquid guide element 30 includes first portions 31 close to two side ends in the length direction, and after assembly, the first portions 31 are opposite to the second liquid guide holes 51, so that the liquid substrate is sucked by the first portions 31. The liquid guide element 30 further includes a second portion 32 close to the center, and the heating element 40 surrounds the second portion 32. After assembly, the second portion 32 is surrounded by the vaporization chamber.

[0038] Further, porous body materials 80 are provided in the second liquid guide holes 51. The porous body materials 80 are prepared from sponge bodies, fiber cotton, etc., for example. Or in other variant implementations, for example, the porous body materials 80 can include porous foam, porous polyurethane, porous ceramic bodies, etc. After assembly, the porous body materials 80 abut against the first portions 31 of the liquid guide element 30. The porous body materials 80 are used for adjusting an amount of a liquid substrate transferred from the second liquid guide holes 51 to the first portions 31 of the liquid guide element 30, so as to avoid the liquid substrate from being quickly and excessively sucked by the liquid guide element 30, thus slowing down oil frying in the heating process.

[0039] Further, in a more preferred implementation, referring to FIGS. 6 to 7, the lower support 60 as a whole is substantially shaped like a hollow cup and the like. Two support walls 61 sequentially arranged in the width direction are provided in the lower support 60. Certainly, the support walls 61 extend in the longitudinal direction of the main housing 10, and the liquid guide element 30 is supported and held by the support walls 61 from the lower side. Moreover, the above second cavity 62 is defined or formed between the two support walls 61.

[0040] In FIGS. 5 to 7, the two ends of the assembled liquid guide element 30 abut against side walls of the lower support 60 in the width direction, respectively. At the same time, the lower support 60 is further internally provided with liquid temporary storage cavities 64 defined between the support walls 61 and the side walls of the lower support 60. After the liquid guide element 30 is assembled, the first portions 31 are located in the liquid temporary storage cavities 64 in the longitudinal direction and surrounded by the liquid temporary storage cavities 64. The liquid temporary storage cavities 64 are used for temporarily storing a surplus or excess liquid substrate transferred to the first portions 31, or storing the surplus or excess liquid substrate seeping from the first portions 31. Thus, the excess liquid substrate is prevented from being transferred to the second portion 32, thus slowing down oil frying. After a liquid substrate in the second portion 32 is consumed, the liquid substrate in the liquid temporary storage cavities 64 can further be sucked by the first portions 31 and then replenished into the second portion 32.

[0041] In a more preferred implementation, air pressure balance channels 641 penetrating from inner walls of the liquid temporary storage cavities 64 towards a surface of the end cap 20 are further provided on the lower support 60. Thus, the air pressure balance channels 641 communicate with the first air inlet 23. Thus, whether in an inhalation state or a non-inhalation state, an air pressure in the liquid temporary storage cavities 64 is substantially the same as an air pressure in the vaporization chamber. The problem that due to the impact of inhalation air pressure, the liquid substrate is excessively transferred to the second portion 32, resulting in oil frying is

avoided. The specific reason lies in that

[0042] When a user inhales through the suction nozzle A and a negative pressure is formed, the air pressure in the vaporization chamber will be decreased to the negative pressure; and at this time, if the pressure in the liquid temporary storage cavities 64 is still not changed and thus greater than that in the vaporization chamber, a pressure difference drives the liquid substrate in the first portions 31 to be transferred to the second portion 32, causing the liquid substrate in the second portion 32 to be excessive, resulting in oil frying. Thus, after the above liquid temporary storage cavities 64 communicate with the first air inlet 23 through the air pressure balance channels 641, in the inhalation process, the air pressure in the liquid temporary storage cavities 64 is also decreased to the same negative pressure as the vaporization chamber. Thus, the second portion 32 can only suck the liquid substrate from the first portions 31 through capillary force drive, so that saturation of the liquid substrate sucked in the second portion 32 is kept in a suitable state, thus eliminating or slowing down oil frying.

