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(54) ELECTRONIC CIGARETTE DEVICE

(57) An electronic cigarette device, comprising a distribution mechanism, a combustion mechanism, and an ash discharging mechanism, wherein the distribution mechanism comprises a distribution portion, and the combustion mechanism comprises an automatic ignition device, the distribution portion being used for conveying a set amount of tobacco to an ignition position of the automatic ignition device, and the automatic ignition device being used for igniting the tobacco; an ash discharging position is provided on one side of the ignition position; the distribution portion is further used for conveying ash generated by means of combustion to the ash discharging position; and the ash discharging mechanism is used for discharging the ash, which is generated by means of combustion, away from the ash discharging position.

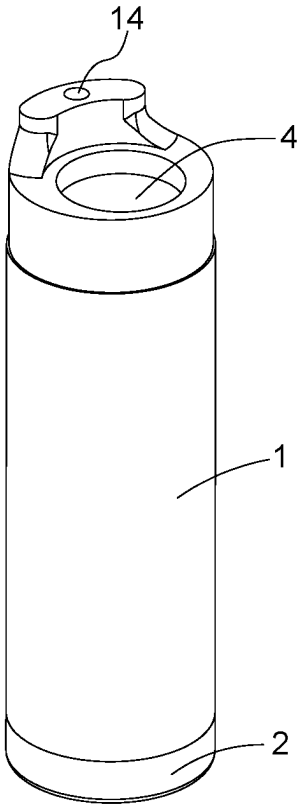

FIG. 6

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Description

[0001] The present disclosure claims priority to China Patent Application No.202210970499.3 filed on August 12, 2022, and the entire content of which is incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to the technical field of a smoking device, and in particular, to an electronic cigarette device.

BACKGROUND

[0003] In related technologies, smoking devices such as pipes require manual filling of tobacco strands and manual ignition during use. Moreover, when not in use, the tobacco continues to burn, resulting in waste. Once the tobacco strands in the pipe have been completely burned, the ash must be cleared out before manually refilling the pipe with tobacco strands again, making the process quite complicated. Additionally, during the manual ash removal process, the ash may scatter outside the pipe. Furthermore, when manually cleaning out the ash, the process of discharging the ash is not smooth, often leading to some ash adhering to an inner wall of the pipe.

SUMMARY

[0004] An objective of the present disclosure is to provide an electronic cigarette device, to address technical problems in the prior art that the operation process of the existing smoking appliances such as tobacco pipes is very complicated, and when not smoking, tobacco plant is still burning, resulting in tobacco waste.

[0005] According to one aspect of the present disclosure, the present disclosure provides an electronic cigarette device, including a distribution mechanism, a combustion mechanism and an ash discharging mechanism. The distribution mechanism includes a distribution portion, and the combustion mechanism includes an automatic ignition device, the distribution portion is used for conveying a set amount of tobacco to an ignition position of the automatic ignition device, and the automatic ignition device is used for igniting the tobacco; an ash discharging position is provided on a side of the ignition position, the distribution portion is further used for conveying ash generated by means of combustion to the ash discharging position, and the ash discharging mechanism is used for discharging the ash generated by means of combustion away from the ash discharging position.

[0006] According to an embodiment of the present disclosure, the distribution portion is rotatable around a preset axis to convey the ash to the ash discharging position; or, the distribution portion is movable along a preset axis to convey the ash to the ash discharging position;

[0007] the ignition position and the ash discharging position are sequentially provided along a movement path of the distribution portion.

[0008] According to an embodiment of the present disclosure, the distribution portion includes a hopper, a distribution chamber, a base and a first driving mechanism, the hopper is located above the distribution chamber, the distribution chamber is installed on the base, and the ash discharging position is an ash discharging hole provided on the base; and the distribution chamber is provided with a cartridge, and the first driving mechanism is capable of driving the distribution chamber to rotate around a rotational axis relative to the base, so that the cartridge is communicated with a discharge port of the hopper or the cartridge is aligned with the ignition position of the automatic ignition device; an extension direction of the rotational axis is consistent with an extension direction of the preset axis.

[0009] According to an embodiment of the present disclosure, the distribution chamber is disc-shaped, and the preset axis is an axis of the distribution chamber; a number of the cartridges is multiple, and the multiple cartridges are provided at intervals along a circumferential direction of the distribution chamber; and the axis of the distribution chamber is parallel to a discharging direction of the hopper, or the axis of the distribution chamber is perpendicular to a discharging direction of the hopper.

[0010] According to an embodiment of the present disclosure, the axis of the distribution chamber is parallel to the discharging direction of the hopper, and the cartridge is a through hole provided on the distribution chamber; and the distribution chamber is located between the hopper and the base, a lower surface of the distribution chamber is attached to an upper surface of the base, and the through hole is capable of communicating with the ash discharging hole.

[0011] According to an embodiment of the present disclosure, the distribution portion further includes a combustion chamber, the combustion chamber is installed on the base and is provided with a material dropping channel, which is capable of being aligned with the cartridge to make the tobacco in the cartridge fall into the material dropping channel, and the automatic ignition device is used for igniting the tobacco in the material dropping channel; and the material dropping channel is capable of further being aligned with the ash discharging hole.

[0012] According to an embodiment of the present disclosure, the base is provided with an accommodating cavity, and the combustion chamber is located in the accommodating cavity; and/or the combustion chamber is detachably connected with the base.

[0013] According to an embodiment of the present disclosure, the axis of the distribution chamber is perpendicular to the discharging direction of the hopper, and the cartridge is a groove provided on the distribution chamber; the base is cylindrical, the distribution chamber is located in an inner cavity of the base, and the inner wall

of the base is matched with a circumferential side wall of the distribution chamber; and a groove opening of the groove can be aligned with the ash discharging hole.

[0014] According to an embodiment of the present disclosure, the electronic cigarette device further includes a preheating element, the preheating element is provided on the base or the preheating element is provided in the distribution chamber.

[0015] According to an embodiment of the present disclosure, the electronic cigarette device further includes a smoke outlet portion, the smoke outlet portion is provided with a smoke outlet channel, and the smoke outlet channel is communicated with the ignition position of the automatic ignition device.

[0016] According to an embodiment of the present disclosure, the hopper is provided with a suction nozzle hole, or the smoke outlet portion is provided with a suction nozzle hole; and the suction nozzle hole is communicated with the smoke outlet channel.

[0017] According to an embodiment of the present disclosure, the distribution portion includes a distribution chamber and a gland assembly, the distribution chamber is tubular, the preset axis is an axis of the distribution chamber, the distribution chamber is provided with a first port and a second port which are opposite, the gland assembly is provided at a second end of the distribution chamber, and the gland assembly is used for pushing the tobacco in the distribution chamber towards a first end; and the automatic ignition device is used for igniting the tobacco close to the first port, and the ash generated by combustion of the tobacco is capable of protruding from the first port.

[0018] According to an embodiment of the present disclosure, a stop portion is provided on a side of the first port of the distribution chamber facing away from the second port, and a gap is arranged between the stop portion and an end face of the first port, the gland assembly is used for pushing the tobacco in the distribution chamber in a direction close to the stop portion, so that the ash generated by the combustion of the tobacco is capable of being located in a gap between the first port and the stop portion; the ash discharging position is the gap between the stop portion and the end face of the first port.

[0019] According to an embodiment of the present disclosure, a distance between the stop portion and the end face of the first port is 0.1 mm ~ 5 mm.

[0020] According to an embodiment of the present disclosure, the electronic cigarette device further includes an annular side wall, the annular side wall and the stop portion are integrally formed.

[0021] According to an embodiment of the present disclosure, the stop portion is provided with an ash discharging port and an air inlet, and the ash discharging port is provided with an ash discharging bin door.

[0022] According to an embodiment of the present disclosure, the gland assembly includes an end cover, an elastic element and a pressing plate, the end cover is connected with one end of the elastic element and the pressing plate is connected with the other end of the elastic element; and the end cover is detachably covered on the second port of the distribution chamber, and the pressing plate is capable of abutting against the tobacco in the distribution chamber.

[0023] According to an embodiment of the present disclosure, the electronic cigarette device further includes a smoke tube; an air inlet hole and a smoke outlet hole is provided on a side wall of the distribution chamber, and the smoke outlet hole is communicated with the smoke tube.

[0024] According to an embodiment of the present disclosure, the smoke tube is slidably connected with the distribution chamber, so that the smoke tube is capable of moving relative to a length direction of the distribution chamber.

[0025] According to an embodiment of the present disclosure, the ash discharging mechanism includes a second driving mechanism and a cartridge cover, the second driving mechanism is in transmission connection with the cartridge cover to enable the cartridge cover to open or close the first port, and a closing action of the cartridge cover making the ash be flicked off.

[0026] According to an embodiment of the present disclosure, the automatic ignition device includes an electromagnetic coil assembly and an electrode, the electromagnetic coil assembly is connected with at least part of the distribution portion, and the electrode is connected with the electromagnetic coil assembly; or, the automatic ignition device includes an electric heating wire or a gas ignition mechanism.

[0027] According to an embodiment of the present disclosure, the automatic ignition device includes the electromagnetic coil assembly and the electrode, a diameter of the electromagnetic coil assembly ranges from 2 cm to 4.5 cm, and a height of the electromagnetic coil assembly ranges from 4 cm to 7 cm.

[0028] According to an embodiment of the present disclosure, the automatic ignition device includes the electromagnetic coil assembly and the electrode, the electromagnetic coil assembly including a Tesla coil, and a number of the electrodes is at least one.

[0029] According to an embodiment of the present disclosure, the electrode includes a first electrode and a second electrode, and the first electrode is provided opposite to the second electrode.

[0030] According to an embodiment of the present disclosure, a number of the first electrodes is at least one, and a number of the second electrodes is equal to the number of the first electrodes; and the distribution portion has a combustion area, and a projection of the first electrode and a projection of the second electrode in a plane where the combustion area is located are both located in the combustion area.

[0031] According to an embodiment of the present disclosure, the automatic ignition device includes an electromagnetic coil assembly, a first electrode and a

second electrode, the electromagnetic coil assembly is connected with the base, and both the first electrode and the second electrode are connected with the electromagnetic coil assembly; and the first electrode and the second electrode are both located below the combustion chamber, or the first electrode and the second electrode are both located in the material dropping channel, or the first electrode and the second electrode are located at both sides of the combustion chamber respectively.

[0032] According to an embodiment of the present disclosure, a number of the first electrodes is multiple, and the multiple first electrodes are provided at intervals along a height direction of the material dropping channel, and the multiple second electrodes correspond to the multiple first electrodes one by one.

[0033] According to an embodiment of the present disclosure, the automatic ignition device includes an electromagnetic coil assembly and an electrode, the electromagnetic coil assembly is installed outside the distribution chamber, and the electrode is connected with the electromagnetic coil assembly.

[0034] According to an embodiment of the present disclosure, an installation hole is provided to an end face of the first port of the distribution chamber, or an installation hole is provided at a position on the side wall of the distribution chamber close to the first port; and the electrode is installed in the installation hole.

[0035] According to an embodiment of the present disclosure, the electronic cigarette device further includes a housing and an ash bin, where at least part of the combustion mechanism, the ash discharging mechanism and the distribution mechanism are located inside the housing, the ash bin is detachably connected with the housing, and the ash bin is opposite to the ash discharging position.

[0036] According to an embodiment of the present disclosure, the ash discharging mechanism includes a thrust mechanism, the thrust mechanism is installed in the housing, and at least part of the thrust mechanism is capable of extending into the distribution portion to push the ash in the distribution portion into the ash bin.

[0037] According to an embodiment of the present disclosure, the thrust mechanism includes a push rod, the push rod is provided with a cleaning structure, and the cleaning structure is capable of contacting with an inner wall of the distribution portion.

[0038] According to an embodiment of the present disclosure, the cleaning structure includes a brush and/or a scraper.

[0039] According to an embodiment of the present disclosure, the ash discharging mechanism is a vibration mechanism, and the vibration mechanism is installed to the housing.

[0040] According to an embodiment of the present disclosure, the electronic cigarette device further includes a crushing mechanism, and the crushing mechanism is used for crushing tobacco strands into granular tobacco with a particle size of 1 mm ~ 2 mm.

[0041] According to an embodiment of the present disclosure, the electronic cigarette device further includes a housing. The housing is hollow and cylindrical. A range of a maximum outer diameter of the housing is 4 cm ~ 9 cm, and a range of a length of the housing is 8 cm ~ 20 cm.

[0042] The beneficial effects of the present disclosure are mainly as follows.

[0043] When the electronic cigarette device provided by the present disclosure is in use, the distribution portion conveys a set amount of tobacco to the ignition position of the automatic ignition device, and the automatic ignition device ignites the tobacco to generate smoke for users to suck. When ash is produced after the tobacco is burned, the distribution portion conveys the ash produced by combustion to the ash discharging position. At this time, the ash discharging mechanism discharges the ash produced by combustion away from the ash discharging position. In the whole process, there is no need to manually fill the tobacco and ignite it, and there is no need to manually discharge ash. When the user wants to smoke again, the above steps may be repeated, and the operation is very convenient. When not smoke, the automatic ignition device may be turned off to prevent tobacco waste.

BRIEF DESCRIPTION OF THE DRAWINGS

[0044] The above and other features and advantages of the present disclosure will become more apparent by describing in detail exemplary example embodiments thereof with reference to the accompanying drawings.

FIG. 1 is a schematic structural view of an electronic cigarette device provided by an embodiment of the present disclosure;

FIG. 2 is an exploded view of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 3 is a schematic structural view of a crushing mechanism in the embodiment of the present disclosure;

FIG. 4 is a schematic structural view of cooperation between a distribution chamber and a base in the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 5 is a schematic structural view of cooperation between the base and an electrode in the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 6 is a structural schematic view of a modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 7 is a structural schematic view of a modified example of the electronic cigarette device provided by the embodiment of the present disclosure (in which a housing is not shown);

FIG. 8 is an exploded view of a modified example of

the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 9 is a schematic structural view of cooperation between a combustion chamber and a first sub-base in a modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 10 is a schematic structural view of a first base in the embodiment of the present disclosure;

FIG. 11 is an exploded view of a smoke outlet portion in the embodiment of the present disclosure;

FIG. 12 is a schematic structural view of cooperation between a first electrode and a second electrode in the embodiment of the present disclosure;

FIG. 13 is a structural schematic view of a modified example of the cooperation between the first electrode and the second electrode in the embodiment of the present disclosure;

FIG. 14 is a structural schematic view of another modified example of the cooperation between the first electrode and the second electrode in the embodiment of the present disclosure;

FIG. 15 is a sectional view (in a material dropping state) of a modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 16 is a sectional view (in an ash discharging state) of a modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 17 is a plan view of a modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 18 is a schematic structural view of cooperation between a cigarette holder and a hopper in the embodiment of the present disclosure;

FIG. 19 is a structural schematic view of another modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 20 is a schematic structural view of cooperation between a combustion chamber and a second base in another modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 21 is an exploded view of the combustion chamber and the second base in the embodiment of the present disclosure;

FIG. 22 is an exploded view of the combustion chamber, the first base and the second base in the embodiment of the present disclosure;

FIG. 23 is a structural schematic view of a modified example of the smoke outlet portion in the embodiment of the present disclosure;

FIG. 24 is an exploded view of an ash bin and a bracket in the embodiment of the present disclosure;

FIG. 25 is a schematic structural view of a third modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 26 is a schematic structural view of the distribution chamber in the third modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 27 is a structural schematic view from another perspective of the third modified example of the electronic cigarette device provided by the embodiment of the present disclosure (in which the distribution chamber is not shown);

FIG. 28 is a schematic structural view of a fourth modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 29 is a schematic view of an internal structure of the fourth modified example of the electronic cigarette device provided by the embodiment of the present disclosure (in which a smoke tube is not shown);

FIG. 30 is a schematic view of the internal structure of the fourth modified example of the electronic cigarette device provided by the embodiment of the present disclosure from another perspective;

FIG. 31 is a schematic structural view of the distribution chamber in the fourth modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 32 is a schematic structural view of the smoke tube in the fourth modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 33 is a schematic structural view of a gland assembly in the fourth modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 34 is a schematic view of a tobacco burning state;

FIG. 35 is another structural schematic view of cooperation between the electrode and the distribution chamber in the fourth modified example of the electronic cigarette device provided by the embodiment of the present disclosure;

FIG. 36 is a schematic structural view of a Tesla coil in the electronic cigarette device provided by the embodiment of the present disclosure.

[0045] Reference numbers are listed as follows: 1-housing; 2-ash bin; 3-control module; 310-controller; 320-relay; 4-hopper; 410-bottom cover; 5-distribution chamber; 6-base; 7-first driving mechanism; 710-the first electric motor; 720-second electric motor; 8-cartridge; 9-discharge port; 10-ash discharging hole; 11-combustion area; 111-preheating area; 112-ignition area; 12-smoke outlet portion; 121-smoke outlet channel; 122-core; 123-cap; 13-cigarette holder; 14-suction nozzle hole; 15-material receiving area; 16-Tesla coil; 17-electromagnet; 18-first electrode; 19-second electrode; 20-container; 21-Upper cover; 22-crushing cutter; 23-vent hole; 24-spring;

25-compression plate; 26-heating device; 27-ash discharging channel; 28-vibration mechanism; 29-push rod; 30-brush; 31-combustion chamber; 32-material dropping channel; 33-accommodating cavity; 34-first base; 341-material dropping hole; 35-second base; 351-the first sub-base; 3511-first through hole; 3512-second through hole; 352-the second sub-base; 36-supporting rod; 37-material dropping tube; 38-installation frame; 39-installation plate; 40-outer ring portion; 41-connecting portion; 411-connecting plate; 42-first magnetic element; 43-second magnetic element; 44-bracket; 45-ash discharging guide groove; 46-buffer bin; 461-discharge hole; 47-push plate; 48-lead screw; 49-position sensor; 50-ash receiving cavity; 51-first port; 52-second port; 53-smoke tube; 531-first tube segment; 532-second tube segment; 54-second driving mechanism; 55-cartridge cover; 551-cover body; 552-connector; 56-stop portion; 57-gland assembly; 571-end cover; 572-elastic element; 573-pressing plate; 58-air inlet hole; 59-air inlet; 60-ash discharging bin door; 61-chute; 62-convex strip; 63-first installation hole; 64-second installation hole; 65-smoke outlet hole; 66-annular side wall; 100-ash; 200-combustion segment.

DETAILED DESCRIPTION

[0046] The technical solutions of the present disclosure will be described clearly and completely below in combination with the embodiments. Obviously, the described embodiments are only a part of the embodiments of the present disclosure, rather than all of them. Based on the embodiments in the present disclosure, all other embodiments obtained by those skilled in the art without creative work belong to the scope of protection of the present disclosure.

[0047] In the description of the present disclosure, it should be noted that terms such as "center," "upper", "lower", "left", "right", "vertical", "horizontal", "inner", "outer" etc., are used to indicate orientations or positional relationships based on the orientations or positional relationships shown in the accompanying drawings. These terms are used solely for the purpose of facilitating the description of the disclosure and simplifying the explanation, and do not imply or suggest that the referenced devices or components must have a specific orientation or be constructed and operated in a specific orientation. Therefore, these terms should not be construed as limiting the scope of the disclosure. Furthermore, terms such as "first", "second", and "third" are used for descriptive purposes only and should not be interpreted as indicating or implying relative importance.

[0048] In the description of the present disclosure, it should be noted that unless otherwise explicitly specified and defined, terms such as "install", "connected", and "connection" should be interpreted broadly. For example, a connection may be fixed, detachable, or integral; it may be a mechanical connection or an electrical connection; it may be a direct connection or an indirect connection through an intermediary medium; or it may refer to the internal communication between two components. For those skilled in the art, the specific meanings of the aforementioned terms in the context of the present disclosure can be understood based on specific circumstances.

[0049] Referring to FIGS. 1 to 36, this embodiment provides an electronic cigarette device, which includes a distribution mechanism, a combustion mechanism and an ash discharging mechanism. The distribution mechanism includes a distribution portion, and the combustion mechanism includes an automatic ignition device. The distribution portion is used for conveying a set amount of tobacco to an ignition position of the automatic ignition device, and the automatic ignition device is used for igniting the tobacco. One side of the ignition position is provided with an ash discharging position. The distribution portion is further used for conveying ash generated by combustion to the ash discharging position, and the ash discharging mechanism is used for discharging the ash generated by combustion away from the ash discharging position.

