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(54) E-LIQUID COLLECTION DRY-BURNING PREVENTION ATOMIZER, AND ELECTRONIC CIGARETTE

(57) An e-liquid collection dry-burning prevention atomizer, and an electronic cigarette. The atomizer comprises a housing (3), a chamber partition wall, a heating core (6), and an e-liquid collection part, an e-liquid storage chamber (301) and a heating chamber (405) being arranged in the housing (3), the chamber partition wall being arranged between the e-liquid storage chamber (301) and the heating chamber (405) and being used for isolating the e-liquid storage chamber (301) from the heating chamber (405), the chamber partition wall being provided with at least one e-liquid inlet hole (401), the heating core (6) being arranged in the heating chamber (405) and being arranged opposite to the e-liquid inlet hole (401), the e-liquid collection part being located in the e-liquid storage chamber (301) and being used for collecting e-liquid to the e-liquid inlet hole (401), and the at least one e-liquid inlet hole (401) leading from the e-liquid collection part to the heating chamber (405). By designing the e-liquid collection part of the atomizer, when the amount of e-liquid in the e-liquid storage chamber (301) does not enable the e-liquid inlet hole (401) to be immersed in the e-liquid, the e-liquid can flow into the e-liquid collection part and is then guided into the heating core (6) from the e-liquid inlet hole (401), thus preventing the heating core (6) from dry burning due to insufficient absorption of e-liquid when the amount of the e-liquid is small.

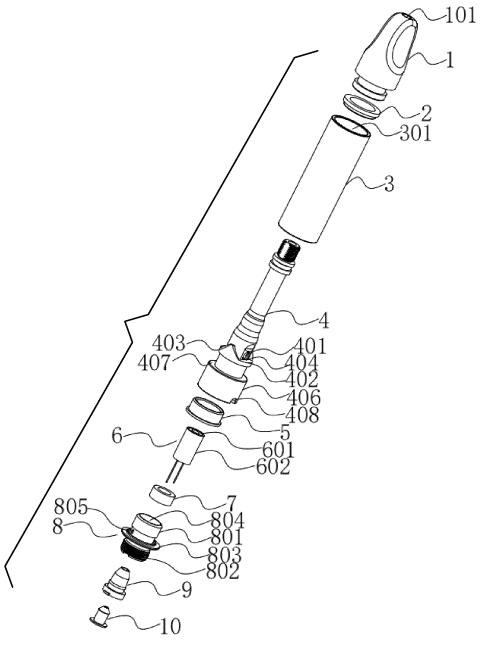

FIG. 1

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Description

[0001] The disclosure relates to the field of electronic cigarette, and more particularly, to an atomizer and an electronic cigarette comprising the same.

[0002] In a conventional atomizer, after use, a small amount of e-liquid often remains on the inner wall and at the bottom of an e-liquid chamber. A relatively large space at the bottom the e-liquid chamber often prevents the e-liquid level from reaching an e-liquid inlet, resulting in insufficient e-liquid being drawn into the heating core. The insufficiency leads to dry burns and a burnt taste during vaping.

[0003] To solve the aforesaid problems, one objective of the disclosure is to provide an atomizer.

[0004] The atomizer comprises a housing, a partition wall, a heating core, and an e-liquid accumulation part; the housing comprises an e-liquid chamber and a heating chamber; the partition wall is disposed between the e-liquid chamber and the heating chamber to separate the e-liquid chamber and the heating chamber; the partition wall comprises at least one e-liquid inlet; the heating core is disposed in the heating chamber and opposite to the at least one e-liquid inlet; the e-liquid accumulation part is disposed in the e-liquid chamber, so that the e-liquid is accumulated and directed to the at least one e-liquid inlet; the e-liquid accumulation part communicates with the heating chamber through the at least one e-liquid inlet.

[0005] In a class of this embodiment, the e-liquid accumulation part comprises a groove and/or a gap; the e-liquid accumulation part and the at least one e-liquid inlet are adjacent to one end of the e-liquid chamber.

[0006] In a class of this embodiment, the e-liquid chamber comprises a first section and a second section connected to the first section; the e-liquid accumulation part is disposed in the second section; the first section has a greater radial cross-sectional area than the e-liquid accumulation part.

[0007] In a class of this embodiment, the e-liquid chamber is defined by an inner wall of the housing and the partition wall; and the partition wall comprises a protrusion extending horizontally into one end of the e-liquid chamber.

[0008] In a class of this embodiment, one end of the protrusion comprises a step structure; the step structure comprises at least one groove functioning as the e-liquid accumulation part; and at least one e-liquid inlet is disposed on the partition wall and opposite to the at least one groove.

[0009] In a class of this embodiment, the protrusion is connected to the inner wall of the housing.

[0010] In a class of this embodiment, a gap is formed between the protrusion and the inner wall of the housing; the at least one e-liquid inlet is disposed on the partition wall and opposite to the gap.

[0011] In a class of this embodiment, the atomizer further comprises an atomizing tube disposed in the housing; the atomizing tube comprises a channel functioning as the heating chamber; the e-liquid chamber is formed between the outer wall of the atomizing tube and the inner wall of the housing; the atomizing tube comprises a sidewall functioning as the partition wall; and the protrusion surrounds the atomizing tube.

[0012] In a class of this embodiment, the heating core comprises an e-liquid absorbent element and a heating element; the e-liquid absorbent element is configured to envelop the outer surface of the heating element and seal the at least one e-liquid inlet.

[0013] In a class of this embodiment, the atomizer further comprises a mouthpiece for smoking; the mouthpiece is disposed at one end of the housing and aligns with the atomizing tube; the atomizer further comprises a first sealing member disposed between the mouthpiece and the housing to seal one end of the e-liquid chamber; the mouthpiece comprises a smoke channel; one end of the atomizing tube is disposed into the smoke channel; and the smoke channel communicates with the heating chamber.

[0014] In a class of this embodiment, the atomizing tube comprises a distal end away from the mouthpiece; the atomizer further comprises a second sealing member disposed between the distal end of the atomizing tube and the housing; the second sealing member is configured to seal the other end of the e-liquid chamber.

[0015] In a class of this embodiment, the distal end of the atomizing tube expands radially and longitudinally extends to form both an air guide tube and a first positioning step; the housing comprises a distal end away from the mouthpiece; the distal end of the housing abuts against the first positioning step; and the outer wall of the air guide tube comprises at least one air inlet.