[0043] In a preferred implementation shown in FIG. 7, grooves 611 extending in the longitudinal direction are provided in surfaces of the support walls 61 adjacent to the liquid temporary storage cavities 64. The grooves 611 are used for guiding the liquid substrate seeping from a surface of the first portion 31 into the liquid temporary storage cavities 64.

[0044] Further referring to FIG. 8, pin fixing grooves 65 are provided in a side of the lower support 60 facing the end cap 20 to allow pin portions 41 of the heating element 40 to penetrate through the lower support 60 from the interior of the second cavity 63 and then to be fixedly held in the pin fixing grooves 65 so as to conduct electricity at the second electrical contacts 21. At the same time, after assembly, ends of the air pressure balance channels 641 facing the end cap 20 are always kept in an opening state.

[0045] In a more preferred implementation, referring to FIG. 9, after assembly, the smoke output pipe 11 penetrates through a second insertion hole 52 of the upper support 50, and the smoke output pipe 11 is provided with an air inlet end 111 at least partially exposed in the first cavity 53 of the upper support 50. The air inlet end 111 of the smoke output pipe 11 is provided with notches 112 located in two sides in the width direction. Protrusions 54 are provided on an inner wall of the first cavity 53 of the upper support 50. After assembly, an outer side wall of the air inlet end 111 of the smoke output pipe 11 abuts against the protrusions 54, so that aerosol condensate in the notches 112 can be guided onto the protrusions 54 in a contact transfer manner and finally accumulated or kept in the vaporization chamber to prevent too much aerosol condensate from being collected in the smoke output pipe 11.

[0046] Preferred embodiments of this application are given in the description of this application and the accompanying drawings thereof. However, this application is not limited to the embodiments described in this description. Further, a person of ordinary skill in the art may make improvements or modifications according to the foregoing illustrations, and all the improvements and modifications shall fall within the protection scope of the appended claims of this application.

Claims

1. A vaporizer, configured to vaporize a liquid substrate to generate an aerosol, and comprising:

   a liquid storage cavity, used for storing the liquid substrate;
   a liquid guide element, configured to extend in a direction perpendicular to a longitudinal direction of the vaporizer and to be in fluid communication with the liquid storage cavity to suck the liquid substrate;
   a heating element, at least partially surrounding the liquid guide element and used for heating at least part of the liquid substrate in the liquid guide element to generate the aerosol; and
   a first support, at least partially defining a vaporization chamber and liquid temporary storage spaces,
   the vaporization chamber at least partially surrounding the heating element, and the liquid temporary storage spaces being configured to at least partially surround the liquid guide element and avoid the heating element, and used for storing the liquid substrate to adjust efficiency of transferring the liquid substrate to the heating element.

2. The vaporizer according to claim 1, further comprising:
   air pressure balance channels, the liquid temporary storage spaces being in airflow communication with the vaporization chamber through the air pressure balance channels, and thus being kept substantially same as the atomization chamber in air pressure.

3. The vaporizer according to claim 1, further comprising:

   at least one air inlet, used for allowing air to enter the vaporization chamber,
   the air pressure balance channels having one ends communicating with the liquid temporary storage spaces and other ends communicating with the at least one air inlet, thus keeping an air pressure of the liquid temporary storage spaces substantially the same as an air pressure of the vaporization chamber.

4. The vaporizer according to any of claims 1-3, where-

in the liquid guide element comprises first portions and a second portion sequentially arranged in a length direction; wherein

the first portions are adjacent to the liquid temporary storage spaces; and
the heating element at least partially surrounds the second portion.

5. The vaporizer according to claim 4, further comprising:
liquid channels, arranged between the liquid storage cavity and the first portions in the longitudinal direction of the vaporizer, and used for providing fluid paths for the liquid substrate in the liquid storage cavity to flow to the first portions.

6. The vaporizer according to claim 5, wherein the liquid channels are substantially aligned with the liquid temporary storage spaces in the longitudinal direction of the vaporizer.