[0050] When the electronic cigarette device provided by this embodiment is used, the distribution portion conveys a set amount of tobacco to the ignition position of the automatic ignition device, and the automatic ignition device ignites the tobacco to generate smoke for the user to suck. When the tobacco is burned to produce ash, the distribution portion conveys the ash produced by combustion to the ash discharging position, and at this time, the ash discharging mechanism discharges the ash produced by combustion away from the ash discharging position. In the whole process, there is no need to manually fill tobacco and ignite, and there is no need to manually discharge ash. When the user smokes again, the above steps may be repeated, and the operation is very convenient. When the user won't smoke, the user may turn off the automatic ignition device to prevent tobacco waste.

[0051] For example, during use, the distribution portion may either deliver a set amount of tobacco to the ignition position of the automatic ignition device each time, after which the automatic ignition device ignites it; or the distribution portion may continuously deliver the set amount of the tobacco to the ignition position of the automatic ignition device multiple times, and then the automatic ignition device collectively ignites the tobacco delivered in batches. This approach can enhance the concentration of smoke, thereby catering to the diverse needs of different users.

[0052] In an embodiment, the electronic cigarette device further includes a crushing mechanism, and the crushing mechanism is used for crushing tobacco strands into granular tobacco with a particle size of 1 mm ~ 2 mm.

[0053] By setting the crushing mechanism, the tobacco strands may be crushed into granular tobacco with the particle size of 1 mm ~2 mm, which is beneficial to the

combustion of granular tobacco, improves the combustion efficiency and avoids waste caused by incomplete combustion.

[0054] In an embodiment, the crushing mechanism is detachably connected with a hopper 4.

[0055] For example, the tobacco may be ground into particles by the crushing mechanism (e.g., the crushing mechanism is a crusher), and then the granular tobacco may be poured into the hopper 4. It is also possible to install the crushing mechanism (e.g., the crushing mechanism is a cutter for crushing) in the hopper 4, and set a sieve plate in the hopper 4, so that the crushed tobacco falls from a through hole on the sieve plate to a discharge port 9, and then into a cartridge 8.

[0056] In an embodiment, the electronic cigarette device further includes a control module 3, which is used for controlling the on and off of the automatic ignition device and also for controlling the action of the ash discharging mechanism. For example, the control module 3 may be a micro-control unit (MCU) or a programmable logic controller (PLC).

[0057] For example, the control module 3 may control an ignition time of the automatic ignition device, for example, ignite for 1s, pause for 0.5s, and repeat the above operations as needed. This method not only conserves energy but also ensures thorough combustion.

[0058] In an embodiment, the electronic cigarette device further includes a power supply module which can supply power to the crushing mechanism, the ash discharging mechanism and the control module 3. For example, the power supply module includes a battery, for example, a lithium-ion battery.

[0059] It should be noted that a setting position of the power supply module may be flexibly selected according to an internal structure of the actual product, so as to achieve the objective of reducing an external size of the product and improving the utilization rate of the internal space of the housing.

[0060] In an embodiment, in order to prevent the ash from being scattered to the outside during the ash discharging process, the electronic cigarette device further includes a housing 1 and an ash bin 2. At least part of the combustion mechanism, the ash discharging mechanism and the distribution mechanism are located inside the housing 1, and the ash bin 2 is detachably connected with the housing 1. The ash bin 2 is opposite to the ash discharging position. The ash discharging mechanism discharges the ash from the ash discharging position, and the ash can fall into the ash bin 2, thus preventing the ash from being scattered outside the housing 1. At the same time, because the ash bin 2 is detachably connected with the housing 1, the ash bin 2 may be detached from the housing 1 after a period of use, so that it is convenient to clean the ash bin 2 separately and reuse it.

[0061] For example, the ash bin 2 may be connected with the housing 1 in a threaded way, and the ash bin 2 may also be connected with the housing 1 through a buckle or a magnetic element. The housing 1 is provided with an air inlet 59.

[0062] In an embodiment, the distribution portion may rotate around a preset axis to convey the ash to the ash discharging position; or the distribution portion may move along a preset axis to convey the ash to the ash discharging position. The ignition position and the ash discharging position are arranged in sequence along a movement path of the distribution portion.

[0063] In a first possible design, the distribution portion may rotate around the preset axis to convey the ash to the ash discharging position. The ignition position and the ash discharging position are arranged in sequence along the movement path of the distribution portion.

[0064] In this first possible design, the distribution portion rotates around the preset axis, and the movement path of the distribution portion is generally annular, and the ignition position and ash discharging position are arranged in sequence along the movement path of the distribution portion. The distribution portion firstly conveys a set amount of tobacco to the ignition position along the movement path, and then conveys the ash generated by combustion to the ash discharging position.

[0065] In this first possible design, as shown in FIG. 2, the distribution portion includes a hopper 4, a distribution chamber 5, a base 6 and a first driving mechanism 7. The hopper 4 is located above the distribution chamber 5, the distribution chamber 5 is installed on the base 6, and the ash discharging position is an ash discharging hole 10 provided on the base 6. The distribution chamber 5 is provided with a cartridge 8, and the first driving mechanism 7 may drive the distribution chamber 5 to rotate around a rotational axis relative to the base 6, so that the cartridge 8 is communicated with a discharge port 9 of the hopper 4 or aligned with the ignition position of the automatic ignition device. The rotational axis is consistent with an extension direction of the preset axis.

[0066] For example, the rotational axis coincides with the preset axis. When in use, enough tobacco used by a user for many times are put into the hopper 4. The power supply module supplies power to the first driving mechanism 7, which drives the distribution chamber 5 to rotate around the rotational axis relative to the base, so that the cartridge 8 is communicated with the discharge port 9 of the hopper 4. The tobacco in the hopper 4 enters the cartridge 8 from the discharge port 9, and then the first driving mechanism 7 drives the distribution chamber 5 to continue to rotate, so that the cartridge 8 is aligned with the ignition position of the automatic ignition device, and the automatic ignition device ignites the tobacco to generate smoke. After the burning of tobacco, ash is generated, and the distribution chamber 5 rotates around the preset axis, thus conveying the ash to the ash discharging hole 10. At this time, the ash discharging mechanism discharges the ash from the ash discharging hole 10. At this time, the cartridge 8 is in an empty state, and the first driving mechanism 7 may drive the distribution portion to move again, so that the cartridge 8 is opposite to the discharge port 9 of the hopper 4, and the tobacco in the

hopper 4 enters the cartridge 8 from the discharge port 9. By repeating the above operations, it is possible to continue to draw in the smoke without manually removing the ash first. Repeating this process back and forth makes the operation very convenient.

[0067] In this first possible design, as shown in FIGS. 2 and 5, the base 6 is plate-shaped, and the base is provided with a combustion area 11 and an ash discharging area. The combustion area 11 includes a preheating area 111 and an ignition area 112. The ignition area 112 is located between the preheating area 111 and the ash discharging area. The preheating area 111 is used to raise the temperature of the tobacco. The ignition position of the automatic ignition device is located in the ignition area 112, and the ash discharging position is located in the ash discharging area. The distribution chamber 5 may rotate around the rotational axis, so that the tobacco in the cartridge 8 may pass through the combustion area 11 and the ash discharging area in turn.

[0068] In this first possible design, the electronic cigarette device further includes a preheating element, which is provided on the base. For example, the preheating element is provided in the preheating area 111, and the preheating element is a resistance wire. After the resistance wire is energized, it may heat up the tobacco to preheat and dry it, which is beneficial to the subsequent automatic ignition device to ignite the tobacco.

[0069] It should be noted that the preheating element may also be provided in the distribution chamber 5, for example, the preheating element is provided on an inner wall of the cartridge 8.

[0070] Specifically, when the cartridge 8 containing tobacco is located in the preheating area 111, the temperature of the tobacco may be increased to achieve a certain drying effect. When the cartridge 8 carrying the heated and dried tobacco rotates to the ignition area 112, the automatic ignition device may ignite the tobacco and generate smoke.

[0071] In some embodiments, as shown in FIG. 5, shapes of the preheating area 111, the ignition area 112 and the ash discharging area are all arc oblong. The ash discharging hole 10 is an arc-shaped oblong hole.

[0072] In this first possible design, as shown in FIGS. 2 and 5, the electronic cigarette device further includes a smoke outlet portion, and the smoke outlet portion is provided with a smoke outlet channel 121. The smoke outlet channel 121 is communicated with the ignition position of the automatic ignition device. For example, as shown in FIG. 5, the smoke outlet portion is integrally provided with the base, and a plurality of smoke outlet holes are arranged in the ignition area 112, which form the smoke outlet channel 121. Referring to FIG. 1, the electronic cigarette device further includes a cigarette holder 13, which is installed outside the housing 1, and is communicated with the smoke outlet channel 121, so that the user may inhale the smoke generated by combustion through the cigarette holder 13.

[0073] In this first possible design, the hopper 4 is provided with a suction nozzle hole 14, or the smoke outlet portion 12 is provided with a suction nozzle hole 14. The suction nozzle hole 14 is communicated with the smoke outlet channel 121. For example, a smoking pipe is provided inside the housing 1, and the smoking pipe is connected with the smoke outlet portion 12. A nozzle of the smoking pipe is the suction nozzle hole 14, and the nozzle of the smoking pipe is communicated with the smoke outlet channel 121.

[0074] For example, a filter cotton is provided inside the cigarette holder 13. The user inhales the smoke through the cigarette holder 13. By providing the cigarette holder 13, an airway may be prolonged, to prevent the user from inhaling tobacco or ash when the user's suction force is too large, and at the same time, the user may be prevented from being overheated by the smoke.

[0075] In this first possible design, the distribution chamber 5 is disc-shaped and the preset axis is an axis of the distribution chamber 5. A number of the cartridges 8 is multiple, and the multiple cartridges 8 are provided at intervals along a circumferential direction of the distribution chamber 5. The axis of the distribution chamber 5 is parallel to a discharging direction of the hopper 4.

[0076] A plurality of cartridges 8 may be provided at even intervals along the circumferential direction of the distribution chamber 5 or at uneven intervals along the circumferential direction of the distribution chamber 5. When the distribution chamber 5 rotates, the tobacco in the hopper 4 may be continuously discharged into different cartridges 8, thus avoiding frequent manual filling of tobacco. Specifically, when there is enough tobacco in the hopper 4, the tobacco in the hopper 4 will fall into the hopper 8 whenever one cartridge 8 is located directly below the discharge port 9 of the hopper 4, thus completing the filling of the tobacco. For example, the material dropping time may be controlled to 2s. Certainly, other material dropping time may also be selected according to the set amount.

[0077] It should be noted that the discharge port 9 of the hopper 4 may be provided with a baffle and a position sensor 49. When it is detected that the discharge port 9 is aligned with the cartridge 8, the control module 3 controls the baffle to open, and the tobacco falls into the cartridge 8 from the discharge port 9. When it is detected that the discharge port 9 is staggered from the cartridge 8, the control module 3 controls the baffle to be closed to prevent the tobacco from falling, or when the material dropping time is over, the control module 3 controls the baffle to be closed to stop feeding.

[0078] In an embodiment, the axis of the distribution chamber 5 is parallel to the discharging direction of the hopper 4, and the cartridge 8 is a through hole provided on the distribution chamber 5. The distribution chamber 5 is located between the hopper 4 and the base. A lower surface of the distribution chamber 5 is attached to an upper surface of the base, and the through hole may be communicated with the ash discharging hole 10. For

example, a power output shaft of the first driving mechanism 7 is coaxially connected with the distribution chamber 5, thereby driving the distribution chamber 5 to rotate around its own axis. The cartridge 8 is a through hole provided in the distribution chamber 5, so that the tobacco in the cartridge 8 may be directly contacted with the combustion area 11. When the cartridge 8 is communicated with the ash discharging hole 10, the ash may be discharged from the ash discharging hole 10 under its own gravity.

[0079] In some embodiments, a lower end surface of the discharge port 9 of the hopper 4 is attached to an upper surface of the distribution chamber 5 as much as possible, to ensure that the distribution chamber 5 may rotate smoothly without friction and wear with the hopper 4. When the discharge port 9 is staggered from the cartridge 8, it is possible to avoid the tobacco falling on the upper surface of the distribution chamber 5 as much as possible, thus avoiding the tobacco from being stuck between the hopper and the upper surface of the distribution chamber, resulting in unsmooth rotation of the distribution chamber.

[0080] For example, the hopper 4 is in an inclined funnel shape, that is, the discharge port 9 of the hopper 4 and a central position of the distribution chamber 5 are provided in a staggered manner, to ensure that the tobacco in the hopper 4 may fall into the cartridge 8.

[0081] In an embodiment, the base also includes a material receiving area 15. The material receiving area 15 is located between the combustion area 11 and the ash discharging area, and the discharge port 9 of the hopper 4 is located above the material receiving area 15.

[0082] For example, before smoking, the discharge port 9 of the hopper 4 is located above the material receiving area 15, and a part of the base located in the material receiving area 15 may seal the cartridge 8, and the tobacco falls into the cartridge 8 from the discharge port 9 of the hopper 4 and is carried in the material receiving area 15.

[0083] Specifically, a cartridge 8 in the distribution chamber 5 is located in the material receiving area 15, and then the tobacco falls into the cartridge 8 from the discharge port 9 of the hopper 4 and is located in the material receiving area 15, and then the distribution chamber 5 rotates around its own axis. For example, as shown in FIG. 4, the distribution chamber 5 rotates in an arrow direction A. The cartridge 8 containing tobacco rotates along with the distribution chamber 5 to the preheating area 111 and the ignition area 112. The automatic ignition device ignites the tobacco, generating smoke, and the user inhales the smoke through the cigarette holder 13. When the tobacco in the cartridge 8 is completely burned to produce ash, the distribution chamber 5 rotates, so that the cartridge 8 filled with ash is located in the ash discharging area. Since the ash discharging area is provided with the ash discharging hole 10, the ash generated by the combustion of the tobacco in the cartridge 8 is discharged from the ash discharging hole 10.

[0084] It should be noted that in other embodiments, the rotational axis may also be parallel to the preset axis.

[0085] In some embodiments, the automatic ignition device includes an electric heating wire. For example, the electric heating wire is provided on the upper surface of the base. Specifically, the electric heating wire is provided in the ignition area 112. The electric heating wire ignites the tobacco to generate smoke, and the user inhales the smoke through the cigarette holder 13 and the smoke outlet channel 121. At this point, the ignition position refers to a range covered by the electric heating wire.

[0086] In other embodiments, the automatic ignition device includes an electromagnetic coil assembly and an electrode. The electromagnetic coil assembly is connected with at least part of the distribution portion, and the electrode is connected with the electromagnetic coil assembly.

[0087] The power supply module supplies power to the electromagnetic coil assembly, and after the electromagnetic coil assembly is electrified, an arc flame or an ion flame is generated through the electrode, thereby igniting the tobacco to generate smoke.

[0088] A diameter of the electromagnetic coil assembly ranges from 2 cm to 4.5 cm, and a height of the electromagnetic coil assembly ranges from 4 cm to 7 cm. In this way, a space occupied by the electromagnetic coil assembly in the housing may be reduced. This is beneficial to the miniaturization of products. It should be noted that the electromagnetic coil assembly includes an electromagnetic coil and a control panel. The diameter of the electromagnetic coil assembly refers to a diameter of the electromagnetic coil, and a height of the electromagnetic coil assembly refers to a sum of the diameter of the electromagnetic coil and a height of the control panel.

[0089] In some embodiments, the electromagnetic coil assembly includes a Tesla coil 16, and a number of the electrodes is at least one. That is, the Tesla coil 16 is used as the electromagnetic coil. The electromagnetic coil assembly also includes an electromagnet 17.

[0090] For example, as shown in FIG. 36, a diameter D of the electromagnetic coil assembly including the Tesla coil 16 may be, but not limited to, 2 cm, 2.2 cm, 2.4 cm, 2.6 cm, 2.8 cm, 3 cm, 3.2 cm, 3.4 cm, 3.6 cm, 3.8 cm, 4 cm, 4.1 cm, 4.2 cm, 4.3 cm, 4.4 cm or 4.5 cm. A height H of the electromagnetic coil assembly including the Tesla coil 16 may be, but not limited to, 4 cm, 4.2 cm, 4.4 cm, 4.6 cm, 4.8 cm, 5 cm, 5.2 cm, 5.4 cm, 5.6 cm, 5.8 cm, 6 cm, 6.2 cm, 6.4 cm, 6.6 cm, 6.7 cm, 6.8 cm, 6.9 cm or 7 cm.

[0091] It should be noted that the diameter and height of the electromagnetic coil assembly are not limited to the above size range, and smaller or larger sizes may be selected according to the actual process level and application scenarios.

[0092] When the number of the electrodes is one, the Tesla coil 16 generates ion flame through a single electrode discharge, and fully burns the tobacco. For example, the diameter of the ion flame may reach 5mm and the height may reach 10 mm. At this time, the ignition position

of the automatic ignition device refers to a range that the combustion power of the ion flame may cover.

[0093] In this embodiment, the tobacco may be in the form of granular tobacco with a particle size of 1 mm ~ 2 mm after being crushed. The tobacco enters the cartridge 8 under its own gravity, and the whole tobacco is in a loose state, so it is not necessary to compact the tobacco. This is convenient for ignition, thus ensuring a good combustion effect.

[0094] It should be noted that the number of the electrodes may also be multiple. The multiple electrodes may all be single electrodes, and the multiple electrodes may also be arranged in pairs. For example, two electrodes provided in pairs may generate arc fire and burn tobacco.

[0095] In addition, in order to improve the high temperature resistance of the electrode, tungsten needles are integrated on the electrode to adapt to a high temperature environment in the combustion process and avoid electrode from being melted.

[0096] In some embodiments, the electrodes include a first electrode 18 and a second electrode 19, and the first electrode 18 is provided opposite to the second electrode 19.

[0097] Specifically, a polarity of the first electrode 18 is opposite to a polarity of the second electrode 19, that is, one of the first electrode 18 and the second electrode 19 is a discharge electrode and the other is a receiving electrode. The first electrode 18 and the second electrode 19 are provided opposite to each other, and may generate arc fire after being electrified. For example, the first electrode 18 and the second electrode 19 may be oppositely provided in a vertical direction, in a horizontal direction or in an inclination direction. The ignition position of the automatic ignition device refers to a position between the first electrode 18 and the second electrode 19 which are opposite to each other, that is, a range that the combustion power of the arc fire may cover.

[0098] Due to the adoption of Tesla coil 16, compared with an ordinary coil, a length and a diameter of the generated arc fire are obviously increased, and the combustion power is obviously enhanced, thus more complete combustion of the tobacco can be ensured.

[0099] In some embodiments, a number of the first electrodes 18 is at least one, and a number of the second electrodes 19 is equal to the number of the first electrodes 18. This way can ensure that the first electrode 18 and the second electrode 19 appear in pairs, and at least one pair. The distribution portion has a combustion area 11. In this first possible design, the combustion area 11 is provided on the base, and the projections of the first electrode 18 and the second electrode 19 in a plane of the combustion area 11 are both located in the combustion area 11, that is, the projections of the first electrodes 18 and the second electrodes 19 in a plane of the combustion area 11 may be located in the combustion area 11 or at an edge of the combustion area 11. Alternatively, a projection of a part of the first electrode 18 and the second electrode 19 in the plane of the combustion area 11 may be located in the combustion area 11, and a projection of another part of the first electrode 18 and the second electrode 19 in the plane of the combustion area 11 may be located at the edge of the combustion area 11. In this way, the tobacco may be burned simultaneously, to realize full and uniform combustion and reduce a dead zone of combustion.

[0100] Specifically, as shown in FIG. 5, the first electrode 18 and the second electrode 19 are located in the ignition area 112. When the number of the first electrodes 18 and the second electrode 19 is plural pairs, the plural pairs of the first electrodes 18 and the second electrodes 19 are arranged in the ignition area 112 at intervals along a circumferential direction of the ignition area 112, or are provided in the ignition area 112 at intervals along the movement path of the cartridge 8.

[0101] It should be noted that both the electric heating wire and the electrode may be provided in the ignition area 112 simultaneously.

[0102] In some embodiments, the ignition device is provided at a set position of the ignition area 112. When the first driving mechanism 7 drives the distribution chamber 5 to rotate until the cartridge 8 containing tobacco is located at the set position of the ignition area 112, the first driving mechanism stops working and the distribution chamber 5 stops rotating, and the ignition device ignites the tobacco in the cartridge 8 to generate smoke.

[0103] For example, when the ignition device includes one electrode, the electrode may be provided at the set position of the ignition area 112, for example, the electrode is arrnaged at a middle position of the ignition area 112, which refers to a middle position of a running track of the cartridge 8 from one end to the other end of the ignition area 112. The Tesla coil 16 generates ion flame through a single electrode discharge to fully burn the tobacco.

[0104] In order to fully burn the tobacco, the ion flame generated by this electrode should be aimed at the center of the cartridge 8 as much as possible.