[0016] In a class of this embodiment, the atomizer further comprises a first conductive connector; the first conductive connector comprises an insert section and a protruding section connected to the insert section; the insert section is disposed inside the air guide tube; the protruding section is disposed outside the air guide tube; a joint of the insert section and the protruding section extends radially to form a second positioning step; the air guide tube comprises a distal end away from the mouthpiece; the distal end of the air guide tube abuts against the second positioning step; an air guide space is defined by the air guide tube, the insert section, and the second positioning step; and the at least one air inlet communicates with the air guide space.

[0017] In a class of this embodiment, the outer wall of the insert section comprises at least one air guide hole communicating with the air guide space; the first conductive connector comprises an air guide channel; the at least one air guide hole communicates with the air guide channel; the air guide channel corresponds to and communicates with the heating chamber.

[0018] In a class of this embodiment, the atomizer further comprises a second conductive connector disposed in the protruding section; the first conductive connector and the second conductive connector are electri-

cally connected to the heating element; the atomizer further comprises an insulating component disposed between the inner wall of the protruding section and the outer wall of the second conductive connector.

[0019] In a class of this embodiment, the atomizer further comprises e-liquid collection cotton disposed within the insert section; the e-liquid collection cotton is configured to absorb condensation escaping from the heating chamber and the e-liquid escaping from the heating core.

[0020] The second objective of the disclosure is to provide an electronic cigarette comprising the atomizer.

[0021] It should be noted that the specification of the disclosure contains a large number of technical features distributed in various technical solutions, and if all possible combinations of technical features (i.e., technical solutions) of the disclosure were to be listed, the specification would be too lengthy. In order to avoid this problem, the technical features disclosed in the above-described inventive content of the disclosure, the technical features disclosed in the following embodiments and examples, and the technical features disclosed in the accompanying drawings may be freely combined with each other to constitute various new technical solutions (which are all deemed to have been recorded in the present specification), unless such combinations of technical features are technically infeasible. feasible. For example, if feature A+B+C is disclosed in one example, and feature A+B+D+E is disclosed in another example, and features C and D are equivalent technical means serving the same function, and technically it is sufficient to use one of them, and it is not possible to use them at the same time, and feature E can be technically combined with feature C, then the scheme of A+B+C+D should not be regarded as having been recorded due to technical infeasibility, and the scheme of A+B+C+E should be regarded as having been recorded because it is technically infeasible, and the scheme of A+B+C+E should be regarded as being technically infeasible. A+B+C+D should not be regarded as having been recorded because it is technically infeasible, while A+B+C+E should be regarded as recorded.

[0022] The following advantages are associated with the disclosure: the disclosed atomizer comprises the e-liquid accumulation part; when the e-liquid level in the e-liquid chamber is below the at least one e-liquid inlet, the e-liquid moves into the e-liquid accumulation part, raising the e-liquid level beyond the at least one e-liquid inlet, ensuring sufficient e-liquid absorption by the heating core and preventing dry burns.

[0023] The disclosure is described in detail below in conjunction with the accompanying drawings in order to make the above advantages of the invention clearer.

FIG. 1 is an exploded view of an atomizer according to Example 1 of the disclosure;

FIG. 2 is a perspective view of an atomizer according to Example 1 of the disclosure;

FIG. 3 is a cross-sectional view of an atomizer according to Example 1 of the disclosure;

FIG. 4 is a cross-sectional view including arrows showing the direction of smoke in an atomizer according to Example 1 of the disclosure; and

FIG. 5 is a cross-sectional view of an atomizer according to Example 2 of the disclosure.

[0024] To further illustrate the disclosure, embodiments detailing the atomizer and the electronic cigarette comprising the same are described below. It should be noted that the following embodiments are intended to describe and not to limit the disclosure.

[0025] As shown in FIGS. 1-5, an atomizer comprises a housing 3, a heating core 6, a partition wall, and an e-liquid accumulation part. The housing 3 comprises an e-liquid chamber 301 and a heating chamber 405; the partition wall is disposed between the e-liquid chamber 301 and the heating chamber 405 to separate the e-liquid chamber 301 and the heating chamber 405. The partition wall comprises at least one e-liquid inlet 401. The heating core 6 is disposed in the heating chamber 405 and opposite to the at least one e-liquid inlet 401. The e-liquid accumulation part is disposed in the e-liquid chamber 301, so that the e-liquid is accumulated and directed to the at least one e-liquid inlet 401. The e-liquid accumulation part communicates with the heating chamber 405 through the at least one e-liquid inlet 401. Notably, when the e-liquid level in the e-liquid chamber 301 is below the at least one e-liquid inlet 401, the e-liquid is directed to the e-liquid accumulation part and then to the heating core 6 through the at least one e-liquid inlet 401, preventing dry burns in the heating core 6, thereby avoiding a burnt taste. The term "partition wall", as use herein, refers to a component that separates the e-liquid chamber 301 and the heating chamber 405.

[0026] The e-liquid accumulation part comprises a groove 404 and/or a gap 410. The e-liquid accumulation part and the at least one e-liquid inlet 401 are disposed adjacent to one end of the e-liquid chamber 301. Notably, the e-liquid accumulation part is in the form of the groove 404, the gap 410, or a combination thereof. Notably, the e-liquid accumulation part and the at least one e-liquid inlet 401 are disposed adjacent to the bottom end of the e-liquid chamber 301, enabling the e-liquid adhering to any part within the e-liquid chamber 301 to flow towards the bottom wall of the e-liquid chamber 301 due to gravity; the e-liquid is then directed to the e-liquid accumulation part and then to the heating core 6 through the at least one e-liquid inlet 401.

[0027] In certain embodiments, the e-liquid chamber 301 comprises a first section and a second section connected to the first section; the e-liquid accumulation part is disposed in the second section; the first section has a

greater radial cross-sectional area than the e-liquid accumulation part. Notably, although the e-liquid level is initially below the at least one e-liquid inlet, a small amount of the e-liquid moves from the first section to the second section, raising the e-liquid level beyond the at least one e-liquid inlet 401, ensuring sufficient e-liquid absorption by the heating core 6 and preventing dry burns.

[0028] Notably, as shown in FIGS. 2-5, the term "longitudinally", as used herein, refer to a longitudinal direction, extending from the top to the bottom or from the bottom to the top of the atomizer; the term "horizontally", as used herein, refer to a direction approximately perpendicular to the "longitudinal" direction; the longitudinal direction and the horizontal direction are not strictly vertical; both orientations broadly fall within the scope of protection of the disclosure.