7. The vaporizer according to claim 5, wherein the liquid channels are further internally provided with porous body materials to adjust a rate of transferring the liquid substrate to the liquid guide element via the liquid channels.

8. The vaporizer according to claim 7, wherein the porous body materials are at least partially in contact with the liquid guide element.

9. The vaporizer according to any of claims 1-3, wherein, the vaporizer further comprises:
the first support is configured to be located on a side of the liquid guide element facing away from the liquid storage cavity in the longitudinal direction of the vaporizer, and configured to at least partially support the liquid guide element.

10. The vaporizer according to claim 9, wherein the first support comprises support walls for supporting the liquid guide element; and the vaporization chamber and the liquid temporary storage spaces are respectively located on two sides of the support walls.

11. A vaporizer, configured to vaporize a liquid substrate to generate an aerosol, and comprising:

a liquid storage cavity, used for storing the liquid substrate;
a liquid guide element, configured to extend in a direction perpendicular to a longitudinal direction of the vaporizer and to be in fluid communication with the liquid storage cavity to suck the liquid substrate;
a heating element, at least partially surrounding the liquid guide element and used for heating at least part of the liquid substrate in the liquid guide element to generate the aerosol;
liquid channels, arranged between the liquid storage cavity and the liquid guide element in the longitudinal direction of the vaporizer, and used for providing fluid paths for the liquid substrate in the liquid storage cavity to flow to first portions; and
liquid temporary storage spaces, arranged on a side of the liquid guide element facing away from the liquid storage cavity in the longitudinal direction of the vaporizer, and substantially aligned with the liquid temporary storage spaces in the longitudinal direction of the vaporizer, the liquid temporary storage spaces at least partially surrounding the liquid guide element and avoiding the heating element, and being used for storing the liquid substrate to adjust efficiency of transferring the liquid substrate to the heating element.

12. An electronic vaporization device, comprising a vaporization device used for vaporizing a liquid substrate to generate an aerosol, and a power supply device supplying power to the vaporization device, the vaporization device comprising the vaporizer according to any of claims 1-11.

