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(72) Inventors:  
• **LU, Zhiming**  
**Shenzhen, Guangdong 518000 (CN)**  
• **HU, Ruilong**  
**Shenzhen, Guangdong 518000 (CN)**  
• **XU, Zhongli**  
**Shenzhen, Guangdong 518000 (CN)**  
• **LI, Yonghai**  
**Shenzhen, Guangdong 518000 (CN)**

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(71) Applicant: **Shenzhen First Union Technology Co.,  
Ltd.**  
**Shenzhen, Guangdong 518000 (CN)**

(74) Representative: **Viering, Jentschura & Partner  
mbB**  
**Patent- und Rechtsanwälte**  
**Am Brauhaus 8**  
**01099 Dresden (DE)**

(54) **AEROSOL GENERATION DEVICE, HEATER FOR AEROSOL GENERATION DEVICE, AND CONTROL METHOD**

(57) An aerosol generation device (100), a heater (30) for the aerosol generation device (100), and a control method. The aerosol generation device (100) includes: a heater (30), which is used for heating an aerosol generation product (1000), where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater (30); a battery cell (130), which is used for providing power to the heater (30); and a circuit, which is configured to control the power provided to the heater (30) by the battery cell (130), to: heat, within a first time period, the first heating section faster or at a higher power than heating the second heating section and/or the third heating section, heat within a second time period, the second heating section faster or at a higher power than heating the first heating section and/or the third heating section, and heat, within a third time period, the third heating section faster or at a higher power than heating the first heating section and/or the second heating section. The aerosol generation device (100) respectively heats a required section faster in different stages.

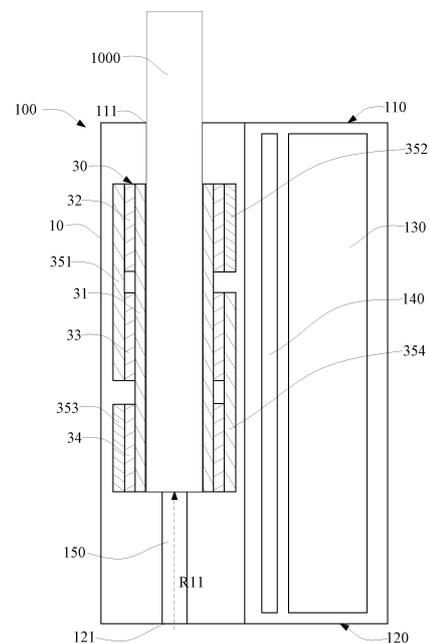


FIG. 1

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## Description

### CROSS-REFERENCE TO RELATED APPLICATIONS

**[0001]** This application claims priority to Chinese Patent Application No. 202210970297.9, entitled "AEROSOL GENERATION DEVICE, HEATER FOR AEROSOL GENERATION DEVICE, AND CONTROL METHOD" filed with China National Intellectual Property Administration on August 12, 2022, which is incorporated by reference in its entirety.

### TECHNICAL FIELD

**[0002]** Embodiments of the present application relate to the field of heat-not-burn aerosol generation technologies, and in particular, to an aerosol generation device, a heater for an aerosol generation device, and a control method.

### BACKGROUND

**[0003]** For tobacco products (such as cigarettes and cigars), tobacco is burnt during use to produce tobacco smoke. Attempts are made to replace these tobacco-burning products by making products that release compounds without burning.

**[0004]** An example of such products is a heating device, which releases compounds by heating rather than burning materials. For example, the material may be tobacco or other non-tobacco products. These non-tobacco products may or may not include nicotine. A known heating device includes a plurality of tubular heaters which are spaced apart in a longitudinal manner and surround tobacco or different sections of other non-tobacco products, and then the plurality of tubular heaters that are spaced apart are independently started to respectively heat tobacco or different sections of other non-tobacco products.

### SUMMARY

**[0005]** An embodiment of the present application provides an aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and including:

- a heater, which is used for heating the aerosol generation product received in the chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater;
- a battery cell, which is used for providing power to the heater; and
- a circuit, which is configured to control the power provided to the heater by the battery cell, to: heat the first heating section faster or at a higher power than heating the second heating section and/or the third

heating section within a first time period, heat the second heating section faster or at a higher power than heating the first heating section and/or the third heating section within a second time period, and heat the third heating section faster or at a higher power than heating the first heating section and/or the second heating section within a third time period.

**[0006]** In some implementations, the first heating section, the second heating section, and the third heating section are sequentially spaced apart.

**[0007]** In some implementations, the first heating section, the second heating section, and the third heating section are simultaneously heated within the first time period and/or the second time period and/or the third time period.

**[0008]** In some implementations, the circuit is further configured to control the power provided to the heater by the battery cell, to: at least heat the first heating section within the first time period, at least heat the first heating section and the second heating section within the second time period, and simultaneously heat the first heating section, the second heating section, and the third heating section within the third time period.

**[0009]** In some implementations, the circuit is further configured to control the power provided to the heater by the battery cell, to: heat, within the first time period, the first heating section to a first target temperature and cause the second heating section and the third heating section to have temperatures less than the first target temperature; heat, within the second time period, the second heating section to a second target temperature and cause the third heating section to have a temperature less than the second target temperature in the second time period; and heat, within the third time period, the third heating section to a third target temperature and cause the first heating section and the second heating section to have temperatures not less than the third target temperature.

**[0010]** In some implementations, the aerosol generation device includes:

- an opening, where during use, the aerosol generation product is at least partially received in a housing through the opening or is removed from the housing through the opening; and
- the first heating section is closer to the opening than the second heating section and/or the third heating section.

**[0011]** In some implementations, a length of the first heating section and/or the second heating section and/or the third heating section is from 8 mm to 12 mm; and/or, the first heating section, the second heating section, and the third heating section have basically the same lengths.

**[0012]** In some implementations, the heater only includes three heating sections.

**[0013]** In some implementations, the aerosol generation device further includes:

a temperature sensor, which is used for sensing a temperature of the heater.

**[0014]** In some implementations, the heater further includes:

an identification section, which is used for providing an identification when the temperature sensor is connected or bonded to the heater.

**[0015]** In some implementations, the aerosol generation device further includes:

a thermoplastic clinging member, which is used for clinging or fastening the temperature sensor to the heater.

**[0016]** In some implementations, the aerosol generation device further includes:

a thermal insulation element, which is used for providing thermal insulation outside the heater.

**[0017]** In some implementations, the heater includes:

a first heating element, which at least partially defines the first heating section;

a second heating element, which at least partially defines the second heating section; and

a third heating element, which at least partially defines the third heating section.

**[0018]** In some implementations, the first heating element is at least one of an infrared heating element or a resistive heating element;

and/or the second heating element is at least one of an infrared heating element or a resistive heating element;

and/or the third heating element is at least one of an infrared heating element or a resistive heating element.

**[0019]** In some implementations, within the first time period, the first heating element is connected in parallel with the second heating element and the third heating element connected in series with the second heating element;

and/or, within the second time period, the second heating element is connected in parallel with the first heating element and the third heating element connected in series with the first heating element;

and/or, within the third time period, the third heating element is connected in parallel with the first heating element and the second heating element connected in series with the first heating element.

**[0020]** In some implementations, the circuit is configured to be able to selectively connect any two or three of the first heating element, the second heating element, and the third heating element in series.

**[0021]** In some implementations, the heater includes: a first electrode element, a second electrode element, a

third electrode element, and a fourth electrode element;

at least a portion of the first heating element is electrically connected between the first electrode element and the second electrode element, so that during use, a current can be guided at the first heating element by the first electrode element and the second electrode element;

at least a portion of the second heating element is electrically connected between the first electrode element and the fourth electrode element, so that during use, a current can be guided at the second heating element by the first electrode element and the fourth electrode element; and

at least a portion of the third heating element is electrically connected between the third electrode element and the fourth electrode element, so that during use, a current can be guided at the third heating element by the third electrode element and the fourth electrode element.

**[0022]** In some implementations, the first electrode element and the second electrode element are oppositely arranged in a radial direction of the heater;

and/or, the third electrode element and the fourth electrode element are oppositely arranged in the radial direction of the heater;

and/or, the first electrode element and the third electrode element are spaced apart in a lengthwise direction of the heater;

and/or, the second electrode element and the fourth electrode element are spaced apart in the lengthwise direction of the heater.

**[0023]** In some implementations, an extension length of the first electrode element is greater than an extension length of the second electrode element;

and/or, an extension length of the third electrode element is less than an extension length of the fourth electrode element.

**[0024]** In some implementations, at least a portion of the first electrode element extends from the first heating element to the second heating element;

and/or, at least a portion of the fourth electrode element extends from the second heating element to the third heating element.

**[0025]** In some implementations, the second electrode element and the third electrode element are connected and conducted through a wire or a conductive element; and/or the first electrode element and the fourth electrode element are connected and conducted through a wire or a conductive element.

**[0026]** In some implementations, the heater includes: a base body; and a first infrared transmitting layer, a second infrared transmitting layer, and a third infrared transmitting layer which are formed on or combined with the base body; at least a portion of the first infrared

transmitting layer defines the first heating section; at least a portion of the second infrared transmitting layer defines the second heating section; and at least a portion of the third infrared transmitting layer defines the third heating section.

**[0027]** In some implementations, the first infrared transmitting layer includes a coating or a thin film formed on or combined with the base body;

and/or, the second infrared transmitting layer includes a coating or a thin film formed on or combined with the base body;

and/or, the third infrared transmitting layer includes a coating or a thin film formed on or combined with the base body.

**[0028]** Another embodiment of the present application further provides an aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and the aerosol generation product includes a first section, a second section, and a third section which are sequentially arranged in a lengthwise direction; the aerosol generation device includes:

a heater, which is used for heating the aerosol generation product received in a chamber,  
a battery cell, which is used for providing power to the heater; and

a circuit, configured to control the power provided to the heater by the battery cell, to: cause the heater to simultaneously heat the first section, the second section, and the third section, where a heating power of one of the first section, the second section, and the third section is different from heating powers of the other two sections.

**[0029]** Another embodiment of the present application further provides an aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and the aerosol generation product includes a first section, a second section, and a third section which are sequentially arranged in a lengthwise direction; the aerosol generation device further includes:

a heater, which is used for heating the aerosol generation product received in a chamber,  
a battery cell, which is used for providing power to the heater; and

a circuit, configured to control the power provided to the heater by the battery cell, to: heat, within a first time period, the first section faster or at a higher power than heating the second section and/or the third section; heat, within a second time period, the second section faster or at a higher power than heating the first section and/or the third section; and heat, within a third time period, the third section faster or at a higher power than heating the first section and/or the second section.

**[0030]** Another embodiment of the present application further provides an aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and including:

a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater;

a battery cell, which is used for providing power to the heater; and

the circuit is further configured to control the power provided to the heater by the battery cell, to: at least heat the first heating section within a first time period, at least heat the first heating section and the second heating section within a second time period, and simultaneously heat the first heating section, the second heating section, and the third heating section within a third time period.

**[0031]** Another embodiment of the present application further provides an aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and including:

a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater;

a battery cell, which is used for providing power to the heater; and

a circuit, configured to control the power provided to the heater by the battery cell, to: at least heat the first heating section within a first time period, at least heat the second heating section within a second time period, at least heat the third heating section within a third time period, and simultaneously heat the first heating section, the second heating section, and the third heating section within a fourth time period.

**[0032]** Another embodiment of the present application further provides an aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and including:

a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater;

a battery cell, which is used for providing power to the heater; and

a circuit, configured to control the power provided to the heater by the battery cell, to: within a first time period, heat the first heating section at a first power and heat the second heating section and the third

heating section at basically the same second powers; within a second time period, heat the second heating section at a third power and heat the first heating section and the third heating section at basically the same fourth powers; and within a third time period, heat the third heating section at a fifth power and heat the first heating section and the second heating section at basically the same sixth powers.

**[0033]** Another embodiment of the present application further provides an aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and including:

a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater;  
 a battery cell, which is used for providing power to the heater; and  
 the circuit, configured to control the power provided to the heater by the battery cell, to: within a first time period, heat the first heating section to a first target temperature and cause the second heating section and the third heating section to have temperatures less than the first target temperature; within the second time period, heat the second heating section to a second target temperature and cause the third heating section to have a temperature less than the second target temperature in the second time period; and within the third time period, heat the third heating section to a third target temperature and cause the first heating section and the second heating section to have temperatures not less than the third target temperature.

**[0034]** Another embodiment of the present application further provides a heater for an aerosol generation device, including:

a first end and a second end which face away from each other in a longitudinal direction;  
 a first heating element, a second heating element, and a third heating element which are spaced apart in the longitudinal direction, where the first heating element is close to the first end; the third heating element is close to the second end; the second heating element is located between the first heating element and the third heating element;  
 and a first electrode element, a second electrode element, a third electrode element, and a fourth electrode element, where at least a portion of the first heating element is electrically connected between the first electrode element and the second electrode element, so that during use, a current is guided at the first heating element by the first electrode element and the second electrode element;

at least a portion of the second heating element is electrically connected between the first electrode element and the fourth electrode element, so that during use, a current can be guided at the second heating element by the first electrode element and the fourth electrode element; and

at least a portion of the third heating element is electrically connected between the third electrode element and the fourth electrode element, so that during use, a current can be guided at the third heating element by the third electrode element and the fourth electrode element.

**[0035]** Another embodiment of the present application further provides a control method for an aerosol generation device. The aerosol generation device is configured to heat an aerosol generation product to generate an aerosol, and the aerosol generation device further includes: a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater; and

a battery cell, which is used for providing power to the heater; and  
 the method includes:

providing power to the heater;  
 within a first time period, heating the first heating section faster or at a higher power than heating the second heating section and/or the third heating section;  
 within a second time period, heating the first heating section and/or the third heating section faster or at a higher power than heating the second heating section; and  
 within a third time period, heating the first heating section and/or the second heating section faster or at a higher power than heating the third heating section.

**[0036]** In some other embodiments, the method includes:

controlling the power provided to the heater by the battery cell, to: heat the first heating section faster or at a higher power than heating the second heating section and/or the third heating section within a first time period, heat the second heating section faster or at a higher power than heating the first heating section and/or the third heating section within a second time period, and heat the third heating section faster or at a higher power than heating the first heating section and/or the second heating section within a third time period.

**[0037]** Another embodiment of the present application further provides a control method for an aerosol generation device. The aerosol generation device is configured to heat an aerosol generation product to generate an

aerosol, and the aerosol generation device includes: a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater; and

a battery cell, which is used for providing power to the heater; and  
the method includes:

- providing power to the heater;
- at least heating the first heating section within a first time period;
- at least heating the first heating section and the second heating section within a second time period; and
- simultaneously heating the first heating section, the second heating section, and the third heating section within a third time period.

