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(54) **ELECTRONIC CIGARETTE CONNECTION BASE AND ELECTRONIC CIGARETTE ATOMIZATION DEVICE**

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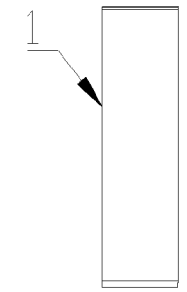
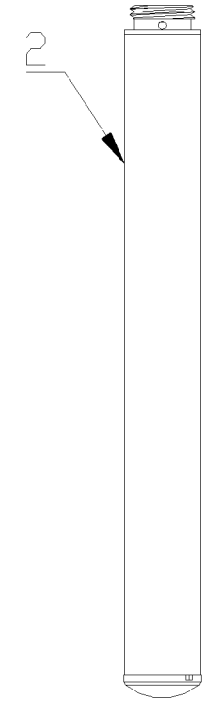
(57) **ABSTRACT**

An electronic cigarette connection base and an electronic cigarette atomization device are provided; the connection base comprises a top cover; a side wall formed around an edge of the top cover; the side wall defining a filling groove around an outer surface of the side wall; and the filling groove filled with seal filler.





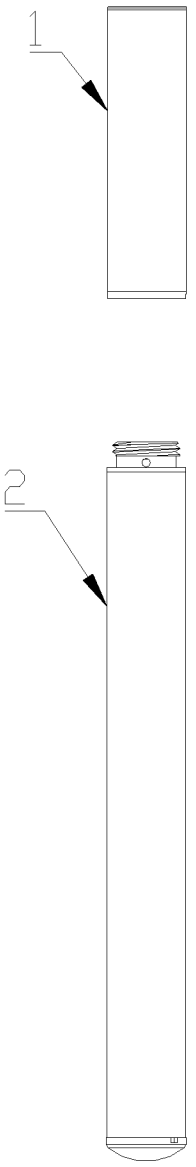


FIG. 1

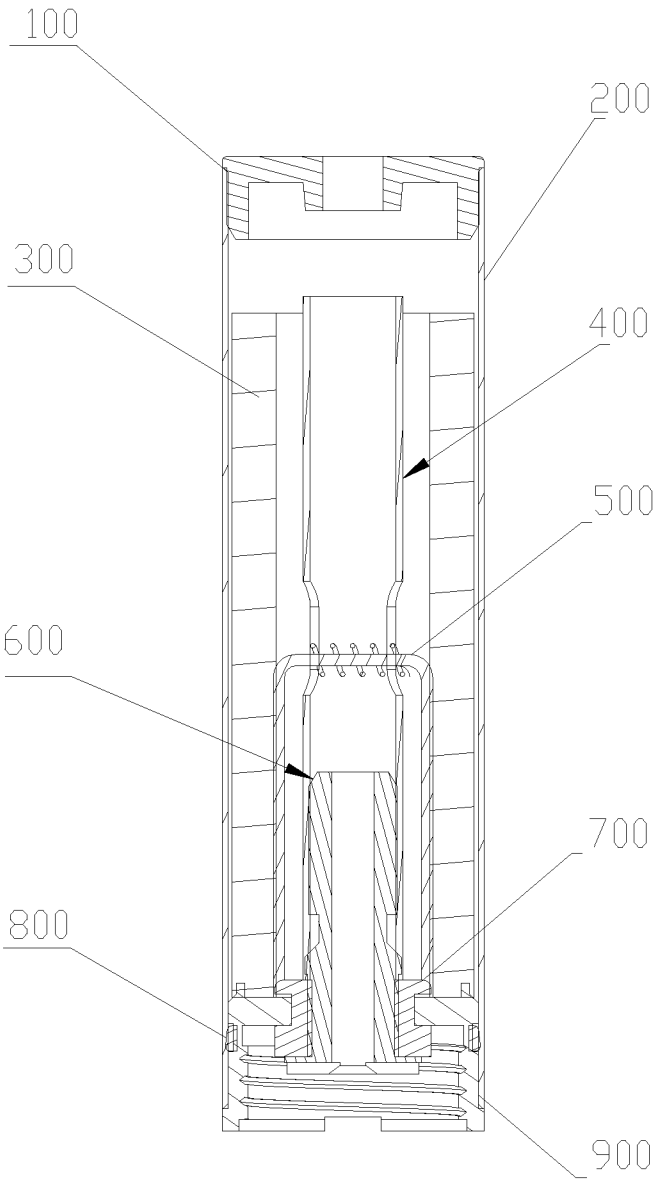


FIG. 2

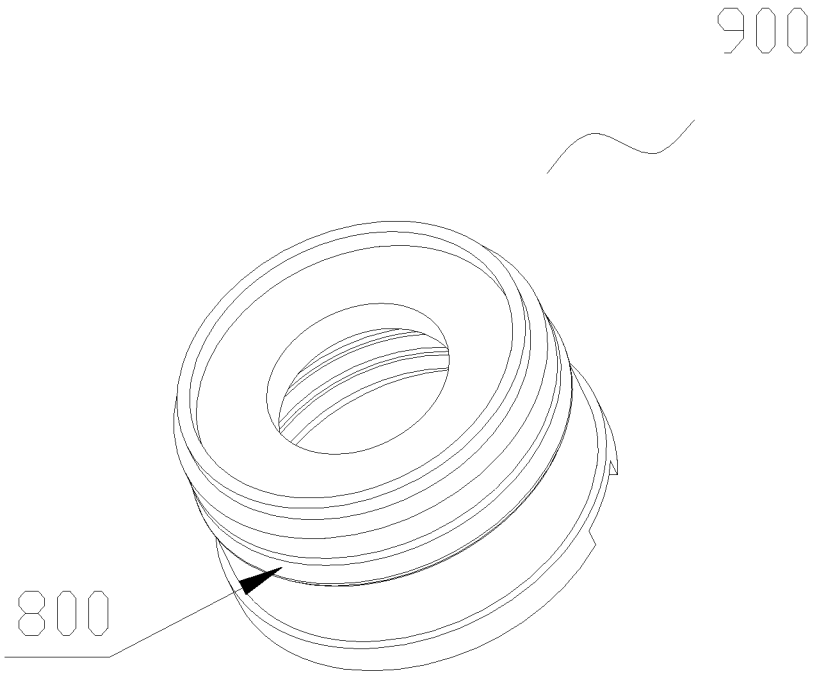


FIG. 3

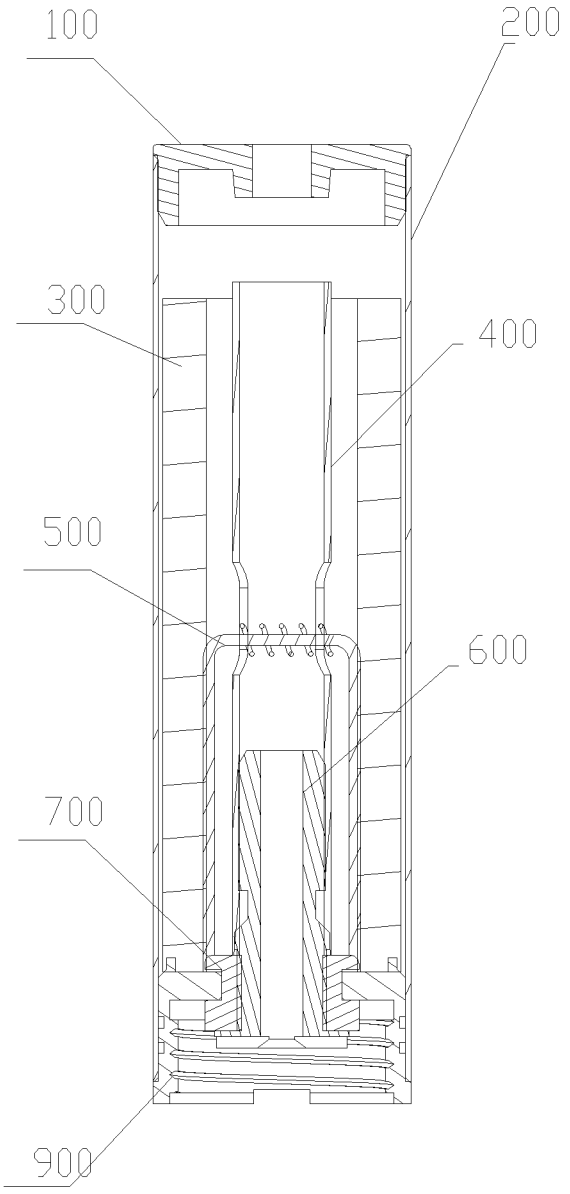


FIG. 4

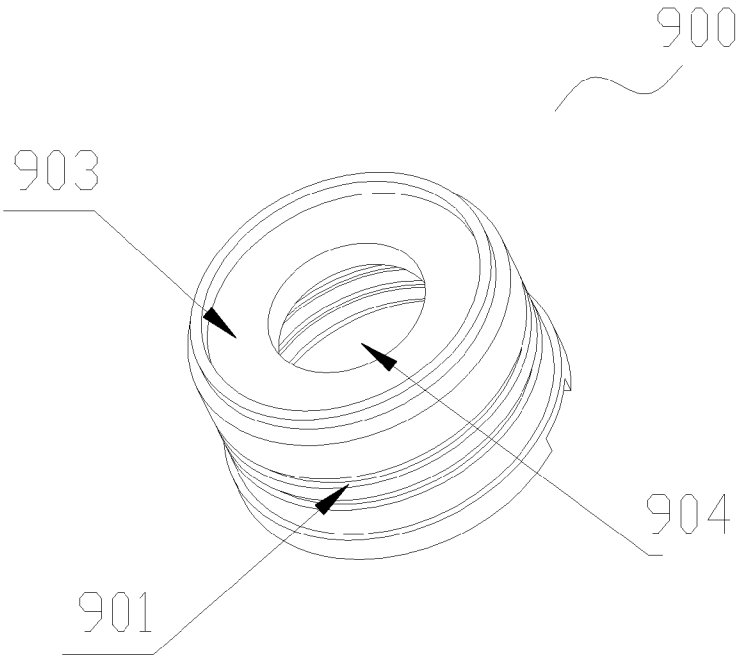


FIG. 5a

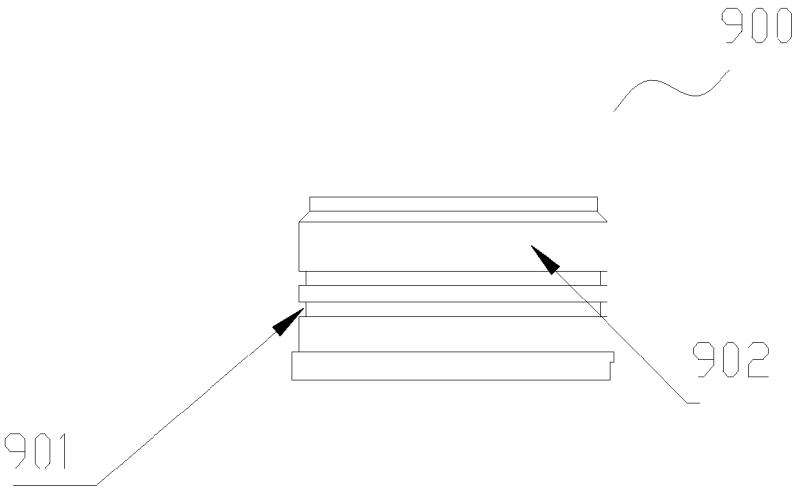


FIG. 5b

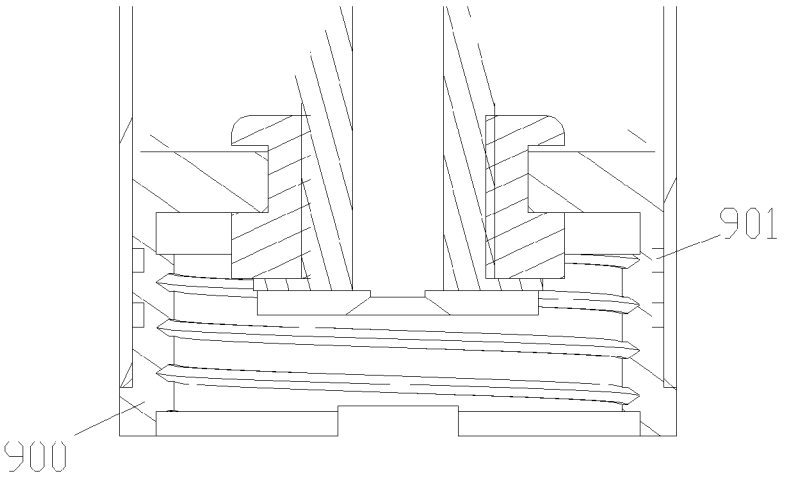


FIG. 6

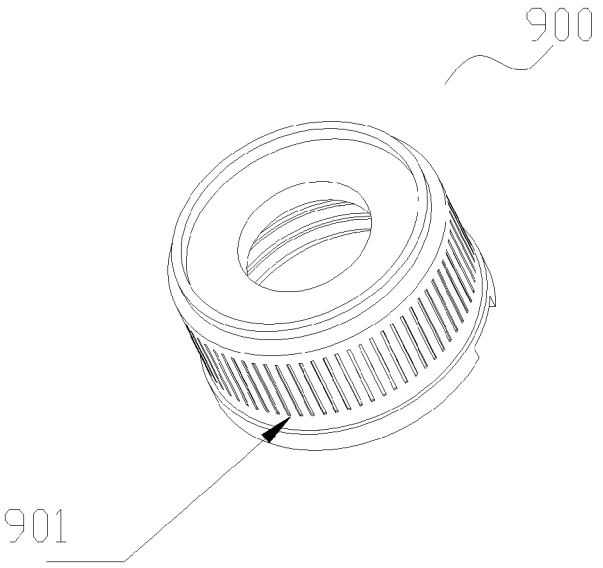


FIG. 7

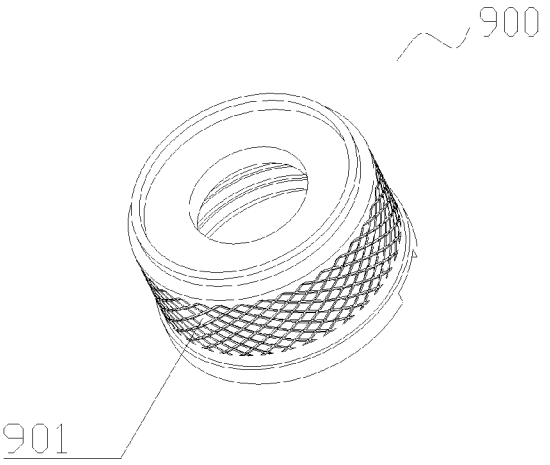


FIG. 8

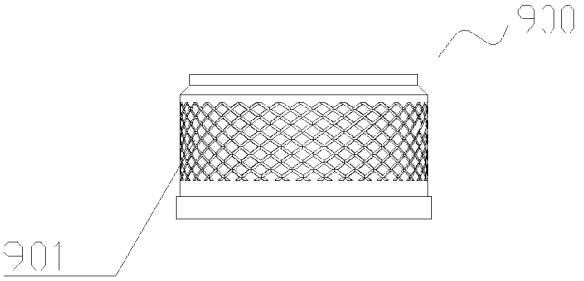


FIG. 9

