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(54) **ELECTRONIC ATOMIZATION DEVICE, AND ATOMIZER AND ATOMIZATION ASSEMBLY THEREOF**

(57) The present invention relates to an electronic vaporization device and a vaporizer thereof and a vaporization assembly. The vaporization assembly includes a heating component, and a vaporization base sleeved over the heating component and provided with an air outlet channel that is in communication with a vaporization cavity; the heating component includes a vaporization surface facing the air outlet channel; and an air guide structure guiding an airflow to the vaporization surface is arranged on the vaporization base. The vaporization assembly is provided with the air guide structure on the vaporization base, so that the airflow may be guided to the vaporization surface facing the air outlet channel, thereby increasing an amount of vaporized vapor and improving an inhalation experience of a user.

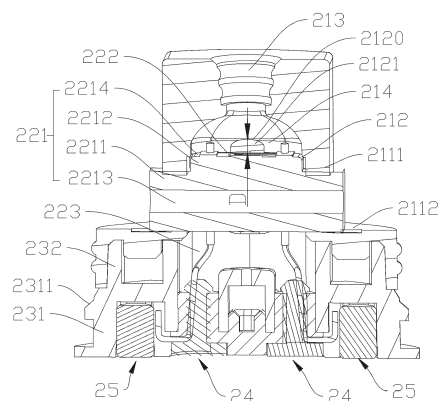


FIG. 4

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Description

TECHNICAL FIELD

[0001] The present invention relates to a vaporization device, and more specifically, to an electronic vaporization device and a vaporizer thereof and a vaporization assembly.

BACKGROUND

[0002] In the related art, an electronic vaporization device mainly includes a vaporizer and a power supply assembly. The vaporizer vaporizes a liquid vaporization medium.

SUMMARY

Technical Problems

[0003] When a vaporizer in the related art vaporizes a liquid vaporization medium, a problem of a small amount of vapor after vaporization is prone to occur, bringing a poor inhalation experience to a user.

Technical Solutions

[0004] The technical problem to be resolved by the present invention is to provide an improved vaporization assembly, and further provide an improved vaporizer and electronic vaporization device.

[0005] The technical solutions adopted by the present invention to resolve the technical problems is: When a vaporizer in the related art vaporizes a liquid vaporization medium, a problem of a small amount of vapor during vaporization is prone to occur, bringing a poor inhalation experience to a user. A vaporization assembly is constructed, including a heating component and a vaporization base sleeved over the heating component, where an air outlet channel is provided on the vaporization base; the heating component includes a vaporization surface facing the air outlet channel; and an air guide structure configured to guide an airflow to the vaporization surface is arranged on the vaporization base.

[0006] Preferably, the air guide structure includes at least one air guide groove facing the vaporization surface to guide the airflow to the vaporization surface.

[0007] Preferably, there are two air guide grooves, and the two air guide grooves are distributed on two opposite sides of the vaporization surface.

[0008] Preferably, the two air guide grooves are provided in parallel.

[0009] Preferably, the two air guide grooves are located on a same straight line, or not on a same straight line.

[0010] Preferably, the air inlet area of the air guide groove ranges from 0.6 mm² to 1.5 mm².

[0011] Preferably, a set distance is left between the air guide structure and the vaporization surface.

[0012] Preferably, the set distance ranges from 0.5 mm to 1.5 mm.

[0013] Preferably, the heating component includes a vaporization core and a heating element arranged on the vaporization core; the vaporization surface is formed on the vaporization core; the heating element is arranged on the vaporization surface; and the air guide direction of the air guide structure is aligned with the position of the highest temperature on the heating element.

[0014] Preferably, the heating element includes at least one bent portion, and at least one straight portion connected to the at least one bent portion; and the air guide direction of the air guide structure is aligned with the bent portion.

[0015] Preferably, the vaporization core includes a liquid guide portion and a vaporization portion protruding from the liquid guide portion; the vaporization surface is formed on the vaporization portion;

the vaporization base includes an inner sleeve sleeved over the outer periphery of the vaporization portion; the vaporization cavity is formed in the inner sleeve; and

the air guide structure is arranged on the end surface of the inner sleeve facing the vaporization surface.

[0016] Preferably, the vaporization base further includes an outer sleeve sleeved over the outer periphery of the inner sleeve and matched with the liquid guide portion;

a vaporization cavity is formed in the inner sleeve;

a gap is left between the outer sleeve and the inner sleeve to form an air storage cavity; and

the air guide structure is arranged in communication with the air storage cavity and the vaporization cavity.

[0017] Preferably, a vent groove configured to ventilate the vaporization core is provided on the outer sleeve.

[0018] Preferably, a through hole is provided on the outer sleeve for the liquid guide portion to pass through; and the vent groove is in communication with the through hole.

[0019] Preferably, the vaporization assembly further includes a base, where

the outer sleeve includes a first sleeve portion sleeved over the outer periphery of the liquid guide portion, and a second sleeve portion arranged at one end of the first sleeve portion and sleeved over the base;

the through hole is provided on the first sleeve portion and is provided close to the second sleeve portion; and

the vent groove is provided on the end surface on which the first sleeve portion is connected to the second sleeve portion.

[0020] Preferably, the vent groove includes at least one air outlet groove in communication with the outside, and at least one air inlet groove that is in communication with the air outlet groove and the air storage cavity.

[0021] Preferably, there are a plurality of air outlet grooves and/or a plurality of air inlet grooves.

[0022] Preferably, a vaporization cavity is provided in the vaporization base; and the vaporization cavity includes a first connection portion connected to the vaporization surface, a second connection portion arranged at one end of the first connection portion, and a third connection portion arranged at one end of the second connection portion and extending toward the air outlet channel.

[0023] Preferably, the first connection portion is a plane, the second connection portion is an arc surface, and the third connection portion is a plane; or

the first connection portion, the second connection portion, and the third connection portion are all arc surfaces; or

the first connection portion is a plane, the second connection portion is an arc surface, and the third connection portion is an arc surface.

[0024] The present invention further constructs a vaporizer, including a vaporization assembly and a shell sleeved over the outer periphery of the vaporization assembly described in the present invention.

[0025] The present invention further constructs an electronic vaporization device, including a vaporizer and a power supply assembly connected to the vaporizer described in the present invention.

Beneficial Effects:

[0026] An electronic vaporization device and a vaporizer thereof and a vaporization assembly of the present invention have the following beneficial effects: The vaporization assembly arranges an air guide structure on the vaporization base, so that an airflow may be guided to a vaporization surface facing an air outlet channel, thereby increasing an amount of vaporized vapor and improving an inhalation experience of a user.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] Subject matter of the present invention will be described in even greater detail below based on the ex-

emplary figures. All features described and/or illustrated herein can be used alone or combined in different combinations. The features and advantages of various embodiments will become apparent by reading the following detailed description with reference to the attached drawings, which illustrate the following:

FIG. 1 is a schematic diagram of a structure of a vaporizer of an electronic vaporization device according to a first embodiment of the present invention;

FIG. 2 is a cross-sectional view of the vaporizer shown in FIG. 1;

FIG. 3 is a schematic exploded view of a structure of a vaporization assembly of a vaporizer shown in FIG. 2;

FIG. 4 is a cross-sectional view of the vaporization assembly shown in FIG. 3;

FIG. 5 is a schematic diagram of a structure of a vaporization base of the vaporization assembly shown in FIG. 3;

FIG. 6 is a schematic diagram of a structure of another angle of a vaporization base of the vaporization assembly shown in FIG. 5;

FIG. 7 is a cross-sectional view of a vaporization base of the vaporization assembly shown in FIG. 5;

FIG. 8 is a schematic diagram of a structure of the heating component shown in FIG. 3;

FIG. 9 is a schematic diagram of a structure of the base shown in FIG. 3;

FIG. 10 is a schematic diagram of a structure of a vaporization base in a vaporizer of a second embodiment of an electronic vaporization device according to the present invention;

FIG. 11 is a schematic diagram of a structure of another angle of a vaporization base of the vaporization assembly shown in FIG. 10;

FIG. 12 is a cross-sectional view of a vaporization base of the vaporization assembly shown in FIG. 10;

FIG. 13 is a pressure field analysis diagram of a first embodiment of an electronic vaporization device according to the present invention;

FIG. 14 is a pressure field analysis diagram of a second embodiment of an electronic vaporization device according to the present invention;

FIG. 15 is a schematic diagram of a cross section in which $X=0$ of velocity field analysis of a first embodiment and a second embodiment of an electronic vaporization device according to the present invention;

FIG. 16 is a velocity vector diagram of a cross section in which $X=0$ of velocity field analysis of a first embodiment and a second embodiment of the electronic vaporization device shown in FIG. 15;

FIG. 17 is a schematic diagram of a cross section in which $Z=80.2$ of velocity field analysis of a first embodiment and a second embodiment of an electronic vaporization device according to the present invention; and

FIG. 18 is a velocity vector diagram of a cross section in which $Z=80.2$ of velocity field analysis of a first embodiment and a second embodiment of the electronic vaporization device shown in FIG. 17.

DETAILED DESCRIPTION

[0028] To provide a clearer understanding of the technical features, objectives, and effects of the present invention, specific implementations of the present invention are described with reference to the accompanying drawings.

