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(54) AEROSOL GENERATING SYSTEM AND HEATING DEVICE

(57) This application provides an aerosol generating system and a heating device. The aerosol generating system further includes: a replaceable aerosol generating article, including at least one aerosol generating substrate, where the at least one aerosol generating substrate is configured to generate an aerosol upon being heated; and a reusable heating device, configured to removably receive the aerosol generating article, and heat the at least one aerosol generating substrate of the aerosol generating article. The heating device includes: a first support, at least partially defining a receiving cavity, to receive the aerosol generating article; and an airflow sensor, configured to detect a change of an airflow flowing through the aerosol generating system when a user inhales, where the airflow sensor is accommodated or held by the first support, and avoids the receiving cavity in a longitudinal direction of the heating device. In the foregoing aerosol generating system, the airflow sensor is accommodated and held by the first support defining the receiving cavity in the heating device, and the airflow sensor is staggered from the receiving cavity in the longitudinal direction.

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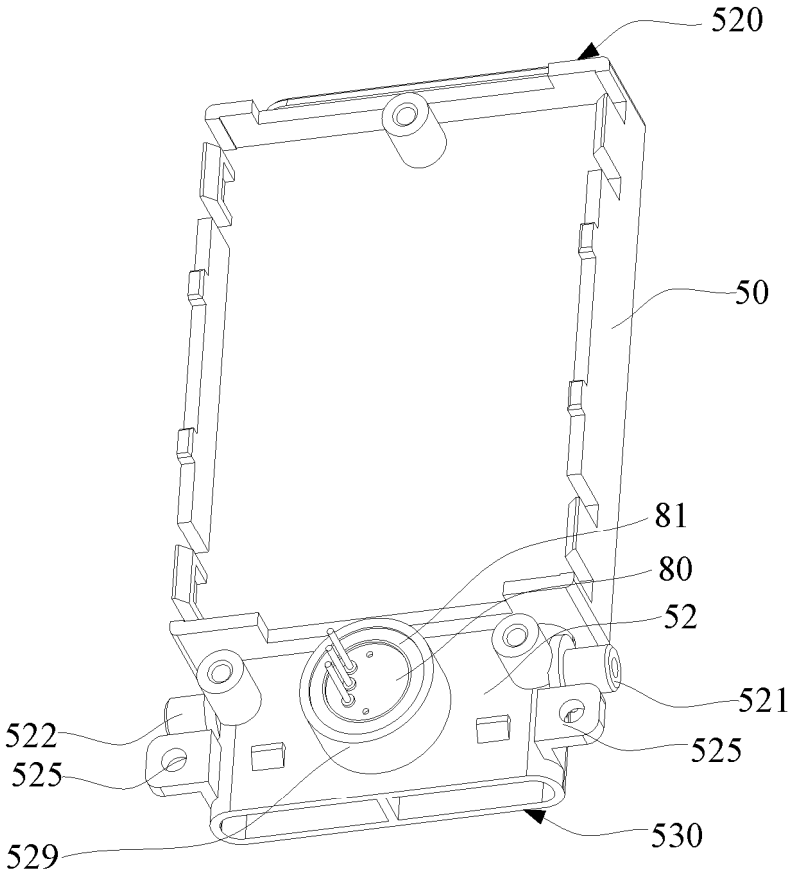


FIG. 8

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 202311867276.5, filed with the China National Intellectual Property Administration on December 29, 2023, and entitled "AEROSOL GENERATING SYSTEM AND HEATING DEVICE", which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] Embodiments of this application relate to the field of heat-not-burn aerosol generating technologies, and in particular, to an aerosol generating system and a heating device.

BACKGROUND

[0003] During use of tobacco products (for example, cigarettes and cigars), tobacco is burnt to generate tobacco smoke. Attempts are made to replace these tobacco-burning products by manufacturing products that release compounds without burning tobacco.

[0004] An example of such products is a heating device, which releases compounds by heating rather than burning materials. For example, the materials may be tobacco or other non-tobacco products, where the non-tobacco products may or may not include nicotine. A U.S. Patent US5479948A proposes a heating device that drives a tape-type aerosol generating substrate to gradually drive some sections or positions of the aerosol generating substrate to a heating element for heating. Such a heating device allows consumers to accurately provide a consistent aerosol delivery volume in each inhalation by drivingly heating a magnetic aerosol generating substrate.

SUMMARY

[0005] An embodiment of this application further provides an aerosol generating system, including:

a replaceable aerosol generating article, including at least one aerosol generating substrate, where the at least one aerosol generating substrate is configured to generate an aerosol upon being heated;
a reusable heating device, including:

a receiving cavity, configured to removably receive the aerosol generating article; and
at least one first elastic element and at least one second elastic element that are arranged at intervals, where at least a part of the aerosol generating article is elastically held between the at least one first elastic element and the at least one second elastic element when the aerosol generating article is received in the receiving cavity.

[0006] In some embodiments, the at least one first elastic element is at least partially located at one end in a longitudinal direction of the receiving cavity, and the at least one second elastic element is at least partially located at an other end in the longitudinal direction of the receiving cavity.

[0007] In some embodiments, the aerosol generating article includes a first end and a second end facing away from each other in a longitudinal direction; and
when the aerosol generating article is received in the receiving cavity, a first end of the aerosol generating article abuts against the at least one first elastic element, and a second end of the aerosol generating article abuts against the at least one second elastic element.

[0008] In some embodiments, the aerosol generating article further includes:
an external body defining a closed volume, where the external body includes at least one air inlet and at least one air outlet, and an air channel defined between the at least one air inlet and the at least one air outlet through the closed volume.

[0009] In some embodiments, at least a part of the at least one first elastic element is constructed to be an annular shape, and surrounds the at least one air outlet; and/or
at least a part of the at least one second elastic element is constructed to be an annular shape, and surrounds the at least one air inlet.

[0010] In some embodiments, the heating device further includes at least one air outlet channel; and
when the aerosol generating article is received in the receiving cavity, the at least one air outlet channel is in airflow communication with the at least one air outlet, to output the aerosol.

[0011] In some embodiments, the at least one first elastic element is further configured to cause the at least one air outlet channel to be in airflow communication with the at least one air outlet; and/or
the at least one first elastic element is further configured to provide a hermetical sealing between the heating device and at least one air outlet of the aerosol generating article.

[0012] In some embodiments, the heating device further includes at least one air inlet channel; and
when the aerosol generating article is received in the receiving cavity, the at least one air inlet channel is in communication with the at least one air inlet, to allow air to enter the aerosol generating article.

[0013] In some embodiments, the at least one second elastic element is further configured to cause the at least one air inlet channel to be in airflow communication with the at least one air inlet; and/or
the at least one second elastic element is further configured to provide a hermetical sealing between the heating device and at least one air inlet of the aerosol generating

article.

[0014] In some embodiments, the aerosol generating article is substantially constructed in a shape of a sheet; and

the aerosol generating article is asymmetric in a length direction and/or a width direction.

[0015] In some embodiments, the receiving cavity is arranged to enable only the aerosol generating article to be received in the receiving cavity based on a first predetermined direction, and prevent the aerosol generating article to be received in the receiving cavity based on a second predetermined direction; and the second predetermined direction is defined by reversing the aerosol generating article in the first predetermined direction by 180 degrees in the length direction and/or the width direction.

[0016] In some embodiments, the aerosol generating article further includes:

an external body, defining a closed volume, where the aerosol generating substrate is accommodated and held in the external body; and

at least one base, located in the external body, and being capable of generating heat by being penetrated by a changing magnetic field, so as to heat the at least one aerosol generating substrate to generate the aerosol.

[0017] In some embodiments, the heating device includes:

at least one induction heater, where the at least one induction heater is configured to generate a changing magnetic field that penetrates the at least one base when the aerosol generating article is received in the receiving cavity.

[0018] In some embodiments, a heat conductivity coefficient of at least a part of the external body is less than 20 W/m k, to prevent heat of the base from being transferred to the heating device as much as possible.

[0019] In some embodiments, the at least one induction heater is substantially constructed to be planar; and/or

the at least one induction heater includes a planar spiral coil or is a planar spiral coil.

[0020] In some embodiments, the at least one induction heater is arranged substantially parallel to the receiving cavity.

[0021] In some embodiments, the heating device further includes:

an airflow sensor, configured to detect a change of an airflow flowing through the heating device when a user inhales; and

a controller, configured to control the at least one induction heater to generate a changing magnetic field based on a sensing result of the airflow sensor, to separately heat one of the at least one aerosol generating substrate each time, to generate an aerosol satisfying one inhalation.

[0022] In some embodiments, the heating device further includes:

at least one heater, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity;

a proximal end and a distal end, facing away from each other in a length direction; and

a battery core, located between the receiving cavity and the distal end, to supply power to the at least one heater.

[0023] In some embodiments, the heating device further includes:

a main circuit board, including a first portion and a second portion that are arranged in the length direction, where the first portion is opposite to the receiving cavity, and the second portion is opposite to the battery core.