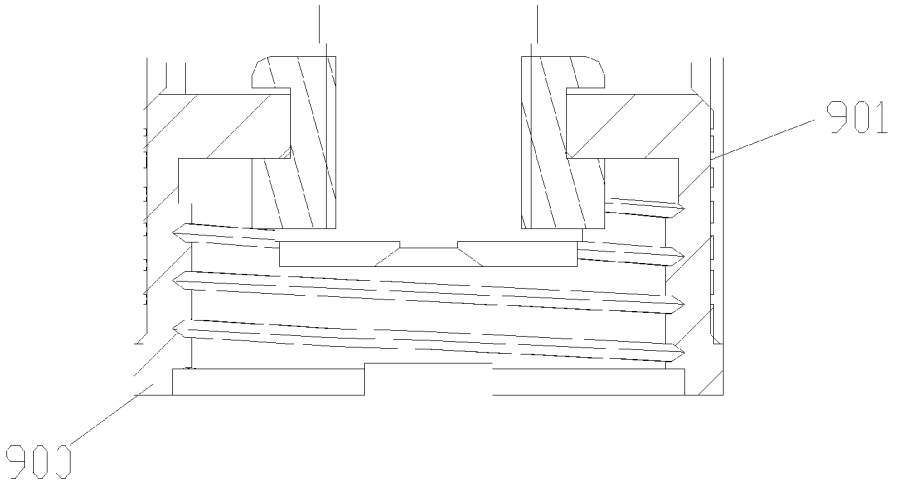


FIG. 10

ELECTRONIC CIGARETTE CONNECTION BASE AND ELECTRONIC CIGARETTE ATOMIZATION DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of International Patent Application No. PCT/CN2013/075330, with an international filing date of May 8, 2013, designating the United States, now pending. The contents of these specifications are incorporated herein by reference.

TECHNICAL FIELD

[0002] The present invention relates to the field of electrical cigarette technology, and more particularly, relates to an electronic cigarette connection base and an electronic cigarette atomization device.

BACKGROUND

[0003] An electronic cigarette is an electronic product that uses heating wires to heat and atomize tobacco juice, and is configured to provide a kind of substitute of cigarettes for smokers. Heated tobacco juice becomes smoke, flows through a breather tube, and flows out of the electronic cigarette from an opening of a nozzle cover. As shown in FIGS. **1-3**, an electronic cigarette generally comprises an atomization device (**1**) and a battery rod device (**2**), and the atomization device (**1**) is connected with the battery rod device (**2**) by a connection base (**900**). For achieving good sealing effect, a seal ring (**800**) is mounted between the connection base (**900**) and an outer wall of the electronic cigarette to prevent smoke oil from leaking via a gap formed between the connection base (**900**) and the outer wall.

[0004] However, in the aforementioned assembly method, the electronic cigarette may need to make a new type of mould, an assembly process of the electronic cigarette is complicated, a production efficiency of the electronic cigarette is low, and a sealing effect of the electronic cigarette is bad.

BRIEF SUMMARY

[0005] Since the existing sealing method and the assembly process of the connection base of the electronic cigarette are complicated, the production efficiency of the electronic cigarette is low, and the sealing effect of the electronic cigarette is bad, the objective of the present invention is to provide an electronic cigarette connection base and an electronic cigarette atomization device, to solve the technical problem mentioned above.

[0006] The technical solutions of the present invention for solving the technical problems are as follows:

[0007] An electronic cigarette connection base is provided, which comprises a top cover, and a side wall formed around an edge of the top cover; the top cover defining a through-hole, and the side wall defining at least one filling groove around an outer surface of the side wall; and the filling groove filled with seal filler.

[0008] According to the electronic cigarette connection base, the seal filler is adhesive.

[0009] According to the electronic cigarette connection base, the filling groove is an annular groove formed around a periphery surface of the side wall.

[0010] According to the electronic cigarette connection base, the filling groove includes a plurality of annular grooves formed around a periphery surface of the side wall, and every two adjacent ones of the annular grooves are separated with a distance and are parallel to each other.

[0011] According to the electronic cigarette connection base, the filling groove includes a plurality of straight line grooves, oblique line grooves, wave-shaped grooves or arc grooves, positioned along an axial direction of the periphery surface of the side wall.

[0012] According to the electronic cigarette connection base, the filling groove includes latticed grooves formed on an outside of the side wall.

[0013] An electronic cigarette atomization device is provided, which comprises a nozzle, an oil storage cotton, a fiberglass tube, a heating wire, an upper electrode, and an insulating ring, the elements successively disposed in an atomization outer sleeve; the atomization device further includes an electronic cigarette connection base; the connection base embedded in one end away from the nozzle of the atomization outer sleeve, the outside of the side wall of the connection base fit the inside of the atomization outer sleeve; a side wall defining at least one filling groove around an outer surface of the side wall; and the filling groove filled with seal filler;.

[0014] According to the electronic cigarette atomization device, the seal filler is adhesive.

[0015] According to the electronic cigarette atomization device, the filling groove is an annular groove formed around a periphery surface of the side wall.