[0105] It should be noted that the set position is not limited to the middle position of the ignition area 112. The automatic ignition device is not limited to the single electrode, for example, a pair of electrodes may be arranged at the set position.

[0106] In other embodiments, the electrode or the electric heating wire is arranged in the whole ignition area 112 as far as possible. In this way, while the distribution chamber 5 rotates, the ignition device burns the tobacco in the cartridge 8, which can increase the concentration of smoke. Specifically, during the continuous rotation of the distribution chamber 5, the multiple cartridges 8 may be located in the ignition area 112 simultaneously, and the automatic ignition device can ignite the tobacco in multiple cartridges 8, thus generating more concentrated smoke.

[0107] Certainly, if there is no need for denser smoke, the amount of tobacco filled in the cartridge 8 may be controlled by opening and closing the discharge port 9 of the hopper 4, or a number of the cartridges 8 filled with

tobacco may be controlled, for example, one cartridge 8 is filled and one cartridge 8 is empty, so that the amount of tobacco ignited simultaneously can be reduced.

[0108] Referring to FIGS. 2 and 3, the crushing mechanism includes a container 20 and an upper cover 21. The container 20 is connected with the housing 1, a bottom plate of the container 20 is provided with a sieve hole, and a crushing cutter 22 is provided in the container 20. The upper cover 21 is detachably connected with the container 20, and the upper cover 21 is provided with a vent hole 23.

[0109] For example, the container 20 is detachably connected with the housing 1, for example, the container 20 is screwed to the housing 1. The crushing mechanism also includes a driving electric motor, which drives the crushing cutter 22 to rotate to crush the tobacco in the container 20. For example, most tobacco may be crushed into granular tobacco with a particle size of 1 mm ~ 2 mm by selecting cutters, and controlling crushing time and rotating speed of driving electric motor.

[0110] By providing the vent hole 23 in the upper cover 21, hot gas generated in the crushing process may be exhausted from the vent hole 23.

[0111] In an embodiment, as shown in FIG. 2, the crushing mechanism further includes a spring 24. One end of the spring 24 is connected with the upper cover 21, and the other end of the spring 24 is connected with the compression plate 25. The compression plate 25 is located above the crushing cutter 22.

[0112] By preparing the compression plate 25, the tobacco in the container 20 may be blocked to some extent, and the tobacco may be prevented from being thrown onto the upper cover 21 in the crushing process, so that the amount of tobacco escaping from the vent hole 23 can be reduced, and the loss of the tobacco can be reduced. For example, the spring 24 may be a compression spring.

[0113] In an embodiment, a heating device 26 is provided on an inner wall of the container 20.

[0114] For example, the heating device 26 is a resistance wire. The resistance wire is provided on an inner wall of the base in a circumferential direction. By providing the heating device 26, the tobacco can be dried.

[0115] In some embodiments, as shown in FIG. 7, the electronic cigarette device further includes a straight-through ash discharging channel 27. One end of the straight-through ash discharging channel 27 is communicated with the ash discharging hole 10 and the other end of the straight-through ash discharging channel 27 is communicated with the ash bin 2. For example, the straight-through ash discharging channel 27 is a straight pipe. One end of the straight-through ash discharging channel 27 is connected with the base, and the other end of the straight pipe extends into the ash bin 2. The combination of the straight-through ash discharging channel 27 and the ash discharging mechanism can improve the smoothness of ash discharge. During use, under the action of the gravity of the ash and the ash discharging mechanism, the ash can smoothly fall from the straight-through ash discharging channel 27 into the ash bin 2, to reduce the adhesion of ash inside the ash discharging channel 27.

[0116] It should be noted that in this first possible design, the ash discharging channel may be formed by a part of the housing 1. When a distance between the ash discharging hole 10 and the ash bin 2 is small, the ash discharging channel may not be provided.

[0117] In an embodiment, as shown in FIG. 15, the ash discharging mechanism is a vibration mechanism 28, and the vibration mechanism 28 is installed in the housing 1. For example, the vibration mechanism 28 may be installed inside the housing 1 or outside the housing 1. For example, the interior of the hopper 4 is provided with a cavity, and the vibration mechanism 28 is located in the cavity. This way can reduce an overall size of a distribution device, which is beneficial to the miniaturization design of products.

[0118] For example, the vibration mechanism 28 is a vibration motor. When discharging ash, the vibrating motor works, which can accelerate the falling speed of the ash.

[0119] It should be noted that by adjusting a vibration frequency of the vibration motor, the effect of flicking off the ash by hand can also be simulated.

[0120] In addition, it should be noted that by providing the vibration mechanism 28, it is also convenient for the tobacco in the hopper 4 to fall into the cartridge 8.

[0121] In other embodiments, the ash discharging mechanism includes a thrust mechanism. The thrust mechanism is installed in the housing 1, and at least part of the thrust mechanism can extend into the distribution portion to push the ash in the distribution portion into the ash bin 2.

[0122] When discharging the ash is required, the thrust mechanism is started, so that at least part of the thrust mechanism extends into the ash discharging channel 27, thereby pushing the ash in the ash discharging channel 27 into the ash bin 2, improving the smoothness of ash discharge and making the ash discharge more thorough.

[0123] In some embodiments, as shown in FIG. 16, the thrust mechanism includes a push rod 29. The push rod 29 is provided with a cleaning structure, and the cleaning structure may be in contact with the inner wall of the distribution portion.

[0124] In some embodiments, the cleaning structure is provided on a circumferential surface of the push rod 29. For example, as shown in FIG. 16, the cleaning structure includes brushes 30 arranged at intervals along a circumferential direction of the push rod 29. When discharging the ash is required, the push rod 29 moves in an arrow direction B and enters the ash discharging channel 27, and the brushes 30 can clean the ash on an inner wall of the ash discharging channel 27.

[0125] For example, the cleaning structure may also include a scraper. The scraper is provided in the circumferential direction of the push rod 29. The scraper and the

push rod 29 may be fixedly connected or hinged, as long as it is ensured that the scraper does not affect the retraction of the push rod 29 and that the scraper can scrape the ash attached to the inner wall.

[0126] It should be noted that the cleaning structure may also include a brush 30 and a scraper. The brush 30 is close to a free end of the push rod 29 and the scraper is away from the free end of the push rod 29. When in use, the brush 30 first sweeps the ash from a surface of the inner wall of the ash discharging channel 27, and then the scraper scrapes off the relatively firm ash attached to the inner wall.

[0127] For example, the material of the scraper may be a rubber or a silica gel.

[0128] In some embodiments, the cleaning structure may also be provided at an end of the push rod 29. For example, the brush 30 is located at the free end of the push rod 29.

[0129] It should be noted that the cleaning structure may also be provided at both a circumferential surface and the end of the push rod 29. When the cleaning structure includes the brush 30 and the scraper, the brush 30 may be provided on the circumferential surface or the free end of the push rod 29, and the scraper may be provided on the circumferential surface or the free end of the push rod 29.

[0130] In some embodiments, the push rod 29 may be an electromagnetic push rod or an electric push rod.

[0131] It should be noted that the push rod 29 may also be a piston rod of a telescopic device. The telescopic device may be a pneumatic cylinder or an electric actuator.

[0132] In one embodiment, the housing 1 has a hollow cylindrical shape, a maximum outer diameter of the housing 1 ranges from 4 cm to 9 cm, and a length of the housing 1 ranges from 8 cm to 20 cm. This is convenient for the user to carry and use at any time, not limited by fixed scenes, and can be used in places where smoking is allowed, which is very convenient.

[0133] For example, the maximum outer diameter of the housing 1 may be, but not limited to, 4 cm, 4.2 cm, 4.5 cm, 4.6 cm, 4.8 cm, 5 cm, 5.2 cm, 5.4 cm, 5.5 cm, 5.6 cm, 5.8 cm, 6 cm, 6.1 cm, 6.2 cm, 6.3 cm, 6.4 cm, 6.5 cm, 6.6 cm, 6.7 cm, 6.8 cm, 6.9 cm, 7 cm, 7.2 cm, 7.5 cm, 7.8 cm, 7.9 cm, 8 cm, 8.2 cm, 8.5 cm, 8.6 cm, 8.8 cm, 8.9 cm or 9 cm.

[0134] For example, the length of the housing 1 may be, but not limited to, 8 cm, 8.5 cm, 9 cm, 9.5 cm, 10 cm, 10.5 cm, 11 cm, 11.5 cm, 12 cm, 12.5 cm, 13 cm, 13.5 cm, 14 cm, 14.5 cm, 15 cm, 15.2 cm, 15.4 cm, 15.6 cm, 15.8 cm, 16 cm, 16.2 cm, 16.4 cm, 16.6 cm, 16.8 cm, 17 cm, 17.2 cm, 17.4 cm, 17.6 cm, 17.8 cm, 18 cm, 18.2 cm, 18.4 cm, 18.6 cm, 18.8 cm, 19 cm, 19.2 cm, 19.4 cm, 19.6 cm, 19.8 cm or 20 cm.

[0135] In the second possible design, as shown in FIGS. 6 to 24, the distribution portion also includes a combustion chamber 31. The combustion chamber 31 is installed on the base, and is provided with a material dropping channel 32. The material dropping channel 32 may be aligned with the cartridge 8 to make the tobacco in the cartridge 8 fall into the material dropping channel 32, and the automatic ignition device is used to ignite the tobacco in the material dropping channel 32. The material dropping channel 32 may also be aligned with the ash discharging hole 10.

[0136] In this second possible design, there are various forms of the base. In some embodiments, the base is provided with an accommodating cavity 33, and the combustion chamber 31 is located in the accommodating cavity 33. For example, as shown in FIGS. 8 and 9, the base includes a first base 34 and a second base 35. The distribution chamber 5 is installed on the first base 34. The second base 35 is located on a side of the first base 34 away from the hopper 4, and the second base 35 and the first base 34 are fixedly connected by a supporting rod 36. For example, a number of the supporting rods 36 may be three. The accommodating cavity 33 is provided on the second base 35.

[0137] The first base 34 is provided with an accommodating groove. The distribution chamber 5 is located in the accommodating groove, and the lower surface of the distribution chamber 5 is attached to a groove bottom of the accommodating groove, so that the tobacco in the hopper 4 can fall into an accommodating space surrounded by the cartridge 8 and the groove bottom of the accommodating groove. For example, the accommodating groove provided on the first base 34 is a circular groove adapted to the disc-shaped distribution chamber 5 to ensure the smooth rotation of the distribution chamber 5. The first base 34 is provided with a material dropping hole 341, and the cartridge 8 and the material dropping channel 32 may be aligned with the material dropping hole 341, so that the tobacco in the cartridge 8 can fall into the material dropping channel 32 of the combustion chamber 31.

[0138] The first driving mechanism 7 is located on a side of the first base 34 facing away from the distribution chamber 5. For example, as shown in FIG. 7, the first driving mechanism 7 includes a first electric motor 710 and a second electric motor 720. The first electric motor 710 is in transmission connection with the distribution chamber 5, and the second electric motor 720 is in transmission connection with the combustion chamber 31. A center position of the first base 34 is provided with a hole through which a power output shaft of the first electric motor 710 may pass.

[0139] Referring to FIG. 8, the second base 35 includes a first sub-base 351 and a second sub-base 352. The accommodating cavity 33 is provided in the first sub-base 351. The first sub-base 351 is provided with a first through hole 3511 for a power output shaft of the second electric motor 720 to pass through. The first through hole 3511 is communicated with the accommodating cavity 33, to facilitate a connection of the power output shaft of the second electric motor 720 with the combustion chamber 31. The first sub-base 351 is also provided with a second

through hole 3512. The second through hole 3512 is aligned and communicated with the material dropping hole 341. When the material dropping channel 32 of the combustion chamber 31 is aligned with the second through hole 3512 and the cartridge 8 is aligned with the material dropping hole 341, the tobacco in the cartridge 8 can smoothly fall into the material dropping channel 32 of the combustion chamber 31. The second sub-base 352 is plate-shaped, and the second sub-base 352 is fixedly connected with the first sub-base 351 by bolts and nuts or other fasteners, so that the combustion chamber 31 is confined in the accommodating cavity 33, and the tobacco is located in a relatively closed space surrounded by a circumferential side wall of the material dropping channel 32 and an upper surface of the second sub-base 352. When the material dropping channel 32 containing a set amount of tobacco is located at the ignition position, the set amount of tobacco can be fully burned in a relatively closed space, and when smoking is not carried out, the negative pressure in the relatively closed space can ensure that burning tobacco is extinguished, thereby saving tobacco and reducing waste.

[0140] For example, an axis of the power output shaft of the first electric motor 710 coincides with an axis of the power output shaft of the second electric motor 720.

[0141] It should be noted that the first driving mechanism may also be a dual-shaft electric motor, and a first power output shaft of the dual-shaft electric motor is in transmission connection with the distribution portion, and a second power output shaft of the dual-shaft electric motor is in transmission connection with the combustion chamber 31.

[0142] In addition, it should be noted that the way in which the first base 34 cooperates with the distribution chamber 5 is also applicable to the first possible design.

[0143] In some embodiments, the combustion chamber 31 is detachably connected with the second base 35. Therefore, it is convenient to clean the combustion chamber 31, to ensure an inner wall of the material dropping channel 32 clean, facilitate reusing and improve the combustion efficiency.

[0144] In some embodiments, a material dropping tube 37 is provided between the material dropping hole 341 and the second through hole 3512. The material dropping tube 37 is a straight tube, so that the tobacco can smoothly pass through the material dropping tube 37 and fall into the material dropping channel 32.

[0145] The combustion chamber 31 has various structures. For example, as shown in FIG. 9, the combustion chamber 31 has a fan-shaped plate structure. When the material dropping channel 32 is staggered from the automatic ignition device, the tobacco in the material dropping channel 32 may be located on the second sub-base 352.

[0146] For example, the material of the combustion chamber may be ceramic. Certainly, other materials that can protect human health and safety, and have properties such as insulation, high temperature resistance and thermal shock resistance may also be chosen.

[0147] In an embodiment, the material dropping channel 32 penetrate the upper and lower surfaces of the combustion chamber. For example, the cross section of the through hole is circular, so that the inner wall of the material dropping channel 32 has no dead zone, which is convenient for cleaning the ash in the material dropping channel 32.

[0148] For example, the material dropping channel 32 is an equal-diameter through hole.

[0149] It should be noted that the material dropping channel may also be a variable-diameter through hole. For example, the diameter of the material dropping channel gradually decreases from the upper surface to the lower surface of the combustion chamber, which is beneficial to ensure that more tobacco may be concentrated in an area that may be ignited by the automatic ignition device, thus ensuring that the tobacco can be fully burned and avoiding waste. For another example, the material dropping channel includes a flared portion and an equal-diameter through hole, and the flared portion is close to the upper surface of the combustion chamber, so that it is convenient to add tobacco to a placement cavity.

[0150] For example, the second base 35 a combustion area 11, and the projections of the electrodes in a plane where the combustion area 11 is located are all located in the combustion area 11. The combustion area 11 may be a part of the upper surface of the second base 35, or may be a protrusion or a depression provided on the upper surface of the second base 35. The power supply module may be provided below the second base 35. For example, as shown in FIG. 7, an installation frame 38 is provided below the second base 35, and the power supply module may be installed at a bottom of the installation frame 38.

[0151] In some embodiments, referring to FIGS. 8 and 13, the first electrode 18 and the second electrode 19 are located at two sides of the combustion chamber 31, respectively.

[0152] When the combustion chamber 31 rotates to a position where the material dropping channel 32 is aligned with the automatic ignition device, the first electrode 18 and the second electrode 19 are located at both ends of the material dropping channel 32, and the arc fire generated between the first electrode 18 and the second electrode 19 may burn the tobacco in the material dropping channel 32, thus improving the combustion effect.

[0153] In some embodiments, both the first electrode 18 and the second electrode 19 are located in the material dropping channel 32.

[0154] For example, as shown in FIG. 14, the number of the first electrodes 18 is multiple, and the multiple first electrodes 18 are provided at intervals along a height direction of the material dropping channel 32. Multiple second electrodes 19 correspond to multiple first electrodes 18 one by one. For example, the number of the first electrodes 18 is three.

[0155] It should be noted that the number of the first electrodes 18 may be one.

[0156] In some embodiments, as shown in FIG. 12 and FIG. 21, the first electrode 18 and the second electrode 19 may both be located below the combustion chamber 31. As shown in FIG. 12, a dotted line in FIG. 12 represents the combustion area 11, and an outline shape of the combustion area 11 is circular. The number of the first electrodes 18 and the number of the second electrodes 19 are both multiple, and the multiple first electrodes 18 are provided at intervals along the circumferential direction of the combustion area 11. The multiple second electrodes 19 are in one-to-one radial opposition to the multiple first electrodes 18.

[0157] For example, the multiple first electrodes 18 are evenly spaced along the circumferential direction of the combustion area 11, which can realize full and uniform combustion and reduce the dead zone of combustion. For example, the number of the first electrodes 18 is two.

[0158] In this second possible design, the suction nozzle hole 14 is provided in the hopper 4. As shown in FIGS. 7 and 8, the smoke outlet portion 12 is located above the combustion chamber 31, and the material dropping channel 32 of the combustion chamber 31 may be aligned and communicated with the smoke outlet channel 121. That is to say, when the material dropping channel 32 is located at the ignition position of the automatic ignition device, the material dropping channel 32 is aligned and communicated with the smoke outlet channel 121, and the smoke generated by combustion is inhaled by the user through the smoke outlet channel 121 and the suction nozzle hole 14.

[0159] The smoke outlet portion 12 has various structures. For example, as shown in FIG. 11, the smoke outlet portion 12 has a cavity. A core body 122 is provided in the cavity, and the core body 122 is provided with a groove or an air hole through which the smoke may pass. For example, a number of the grooves or the air holes is multiple, and the sizes of the groove and the air hole should be as small as possible on the premise of satisfying the ventilation effect, to play the role of preliminary filtering and prevent the ash from being inhaled by the user.

[0160] For example, a center of the core body 122 is provided with a hole through which the electrode may pass.

[0161] The smoke outlet portion 12 also includes a cap 123, which encapsulates the core body 122 in the cavity. The cap 123 is provided with a hole through which the electrode may pass.

[0162] It should be noted that the structure of the core body 122 is not limited to the above one, and other types of core bodies may be selected according to actual needs.

[0163] It should be noted that, as shown in FIG. 22, the suction nozzle hole 14 may also be provided in the first base 34.

[0164] For example, as shown in FIG. 15, the hopper 4 is provided with a bottom cover 410, and the bottom cover 410 is detachably connected with the hopper 4. For example, the bottom cover 410 is connected with the hopper 4 by bolts. A cavity is formed between the hopper 4 and the bottom cover 410, and the vibration mechanism 28 is installed in the cavity.

[0165] For example, as shown in FIG. 16, the cleaning structure includes brushes 30 provided at intervals along the circumferential direction of the push rod 29. When discharging the ash is required, the push rod 29 moves in an arrow direction B and enters the ash discharging channel 27, and the brushes 30 may clean the ash on the inner wall of the ash discharging channel 27.

[0166] In other embodiments, as shown in FIGS. 20 to 22, the second base includes an installation plate 39, an outer ring portion 40 and a connecting portion 41. The installation plate 39 is connected to the outer ring portion 40. The connecting portion 41 is provided on the installation plate 39 and located inside the outer ring portion 40. The combustion chamber 31 is detachably connected with the connecting portion 41. The combustion chamber 31 is connected with the connecting portion 41 to form an annular structure, and the annular structure can rotate relative to the outer ring portion 40.

[0167] For example, as shown in FIG. 21, the outer ring portion 40 is an open ring structure. The outer ring portion 40 is fixedly installed on the installation plate 39 by bolts and nuts or other fasteners. The connecting portion 41 is in the shape of a cylinder as a whole. A circumferential outer surface of the connecting portion 41 may be adapted to a circumferential inner surface of the outer ring portion 40, and the connecting portion 41 has a notch similar to a sector for accommodating the combustion chamber 31. As shown in FIG. 22, the combustion chamber 31 is located in the notch and, after being connected to the connecting portion 41, forms an annular structure. In this possible design, the connecting portion 41 is integrally provided with a connecting plate 411. The connecting plate 411 is connected with the power output shaft of the second electric motor 720. The second electric motor 720 indirectly drives the combustion chamber 31 to rotate by driving the connecting portion 41.

[0168] It should be noted that the connecting plate 411 may also be integrally formed in the combustion chamber 31, while the driving mechanism directly drives the combustion chamber 31 to rotate.

[0169] In some embodiments, the combustion chamber 31 and the connecting portion 41 are connected by a magnetic element.