[0024] In some embodiments, the at least one heater is electrically connected to the first portion; and/or the battery core is electrically connected to the second portion.

[0025] In some embodiments, a controller is arranged on the first portion, and the controller is configured to control the battery core to supply electric power to the at least one heater.

[0026] In some embodiments, the at least one heater is an induction heater driven by an alternating current to generate a changing magnetic field; and

at least one inverter circuit is arranged on the first portion, the at least one inverter circuit is configured to convert a direct current outputted by the battery core into an alternating current, and provide the alternating current to the at least one induction heater, to drive the at least one induction heater to generate a changing magnetic field.

[0027] In some embodiments, the heating device further includes:

a charging interface, arranged at the distal end; and

a charging circuit board, arranged between the battery core and the distal end and configured to control the charging interface to charge the battery core, where the charging circuit board is connected to the second portion of the main circuit board.

[0028] In some embodiments, the heating device further includes:

a shell, at least partially defining an outer surface of the heating device, and having a front side and a rear side facing away from each other in a thickness direction, where the aerosol generating article is capable of being received in the receiving cavity or removed from the receiving cavity through the front side of the shell; and

at least one heater is arranged between the receiving cavity and the rear side.

[0029] In some embodiments, the heating device further includes:

a shell, at least partially defining an outer surface of the heating device, and having a front side and a rear side facing away from each other in a thickness direction, where the shell defines an opening located on the front side, and the aerosol generating article is capable of being received in the receiving cavity or removed from the receiving cavity through the opening; and

a door cover, connected to the shell and movable relative to the shell to be selectively configured between an open position and a closed position, where the door cover opens the opening in the open position, and closes the opening in the closed position.

[0030] In some embodiments, the door cover is arranged to be capable of rotating relative to the shell, to be selectively configured between the open position and the closed position; and/or

the door cover is arranged to be capable of linearly moving relative to the shell, to be selectively configured between the open position and the closed position.

[0031] In some embodiments, the heating device further includes:

a pin shaft, arranged to extend in a longitudinal direction, where the door cover is rotatably connected to the shell through the pin shaft, and is capable of rotating relative to the shell around the pin shaft as a shaft.

[0032] In some embodiments, the door cover has a protruding portion; and

when the aerosol generating article is received in the receiving cavity, at least a part of the protruding portion of the door cover extends into the receiving cavity from the opening to abut against a surface of the aerosol generating article, so as to at least partially support or hold the aerosol generating article.

[0033] In some embodiments, the door cover is hollow; and/or

at least one heat-insulation empty cavity is provided in the door cover for heat insulation.

[0034] In some embodiments, at least one first magnetic element is arranged on the door cover;

the heating device includes at least one second magnetic element; and when the door cover is in the closed position, the first magnetic element is in magnetic attraction with the second magnetic element, to hold the door cover in the closed position.

[0035] In some embodiments, the heating device further includes:

a front side and a rear side, facing away from each other in a thickness direction;

at least one heater, arranged between the receiving cavity and the rear side, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and

a first support, at least partially located between the at least one heater and the receiving cavity, and at least partially defining the receiving cavity.

[0036] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction;

a battery core, located between the first support and the distal end, to supply power to the at least one heater, where the first support includes an extension portion located between the receiving cavity and the battery core; and

an airflow sensor, configured to detect a change of an airflow flowing through the heating device when a user inhales, where the airflow sensor is accommodated or held in the extension portion of the first support.

[0037] In some embodiments, the heating device further includes at least one air inlet, at least one inhalation port, and at least one airflow channel located between the at least one air inlet and the at least one inhalation port; the at least one airflow channel is arranged to define an airflow path from the at least one air inlet to the at least one inhalation port, to transfer the aerosol to the inhalation port;

the at least one air inlet and the at least one inhalation port are arranged on the heating device; and

a part of the at least one airflow channel is arranged in the heating device and a part of the at least one airflow channel is arranged in the aerosol generating article.

[0038] In some embodiments, the heating device further includes: at least one air inlet and at least one inhalation port;

at least one air inlet channel, extending from the at least one air inlet to the receiving cavity;

at least one air outlet channel, extending from the receiving cavity to the at least one inhalation port;

at least one air channel, at least partially defined by the aerosol generating article, where when the aerosol generating article is received in the receiving cavity, airflow communication between the at least one air inlet channel and the at least one air outlet channel is provided or established by the at least one air channel.

[0039] In some embodiments, the at least one air

channel straightly extends through the aerosol generating article.

[0040] In some embodiments, the at least one air inlet channel is arranged in the heating device in a circuitous and meandering extending manner.

[0041] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction, where
the at least one air inlet channel includes a first path portion and a second path portion; at least a part of the first path portion extends from the at least one air inlet toward the distal end, and the second path portion extends from the first path portion to the receiving cavity toward the proximal end.

[0042] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction, where
at least one heater, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and
a battery core, located between the receiving cavity and the distal end, to supply power to the at least one heater, where
the at least one air inlet channel is arranged between the battery core and the receiving cavity.

[0043] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction, where
the at least one air inlet channel is located between the receiving cavity and the distal end; and the at least one air outlet channel is located between the receiving cavity and the proximal end.

[0044] In some embodiments, the heating device further includes:

a first air inlet, a second air inlet, and an inhalation port;
a first airflow channel, formed or arranged between the first air inlet and the inhalation port, to transfer an aerosol to the inhalation port; and
a second airflow channel formed or arranged between the second air inlet and the inhalation port, to transfer an aerosol to the inhalation port.

[0045] In some embodiments, the heating device further includes:
an airflow sensor, being in airflow communication with both the first airflow channel and the second airflow channel, to be configured to sense a change of airflow flowing through the first airflow channel and/or the second airflow channel.

[0046] In some embodiments, the first airflow channel at least partially passes through the aerosol generating article;

the second airflow channel at least partially passes through the aerosol generating article; and
a part of the first airflow channel in the aerosol generating article and a part of the second airflow channel in the aerosol generating article are isolated from each other.

[0047] In some embodiments, the first airflow channel and the second airflow channel are substantially arranged in a mirror symmetry.

[0048] In some embodiments, the heating device further includes:

a proximal end and a distal end facing away from each other in a length direction, and a first side and a second side facing away from each other in a width direction, where
the first air inlet is provided on the first side, and is located between the receiving cavity and the distal end; and
the second air inlet is provided on the second side, and is located between the receiving cavity and the distal end.

[0049] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction; and
a first support, at least partially defining the receiving cavity, where the first support includes an extension portion extending from the receiving cavity toward the distal end;
the first airflow channel includes a first air inlet channel extending from the first air inlet to the receiving cavity; the second airflow channel includes a second air inlet channel extending from the second air inlet to the receiving cavity; and the first air inlet channel and the second air inlet channel are formed or defined in the extension portion, and are isolated from each other in the extension portion.

[0050] In some embodiments, the first support includes a front end mounted toward the proximal end and an end facing away from the front end, where

a partition wall extending toward the end and terminating at the end is arranged in the extension portion;
a first sensing hole and a second sensing hole are respectively provided on two sides of the partition

wall; and
an airflow sensor, configured to sense a change of airflow flowing through the first air inlet channel and the second air inlet channel, where the airflow sensor is in airflow communication with the first air inlet channel through the first sensing hole, and the airflow sensor is in airflow communication with the second air inlet channel through the second sensing hole.

[0051] In some embodiments, a first shielding wall that extends toward the end and has a gap with the end is arranged in the extension portion; the first sensing hole is located between the first shielding wall and the partition wall and is in airflow communication with the first air inlet channel through a gap between the first shielding wall and the end; and/or
a second shielding wall that extends toward the end and has a gap with the end is arranged in the extension portion; and the second sensing hole is located between the second shielding wall and the partition wall, and is in airflow communication with the second air inlet channel through a gap between the second shielding wall and the end.

[0052] In some embodiments, the heating device further includes:

a front side and a rear side, facing away from each other in a thickness direction;
at least one heater, arranged between the receiving cavity and the rear side, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and
a second support, at least partially arranged between the at least one heater and the rear side, and at least partially accommodating or supporting the at least one heater.

[0053] In some embodiments, the second support is provided with:
at least one annular protruding edge, surrounding the at least one heater.

[0054] Another embodiment of this application further provides an aerosol generating system, including:
a replaceable aerosol generating article, including:

an external body, defining a closed volume;
at least one aerosol generating substrate, accommodated and held in the external body and configured to generate an aerosol upon being heated, where the external body includes at least one air outlet, configured to output an aerosol; and
a reusable heating device, including:

a receiving cavity, configured to removably receive the aerosol generating article;
at least one inhalation port;
at least one air outlet channel, formed between the receiving cavity and the at least one inhalation port, where when the aerosol generating article is received in the receiving cavity, the at least one air outlet channel is in airflow communication with the at least one air outlet, to deliver the aerosol to the at least one inhalation port;
at least one first elastic element, where the at least one first elastic element is configured to cause the at least one air outlet channel to be in airflow communication with the at least one air outlet when the aerosol generating article is received in the receiving cavity; and/or the at least one first elastic element is further configured to provide a hermetical sealing between the heating device and at least one air outlet of the aerosol generating article.