[0016] According to the electronic cigarette atomization device, the filling groove includes a plurality of annular grooves formed around a periphery surface of the side wall, and every two adjacent ones of the annular grooves are separated with a distance and are parallel to each other.

[0017] According to the electronic cigarette atomization device, the filling groove includes a plurality of straight line grooves, oblique line grooves, wave-shaped grooves or arc grooves, positioned along an axial direction of the periphery surface of the side wall.

[0018] According to the electronic cigarette atomization device, the filling groove includes latticed grooves formed on an outside of the side wall.

[0019] According to the electronic cigarette atomization device, the upper electrode runs through the insulating ring, the insulating ring is secured in a through-hole defined in a top cover of the connection base, and the connection base is electrically isolated with the upper electrode.

[0020] According to the electronic cigarette atomization device, the fiberglass tube is hollow and positioned inside the atomization outer sleeve, and the oil storage cotton sleeves the fiberglass.

[0021] According to the electronic cigarette atomization device, the connection base is chamfered to help the connection base to be inserted into the atomization outer sleeve.

[0022] According to the electronic cigarette atomization device, the connection base and the atomization outer sleeve form interference fit or engage with each other.

[0023] When implementing the electronic cigarette connection base and the electronic cigarette atomization device of the present invention, users do not need to re-design the connection base and make a new type of mould. When the filling groove is defined in the outer wall of the connection base and glue is filled therein, a good sealing effect can be

achieved. The smoke oil in the oil storage cotton can be prevented from flowing into the battery device. The whole assembly process is simple, and the good products rate is high. Furthermore, the present invention can be used in existing connection bases, and achieve higher applicability.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The present invention will be further described with reference to the accompanying drawings and embodiments in the following, in the accompanying drawings:

[0025] FIG. **1** illustrates a schematic view of an atomization device and a battery rod device of an electronic cigarette;

[0026] FIG. **2** illustrates a cutaway view of a typical electronic cigarette atomization device;

[0027] FIG. **3** illustrates a schematic view of a typical electronic cigarette connection base;

[0028] FIG. **4** illustrates a cutaway view of an electronic cigarette atomization device of the present invention;

[0029] FIG. **5***a* illustrates a schematic view of an electronic cigarette connection base according to a first embodiment of the present invention;

[0030] FIG. **5***b* illustrates a side view of the electronic cigarette connection base according to the first embodiment of the present invention;

[0031] FIG. **6** illustrates a schematic view of the electronic cigarette connection base according to the first embodiment of the present invention mounted on the electronic cigarette atomization device of the present invention;

[0032] FIG. **7** illustrates a schematic view of an electronic cigarette connection base according to a second embodiment of the present invention;

[0033] FIG. **8** illustrates a schematic view of an electronic cigarette connection base according to a third embodiment of the present invention;

[0034] FIG. **9** illustrates a side view of the electronic cigarette connection base according to the third embodiment of the present invention;

[0035] FIG. **10** illustrates a schematic view of the electronic cigarette connection base according to the third embodiment of the present invention mounted on the electronic cigarette atomization device of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0036] The present invention will now be described in detail with reference to the accompanying drawings and embodiments.

[0037] According to the prior art as shown in FIG. **1-3**, an outside of a connection base **900** needs to be sleeved with a flexible glue seal ring **800** to achieve a good sealing effect. However, it is prone to appear a problem that a sealing effect is bad and an assembly is difficult in the aforementioned method during the assembly process. Therefore, the present invention aims at the connection base **900** of an electronic cigarette to improve the connection base **900**.

[0038] FIGS. **4-6** illustrate a first embodiment of the present invention. Wherein, a connection base **900** comprises a top cover **903**, a side wall **902** is formed around an edge of the top cover **903**; the side wall **902** defines a filling groove around an outer surface of the side wall **902**; and the filling groove **901** is filled with seal filler, for example, adhesive, such as different kinds of suitable glue. After filled with glue, the connection base **900** is embedded from the bottom of an atomization outer sleeve **200**, and the outside of the side wall **902** of the connection base **900** is in tight contact with the atomization outer sleeve **200**. In order to make the connection base **900** be in tight contact with the atomization outer sleeve **200**, diameters of the connection base **900** and the atomization outer sleeve **200** should match with each other, and a complete electronic cigarette atomization device is formed in the way of interference fit or engagement. Additionally, the connection base **900** is chamfered, so that the connection base **900** is more easily embedded into the atomization outer sleeve **200**. A through-hole **904** is defined in the top cover **903**. An electrode of the atomization device extends through the through-hole **904**, and connects with a corresponding electrode of the battery rod device. An inside of the side wall **902** of the connection base **900** forms a thread, so that the atomization device **1** is connected with the battery rod device **2** in the way of screwed connection.