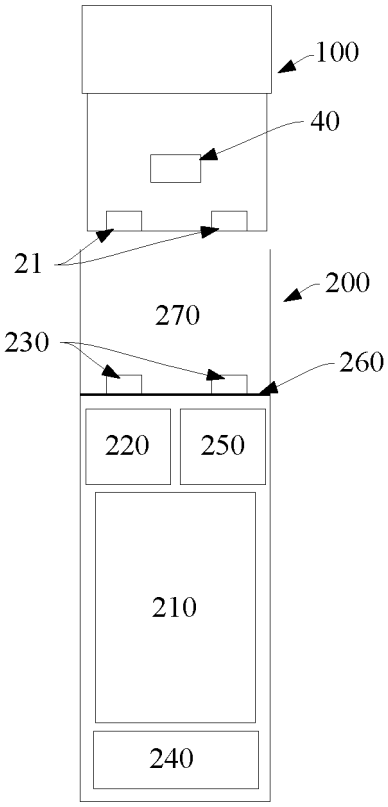

FIG. 1

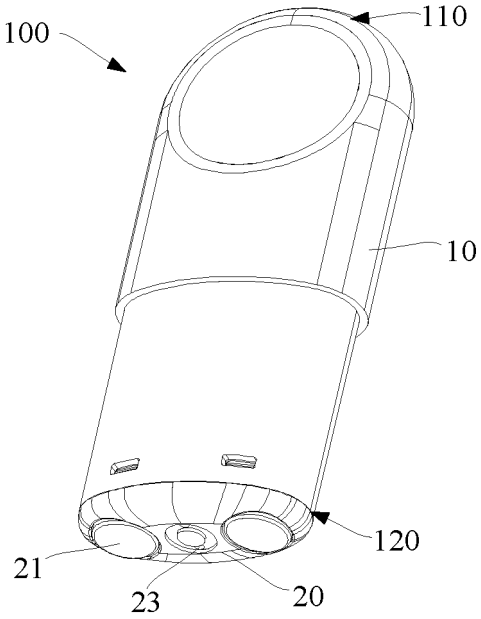

FIG. 2

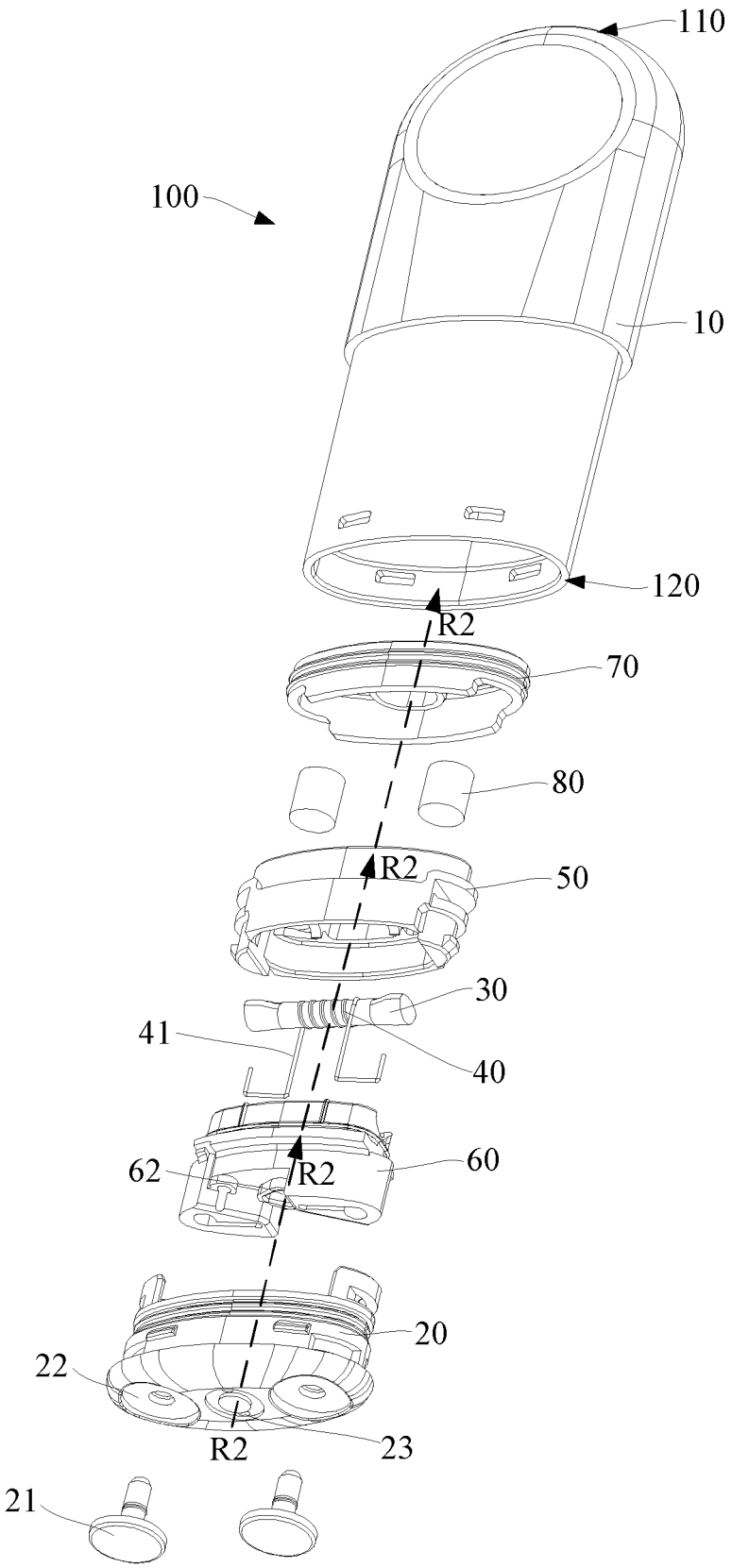