[0055] Another embodiment of this application further provides an aerosol generating system, including:
a replaceable aerosol generating article, including:

an external body, defining a closed volume;
at least one aerosol generating substrate, accommodated and held in the external body and configured to generate an aerosol upon being heated, where the external body includes at least one air inlet, for allowing the external air to enter;
a reusable heating device, including:

a receiving cavity, configured to removably receive the aerosol generating article;
at least one air inlet;
at least one air inlet channel, formed between the receiving cavity and the at least one air inlet, where the at least one air inlet channel is in airflow communication with the at least one air inlet when the aerosol generating article is received in the receiving cavity, to enable external air to be delivered from the at least one air inlet to the at least one air inlet;
at least one second elastic element, where the at least one second elastic element is configured to cause the at least one air inlet channel to be in airflow communication with the at least one air inlet when the aerosol generating article is received in the receiving cavity; and/or the at least one second elastic element is further configured to provide a hermetical sealing between the heating device and at least one air inlet of the aerosol generating article.

[0056] Another embodiment of this application further provides a heating device, configured to heat an aerosol generating article substantially in a shape of a sheet, to generate an aerosol, where the heating device includes:

a receiving cavity, configured to receive the aerosol generating article; and

at least one first elastic element and at least one second elastic element that are arranged at intervals, where at least a part of the aerosol generating article is elastically held between the at least one first elastic element and the at least one second elastic element when the aerosol generating article is received in the receiving cavity.

[0057] Another embodiment of this application further provides a heating device, configured to heat an aerosol generating article to generate an aerosol; and the aerosol generating article includes at least one air outlet, configured to output an aerosol; and the heating device includes:

a receiving cavity, configured to removably receive the aerosol generating article;

at least one inhalation port;

at least one air outlet channel, formed between the receiving cavity and the at least one inhalation port, where when the aerosol generating article is received in the receiving cavity, the at least one air outlet channel is in airflow communication with the at least one air outlet, to deliver the aerosol to the at least one inhalation port;

at least one first elastic element, where the at least one first elastic element is configured to cause the at least one air outlet channel to be in airflow communication with the at least one air outlet when the aerosol generating article is received in the receiving cavity; and/or the at least one first elastic element is further configured to provide a hermetical sealing between the heating device and at least one air outlet of the aerosol generating article.

[0058] Another embodiment of this application further provides a heating device, configured to heat an aerosol generating article to generate an aerosol; and the aerosol generating article includes at least one air inlet, to allow the external air to enter; and the heating device includes:

a receiving cavity, configured to removably receive the aerosol generating article;

at least one air inlet;

at least one air inlet channel, formed between the receiving cavity and the at least one air inlet, where the at least one air inlet channel is in airflow communication with the at least one air inlet when the aerosol generating article is received in the receiving cavity, to enable external air to be delivered from the at least one air inlet to the at least one air inlet;

at least one second elastic element, where the at least one second elastic element is configured to cause the at least one air inlet channel to be in airflow communication with the at least one air inlet when the aerosol generating article is received in the receiving cavity; and/or the at least one second elastic element is further configured to provide a hermetical sealing between the heating device and at least one air inlet of the aerosol generating article.

[0059] Another embodiment of this application further provides an aerosol generating system, including:

a replaceable aerosol generating article, including at least one aerosol generating substrate, where the at least one aerosol generating substrate is configured to generate an aerosol upon being heated;

a reusable heating device, configured to removably receive the aerosol generating article, and heat the at least one aerosol generating substrate of the aerosol generating article; and

at least one air inlet, at least one inhalation port, and at least one airflow channel located between the at least one air inlet and the at least one inhalation port, where the at least one airflow channel is arranged to define an airflow path from the at least one air inlet to the at least one inhalation port, to transfer the aerosol to the inhalation port;

the at least one air inlet and the at least one inhalation port are arranged on the heating device; and

a part of the at least one airflow channel is arranged in the heating device and a part of the at least one airflow channel is arranged in the aerosol generating article.

[0060] In some embodiments, the aerosol generating article further includes:

an external body defining a closed volume, where the external body includes at least one air inlet and at least one air outlet, and an air channel defined between the at least one air inlet and the at least one air outlet through the closed volume; and

a part of the at least one airflow channel is defined by the at least one air channel.

[0061] In some embodiments, the at least one air channel straightly extends through the aerosol generating article.

[0062] In some embodiments, the at least one airflow channel further includes:

at least one air outlet channel, where the at least one air outlet channel causes the at least one air outlet to be in airflow communication with the at least one inhalation port when the aerosol generating article is received in the heating device, to deliver the aerosol to the at least one inhalation port.

[0063] In some embodiments, the at least one airflow channel further includes:

at least one air inlet channel, where the at least one air inlet channel causes the at least one air inlet to be in communication with the at least one air inlet when the aerosol generating article is received in the receiving

cavity, to allow air to enter the aerosol generating article.

[0064] In some embodiments, the heating device further includes:

a receiving cavity, configured to removably receive the aerosol generating article;
at least one air inlet channel, extending from the at least one air inlet to the receiving cavity; and
at least one air outlet channel, extending from the receiving cavity to the at least one inhalation port, where
when the aerosol generating article is received in the receiving cavity, airflow communication between the at least one air inlet channel and the at least one air outlet channel is provided or established by the aerosol generating article.

[0065] In some embodiments, the at least one air inlet channel is arranged in the heating device in a circuitous and meandering extending manner.

[0066] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction, where
the at least one air inlet channel is located between the receiving cavity and the distal end; and the at least one air outlet channel is located between the receiving cavity and the proximal end.

[0067] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction, where
the at least one air inlet channel includes a first path portion and a second path portion; at least a part of the first path portion extends from the at least one air inlet toward the distal end, and the second path portion extends from the first path portion to the receiving cavity toward the proximal end.

[0068] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction; and
at least one heater, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and
a battery core, located between the receiving cavity and the distal end, to supply power to the at least one heater, where
the at least one air inlet channel is arranged between the battery core and the receiving cavity.

[0069] In some embodiments, the heating device further includes:

at least one heater, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity;
an airflow sensor, configured to detect a change of an airflow flowing through the at least one airflow channel when a user inhales; and
a controller, configured to control, based on a sensing result of the airflow sensor, the at least one heater to separately heat one of the at least one aerosol generating substrate each time, to generate an aerosol satisfying one inhalation.

[0070] In some embodiments, the air inlet includes a first air inlet and a second air inlet that are arranged at intervals; and
the airflow channel includes:

a first airflow channel, formed between the first air inlet and the at least one inhalation port; and
a second airflow channel, formed between the second air inlet and the at least one inhalation port.

[0071] In some embodiments, the first airflow channel at least partially passes through the aerosol generating article;

the second airflow channel at least partially passes through the aerosol generating article; and
a part of the first airflow channel in the aerosol generating article and a part of the second airflow channel in the aerosol generating article are isolated from each other.

[0072] In some embodiments, the first airflow channel and the second airflow channel are substantially arranged in a mirror symmetry.

[0073] In some embodiments, the heating device further includes:
an airflow sensor, being in airflow communication with both the first airflow channel and the second airflow channel, to be configured to sense a change of airflow flowing through the first airflow channel and/or the second airflow channel.

[0074] In some embodiments, the heating device further includes:

a proximal end and a distal end facing away from each other in a length direction, and a first side and a second side facing away from each other in a width direction; and
a receiving cavity, configured to removably receive the aerosol generating article, where
the first air inlet is provided on the first side, and is

located between the receiving cavity and the distal end; and
the second air inlet is provided on the second side, and is located between the receiving cavity and the distal end.

[0075] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction;
a receiving cavity, configured to removably receive the aerosol generating article; and
a first support, at least partially defining the receiving cavity, where the first support includes an extension portion extending from the receiving cavity toward the distal end;
the first airflow channel includes a first air inlet channel extending from the first air inlet to the receiving cavity; the second airflow channel includes a second air inlet channel extending from the second air inlet to the receiving cavity; and the first air inlet channel and the second air inlet channel are formed or defined in the extension portion, and are isolated from each other in the extension portion.

[0076] In some embodiments, the first support includes a front end mounted toward the proximal end and an end facing away from the front end, where

a partition wall extending toward the end and terminating at the end is arranged in the extension portion;
a first sensing hole and a second sensing hole are respectively provided on two sides of the partition wall; and
an airflow sensor, configured to sense a change of airflow flowing through the first air inlet channel and the second air inlet channel, where the airflow sensor is in airflow communication with the first air inlet channel through the first sensing hole, and the airflow sensor is in airflow communication with the second air inlet channel through the second sensing hole.