**[0038]** In some other embodiments, the method includes:

controlling the power provided to the heater by the battery cell, to: at least heat the first heating section within a first time period, at least heat the first heating section and the second heating section within a second time period, and simultaneously heat the first heating section, the second heating section, and the third heating section within a third time period.

**[0039]** Another embodiment of the present application further provides a control method for an aerosol generation device. The aerosol generation device is configured to heat an aerosol generation product to generate an aerosol, and the aerosol generation device includes: a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater; and

a battery cell, which is used for providing power to the heater; and  
the method includes:

- providing power to the heater;
- at least heating the first heating section within a first time period;
- at least heating the second heating section within a second time period;
- at least heating the third heating section within a third time period; and
- simultaneously heating the first heating section, the second heating section, and the third heating section within a fourth time period.

**[0040]** In some other embodiments, the method includes:

controlling the power provided to the heater by the battery cell, to: at least heat the first heating section within a first time period, at least heat the second heating section within a second time period, at least heat the third heating section within a third time period, and simultaneously heat the first heating section, the second heating section, and the third heating section within a fourth time period.

**[0041]** Another embodiment of the present application further provides a control method for an aerosol generation device. The aerosol generation device is configured to heat an aerosol generation product to generate an aerosol, and the aerosol generation device includes: a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater; and

a battery cell, which is used for providing power to the heater; and  
the method includes:

- providing power to the heater;
- within a first time period, heating the first heating section at a first power and heating the second heating section and the third heating section at basically the same second powers;
- within a second time period, heating the second heating section at a third power and heating the first heating section and the third heating section at basically the same fourth powers; and
- within a third time period, heating the third heating section at a fifth power and heating the first heating section and the second heating section at basically the same sixth powers.

**[0042]** In some other embodiments, the method includes:

controlling the power provided to the heater by the battery cell, to: within a first time period, heat the first heating section at a first power and heat the second heating section and the third heating section at basically the same second powers; within a second time period, heat the second heating section at a third power and heat the first heating section and the third heating section at basically the same fourth powers; and within a third time period, heat the third heating section at a fifth power and heat the first heating section and the second heating section at basically the same sixth powers.

**[0043]** Another embodiment of the present application further provides a control method for an aerosol generation device. The aerosol generation device is configured to heat an aerosol generation product to generate an aerosol, and the aerosol generation device includes: a heater, which is used for heating the aerosol generation product received in a chamber, where a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least

defined on the heater; and

a battery cell, which is used for providing power to the heater; and  
the method includes:

providing power to the heater;  
within a first time period, heating the first heating section to a first target temperature, where the first target temperature is greater than a current temperature of the second heating section and a current temperature of the third heating section;  
within a second time period, heating the second heating section to a second target temperature, where the second target temperature is greater than a current temperature of the third heating section; and  
within a third time period, heating the third heating section to a third target temperature, where the third target temperature is greater than a current temperature of the first heating section and a current temperature of the second heating section.

**[0044]** In some other embodiments, the method includes:

controlling the power provided to the heater by the battery cell, to: within a first time period, heat the first heating section to a first target temperature and cause the second heating section and the third heating section to have temperatures less than the first target temperature; within the second time period, heat the second heating section to a second target temperature and cause the third heating section to have a temperature less than the second target temperature in the second time period; and within the third time period, heat the third heating section to a third target temperature and cause the first heating section and the second heating section to have temperatures not less than the third target temperature.

**[0045]** Another embodiment of the present application further provides a control method for an aerosol generation device. The aerosol generation device is configured to heat an aerosol generation product to generate an aerosol, and the aerosol generation product includes a first section, a second section, and a third section which are sequentially arranged in a lengthwise direction;

the aerosol generation device includes: a heater, which is used for heating the aerosol generation product received in a chamber, a battery cell, which is used for providing power to the heater; and  
the method includes:

providing power to the heater, to simultaneously heat the first section, the second section, and the third section, where a heating power of one of the first section, the second section, and the third section is different from heating powers of the other two sections.

**[0046]** In some other embodiments, the method includes:

controlling the power provided to the heater by the battery cell, to: cause the heater to simultaneously heat the first section, the second section, and the third section, where a heating power of one of the first section, the second section, and the third section is different from heating powers of the other two sections.

**[0047]** Another embodiment of the present application further provides a control method for an aerosol generation device. The aerosol generation device is configured to heat an aerosol generation product to generate an aerosol, and the aerosol generation product includes a first section, a second section, and a third section which are sequentially arranged in a lengthwise direction;

the aerosol generation device includes: a heater, which is used for heating the aerosol generation product received in a chamber; and a battery cell, which is used for providing power to the heater; and  
the method includes:

providing power to the heater;  
within a first time period, heating the second section and/or the third section faster or at a higher power than heating the first section;  
within a second time period, heating the first section and/or the third section faster or at a higher power than heating the second section;  
and  
within a third time period, heating the first section and/or the second section faster or at a higher power than heating the third section.

**[0048]** In some other embodiments, the method includes:

controlling the power provided to the heater by the battery cell, to: heat, within a first time period, the first section faster or at a higher power than heating the second section and/or the third section; heat, within a second time period, the second section faster or at a higher power than heating the first section and/or the third section; and heat, within a third time period, the third section faster or at a higher power than heating the first section and/or the second section.

**[0049]** The above aerosol generation device is advantageous for faster heating required sections in different stages.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0050]** One or more embodiments are exemplarily described with reference to the corresponding figures in the accompanying drawings, and the descriptions are not to be construed as limiting the embodiments. Elements in the accompanying drawings that have same reference numerals are represented as similar elements, and unless otherwise particularly stated, the figures in the ac-

accompanying drawings are not drawn to scale.

FIG. 1 is a schematic structural diagram of an aerosol generation device according to an embodiment;  
 FIG. 2 is a schematic structural diagram of a heater in a viewing angle according to an embodiment;  
 FIG. 3 is a schematic exploded view of the heater in FIG. 2 in a viewing angle;  
 FIG. 4 is a schematic exploded view of the heater in FIG. 2 in another viewing angle;  
 FIG. 5 is a schematic diagram of guiding a current on a heater in an embodiment;  
 FIG. 6 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 7 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 8 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 9 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 10 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 11 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 12 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 13 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 14 is a schematic diagram of guiding a current on a heater in another embodiment;  
 FIG. 15 is a schematic diagram of heating an aerosol generation product according to another embodiment;  
 FIG. 16 is a schematic diagram of a heating curve of different sections of an aerosol generation product according to an embodiment; and  
 FIG. 17 is a schematic diagram of a control method of an aerosol generation device according to an embodiment.

## DETAILED DESCRIPTION

**[0051]** For ease of understanding of the present application, the present application is described below in more detail with reference to accompanying drawings and specific implementations.

**[0052]** An embodiment of the present application provides an aerosol generation device 100 that heats but not burns an aerosol generation product 1000, for example, a cigarette, to volatilize or release at least one component of the aerosol generation product 1000 to form an aerosol for inhalation, for example as shown in FIG. 1.

**[0053]** Further, in an optional implementation, a tobacco-contained material that releases volatile compounds from base bodys when being heated is preferably used as the aerosol generation product 1000. Alternatively, a non-tobacco material that can be suitable for electrical heating smoke generation after being heated may be

used. A solid substrate is preferably used as the aerosol generation product 1000, which may include powder, particles, shreds, strips, or flakes of one or more of a vanilla leaf, a tobacco leaf, homogenized tobacco, or expanded tobacco. Alternatively, a solid substrate may include additional tobacco or non-tobacco volatile flavor compounds, so as to be released when the base body is heated.

**[0054]** In addition, as shown in FIG. 1, after the aerosol generation product 1000 is received in an aerosol generation device 100, it is advantageous that a portion of the aerosol generation product is exposed outside the aerosol generation device 100, such as a filter tip, for inhalation by a user.

**[0055]** A configuration of an aerosol generation device according to an embodiment of the present application may be shown in FIG. 1. The overall shape of the device is roughly configured into a flat cylinder shape, and an external member of the aerosol generation device 100 includes:

a housing 10, having a hollow structure inside, to form an assembling space for a component with a necessary function, such as an electronic device and a heating device. The housing 10 has a near end 110 and a far end 120 which are opposite to each other in a lengthwise direction.

**[0056]** The near end 110 is provided with an opening 111. The aerosol generation product 1000 may be received in the housing 10 through the opening 111 to be heated or may be removed from the housing 10.

**[0057]** The far end 120 is provided with an air inlet hole 121. The air inlet hole 121 is used for allowing external air to enter the housing 10 in a vaping process

**[0058]** Further, as shown in FIG. 1, the aerosol generation device 100 further includes:

a chamber, which is used for accommodating or receiving the aerosol generation product 1000. During use, the aerosol generation product 1000 may be removably received in the chamber through the opening 111. In some embodiments, a length of the aerosol generation product 1000 that is surrounded and heated by a heater 30 is greater than 30 mm.

**[0059]** In addition, as shown in FIG. 1, the aerosol generation device 100 further includes:

an air channel 150, which is located between the chamber and the air inlet 121. Therefore, during use, the air channel 150 provides a channel path from the air inlet 121 to the chamber/the aerosol generation product 1000, as shown by the arrow R11 in FIG. 1.

**[0060]** Further, as shown in FIG. 1, the aerosol generation device 100 further includes:

a battery cell 130 for supplying power, where preferably, the battery cell 130 is a rechargeable direct-current battery cell 130 and may be connected to an external power supply for charging; and  
 a circuit board 140, such as a Printed Circuit Board (PCB), which is provided with a circuit or a Micro-

controller Unit (MCU) controller. The circuit may be an integrated circuit.

**[0061]** Further, as shown in FIG. 1, the aerosol generation device 100 further includes:

a heater 30, which at least partially surrounds and defines the chamber. When the aerosol generation product 1000 is received in the housing 10, the heater 30 at least partially surrounds or encloses the aerosol generation product 1000, and performs heating from an outer circumference of the aerosol generation product 1000. Moreover, when received in the housing 10, the aerosol generation product 1000 is at least partially accommodated and maintained in the heater 30.

**[0062]** Further, referring to FIG. 2, the heater 30 is constructed into a basically elongated tubular shape, and includes:

a tubular base body 31, where a material of the base body 31 may be an infrared-transmittable material, such as quartz, glass, and ceramic; during use, the base body 31 is at least partially used for accommodating and maintaining the aerosol generation product 1000;

and an infrared transmitting layer 32, an infrared transmitting layer 33, and an infrared transmitting layer 34 which are formed or arranged on the base body 31. In this embodiment, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are formed on an outer surface of the base body 31 by deposition, spraying, wrapping, or the like.

**[0063]** The infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are sequentially spaced apart. In addition, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are basically in ring shapes around the base body 31. In addition, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are closed in a circumferential direction.

**[0064]** In some specific implementations, the base body 31 has a wall thickness of approximately 0.05 mm to 1 mm; the base body 31 has an inner diameter of approximately 5.0 mm to 8.0 mm; and the base body 31 has a length of approximately 30 mm to 60 mm.

**[0065]** Alternatively, in still some embodiments, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are formed on an inner surface of the base body 31.

**[0066]** In some embodiments, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are coatings or thin layers formed on the base body 31 by deposition, spraying, or the like. Alternatively, in still some embodiments, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer

34 are thin films wrapped on or combined with the base body 31.

**[0067]** In this embodiment, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are electro-induced infrared transmitting layers. By directly supplying a direct-current voltage to the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 may be driven by the voltage to transmit infrared ray.

**[0068]** In some implementations, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 may be coatings prepared from a ceramic material such as zirconium, an Fe-Mn-Cu material, a tungsten material, a transition metal, and their oxides.

**[0069]** In some implementations, the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are composed of an oxide of at least one metal element such as Mg, Al, Ti, Zr, Mn, Fe, Co, Ni, Cu, Cr, and Zn. These metal oxides may transmit far-infrared ray with a heating effect when heated to an appropriate temperature. A thickness of the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 may be preferably 30  $\mu\text{m}$  to 50  $\mu\text{m}$ . A mode of formation on the surface of the tubular base body 31 may be achieved by spraying the oxides of the above metal elements onto the outer surface of the tubular base body 31 through atmospheric plasma spraying and then curing the outer surface.

**[0070]** In some embodiments, the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 have substantially the same lengths. For example, in a specific embodiment, the lengths of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 are all 8 mm to 12 mm. For another example, in a specific embodiment, the lengths of the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 are 9.5 mm.

**[0071]** Alternatively, in still some embodiments, the length of any one of the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34 is different from the lengths of the other two infrared transmitting layers. Alternatively, in still some changed embodiments, each of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 has a length different from the lengths of the other two infrared transmitting layers.

**[0072]** Alternatively, in still some embodiments, extension lengths of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 gradually change in an axial direction of the heater 30. For example, in some specific embodiments,

the extension lengths of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 gradually or sequentially increase. Alternatively, the extension lengths of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 gradually or sequentially decrease.

**[0073]** Alternatively, in still some embodiments, the length of the infrared transmitting layer 33 is less than the length of any one of the infrared transmitting layer 32 and the infrared transmitting layer 34. Alternatively, in still some embodiments, the length of the infrared transmitting layer 33 is greater than the length of any one of the infrared transmitting layer 32 and the infrared transmitting layer 34.

**[0074]** Alternatively, in still some embodiments, heater 30 may further include three infrared transmitting layers, namely, the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34. Alternatively, in still some embodiments, the heater 30 further includes more infrared transmitting layers, for example, four, five, six, or more infrared transmitting layers sequentially spaced apart in an axial direction of the base body 31.

**[0075]** Further, FIG. 2 to FIG. 4 show a schematic structural diagram of a heater 30 according to an embodiment. In this embodiment, the heater 30 includes:

a first end 311 and a second end 312 which face away from each other in an axial direction; and an infrared-transmittable base body 31, which is constructed into a tubular shape. In an implementation, two ends of the base body 31 in a lengthwise direction respectively define the first end 311 and the second end 312 of the heater 30. Furthermore, an inner chamber 310 of the base body 31 at least partially defines a chamber for receiving the aerosol generation product 1000.

**[0076]** In addition, the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 are formed on the base body 31 and are sequentially arranged in an axial direction of the base body 31. Certainly, the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 are spaced apart.