[0170] The magnetic element includes a first magnetic element 42 and a second magnetic element 43, and the first magnetic element 42 and the second magnetic element 43 are attracted with each other. For example, as shown in FIG. 21, the combustion chamber 31 has two side walls, and the first magnetic element 42 is provided on the side walls of the combustion chamber 31. The connecting portion 41 also has two side walls, and the second magnetic element 43 is provided on the two side walls of the connecting portion 41. The combustion chamber 31 is placed at the notch, and the first magnetic

element 42 and the second magnetic element 43 are attracted with each other, thereby fixedly installing the combustion chamber 31 on the connecting portion 41. For example, the first magnet is a first magnet, the second magnet 43 is a second magnet, and the first magnet and the second magnet are attracted with each other.

[0171] The automatic ignition device includes an electromagnetic coil assembly, a first electrode 18 and a second electrode 19. The electromagnetic coil assembly is connected with the base, and both the first electrode 18 and the second electrode 19 are connected with the electromagnetic coil assembly. In some embodiments, both the first electrode 18 and the second electrode 19 are located below the combustion chamber 31.

[0172] In other embodiments, both the first electrode 18 and the second electrode 19 are located in the material dropping channel 32. For example, the number of the first electrodes 18 is multiple, and the multiple first electrodes 18 are provided at intervals along a height direction of the material dropping channel 32. The multiple second electrodes 19 correspond to the multiple first electrodes 18 one by one.

[0173] In other embodiments, the first electrode 18 and the second electrode 19 are respectively located at two sides of the combustion chamber 31.

[0174] For example, as shown in FIG. 20 and FIG. 22, both the first electrode 18 and the second electrode 19 are located below the combustion chamber 31, and the combustion area 11 is located on the installation plate 39. An outline shape of the combustion area 11 is circular, and the number of the first electrodes 18 and the number of the second electrodes 19 are multiple. The multiple first electrodes 18 are provided at intervals along the circumferential direction of the combustion area 11. The multiple second electrodes 19 are in one-to-one radial opposition to the multiple first electrodes 18.

[0175] In this second possible design, the first base 34 is provided with a suction nozzle hole 14, and the suction nozzle hole 14 is communicated with the smoke outlet channel 121. Referring to FIGS. 22 and 23, the smoke outlet portion 12 is installed in the material dropping hole 341. The smoke outlet portion 12 is tubular, and a plurality of smoke outlet holes are arranged on a circumferential side wall of the smoke outlet portion 12. The plurality of smoke outlet holes are communicated with a tube cavity of the smoke outlet portion 12 to form the smoke outlet channel 121. The smoke outlet channel 121 is communicated with the suction nozzle hole 14. For example, a size of the smoke outlet hole is as small as possible, and a distance between two adjacent smoke outlet holes is also small, so that the smoke can be preliminarily filtered on the basis of ensuring the smooth flow of smoke and preventing the ash from being inhaled by the user.

[0176] It should be noted that the technical solution of the smoke outlet portion in this second possible design is also applicable to the first possible design. Correspondingly, the technical solution of the smoke outlet portion in the first possible design is also applicable to this second possible design.

[0177] In some embodiments, the installation plate 39 is provided with an ash discharging hole 10. The ash discharging hole 10 may be communicated with the ash discharging channel 27. The ash bin 2 is slidably connected with the installation plate 39, and the ash bin 2 is located below the ash discharging hole 10.

[0178] For example, the installation plate 39 is located between the two ends of the housing 1, the side wall of the housing 1 is provided with an installation hole. The ash bin 2 is detachably installed in the installation hole. The ash bin 2 is slidably connected with the installation plate 39, so that the ash bin 2 may be opened or closed by pushing and pulling.

[0179] In an embodiment, as shown in FIG. 24, a lower surface of the installation plate 39 is provided with a bracket 44, and the ash bin 2 is slidably connected with the bracket 44. The bracket 44 is located below the ash discharging hole 10. The ash bin 2 and the bracket 44 form a drawer-type structure, which is convenient for pulling, installing and disassembling the ash bin 2, and will not be described in detail here.

[0180] As shown in FIG. 22 and FIG. 24, an upper surface of the installation plate 39 may be provided with an ash discharging guide groove 45. The ash discharging hole 10 is provided at an end of a groove bottom of the ash discharging guide groove 45. The groove bottom of the ash discharging guide groove 45 is obliquely provided, and an end of the groove bottom away from the ash discharging hole 10 is higher than an end of the groove bottom provided with the ash discharging hole 10.

[0181] For example, the cross section of the installation plate 39 is circular, and the ash discharging guide groove 45 is generally an arc groove.

[0182] The second electric motor 720 drives the combustion chamber 31 to move to the ignition position, and the automatic ignition device ignites the tobacco in the material dropping channel 32. After the tobacco is burned, ash remains in the material dropping channel 32 of the combustion chamber 31. At this time, the second electric motor 720 drives the combustion chamber 31 to move to a position of the ash discharging hole 10. During the movement, a part of the ash falls into the ash discharge guide groove 45. Since the groove bottom of the ash discharge guide groove 45 is inclined, and the end of the groove bottom away from the ash discharging hole 10 is higher than the end of the groove bottom provided with the ash discharging hole 10, so the ash can move to the position of the ash discharging hole 10 along the ash discharging guide groove 45 under the action of the gravity of the ash and the vibration of the vibration mechanism 28, and the ash falls into the ash bin 2 through the ash discharging hole 10.

[0183] In a third possible design, the distribution chamber 5 is disc-shaped and the preset axis is the axis of the distribution chamber 5. The number of cartridges 8 is multiple, and the multiple cartridges 8 are provided at

intervals along the circumferential direction of the distribution chamber 5. The axis of the distribution chamber 5 is perpendicular to the discharging direction of the hopper 4.

[0184] In some embodiments, as shown in FIG. 25, the first driving mechanism 7 is an electric motor. The first driving mechanism 7 is coaxially connected with the distribution chamber 5 to drive the distribution chamber 5 to rotate around its own axis. When the user does not smoke, the distribution chamber 5 may be driven by the first driving mechanism 7 to rotate to a position where the cartridge 8 is staggered from the discharge port 9 of the hopper 4, to ensure that tobacco does not enter the cartridge 8 again. The cartridge 8 filled with tobacco may also be rotated to a position away from the ignition position by the first driving mechanism 7.

[0185] In this third possible design, the cartridge 8 is a groove provided on the distribution chamber 5. The base is cylindrical. The distribution chamber 5 is located in an inner cavity of the base, and the inner wall of the base is matched with the circumferential side wall of the distribution chamber 5. A groove opening of the groove may be aligned with the ash discharging hole 10.

[0186] In an embodiment, the housing 1 is integrally formed with the base, as shown in FIGS. 25 and 27. In FIGS. 25 and 27, the housing 1 is sectioned and only a part of the housing 1 is shown. The inner wall of the base is adapted to the circumferential side wall of the distribution chamber 5, which means that a gap between the inner wall of the base and the circumferential side wall of the distribution chamber 5 is small, so that the distribution chamber 5 can rotate around itself, and, it can also prevent tobacco from entering a position between the circumferential side wall of the distribution chamber 5 and the inner wall of the base.

[0187] For example, a plurality of grooves are evenly spaced on the circumferential side wall of the distribution chamber 5.

[0188] It should be noted that the cartridge 8 is matched with a cavity wall of the inner cavity to form a relatively closed space. When the cartridge 8 containing a set amount of tobacco is in the ignition position, the set amount of tobacco may be fully burned in the relatively closed space. When not smoking, a negative pressure in the relatively closed space can ensure that the burning tobacco is extinguished, thus saving tobacco and reducing waste.

[0189] For example, a volume and size of the cartridge 8 may be set as required. For example, a set amount of tobacco is inhaled each time. Based on a volume of this set amount of tobacco in a natural accumulation state, the volume and size of cartridge 8 are designed to ensure that a fixed amount of tobacco can be inhaled each time and to avoid excessive smoking. Meanwhile, it can also guarantee the taste and concentration.

[0190] It should be noted that a shutdown time of the electric motor may be set according to the time required for the set amount of tobacco to fall into one cartridge 8 under the action of gravity. That is to say, when the electric motor drives the cartridge 8 to be opposite to the discharge port 9 of the hopper 4, the tobacco in hopper 4 starts to fall into cartridge 8. At this time, the electric motor stops. After the set amount of tobacco all falls into the cartridge 8, the electric motor continues to work to rotate the cartridge 8 loaded with tobacco to a combustion position.

[0191] In an embodiment, the electrode includes a first electrode 18 and a second electrode 19, and the first electrode 18 is provided opposite to the second electrode 19. The side wall of the housing 1 close to the ignition position of the automatic ignition device is provided with a smoke outlet hole 65. For example, the smoke outlet hole 65 is provided in a cavity wall of the chamber. The housing 1 is integrally provided with a smoke outlet channel 121. The smoke outlet channel 121 is communicated with the smoke outlet hole 65. A port of a free end of the smoke outlet channel 121 is a suction nozzle hole 14. A filter cotton is provided in the smoke outlet channel 121. The user inhales the smoke through the suction nozzle hole 14.

[0192] In an embodiment, the cigarette holder 13 is communicated with the suction nozzle hole 14. The cigarette holder 13 is detachably connected with the suction nozzle hole 14, and/or the cigarette holder 13 is hinged with the suction nozzle hole 14. By providing the cigarette holder 13, the airway may be prolonged, to prevent the user from inhaling tobacco or ash when the user's suction force is too large, it can prevent the user from being scalded by overheated smoke.

[0193] When the suction nozzle hole 14 is provided in the hopper 4, the cigarette holder 13 is detachably connected with the hopper 4. When the suction nozzle hole 14 is provided in the base, the cigarette holder 13 is detachably connected with the base, which is convenient for replacing the cigarette holder 13.

[0194] In some embodiments, the cigarette holder 13 is hinged with the suction nozzle hole 14. Specifically, when the suction nozzle hole 14 is provided in the hopper 4, the cigarette holder 13 is hinged to the hopper 4. When the suction nozzle hole 14 is provided in the base, the cigarette holder 13 is hinged to the base. Such an arrangement facilitates the adjustment of the angle of the cigarette holder 13, thus making it convenient for the user to inhale. For example, the cigarette holder 13 is hinged with a hole wall of the suction nozzle hole 14 through a damping rotating shaft to ensure that the cigarette holder 13 can maintain a set angle relative to the hopper 4 or the base.

[0195] It should be noted that the cigarette holder 13 may be hinged with the suction nozzle hole 14 and can be detachably connected with the suction nozzle hole 14.

[0196] In an embodiment, as shown in FIG. 25, the electronic cigarette device further includes a buffer bin 46. The buffer bin 46 is located between the hopper 4 and the distribution chamber 5, and the discharge port 9 of the hopper 4 is communicated with the buffer bin 46. The

buffer bin 46 is provided with a discharge hole 461. The discharge hole 461 may be aligned with the cartridge 8. The buffer bin 46 is provided with a material pushing mechanism. The material pushing mechanism includes a push plate 47 and a lead screw 48. The push plate 47 is located within the buffer bin 46. The lead screw 48 may drive the push plate 47 to move back and forth to push the tobacco into the discharge hole 461.

[0197] For example, a size and shape of the discharge hole 461 can be adapted to a size and shape of a groove opening of the groove, to ensure that after the discharge hole 461 is aligned with the cartridge 8, the tobacco can accurately fall into the cartridge 8.

[0198] In some embodiments, an inner wall of the buffer bin 46 is provided with a position sensor 49. The position sensor 49 is located on a movement path of the push plate 47. During a process in which the lead screw 48 drives the push plate 47 to move in a direction close to the discharge port 9, when the push plate 47 touches the position sensor 49, the lead screw 48 will rotate in a reverse direction to drive the push plate 47 to move in a direction away from the discharge port 9.

[0199] In some embodiments, the housing 1 is integrally provided with the buffer bin 46.

[0200] In some embodiments, the hopper 4 is integrally provided with the buffer bin 46.

[0201] It should be noted that the hopper 4 and the buffer bin 46 may also be detachably connected.

[0202] For example, as shown in FIG. 27, the housing 1 further includes an ash receiving cavity 50. An ash bin 2 is located in the ash receiving cavity 50. The ash receiving cavity 50 is communicated with the base. For example, the bottom of the base is provided with an ash dropping port. The ash dropping port is communicated with the ash receiving cavity 50. The top of the ash bin 2 is provided with an opening, which is opposite to the ash dropping port. When the tobacco in the cartridge 8 is burned at the ignition position, the ash is concentrated in the cartridge 8. The first driving mechanism 7 drives the distribution chamber 5 to continue to rotate. When the opening of the cartridge 8 faces towards the ash dropping port, the ash in the cartridge 8 falls into the ash bin 2 from the ash dropping port.

[0203] In an embodiment, a cleaning structure is arranged in the ash bin 2, and the cleaning structure may be in contact with the inner wall of the cartridge 8.

[0204] As shown in FIG. 25, when in use, enough tobacco for multiple uses is placed in the hopper 4 by the user. For example, the first driving mechanism 7 drives the distribution chamber 5 to rotate counterclockwise. When one of the cartridges 8 is opposite to the discharge port 9 of the hopper 4, the tobacco in the hopper 4 may fall into the cartridge 8 from the discharge port 9, and the driving mechanism may continue to drive the distribution chamber 5 to rotate counterclockwise. When the cartridge 8 carrying tobacco moves to the ignition position of the automatic ignition device, the automatic ignition device may ignite the tobacco in the cartridge 8, generating smoke, and the user may inhale the smoke through the suction nozzle hole 14. When another cartridge 8 beside this cartridge 8 is opposite to the discharge port 9, the tobacco in the hopper 4 may fall into this another cartridge 8, and then continue to rotate to the ignition position of the automatic ignition device for combustion. In this way, the tobacco in different cartridges 8 may be burned respectively, and the operation is very convenient.

[0205] It should be noted that the technical solution of the combustion mechanism and ash discharging mechanism in the first possible design is also applicable to the second and third possible designs.

[0206] In addition, it should be noted that "parallel to" and "perpendicular to" in this embodiment refer to generally parallel and generally vertical respectively, that is, the discharging direction is arranged as a perpendicular downward direction of the tobacco under its own gravity, and the axis of the distribution chamber is parallel to or perpendicular to the set direction.

[0207] In a fourth possible design, as shown in FIG. 28 to FIG. 35, the distribution portion includes a distribution chamber 5 and a gland assembly 57. The distribution chamber 5 is tubular, the preset axis is as the axis of the distribution chamber 5, the distribution chamber 5 has a first port 51 and a second port 52 which are opposite. The gland assembly 57 is provided at a second end of the distribution chamber 5, and the gland assembly 57 is used for pushing the tobacco in the distribution chamber 5 towards a first end. For example, the gland assembly 57 may push the tobacco in the distribution chamber 5 along the preset axis in a direction close to the first end. The automatic ignition device is used to ignite the tobacco close to the first port 51, and the ash generated by the combustion of the tobacco may protrude from the first port 51. The ash discharging mechanism is used to discharge the ash protruding from the first port 51 away from the first port 51 to ensure that the subsequently generated ash can continue to be pushed out.

[0208] In this fourth possible design, the distribution chamber 5 is tubular. For example, the distribution chamber 5 is circular. The electronic cigarette device further includes a smoke tube 53. A smoke outlet channel 121 is formed in the inner cavity of the smoke tube 53. The side wall of the distribution chamber 5 is provided with an air inlet hole 58 and a smoke outlet hole 65. The smoke outlet hole 65 is communicated with the smoke tube 53. A side of the first port 51 of the distribution chamber 5 facing away from the second port 52 is provided with a stop portion 56, and a gap is provided between the stop portion 56 and an end face of the first port 51. The gland assembly 57 is used to push the tobacco in the distribution chamber 5 in a direction close to the stop portion 56, so that the ash generated by the combustion of the tobacco may be located in the gap between the first port 51 and the stop portion 56. The ash discharging position is the gap between the stop portion 56 and the end face of the first port 51.

[0209] In this fourth possible design, the ash discharging mechanism includes a second driving mechanism 54 and a cartridge cover 55. The second driving mechanism 54 is in transmission connection with the cartridge cover 55 so that the cartridge cover 55 may open or close the first port 51, and the closing action of the cartridge cover 55 may make the ash be flicked off.

[0210] When in use, the cartridge cover 55 may be closed on the second port 52, and then the tobacco may be filled in the distribution chamber 5. The gland assembly 57 is covered on the second port 52, and the gland assembly 57 may push the tobacco in the distribution chamber 5 towards the stop portion 56 until the tobacco contacts the inner surface of the cartridge cover 55. The automatic ignition device ignites the tobacco close to the first port 51, and the user inhales the smoke through the smoke tube 53. Then, the second driving mechanism 54 drives the cartridge cover 55 to move to open the first port 51. Under the action of the gland assembly 57, the ash 100 generated by the combustion of tobacco may be pushed out of the first port 51. Since the ash newly generated is usually in the form of loose lumps, the ash can be located in the gap between the first port 51 and the stop portion 56. At this time, the second driving mechanism 54 drives the cartridge cover 55 to close the first port 51, and the cartridge cover 55 may bounce off the ash during the closing process. Then, the remaining tobacco in the distribution chamber 5 may continue to burn, that is, the automatic ignition device may ignite the tobacco close to the first port 51. In this way, smoke suction and ash cleaning can be carried out alternately.

[0211] Certainly, after the tobacco is filled, a part of the tobacco located at the first port 51 may be pushed out into the gap between the first port 51 and the stop portion 56, and then the tobacco in the gap is ignited by the automatic ignition device, and the loose and massive ash generated after combustion is still located in the gap. At this time, the second driving mechanism 54 drives the cartridge cover 55 to close the first port 51, and the cartridge cover 55 may bounce off the ash during the closing process. Then, the gland assembly 57 continues to push the part of the tobacco located at the first port 51 out into the gap between the first port 51 and the stop portion 56. The automatic ignition device may still ignite the part of the tobacco located close to the first port 51 and in the gap. In this way, smoke suction and ash cleaning may be carried out alternately.

[0212] As above described, the automatic ignition device may ignite the tobacco close to the first port 51, which means that the automatic ignition device may ignite both the tobacco close to the first port 51 in the distribution chamber 5 and also ignite the tobacco close to the first port 51 outside the distribution chamber 5. For example, referring to FIG. 34, the tobacco close to the first port 51 is named as a combustion segment 200.

[0213] In an embodiment, a distance d between the stop portion 56 and the end face of the first port 51 is 0.1 mm ~ 5 mm to ensure that the ash will not fall under its own gravity as much as possible, and further prevent the tobacco in the distribution chamber 5 from being pushed out of the distribution chamber 5 by the gland assembly 57 along with the natural falling of the ash.

[0214] For example, as shown in FIG. 34, the stop portion 56 may have a plate structure, and the distance d between a plate surface of the stop portion 56 close to the first port 51 and the end surface of the first port 51 is 0.1 mm ~ 5 mm. In this way, the amount of tobacco burned at a time can be basically controlled. It should be understood that in the actual design and production process, the distance between the stop portion 56 and the end face of the first port 51 should be matched with an inner diameter of the distribution chamber 5 to ensure that the amount of each combustion is basically the same. Certainly, in order to change the amount of combustion, the distance between the stop portion and the end face of the first port 51 may also be changed, or the distribution portion chamber 5 with different inner diameters may be replaced.

[0215] For example, the distance d may be but not limited to 0.1mm, 0.2 mm, 0.3 mm, 0.4 mm, 0.5 mm, 0.6 mm, 0.7 mm, 0.8 mm, 0.9 mm, 1 mm, 1.2 mm, 1.4 mm, 1.6 mm, 1.8 mm, 2 mm, 2.1 mm, 2.2 mm, 2.3 mm, 2.4 mm, 2.5 mm, 2.6 mm, 2.7 mm, 2.8 mm, 2.9 mm, 3 mm, 3.2 mm, 3.4 mm, 3.6 mm, 3.8 mm, 4 mm, 4.2 mm, 4.4 mm, 4.6 mm, 4.8 mm or 5 mm.

[0216] In an embodiment, as shown in FIG. 29, the cartridge cover 55 includes a cover body 551 and a connector 552. The cover body 551 is fixedly connected with the connector 552, and a thickness of the cover body 551 is adapted to the distance between the stop portion 56 and the end face of the first port 51. The power output shaft of the second driving mechanism 54 is connected with the connector 552, so that the cartridge cover 55 rotates around an axis of the power output shaft of the second driving mechanism 54 relative to the first port 51 of the distribution chamber 5, and an end face of the cover body 551 close to the distribution chamber 5 is in contact with the end face of the first port 51 of the distribution chamber 5. The axis of the power output shaft of the second driving mechanism 54 is parallel to the preset axis.

[0217] For example, the cartridge cover 55 is plate-shaped as a whole, and the cover body 551 and the connector 552 are integrally formed. A plate surface of the cartridge cover 55 is perpendicular to the axis of the power output shaft of the second driving mechanism 54.