FIG. 3

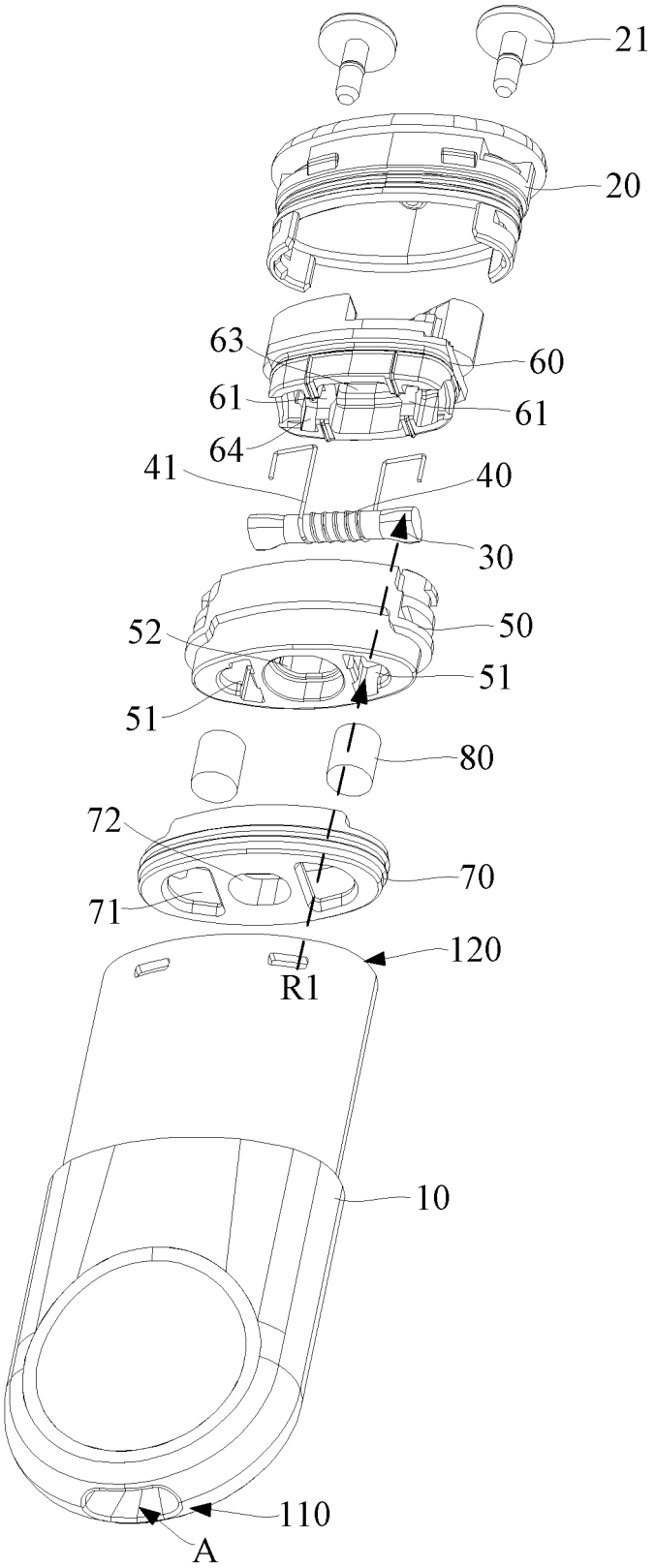

FIG. 4

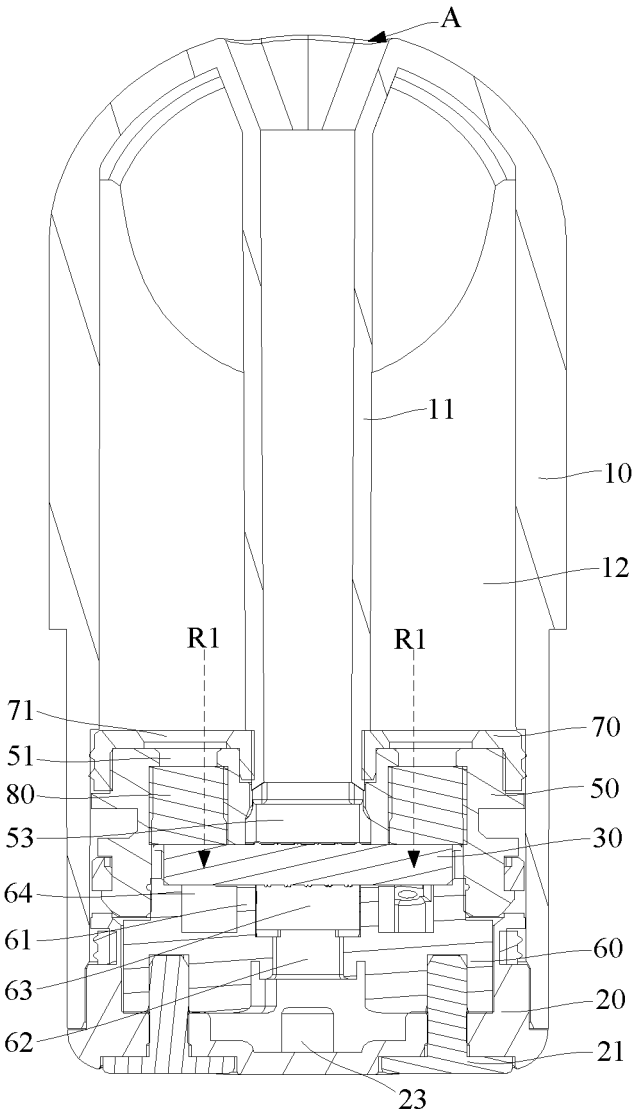
A
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FIG. 5

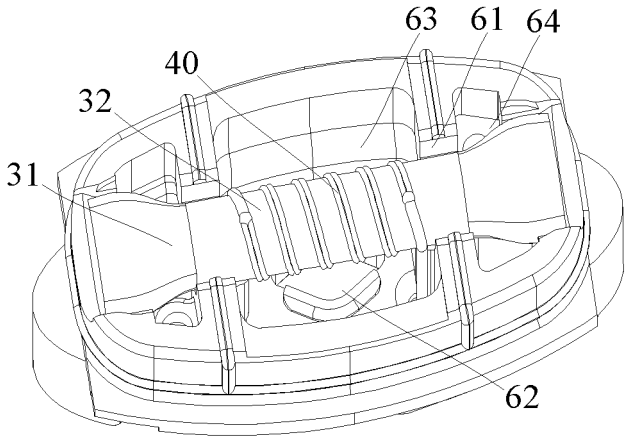
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FIG. 6