**[0077]** Further as shown in FIG. 2 to FIG. 4, the infrared transmitting layer 32 is arranged near the first end 311; the infrared transmitting layer 34 is arranged near the second end 312; and the infrared transmitting layer 33 is located between the infrared transmitting layer 32 and the infrared transmitting layer 34.

**[0078]** In addition, the following are further defined on a surface of the base body 31:

an exposed section 313, located between the first end 311 and the infrared transmitting layer 32; and an exposed section 314, located between infrared

transmitting layer 32 and the infrared transmitting layer 33 and separating the infrared transmitting layer 32 from the infrared transmitting layer 33; an exposed section 315, located between infrared transmitting layer 33 and the infrared transmitting layer 34 and separating the infrared transmitting layer 33 from the infrared transmitting layer 34; and an exposed section 316, located between the infrared transmitting layer 34 and the second end 312.

**[0079]** Furthermore, in some embodiments, in the axial direction of the base body 31, the exposed section 313, the exposed section 314, and the exposed section 315 have substantially the same sizes. For example, in some specific embodiments, the exposed section 313, the exposed section 314, and the exposed section 315 have lengths of approximately 0.5 mm to 3 mm.

**[0080]** In addition, in some embodiments, the length of the exposed section 316 in the axial direction of the base body 31 is greater than the length of the exposed section 313 and/or the length of the exposed section 314 and/or the length of the exposed section 315. For example, in some specific embodiments, the length of the exposed section 316 in the axial direction of the base body 31 is between 3 mm and 5 mm.

**[0081]** In some embodiments, temperature measurement identification sections are arranged on the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34, to indicate adhesion of temperature sensors. For example, in FIG. 2 to FIG. 4, a temperature measurement identification section 321 is arranged on the infrared transmitting layer 32, and is a sprayed identifiable color, or a hollowed hole formed in the infrared transmitting layer 32, or an identifiable graph or pattern, or the like. During preparation, a temperature sensor is bonded to the temperature measurement identification section 321 in a mounted manner, a welded manner, or the like, to accurately sense a temperature of the infrared transmitting layer 32. Similarly, the infrared transmitting layer 33 and the infrared transmitting layer 34 further have temperature measurement identification sections.

**[0082]** In some embodiments, the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 are all prepared from the same material, so that they have the same infrared radiation wavelength or infrared radiation efficiency during heating of different sections of the aerosol generation product 1000.

**[0083]** Alternatively, in still some changed embodiments, one of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 is prepared from a material that is different from materials of the other two infrared transmitting layers, and an infrared transmitting spectrum of one of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 and infrared transmitting spectra of the other two infrared

transmitting layers have different WLPs (a peak wavelength which is a wavelength corresponding to a maximum radiation power) in its infrared transmitting spectrum from the other two, which can respectively adapt to optimal absorption wavelength ranges of different organic components in the aerosol generation product 1000. Alternatively, in still some embodiments, the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 are all prepared using different materials, and any two of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 have different infrared transmission spectra and/or different WLPs.

**[0084]** In addition, further as shown in FIG. 2 to FIG. 4, the heater 30 further includes:

an electrode coating 351, which has a slender or elongated shape. The electrode coating 351 extends from an end portion of the infrared transmitting layer 32 close to the first end 311 to an end portion of the infrared transmitting layer 33 facing away from the infrared transmitting layer 32. Thus, one portion of the electrode coating 351 is electrically connected to the infrared transmitting layer 32, and the other portion of the electrode coating 351 is further electrically connected to the infrared transmitting layer 33. Alternatively, the electrode coating 351 extends from the infrared transmitting layer 32 to the infrared transmitting layer 33. Alternatively, an extension length of the electrode coating 351 spans or basically spans the infrared transmitting layer 32 and infrared transmitting layer 33. Alternatively, a length of the electrode coating 351 is basically equal to a sum of the lengths of the infrared transmitting layer 32, the exposed section 314, and the infrared transmitting layer 33.

**[0085]** In addition, the heater 30 further includes:

an electrode coating 352, which extends in a longitudinal direction of the heater 30. Furthermore, the electrode coating 352 is arranged in a radial direction of the base body 31 or the heater 30 in a manner of facing away from the electrode coating 351. The electrode coating 352 is basically opposite to the electrode coating 351 in the radial direction of the base body 31 or the heater 30. A length of the electrode coating 352 in the axial direction of the heater 30 only covers the infrared transmitting layer 32. The electrode coating 352 is conductively connected to the infrared transmitting layer 32.

**[0086]** In addition, the heater 30 further includes:

an electrode coating 353, which includes a portion 3531 and a portion 3532, where the portion 3531 extends in the longitudinal direction of the heater 30, and the portion 3532 extends in the circumferential direction of the heater 30. The portion 3532 is closer to the second end 312 than the portion 3531. In addition, the portion 3531 spans the infrared transmitting layer 34 and is conductively connected to the infrared transmitting layer 34. In addition, the portion 3532 is located in the exposed section 316, so as to connect the electrode coating 353 to the circuit board 140.

**[0087]** In addition, the heater 30 further includes:

an electrode coating 354, which includes a portion 3541 and a portion 3542. The portion 3541 extends in the longitudinal direction of the heater 30 the portion 3542 extends in the circumferential direction of the heater 30.

5 The portion 3542 is closer to the second end 312 than the portion 3541. In addition, the portion 3541 spans the infrared transmitting layer 33 and the infrared transmitting layer 34, and is partially conductively connected to the infrared transmitting layer 33 and partially conductively connected to the infrared transmitting layer 34. Alternatively, the electrode coating 354 extends from the infrared transmitting layer 33 to the infrared transmitting layer 34. Alternatively, an extension length of the electrode coating 354 spans or basically spans the infrared transmitting layer 33 and infrared transmitting layer 34. Alternatively, a length of the portion 3541 of the electrode coating 354 is basically equal to a sum of the lengths of the infrared transmitting layer 33, the exposed section 315, and the infrared transmitting layer 34. In addition, the portion 3542 of the electrode coating 354 is located in the exposed section 316, to connect the electrode coating 354 to the circuit board 140.

**[0088]** In addition, in some embodiments, the above electrode coating 351 and/or the electrode coating 352 and/or the electrode coating 353 and/or the electrode coating 354 uses a low-resistivity metal or alloy, such as silver, gold, palladium, platinum, copper, nickel, molybdenum, tungsten, niobium, or an alloy thereof. The above electrode coating 351 and/or the electrode coating 352 and/or the electrode coating 353 and/or the electrode coating 354 is formed by spraying, printing, or the like.

**[0089]** In addition, in some embodiments, the electrode coating 351 and/or the electrode coating 352 and/or the electrode coating 353 and/or the electrode coating 354 are basically in lengthwise shapes. In addition, the electrode coating 351 and/or the electrode coating 352 and/or the portion 3531 of the electrode coating 353 and/or the portion 3541 of the electrode coating 354 has a width of approximately 2 mm to 4 mm.

**[0090]** In addition, further as shown in FIG. 2 to FIG. 4, the heater 30 further includes:

a conductive element 361, which has a length or a shape that is basically the same as the length or the shape of the electrode coating 351. During assembling, the conductive element 361 is turned on by resisting against or abutting against the electrode coating 351. The conductive element 361 is connected to the circuit board 140 through a welded conductive wire 3611, so that the electrode coating 351 is connected to the circuit board 140.

**[0091]** In addition, further as shown in FIG. 2 to FIG. 4, the heater 30 further includes:

a conductive element 362, which has a length or a shape that is basically the same as the length or the shape of the electrode coating 352. During assembling, the conductive element 362 is turned on by resisting against or abutting against the electrode coating 352. The conductive element 362 is connected to the circuit board 140

through a welded conductive wire 3621, so that the electrode coating 352 is connected to the circuit board 140.

**[0092]** The conductive element 361 and/or the conductive element 362 is a relatively thin sheet, and a material is low-resistivity gold, silver, copper, or an alloy thereof.

**[0093]** In addition, further as shown in FIG. 2 to FIG. 4, the heater 30 further includes:

a conductive element 363, which is turned on by abutting against and resisting against the portion 3532 of the electrode coating 353; and a conductive element 364, which is turned on by abutting against and resisting against the portion 3542 of the electrode coating 354. Afterwards, after the conductive element 363 and the conductive element 364 are connected to the circuit board 140 through wires, the electrode coating 353 and the electrode coating 354 are respectively connected to the circuit board 140. The applicant provides the shapes and structures of the conductive element 363 and the conductive element 364, assembling, fixing, and elasticities of the conductive element 363 and the conductive element 364, and other details in Chinese Patent Application No. CN215958354U, which is incorporated by reference in its entirety.

**[0094]** Alternatively, in some other embodiments, each of the electrode coating 351 and/or the electrode coating 352 and/or the electrode coating 353 and/or the electrode coating 354 is directly connected to the circuit board 140 through a welding wire.

**[0095]** Alternatively, in still some embodiments, an implementation for supplying power to the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 is performed only through the conductive element 361, the conductive element 362, the conductive element 363, and the conductive element 364.

**[0096]** Alternatively, in still some changed embodiments, the heater 30 further includes:

a first temperature sensor, which abuts against the infrared transmitting layer 32 to sense a temperature of the infrared transmitting layer 32; a second temperature sensor, which abuts against the infrared transmitting layer 33 to sense a temperature of the infrared transmitting layer 33; and a third temperature sensor, which abuts against the infrared transmitting layer 34 to sense a temperature of the infrared transmitting layer 34.

**[0097]** Alternatively, in still some changed embodiments, the heater 30 further includes:

a thermoplastic clinging member, which encloses the first temperature sensor and/or the second temperature sensor and/or the third temperature sensor outside the heater 30, to cling the first temperature sensor and/or the second temperature sensor and/or the third temperature sensor to the outsides of the infrared transmitting layers.

**[0098]** In some embodiments, the thermoplastic clinging member includes at least one of a heat-resistant synthetic resin, teflon, and silicon. In still some changed

embodiments, the thermoplastic clinging member includes a heat shrinkable tube or a high-temperature-resistant tape.

**[0099]** In addition, in some embodiments, a thermoplastic clinging member is further used for fastening or maintaining one or more of the conductive element 361, the conductive element 362, the conductive element 363, and the conductive element 364.

**[0100]** Alternatively, in still some changed embodiments, the heater 30 further includes:

a thermal insulation element, which is used for surrounding or enclosing the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34, to provide thermal insulation on the outer sides of the infrared transmitting layer 32 and/or the infrared transmitting layer 33 and/or the infrared transmitting layer 34. The thermal insulation element is, for example, a rolled-up aerogel blanket, a porous material, or a vacuum tube.

**[0101]** Alternatively, in some other changed embodiments, the thermal insulation element of the heater 30 is a tube having an inner thermal insulation cavity. A thermal insulation cavity is provided between an inner surface and an outer surface of the tubular thermal insulation element. A pressure of the thermal insulation cavity is less than an external pressure. Namely, the thermal insulation element is a vacuum thermal insulation tube having a vacuum degree. Alternatively, in still some changed embodiments, a thermal insulation cavity is provided between an inner surface and an outer surface of the tubular thermal insulation element, and the thermal insulation cavity is filled with thermal insulation gas, such as argon. At the same pressure and temperature, a heat conduction coefficient of argon is approximately one third less than that of air, thereby effectively providing thermal insulation.

**[0102]** In some embodiments, the circuit board 140 can selectively establish conduction between two or more of the electrode coating 351/the conductive element 361, the electrode coating 352/the conductive element 362, the electrode coating 353/the conductive element 363, and the electrode coating 354/the conductive element 364, to selectively cause one or more of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 of the heater 30 to work. For example:

In a specific embodiment, when the electrode coating 351/the conductive element 361 is connected to a positive electrode of the battery cell 130, and the electrode coating 352/the conductive element 362 is connected to a negative electrode of the battery cell 130, a current in the circumferential direction can be formed on the infrared transmitting layer 32, so that the infrared transmitting layer 32 is caused to work, as shown in FIG. 5. In this case, the heater 30 transmits the infrared ray through the infrared transmitting layer 32 to heat a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 32.

**[0103]** Moreover, when the electrode coating 351/the conductive element 361 is connected to the positive electrode of the battery cell 130, and the electrode coating 354/the conductive element 364 is connected to the negative electrode of the battery cell 130, a current in the circumferential direction can be formed on the infrared transmitting layer 33, so that the infrared transmitting layer 33 is caused to work, as shown in FIG. 6. In this case, the heater 30 transmits the infrared ray through the infrared transmitting layer 33 to heat a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 33.

**[0104]** Moreover, when the electrode coating 353/the conductive element 363 is connected to the positive electrode of the battery cell 130, and the electrode coating 354/the conductive element 364 is connected to the negative electrode of the battery cell 130, a current in the circumferential direction can be formed on the infrared transmitting layer 34, so that the infrared transmitting layer 34 is caused to work, as shown in FIG. 7. In this case, the heater 30 transmits the infrared ray through the infrared transmitting layer 34 to heat a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 34.

**[0105]** Moreover, when the electrode coating 351/the conductive element 361 is connected to the positive electrode of the battery cell 130, and the electrode coating 353/the conductive element 363 is connected to the negative electrode of the battery cell 130, the conductive coating 354 is used as a conductive intermediate, i.e. an empty electrode, for serial connection between the infrared transmitting layer 33 and the infrared transmitting layer 34, and currents in the circumferential direction can be simultaneously formed on the infrared transmitting layer 33 and the infrared transmitting layer 34, so that the infrared transmitting layer 33 and the infrared transmitting layer 34 are caused to work simultaneously, as shown in FIG. 8. In this case, the infrared transmitting layer 32 does not work. In this case, in the heater 30, the infrared transmitting layer 33 and the infrared transmitting layer 34 simultaneously transmit infrared rays to simultaneously heat a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 33 and a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 34.

**[0106]** Moreover, when the electrode coating 352/the conductive element 362 is connected to the positive electrode of the battery cell 130, and at the same time, the electrode coating 354/the conductive element 364 is connected to the negative electrode of the battery cell 130, the electrode coating 351 serves as a serial connection intermediate between the infrared transmitting layer 32 and the infrared transmitting layer 33. Currents can be simultaneously formed on the infrared transmitting layer 32 and the infrared transmitting layer 33 in the circumferential direction, so that the infrared transmitting layer 32 and the infrared transmitting layer 33 are caused to work simultaneously, as shown in FIG. 9. In this case,

the infrared transmitting layer 34 does not work. In this case, in the heater 30, the infrared transmitting layer 32 and the infrared transmitting layer 33 simultaneously transmit infrared rays to simultaneously heat a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 32 and a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 33.