[0218] For example, the second driving mechanism 54 is installed on an outer wall of the distribution chamber 5. The axis of the power output shaft of the second driving mechanism 54 is parallel to a length direction of the distribution chamber 5, so that the cartridge cover 55 can rotate in its own plane until the cover body 551 closes the first port 51 or moves away from the first port 51.

[0219] Specifically, as shown in FIGS. 29 and 34, when a short piece of ash 100 (e.g., ash with a length of 2 mm ~ 3 mm) generated by the combustion of tobacco is pushed

out of the first port 51, the driving mechanism drives the cartridge cover 55 to rotate. As the thickness of the cover body 551 is adapted to the distance between the stop portion 56 and the end face of the first port 51, when the cover body 551 rotates to the first port 51, the cover body 551 may bounce a small piece of ash protruding from the first port 51 away from the first port 51, and the ash separated from the first port 51 naturally falls. At the same time, the cover body 551 replaces the position of the small piece of ash and blocks the first port 51. For example, when the cover body 551 is covered on the first port 51, an end face of the cover body 551 close to the distribution chamber 5 contacts the end face of the first port 51 of the distribution chamber 5. For example, the shape and size of the cross section of the cover body 551 are adapted to the shape and size of the cross section of the distribution chamber 5.

[0220] In an embodiment, the electronic cigarette device further includes an annular side wall 66, and the annular side wall 66 is integrally provided with the stop portion 56. The annular side wall and the stop portion 56 form a cylindrical structure, which is equivalent to an integration of the housing 1 and the ash bin 2, so that the whole electronic cigarette device may be shaped like a cigarette and is convenient to carry. An axis of the cylindrical structure is parallel to the preset axis, and the stop portion 56 may be used as the bottom of the cylinder. At least part of the smoke tube 53, the distribution chamber 5, the automatic ignition device and the second driving mechanism 54 are all located inside the cylindrical structure.

[0221] In an embodiment, as shown in FIG. 28, the stop portion 56 is provided with an ash discharging port and an air inlet 59, and the ash discharging port is provided with an ash discharging bin door 60.

[0222] During use, the ash falls on the stop portion 56, that is, the ash falls on the bottom of the cylinder. After a period of use, the ash accumulated at the bottom of the cylinder gradually increases. At this time, the ash discharging bin door 60 is opened to clean the ash in the housing.

[0223] In an embodiment, the smoke tube 53 is slidably connected with the distribution chamber 5, so that the smoke tube 53 may move relative to the length direction of the distribution chamber 5.

[0224] In some embodiments, an extending direction of the smoke tube 53 coincides with an extending direction of the distribution chamber 5.

[0225] For example, as shown in FIGS. 31 and 32, the outer tube wall of the smoke tube 53 is provided with a chute 61. A length direction of the chute 61 is parallel to the axis of the smoke tube 53. The distribution chamber 5 is provided with a convex strip 62. The chute 61 is matched with the convex strip 62, so that the smoke tube 53 may slide relative to the distribution chamber 5. When the smoke tube 53 needs to be cleaned or replaced, the smoke tube 53 may be pulled out from the annular side wall. After cleaning, or when a new smoke tube 53 is replaced, the smoke tube 53 may be pushed into the annular side wall through a first through hole.

[0226] In an embodiment, referring to FIG. 32, the smoke tube 53 includes a first tube segment 531 and a second tube segment 532. The first tube segment 531 is hinged with the second tube segment 532, and the second tube segment 532 is located outside the annular side wall.

[0227] At least part of the first tube segment 531 is located inside the annular side wall, and an axis of the first tube segment 531 is parallel to the axis of the distribution chamber 5. The second tube segment 532 and the first tube segment 531 are hinged by a hinge shaft. For example, the hinge shaft is a damping rotating shaft, which can ensure that the second tube segment 532 can maintain at a set angle with the first tube segment 531 without an external force.

[0228] In an embodiment, as shown in FIGS. 28 and 33, the gland assembly 57 includes an end cover 571, an elastic element 572 and a pressing plate 573. The end cover 571 is connected with an end of the elastic element 572, and the pressing plate 573 is connected with the other end of the elastic element 572. The end cover 571 is detachably covered at the second port 52 of the distribution chamber 5, and the pressing plate 573 can abut against the tobacco in the distribution chamber 5.

[0229] The end cover 571 is detachably connected with the distribution chamber 5. For example, the end cover 571 is in threaded connection or interference fit with the second port 52 of the distribution chamber 5.

[0230] For example, the elastic element 572 is a compression spring.

[0231] When the distribution chamber 5 is filled with a proper amount of tobacco, the gland assembly 57 is installed at the second port 52 of the distribution chamber 5. The pressing plate 573 abuts against the tobacco in the distribution chamber 5. When the end cover 571 is connected with the second port 52 of the distribution chamber 5, the elastic element 572 is in a compressed state. The granular tobacco located between the pressing plate 573 and the cover body 551 can be appropriately compacted, to ensure that the tobacco in the distribution chamber 5 can generally form a columnar tobacco as a whole, so that it can be pushed towards the first port 51 by the gland assembly 57 as a whole. That is to say, the tobacco particles located between the pressing plate 573 and the cover body 551 can fill this space, but the tobacco particles are not completely adhered together, that is, the tobacco is not in a completely compressed state.

[0232] When in use, the cartridge cover 55 is covered on the second port 52, and then the tobacco is filled in the distribution chamber 5. The gland assembly 57 is covered on the second port 52, and the elastic element 572 is in a compressed state to properly compact the tobacco between the pressing plate 573 and the cover body 551. The automatic ignition device ignites the tobacco close to the first port 51, and the user inhales the smoke through the smoke tube 53. Then, the driving mechanism drives

the cartridge cover 55 to move to open the first port 51. Under an elastic force of the elastic element 572, the columnar tobacco moves in a direction close to the stop portion 56 as a whole, and the ash generated by the combustion of the tobacco is just pushed out of the first port 51. As the ash newly generated is usually loose and massive ash 100, the ash may be located in the gap between the first port 51 and the stop portion 56. At this time, the driving mechanism drives the cartridge cover 55 to close the first port 51, and the cartridge cover 55 may bounce off the ash during the closing process. Then, the remaining tobacco in the distribution chamber 5 may continue to burn, that is, the automatic ignition device can ignite the tobacco close to the first port 51. In this way, smoke suction and ash cleaning can be carried out alternately.

[0233] In this fourth possible design, an installation hole is provided on the end face of the first port 51 of the distribution chamber 5, or an installation hole is provided at a position close to the first port 51 on the side wall of the distribution chamber 5. The electrode is installed in the installation hole.

[0234] In some embodiments, as shown in FIG. 34, an installation hole is provided at a position close to the first port 51 on the side wall of the distribution chamber 5. The electrode is installed in the installation hole. A number of the installation holes is not less than the number of the electrodes. The arc flame or ion flame generate by the electrode ignites the tobacco close to the first port 51.

[0235] In other embodiments, as shown in FIG. 35, the end face of the first port 51 of the distribution chamber 5 is provided with an installation hole, and the electrode is installed in the installation hole. The arc fire generated in this way is located outside the end face of the first port 51. After the tobacco is filled, the part of the tobacco located at the first port 51 is first pushed out into the gap between the first port 51 and the stop portion 56, and then the electrode generates an arc fire or ion flame to ignite the tobacco in the gap.

[0236] In this fourth possible design, as an example, the automatic ignition device includes an electromagnetic coil assembly installed outside the distribution chamber 5 and an electrode connected to the electromagnetic coil assembly.

[0237] The control module 3 includes a controller 310 and a relay 320. The relay 320 can control the on and off of the ignition device. The controller 310 may control the start and stop of the driving mechanism and also control the ignition time of the ignition device. For example, the controller 310 may be an MCU.

[0238] In an embodiment, by way of example, as shown in FIG. 34, the installation holes include a first installation hole 63 and a second installation hole 64, and the electrodes include a first electrode 18 and a second electrode 19. The first electrode 18 is installed in the first installation hole 63 and the second electrode 19 is installed in the second installation hole 64.

[0239] A number of the first installation holes 63 may be one or multiple, and a number of the second installation holes 64 is the same as that of the first installation holes 63. The first installation hole 63 is opposite to the second installation hole 64, so that the first electrode 18 and the second electrode 19 are provided opposite to each other.

[0240] In an embodiment, the first installation hole 63 and the second installation hole 64 are oppositely provided along the radial direction of the distribution chamber 5. In this way, the first electrode 18 and the second electrode 19 are provided oppositely along the radial direction of the distribution chamber 5, thereby generating an arc fire.

[0241] In an embodiment, the distribution chamber 5 is provided with a thermal insulation layer to reduce heat transfer to the relay 320 and the controller 310.

[0242] In an embodiment, the housing 1 is provided with a thermal insulation layer. For example, the thermal insulation layer may be provided on the inner wall of the housing 1 or on the outer wall of the housing 1.

[0243] It should be noted that the housing 1 may be made of a heat insulation material.

[0244] In some embodiments, the electronic cigarette device further includes a cover plate (not shown). The cover plate is located at an end of the annular side wall 66 away from the stop portion 56, and the cover plate is detachably connected with the annular side wall.

[0245] In some embodiments, the cover plate is provided with a first through hole. The smoke tube 53 passes through the annular side wall through the first through hole, that is, a part of the smoke tube 53 is located inside the annular side wall, and the other part of the smoke tube 53 is located outside the annular side wall. This is convenient for the user to inhale the smoke through the smoke tube 53.

[0246] In some embodiments, the cover plate is provided with a second through hole. The second through hole is communicated with the second port 52 of the distribution chamber 5, and the gland assembly 57 is covered on the second port 52. A part of the gland assembly 57 is located in the distribution chamber 5, and the other part of the gland assembly 57 is located on a side of the cover plate away from the stop portion 56, so that the gland assembly 57 is convenient to install and disassemble.

[0247] It should be noted that the technical solution of the combustion mechanism and ash discharging mechanism in the first possible design is also applicable to the fourth possible design.

[0248] As above described, the electronic cigarette device provided in this embodiment can adjust the smoking concentration and the consumption of tobacco each time by providing the distribution portion to convey a set amount of tobacco (e.g., granular tobacco with a particle size of 1 mm ~ 2 mm) to the ignition position of the automatic ignition device. By providing the automatic ignition device, especially by using a Tesla arc and ion flame technology, the combustion efficiency of tobacco can be improved, and the user can be ensured to inhale

the smoke at any time. Usually, smoke can be generated for the user within 1 second of the ignition, to ensure the full and immediate combustion of the tobacco and reduce the generation of smoke oil. At the same time, by providing the ash discharging mechanism, when the distribution mechanism conveys the ash generated by combustion to the ash discharging position, the ash discharging mechanism can timely discharge the ash generated by combustion away from the ash discharging position, to avoid the accumulation of the ash and the tobacco oil, thereby simplifying the operation process of the existing tobacco pipe as a whole, improving the convenience, improving the use efficiency of tobacco and saving the consumption of tobacco.

[0249] Finally, it should be noted that the above embodiments are merely illustrative of the technical solutions of the present disclosure and are not intended to limit it. Although the present disclosure has been described in detail with reference to the foregoing embodiments, those skilled in the art should understand that they can still modify the technical solutions described in the foregoing embodiments or equivalently replace some or all of the technical features. Such modifications or replacements do not cause the essence of the corresponding technical solutions to depart from the scope of the technical solutions of the embodiments of the present disclosure.

Claims

1. An electronic cigarette device, comprising a distribution mechanism, a combustion mechanism and an ash discharging mechanism, wherein the distribution mechanism comprises a distribution portion, and the combustion mechanism comprises an automatic ignition device, the distribution portion being used for conveying a set amount of tobacco to an ignition position of the automatic ignition device, and the automatic ignition device being used for igniting the tobacco; an ash discharging position is provided on a side of the ignition position, the distribution portion is further used for conveying ash generated by means of combustion to the ash discharging position, and the ash discharging mechanism is used for discharging the ash generated by means of combustion away from the ash discharging position.

2. The electronic cigarette device according to claim 1, wherein the distribution portion is rotatable around a preset axis to convey the ash to the ash discharging position; or, the distribution portion is movable along a preset axis to convey the ash to the ash discharging position;
wherein the ignition position and the ash discharging position are sequentially provided along a movement path of the distribution portion.

3. The electronic cigarette device according to claim 2, wherein the distribution portion comprises a hopper, a distribution chamber, a base and a first driving mechanism; the hopper is located above the distribution chamber; the distribution chamber is installed on the base; and the ash discharging position is an ash discharging hole provided on the base; and the distribution chamber is provided with a cartridge, and the first driving mechanism is capable of driving the distribution chamber to rotate around a rotational axis relative to the base, so that the cartridge is communicated with a discharge port of the hopper or the cartridge is aligned with the ignition position of the automatic ignition device; wherein an extension direction of the rotational axis is consistent with an extension direction of the preset axis.

4. The electronic cigarette device according to claim 3, wherein the distribution chamber is disc-shaped, and the preset axis is an axis of the distribution chamber; a number of the cartridges is multiple, and the multiple cartridges are provided at intervals along a circumferential direction of the distribution chamber; and the axis of the distribution chamber is parallel to a discharging direction of the hopper, or the axis of the distribution chamber is perpendicular to a discharging direction of the hopper.

5. The electronic cigarette device according to claim 4, wherein the axis of the distribution chamber is parallel to the discharging direction of the hopper, and the cartridge is a through hole provided on the distribution chamber; and the distribution chamber is located between the hopper and the base, a lower surface of the distribution chamber is attached to an upper surface of the base, and the through hole is capable of communicating with the ash discharging hole.

6. The electronic cigarette device according to claim 5, wherein the distribution portion further comprises a combustion chamber; the combustion chamber is installed on the base and is provided with a material dropping channel; the material dropping channel is capable of being aligned with the cartridge to make the tobacco in the cartridge fall into the material dropping channel; and the automatic ignition device is used for igniting the tobacco in the material dropping channel; and the material dropping channel is capable of further being aligned with the ash discharging hole.

7. The electronic cigarette device according to claim 6, wherein the base is provided with an accommodating cavity, and the combustion chamber is located in the accommodating cavity; and/or the combustion chamber is detachably connected with the base.

8. The electronic cigarette device according to claim 4, wherein the axis of the distribution chamber is perpendicular to the discharging direction of the hopper, and the cartridge is a groove provided to the distribution chamber; the base is cylindrical, the distribution chamber is located in an inner cavity of the base, and the inner wall of the base is matched with a circumferential side wall of the distribution chamber; and a groove opening of the groove is capable of being aligned with the ash discharging hole.

9. The electronic cigarette device according to claim 3, further comprising a preheating element, wherein the preheating element is provided on the base or the preheating element is provided to the distribution chamber.

10. The electronic cigarette device according to claim 3, further comprising a smoke outlet portion, wherein the smoke outlet portion is provided with a smoke outlet channel, and the smoke outlet channel is communicated with the ignition position of the automatic ignition device.

11. The electronic cigarette device according to claim 10, wherein the hopper is provided with a suction nozzle hole, or the smoke outlet portion is provided with a suction nozzle hole; and the suction nozzle hole is communicated with the smoke outlet channel.

12. The electronic cigarette device according to claim 2, wherein the distribution portion comprises a distribution chamber and a gland assembly, the distribution chamber is tubular, the preset axis is an axis of the distribution chamber, the distribution chamber is provided with a first port and a second port which are opposite, the gland assembly is provided at a second end of the distribution chamber, and the gland assembly is used for pushing the tobacco in the distribution chamber towards a first end; and the automatic ignition device is used for igniting the tobacco close to the first port, and the ash generated by combustion of the tobacco is capable of protruding from the first port.

13. The electronic cigarette device according to claim 12, wherein a stop portion is provided on a side of the first port of the distribution chamber facing away from the second port, and a gap is arranged between the stop portion and an end face of the first port, the gland assembly is used for pushing the tobacco in the distribution chamber in a direction close to the stop portion, so that the ash generated by the combustion of the tobacco is capable of being located in a gap between the first port and the stop portion; wherein the ash discharging position is the gap between the stop portion and the end face of the first port.

14. The electronic cigarette device according to claim 13, wherein a distance between the stop portion and the end face of the first port is 0.1 mm ~ 5 mm.

15. The electronic cigarette device according to claim 13, further comprising an annular side wall, wherein the annular side wall and the stop portion are integrally formed.

16. The electronic cigarette device according to claim 15, wherein the stop portion is provided with an ash discharging port and an air inlet, and the ash discharging port is provided with an ash discharging bin door.

17. The electronic cigarette device according to claim 12, wherein the gland assembly comprises an end cover, an elastic element and a pressing plate, the end cover is connected with one end of the elastic element, and the pressing plate is connected with the other end of the elastic element; and the end cover is detachably covered on the second port of the distribution chamber, and the pressing plate is capable of abutting against the tobacco in the distribution chamber.

18. The electronic cigarette device according to claim 12, further comprising a smoke tube; wherein an air inlet hole and a smoke outlet hole is provided on a side wall of the distribution chamber, and the smoke outlet hole is communicated with the smoke tube.

19. The electronic cigarette device according to claim 18, wherein the smoke tube is slidably connected with the distribution chamber, so that the smoke tube is capable of moving relative to a length direction of the distribution chamber.

20. The electronic cigarette device according to claim 12, wherein the ash discharging mechanism comprises a second driving mechanism and a cartridge cover, the second driving mechanism is in transmission connection with the cartridge cover to enable the cartridge cover to open or close the first port, and a closing action of the cartridge cover making the ash be flicked off.

21. The electronic cigarette device according to any one of claims 1 to 20, wherein the automatic ignition device comprises an electromagnetic coil assembly and an electrode, the electromagnetic coil assembly is connected with at least part of the distribution portion, and the electrode is connected with the electromagnetic coil assembly; or, the automatic ignition device comprises an electric heating wire or a gas ignition mechanism.

22. The electronic cigarette device according to claim

21, wherein the automatic ignition device comprises the electromagnetic coil assembly and the electrode, a diameter of the electromagnetic coil assembly ranges from 2 cm to 4.5 cm, and a height of the electromagnetic coil assembly ranges from 4 cm to 7 cm.

23. The electronic cigarette device according to claim 21, wherein the automatic ignition device comprises the electromagnetic coil assembly and the electrode, the electromagnetic coil assembly comprises a Tesla coil, and a number of the electrodes is at least one.

24. The electronic cigarette device according to claim 23, wherein the electrode comprises a first electrode and a second electrode, and the first electrode is provided opposite to the second electrode.

25. The electronic cigarette device according to claim 24, wherein a number of the first electrodes is at least one, and a number of the second electrodes is equal to the number of the first electrodes; and the distribution portion has a combustion area, and a projection of the first electrode and a projection of the second electrode in a plane where the combustion area is located are both located in the combustion area.

26. The electronic cigarette device according to claim 6 or claim 7, wherein the automatic ignition device comprises an electromagnetic coil assembly, a first electrode and a second electrode, the electromagnetic coil assembly is connected with the base, and both the first electrode and the second electrode are connected with the electromagnetic coil assembly; and the first electrode and the second electrode are both located below the combustion chamber, or the first electrode and the second electrode are both located in the material dropping channel, or the first electrode and the second electrode are respectively located at both sides of the combustion chamber.

27. The electronic cigarette device according to claim 26, wherein a number of the first electrodes is multiple, and the multiple first electrodes are provided at intervals along a height direction of the material dropping channel, and the multiple second electrodes correspond to the multiple first electrodes one by one.

28. The electronic cigarette device according to any one of claims 12 to 20, wherein the automatic ignition device comprises an electromagnetic coil assembly and an electrode, the electromagnetic coil assembly is installed outside the distribution chamber, and the electrode is connected with the electromagnetic coil assembly.

29. The electronic cigarette device according to claim 28, wherein an installation hole is provided to an end face of the first port of the distribution chamber, or an installation hole is provided at a position on the side wall of the distribution chamber close to the first port; and the electrode is installed in the installation hole.

30. The electronic cigarette device according to any one of claims 1 to 20, further comprising a housing and an ash bin, wherein at least part of the combustion mechanism, the ash discharging mechanism and the distribution mechanism are located inside the housing, the ash bin is detachably connected with the housing, and the ash bin is opposite to the ash discharging position.

31. The electronic cigarette device according to claim 30, wherein the ash discharging mechanism comprises a thrust mechanism, the thrust mechanism is installed in the housing, and at least part of the thrust mechanism is capable of extending into the distribution portion to push the ash in the distribution portion into the ash bin.

32. The electronic cigarette device according to claim 31, wherein the thrust mechanism comprises a push rod, the push rod is provided with a cleaning structure, and the cleaning structure is capable of contacting with an inner wall of the distribution portion.