[0029] FIG. 1 to FIG. 2 show a first embodiment of an electronic vaporization device according to the present invention. The electronic vaporization device may be applied to vaporization of a vaporized liquid vaporization medium. In some embodiments, the electronic vaporization device may include a vaporizer and a power supply assembly mechanically and electrically connected to the vaporizer. The vaporizer is used to heat and vaporize a liquid medium, and the power supply assembly is used to supply power to the vaporizer. Preferably, the vaporizer and the power supply assembly are detachably connected.

[0030] As shown in FIG. 1 and FIG. 2, the vaporizer may include a shell 1 and a vaporization assembly 2. The shell 1 may be sleeved over the outer periphery of the vaporization assembly 2. The vaporization assembly 2 may be arranged in the shell 1, and may be used to heat and vaporize the liquid vaporization medium.

[0031] Further, in some embodiments, the shell 1 may be in a shape of a cylinder. An inner side may be a hollow structure, and may include a housing 11 sleeved over the outer periphery of the vaporization assembly 2 and an airflow pipeline 12 provided in the housing 11. Space in the housing 11 and located on an upper part of the vaporization assembly 2 may form a liquid storage cavity 13, which is used to store the liquid vaporization medium. The airflow pipeline 12 may be inserted on the vaporization assembly 2, and may be used to output an airflow vaporized by the vaporization assembly 2. An air outlet may be provided at one end of the airflow pipeline 12. In

some embodiments, the housing 11 may be integrally formed with the airflow pipeline 12. Specifically, in some embodiments, the housing 11 may be integrally formed with the airflow pipeline 12 by injection molding.

[0032] As shown in FIG. 3 and FIG. 4, further, in this embodiment, the vaporization assembly may include a vaporization base 21, a heating component 22, and a base 23. The vaporization base 21 may be sleeved above the heating component 22, and may be in communication with the airflow pipeline 12 in the shell 1. The vaporization base 21 may accommodate the heating component 22 and form a vaporization cavity 214, thereby forming space for the heating component 22 to heat the liquid vaporization medium, and facilitating output of the formed vapor from the airflow pipeline 12. The heating component 22 may be arranged in the vaporization base 21, and may be used to vaporize the vaporization medium in the shell 1. The base 23 is assembled with the vaporization base 21, and is used to support the heating component 22.

[0033] As shown in FIG. 5 to FIG. 7, in this embodiment, the vaporization base 21 may include an outer sleeve 211 and an inner sleeve 212. The outer sleeve 211 may be sleeved over the outer periphery of the inner sleeve 212, and the length of the outer sleeve 211 may be greater than the length of the inner sleeve 212. The outer sleeve 211 may extend along one end of the inner sleeve 212 and may be sleeved over the base 23. In some embodiments, the inner sleeve 212 may be embedded in the outer sleeve 211, and the inner sleeve 212 may be integrally formed with the outer sleeve 211. Specifically, in some embodiments, the inner sleeve 212 may be integrally formed with the outer sleeve 211 by injection molding.

[0034] In this embodiment, the outer sleeve 211 may include a first sleeve portion 2111 and a second sleeve portion 2112. The first sleeve portion 2111 may be sleeved over the heating component 22. The first sleeve portion 2111 may be substantially a hollow structure with a narrow top and a wide bottom, and may be substantially in a shape of a rectangular. The second sleeve portion 2112 may be arranged at the end of the first sleeve portion 2111. Specifically, the second sleeve portion 2112 may be arranged at a lower end of the first sleeve portion 2111, and the width of the second sleeve portion 2112 may be set greater than the width of the first sleeve portion 2111. In this embodiment, a cross section of the second sleeve portion 2111 may be substantially in a shape of an ellipse. The second sleeve portion 2112 may be sleeved over the base 23, and may be fixedly connected to the base 23 through an interference fit. In some embodiments, the first sleeve portion 2111 may be integrally formed with the second sleeve portion 2112. Specifically, in some embodiments, the first sleeve portion 2111 may be integrally formed with the second sleeve portion 2112 by injection molding.

[0035] In this embodiment, the inner sleeve 212 may be sleeved over the heating component 22, and the

length of the inner sleeve 212 may be less than the length of the outer sleeve 211, and specifically, may be less than the length of the first sleeve portion 2111. In this embodiment, the inner sleeve 212 may be substantially in a shape of a bowl, and a size of a cross section of the inner sleeve 212 may be less than a size of a cross section of the outer sleeve 211. An inner side of the inner sleeve 212 may be a hollow structure. A gap left between the outer sleeve 211 and the inner sleeve 212 may form an air storage cavity 215, which may be used to collect an airflow delivered from the outside.

[0036] In this embodiment, an air outlet channel 213 may be provided on the vaporization base 21, and the air outlet channel 213 may be provided on a top portion of the outer sleeve 211. Specifically, in this embodiment, the air outlet channel 213 may be provided on a top portion of the first sleeve portion 2111 and is in communication with the inner sleeve 22. The air outlet channel 213 may be in communication with the airflow pipeline 12 on the shell 1, and may be used to output vapor generated by the heating component 22 to the airflow pipeline 12.

[0037] In this embodiment, a vaporization cavity 214 is provided on an inner side of the vaporization base 21, and the vaporization cavity 214 may be formed in the inner sleeve 212. The air outlet channel 213 may be provided in communication with the vaporization cavity 214, and may be used to output the vapor in the vaporization cavity 214. The air storage cavity 215 may be located on the outer periphery of the vaporization cavity 214. In this embodiment, the vaporization cavity 214 may include a first connection portion 2141, a second connection portion 2142, and a third connection portion 2143 that are sequentially arranged. In this embodiment, the first connection portion 2141 may extend toward the heating component 22. The second connection portion 2142 may be arranged at one end of the first connection portion 2141, and may be connected to the first connection portion 2141. The third connection portion 2143 may be arranged at one end of the second connection portion 2142, and may extend toward the air outlet channel 213. In this embodiment, the first connection portion 2141, the second connection portion 2142, and the third connection portion 2143 may be integrally formed. In this embodiment, the vaporization cavity 214 may be substantially in a shape of a bowl. The first connection portion 2141, the second connection portion 2142, and the third connection portion 2143 may all be arc surfaces, so as to reduce airflow resistance and cause the airflow to be more smooth.

[0038] In this embodiment, a through hole 216 may be provided on the outer sleeve 211. The through hole 216 may be located on two opposite sides of the first sleeve portion 2111, may be provided close to the second sleeve portion 2112, and may be in communication with the air storage cavity 215. The through hole 216 may be used for the heating component 22 to pass through.

[0039] In this embodiment, a vent groove 217 for ventilating a vaporization core 221 is provided on the outer

sleeve 211, and the vent groove 217 may be provided on two opposite sides of the outer sleeve 211. Specifically, the air vent groove 217 may be provided on an end surface on which the first sleeve portion 2112 is connected to the second sleeve portion 2111. In this embodiment, the vent groove 217 may be correspondingly provided with the through hole 216. Specifically, the vent groove 217 may be in communication with the through hole 216. In this embodiment, the vent groove 217 may be in a shape of a cross. Certainly, it may be understood that in some other embodiments, the vent groove 217 may be in a shape of a straight line or in another shape. In this embodiment, the vent groove 217 may include air outlet grooves 2172, 2173 and air inlet grooves 2171. In this embodiment, there may be one air inlet groove 2171, and the air inlet groove 2171 may be provided along a direction of a long axis of the second sleeve portion 2112. The air outlet grooves 2172, 2173 may include a first air outlet groove 2172 and a second air outlet groove 2173. There may be two first air outlet grooves 2172, and the two first air outlet grooves 2172 may be provided side by side and provided in communication with each other, and be cross-provided with the air inlet grooves 2171. There may be one second air outlet groove 2173, and the air outlet groove 2173 and the air inlet grooves 2171 may be distributed in a shape of a straight line. By providing a plurality of first air outlet grooves 2172, when the heating component 22 is mounted in a mounting hole 216, the second air outlet groove 2173 is blocked. As a result, the heating component 22 cannot ventilate normally. It may be understood that in some other embodiments, a quantity of air outlet grooves 2172, 2173 is not limited to three. In some other embodiments, a quantity of air outlet grooves 2172, 2173 may be one or more than three, and a quantity of air inlet grooves 2171 may be one or more. When a plurality of air inlet grooves 2171 or a plurality of air outlet grooves 2172, 2173 are provided, ventilation efficiency of the heating component 22 may be improved, and a problem of liquid leakage may be resolved. That is, there is a bending area, which may make it difficult for the vaporization medium to leak downward.

[0040] As shown in FIG. 3 to FIG. 8, in this embodiment, the heating component 22 may include a vaporization core 221 and a heating element 222; and the heating element 222 may be arranged on the vaporization core 221. The heating element 222 may be arranged on the vaporization core 221, and may be used to heat the vaporization medium on the vaporization core 221 to cause the vaporization medium to be vaporized and form vapor.