**[0107]** Moreover, when the electrode coating 352/the conductive element 362 is connected to the positive electrode of the battery cell 130 and the electrode coating 353/the conductive element 363 is connected to the negative electrode of the battery cell 130, the electrode coating 351 serves as a serial connection intermediate between the infrared transmitting layer 32 and the infrared transmitting layer 33, and the electrode coating 354 serves as a serial connection intermediate between the infrared transmitting layer 33 and the infrared transmitting layer 34. In this case, the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 can be caused to work simultaneously, as shown in FIG. 10. In this case, the heater 30 simultaneously heats a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 32, a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 33, and a section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 34. Namely, in this case, the aerosol generation product 1000 is entirely heated.

**[0108]** In addition, in some embodiments, for example, as shown in FIG. 11, in the heater 30, a wire/a conductive element 39 is used to connect the conductive coating 351/the conductive element 361 to the conductive coating 354/the conductive element 364, so that the conductive coating 351 and the conductive coating 354 form an integrally conductive short-circuit state. In this case, the electrode coating 352/the conductive element 362 is then connected to the positive electrode of the battery cell 130, and the electrode coating 353/the conductive element 363 is then connected to the negative electrode of the battery cell 130. Because of the short circuit between the conductive coating 351 and the conductive coating 354, current does not flow through the infrared transmitting layer 33, thereby forming a state in which the infrared transmitting layer 32 and the infrared transmitting layer 34 work and the infrared transmitting layer 33 does not work.

**[0109]** Alternatively, when the conductive coating 351 and the conductive coating 354 form the short-circuit state by using the wire or the conductive element 39, it can further selectively connect the conductive coating 351/the conductive element 361 to the positive electrode of the battery cell 130 and connect the conductive coating 352/the conductive element 362 to the negative electrode of the battery cell 130. In this case, a state in which the infrared transmitting layer 32 works only, and the infrared transmitting layer 33 and the infrared transmit-

ting layer 34 do not work. Alternatively, in this case, it can further connect the electrode coating 353/the conductive element 363 to the positive electrode of the battery cell 130 and connect the electrode coating 354/the conductive element 364 to the negative electrode of the battery cell 130, so that only the infrared transmitting layer 34 works, and the infrared transmitting layer 32 and the infrared transmitting layer 33 do not work.

**[0110]** In the foregoing implementations, by selectively connecting the positive electrode and the negative electrode between different electrode coatings or conductive elements respectively to input a voltage, any one, two, or three of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 work in series.

**[0111]** In still another embodiment of the present application, an electrode connection control mode is further provided, in which the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 work simultaneously, but one of the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 has a higher power.

**[0112]** For example, in an embodiment shown in FIG. 12, the conductive coating 352/the conductive element 362 are connected to the conductive coating 353/the conductive element 353 through the wire or the conductive element 39, so that the conductive coatings/the conductive elements are directly turned on or in a short-circuit state. In this case, the conductive coating 351/the conductive element 361 is connected to the positive electrode of the battery cell 130, and the conductive coating 352 and/or the conductive coating 353 is connected to the negative electrode, to provide a voltage. In this case, in this state, a current  $i_{11}$  that directly flows from the conductive coating 351 to the conductive coating 352 through the infrared transmitting layer 32, and a current  $i_{12}$  that flows from the conductive coating 351 to the conductive coating 353 through the infrared transmitting layer 33 and the infrared transmitting layer 34 that are connected in series are generated. On a power supply path, the infrared transmitting layer 32 and the serially connected infrared transmitting layer 33 and infrared transmitting layer 34 form two circuit paths connected in parallel to each other.

**[0113]** In the implementation of FIG. 12, the infrared transmitting layer 32, the infrared transmitting layer 33, and the infrared transmitting layer 34 work simultaneously. However, a resistance of the infrared transmitting layer 32 is less than an equivalent resistance of the infrared transmitting layer 33 and the infrared transmitting layer 34 that are connected in series. For example, when the resistance of the infrared transmitting layer 32, the resistance of the infrared transmitting layer 33, and the resistance of the infrared transmitting layer 34 are the same and represented by  $R$ , the current  $i_{11}$  flowing through the infrared transmitting layer 32 is twice a current flowing through the infrared transmitting layer 33 and the infrared transmitting layer 34 that are connected in

series. The power of the infrared transmitting layer 32 is  $P_1 = i_{11}^2 \times R$ . The power of the infrared transmitting layer 33 and/or the infrared transmitting layer 34 is  $P_2 = i_{12}^2 \times R$ . Power  $P_2$  is 1/4 of power  $P_1$ . In this case, the section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 32 is heated faster or at a higher temperature than the section surrounded by the infrared transmitting layer 33 and/or the infrared transmitting layer 34. In the implementation of FIG. 12, the infrared transmitting layer 32 is in a relatively high power density state, and the infrared transmitting layer 33 and/or the infrared transmitting layer 34 is in a relatively low power density state.

**[0114]** Alternatively, for another example, in an embodiment shown in FIG. 13, the conductive coating 351/the conductive element 361 is connected to the positive electrode, and the conductive coating 354/the conductive element 364 is connected to the negative electrode, thus providing a voltage. In this case, a current  $i_{11a}$  flowing from the conductive coating 351/the conductive element 361 through the infrared transmitting layer 33 to the conductive coating 354/the conductive element 364 is formed, and a current  $i_{12a}$  flowing from the conductive coating 351/the conductive element 361 through the infrared transmitting layer 32 and the infrared transmitting layer 34 that are connected in series to the conductive coating 354/the conductive element 364 is formed, making the power of the infrared transmitting layer 33 four times of the power of the infrared transmitting layer 32 and/or the power of the infrared transmitting layer 34. In this case, the section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 33 is heated faster or at a higher temperature than the section surrounded by the infrared transmitting layer 32 and/or the infrared transmitting layer 34.

**[0115]** Alternatively, for another example, in an embodiment shown in FIG. 14, the conductive coating 353/the conductive element 363 is connected to the positive electrode, and the conductive coating 354/the conductive element 364 is connected to the negative electrode, thus providing a voltage. In this case, a current  $i_{11b}$  flowing from the conductive coating 353/the conductive element 363 through the infrared transmitting layer 34 to the conductive coating 354/the conductive element 364 is formed, and a current  $i_{12b}$  flowing from the conductive coating 353/the conductive element 363 through the infrared transmitting layer 32 and the infrared transmitting layer 33 that are connected in series to the conductive coating 354/the conductive element 364 is formed, making the power of the infrared transmitting layer 34 four times of the power of the infrared transmitting layer 32 and/or the power of the infrared transmitting layer 33. In this case, the section of the aerosol generation product 1000 surrounded by the infrared transmitting layer 34 is heated faster or at a higher temperature than the section surrounded by the infrared transmitting layer 32 and/or the infrared transmitting layer 33.

**[0116]** Further, FIG. 15 shows a schematic diagram of

heating different sections of an aerosol generation product 1000 by a heater 30 according to an embodiment. In this embodiment shown in FIG. 15, the aerosol generation product 1000 includes a section 1100 surrounded and heated by an infrared transmitting layer 32, a section 1200 surrounded and heated by an infrared transmitting layer 33, and a section 1300 surrounded and heated by an infrared transmitting layer 34. In this embodiment, the section 1100, section 1200, and section 1300 of the aerosol generation product 1000 are respectively located in different heating sections of the heater 30. For example, the section 1100 is located in a heating section defined around the infrared transmitting layer 32; the section 1200 is located in a heating section defined around the infrared transmitting layer 33; and the section 1300 is located in a heating section defined around the infrared transmitting layer 34. During implementation, by selectively connecting the heater 30 to a battery cell 130, the heater 30 can operate in various situations: only any one or two of the section 1100, the section 1200, and the section 1300 of the aerosol generation product 1000 are heated, or the section 1100, the section 1200, and the section 1300 of the aerosol generation product 1000 are simultaneously heated.

**[0117]** In addition, in this embodiment, by selectively connecting the heater 30 to the battery cell 130 in a different manner different, when the section 1100, the section 1200, and the section 1300 of the aerosol generation product 1000 are simultaneously heated, any one or two of the section 1100, the section 1200, and the section 1300 may be heated faster or at a higher temperature.

**[0118]** Alternatively, in a specific embodiment, for example, FIG. 16 shows a schematic diagram of a temperature curve of controlling a heater 30 to heat a section 1100, a section 1200, and a section 1300 of an aerosol generation product 1000 according to an embodiment. Where a curve S1 is a temperature curve indicating that the section 1100 is heated by an infrared transmitting layer 32; a curve S2 is a temperature curve indicating that the section 1200 is heated by an infrared transmitting layer 33; and a curve S3 is a temperature curve indicating that the section 1300 is heated by an infrared transmitting layer 34. A heating process includes:

Within a first time period (0 to t1), the battery cell 130 supplies power to the heater 30 in the manner shown in FIG. 12, so that the section 1100 is heated faster than the section 1200 and/or the section 1300. Moreover, within the first time period, the section 1100 is heated to a first target temperature which is, for example, temperature T1, and a heating temperature or a current temperature of the section 1200 and/or a heating temperature or a current temperature of the section 1300 is less than the first target temperature.

**[0119]** With a second time period (t1 to t2), the battery cell 130 supplies power to the heater 30 in the manner shown in FIG. 13, so that the section 1200 is heated faster than the section 1100 and/or the section 1300. Within the

second time period, the section 1200 is heated to a second target temperature, which is, for example, temperature T2, and a heating temperature or a current temperature of the section 1300 is less than the second target temperature.

**[0120]** Within a third time period (t2 to t3), the battery cell 130 supplies power to the heater 30 in the manner shown in FIG. 14, so that the section 1300 is heated faster than the section 1100 and/or the section 1200. Within the third time period, the section 1300 is heated to a third target temperature, which is, for example, temperature T3. In addition, within the third time period, the section 1100, the section 1200, and the section 1300 can be heated to an extent that their temperatures are basically close or tend to be close.

**[0121]** Within a fourth time period (t3 to t4 or at the end), the battery cell 130 supplies power to the heater 30 in the manner shown in FIG. 10, so that when the section 1100, the section 1200, and the section 1300 are heated basically according to the close powers or temperatures till t4 or until vaping ends.

**[0122]** In some embodiments, the first target temperature T1, the second target temperature T2, and the third target temperature T3 may be the same. For example, temperature T1, temperature T2, and temperature T3 may all be set to be approximately 200°C to 300°C. Alternatively, in still some embodiments, the first target temperature, the second target temperature, and the third target temperature are different. For example, in some embodiments, the first target temperature, the second target temperature, and the third target temperature sequentially or gradually increase or gradually decrease. For example, in an embodiment, the first target temperature T1, the second target temperature T2, and the third target temperature T3 may gradually increase. For example, in a specific embodiment, the first target temperature T1 may be set to 220°C to 250°C; the second target temperature T2 may be set to 240°C to 270°C; and the third target temperature T3 may be set to 260°C to 350°C. In addition, in the foregoing embodiment, within the fourth time period, the temperatures of the section 1100, the section 1200, and the section 1300 are basically maintained to be the third target temperature.

**[0123]** In some embodiments, a length of the first time period is approximately 10 s to 150 s. A length of the second time period is approximately 20 s to 40 s. A length of the third time period is approximately 40 s to 120 s. A length of the fourth time period is approximately 60 s to 150 s. In a specific embodiment, the length of the first time period is approximately 130 s. The length of the second time period is approximately 25 s. The length of the third time period is approximately 100 s. The length of the fourth time period is approximately 120 s.

**[0124]** In some embodiments, the length of the fourth time period is greater than the length of the first time period and/or the length of the second time period and/or the length of the third time period. In some embodiments,

the length of the first time period is greater than the length of the second time period and/or the length of the third time period.

**[0125]** Alternatively, in still some changed embodiments, there may be one or more of the first time period, the second time period, the third time period, and the fourth time period in the heating of the aerosol generation product 1000. For example, only the heating processes of the first time period, the second time period, and the third time period are included, and the process of the fourth time period is not included. Alternatively, only the heating processes of the first time period and the fourth time period are included, and the heating processes of the second time period and the third time period are not included.

**[0126]** Alternatively, in still another embodiment, a method for controlling an aerosol generation device to heat a section 1100, a section 1200, and a section 1300 of an aerosol generation product 1000 is further provided, including:

Within a first time period, an infrared transmitting layer 32 of a heater 30 heats the section 1100 at power P10; an infrared transmitting layer 33 heats the section 1200 at power P20; an infrared transmitting layer 34 heats the section 1300 at power P30; power P10 is greater than power P20, and/or power P10 is greater than power P30, and/or power P20 is basically equal to power P30.

**[0127]** Within a second time period, the infrared transmitting layer 32 of the heater 30 heats the section 1100 at power P40; the infrared transmitting layer 33 heats the section 1200 at power P50; and the infrared transmitting layer 34 heats the section 1300 at power P60; and/or, power P50 is greater than power P40, and/or power P50 is greater than power P60, and/or power P50 is basically equal to power P10, and power P40 is basically equal to power P60; and/or, power P40, power P60, power P20, and power P30 are basically the same; and/or, power P40 and/or power P60 is less than power P10.

**[0128]** Within a third time period, the infrared transmitting layer 32 of the heater 30 heats the section 1100 at power P70; the infrared transmitting layer 33 heats the section 1200 at power P80; and the infrared transmitting layer 34 heats the section 1300 at power P90; and/or, power P90 is greater than power P70, and/or power P90 is greater than power P80, and/or power P90 is basically equal to power P10 or power P50; and/or, power P70 is basically equal to power P80.

**[0129]** Alternatively, in still another embodiment, a method for controlling an aerosol generation device to heat a section 1100, a section 1200, and a section 1300 of an aerosol generation product 1000 is further provided, referring to FIG. 17, including:

S100, within a first time period, the section 1100 is heated faster or at a higher temperature or at a higher power than the section 1200 and/or the section 1300. S200, within a second time period, the section 1200 is heated faster or at a higher temperature or at a

higher power than the section 1100 and/or the section 1300; and

S300, within a third time period, the section 1300 is heated faster or at a higher temperature or at a higher power than the section 1100 and/or the section 1200.

**[0130]** In addition, in some embodiments, the first time period, the second time period, and the third time period are continuous. Alternatively, in still some embodiments, the first time period, the second time period, and the third time period are discontinuous, or an interval exists between the first time period and the second time period, or an interval exists between the second time period and the third time period.