[0039] In the first embodiment of the present invention, the filling groove **901** is formed to be an annular groove around the outside of the side wall of the connection base **900**. There may be one annular groove or a plurality of annular grooves; and the annular grooves are all parallel to each other. When the glue filled in the annular grooves is dried, the gap formed between the connection base **900** and the atomization outer sleeve **200** is completely stuffed and achieves the sealing for the smoke oil.

[0040] The atomization device, with the connection base **900** of the present invention mounted thereon, further includes a nozzle **100**, an oil storage cotton **300**, a fiberglass tube **400**, a heating wire element **500**, an upper electrode **600**, and an insulating ring **700**, which are disposed in the atomization outer sleeve **200**, and are successively arranged from the top to the bottom of the atomization outer sleeve **200**. The upper electrode **600** runs through the insulating ring **700**, and the insulating ring **700** is secured in the through-hole **904** defined in the top cover of the connection base **900**, so that the connection base **900** is electrically isolated with the upper electrode **600**. The fiberglass tube **400** is hollow, and is positioned inside of the atomization outer sleeve **200** and separated from the inner wall of the atomization outer sleeve **200** with a gap. The oil storage cotton **300** is positioned in the gap. The heating wire element **500** heats and atomizes the tobacco juice stored in the oil storage cotton **300**. The atomized smoke oil flows along the hollow fiberglass tube **400**, and flows out via the nozzle **100**.

[0041] In the present invention, the filling groove **901** of the connection base **900** may be in other shapes. For example, in a second embodiment of the present invention as shown in FIG. **7**, the filling groove **901** includes straight line grooves which are perpendicular to the top cover (i.e., positioned along an axial direction of the periphery surface of the side wall of the connection base). Every two adjacent ones of these straight line grooves are parallel to each other and are separated with a certain distance. When the filling groove **901** is filled with glue and replaces the connection base **900** shown in FIG. **4** and FIG. **6**, the sealing for the oil storage cotton **300** can also be achieve.

[0042] Two kinds of the filling grooves mentioned above have different advantages: in the first embodiment, the annular filling groove is corresponding to the inner wall of the whole atomization outer sleeve **200**, therefore, the sealing effect is better; in the second embodiment, the longitudinal straight line filling groove can enhance the pivoting friction generated when the connection base **900** is rotating with

respect to the atomization outer sleeve **200**, therefore, the battery rod device **2** can be more firmly screwed connected with the atomization device **1**.

[0043] Based on the two kinds of the filling grooves above, there can be more changes. For example, the longitudinal straight line grooves may be formed into oblique straight line grooves, that is, there may be a certain angle between the straight line grooves and the plane of the top cover of the connection base, wave-shaped grooves or arc-shaped grooves. Another example is that both the annular grooves of the first embodiment and the longitudinal straight line grooves of the second embodiment are formed in the connection base **900**, so that the connection base **900** can combine the advantages of both two kinds of the filling grooves.

[0044] In order to prevent the connection base **900** from loosening when the connection base **900** is embedded into the atomization outer sleeve **200**, usually the outer diameter of the connection base **900** is configured to be equal to the inner diameter of the atomization outer sleeve **200**, so that the connection base **900** can engage with the atomization outer sleeve **200**. The inner diameter of the atomization outer sleeve can also be slightly smaller than the outer diameter of the connection base **900**, so that the connection base **900** can be interference fitted with the atomization outer sleeve **200**. Since the outside of the side wall of the connection base **900** is not sleeved with the seal ring **800**, the connection base **900** will not be resisted by the friction of seal ring **800** when the connection base **900** is sleeved into the atomization outer sleeve **20**, which makes the assembly process easier.