[0041] The vaporization core 221 may be a ceramic vaporization core. Certainly, it may be understood that in some other embodiments, the vaporization core 221 may not be limited to the ceramic vaporization core. The vaporization core 221 may include a liquid guide portion 2211 and a vaporization portion 2212. The liquid guide portion 2211 may be substantially in a shape of a rectangular, and may be inserted on the first sleeve portion

2111 of the outer sleeve 211. In addition, two ends of the liquid guide portion 2211 pass through the through hole 216 to be in liquid guiding connection with the liquid storage cavity 13 of the shell 1, and may inhale the liquid vaporization medium. In this embodiment, a liquid guide hole 2213 used to introduce the vaporization medium in the liquid storage cavity 13 may be provided on the liquid guide portion 2211, and the liquid guide hole 2213 may be provided along the length direction of the liquid guide portion 2211. In this embodiment, the vaporization portion 2212 may protrude from the liquid guide portion 2211. The vaporization portion 2212 may be in a shape of a rectangular, and the length of the vaporization portion 2212 may be less than the length of the liquid guide portion 2211. The vaporization portion 2212 may be integrally formed with the liquid guide portion 2211. The inner sleeve 212 may be sleeved over the vaporization portion 2212, and may be fixedly connected to the vaporization portion 2212 through an interference fit. The vaporization cavity 214 may be formed in the inner sleeve 212 and be located in upper space of the vaporization portion 2212. In this embodiment, the heating component 22 may include a vaporization surface 2214. The vaporization surface 2214 may be formed on the vaporization portion 2212 of the vaporization core 221, and may be arranged facing the air outlet channel 213.

[0042] In this embodiment, the heating element 222 may be arranged on the vaporization surface 2214. The heating element 222 may be a heating film, and the heating film may be fixed on the vaporization surface 2214 by sintering. Certainly, it may be understood that in some other embodiments, the heating element 222 may not be limited to the heating film. In some other embodiments, the heating element 222 may be a heating sheet. In this embodiment, the heating element 222 may include a bent portion 2221 and a straight portion 2222. The bent portion 2221 may be in two sections, the bent portion 2221 may be located on two opposite sides, and may be connected by the straight portion 2222. The straight portion 2222 may be in three sections, and one end of the straight portion 2222 may be connected to the bent portion 2221. The bent portion 2221 increases internal resistance through bending so that the temperature of the bent portion 2221 is higher than the temperature of the straight portion 2222 in an energized state, and the temperature in a corner area of the bent portion 2221 is the highest temperature.

[0043] In this embodiment, the heating component 22 may further include conductive connection portions 223. There may be two conductive connection portions 223. The two conductive connection portions 223 may be respectively connected to two ends of the heating element 222, and may pass through the vaporization core 221 to be electrically connected to an electrode member 24. In this embodiment, the conductive connection portion 223 may be a lead.

[0044] As shown in FIG. 5 to FIG. 7, in this embodiment, the air guide structure 2120 may be arranged on

the vaporization base 21. The air guide structure 2120 may be used to guide the airflow in an air flow path, and guide the airflow to the vaporization surface 2214 on the heating component 22. In addition, the vaporized vapor on the vaporization surface 2214 may be directly guided into the air outlet channel 213 through the air guide structure 2120, thereby increasing an amount of vaporized vapor. Specifically, in this embodiment, the air guide structure 2120 may be arranged on an end surface of the inner sleeve 21 facing the vaporization surface 2214, and a set distance D may be left between the air guide structure 2120 and the vaporization surface 2214. That is, the set distance D is left between a bottom surface of the air guide structure 2120 and the vaporization surface 2214. The air guide direction of the air guide structure 2120 may be set to align with the position of the highest temperature on the heating element 222, that is, set to align with the bent portion 2221, so that vapor from an area that generates the largest amount of vapor may be exported, thereby increasing the amount of exported vapor.

[0045] Further, in this embodiment, the air guide structure 2120 may include two air guide grooves 2121. The two air guide grooves 2121 may be provided on the end surface of the inner sleeve 212 facing the vaporization surface 2214, may be distributed on two opposite sides of the vaporization surface 2214, and may be provided in parallel. Specifically, the two air guide grooves 2121 may not be on the same straight line, so that the introduced airflow does not form a confrontation, thereby causing the vapor to disperse. It may be understood that in some other embodiments, the two air guide grooves 2121 may not be limited to being provided in parallel, nor be limited to being not on the same straight line. In some other embodiments, specifically, the two air guide grooves 2121 may be provided opposite to each other and located on a straight line. It may be understood that, in some embodiments, a quantity of air guide grooves 2121 may not be limited to two. In some other embodiments, a quantity of air guide grooves 2121 may be one or more than two.

[0046] A set distance D may be left between the air guide groove 2121 and the vaporization surface 2214. In this embodiment, a plane on which the air guide groove 2121 is located may be arranged slightly higher than the vaporization surface 2214, and the set distance D of the air guide groove 2121 may range from 0.5 mm to 1.5 mm. When a height range is greater than 1.5 mm, the introduced airflow cannot touch the vaporization surface 214, and a problem of carbonization of the heating film occurs; and if the height range is less than 0.5 mm, problems of insufficient air inflow and insufficient amount of vapor occur. In this embodiment, the air guide direction of the air guide groove 2121 may be set to align with the position of the highest temperature on the heating element 222, that is, may be set to align with the bent portion 2221.

[0047] In this embodiment, the air inlet area of a single

air guide groove 2121 may range from 0.6 mm² to 1.5 mm². When the air inlet area is less than 0.6 mm², the air inflow is insufficient; and when the air inlet area is greater than 1.5 mm², vapor dispersion occurs and the amount of vapor decreases. A sum of air inlet areas of the two air guide grooves 2121 may range from 0.8 mm² to 3.0 mm², so that the air inflow may be increased, and then the amount of the vaporized vapor may be increased.

[0048] As shown in FIG. 3 and FIG. 9, further, in this embodiment, the base 23 may include a base body 231, and a matching portion 232 arranged on the base body 231 and matching with the vaporization base 21. A cross section of the base body 231 may be substantially in a shape of an ellipse. The base body 231 may be inserted from an open end of the shell 1, and may block the opening of the shell 1. Certainly, it may be understood that in some other embodiments, the base body 231 may not be limited to be in a shape of an ellipse. The base body 231 may be in snap-fit connection to the shell 1. In some embodiments, buckles 2311 may be arranged on two side walls that are arranged opposite to each other of the base body 231, and the base body 231 may be in snap-fit connection to the shell 1 through the buckles 2311. In this embodiment, an air inlet 2312 may be provided on the base 23. Specifically, the air inlet 2312 may be provided on the base body 231, and there may be two air inlets 2312. The two air inlets 2312 may be distributed on a short axis of the base body 231, and are in communication with the air storage cavity 215 respectively. In this embodiment, a first through hole 2313 may further be provided on the base body 231, and there may be two first through holes 2313. The two first through holes 2313 may be provided at intervals, so that two electrode members 24 may be mounted on the two first through holes 2313 in a one-to-one correspondence manner. In this embodiment, two second through holes 2313 may further be provided on the base body 231. The two second through holes 2312 may be located on two opposite sides of the two first through holes 2313, so that magnetic members 25 may be mounted on the two second through holes 2312. The matching portion 232 may be arranged at one end of the base body 231, so that the second sleeve portion 2112 of the vaporization base 21 may be sleeved over the matching portion 232. In some embodiments, a support structure 2312 may further be arranged at one end of the matching portion 232. The support structure 2312 may be inserted into the vaporization base 231, and may be used to support the heating component 22. In this embodiment, the support structure 2312 may include two support arms that are arranged opposite to each other. The two support arms may be respectively inserted from the vaporization base 21, and may be located on two opposite sides of the heating component 22.

[0049] In this embodiment, the vaporization assembly 2 may further include electrode members 24, and there may be two electrode members 24. The two electrode members 24 may be electrically connected to the two

conductive connection portions 223 on the heating component 22 respectively in a one-to-one correspondence manner. The two electrode members 24 may be mounted in the first through hole 2313 in a one-to-one correspondence manner, so that the heating component 22 may be connected to the power supply assembly.

[0050] In this embodiment, the vaporization assembly 2 may further include magnetic members 25, and there may be two magnetic members 25. The two magnetic members 25 may be mounted in the two second through holes 2314 in a one-to-one correspondence manner, and may attract and fix the entire vaporizer with the power supply assembly.

[0051] FIG. 10 to FIG. 12 show the second embodiment of the electronic vaporization device of the present invention, which is different from the first embodiment in that the two air guide grooves 2121 are provided in parallel and are located on a straight line. In addition, a shape of the vaporization cavity 214 is different. In this embodiment, the vaporization cavity 214 may be substantially in a shape of a rectangular with rounded corners. The first connection portion 2141 may be a plane, the second connection portion 2142 may be an arc surface, and the third connection portion 2143 may be a plane.

[0052] After the airflow is guided to the vaporization surface 214 by the air guide structure 2120, a flow direction of the airflow may be changed by using vaporization cavities of different shapes. Compared with the airflow of the second embodiment, the airflow of the first embodiment is smoother. In the first embodiment and the second embodiment, a structure of an inlet adaptation section and a structure of the air outlet channel 213 are substantially the same, but a design of the vaporization cavity 214 is different. A main difference is that the airflow enters the vaporization cavity 214 from the adaptation section (the second connection portion 2142) at a different velocity horizontal angle, and a shape of the adaptation section (the second connection portion 2142) from the vaporization cavity 214 to the air outlet channel 213 is different, so that uniformity and fluidity of the airflow are different. Specifically, reference may be made to comparative analysis of a pressure field and a velocity field of the first embodiment and the second embodiment.