[0077] In some embodiments, a first shielding wall that extends toward the end and has a gap with the end is arranged in the extension portion; the first sensing hole is located between the first shielding wall and the partition wall and is in airflow communication with the first air inlet channel through a gap between the first shielding wall and the end; and/or
a second shielding wall that extends toward the end and has a gap with the end is arranged in the extension portion; and the second sensing hole is located between the second shielding wall and the partition wall, and is in airflow communication with the second air inlet channel through a gap between the second shielding wall and the end.

[0078] In some embodiments, the aerosol generating article is substantially constructed in a shape of a sheet; and
the aerosol generating article is asymmetric in a length direction and/or a width direction.

[0079] In some embodiments, the heating device further includes:

a receiving cavity, configured to removably receive the aerosol generating article, where
the receiving cavity is arranged to enable only the aerosol generating article to be received in the receiving cavity based on a first predetermined direction, and prevent the aerosol generating article to be received in the receiving cavity based on a second predetermined direction; and the second predetermined direction is defined by reversing the aerosol generating article in the first predetermined direction by 180 degrees in the length direction and/or the width direction.

[0080] In some embodiments, the aerosol generating article further includes:

an external body, defining a closed volume, where the aerosol generating substrate is accommodated and held in the external body; and
at least one base, located in the external body, and being capable of generating heat by being penetrated by a changing magnetic field, so as to heat the at least one aerosol generating substrate to generate the aerosol.

[0081] In some embodiments, the heating device includes:
at least one induction heater, where the at least one induction heater is configured to generate a changing magnetic field that penetrates the at least one base when the aerosol generating article is received in the receiving cavity.

[0082] In some embodiments, a heat conductivity coefficient of at least a part of the external body is less than 20 W/m k, to prevent heat of the base from being transferred to the heating device as much as possible.

[0083] In some embodiments, the at least one induction heater is substantially constructed to be planar; and/or
the at least one induction heater includes a planar spiral coil or is a planar spiral coil.

[0084] In some embodiments, the at least one induction heater is arranged substantially parallel to the receiving cavity.

[0085] In some embodiments, the heating device further includes:

a proximal end and a distal end, facing away from each other in a length direction;
a receiving cavity, configured to removably receive

the aerosol generating article, where

at least one heater, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and

a battery core, located between the receiving cavity and the distal end, to supply power to the at least one heater.

[0086] In some embodiments, the heating device further includes:

a main circuit board, including a first portion and a second portion that are arranged in the length direction, where the first portion is opposite to the receiving cavity, and the second portion is opposite to the battery core.

[0087] In some embodiments, the at least one heater is electrically connected to the first portion; and/or the battery core is electrically connected to the second portion.

[0088] In some embodiments, a controller is arranged on the first portion, and the controller is configured to control the battery core to supply electric power to the at least one heater.

[0089] In some embodiments, the heating device further includes:

a charging interface, arranged at the distal end; and

a charging circuit board, arranged between the battery core and the distal end and configured to control the charging interface to charge the battery core, where the charging circuit board is connected to the second portion of the main circuit board.

[0090] In some embodiments, the heating device further includes:

a shell, at least partially defining an outer surface of the heating device, and having a front side and a rear side facing away from each other in a thickness direction, where the aerosol generating article is capable of being received in the receiving cavity or removed from the receiving cavity through the front side of the shell; and

at least one heater is arranged between the receiving cavity and the rear side.

[0091] In some embodiments, the heating device further includes:

a first support, at least partially defining the receiving cavity, where the first support includes an extension portion located between the receiving cavity and the battery core; and

an airflow sensor, configured to detect a change of an airflow flowing through the at least one airflow channel when a user inhales, where the airflow sensor is accommodated or held in the extension portion of the first support.

[0092] In some embodiments, the heating device further includes:

a receiving cavity, configured to removably receive the aerosol generating article;

a shell, at least partially defining an outer surface of the heating device, and having a front side and a rear side facing away from each other in a thickness direction, where the shell defines an opening located on the front side, and the aerosol generating article is capable of being received in the receiving cavity or removed from the receiving cavity through the opening; and

a door cover, connected to the shell and movable relative to the shell to be selectively configured between an open position and a closed position, where the door cover opens the opening in the open position, and closes the opening in the closed position.

[0093] In some embodiments, the door cover is arranged to be capable of rotating relative to the shell, to be selectively configured between the open position and the closed position; and/or

the door cover is arranged to be capable of linearly moving relative to the shell, to be selectively configured between the open position and the closed position.

[0094] In some embodiments, the heating device further includes:

a pin shaft, arranged to extend in a longitudinal direction, where the door cover is rotatably connected to the shell through the pin shaft, and is capable of rotating relative to the shell around the pin shaft as a shaft.

[0095] In some embodiments, the door cover has a protruding portion; and

when the aerosol generating article is received in the receiving cavity, at least a part of the protruding portion of the door cover extends into the receiving cavity from the opening to abut against a surface of the aerosol generating article, so as to at least partially support or hold the aerosol generating article.

[0096] In some embodiments, the door cover is hollow; and/or

at least one heat-insulation empty cavity is provided in the door cover for heat insulation.

[0097] In some embodiments, at least one first magnetic element is arranged on the door cover;

the heating device includes at least one second magnetic element; and when the door cover is in the closed position, the first magnetic element is in magnetic attraction with the second magnetic element, to hold the door cover in the closed position.

[0098] In some embodiments, the heating device further includes:

a front side and a rear side, facing away from each other in a thickness direction;

a receiving cavity, configured to removably receive the aerosol generating article;

at least one heater, arranged between the receiving cavity and the rear side, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and

a second support, at least partially arranged between the at least one heater and the rear side, and at least partially accommodating or supporting the at least one heater.

[0099] In some embodiments, the second support is provided with:

at least one annular protruding edge, surrounding the at least one heater.

[0100] Another embodiment of this application further provides an aerosol generating system, including:

a replaceable aerosol generating article, including:

at least one aerosol generating substrate, where the at least one aerosol generating substrate is configured to generate an aerosol upon being heated;

an external body defining a closed volume, where the external body includes at least one air inlet and at least one air outlet, and an air channel defined between the at least one air inlet and the at least one air outlet through the closed volume; and

a reusable heating device, configured to removably receive the aerosol generating article, and heat the at least one aerosol generating substrate of the aerosol generating article; and the heating device includes:

a receiving cavity, configured to removably receive the aerosol generating article;

at least one air inlet and at least one inhalation port;

at least one air inlet channel, extending from the at least one air inlet to the receiving cavity; and

at least one air outlet channel, extending from the receiving cavity to the at least one inhalation port, where

when the aerosol generating article is received in the receiving cavity, airflow communication between the at least one air inlet channel and the at least one air outlet channel is provided or established by the at least one air channel.

[0101] Another embodiment of this application further provides an aerosol generating system, including:

a replaceable aerosol generating article, including at least one aerosol generating substrate, where the at least one aerosol generating substrate is configured to generate an aerosol upon being heated; and

a reusable heating device, configured to removably receive the aerosol generating article, and heat the at least one aerosol generating substrate of the aerosol generating article; and the heating device includes:

a first air inlet and a second air inlet that are arranged at intervals;

an inhalation port;

a first airflow channel, formed between the first air inlet and the at least one inhalation port, and at least partially passing through the aerosol generating article; and

a second airflow channel, formed between the second air inlet and the at least one inhalation port, and at least partially passing through the aerosol generating article.

[0102] Another embodiment of this application further provides a heating device, configured to heat an aerosol generating article substantially in a shape of a sheet, to generate an aerosol, where the heating device includes:

a receiving cavity, configured to receive the aerosol generating article;

at least one air inlet and at least one inhalation port;

at least one air inlet channel, extending from the at least one air inlet to the receiving cavity; and

at least one air outlet channel, extending from the receiving cavity to the at least one inhalation port, where

when the aerosol generating article is received in the receiving cavity, airflow communication between the at least one air inlet channel and the at least one air outlet channel is provided or established by the aerosol generating article.

[0103] Another embodiment of this application further provides an aerosol generating system, including:

a replaceable aerosol generating article, including at least one aerosol generating substrate, where the at least one aerosol generating substrate is configured to generate an aerosol upon being heated; and

a reusable heating device, configured to removably receive the aerosol generating article, and heat the at least one aerosol generating substrate of the aerosol generating article; and the heating device includes:

a first support, at least partially defining a receiving cavity, to receive the aerosol generating article;

an airflow sensor, configured to detect a change of an airflow flowing through the aerosol generating system when a user inhales, where the airflow sensor is accommodated or held by the first support, and avoids the receiving cavity in a longitudinal direction of the heating device.

[0104] In some embodiments, the heating device

further includes:

at least one heater, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and

a controller, configured to control, based on a sensing result of the airflow sensor, the at least one heater to separately heat one of the at least one aerosol generating substrate each time, to generate an aerosol satisfying one inhalation.