[0029] In certain embodiments, the e-liquid chamber 301 is defined by the inner wall of the housing 3 and the partition wall; the partition wall comprises a protrusion 402 extending horizontally into one end of the e-liquid chamber 301. Specifically, the e-liquid in the e-liquid chamber 301 is directed to the heating core 6 through the at least one e-liquid inlet 401, and the protrusion 402 functions as the bottom wall of the e-liquid chamber 301.

[0030] In certain embodiments, one end of the protrusion 402 comprises a step structure 403; the step structure 403 comprises at least one groove 404 functioning as the e-liquid accumulation part; and at least one e-liquid inlet 401 is disposed on the partition wall and opposite to the at least one groove 404. Notably, the grooves 404 is U-shaped or a V-shaped.

[0031] The protrusion 402 is connected to the inner wall of the housing 3 to prevent the e-liquid from flowing out from the at least one groove 404.

[0032] In certain embodiments, the gap 410 is formed between the protrusion 402 and the inner wall of the housing 3; the at least one e-liquid inlet 401 is disposed on the partition wall and opposite to the gap 410. Alternatively, the e-liquid accumulation part is in the form of the gap 410.

[0033] In certain embodiments, the atomizer further comprises an atomizing tube 4 disposed in the housing; the atomizing tube 4 comprises a channel functioning as the heating chamber 405; the e-liquid chamber 301 is formed between the outer wall of the atomizing tube 4 and the inner wall of the housing 3; the atomizing tube 4 comprises a sidewall functioning as the partition wall; and the protrusion 402 surrounds the atomizing tube 4. In this embodiment, the interior of the atomizing tube 4 forms the heating chamber 405, and the exterior of the atomizing tube 4 forms the e-liquid chamber 301. The atomizing tube 4 comprises a composite material comprising both ceramic and zirconia. The composite material is eco-friendly, heat-resistant, and resistant to deformation when heated; moreover, the composite material does not corrode when exposed to the e-liquid and does not emit any distinctive odors that could impact the taste of the e-liquid. The housing 3 comprises glass materials, allowing for monitoring of e-liquid consumption. In certain embodiments, only a portion of the sidewall of the atomizing tube 4 functions as the partition wall; the interior of the portion of the sidewall of atomizing tube 4 forms the heating chamber, and the exterior of the portion of the sidewall of the atomizing tube 4 forms the e-liquid chamber.

[0034] In certain embodiments, the heating core 6 comprises an e-liquid absorbent element 602 and a heating element 601. The e-liquid absorbent element 602 is configured to envelop the outer surface of the heating element 601 and seal the at least one e-liquid inlet 401. Understandably, the e-liquid absorbent element 602 comprises porous materials, including but not limited to cotton, e-liquid-absorbing fibers, ceramic, and mica. The e-liquid absorbent element is used to rapidly absorb significant quantities of the e-liquid from the at least one e-liquid inlet 401, ensuring a sufficient supply of the e-liquid to the heating element 601. The heating element 601 comprises conductive materials like metal or carbon-containing materials, such as carbon nanomaterials and graphene; the metal or carbon-containing materials are known for high heat resistance, effective heat transfer capabilities, large heating surface area, and the ability to produce abundant smoke. For example, the e-liquid absorbent element 602 comprises a ceramic core in the shape of a hollow tube; and the heating element 601 is embedded in the hollow tube or disposed on the inner wall of the hollow tube. Alternatively, the e-liquid absorbent element comprises cotton; and the heating element is an electric heating wire disposed within or wound around the cotton. The heating element is not limited to the electric heating wire, can also be in the shape of mesh, tube, or sheet. Alternatively, the e-liquid absorbent element comprises both the ceramic core and the cotton; the ceramic core is in the shape of a hollow tube; the cotton is wound around or disposed inside the ceramic core; and the electric heating wire is disposed in the ceramic core.

[0035] In certain embodiments, the atomizer further comprises a mouthpiece 1 for smoking; the mouthpiece 1 is disposed at one end of the housing 3 and aligns with the atomizing tube 4; the atomizer further comprises a first sealing member 2 disposed between the mouthpiece 1 and the housing 3 to seal one end of the e-liquid chamber 301; the mouthpiece 1 comprises a smoke channel 101; one end of the atomizing tube 4 is disposed into the smoke channel 101; the smoke channel 101 communicates with the heating chamber 405. Notably, the smoke generated by vaporizing the e-liquid flows from the heating chamber 405 into the smoke channel 101 and is inhaled through the mouthpiece 1; the mouthpiece 1 comprises a composite material comprising both ceramic and zirconia, offering effective insulation to prevent burns during smoking. The design ensures that the smoke remains free from any unusual odors when passing through the mouthpiece 1.

[0036] In certain embodiments, the atomizing tube 4 comprises a distal end away from the mouthpiece; the atomizer further comprises a second sealing member 5 disposed between the distal end of the atomizing tube 4 and the housing; the second sealing member is configured to seal the other end of the e-liquid chamber 30. Both the first sealing member 2 and the second sealing member 5 comprise materials such as silicone, rubber, or latex; and the materials exhibit a substantial deformation coefficient, ensuring an effective seal while maintaining flexibility for convenient assembly.

[0037] In certain embodiments, the atomizer further comprises an air guide tube 406 and a first positioning step 407; the distal end of the atomizing tube 4 expands radially and longitudinally extends to form both the air guide tube 406 and the first positioning step 407; the housing 3 comprises a distal end away from the mouthpiece 1; the distal end of the housing 3 abuts against the first positioning step 407; the outer wall of the air guide tube 406 comprises at least one air inlet 408; the first positioning step 407 is used to control the insertion depth of the atomizing tube 4 into the housing 3, preventing excessive insertion. The at least one air inlet 408 communicates with the external environment, allowing for the intake of air.

[0038] In certain embodiments, the atomizer further comprises a first conductive connector 8; the first conductive connector 8 comprises an insert section 801 and a protruding section 802 connected to the insert section 801; the insert section 801 is disposed inside the air guide tube 406; the protruding section 802 is disposed outside the air guide tube 406; a joint of the insert section 801 and the protruding section 802 extends radially to form a second positioning step 803; the air guide tube 406 comprises a distal end away from the mouthpiece 1; the distal end of the air guide tube 406 abuts against the second positioning step 803; an air guide space is defined by the air guide tube 406, the insert section 801, and the second positioning step 803; the at least one air inlet 408 communicates with the air guide space 409; and the second positioning step 803 is used to control the insertion depth of the insert section 801 into the air guide tube 406, preventing excessive insertion.