33. The electronic cigarette device according to claim 32, wherein the cleaning structure comprises a brush and/or a scraper.

34. The electronic cigarette device according to claim 30, wherein the ash discharging mechanism is a vibration mechanism, and the vibration mechanism is installed to the housing.

35. The electronic cigarette device according to any one of claims 1 to 20, further comprising a crushing mechanism, wherein the crushing mechanism is used for crushing tobacco strands into granular tobacco with a particle size of 1 mm ~ 2 mm.

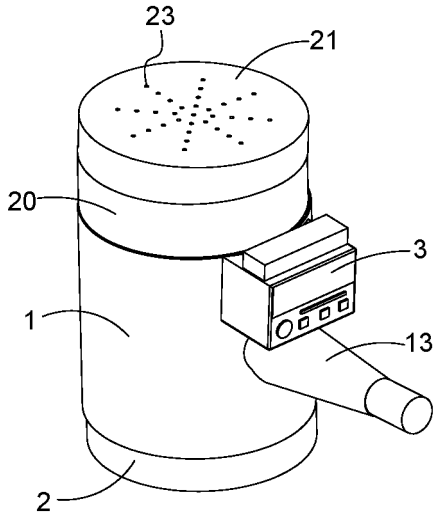


FIG. 1

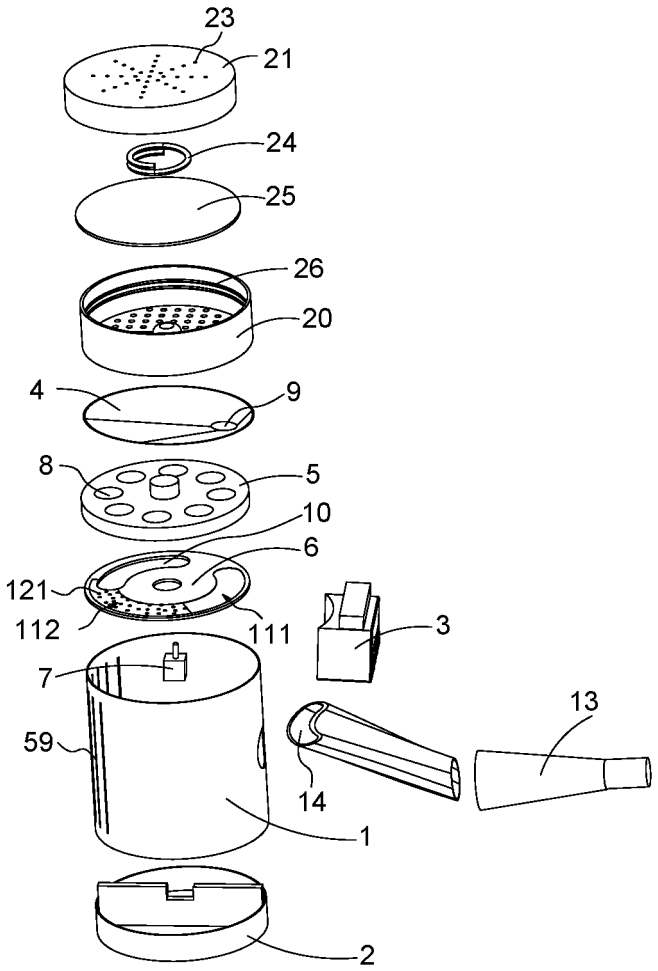


FIG. 2

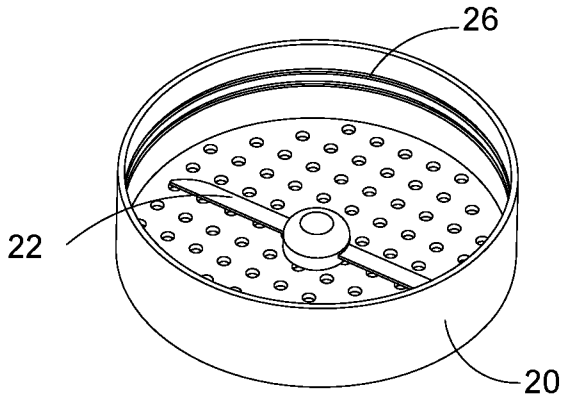


FIG. 3

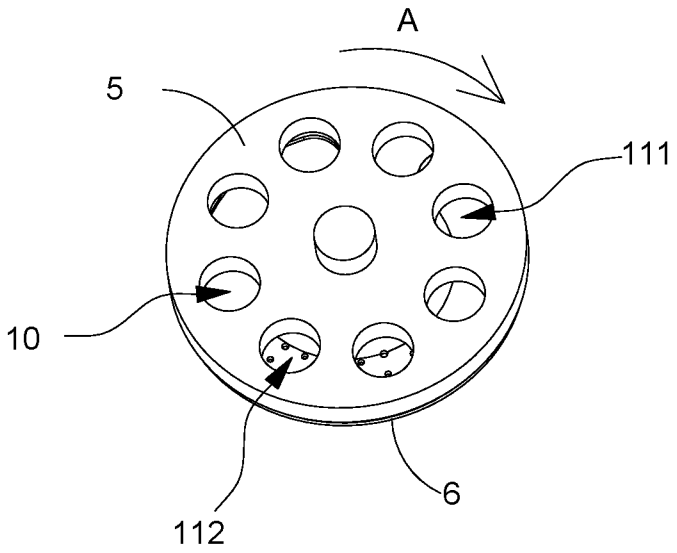


FIG. 4

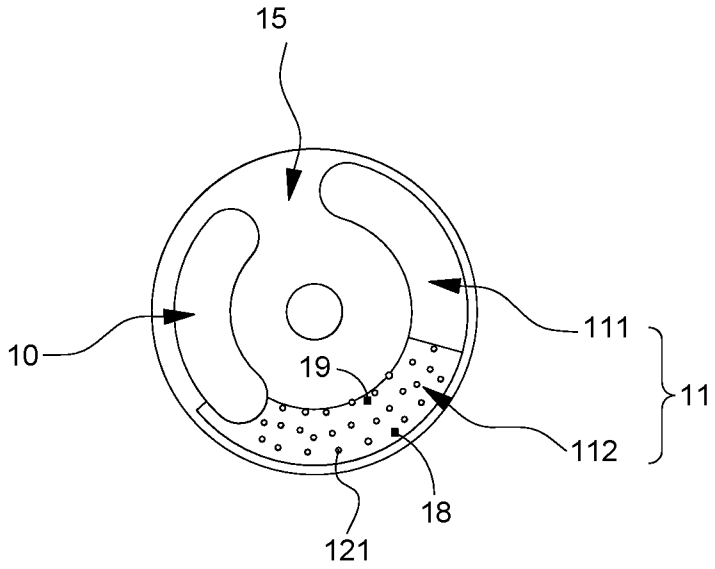


FIG. 5

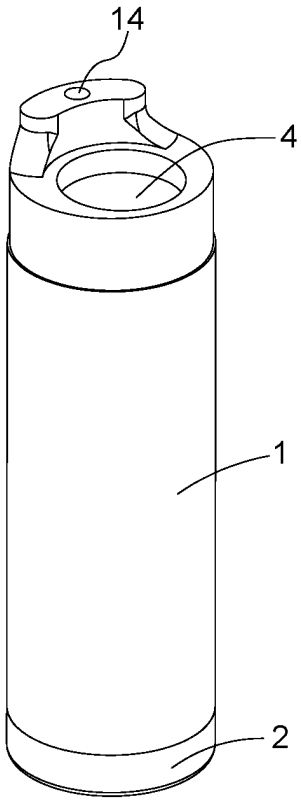


FIG. 6

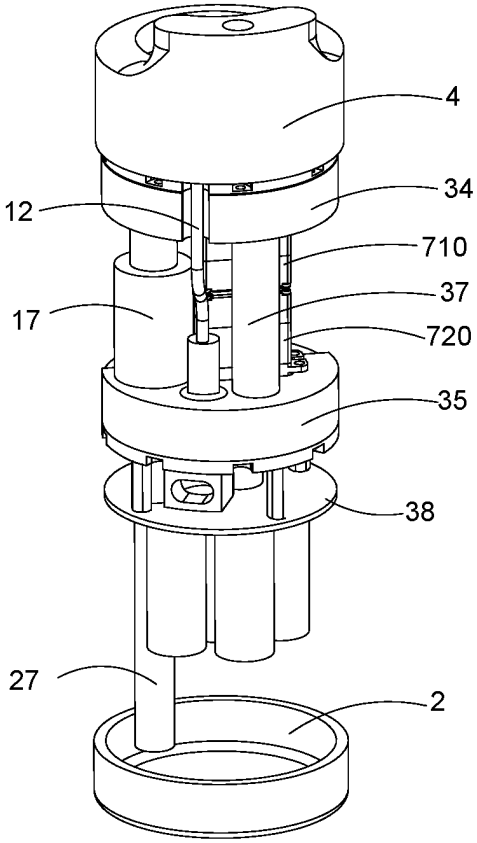
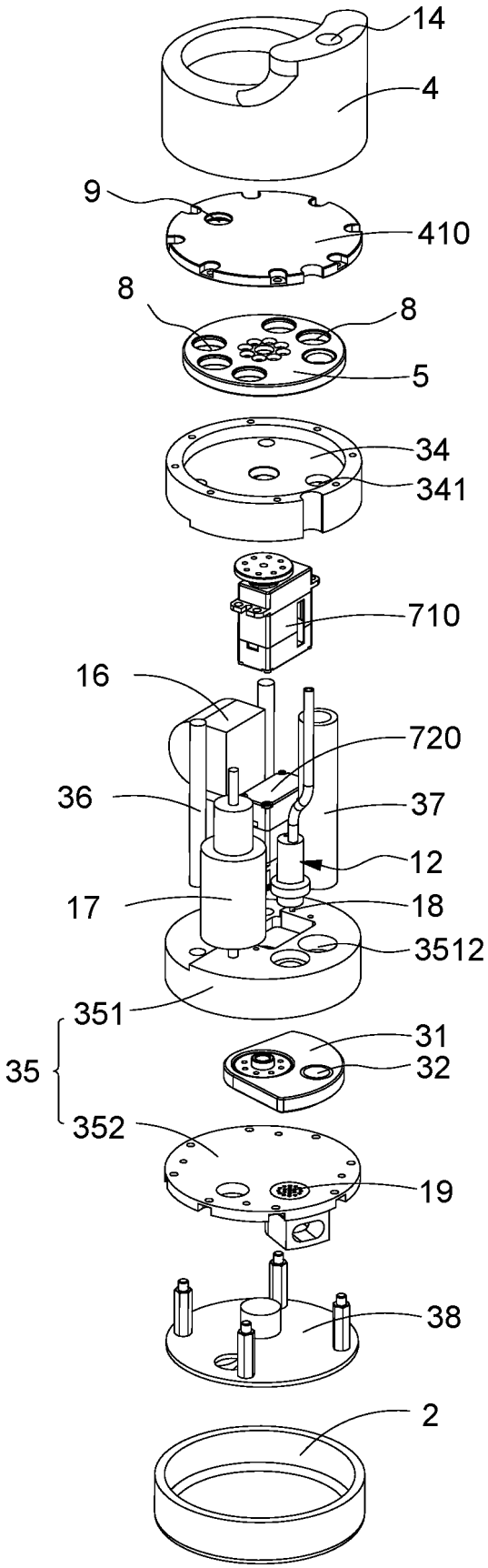


FIG. 7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4
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8
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34
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FIG. 8