**[0131]** Alternatively, in still another embodiment, a method for controlling an aerosol generation device to heat a section 1100, a section 1200, and a section 1300 of an aerosol generation product 1000 is further provided, including:

within a first time period, the section 1100 is at least heated; the section 1200 and the section 1300 can be selectively heated or not heated; within a second time period, the section 1200 is at least heated; the section 1100 and the section 1300 can be selectively heated or not heated; within a third time period, the section 1300 is at least heated; the section 1100 and the section 1200 can be selectively heated or not heated; and within a fourth time period, the section 1100, the section 1200, and the section 1300 are simultaneously heated.

**[0132]** Alternatively, in still another embodiment, a method for controlling an aerosol generation device to heat a section 1100, a section 1200, and a section 1300 of an aerosol generation product 1000 is further provided, including:

within a first time period, the section 1100 is at least heated; the section 1200 and the section 1300 can be selectively heated or not heated; and within a second time period, the section 1100 and the section 1200 are at least heated; the section 1300 can be selectively heated or not heated; and within a third time period, the section 1100, the section 1200, and the section 1300 are simultaneously heated.

**[0133]** Alternatively, in still some changed embodiments, the above heater 30 includes:

a first resistive heating element, a second resistive heating element, and a third resistive heating element which are sequentially arranged in a longitudinal direction. Where:

The first resistive heating element is arranged to surround and heat the section 1100.

**[0134]** The second resistive heating element is ar-

ranged to surround and heat the section 1200.

[0135] The third resistive heating element is arranged to surround and heat the section 1300.

[0136] Alternatively, in still some embodiments, the first resistive heating element and/or the second resistive heating element and/or the third resistive heating element is a pin, a needle, a sheet, or the like that is inserted into different sections of the aerosol generation product 1000 for heating.

[0137] Alternatively, in still some changed embodiments, the above heater 30 includes:

a first inductive heating element, a second inductive heating element, and a third inductive heating element which are sequentially arranged in the longitudinal direction. Where:

The first inductive heating element is arranged to surround and heat the section 1100.

[0138] The second inductive heating element is arranged to surround and heat the section 1200.

[0139] The third inductive heating element is arranged to surround and heat the section 1300.

[0140] Alternatively, in still some embodiments, the first inductive heating element and/or the second inductive heating element and/or the third inductive heating element is a pin, a needle, a sheet, or the like that is inserted into different sections of the aerosol generation product 1000 for heating.

[0141] It should be noted that, the specification and the accompanying drawings of the present application illustrate preferred embodiments of the present application, but the present application is not limited to the embodiments described in this specification. Further, a person of ordinary skill in the art can make improvements or transformations according to the above description, and all these improvements and transformations should fall within the scope of protection of the claims attached to the present application.

## Claims

1. An aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and comprising:

a heater, which is used for heating the aerosol generation product, wherein a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction;

a battery cell, which is used for providing power to the heater; and

a circuit, which is configured to control the power provided to the heater by the battery cell, to: heat the first heating section faster or at a higher power than heating the second heating section and/or the third heating section within a first time

period, heat the second heating section faster or at a higher power than heating the first heating section and/or the third heating section within a second time period, and heat the third heating section faster or at a higher power than heating the first heating section and/or the second heating section within a third time period.

2. The aerosol generation device according to claim 1, wherein the first heating section, the second heating section, and the third heating section are sequentially spaced apart.

3. The aerosol generation device according to claim 1 or 2, wherein the first heating section, the second heating section, and the third heating section are simultaneously heated within the first time period and/or the second time period and/or the third time period.

4. The aerosol generation device according to claim 1 or 2, wherein the circuit is further configured to control the power provided to the heater by the battery cell, to: at least heat the first heating section within the first time period, at least heat the first heating section and the second heating section within the second time period, and simultaneously heat the first heating section, the second heating section, and the third heating section within the third time period.

5. The aerosol generation device according to claim 1 or 2, wherein the circuit is further configured to control the power provided to the heater by the battery cell, to: heat, within the first time period, the first heating section to a first target temperature and cause the second heating section and the third heating section to have temperatures less than the first target temperature; heat, within the second time period, the second heating section to a second target temperature and cause the third heating section to have a temperature less than the second target temperature in the second time period; and heat, within the third time period, the third heating section to a third target temperature and cause the first heating section and the second heating section to have temperatures not less than the third target temperature.

6. The aerosol generation device according to claim 1 or 2, comprising:

an opening, wherein during use, the aerosol generation product is at least partially received in a housing through the opening or is removed from the housing through the opening; and the first heating section is closer to the opening than the second heating section and/or the third heating section.

7. The aerosol generation device according to claim 1 or 2, wherein a length of the first heating section and/or the second heating section and/or the third heating section is from 8 mm to 12 mm; and/or, the first heating section, the second heating section, and the third heating section have basically the same lengths. 5
8. The aerosol generation device according to claim 1 or 2, wherein the heater only comprises three heating sections. 10
9. The aerosol generation device according to claim 1 or 2, further comprising:  
a temperature sensor, which is used for sensing a temperature of the heater. 15
10. The aerosol generation device according to claim 9, wherein the heater further comprises:  
an identification section, which is used for providing an identification when the temperature sensor is connected or bonded to the heater. 20
11. The aerosol generation device according to claim 9, further comprising:  
a thermoplastic clinging member, which is used for clinging or fastening the temperature sensor to the heater. 25
12. The aerosol generation device according to claim 1 or 2, further comprising:  
a thermal insulation element, which is used for providing thermal insulation outside the heater. 30
13. The aerosol generation device according to claim 1 or 2, wherein the heater comprises the following elements sequentially arranged in a longitudinal direction: 35  
a first heating element, which at least partially defines the first heating section; 40  
a second heating element, which at least partially defines the second heating section; and  
a third heating element, which at least partially defines the third heating section. 45
14. The aerosol generation device according to claim 13, wherein the first heating element is at least one of an infrared heating element or a resistive heating element; 50  
and/or the second heating element is at least one of an infrared heating element or a resistive heating element;  
and/or the third heating element is at least one of an infrared heating element or a resistive heating element. 55
15. The aerosol generation device according to claim 13, wherein within the first time period, the first heating element is connected in parallel with the second heating element and the third heating element connected in series with the second heating element;  
and/or, within the second time period, the second heating element is connected in parallel with the first heating element and the third heating element connected in series with the first heating element;  
and/or, within the third time period, the third heating element is connected in parallel with the first heating element and the second heating element connected in series with the first heating element;
16. The aerosol generation device according to claim 13, wherein the circuit is configured to be able to selectively connect any two or three of the first heating element, the second heating element, and the third heating element in series.
17. The aerosol generation device according to claim 13, wherein the heater comprises: a first electrode element, a second electrode element, a third electrode element, and a fourth electrode element;  
at least a portion of the first heating element is electrically connected between the first electrode element and the second electrode element, so that during use, a current is guided at the first heating element by the first electrode element and the second electrode element;  
at least a portion of the second heating element is electrically connected between the first electrode element and the fourth electrode element, so that during use, a current is guided at the second heating element by the first electrode element and the fourth electrode element; and  
at least a portion of the third heating element is electrically connected between the third electrode element and the fourth electrode element, so that during use, a current is guided at the third heating element by the third electrode element and the fourth electrode element.
18. The aerosol generation device according to claim 17, wherein the first electrode element and the second electrode element are oppositely arranged in a radial direction of the heater;  
and/or, the third electrode element and the fourth electrode element are oppositely arranged in the radial direction of the heater;  
and/or, the first electrode element and the third electrode element are spaced apart in a lengthwise direction of the heater;

and/or, the second electrode element and the fourth electrode element are spaced apart in the lengthwise direction of the heater.

19. The aerosol generation device according to claim 17, wherein an extension length of the first electrode element is greater than an extension length of the second electrode element; and/or, an extension length of the third electrode element is less than an extension length of the fourth electrode element.
20. The aerosol generation device according to claim 17, wherein at least a portion of the first electrode element extends from the first heating element to the second heating element; and/or, at least a portion of the fourth electrode element extends from the second heating element to the third heating element.
21. The aerosol generation device according to claim 17, wherein the second electrode element and the third electrode element are connected and conducted through a wire or a conductive element; and/or the first electrode element and the fourth electrode element are connected and conducted through a wire or a conductive element.
22. The aerosol generation device according to claim 1 or 2, wherein the heater comprises: a base body; and a first infrared transmitting layer, a second infrared transmitting layer, and a third infrared transmitting layer which are formed on or combined with the base body; at least a portion of the first infrared transmitting layer defines the first heating section; at least a portion of the second infrared transmitting layer defines the second heating section; and at least a portion of the third infrared transmitting layer defines the third heating section.
23. The aerosol generation device according to claim 22, wherein the first infrared transmitting layer comprises a coating or a thin film formed on or combined with the base body; and/or, the second infrared transmitting layer comprises a coating or a thin film formed on or combined with the base body; and/or, the third infrared transmitting layer comprises a coating or a thin film formed on or combined with the base body.
24. An aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, wherein the aerosol generation product comprises a first section, a second section, and a third section which are sequentially arranged in a lengthwise direction, wherein the aerosol generation device

comprises:

- a heater, which is used for heating the aerosol generation product;
- a battery cell, which is used for providing power to the heater; and
- a circuit, configured to control the power provided to the heater by the battery cell, to: cause the heater to simultaneously heat the first section, the second section, and the third section, wherein a heating power of one of the first section, the second section, and the third section is different from heating powers of the other two sections.
25. An aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, wherein the aerosol generation product comprises a first section, a second section, and a third section which are sequentially arranged in a lengthwise direction, wherein the aerosol generation device comprises:
- a heater, which is used for heating the aerosol generation product;
- a battery cell, which is used for providing power to the heater; and
- a circuit, configured to control the power provided to the heater by the battery cell, to: heat, within a first time period, the first section faster or at a higher power than heating the second section and/or the third section; heat, within a second time period, the second section faster or at a higher power than heating the first section and/or the third section; and heat, within a third time period, the third section faster or at a higher power than heating the first section and/or the second section.
26. An aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and comprising:
- a heater, which is used for heating the aerosol generation product; wherein a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction;
- a battery cell, which is used for providing power to the heater; and
- the circuit is further configured to control the power provided to the heater by the battery cell, to: at least heat the first heating section within a first time period, at least heat the first heating section and the second heating section within a second time period, and simultaneously heat the first heating section, the second heating

section, and the third heating section within a third time period.

27. An aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and comprising:

a heater, which is used for heating the aerosol generation product; wherein a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction;

a battery cell, which is used for providing power to the heater; and

a circuit, configured to control the power provided to the heater by the battery cell, to: at least heat the first heating section within a first time period, at least heat the second heating section within a second time period, at least heat the third heating section within a third time period, and simultaneously heat the first heating section, the second heating section, and the third heating section within a fourth time period.

28. An aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and comprising

a heater, which is used for heating the aerosol generation product; wherein a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction;

a battery cell, which is used for providing power to the heater; and

a circuit, configured to control the power provided to the heater by the battery cell, to: within a first time period, heat the first heating section at a first power and heat the second heating section and the third heating section at basically the same second powers; within a second time period, heat the second heating section at a third power and heat the first heating section and the third heating section at basically the same fourth powers; and within a third time period, heat the third heating section at a fifth power and heat the first heating section and the second heating section at basically the same sixth powers.

29. An aerosol generation device, configured to heat an aerosol generation product to generate an aerosol, and comprising:

a heater, which is used for heating the aerosol generation product; wherein a first heating section, a second heating section and a third heat-

ing section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction;

a battery cell, which is used for providing power to the heater; and

the circuit, configured to control the power provided to the heater by the battery cell, to: within a first time period, heat the first heating section to a first target temperature and cause the second heating section and the third heating section to have temperatures less than the first target temperature; within the second time period, heat the second heating section to a second target temperature and cause the third heating section to have a temperature less than the second target temperature in the second time period; and within the third time period, heat the third heating section to a third target temperature and cause the first heating section and the second heating section to have temperatures not less than the third target temperature.

30. A heater for an aerosol generation device, comprising:

a first end and a second end which face away from each other in a longitudinal direction;

a first heating element, a second heating element, and a third heating element which are spaced apart in the longitudinal direction, wherein the first heating element is close to the first end; the third heating element is close to the second end; the second heating element is located between the first heating element and the third heating element;

and a first electrode element, a second electrode element, a third electrode element, and a fourth electrode element, wherein at least a portion of the first heating element is electrically connected between the first electrode element and the second electrode element, so that during use, a current is guided at the first heating element by the first electrode element and the second electrode element;

at least a portion of the second heating element is electrically connected between the first electrode element and the fourth electrode element, so that during use, a current is guided at the second heating element by the first electrode element and the fourth electrode element; and at least a portion of the third heating element is electrically connected between the third electrode element and the fourth electrode element, so that during use, a current is guided at the third heating element by the third electrode element and the fourth electrode element.

31. A control method of an aerosol generation device,

wherein the aerosol generation device is configured to heat an aerosol generation product to generate an aerosol; the aerosol generation device comprises: a heater, which is used for heating the aerosol generation product, wherein a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction; and

a battery cell, which is used for providing power to the heater,  
wherein the method comprises:

providing power to the heater;  
within a first time period, heating the first heating section faster or at a higher power than heating the second heating section and/or the third heating section;  
within a second time period, heating the first heating section and/or the third heating section faster or at a higher power than heating the second heating section; and  
within a third time period, heating the first heating section and/or the second heating section faster or at a higher power than heating the third heating section.

**32.** A control method of an aerosol generation device, wherein the aerosol generation device is configured to heat an aerosol generation product to generate an aerosol; the aerosol generation device comprises: a heater, which is used for heating the aerosol generation product, wherein a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction; and

a battery cell, which is used for providing power to the heater,  
wherein the method comprises:

providing power to the heater;  
at least heating the first heating section within a first time period;  
at least heating the first heating section and the second heating section within a second time period; and  
simultaneously heating the first heating section, the second heating section, and the third heating section within a third time period.

**33.** A control method of an aerosol generation device, wherein the aerosol generation device is configured to heat an aerosol generation product to generate an aerosol; the aerosol generation device comprises: a heater, which is used for heating the aerosol generation product, wherein a first heating section, a

second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction; and

a battery cell, which is used for providing power to the heater,  
wherein the method comprises:

providing power to the heater;  
at least heating the first heating section within a first time period;  
at least heating the second heating section within a second time period;  
at least heating the third heating section within a third time period; and  
simultaneously heating the first heating section, the second heating section, and the third heating section within a fourth time period.