[0105] In some embodiments, the heating device further includes a proximal end and a distal end facing away from each other in a length direction;

a battery core, located between the receiving cavity and the distal end, to supply power to the at least one heater; and

a main circuit board, including a first portion and a second portion that are arranged in the length direction, where the controller is arranged in the first portion, and the airflow sensor is electrically connected to the first portion; and the battery core is electrically connected to the second portion.

[0106] In some embodiments, the heating device further includes: an inhalation port;

a first airflow channel, defining a first airflow path for delivering the aerosol to the inhalation port; and

a second airflow channel, defining a second airflow path for delivering the aerosol to the inhalation port, where

the airflow sensor is in airflow communication with both the first airflow channel and the second airflow channel, so as to sense a change of airflow flowing through the first airflow channel and/or the second airflow channel.

[0107] In some embodiments, a partition wall is further arranged in the first support, to partition the first airflow channel and the second airflow channel; a first sensing hole and a second sensing hole are respectively provided on two sides of the partition wall; and

the airflow sensor is in airflow communication with the first airflow channel through the first sensing hole, and is in airflow communication with the second airflow channel through the second sensing hole.

[0108] In some embodiments, a first shielding wall is further arranged in the first support, to shield an aerosol condensate that is in the first airflow channel from flowing to the first sensing hole; and/or

a second shielding wall is further arranged in the first support, to shield an aerosol condensate that is in the second airflow channel from flowing to the second sensing hole.

[0109] In some embodiments, the heating device further includes a first air inlet and a second air inlet that are arranged at intervals;

the first airflow channel includes a first air inlet channel extending from the first air inlet to the receiving cavity; the second airflow channel includes a second air inlet channel extending from the second air inlet to the receiving cavity; and the airflow sensor is in airflow communication with both the first air inlet channel and the second air inlet channel.

[0110] In some embodiments, the first air inlet channel and the second air inlet channel are formed or defined in the first support, and are isolated from each other in the first support.

[0111] In some embodiments, the first air inlet channel and the second air inlet channel are substantially in mirror symmetry.

[0112] In some embodiments, the first air inlet channel and the second air inlet channel are arranged in the first support in a circuitous and meandering extending manner.

[0113] In some embodiments, the heating device further includes a proximal end and a distal end facing away from each other in a longitudinal direction; and

a battery core, located between the receiving cavity and the distal end, to supply power, where

the first support includes an extension portion located between the receiving cavity and the battery core; and the airflow sensor is accommodated or held in the extension portion of the first support.

[0114] In some embodiments, the aerosol generating article is substantially constructed in a shape of a sheet; and

the aerosol generating article is asymmetric in a length direction and/or a width direction.

[0115] In some embodiments, the heating device further includes:

a receiving cavity, configured to removably receive the aerosol generating article, where

the receiving cavity is arranged to enable only the aerosol generating article to be received in the receiving cavity based on a first predetermined direction, and prevent the aerosol generating article to be received in the receiving cavity based on a second predetermined direction; and the second predetermined direction is defined by reversing the aerosol generating article in the first predetermined direction by 180 degrees in the length direction and/or the width direction.

[0116] In some embodiments, the aerosol generating article further includes:

an external body, defining a closed volume, where the aerosol generating substrate is accommodated

and held in the external body; and
at least one base, located in the external body, and being capable of generating heat by being penetrated by a changing magnetic field, so as to heat the at least one aerosol generating substrate to generate the aerosol.

[0117] In some embodiments, the heating device includes:
at least one induction heater, where the at least one induction heater is configured to generate a changing magnetic field that penetrates the at least one base when the aerosol generating article is received in the receiving cavity.
[0118] In some embodiments, a heat conductivity coefficient of at least a part of the external body is less than 20 W/m k, to prevent heat of the base from being transferred to the heating device as much as possible.
[0119] In some embodiments, the heating device further includes:

a front side and a rear side, facing away from each other in a thickness direction;
a receiving cavity, configured to removably receive the aerosol generating article; and
at least one heater, arranged between the receiving cavity and the rear side, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity.

[0120] In some embodiments, the at least one heater is substantially constructed to be planar; and/or
the at least one heater includes a planar spiral coil or is a planar spiral coil.
[0121] In some embodiments, the at least one heater is arranged substantially parallel to the receiving cavity.
[0122] In some embodiments, the heating device further includes:
a second support, at least partially arranged between the at least one heater and the rear side, and at least partially accommodating or supporting the at least one heater.
[0123] Another embodiment of this application further provides an aerosol generating system, including:

a replaceable aerosol generating article, including at least one aerosol generating substrate, where the at least one aerosol generating substrate is configured to generate an aerosol upon being heated; and
a reusable heating device, configured to removably receive the aerosol generating article, and heat the at least one aerosol generating substrate of the aerosol generating article;
an inhalation port;
a first airflow channel, defining a first airflow path for delivering the aerosol to the inhalation port; and
a second airflow channel, defining a second airflow path for delivering the aerosol to the inhalation port, where
an airflow sensor, arranged to be in airflow communication with both the first airflow channel and the second airflow channel, so as to sense a change of airflow flowing through the first airflow channel and/or the second airflow channel.

[0124] Another embodiment of this application further provides a heating device, configured to heat an aerosol generating article to generate an aerosol; the aerosol generating article includes at least one aerosol generating substrate, configured to generate an aerosol upon being heated; the heating device includes a front side and a rear side facing away from each other in a thickness direction;

a first support, at least partially defining a receiving cavity, to receive the aerosol generating article;
at least one heater, arranged between the receiving cavity and the rear side, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and
an airflow sensor, configured to detect a change of an airflow flowing through the heating device when a user inhales, where the airflow sensor is accommodated or held by the first support, and avoids the receiving cavity in a longitudinal direction of the heating device.

[0125] Another embodiment of this application further provides a heating device, configured to heat an aerosol generating article to generate an aerosol; the aerosol generating article includes at least one aerosol generating substrate, configured to generate an aerosol upon being heated; the heating device includes:

a receiving cavity, configured to receive the aerosol generating article;
at least one heater, where the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and
a first air inlet and a second air inlet;
a first air inlet channel, arranged to extend from the first air inlet to the receiving cavity, to provide a first air inlet path through which air enters the receiving cavity when a user inhales;
a second air inlet channel, arranged to extend from the second air inlet to the receiving cavity, to provide a second air inlet path through which air enters the receiving cavity when a user inhales; and
an airflow sensor, arranged to be in airflow communication with both the first air inlet channel and the second air inlet channel, so as to sense a change of

airflow flowing through the first air inlet channel and/or the second air inlet channel.

[0126] In the foregoing aerosol generating system, the airflow sensor is accommodated and held by the first support defining the receiving cavity in the heating device, and the airflow sensor is staggered from the receiving cavity in the longitudinal direction.

BRIEF DESCRIPTION OF THE DRAWINGS

[0127] One or more embodiments are illustratively described with reference to the figures in the corresponding accompanying drawings, and these illustrative descriptions are not to limit the embodiments. Elements having same reference numerals in the accompanying drawings are denoted as similar elements, and the figures in the accompanying drawings are not drawn to scale, unless particularly stated otherwise.

FIG. 1 is a schematic diagram of an aerosol generating system according to an embodiment;

FIG. 2 is a schematic diagram of removing or replacing an aerosol generating article after a door cover is opened in FIG. 1;

FIG. 3 is a schematic exploded view of an aerosol generating article in FIG. 2 from another perspective;

FIG. 4 is a schematic exploded view of a heating device in FIG. 1 from a perspective;

FIG. 5 is a schematic diagram from a perspective after a first housing of the heating device in FIG. 2 is removed;

FIG. 6 is a schematic diagram from another perspective after a first housing of the heating device in FIG. 2 is removed;

FIG. 7 is a schematic structural diagram of a first support in FIG. 4 from another perspective;

FIG. 8 is a schematic structural diagram of a first support in FIG. 7 from another perspective;

FIG. 9 is a schematic cross-sectional view of an aerosol generating system in FIG. 1 from a perspective; and

FIG. 10 is a schematic cross-sectional view of an aerosol generating system in FIG. 1 from a perspective.

DETAILED DESCRIPTION

[0128] To facilitate understanding of this application, this application is described in more detail below with reference to accompanying drawings and specific implementations.

[0129] An embodiment of this application provides an aerosol generating system, configured to heat an aerosol generating article that may be used as a consumable, to generate an aerosol.

[0130] In some embodiments, the aerosol generating system may include a reusable heating device and a replaceable consumable such as an aerosol generating article. A replaceable consumable such as an aerosol generating article receives or is coupled to a reusable heating device to form an aerosol generating system.

[0131] For example, FIG. 1 and FIG. 2 are schematic diagrams of an aerosol generating system according to an embodiment. In this embodiment, the aerosol generating system includes:

an aerosol generating article 200 as a replaceable consumable, and a heating device 100 for accommodating and receiving the aerosol generating article 200 and heating the aerosol generating article.