[0039] The outer wall of the insert section 801 comprises at least one air guide hole 805 communicating with the air guide space 409; the first conductive connector 8 further comprises an air guide channel 804; the at least one air guide hole 805 communicates with the air guide channel 804; the air guide channel 804 corresponds to and communicates with the heating chamber 405. Notably, when in use, external airflow is drawn into the air guide space 409 via the at least one air inlet 408, and then passes through the at least one air guide hole 805, entering the air guide channel 804; ultimately, the airflow reaches the heating chamber 405; in the heating chamber 405, the heating element 601 heats the e-liquid, producing smoke; the smoke then flows through the heating chamber 405, entering the smoke channel 101, and is inhaled through the mouthpiece 1.

[0040] The atomizer further comprises a second conductive connector 10 disposed in the protruding section 802; the first conductive connector 8 and the second conductive connector 10 are electrically connected to the heating element 601; the atomizer further comprises an insulating component 9 disposed between the inner wall of the protruding section 802 and the outer wall of the second conductive connector 10. Both the first conductive connector 8 and the second conductive connector 10 comprise conductive metal materials, including but not limited to gold, silver, copper, iron, and zinc. The insulating component 9 is used to insulate the first conductive connector 8 and the second conductive connector 10, preventing short circuit.

[0041] The atomizer further comprises e-liquid collection cotton 7 disposed within the insert section 801; the e-liquid collection cotton is configured to absorb condensation escaping from the heating chamber 406 and the e-liquid escaping from the heating core 6.

Example 1

[0042] As shown in FIGS. 1-3, an atomizer comprises a mouthpiece 1, a first sealing member 2, a housing 3, an atomizing tube 4, a second sealing member 5, a heating core 6, e-liquid collection cotton 7, a first conductive connector 8, an insulating component 9, and a second conductive connector 10. The atomizing tube 4 is disposed within the housing 3. A space between the atomizing tube 4 and the housing 3 forms an e-liquid chamber 301 for holding the e-liquid. The atomizing tube 4 comprises a heating chamber 405. The heating core 6 is disposed in the heating chamber 405. The outer wall of the atomizing tube 4 comprises two e-liquid inlets 401. The two e-liquid inlets are aligned with the heating core 6 and allow the e-liquid to be drawn in. The heating core 6 comprises an e-liquid absorbent element 602 and a heating element 601. The e-liquid absorbent element 602 is configured to envelop the outer surface of the heating element 601 and absorb the e-liquid efficiently. The e-liquid absorbent element 602 further seals the two e-liquid inlets 401 to directly absorb the e-liquid from the two e-liquid inlets 401. The lower end of the mouthpiece 1 is inserted into the top part of the housing 3, and sleeved by the first sealing member 2. The first sealing member 2 is used to seal the top end of the e-liquid channel 301. The mouthpiece 1 is aligned with the atomizing tube 4. The upper end of the mouthpiece 1 comprises a smoke channel. The upper end of the atomizing tube 4 is disposed into the smoke channel 101. The smoke channel 101 communicates with the heating chamber 405. The smoke vaporized by the heating core 6 is directed into the smoke channel 101 through the heating chamber 405, and then inhaled through the mouthpiece 1. The outer wall of atomizing tube 4 extends radially outward to form a protrusion 402. The protrusion 402 functions as the bottom wall of the liquid chamber 301. The top part of the

protrusion 402 extends into the e-liquid chamber 301 to form a step structure 403. The step structure 403 comprises two grooves 404. The two e-liquid inlets 401 are aligned to and communicate with the two grooves 404, respectively. When the e-liquid level in the e-liquid chamber 301 is below the two e-liquid inlets 401, the e-liquid is directed to the two grooves 404 and then to the heating core 6 through the two e-liquid inlets 401, preventing dry burns in the heating core 6, thereby avoiding a burnt taste. The second sealing member 5 is disposed between the atomizing tube 4 and the housing 3 to seal the bottom part of the liquid chamber 301. The lower end of the atomizing tube 4 expands radially and extends longitudinally to form both an air guide tube 406 and a first positioning step 407. The bottom part of the housing 3 abuts against the first positioning step 407. The first positioning step 407 is used to control the insertion depth of the atomizing tube 4 into the housing 3, preventing excessive insertion. The outer wall of the air guide tube 406 comprises an air inlet 408. The first conductive connector 8 comprises an insert section 801 and a protruding section 802 connected to the insert section 801. The insert section 801 is inserted into the air guide tube 406. The protruding section 802 is disposed outside the air guide tube 406. A joint of the insert section 801 and the protruding section 802 extends radially to form a second positioning step 803. The bottom part of the air guide tube 406 abuts against the second positioning step 803. The second positioning step 803 is used to control the insertion depth of the insert section 801 into the air guide tube 406, preventing excessive insertion. An air guide space is defined by the air guide tube 406, the insert section 801, and the second positioning step 803. The air inlet 408 communicates with the air guide space 409. The outer wall of the insert section 801 comprises an air guide hole 805 communicating with the air guide space 409. The first conductive connector 8 further comprises an air guide channel 804. The air guide hole 805 communicates with the air guide channel 804. The air guide channel 804 corresponds to and communicates with the heating chamber 405. When in use, external airflow is drawn into the air guide space 409 via the at least one air inlet 408, and then reaches the heating chamber 405; in the heating chamber 405, the heating element 601 heats the e-liquid, producing smoke; the smoke then flows through the heating chamber 405, entering the smoke channel 101, and is inhaled through the mouthpiece 1. The second conductive connector 10 is disposed in the air guide channel 804. The first conductive connector 8 and the second conductive connector 10 are electrically connected to the heating element 601, so as to provide electrical power to the heating element 601. The insulating component 9 is disposed between the inner wall of the protruding section 802 and the outer wall of the second conductive connector 10 to prevent short-circuiting of the heating core 6. The e-liquid collection cotton 7 is disposed within the air guide channel 804. The e-liquid collection cotton is configured to absorb both condensation escaping from the heating chamber 406 and the e-liquid escaping from the heating core 6.

[0043] FIG. 4 is a cross-sectional view including arrows showing the direction of smoke in the atomizer of the disclosure. When in use, external airflow is drawn into the air guide space 409 via the at least one air inlet 408, and then passes through the air guide hole 805, entering the air guide channel 804; ultimately, the airflow reaches the heating chamber 405; in the heating chamber 405, the heating element 601 heats the e-liquid, producing smoke. The smoke then flows through the heating chamber 405, entering the smoke channel 101, and is inhaled through the mouthpiece 1.