**34.** A control method of an aerosol generation device, wherein the aerosol generation device is configured to heat an aerosol generation product to generate an aerosol; the aerosol generation device comprises: a heater, which is used for heating the aerosol generation product, wherein a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined on the heater in a longitudinal direction; and

a battery cell, which is used for providing power to the heater,  
wherein the method comprises:

providing power to the heater;  
within a first time period, heating the first heating section at a first power and heating the second heating section and the third heating section at basically the same second powers;  
within a second time period, heating the second heating section at a third power and heating the first heating section and the third heating section at basically the same fourth powers; and  
within a third time period, heating the third heating section at a fifth power, the first heating section and the second heating section at basically the same sixth powers.

**35.** A control method of an aerosol generation device, wherein the aerosol generation device is configured to heat an aerosol generation product to generate an aerosol; the aerosol generation device comprises: a heater, which is used for heating the aerosol generation product, wherein a first heating section, a second heating section and a third heating section, which are sequentially arranged, are at least defined

on the heater in a longitudinal direction; and

a battery cell, which is used for providing power to the heater,

wherein the method comprises:

providing power to the heater;

within a first time period, heating the first heating section to a first target temperature, wherein the first target temperature is greater than a current temperature of the second heating section and a current temperature of the third heating section;

within a second time period, heating the second heating section to a second target temperature, wherein the second target temperature is greater than a current temperature of the third heating section; and

within a third time period, heating the third heating section to a third target temperature, wherein the third target temperature tends to be close to a current temperature of the first heating section and a current temperature of the second heating section.

- 36.** A control method of an aerosol generation device, wherein the aerosol generation device is configured to heat an aerosol generation product to generate an aerosol; the aerosol generation product comprises a first section, a second section, and a third section which are sequentially arranged in a lengthwise direction;

the aerosol generation device comprises: a heater, which is used for heating the aerosol generation product; a battery cell, which is used for providing power to the heater,

wherein the method comprises:

providing power to the heater, to simultaneously heat the first section, the second section, and the third section, wherein a heating power of one of the first section, the second section, and the third section is different from heating powers of the other two sections.

- 37.** A control method of an aerosol generation device, wherein the aerosol generation device is configured to heat an aerosol generation product to generate an aerosol; the aerosol generation product comprises a first section, a second section, and a third section which are sequentially arranged in a lengthwise direction;

the aerosol generation device comprises: a heater, which is used for heating the aerosol generation product; and a battery cell, which is used for providing power to the heater, wherein the method comprises:

providing power to the heater;

within a first time period, heating the second section and/or the third section faster or at a higher power than heating the first section; within a second time period, heating the first section and/or the third section faster or at a higher power than heating the second section; and

within a third time period, heating the first section and/or the second section faster or at a higher power than heating the third section.