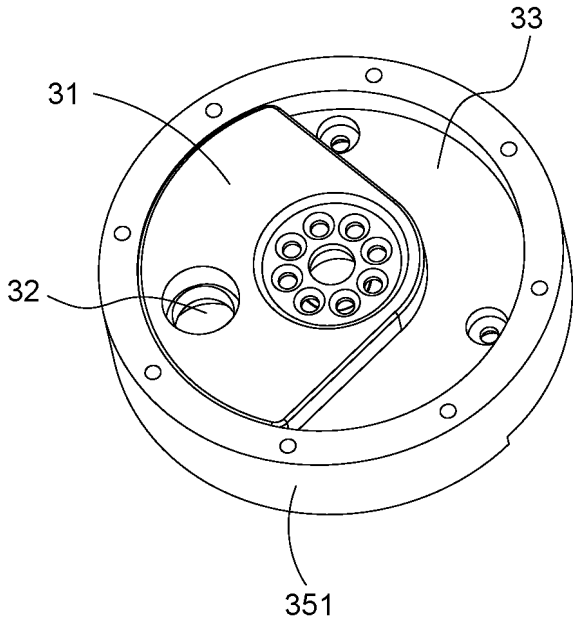

FIG. 9

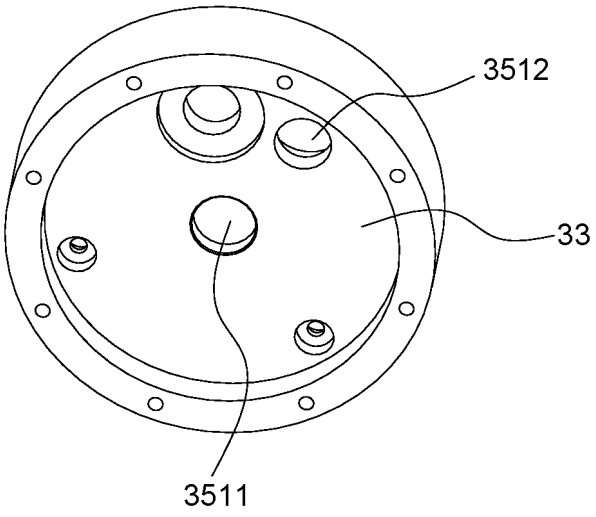

FIG. 10

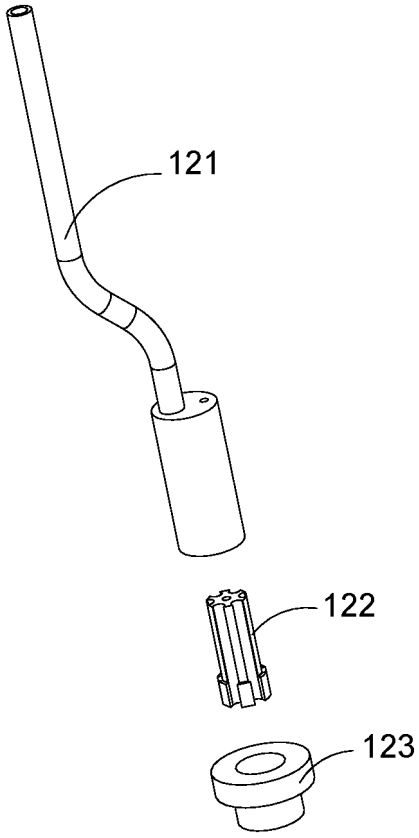

FIG. 11

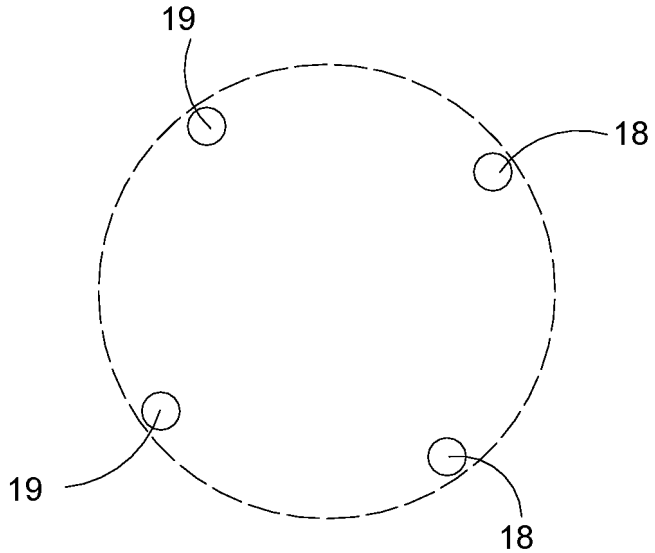

FIG. 12

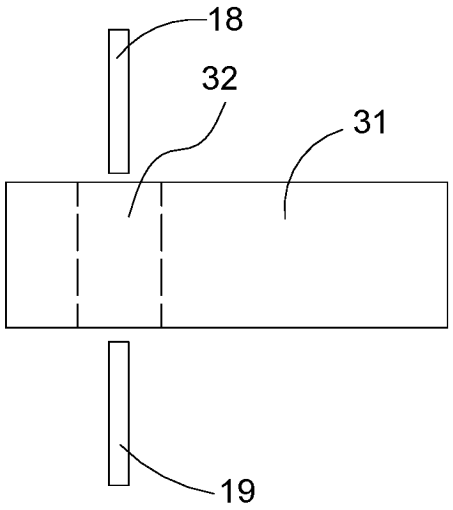

FIG. 13

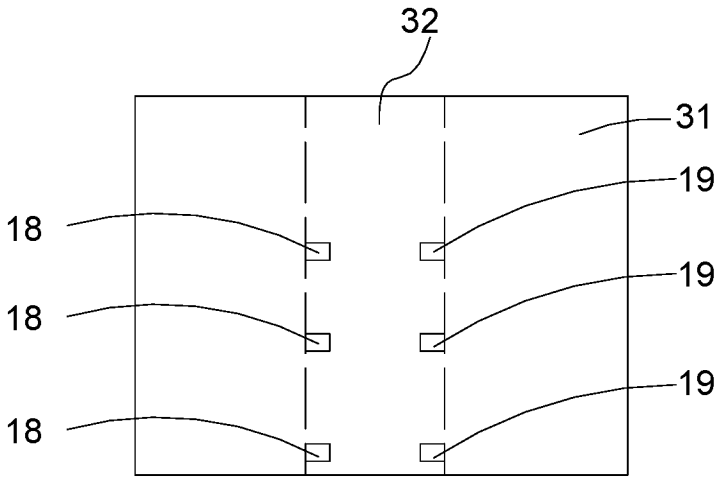

FIG. 14

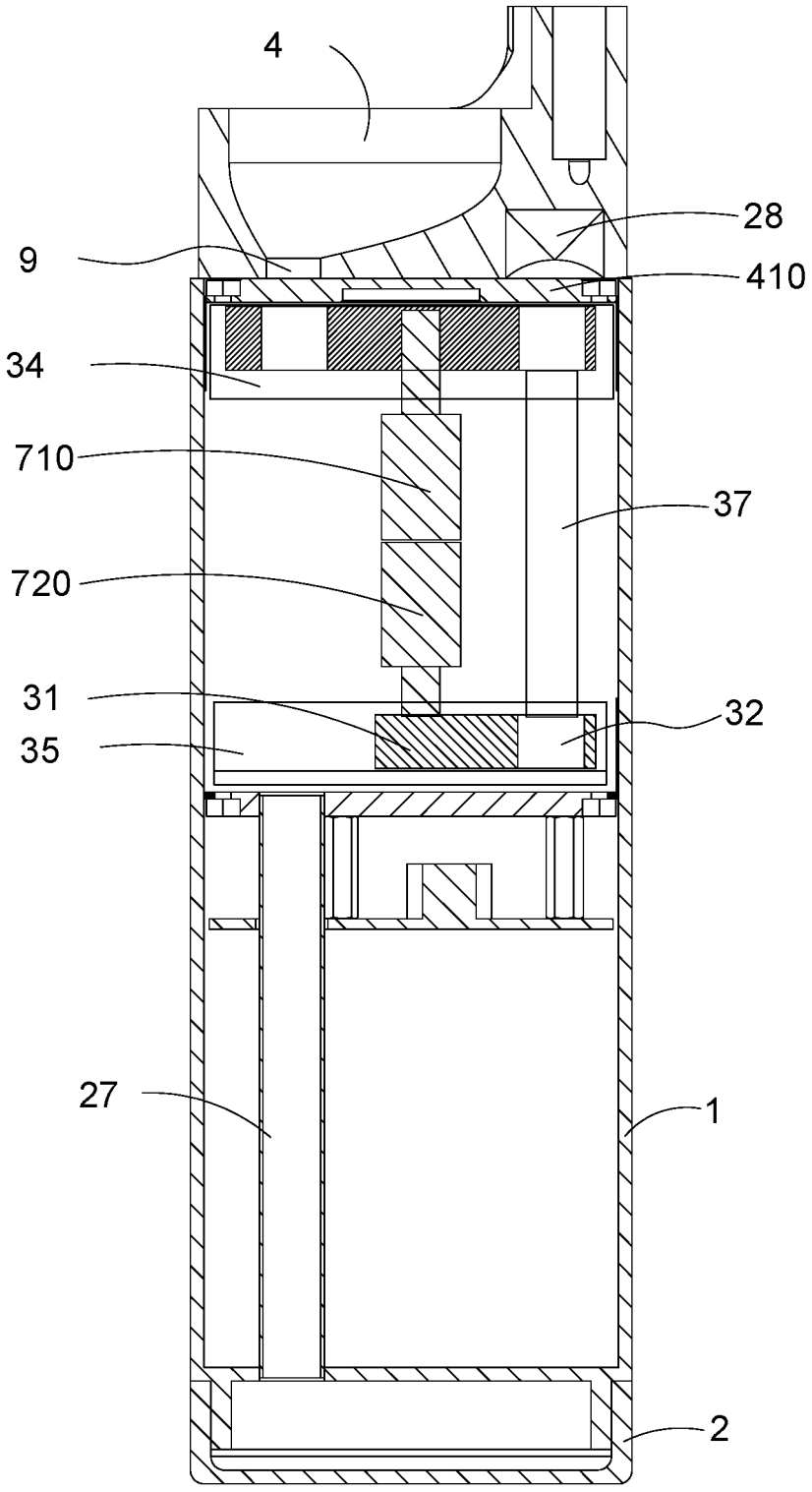

FIG. 15

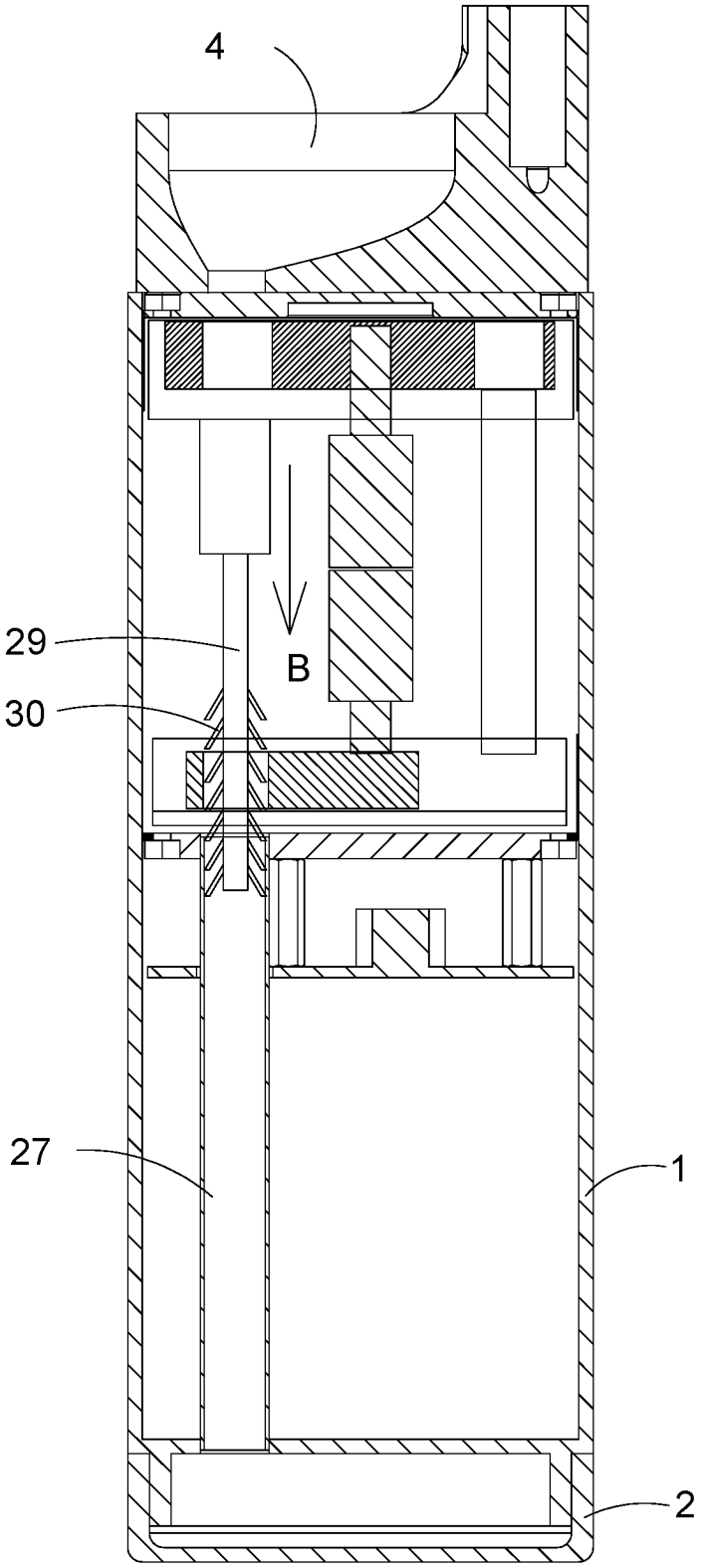

FIG. 16

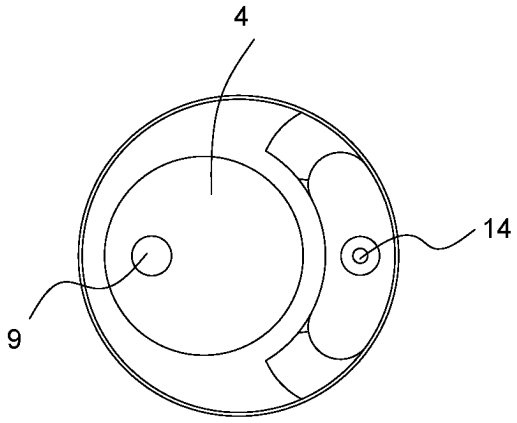

FIG. 17

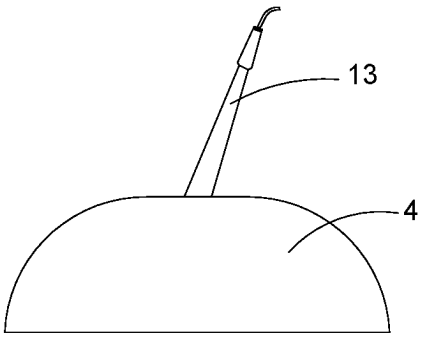

FIG. 18

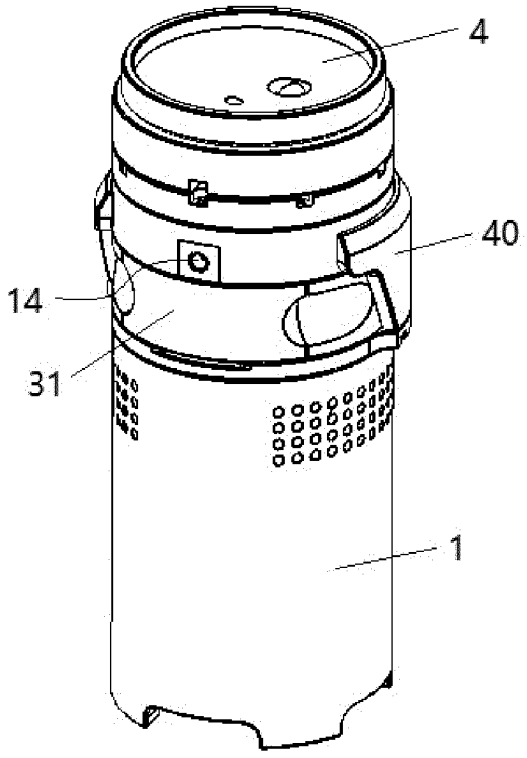

FIG. 19

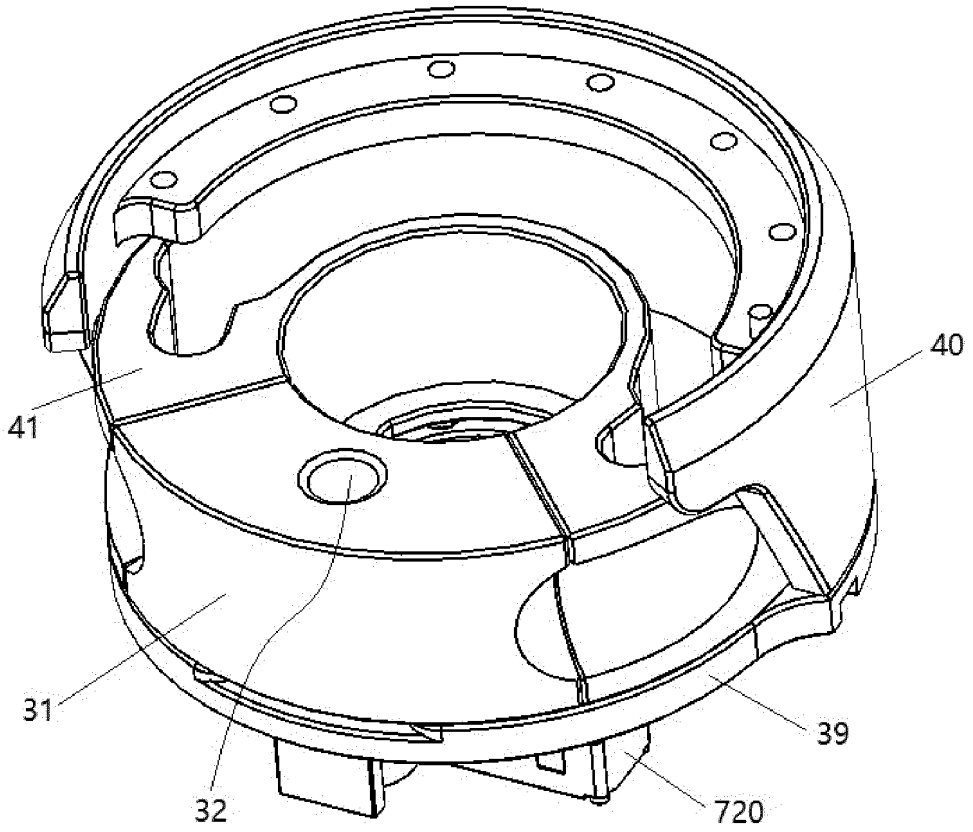

FIG. 20

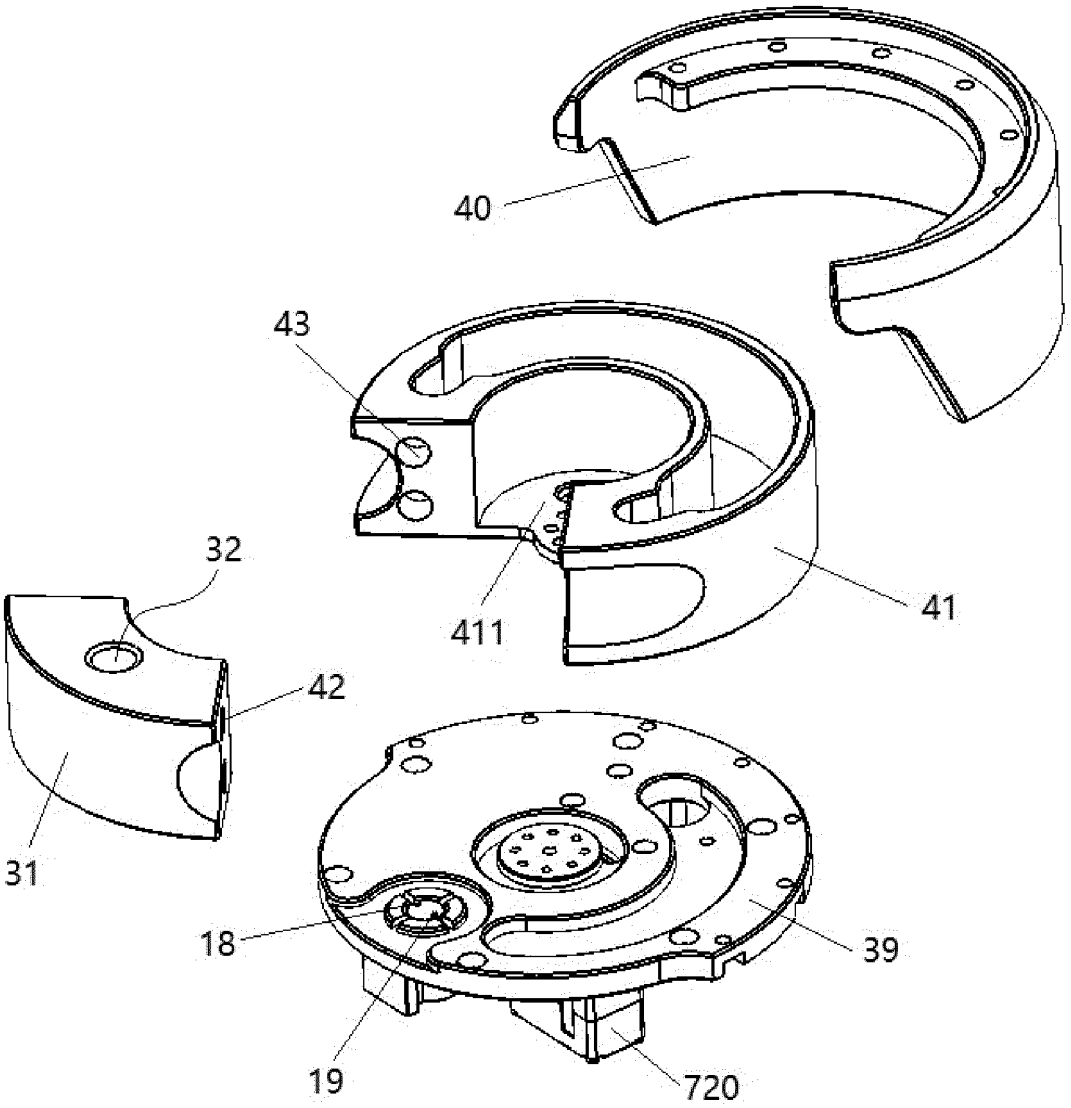

FIG. 21

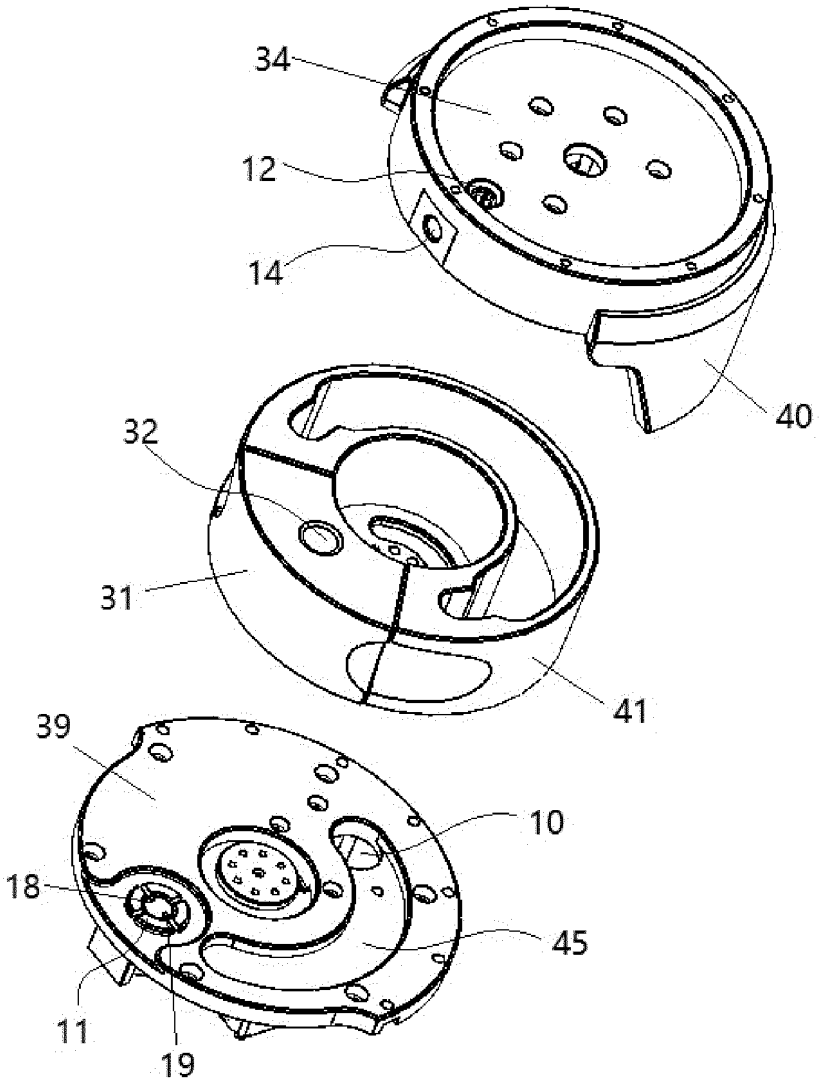

FIG. 22

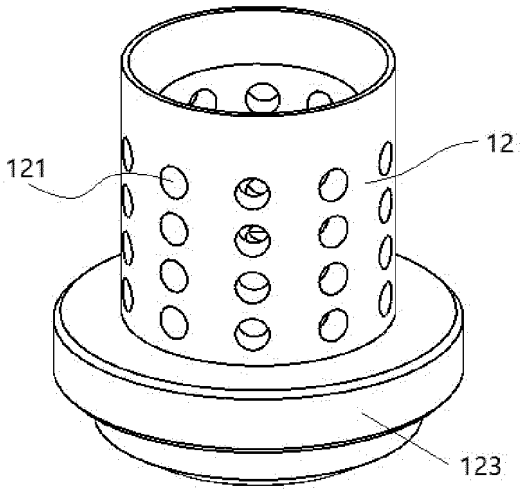

FIG. 23

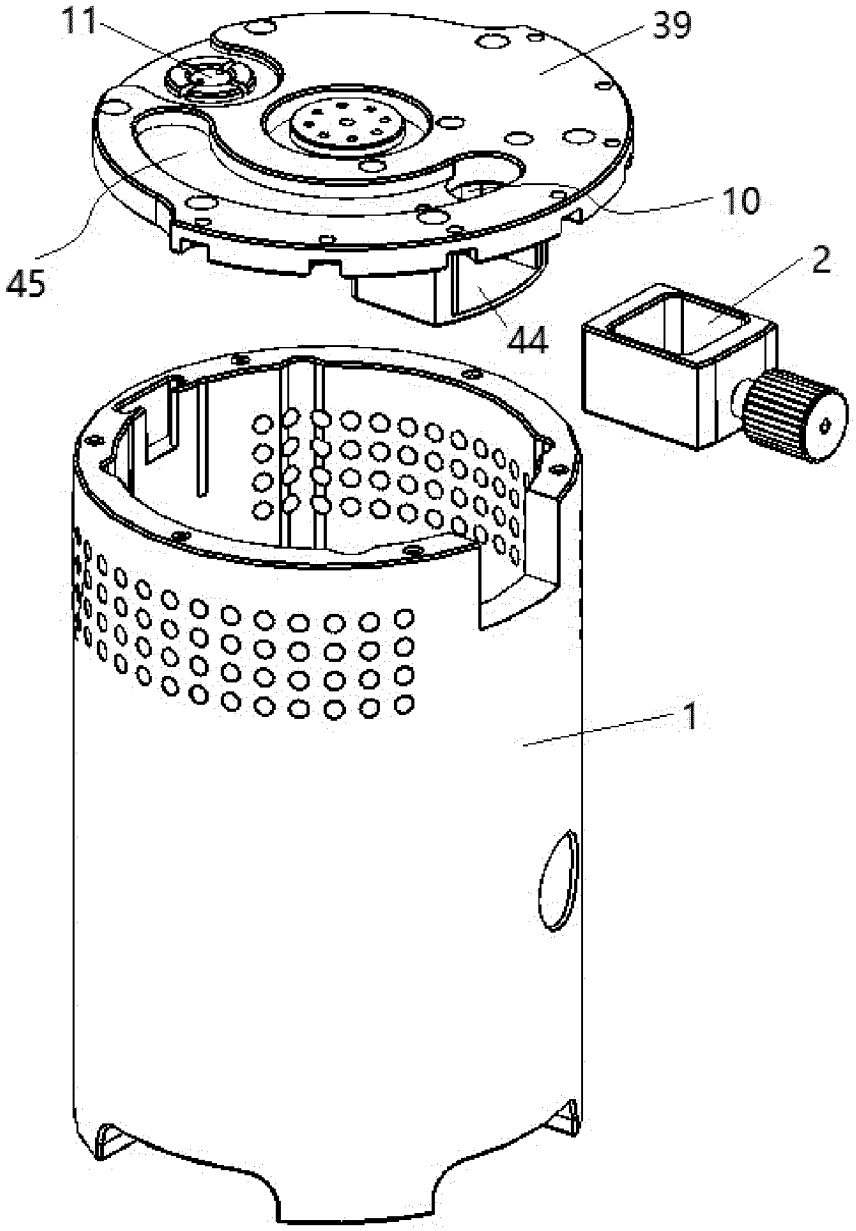

FIG. 24

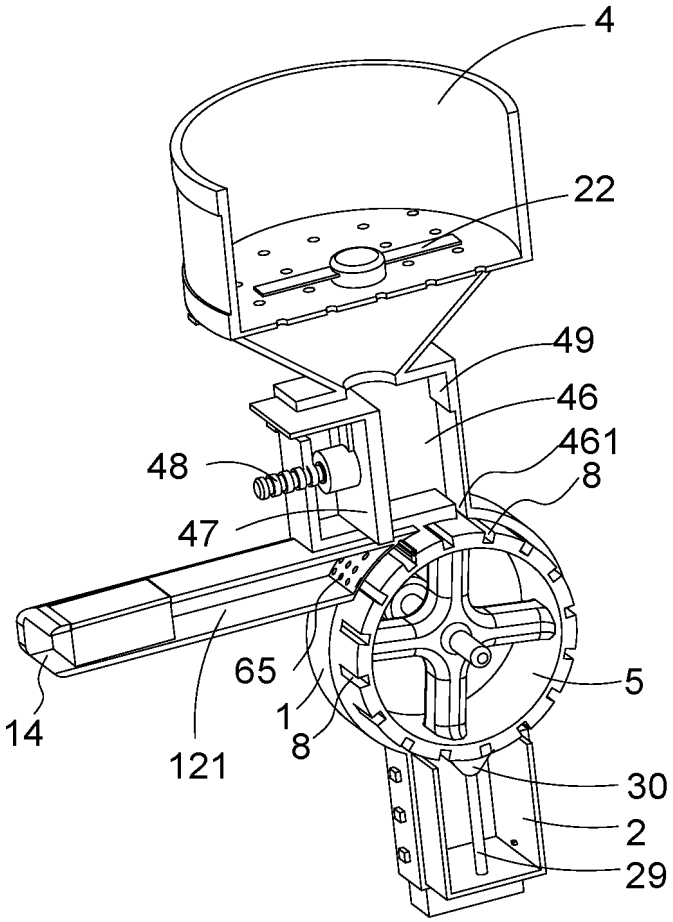

FIG. 25

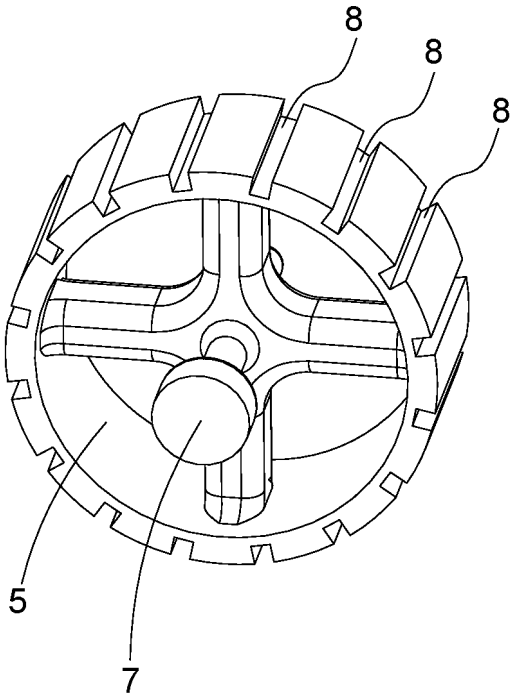

FIG. 26

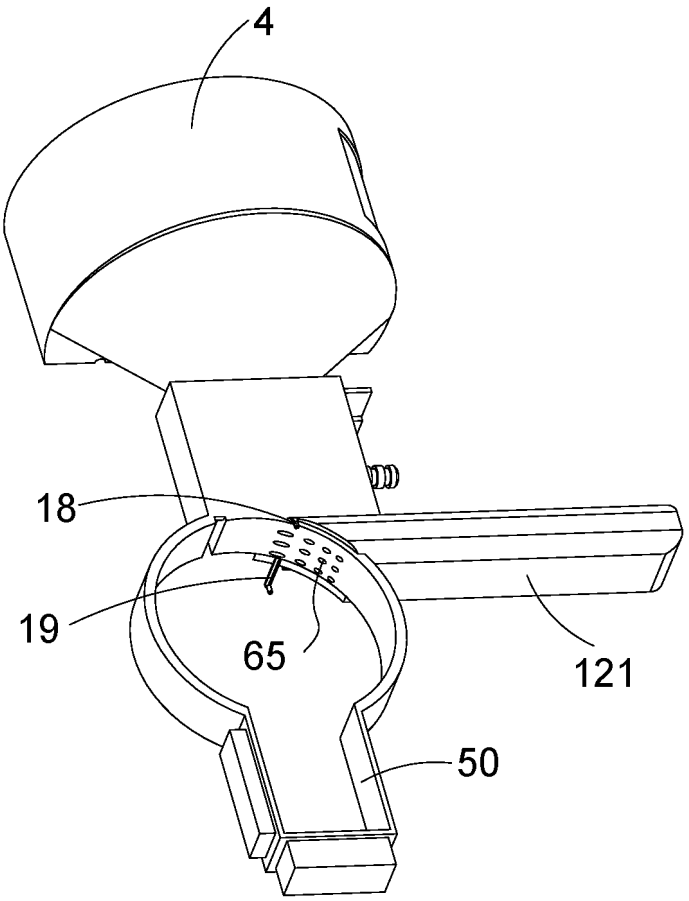

FIG. 27

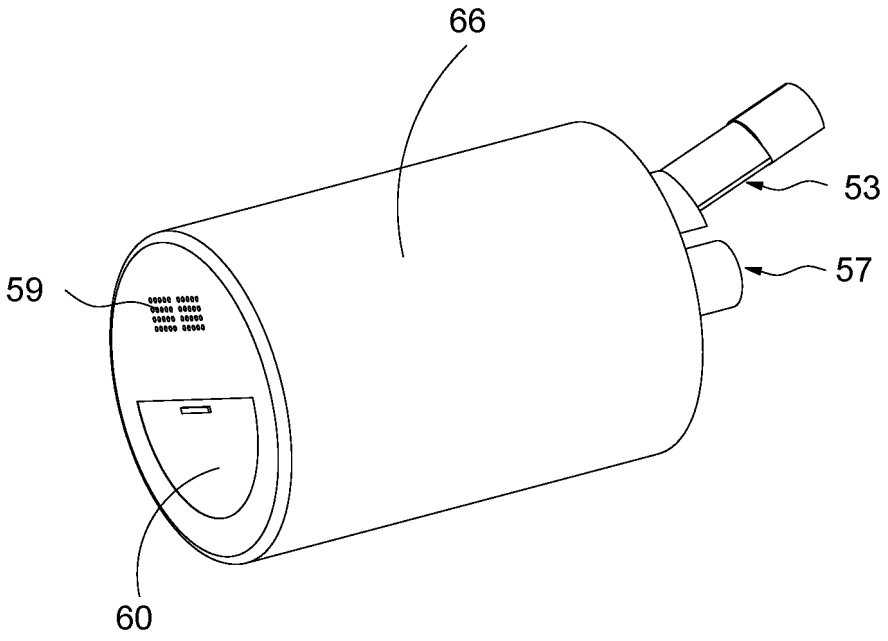

FIG. 28

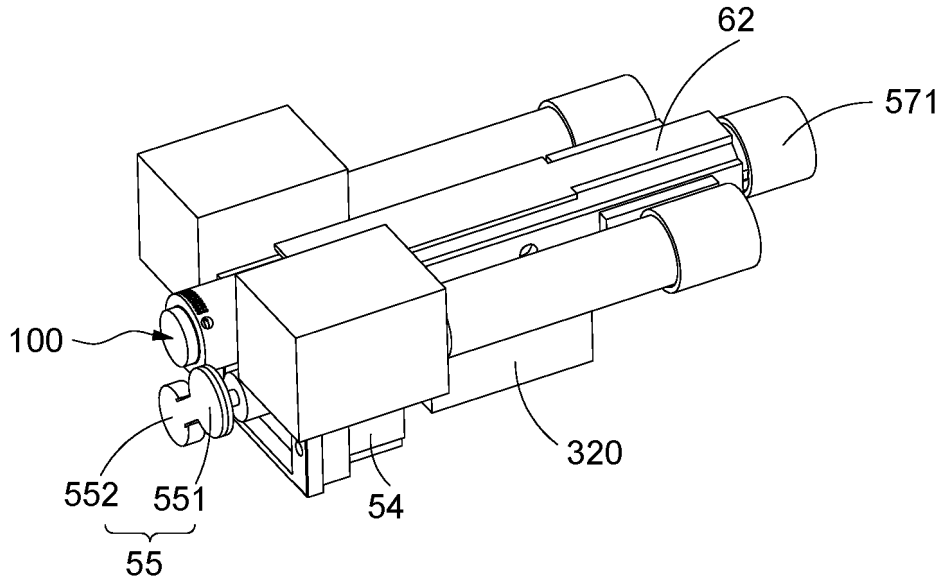

FIG. 29

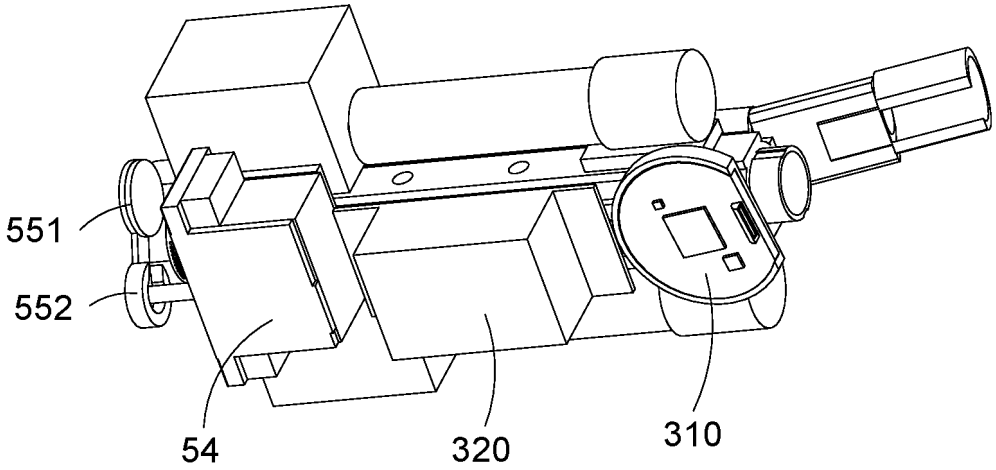

FIG. 30

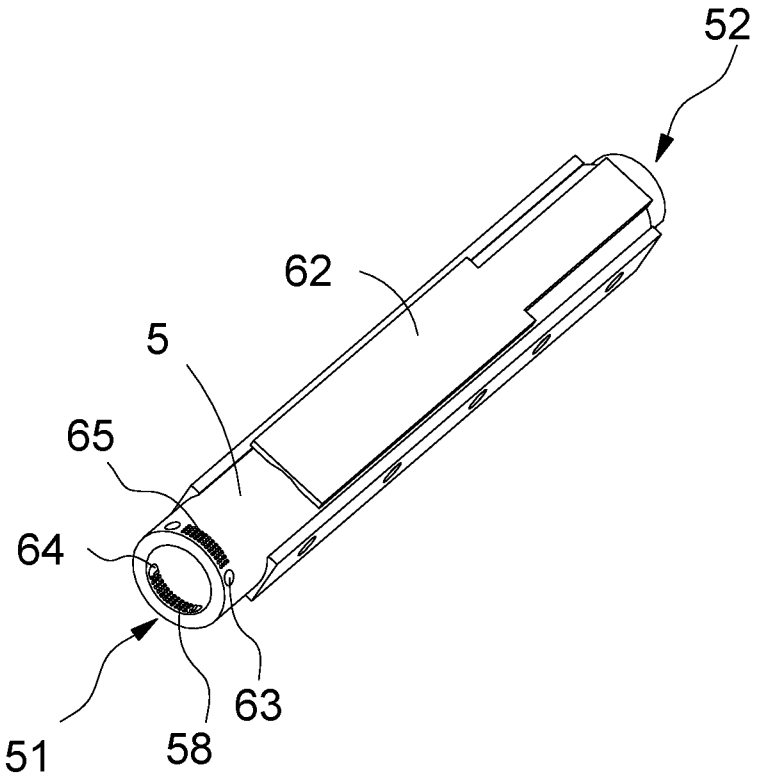

FIG. 31

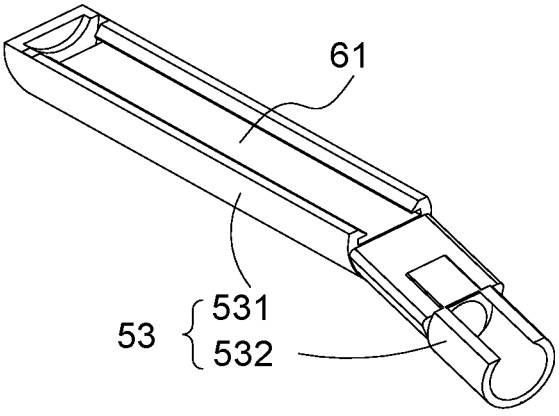

FIG. 32

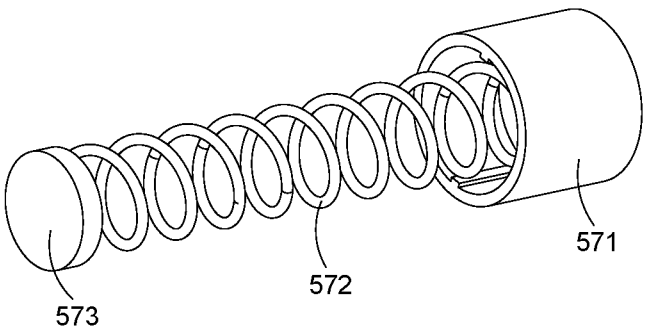

FIG. 33

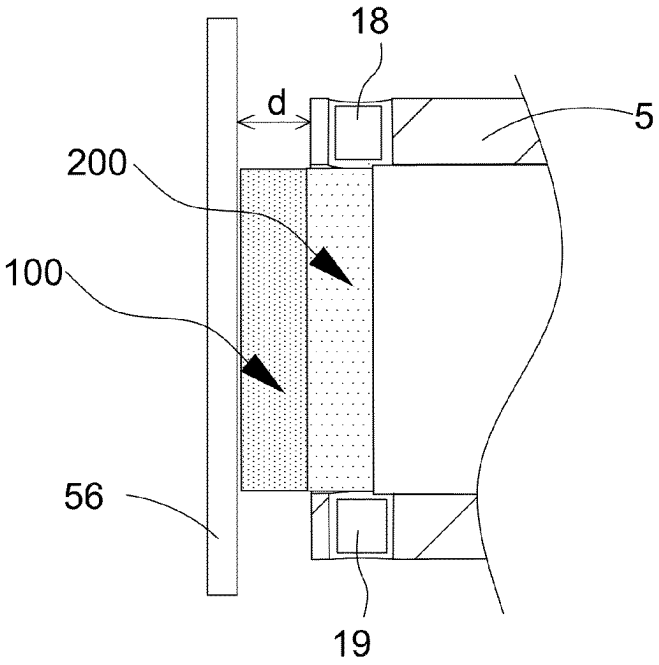

FIG. 34

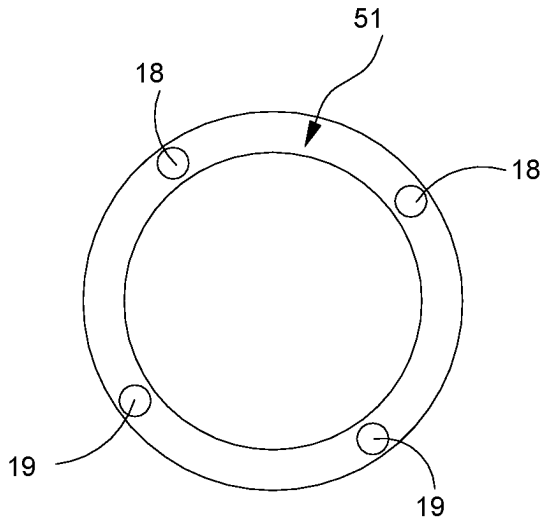

FIG. 35

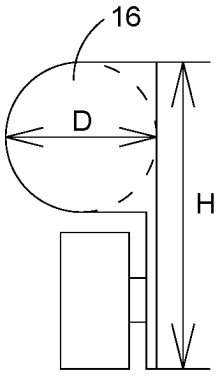

FIG. 36

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2023/112352

A. CLASSIFICATION OF SUBJECT MATTER

A24F5/00(2006.01)i; A24F1/24(2006.01)i; A24F40/40(2020.01)n; A61M15/06(2006.01)n

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:A24F5/-,A24F1/-,A24F40/-,A16M15/-

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, ENTXTC, ENTXT, VEN, DWPI, 百度, BAIDU: 知止观心, 张奕, 电子烟, 烟灰, 排灰, 自动 s 点火, 点火, 点燃, 燃烧, 旋转, 轴线, 分料, 输料, 进料, 料斗, 烟料 s (浪费 or 节约), 电磁线圈, 电极, 推杆, 压盖 s 推, 管, smok+, heat+, in 2d feed, rotat+, coil+, tobacco?

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 115191651 A (BEIJING ZHIZHI GUANXIN TECHNOLOGY CO., LTD.) 18 October 2022 (2022-10-18) claims 1-35, and description, paragraphs 83-281, and figures 1-36	1-35
PX	CN 115191647 A (BEIJING ZHIZHI GUANXIN TECHNOLOGY CO., LTD.) 18 October 2022 (2022-10-18) description, paragraphs 45-118, and figures 1-15	1-11, 21-30, 35
PX	CN 115413824 A (BEIJING ZHIZHI GUANXIN TECHNOLOGY CO., LTD.) 02 December 2022 (2022-12-02) description, paragraphs 41-102, and figures 1-12	1-11, 21-30, 35
PX	CN 218337710 U (BEIJING ZHIZHI GUANXIN TECHNOLOGY CO., LTD.) 20 January 2023 (2023-01-20) description, paragraphs 32-82, and figures 1-9	1-11, 30-35