Example 2

[0044] In contrast to Example 1, as shown in FIG. 5, the outer wall of atomizing tube 4 extends radially outward to form the protrusion 402; the bottom part of the protrusion 402 is connected to the inner wall of the housing 3; the gap 410 is formed between the outer wall of the protrusion 402 and the inner wall of the housing 3; the gap 410 corresponds to and communicates with the two e-liquid inlets 401. When the e-liquid level in the e-liquid chamber 301 is below the two e-liquid inlets 401, the e-liquid moves into the gap 410, raising the e-liquid level beyond the two e-liquid inlets 401, ensuring sufficient e-liquid absorption by the heating core 6 and preventing dry burns.

[0045] An electronic cigarette comprises the atomizer of any one of Examples of the disclosure.

[0046] It will be obvious to those skilled in the art that changes and modifications may be made, and therefore, the aim in the appended claims is to cover all such changes and modifications.

Claims

1. An atomizer, comprising:

a housing comprising an e-liquid chamber and a heating chamber;

a partition wall, the partition wall being disposed in the housing to separate the housing into the e-liquid chamber and the heating chamber, and the partition wall comprising at least one e-liquid inlet;

a heating core, the heating core being disposed in the heating chamber and opposite to the at least one e-liquid inlet; and

an e-liquid accumulation part, the e-liquid accumulation part being disposed in the e-liquid chamber to collect and direct e-liquid to the at least one e-liquid inlet; and the e-liquid accumulation part communicating with the heating chamber through the at least one e-liquid inlet.

2. The atomizer of claim 1, wherein the e-liquid accumulation part comprises a groove and/or a gap; the e-liquid accumulation part and the at least one e-liquid inlet are adjacent to one end of the e-liquid chamber.

3. The atomizer of claim 2, wherein the e-liquid chamber comprises a first section and a second section connected to the first section; the e-liquid accumulation part is disposed in the second section; the first section has a greater radial cross-sectional area than the e-liquid accumulation part.

4. The atomizer of claim 3, wherein the e-liquid chamber is defined by an inner wall of the housing and the partition wall; and the partition wall comprises a protrusion extending horizontally into one end of the e-liquid chamber.

5. The atomizer of claim 4, wherein one end of the protrusion comprises a step structure; the step structure comprises at least one groove functioning as the e-liquid accumulation part; and at least one e-liquid inlet is disposed on the partition wall and opposite to the at least one groove.

6. The atomizer of claim 5, wherein the protrusion is connected to the inner wall of the housing.

7. The atomizer of claim 4, wherein a gap is formed between the protrusion and the inner wall of the housing; the at least one e-liquid inlet is disposed on the partition wall and opposite to the gap.

8. The atomizer of claim 4, wherein the atomizer further comprises an atomizing tube disposed in the housing; the atomizing tube comprises a channel functioning as the heating chamber; the e-liquid chamber is formed between the outer wall of the atomizing tube and the inner wall of the housing; the atomizing tube comprises a sidewall functioning as the partition wall; and the protrusion surrounds the atomizing tube.

9. The atomizer of claim 8, wherein the heating core comprises an e-liquid absorbent element and a heating element; the e-liquid absorbent element is configured to envelop an outer surface of the heating element and seal the at least one e-liquid inlet.

10. The atomizer of claim 9, wherein the atomizer further comprises a mouthpiece for smoking; the mouthpiece is disposed at one end of the housing and aligns with the atomizing tube; the atomizer further comprises a first sealing member disposed between the mouthpiece and the housing to seal one end of the e-liquid chamber; the mouthpiece comprises a smoke channel; one end of the atomizing tube is disposed into the smoke channel; and the smoke channel communicates with the heating chamber.

11. The atomizer of claim 10, wherein the atomizing tube comprises a distal end away from the mouthpiece; the atomizer further comprises a second sealing member disposed between the distal end of the atomizing tube and the housing; and the second sealing member is configured to seal the other end of the e-liquid chamber.

12. The atomizer of claim 10, wherein the distal end of the atomizing tube expands radially and longitudinally extends to form both an air guide tube and a first positioning step; the housing comprises a distal end away from the mouthpiece; the distal end of the housing abuts against the first positioning step; and an outer wall of the air guide tube comprises at least one air inlet.

13. The atomizer of claim 12, wherein:

the atomizer further comprises a first conductive connector; the first conductive connector comprises an insert section and a protruding section connected to the insert section; the insert section is disposed inside the air guide tube; the protruding section is disposed outside the air guide tube; a joint of the insert section and the protruding section extends radially to form a second positioning step; the air guide tube comprises a distal end away from the mouthpiece; the distal end of the air guide tube abuts against the second positioning step; an air guide space is defined by the air guide tube, the insert section, and the second positioning step; and the at least one air inlet communicates with the air guide space;

an outer wall of the insert section comprises at least one air guide hole communicating with the air guide space; the first conductive connector comprises an air guide channel; the at least one air guide hole communicates with the air guide channel; the air guide channel corresponds to and communicates with the heating chamber;

the atomizer further comprises a second conductive connector disposed in the protruding section; the first conductive connector and the second conductive connector are electrically connected to the heating element; the atomizer further comprises an insulating component disposed between an inner wall of the protruding section and an outer wall of the second conductive connector; and

the atomizer further comprises e-liquid collection cotton disposed within the insert section; the e-liquid collection cotton is configured to absorb condensation escaping from the heating cham-

ber and e-liquid escaping from the heating core.