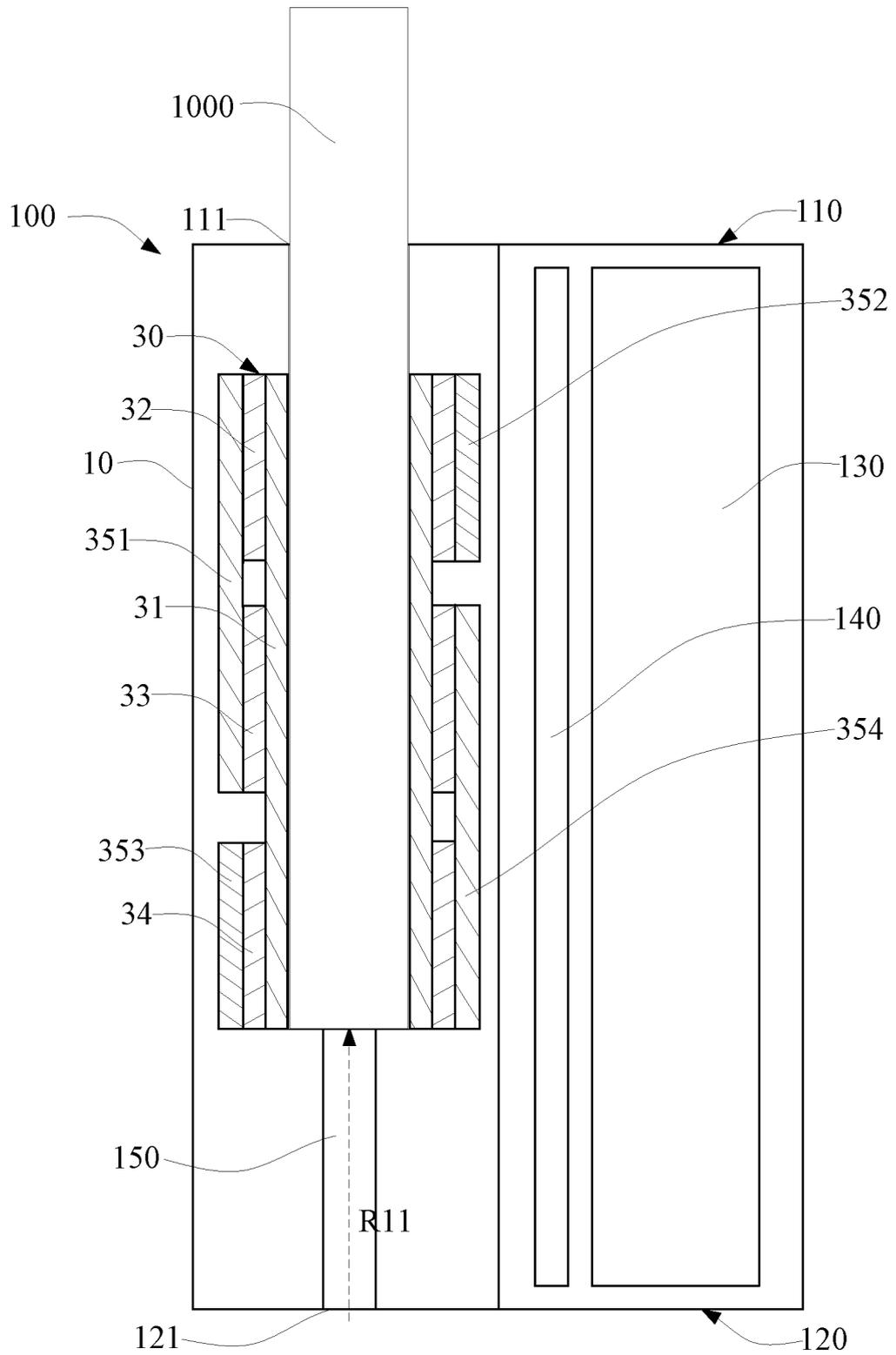


FIG. 1

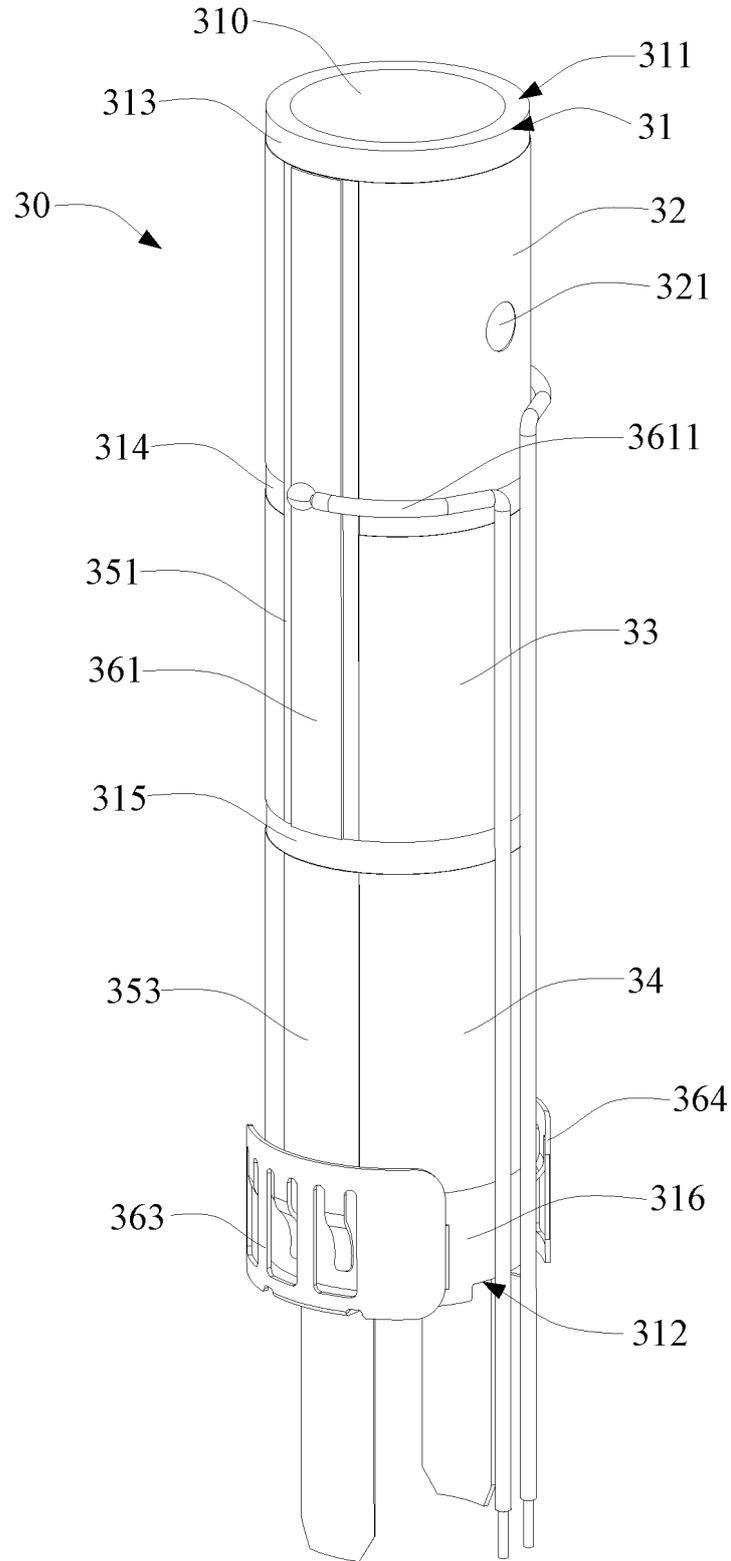


FIG. 2

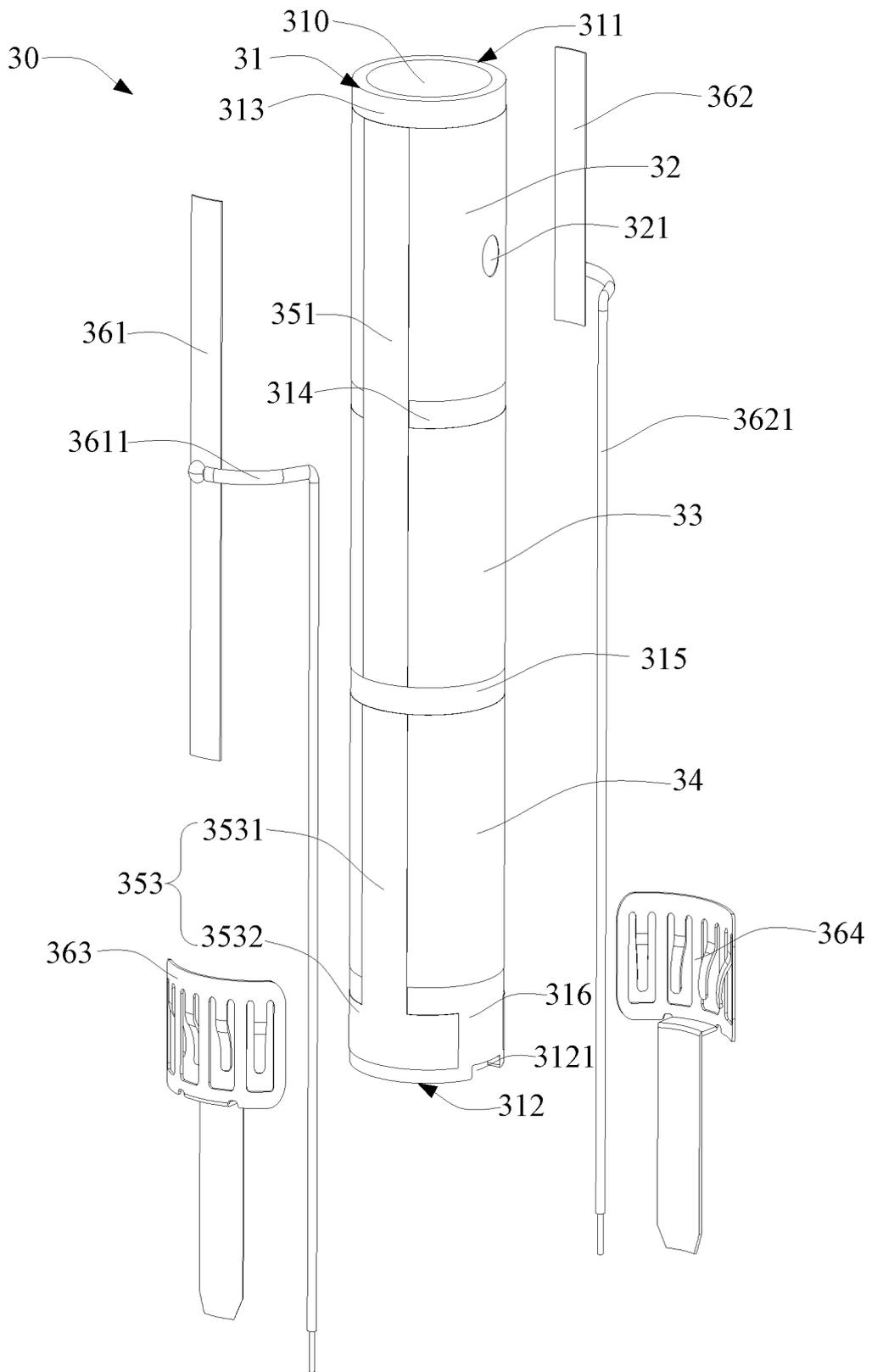


FIG. 3

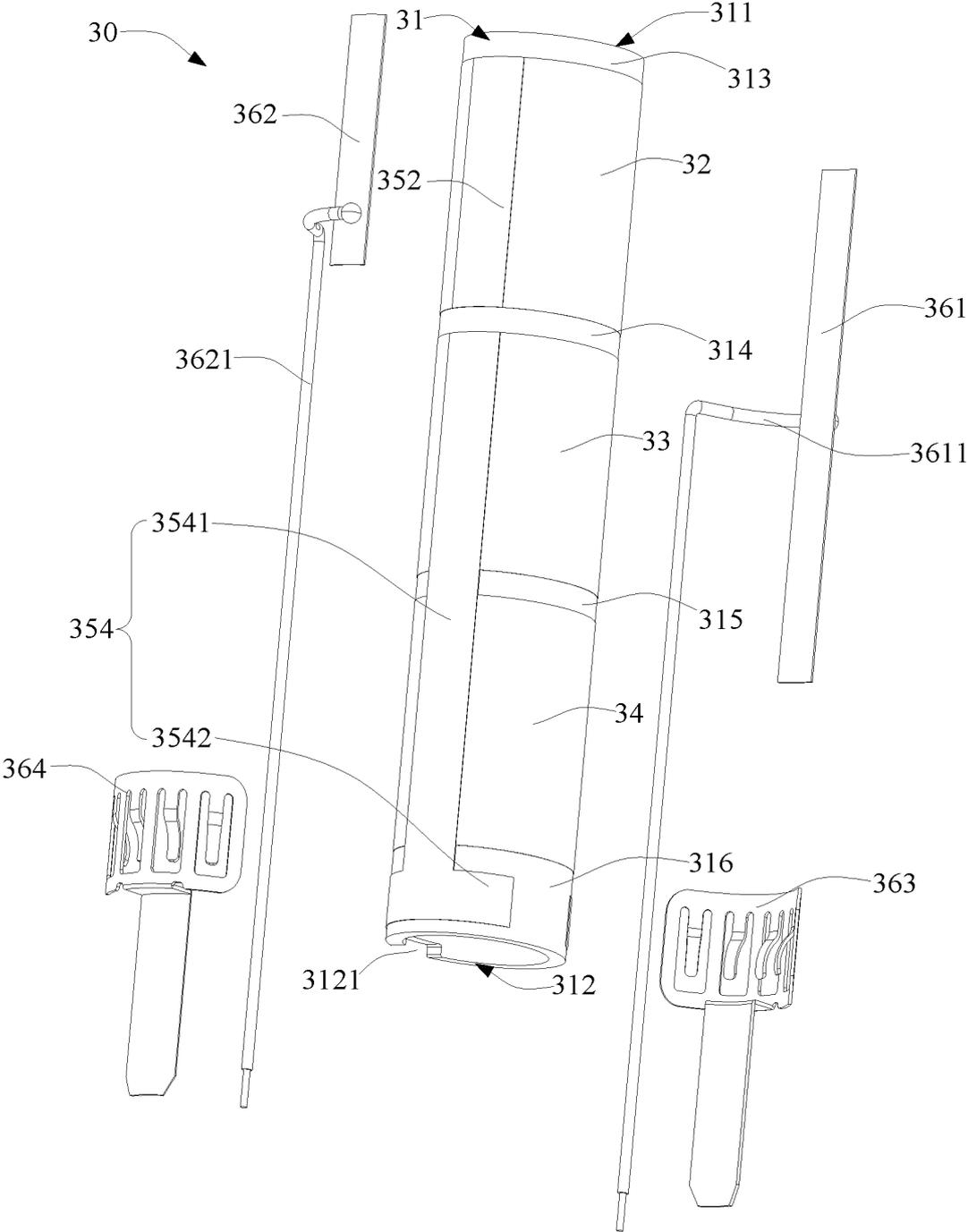


FIG. 4

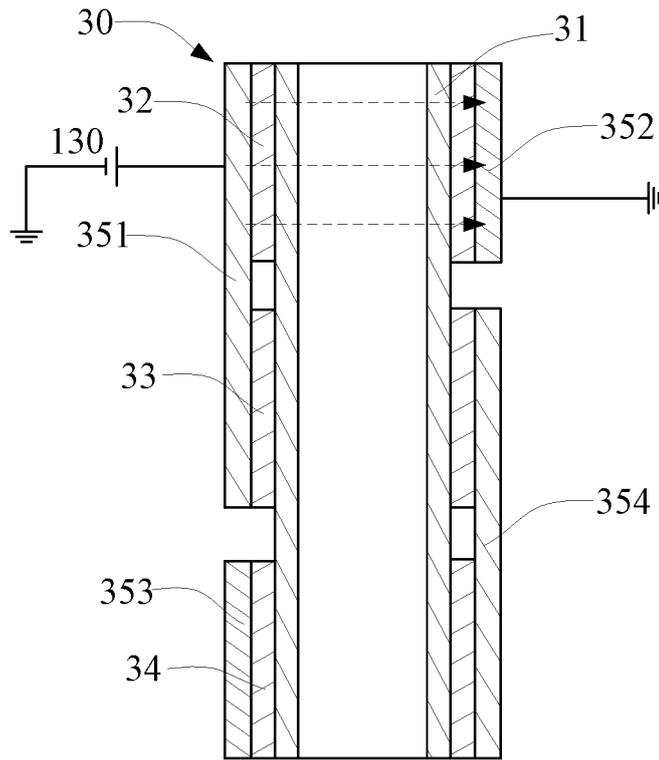


FIG. 5

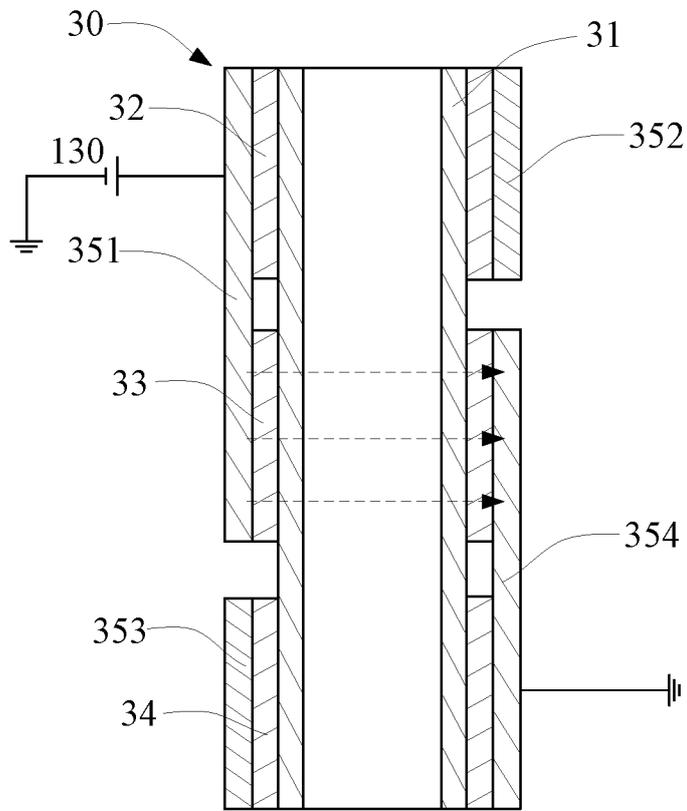


FIG. 6

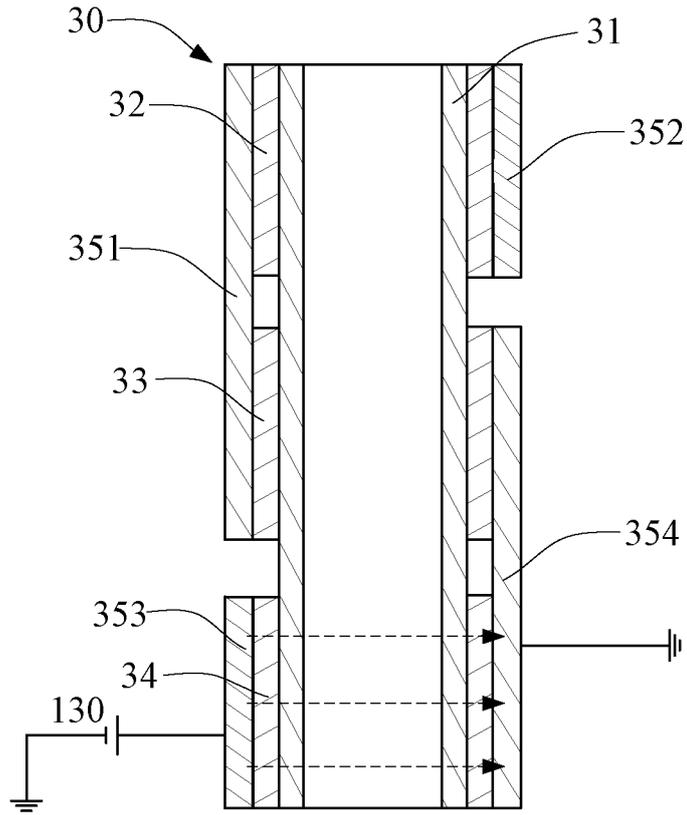


FIG. 7

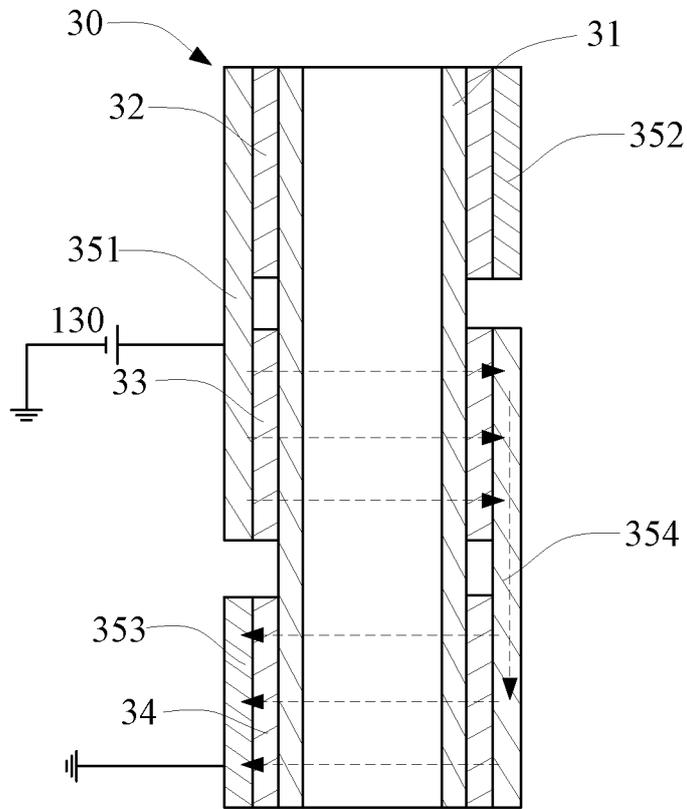


FIG. 8

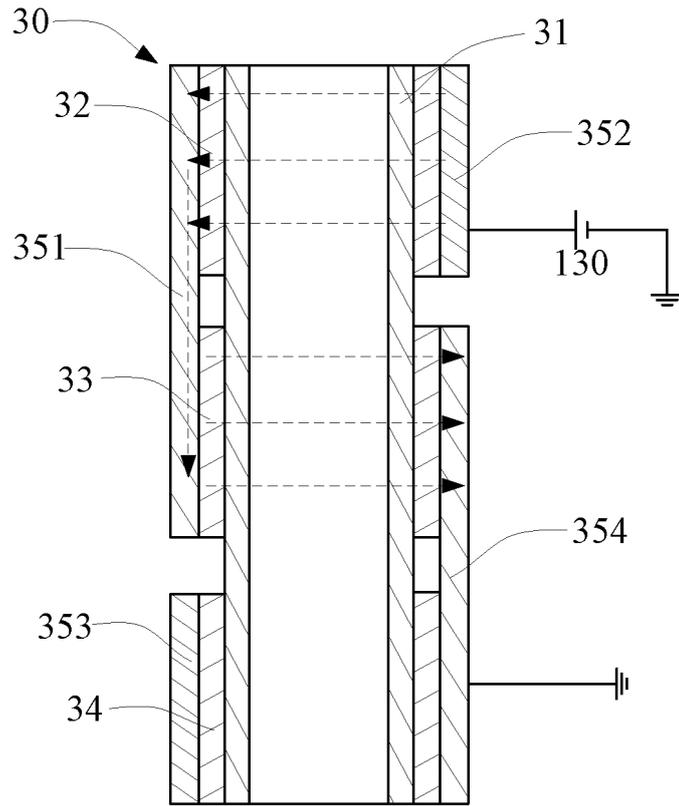


FIG. 9

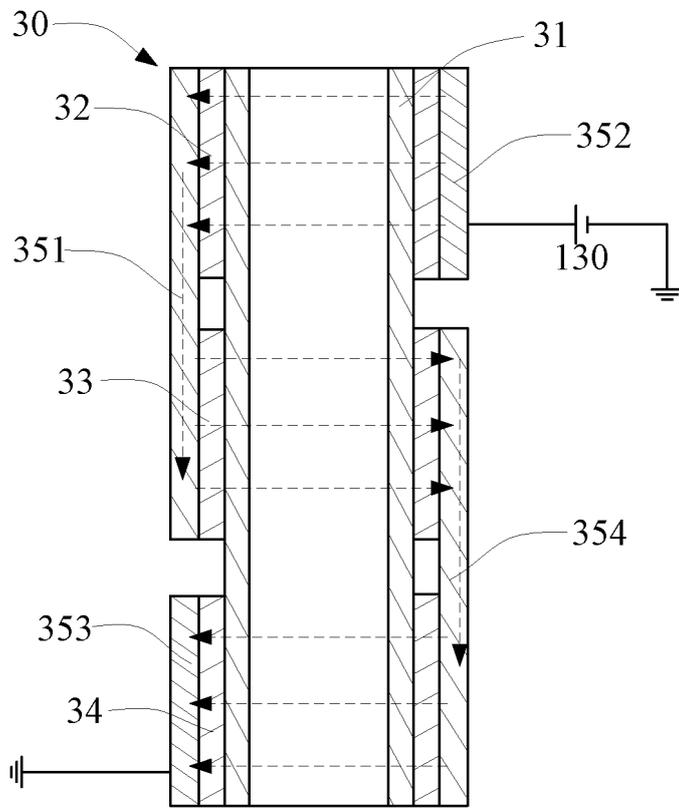


FIG. 10

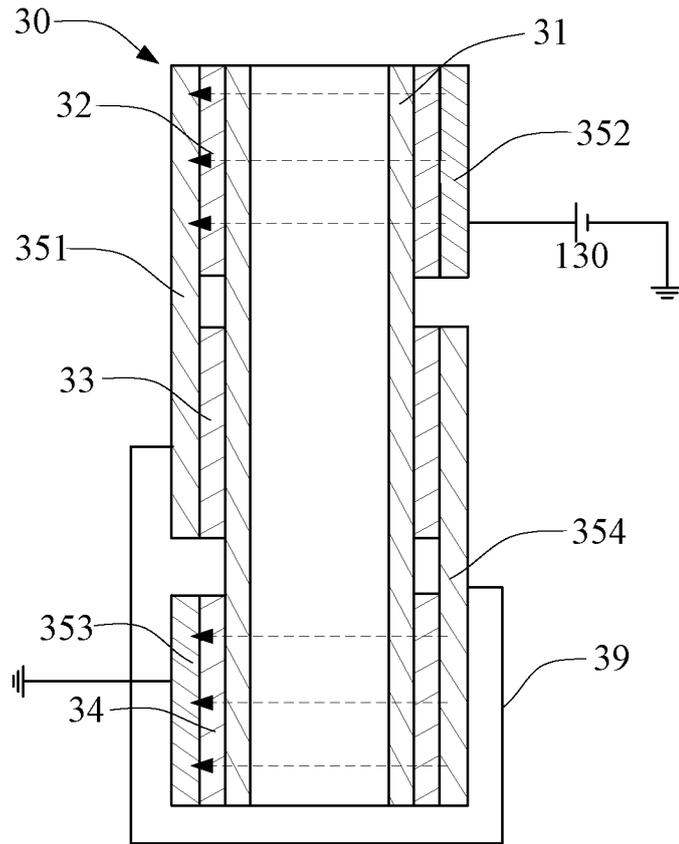


FIG. 11

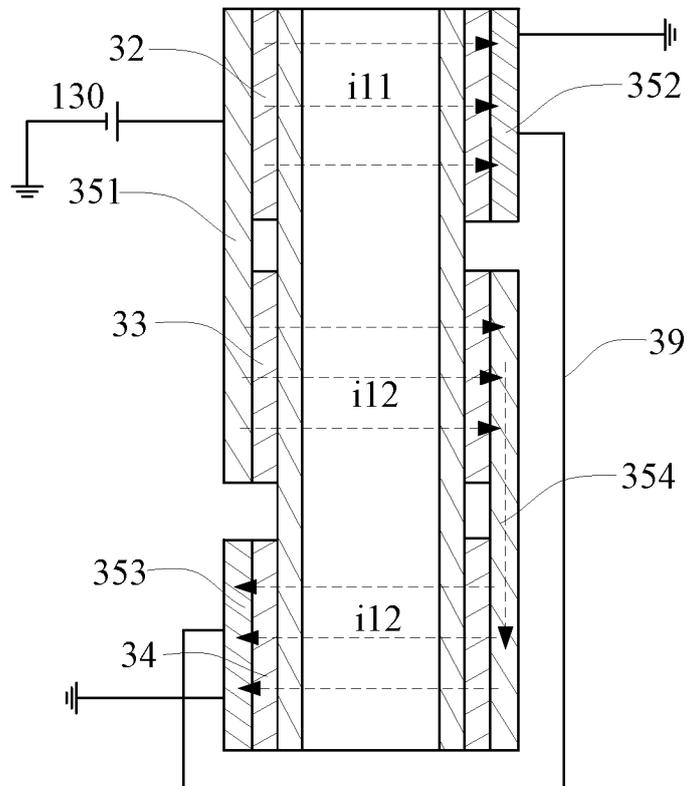


FIG. 12

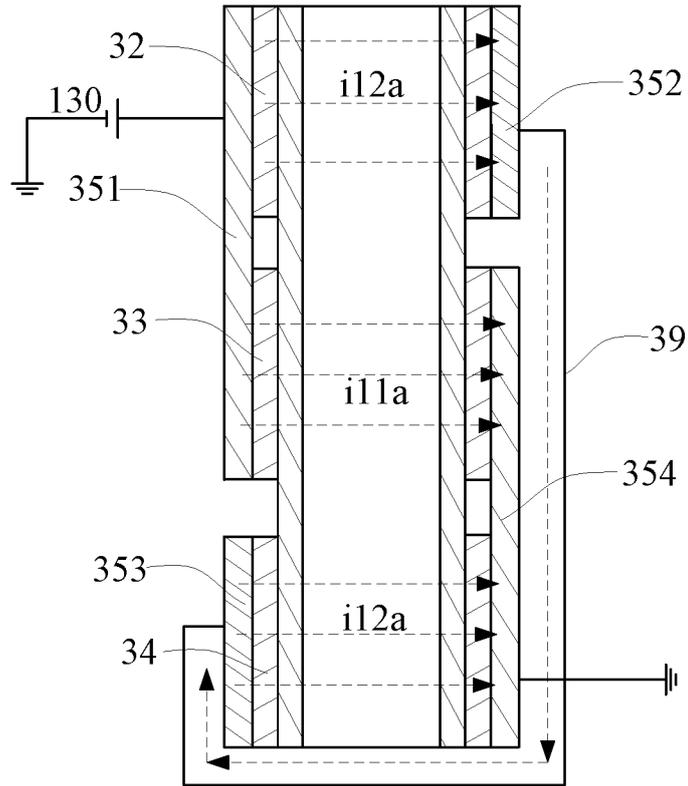


FIG. 13

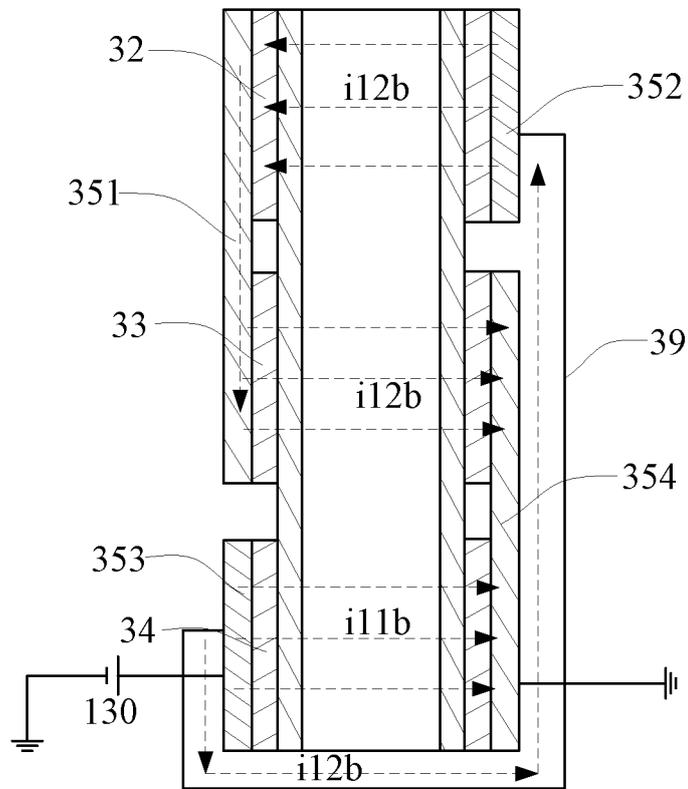


FIG. 14

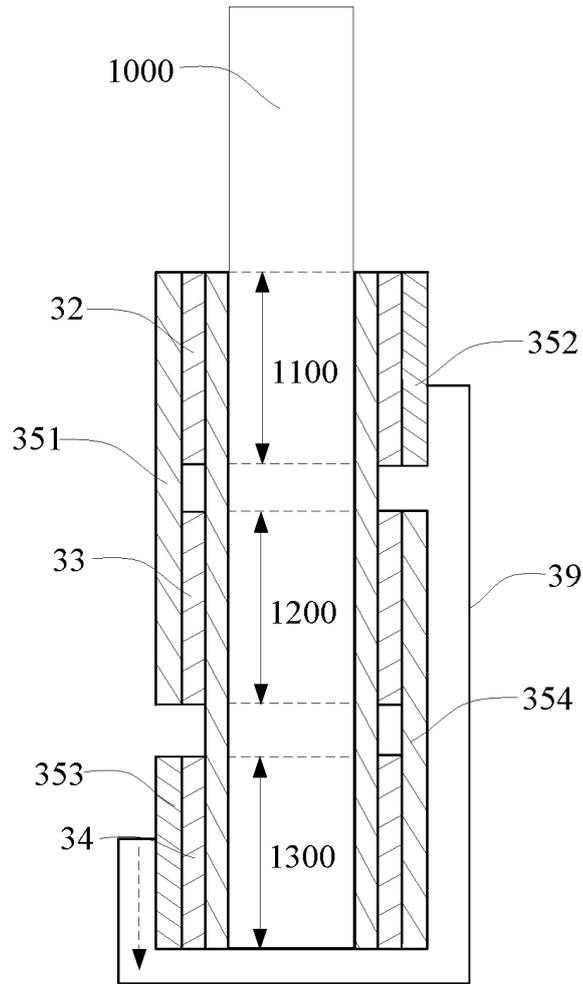


FIG. 15

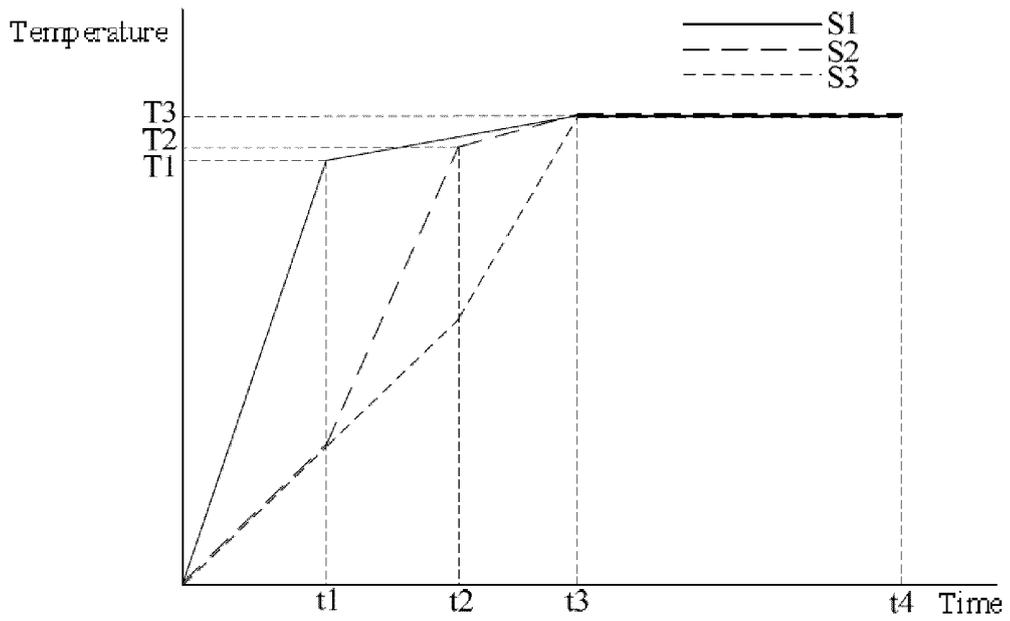


FIG. 16

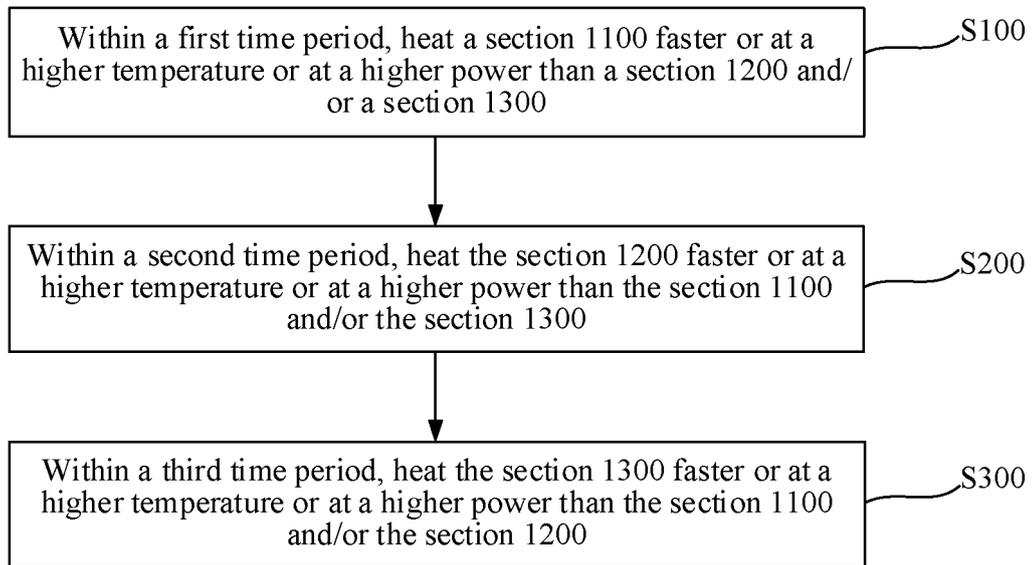


FIG. 17

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/111793

5	<b>A. CLASSIFICATION OF SUBJECT MATTER</b>	
	A24F40/50(2020.01)i; A24F40/46(2020.01)i	
	According to International Patent Classification (IPC) or to both national classification and IPC	
10	<b>B. FIELDS SEARCHED</b>	
	Minimum documentation searched (classification system followed by classification symbols) IPC:A24F40	
15	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched	
	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNTXT, ENTXT, ENTXT, VEN: 第三, 热, 温度, third, 3rd, heat+, temperature	
20	<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>	
	Category*	Citation of document, with indication, where appropriate, of the relevant passages
		Relevant to claim No.
	PX	CN 218999525 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 12 May 2023 (2023-05-12) claims 1-30, description, paragraphs 0004-0296, and figures 1-17
25	X	CN 114098166 A (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 March 2022 (2022-03-01) description, paragraphs 0027-0073, and figures 1-12