[0045] A third embodiment of the present invention is shown as FIGS. **8-10**. In the third embodiment, the filling groove is defined to mesh grooves, and includes two groups of the angularity twill grooves crossing each other and forming the latticed grooves as shown in FIG. **8** and FIG. **9**. The advantage for using this kind of filling groove is that, the crossing grooves communicate with each other, and when the filling groove is filled with glue or adhesive in one place, the glue or adhesive can flow along the communicating grooves to the whole filling groove **901**. Therefore, the method to fill the glue is simpler, and the glue is more distributed. Additionally, the filling groove is distributed on the whole outer wall of the electronic cigarette connection base **900**, the connection base **900** is better fitted with the atomization outer sleeve **200**, and the electronic cigarette connection base **900** is more secured.

[0046] Those mentioned above are the detailed descriptions of the embodiments, and do not imply a limitation to the protection scope of the present invention. In the inspiration of the present invention, those ordinary skills in the art can also make many modifications without breaking away from the subject of the present invention and the protection scope of the claims. All these modifications belong to the protection of the present invention.

What is claimed is:

1. An electronic cigarette connection base, comprising: a top cover, and a side wall formed around an edge of the top cover; the top cover defining a through-hole, and the side wall defining at least one filling groove around an outer surface of the side wall; and the filling groove filled with seal filler.

2. The electronic cigarette connection base according to claim **1**, wherein, the seal filler is adhesive.

3. The electronic cigarette connection base according to claim **1**, wherein, the filling groove is an annular groove formed around a periphery surface of the side wall.

4. The electronic cigarette connection base according to claim **1**, wherein, the filling groove includes a plurality of annular grooves formed around a periphery surface of the side wall, and every two adjacent ones of the annular grooves are separated with a distance and are parallel to each other.

5. The electronic cigarette connection base according to claim **1**, wherein, the filling groove includes a plurality of straight line grooves, oblique line grooves, wave-shaped grooves or arc grooves, positioned along an axial direction of the periphery surface of the side wall.

6. The electronic cigarette connection base according to claim **1**, wherein, the filling groove includes latticed grooves formed on an outside of the side wall.

7. An electronic cigarette atomization device, comprising: a nozzle, an oil storage cotton, a fiberglass tube, a heating wire, an upper electrode, and an insulating ring, the elements successively disposed in an atomization outer sleeve, wherein, the atomization device further includes a connection base; the connection base includes a top cover, and a side wall formed around an edge of the top cover; the top cover defining a through-hole, and the side wall defining at least one filling groove around an outer surface of the side wall; and the filling groove filled with seal filler; the connection base embedded in one end away from the nozzle of the atomization outer sleeve, the outside of the side wall of the connection base fit the inside of the atomization outer sleeve.

8. The electronic cigarette atomization device according to claim **7**, wherein, the seal filler is adhesive.

9. The electronic cigarette atomization device according to claim **7**, wherein, the filling groove is an annular groove formed around a periphery surface of the side wall.

10. The electronic cigarette atomization device according to claim **7**, wherein, the filling groove includes a plurality of annular grooves formed around a periphery surface of the side wall, and every two adjacent ones of the annular grooves are separated with a distance and are parallel to each other.

11. The electronic cigarette atomization device according to claim **7**, wherein, the filling groove includes a plurality of straight line grooves, oblique line grooves, wave-shaped grooves or arc grooves, positioned along an axial direction of the periphery surface of the side wall.

12. The electronic cigarette atomization device according to claim **7**, wherein, the filling groove includes latticed grooves formed on an outside of the side wall.

13. The electronic cigarette atomization device according to claim **7**, wherein, the upper electrode runs through the insulating ring, the insulating ring is secured in a through-hole defined in a top cover of the connection base, and the connection base is electrically isolated with the upper electrode.

14. The electronic cigarette atomization device according to claim **7**, wherein, the fiberglass tube is hollow and positioned inside the atomization outer sleeve, and the oil storage cotton sleeves the fiberglass.

15. The electronic cigarette atomization device according to claim **7**, wherein, the connection base is chamfered to help the connection base to be inserted into the atomization outer sleeve.

16. The electronic cigarette atomization device according to claim **7**, wherein, the connection base and the atomization outer sleeve form interference fit or engage with each other.

* * * * *