14. An electronic cigarette, comprising the atomizer of any one of claims 1-13.

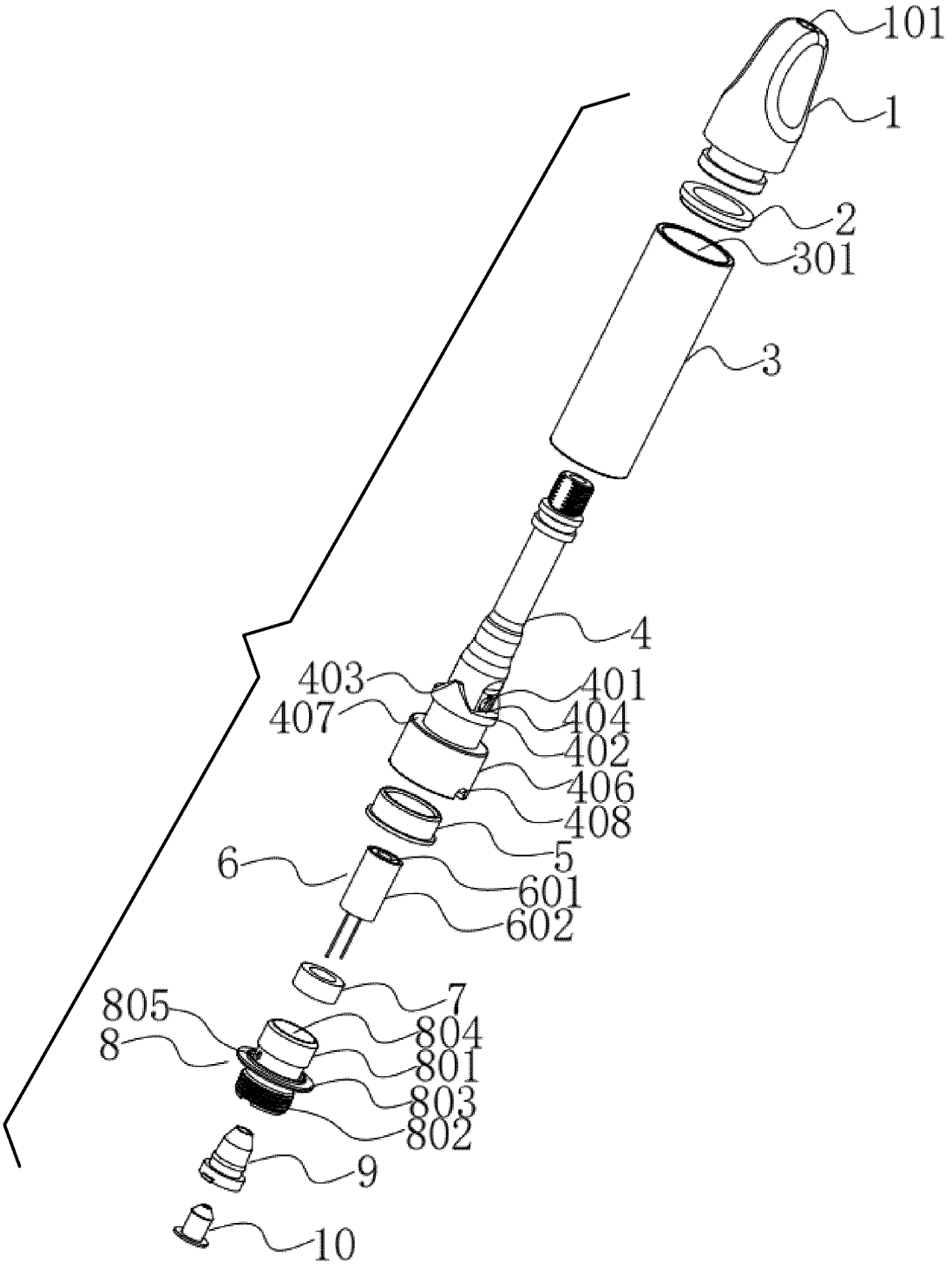
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FIG. 1