[0053] As shown in FIG. 13 and FIG. 14, inhalation resistance of the airflow channel in the first embodiment and the second embodiment is mainly caused by two parts: the air inlet channel and the adaptation section (the second connection portion 2142) entering the vaporization cavity 214; and the inhalation resistance of the first embodiment is 713.5 Pa, and the inhalation resistance of the second embodiment is 918.3 Pa. Compared with the inhalation resistance of the first embodiment, the inhalation resistance of the second embodiment increases by 28.7%. A main reason for the small inhalation resistance of the first embodiment is that a cross-sectional area of an inlet channel of the vaporization cavity 214 is relatively large. The local resistance loss of the air entering the vaporization cavity 214 is small, and the airflow

channel at the outlet of the vaporization cavity 214 is smoother, generating a small vortex and less resistance loss.

[0054] As shown in FIG. 15 and FIG. 16, compared with the first embodiment, there are two relatively large vortex areas in the vaporization cavity 214 of the second embodiment. A vortex in an area 1 causes an increase in the inhalation resistance of the airflow channel and intensifies condensation of vapor. A vortex in an area 2 causes a vaporization medium to not be taken away in time, and the temperature of the heating element is too high.

[0055] As shown in FIG. 17 and FIG. 18, because the two air guide grooves 2121 of the vaporization cavity 214 of the second embodiment are on the same straight line, after the air enters the vaporization cavity 214 from the two air inlets, a "stagnation area" appears at the heating element in the middle, a large vortex (as shown in a dotted box in the foregoing figure) is generated. Most of the airflow is not fully diffused in the vaporization cavity 214, and directly flows out to the air outlet channel. The air guide grooves 2121 of the first embodiment are staggered with each other, so that the air enters the vaporization cavity 214 and fully diffuses. Velocity distribution in a heating element area is more uniform, and the air may be fully mixed with the vaporized liquid vaporization medium and then flow out of the vaporization cavity 214.

[0056] Based on the foregoing analysis, it may be learnt that compared with that in the second embodiment, the airflow in the first embodiment is more uniformly mixed and the flow is smoother.

[0057] 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.

Claims

1. A vaporization assembly, comprising:

a heating component (22); and
a vaporization base (21) sleeved over the heating component (22) and provided with an air outlet channel (213),
wherein the heating component (22) comprises a vaporization surface (2214) facing the air outlet channel (213), and
wherein an air guide structure (2120) configured to guide an airflow to the vaporization surface

(2214) is arranged on the vaporization base (21).

2. The vaporization assembly of claim 1, wherein the air guide structure (2120) comprises at least one air guide groove (2121) configured to guide the airflow to the vaporization surface (2214).
3. The vaporization assembly of claim 2, wherein there are two air guide grooves (2121), and wherein the two air guide grooves (2121) are distributed on two opposite sides of the vaporization surface (2214).
4. The vaporization assembly of claim 3, wherein the two air guide grooves (2121) are provided in parallel.
5. The vaporization assembly of claim 4, wherein the two air guide grooves (2121) are located on a same straight line, or not on a same straight line.
6. The vaporization assembly of claim 2, wherein the air inlet area of the air guide groove (2121) ranges from 0.6 mm² to 1.5 mm².
7. The vaporization assembly of claim 1, wherein a set distance is left between the air guide structure (2120) and the vaporization surface (2214).
8. The vaporization assembly of claim 7, wherein the set distance ranges from 0.5 mm to 1.5 mm.
9. The vaporization assembly of claim 1, wherein the heating component (22) comprises a vaporization core (221) and a heating element (222) arranged on the vaporization core (221),

wherein the vaporization surface (2214) is formed on the vaporization core (221),
wherein the heating element (222) is arranged on the vaporization surface (2214), and
wherein the air guide direction of the air guide structure (2120) is aligned with the position of the highest temperature on the heating element (222).

10. The vaporization assembly of claim 9, wherein the heating element (222) comprises at least one bent portion (2221), and at least one straight portion (2222) connected to the at least one bent portion (2221), and
wherein the air guide direction of the air guide structure (2120) is aligned with the bent portion (2221).
11. The vaporization assembly of claim 9, wherein the vaporization core (221) comprises a liquid guide portion (2211) and a vaporization portion (2212) protruding from the liquid guide portion (2211),

- wherein the vaporization surface (2214) is formed on the vaporization portion (2212), wherein the vaporization base (21) comprises an inner sleeve (212) sleeved over the outer periphery of the vaporization portion (2212), and wherein the air guide structure (2120) is arranged on the end surface of the inner sleeve (212) facing the vaporization surface (2214).
12. The vaporization assembly of claim 11, wherein the vaporization base (21) further comprises an outer sleeve (211) sleeved over the outer periphery of the inner sleeve (212) and matched with the liquid guide portion (2211),
- wherein a gap is left between the outer sleeve (211) and the inner sleeve (212) to form an air storage cavity (215), wherein a vaporization cavity (214) is formed in the inner sleeve (212), and wherein the air guide structure (2120) is in communication with the air storage cavity (215) and the vaporization cavity (214).
13. The vaporization assembly of claim 12, wherein a vent groove (217) configured to ventilate the vaporization core (221) is provided on the outer sleeve (211).
14. The vaporization assembly of claim 13, wherein a through hole (216) is provided on the outer sleeve (211) for the liquid guide portion (2211) to pass through, and wherein the vent groove (217) is in communication with the through hole (216).
15. The vaporization assembly of claim 14, further comprising:
- a base,
- wherein the outer sleeve (211) comprises a first sleeve portion (2111) sleeved over the outer periphery of the liquid guide portion (2211), and a second sleeve portion (2112) arranged at one end of the first sleeve portion (2111) and sleeved over the base (23),
- wherein the through hole (216) is provided on the first sleeve portion (2111) and is provided close to the second sleeve portion (2112), and wherein the vent groove (217) is provided on the end surface on which the first sleeve portion (2112) is connected to the second sleeve portion (2112).
16. The vaporization assembly of claim 13, wherein the vent groove (217) comprises at least one air outlet groove (2172, 2173) in communication with the outside, and at least one air inlet groove (2171) that is in communication with the air outlet groove (2172, 2173) and the air storage cavity (215).
17. The vaporization assembly of claim 16, wherein there are a plurality of air outlet grooves (2172, 2173) and/or a plurality of air inlet grooves (2171).
18. The vaporization assembly of claim 1, wherein a vaporization cavity (214) is provided in the vaporization base (21), and comprises a first connection portion (2141), a second connection portion (2142) arranged at one end of the first connection portion (2141), and a third connection portion (2143) arranged at one end of the second connection portion (2142) and extending toward the air outlet channel (213).
19. The vaporization assembly of claim 18, wherein the first connection portion (2141) is a plane, the second connection portion (2142) is an arc surface, and the third connection portion (2143) is a plane, or wherein the first connection portion (2141), the second connection portion (2142), and the third connection portion (2143) are all arc surfaces, or wherein the first connection portion (2141) is a plane, the second connection portion (2142) is an arc surface, and the third connection portion (2143) is an arc surface.
20. A vaporizer, comprising:
- the vaporization assembly (2) of any one of claims 1 to 19; and
- a shell (1) sleeved over the outer periphery of the vaporization assembly (2).
21. An electronic vaporization device, comprising:
- the vaporizer of claim 20; and
- a power supply assembly connected to the vaporizer.