PX	CN 218354573 U (BEIJING ZHIZHI GUANXIN TECHNOLOGY CO., LTD.) 24 January 2023 (2023-01-24) description, paragraphs 30-70, and figures 1-8	1-11, 30, 35

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

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"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"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
25 October 2023	**30 October 2023**

Name and mailing address of the ISA/CN	Authorized officer
China National Intellectual Property Administration (ISA/CN) **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	Telephone No.

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INTERNATIONAL SEARCH REPORT

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PCT/CN2023/112352

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 110810919 A (LANZE (JINGMEN) INTELLIGENT TECHNOLOGY CO., LTD.) 21 February 2020 (2020-02-21) description, paragraphs 11-16, and figures 1-11	1-11, 21-27, 30-35
Y	WO 2012164033 A1 (BRITISH AMERICAN TOBACCO (INVESTMENTS) LIMITED et al.) 06 December 2012 (2012-12-06) description, pp. 3-10, and figure 6	1-11, 21-27, 30-35
Y	CN 211290150 U (LI YUHONG) 18 August 2020 (2020-08-18) description, paragraphs 21-29	1-11, 21-27, 30-35
A	CH 698603 B1 (BURGER SOEHNE MANAGEMENT AG) 15 September 2009 (2009-09-15) entire document	1-35
A	CN 106691831 A (LU HONGRUI) 24 May 2017 (2017-05-24) entire document	1-35
A	CN 209171426 U (LUO RIJIAN) 30 July 2019 (2019-07-30) entire document	1-35
A	CN 212185127 U (ZHUZHOU LIDE YINGKE ELECTRONIC TECHNOLOGY CO., LTD.) 22 December 2020 (2020-12-22) entire document	1-35
A	KR 101766295 B1 (KOREA CITY TRAFFIC SYSTEM) 24 August 2017 (2017-08-24) entire document	1-35
A	US 2019059439 A1 (BANANA BROS, LLC) 28 February 2019 (2019-02-28) entire document	1-35

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2023/112352

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 115191651 A	18 October 2022	None	
CN 115191647 A	18 October 2022	None	
CN 115413824 A	02 December 2022	None	
CN 218337710 U	20 January 2023	None	
CN 218354573 U	24 January 2023	None	
CN 110810919 A	21 February 2020	None	
WO 2012164033 A1	06 December 2012	GB 201109174 D0	13 July 2011
CN 211290150 U	18 August 2020	None	
CH 698603 B1	15 September 2009	None	
CN 106691831 A	24 May 2017	None	
CN 209171426 U	30 July 2019	None	
CN 212185127 U	22 December 2020	None	
KR 101766295 B1	24 August 2017	None	
US 2019059439 A1	28 February 2019	US 11547139 B2	10 January 2023

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 202210970499 **[0001]**