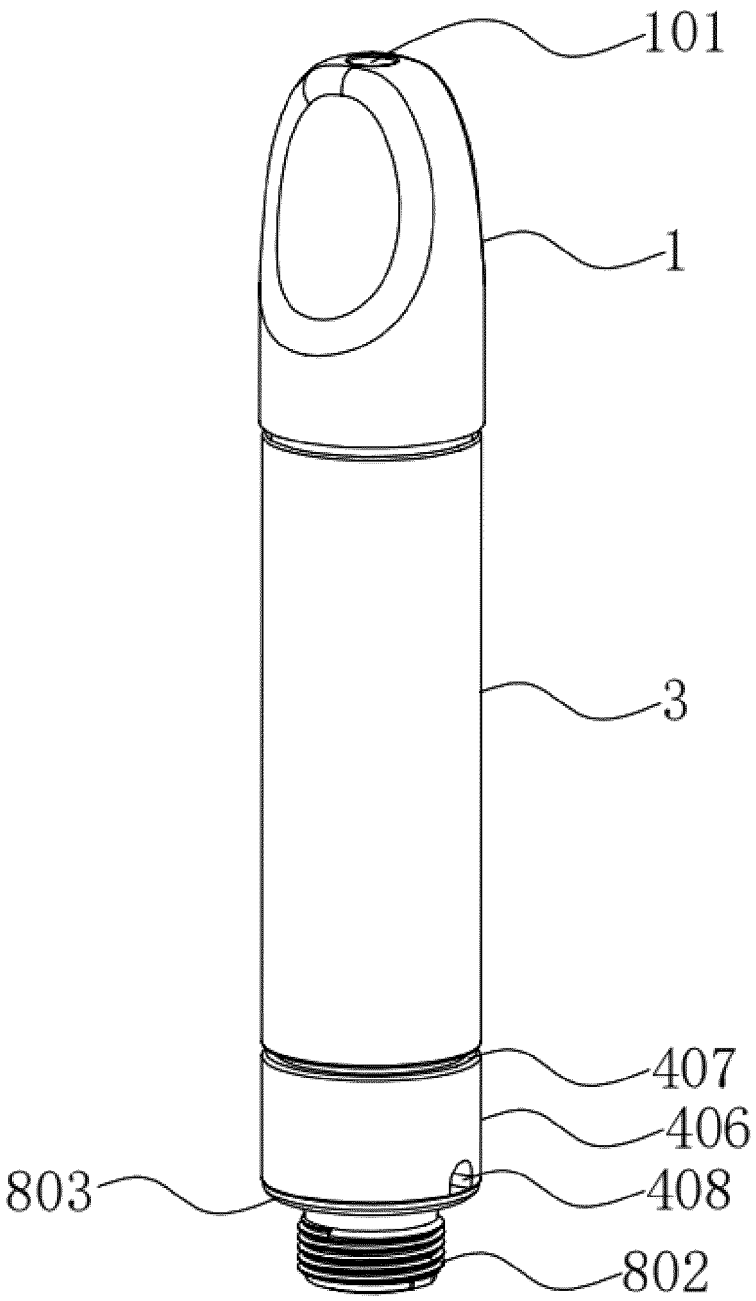

FIG. 2

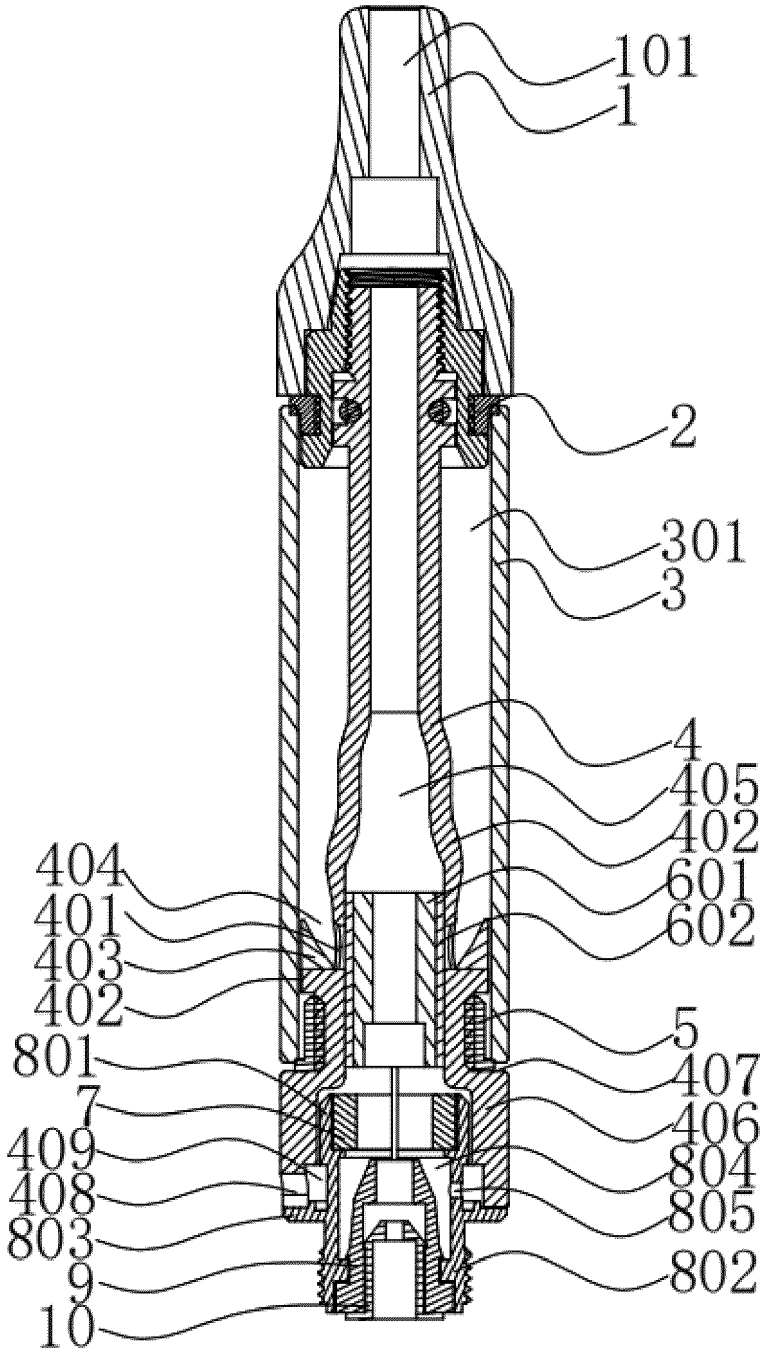
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FIG. 3