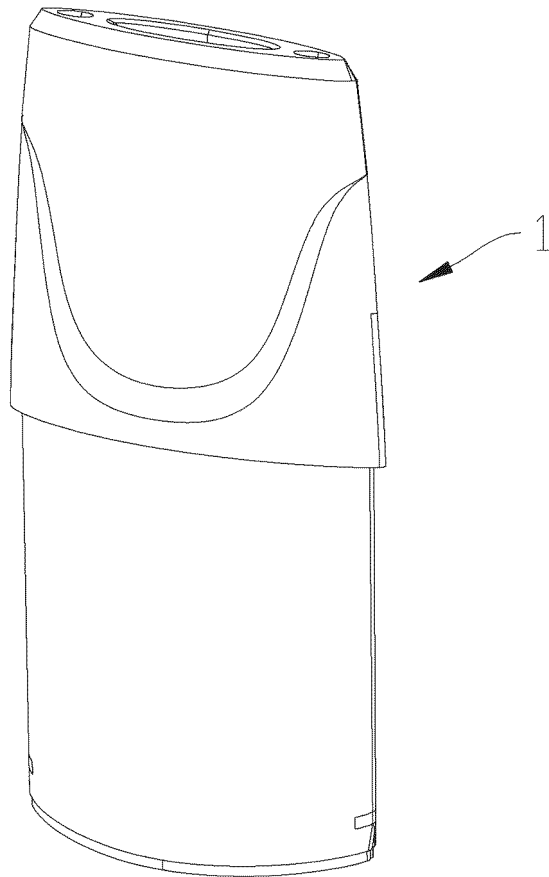


FIG. 1

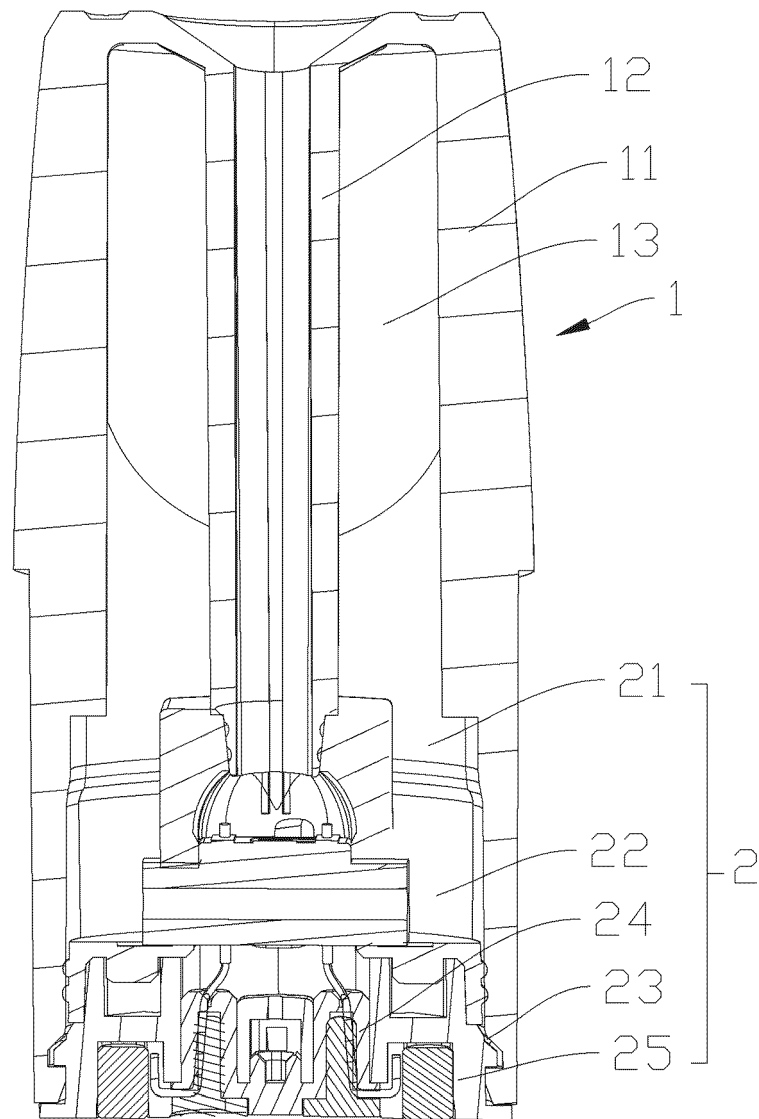


FIG. 2

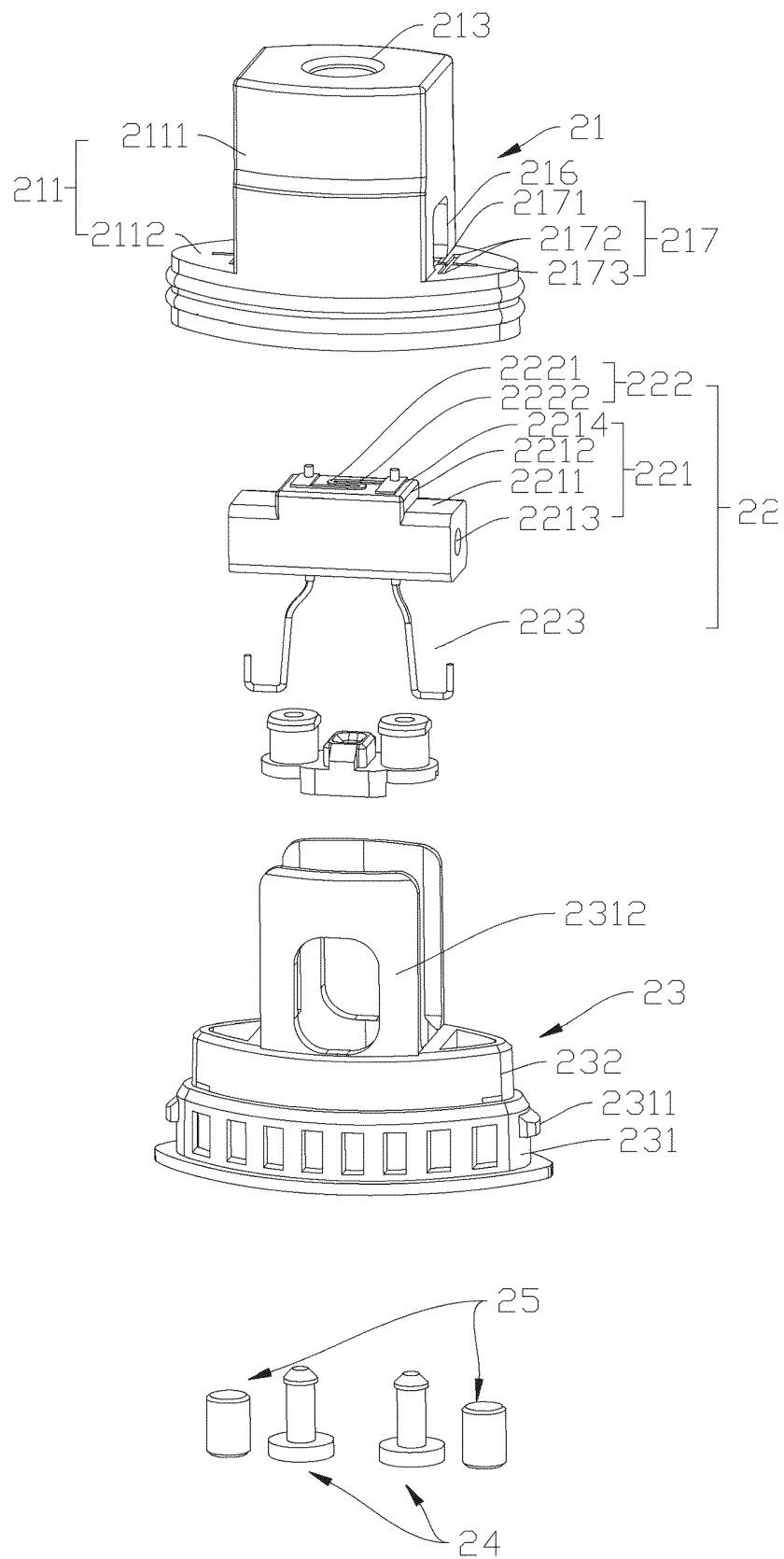


FIG. 3

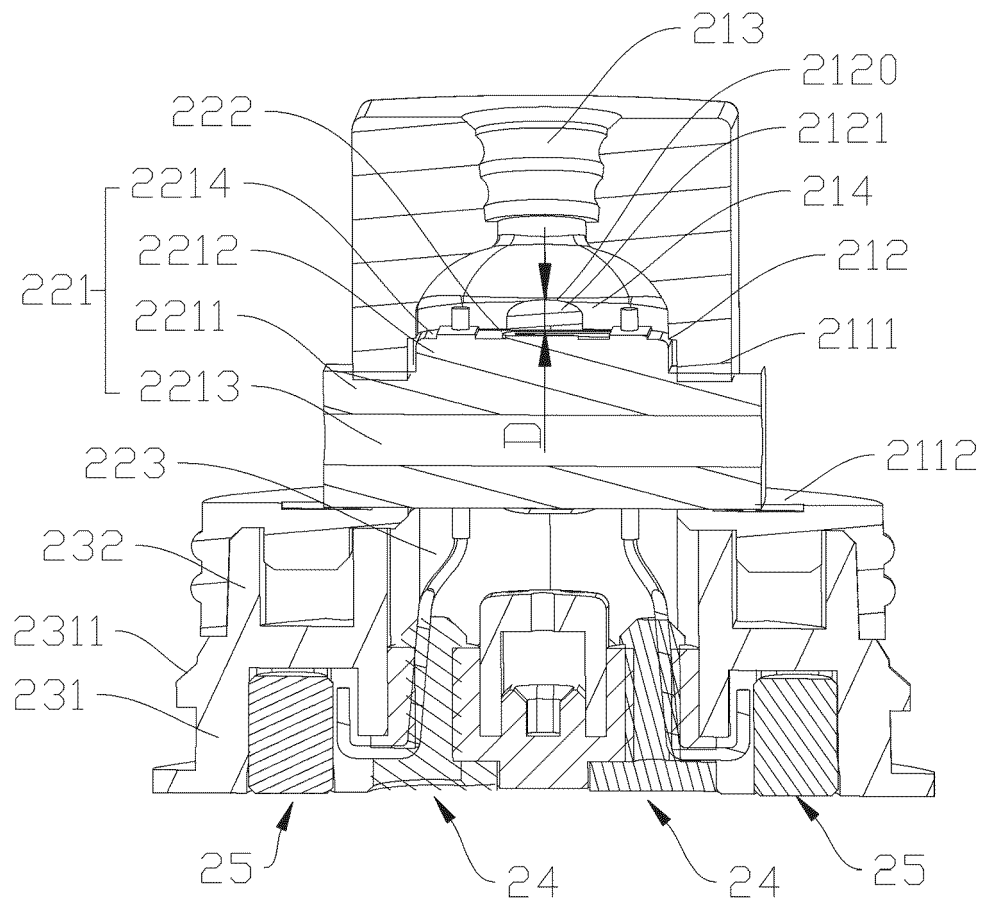


FIG. 4

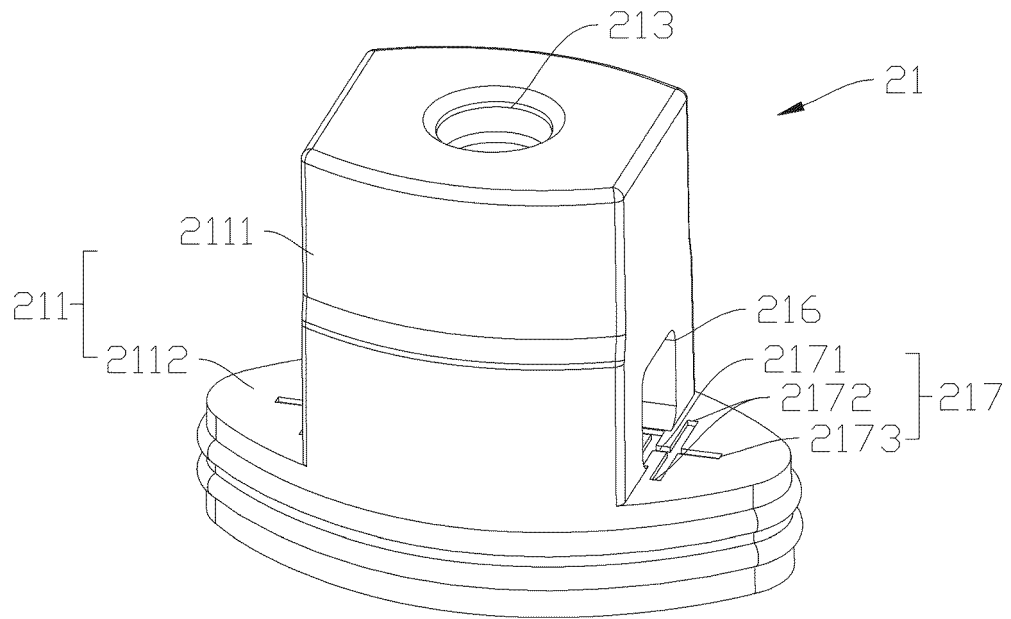


FIG. 5

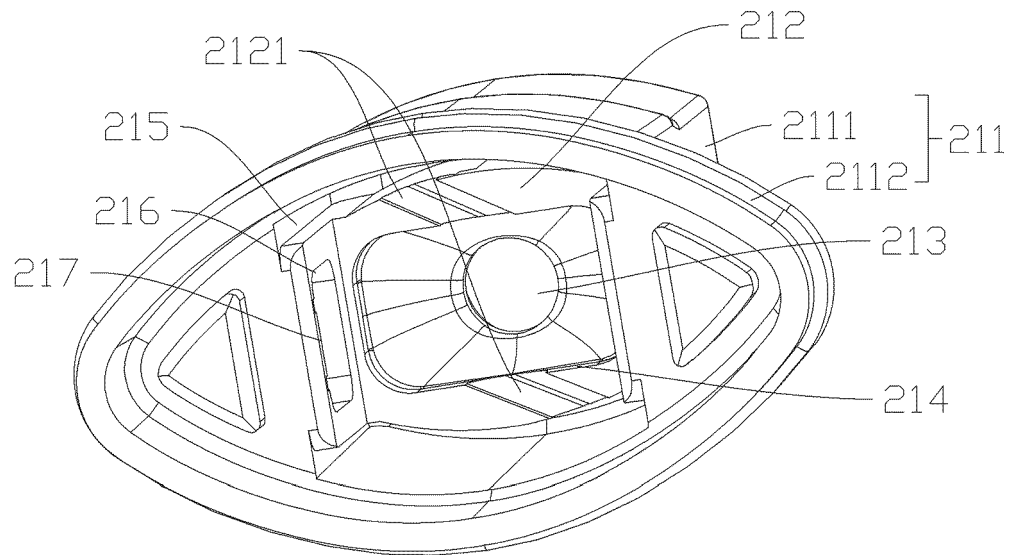


FIG. 6

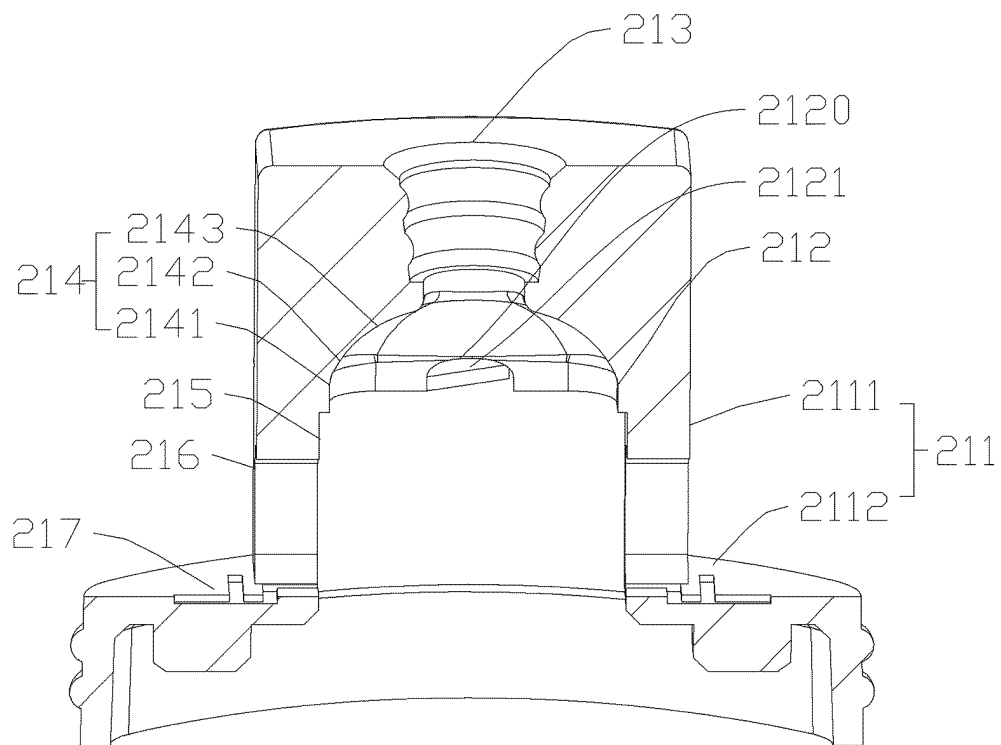


FIG. 7

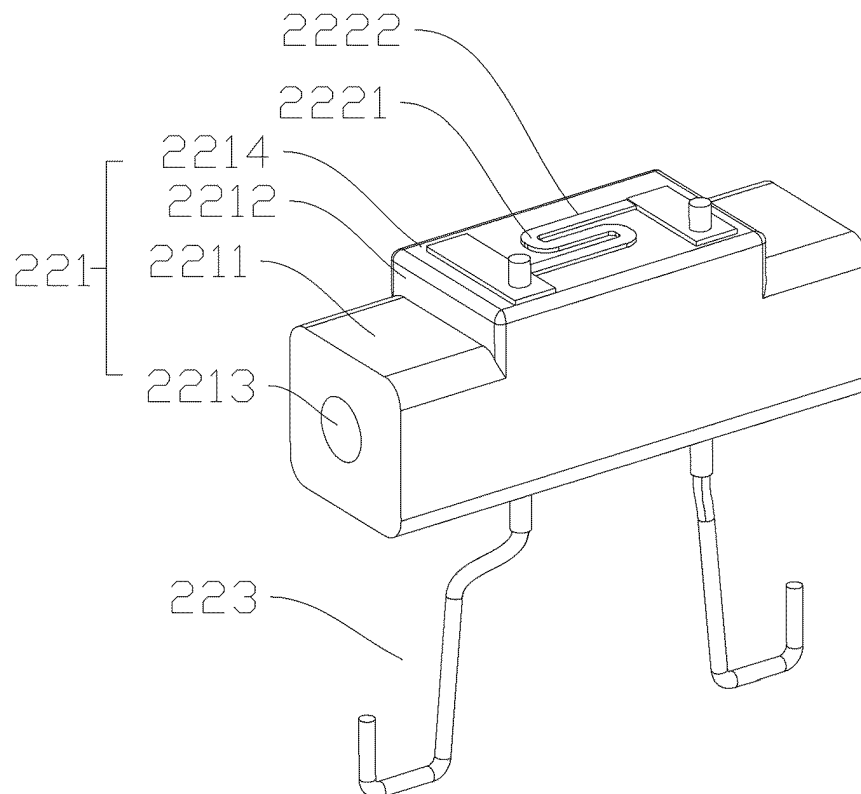


FIG. 8

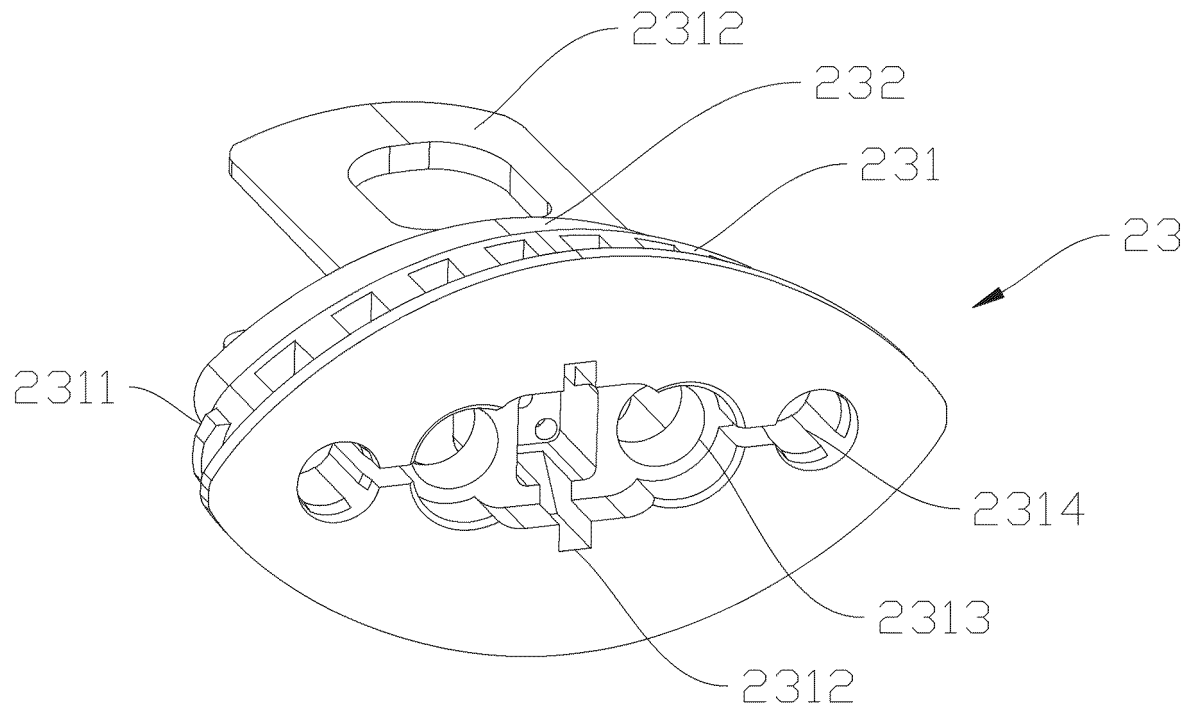


FIG. 9

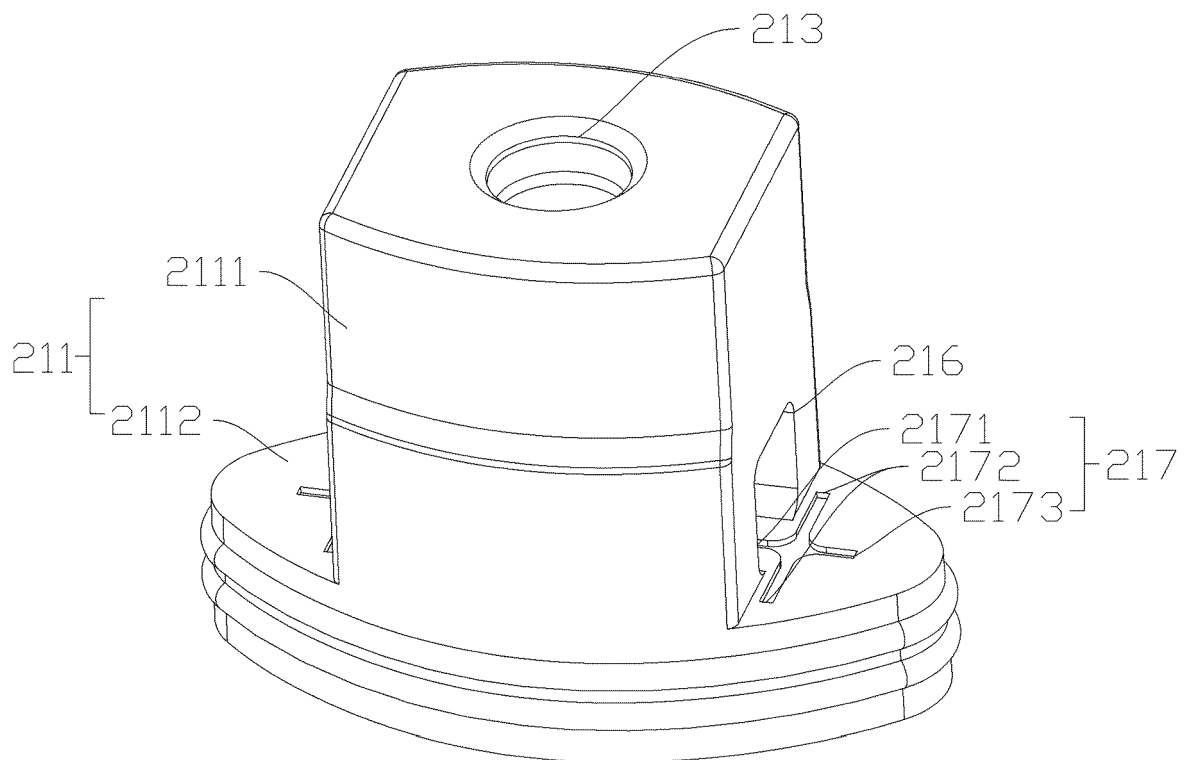


FIG. 10

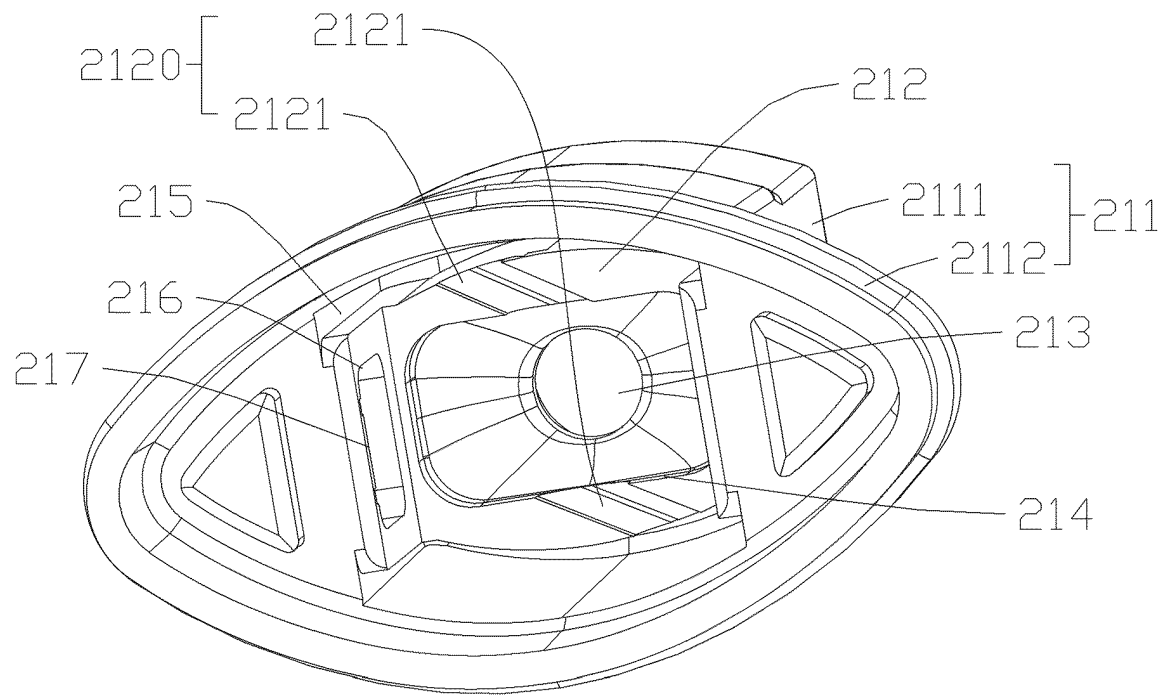


FIG. 11

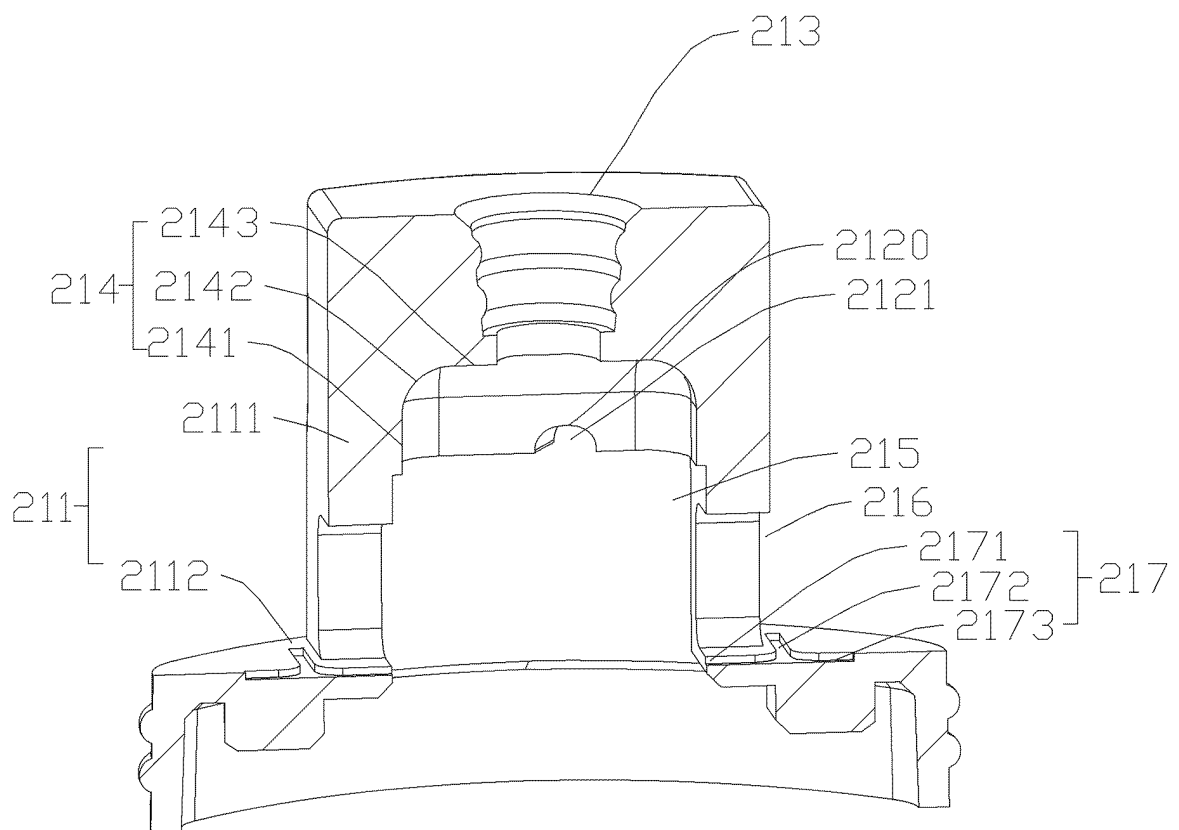


FIG. 12

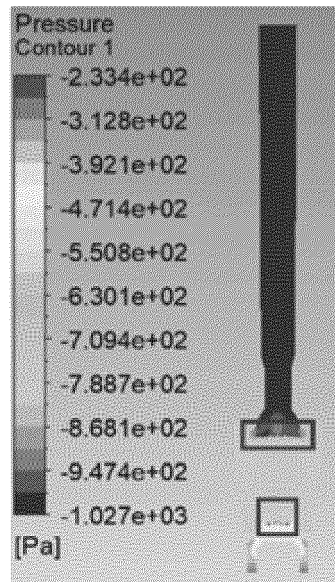


FIG. 13

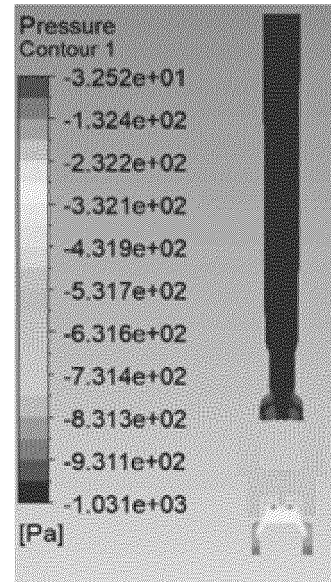


FIG. 14

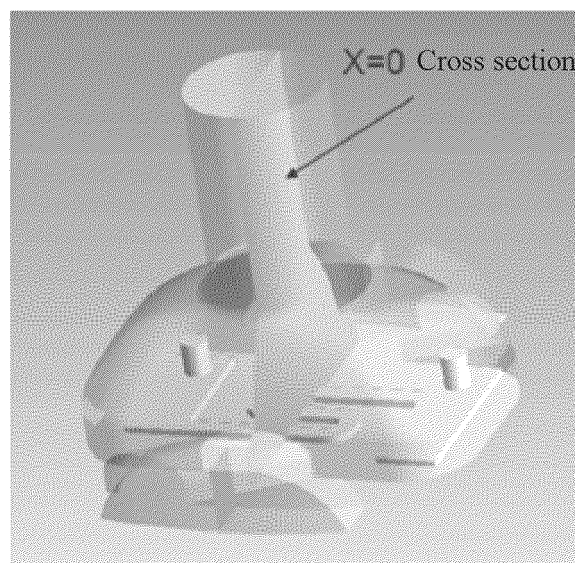


FIG. 15