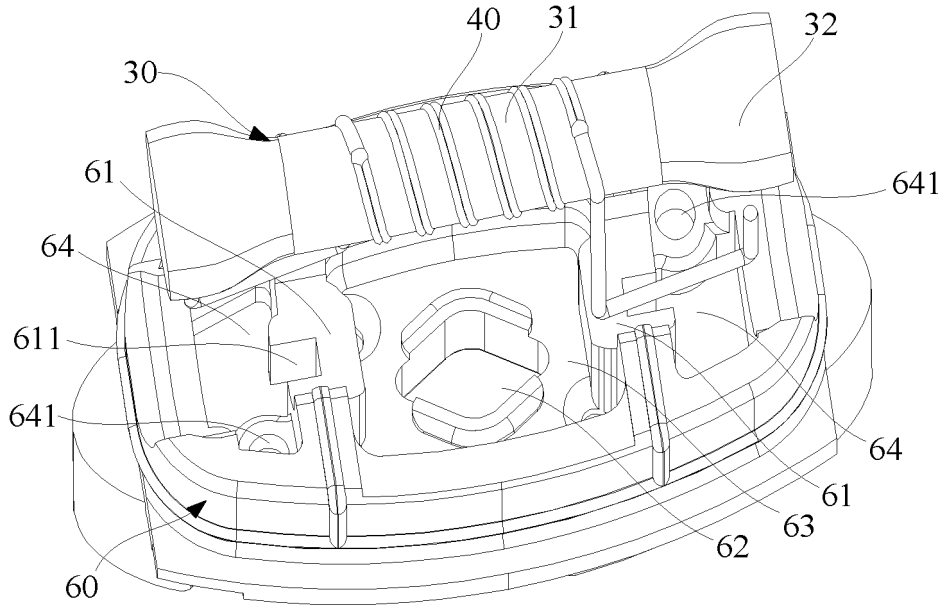

FIG. 7

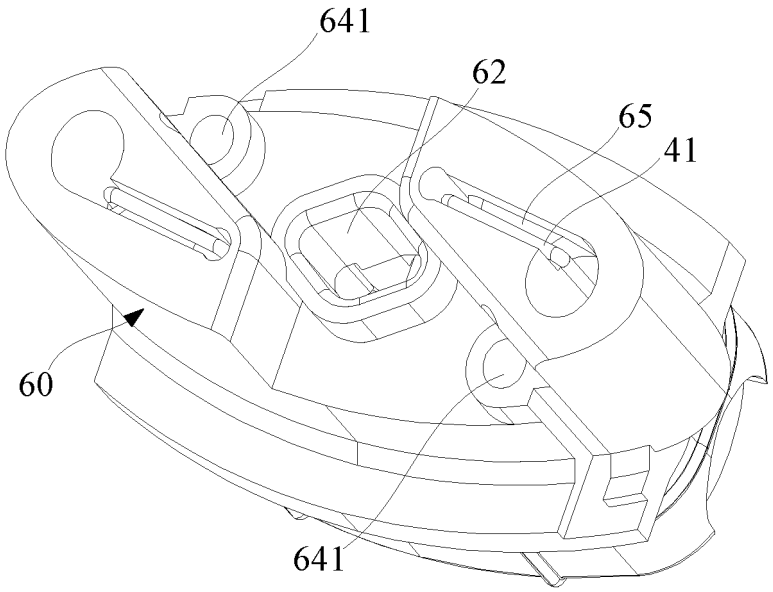

FIG. 8

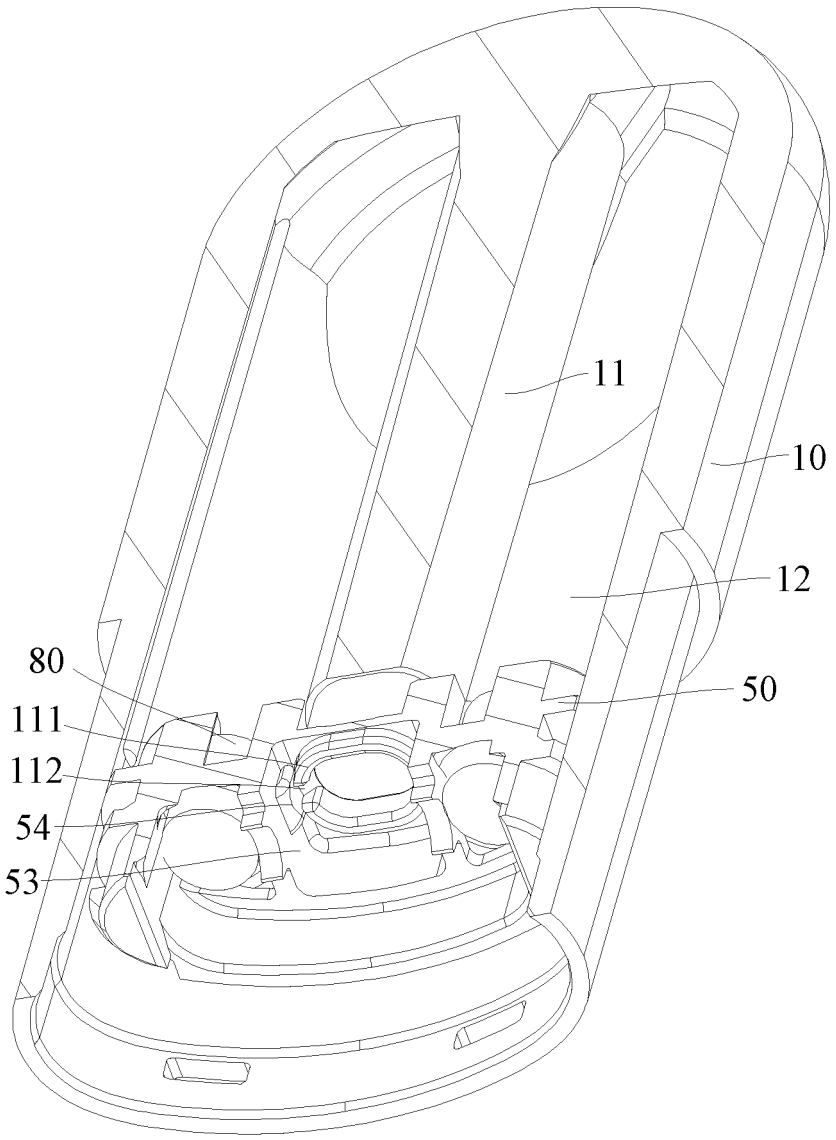

FIG. 9

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/072786

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 40/42(2020.01)i; A24F 40/10(2020.01)i

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)

CNTXT; WPABSC; ENTXTC; DWPI; VEN; OETXT: 雾化器, 气溶胶, 电子烟, 导液, 多孔, 纤维棉, 纤维绳, 缓存, 加热, 支架, 气压平衡, 气孔, 炸油, atomiz+, absorb+, buffer+, fry+ oil, liquid, electronic cigarette, tobacco, air inlet, inhaled, holder?, hole?, cotton

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 215347013 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 31 December 2021 (2021-12-31) claims 1-12, description paragraphs 47-75 and figures 1-9	1-12
X	CN 204070572 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 07 January 2015 (2015-01-07) description, paragraphs 32-38 and figures 1-6	1-12
X	CN 204232296 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 April 2015 (2015-04-01) description, paragraphs 23-33 and figures 1-6	1-12
A	CN 110856554 A (SHANGHAI NEW TOBACCO PRODUCT RES INSTITUTE CO., LTD. et al.) 03 March 2020 (2020-03-03) entire document	1-12
A	CN 110893016 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 20 March 2020 (2020-03-20) entire document	1-12

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