[0132] In the embodiments shown in FIG. 1 and FIG. 2, the heating device 100 includes a plurality of components arranged in a shell (which may be referred to as a housing). An overall design of the shell may be changed, and a form or a configuration of the shell that may define an overall dimension and a shape of the heating device 100 may be changed. Generally, an elongated body may be formed by a single integrated housing, or a longitudinal housing may be formed by two or more separable bodies. In some examples, all or only part of the shell may be formed by metal or an alloy such as stainless steel or aluminum, or another suitable material including various plastic (for example, polycarbonate), metal-plating over plastic, ceramic, and the like. In the embodiments shown in FIG. 1 and FIG. 2, the heating device 100 is substantially flat. A longitudinal length of the heating device 100 is greater than a width, and the width is greater than a thickness.

[0133] In some embodiments, the shell of the heating device 100 substantially defines an outer surface of the heating device 100. In the embodiments shown in FIG. 1 to FIG. 2, the heating device 100 includes:

a shell, which may include one or more reusable components. The shell has a proximal end 110 and a distal end 120 facing away from each other in a longitudinal direction, a first side 130 and a second side 140 facing away from each other in a width direction, and a front side 150 and a rear side 160 facing away from each other in a thickness direction.

[0134] During use, the proximal end 110 is configured as an end for a user to inhale the aerosol and a suction nozzle member 111 for the user to inhale is arranged at the proximal end 110. However, the distal end 120 is an end away from the user. A charging interface 121 is arranged at the distal end 120. The charging interface 121 is configured to charge the heating device 100 and/or the battery core 10 in the heating device 100. In some embodiments, the charging interface 121 uses a USB Type-C interface. Alternatively, in some other variant embodiments, the charging interface 121 may further use a USB 2.0 interface, a USB 3.0 interface, or a USB 4pin interface.

[0135] In some embodiments, the suction nozzle member 111 and the shell/second housing 180 are separately prepared and obtained and then assembled and connected. The suction nozzle member 111 is detachably

connected to the shell. Further, during use, the suction nozzle member 111 may be disassembled or removed from the shell. In addition, the suction nozzle member and the shell may be hermetically sealed through a sealing ring such as an O-ring. Alternatively, in some other embodiments, the suction nozzle member 111 and the shell/-second housing 180 are integrally molded by using a moldable material, and cannot be detachable or separated relative to each other.

[0136] During use, the front side 150 is a side on which a user operates to open a door cover 190, and then is used for receiving the aerosol generating article 200 or taking out the aerosol generating article 200. The rear side 160 is a side on which the induction heater 30 is arranged.

[0137] As shown in FIG. 1 and FIG. 2, the shell of the heating device 100 includes:

a first housing 170 and a second housing 180, where the first housing 170 is close to or defines the front side 150, and the second housing 180 is close to or defines the rear side 160.

[0138] In the embodiments of FIG. 1 and FIG. 2, the heating device 100 and/or the shell of the heating device 100 is of a longitudinal cylindrical shape. In addition, in the embodiments, the length of the heating device 100 and/or the shell of the heating device 100 is greater than the width, and the width is greater than the thickness, so that the heating device 100 and/or the shell of the heating device 100 is constructed in a flat shape.

[0139] In some embodiments, a length dimension of the heating device 100 and/or the shell of the heating device 100 ranges from 60 mm to 160 mm. Moreover, a width dimension of the heating device 100 and/or the shell of the heating device 100 ranges from 22 mm to 50 mm. Moreover, a thickness dimension of the heating device 100 and/or the shell of the heating device 100 ranges from 5 mm to 20 mm.

[0140] As shown in FIG. 2, the aerosol generating article 200 is substantially constructed in a shape of a sheet; and the sheet shape may be represented as that the length of the aerosol generating article 200 is greater than or equal to the width, and the width is greater than the thickness.

[0141] Correspondingly, the heating device 100 includes:

a receiving cavity 510, located in the shell, where the receiving cavity 510 is substantially adapted to a shape of the aerosol generating article 200, to receive the aerosol generating article 200. In some embodiments, the length of the receiving cavity 510 is greater than or equal to the width, and the width is greater than the thickness. Moreover, the receiving cavity 510 is arranged parallel to a plane of a longitudinal direction and a width direction of the heating device 100.

[0142] As shown in FIG. 1 and FIG. 2, the receiving cavity 510 defines an opening 171 on the front side 150 of the shell. In this embodiment, the opening 171 is formed or defined by the first housing 170 of the shell. During use, the aerosol generating article 200 may be removably received in the receiving cavity 510 or removed from the receiving cavity through the opening 171.

[0143] As shown in FIG. 1 and FIG. 2, the heating device 100 further includes:

a movable door cover 190, which is movably coupled to the shell of the heating device 100, and can move relative to the shell, so as to selectively move between an open position and a closed position. In the open position, the door cover 190 opens the opening 171 to enable a user to perform an operation to removably receive the aerosol generating article 200 in the receiving cavity 510 or remove the aerosol generating article from the receiving cavity. In the closed position, the door cover 190 shields and closes the opening 171, to prevent a user from being able to operate to removably receive the aerosol generating article 200 in the receiving cavity 510 or remove the aerosol generating article from the receiving cavity.

[0144] As shown in FIG. 1, FIG. 2, and FIG. 4, the second housing 180 of the shell is arranged on the first side 130 with a pin shaft 181 arranged in the longitudinal direction. The door cover 190 is hinged to the shell through the pin shaft 181, and can rotate about the pin shaft 181, as shown by an arrow R1 in FIG. 2. Further, the door cover 190 can be selectively configured between the open position and the closed position by rotating, so as to selectively open or close the opening 171. Alternatively, in some other variant embodiments, the pin shaft 181 may be arranged on the second side 140 of the shell. The door cover 190 forms a rotational connection with the shell on the second side 140. Alternatively, in some other variant embodiments, the pin shaft 181 may be located on the door cover 190.

[0145] Alternatively, in some other variant embodiments, the door cover 190 is adhered to a surface of the front side 150 of the first housing 170, and can linearly move relative to the first housing 170 in the longitudinal direction. Further, during movement, the door cover is selectively configured between the open position and the closed position, so as to selectively open or close the opening 171.

[0146] As shown in FIG. 2 and FIG. 6, the aerosol generating article 200 that is substantially in a shape of a sheet has a notch 290 on one of corners. In this way, the aerosol generating article 200 is asymmetrically arranged in the length direction and/or the width direction.

[0147] For example, the aerosol generating article 200 has an asymmetry that the aerosol generating article is turned by 180 degrees along a central axis m in the length direction. Alternatively, the aerosol generating article 200 has an asymmetry that the aerosol generating article is turned by 180 degrees along a central axis n in the width direction.

[0148] Correspondingly, the receiving cavity 510 has an inclined boundary 518 adapted to the notch 290. Therefore, during use, the aerosol generating article 200 can be received in the receiving cavity 510 only in one predetermined direction, for example, the first pre-

determined direction shown in FIG. 2. Moreover, the inclined boundary 518 further has a convex edge 519, for abutting against the notch 290 of the aerosol generating article 200.

[0149] As shown in FIG. 1, FIG. 2, and FIG. 9, the door cover 190 has a protruding portion 191. Moreover, when the aerosol generating article 200 is received in the receiving cavity 510, the protruding portion 191 of the door cover 190 in the closed position can extend from the portion of opening 171 into the receiving cavity 510 to press or abut against the aerosol generating article 200, so that the aerosol generating article 200 abuts against an inner bottom wall of the receiving cavity 510 that faces away from the opening 170 and stops.

[0150] As shown in FIG. 1, FIG. 2, FIG. 4, and FIG. 9, at least one or more first magnetic elements are further arranged inside the door cover 190. Specifically, the at least one or more first magnetic elements include a first magnetic element 192 and a first magnetic element 193. The first magnetic element 192 and the first magnetic element 193 are respectively located at two sides of the protruding portion 191 in the longitudinal direction. The first magnetic element 192 and the first magnetic element 193 are located inside the door cover 190, and are not exposed on a surface of the door cover 190.

[0151] As shown in FIG. 1, FIG. 2, FIG. 4, and FIG. 9, the door cover 190 further defines a heat-insulation empty cavity 194. When the door cover 190 is located in the closed position, the heat-insulation empty cavity 194 is located between the outer surface of the door cover 190 and the aerosol generating article 200, This is used to prevent the heat generated by the aerosol generating article 200 from being transferred to the surface of the front side 150 of the door cover 190, which helps improve the thermal insulation.

[0152] Correspondingly, at least one or more second magnetic elements are arranged on the heating device 100. Specifically, the at least one or more second magnetic elements include a second magnetic element 61 and a second magnetic element 62. The second magnetic element 61 and the second magnetic element 62 are respectively located at two sides of the receiving cavity 510 in the longitudinal direction. Specifically, a mounting groove 611 is provided in the second housing 180 close to the suction nozzle member 111, and the second magnetic element 61 is mounted in the mounting groove 611. Correspondingly, the second magnetic element 62 may also be fixedly mounted in the mounting groove in the inner surface of the first housing 170 for fixing.