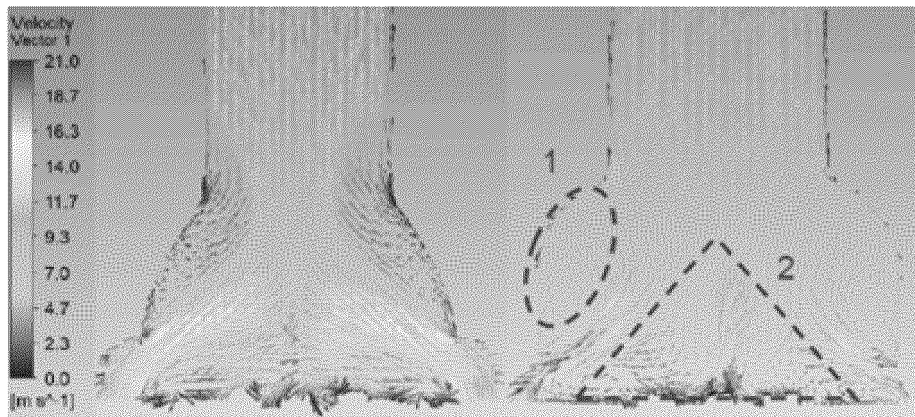


FIG. 16

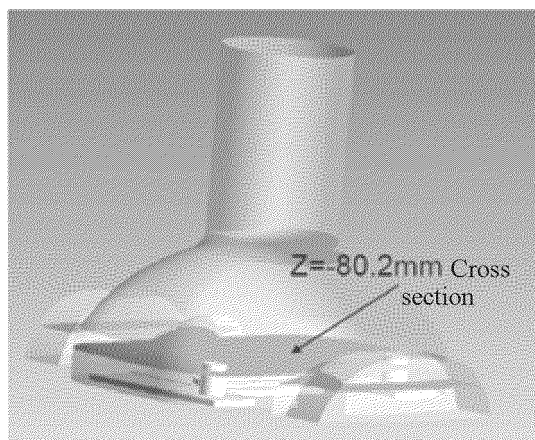


FIG. 17

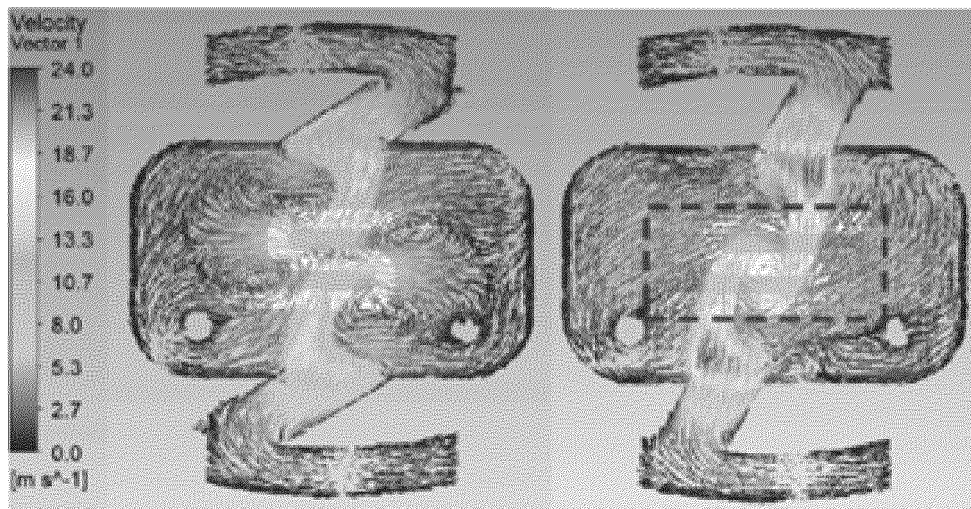


FIG. 18

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/133704

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 40/48(2020.01)i; A24F 40/46(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)

CNABS; CNTXT; VEN; USTXT; EPTXT; WOTXT; CNKI: 深圳麦克韦尔科技有限公司, 雾化, 电子烟, 加热, 发热, 电热, 进气, 出气, 通道, 管道, 管路, 通路, 雾化面, 雾化座, 引导, 引流, 导气, smoking, atomizer, heat+, outlet, channel, airflow, guid+, atomizat+ surface, groove

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 112790434 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 14 May 2021 (2021-05-14) claims 1-21, description paragraphs [0003]-[0086], figures 1-18	1-21