08 March 2022	**30 March 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

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PCT/CN2022/072786

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 211960908 U (SHENZHEN SMOORE TECHNOLOGY LIMITED) 20 November 2020 (2020-11-20) entire document	1-12
A	AT 510405 A4 (BUCHBERGER HELMUT DR) 15 April 2012 (2012-04-15) entire document	1-12
A	US 2015196056 A1 (KIMREE HI-TECH INC.) 16 July 2015 (2015-07-16) entire document	1-12

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/072786

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 215347013 U	31 December 2021	None	
CN 204070572 U	07 January 2015	None	
CN 204232296 U	01 April 2015	EP 3011850 A1	27 April 2016
		EP 3011850 B1	12 August 2020
		US 2016113326 A1	28 April 2016
		US 9848650 B2	26 December 2017
CN 110856554 A	03 March 2020	CN 208837104 U	10 May 2019
CN 110893016 A	20 March 2020	CN 211910558 U	13 November 2020
CN 211960908 U	20 November 2020	None	
AT 510405 A4	15 April 2012	AT 510405 B1	15 April 2012
		JP 2015198985 A	12 November 2015
		JP 6088589 B2	01 March 2017
		US 2021204602 A1	08 July 2021
US 2015196056 A1	16 July 2015	WO 2014172834 A1	30 October 2014
		EP 2989910 A1	28 December 2016
		EP 2989910 A4	28 December 2016

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 202120315009 **[0001]**