[0153] When the door cover 190 is located at the closed position, the first magnetic element 192 is in magnetic attraction with the second magnetic element 61, and the first magnetic element 193 is in magnetic attraction with the second magnetic element 62, so that the door cover 190 is stably maintained at the closed position.

[0154] As shown in FIG. 2 and FIG. 3, the aerosol generating article 200 includes a first end 210 and a second end 220 facing away from each other in the length direction. In addition, the aerosol generating article 200 includes:

a first air inlet 251 and a second air inlet 252, isolated from each other and formed or defined at the second end 220;

a first air outlet 261 and a second air outlet 262, isolated from each other and formed or defined at the first end 210; and

a first air channel R21 extending from the first air inlet 251 to the first air outlet 261, and a second air channel R22 extending from the second air inlet 252 to the second air outlet 262. The first air channel R21 and/or the second air channel R22 are/is extending and arranged in the length direction of the aerosol generating article 200. The first air channel R21 and the second air channel R22 are isolated from each other. The first air channel R21 and/or the second air channel R22 extend straightly.

[0155] As shown in FIG. 2 and FIG. 3, the aerosol generating article 200 includes:

an external body 230 defining a closed volume, which is rigid, and is jointly defined by a cover plate 231 and a tray 232. Specifically, the cover plate 231 and the tray 232 are combined in the thickness direction of the aerosol generating article 200, to form or define the external body 230 of the aerosol generating article 200. At least one or more recessed cavities that are arranged discretely or in an array are arranged on the tray 232.

[0156] Specifically, the recessed cavities include at least one or more first recessed cavities 271 that are arranged at intervals in the longitudinal direction and at least one or more second recessed cavities 272 that are arranged at intervals in the longitudinal direction. At least one or more first recessed cavities 271 are arranged in the first air channel R21. At least one or more second recessed cavities 272 are arranged in the second air channel R22.

[0157] In some embodiments, the cover plate 231 and the tray 232 are fixedly combined in a manner such as interference or close fitting. In some embodiments, a partition protruding edge 235 extending from the first end 210 to the second end 220 in the length direction is arranged on the cover plate 231 and/or the tray 232. After the cover plate 231 is coupled to the tray 232, the first air channel R21 and the second air channel R22 are separated by the partition protruding edge 235. In this embodiment, the first air channel R21 and/or the first air inlet 251 and/or the first air outlet 261 are provided on one side of the partition protruding edge 235, and the second air channel R22 and/or the second air inlet 252 and/or the second air outlet 262 are provided on an other side of the partition protruding edge 235.

[0158] In the embodiment shown in FIG. 3, the partition protruding edge 235 is arranged on a surface of the tray

232 that faces toward the cover plate 231. Alternatively, in some other variant embodiments, the partition protruding edge 235 is arranged on a surface of the cover plate 231 that faces toward the tray 232.

[0159] A plurality of bases and an aerosol generating substrate that is separately formed or coupled to the plurality of bases are further arranged between the cover plate 231 and the tray 232. The base can be penetrated by the changing magnetic field to generate heat, so as to heat the aerosol generating substrate bond with the base to generate an aerosol. The aerosol generating substrate is a solid or a gel that is in a shape of a sheet or a block.

[0160] In some embodiments, the base is in a shape of a sheet. The base has a thickness that is in a range of about 0.03 mm to 1.0 mm. In a more preferred embodiment, the base has a thickness that is in a range of about 0.03 mm to 0.2 mm. In some specific embodiments, the thickness of the base is 0.26 mm.

[0161] In some embodiments, the aerosol generating substrate is a continuous thin layer arranged on the base. For example, the aerosol generating substrate substantially completely covers at least one side surface of the base.

[0162] In some embodiments, the aerosol generating substrate may be used to mean a substrate that can release a volatile compound that may form aerosol. The aerosol may be generated by heating the aerosol generating substrate to release the volatile compound. In some common embodiments, the aerosol generating substrate is a solid or a gel or may include a solid or a gel at room temperature.

[0163] In some embodiments, the aerosol generating substrate may include one or more of powder, particles, fragments, strips, or sheets of one or more of a vanilla leaf, a tobacco leaf, homogeneous tobacco, and expanded tobacco. Alternatively, the solid aerosol generating substrate may include additional tobacco or non-tobacco volatile aroma compounds to be released when the substrate is heated.

[0164] In some embodiments, the aerosol generating substrate may include an active base material; and the active base material includes or is derived from one or more plant products or components thereof. For example, in some specific embodiments, the active base material includes a leaf, a tree bark, a fibrous tissue, a shoot, a root, a petal, a fruit, or the like of a plant. For example, in a specific embodiment, the active base material includes or is derived from one or more plant varieties or a component, a derivative, or an extract thereof, and the plant variety is tobacco. For example, in a specific embodiment, the active base material includes a mixture of plants such as tobacco and Chinese herbal medicine. The active base material may include a tobacco or a tobacco-containing material. For example, the active base material may include any one of the following: tobacco leaves, tobacco vein segments, reconstituted tobacco, homogenized tobacco, extruded tobacco, tobacco slurry, cast leaf tobacco, and expanded tobacco.

[0165] In some optional embodiments, the aerosol generating substrate further includes a flavoring agent. The flavoring agent may include a volatile aroma component. For example, in common embodiments, the flavoring agent may provide an aroma selected from menthol, lemon, vanilla, orange, holly, cherry, and cinnamon. The flavoring agent may include a volatile tobacco flavoring agent compound that is released from the aerosol generating substrate upon heating.

[0166] In some optional embodiments, the aerosol generating substrate further includes an aerosol forming agent or a smoking agent. During use, the aerosol forming agent or the smoking agent facilitates formation of a dense and stable aerosol. In some specific embodiments, the aerosol forming agent or the smoking agent is or includes at least one of glycerol, propylene glycol, diethylene glycol, triethylene glycol, tetraethylene glycol, and the like.

[0167] In some optional embodiments, the aerosol generating substrate further includes an adhesive; and the adhesive facilitates binding of the components of the aerosol generating substrate during use. For example, in some specific embodiments, the adhesive is or includes at least one of gum Arabic, casein, dextrin, sodium carboxymethyl cellulose, starch, polyvinyl alcohol, guar gum, and the like.

[0168] In some optional embodiments, the aerosol generating substrate further includes reinforcing fibers. The fiber strength of the reinforcing fibers is usually higher than the fiber strength of the tobacco plant in the active base material, so as to enhance the strength and the plasticity of the aerosol generating substrate during use. For example, in some specific embodiments, the reinforcing fibers include at least one of softwood fibers, hardwood fibers, hemp or flax fibers, bamboo fibers, and the like.

[0169] In a specific embodiment, the aerosol generating substrate includes: 65 wt% to 90 wt% of the active base material, 3 wt% to 10 wt% of the reinforcing fibers, 0 wt% to 5 wt% of the adhesive, 5 wt% to 15 wt% of the flavoring agent, and 10 wt% to 20 wt% of the aerosol forming agent or the smoking agent.

[0170] Alternatively, in another specific embodiment, the aerosol generating substrate includes: 65 wt% to 90 wt% of the active base material, 3 wt% to 10 wt% of the reinforcing fibers, 1 wt% to 5 wt% of the adhesive, 5 wt% to 15 wt% of the flavoring agent, and 15 wt% to 40 wt% of the aerosol forming agent or the smoking agent.

[0171] In some embodiments, an areal density of the aerosol generating substrate ranges from 20 g/m^2 to 150 g/m^2.

[0172] In some embodiments, the thickness of the aerosol generating substrate ranges from 0.1 mm to 0.6 mm. In some embodiments, the thickness of the aerosol generating substrate is greater than the thickness of the base.

[0173] In some embodiments, moisture content in the aerosol generating substrate ranges from 6 wt% to 14

wt%.

[0174] In some embodiments, the aerosol generating substrate includes a plurality of sub-layers. For example, in some optional embodiments, the aerosol generating substrate may include a first sub-layer and a second sub-layer arranged in a laminated or stacked manner. The first sub-layer may include the active base material, the reinforcing fibers, the aerosol forming agent or smoking agent, and the like. The second sub-layer mainly includes the flavoring agent. Then, during use, the first sub-layer is configured to generate aerosol, and the second sub-layer is configured to adjust or alter properties of the aerosol, such as taste or flavor.

[0175] Alternatively, in some other embodiments, the aerosol generating substrate including a plurality of sub-layers may include the first sub-layer and the second sub-layer arranged in a laminated or stacked manner. The first sub-layer may include the active base material such as tobacco. The second sub-layer includes any one or more of functional additives such as a flavoring agent, a binder, a moisture-proof agent, a mildew-proof agent, and an antibacterial agent. For example, the second sub-layer includes 0 wt% to 20 wt% of the flavor and fragrance, 80 wt% to 100 wt% of the adhesive, 0 wt% to 0.2 wt% of the moisture-proof agent, 0 wt% to 0.5 wt% of the mildew-proof agent, and 0 wt% to 0.5 wt% of the antibacterial agent.