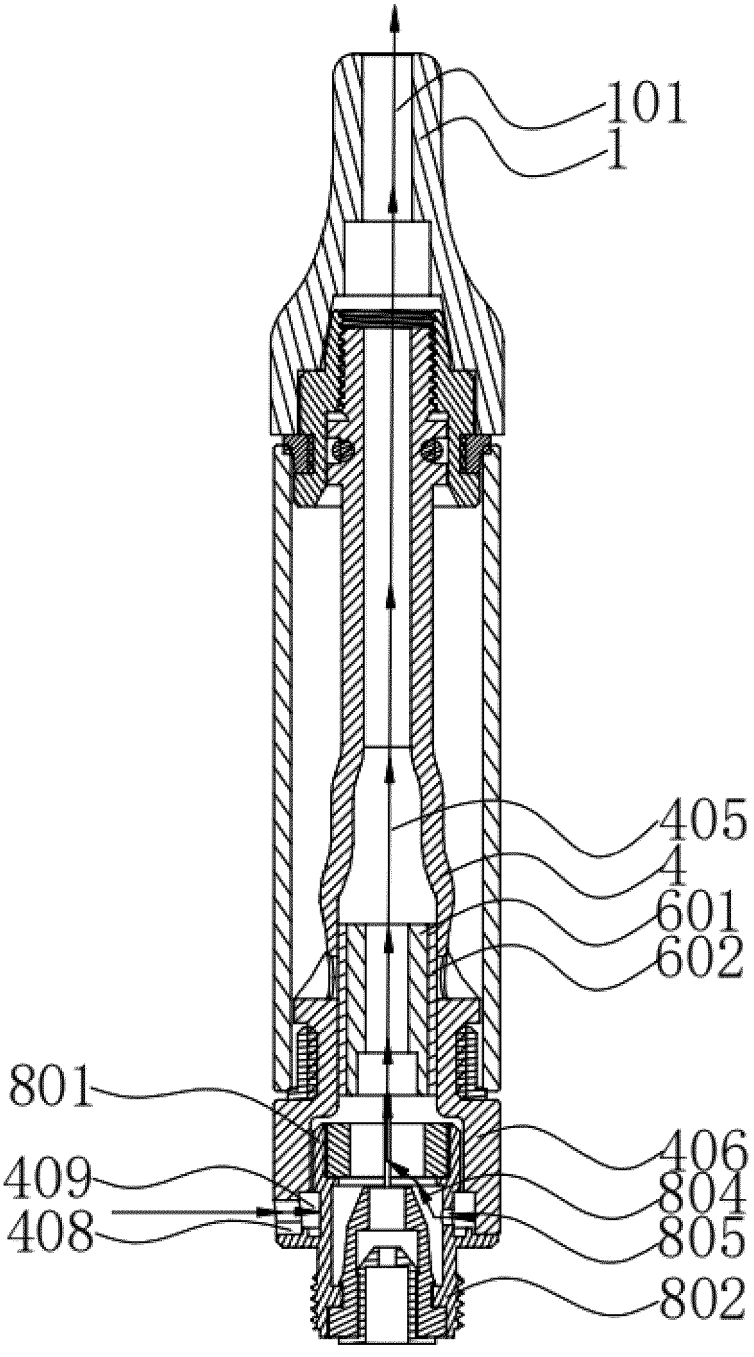

FIG. 4

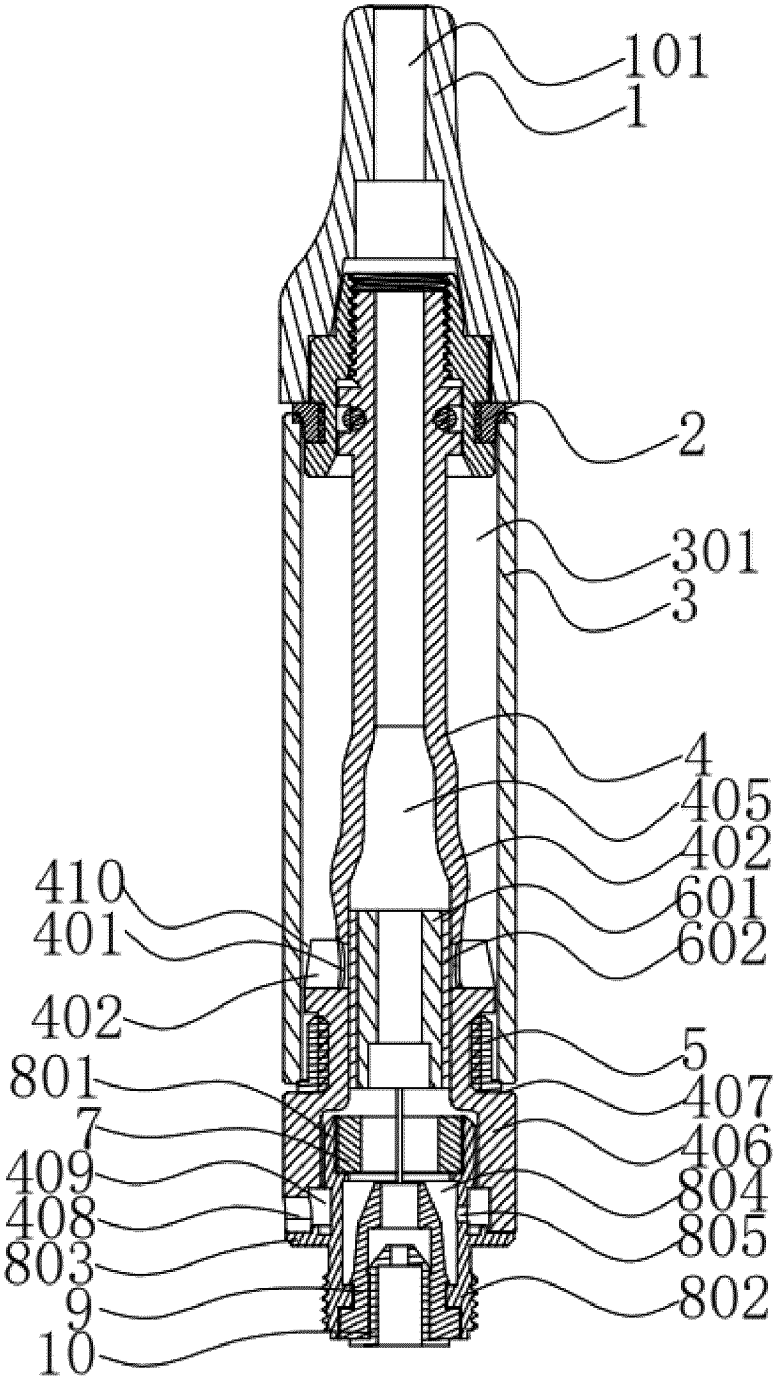
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FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/074375

A. CLASSIFICATION OF SUBJECT MATTER

A24F40/42(2020.01)i;A24F40/10(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)

IPC:A24F40/-; A61M11/-

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, ENTXT, ENTXTC, VEN, USTXT, JPTXT, EPTXT, WOTXT, CNKI, 万方, WANFANG, 百度, BAIDU, IEEE: 刘团芳, 迪斯卓越, 残留, 储油腔, 储油室, 导流, 道, 底, 干烧, 痕量, 积油, 间隙, 较少, 截面, 孔, 浪费, 利用率, 面积, 腔, 少量, 剩余, 室, 缩小, 筒, 凸, 突起, 斜, 烟液, 引导, 引流, 油窄, gateway, inlet, porch, guid+, lead+, drainag+, entran+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 114424839 A (LIU TUANFANG) 03 May 2022 (2022-05-03) claims 1-14	1-14
X	CN 111544714 A (SHENZHEN CITY SHIKAI TECHNOLOGY CO., LTD.) 18 August 2020 (2020-08-18) description, paragraphs [0044]-[0056], and figures 1-13	1-9, 14
X	CN 112021658 A (SHENZHEN WOODY VAPES TECHNOLOGY CO., LTD.) 04 December 2020 (2020-12-04) description, paragraphs [0036]-[0058], and figures 1-3	1-9, 14
Y	CN 111544714 A (SHENZHEN CITY SHIKAI TECHNOLOGY CO., LTD.) 18 August 2020 (2020-08-18) description, paragraphs [0044]-[0056], and figures 1-13	10-13
Y	CN 112021658 A (SHENZHEN WOODY VAPES TECHNOLOGY CO., LTD.) 04 December 2020 (2020-12-04) description, paragraphs [0036]-[0058], and figures 1-3	10-13

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

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"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
"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
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
05 May 2023	**30 May 2023**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/074375

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	CN 211532792 U (CHEN YONGLI) 22 September 2020 (2020-09-22) entire document	1-14
A	CN 212971657 U (CHINA TOBACCO HUNAN INDUSTRIAL CO., LTD.) 16 April 2021 (2021-04-16) entire document	1-14
A	US 2020037670 A1 (MAGNA FLUX CORP.) 06 February 2020 (2020-02-06) entire document	1-14

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2023/074375

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CN 114424839 A	03 May 2022	None	
CN 111544714 A	18 August 2020	CN 212282439 U	18 August 2020
		US 10945455 B1	16 March 2021
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CN 212971657 U	16 April 2021	None	
US 2020037670 A1	06 February 2020	WO 2020028800 A1	06 February 2020
		WO 2020028800 A9	02 April 2020

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