	Y	CN 114098166 A (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 March 2022 (2022-03-01) description, paragraphs 0027-0073, and figures 1-12
30	Y	CN 112996399 A (BRITISH AMERICAN TOBACCO INVESTMENTS LTD.) 18 June 2021 (2021-06-18) description, paragraphs 0035-0060, and figure 1
35	A	CN 112471601 A (SHANGHAI TOBACCO GROUP CO., LTD. et al.) 12 March 2021 (2021-03-12) entire document
	<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.	
40	* Special categories of cited documents:	
	"A" document defining the general state of the art which is not considered to be of particular relevance	"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
	"D" document cited by the applicant in the international application	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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45	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
	"O" document referring to an oral disclosure, use, exhibition or other means	
	"P" document published prior to the international filing date but later than the priority date claimed	
	Date of the actual completion of the international search <b>20 October 2023</b>	Date of mailing of the international search report <b>23 October 2023</b>
50	Name and mailing address of the ISA/CN <b>China National Intellectual Property Administration (ISA/ CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088</b>	Authorized officer
55		Telephone No.

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International application No.  
**PCT/CN2023/111793**

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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
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25 A	US 2021321655 A1 (R.J. REYNOLDS TOBACCO CO.) 21 October 2021 (2021-10-21) entire document	1-37
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International application No.

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