X	CN 210929638 U (CHANGZHOU PAITENG ELECTRONIC TECHNOLOGY SERVICE CO., LTD.) 07 July 2020 (2020-07-07) description, paragraphs [0042]-[0055], and figure 8	1, 2, 7, 20, 21
A	CN 111011932 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 17 April 2020 (2020-04-17) entire document	1-21
A	CN 110623308 A (SHENZHEN SMOORE TECHNOLOGY LIMITED) 31 December 2019 (2019-12-31) entire document	1-21
A	CN 211211432 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 11 August 2020 (2020-08-11) entire document	1-21

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

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search

27 December 2021

Date of mailing of the international search report

09 February 2022

Name and mailing address of the ISA/CN

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100088, China

Facsimile No. (86-10)62019451

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2021/133704

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2021/133704

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		CN 211832827 U	03 November 2020
CN 110623308 A	31 December 2019	CN 211020995 U	17 July 2020
CN 211211432 U	11 August 2020	None	
CN 111466614 A	31 July 2020	EP 3888476 A1	06 October 2021
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		CN 212545544 U	19 February 2021
CN 211482973 U	15 September 2020	WO 2021104390 A1	03 June 2021
CN 209376696 U	13 September 2019	EP 3888479 A1	06 October 2021
		US 2021345670 A1	11 November 2021
		WO 2020108258 A1	04 June 2020

Form PCT/ISA/210 (patent family annex) (January 2015)