[0176] In this embodiment, the binder of the second sub-layer includes at least one of gum Arabic, casein, dextrin, sodium carboxymethyl cellulose, starch, polyvinyl alcohol, and guar gum; the moisture-proof agent may include at least one of dimethyl fumarate, anhydrous calcium chloride, super absorbent resin, and the like; the mildew-proof agent includes at least one of biphenyl, o-phenylphenol, 2-pyridinethiol-1-zinc oxide, ammonium persulfate, and calcium phosphate; and the antibacterial agent may use metal oxide, metal ion inorganic antibacterial agent, and the like.

[0177] In some other embodiments, the thickness of the second sub-layer of the aerosol generating substrate ranges from 0.001 mm to 0.1 mm. During preparation, the second sub-layer is applied to the base in a manner such as spraying, brushing, or film transfer. Subsequently, the first sub-layer is bonded to a surface of the second sub-layer by roll-pressing or casting, or the like, thereby forming a multi-sub-layer aerosol generating substrate.

[0178] Alternatively, in some other variant embodiments, the aerosol generating substrate may include a gel and/or a paste. The gel may be defined as an essentially diluted, cross-linked system, which does not exhibit flow when in a steady state. The paste may be defined as a viscous fluid such as a cream or a slurry. For example, the paste may be a fluid that has a dynamic viscosity greater than 1 Pa S, 5 Pa S, or 10 Pa S at rest.

[0179] In an embodiment, an identifier that can be identified is arranged on the aerosol generating substrate and/or the base. The identifier may be arranged as a pattern that can be identified. Alternatively, in some other variant embodiments, the identifier is a color, a pattern, a number, a text, a two-dimensional code, or the like that can be identified. In some embodiments, the identifier is used to provide an identification indication related to a unique property of the aerosol generating article 200. The user or the heating device 100 identifies the identifier to acquire the unique property of the aerosol generating article 200.

[0180] In some embodiments, the unique property of the aerosol generating article 200 includes various information of the aerosol generating article 200, for example, authenticity information, expiration date, and a place of origin. In some embodiments, the above various information of the aerosol generating article 200 can be acquired by using the identifier, so that it can be determined whether the aerosol generating article 200 is genuine, when the aerosol generating article 200 has expired, and where the aerosol generating article 200 was manufactured. Therefore, the user may not unintentionally use a non-genuine aerosol generating article 200, an expired aerosol generating article 200, or an aerosol generating article 200 from an undesirable source position.

[0181] In some other embodiments, the unique property of the aerosol generating article 200 may include flavor of the flavoring agent included in the aerosol generating substrate, such as peach, mint, or orange.

[0182] In another example, in some embodiments, the unique property of the aerosol generating article 200 may include strength of nicotine included in the aerosol generating substrate, such as nicotine content.

[0183] In the embodiments shown in FIG. 2 and FIG. 3, the base is rigid or hard. In some embodiments, the base is made of a sensitive metal or metal material. In this way, during use, the base can be heated by means of electromagnetic induction or by being penetrated by a changing magnetic field to generate heat, and then, the aerosol generating substrate is heated to generate an aerosol. In some specific embodiments, the sensitive metal or alloy used to prepare or form the base is at least one of iron or iron alloy, nickel or nickel alloy, cobalt or cobalt alloy, graphite, ordinary carbon steel, stainless steel, ferritic stainless steel, permalloy, and the like. In some specific embodiments, the base includes permalloy whose alloy brand number is 1J50 or 1J85. For example, a mass percentage of the iron in the base of the permalloy material ranges from 15 wt% to 85 wt%, and a mass percentage of the nickel does not exceed 85 wt%.

[0184] Specifically, the plurality of bases include at least one or more first bases 241 that are in a shape of a sheet, and at least one or more first aerosol generating substrates 242 formed on or coupled to the at least one or more first bases 241 that are in a shape of a sheet. The first base 241 and the first aerosol generating substrate 242 are accommodated and held in the first recessed cavity 271.

[0185] Specifically, the plurality of bases further include at least one or more second bases 281 that are

in a shape of a sheet, and at least one or more second aerosol generating substrates 282 formed on or coupled to the at least one or more second bases 281 that are in a shape of a sheet.

[0186] In a specific embodiment, each of the plurality of first aerosol generating substrates 242 is coupled to each of the plurality of first bases 241. Each of the plurality of second aerosol generating substrates 282 is coupled to each of the plurality of second bases 281. Moreover, each of the plurality of first aerosol generating substrates 242 and/or the first bases 241 is discretely arranged in the plurality of first recessed cavities 271. The plurality of second aerosol generating substrates 282 and/or the second bases 281 are respectively discretely arranged in the plurality of second recessed cavities 272.

[0187] The first aerosol generating substrate 242 is exposed to or located on the first air channel R21, so that an aerosol generated by the first aerosol generating substrate 242 can be outputted from the first air channel R21 to the first air outlet 261. The second aerosol generating substrate 282 is exposed to or located on the second air channel R22, so that an aerosol generated by the second aerosol generating substrate 282 can be outputted from the second air channel R22 to the second air outlet 262.

[0188] In some embodiments, the first base 241 and/or the second base 281 may be in a dense sheet shape. Alternatively, in some other embodiments, the first base 241 and/or the second base 281 may be a mesh shape having mesh holes, so that the first base 241 and/or the second base 281 are/is fluid permeable.

[0189] In some embodiments, the cover plate 231 and/or the tray 232 has a material with a low heat conductivity coefficient and a low mass heat capacity, for example, a material such as zirconium oxide, glass, or polyether ether ketone (PEEK), and long-term temperature resistance needs to be not less than 250°C. Alternatively, in some other variant embodiments, the cover plate 231 and/or the tray 232 includes or is paper. For example, the cover plate 231 and/or the tray 232 includes a fiber paper made of wood fiber, hemp fiber, flax fiber, bamboo fiber, or the like.

[0190] In some embodiments, the heat conductivity coefficient of the cover plate 231 and/or the tray 232 is less than 20 W/m·k. Alternatively, in a more preferred embodiment, the heat conductivity coefficient of the cover plate 231 and/or the tray 232 is less than 1 W/m·k. The tray 232 having the foregoing low heat conductivity coefficient can minimally prevent transfer of heat from bases such as the first base 241 and the second base 281 that are induced to generate heat to the heating device 100 when the aerosol generating article 200 is accommodated in the receiving cavity 510 of the heating device 100, in particular to prevent the transfer of heat from bases such as the first base 241 and the second base 281 to the first support 50 defining the receiving cavity 510.

[0191] Based on the embodiments shown in FIG. 2 and FIG. 3, the notch 290 of the aerosol generating article 200 includes a first notch 291 on the cover plate 231 and a second notch 292 on the tray 232. When the cover plate 231 and the tray 232 are combined, the first notch 291 and the second notch 292 jointly form or define the notch 290 of the aerosol generating article 200.

[0192] As shown in FIG. 4 to FIG. 10, the heating device 100 further includes:

a battery core 10, arranged between the receiving cavity 510 and the distal end 120 in the longitudinal direction, to supply power to the heating device 100 and/or the heater 30;

a charging circuit board 23, located between the battery core 10 and the distal end 120, where a charging IC (that is, a charging management chip) is arranged on the charging circuit board 23 for controlling charging of the battery core 10 through the charging interface 121; and

a main circuit board 20, on which a control circuit or an MCU controller is integrated or arranged, where the main circuit board 20 includes a first portion 21 and a second portion 22 arranged in the longitudinal direction; the second portion 22 is at least partially located between the battery core 10 and the rear side 160; and the first portion 21 is at least partially located between the receiving cavity 510 and/or the induction heater 30 and the rear side 160.

[0193] In some embodiments, the charging circuit board 23 is connected to the second portion 22 of the main circuit board 20 through a conductive lead, a laminated conductive line, or the like. In addition, the battery core 10 abuts against and is connected to the second portion 22 of the main circuit board 20.

[0194] A microcontroller unit (MCU) controller and the like are arranged on the first portion 21 of the main circuit board 20 for controlling supply of electric power to the heater 30. Alternatively, the first portion 21 of the main circuit board 20 is configured to control to supply electric power to the heater 30. At least one inverter circuit is arranged on the first portion 21 of the main circuit board 20, to convert the direct current outputted by the battery core 10 into an alternating current, and supply the alternating current to the at least one planar spiral coil 30, so that the planar spiral coil 30 generates a changing magnetic field. In some embodiments, the at least one inverter circuit includes at least one capacitor, the at least one capacitor and the at least one planar spiral coil 30 may be operatively combined to form an inductor-capacitor (LC) oscillator, and the alternating current provided to the at least one planar spiral coil 30 is formed through oscillation of the LC oscillator.

[0195] As shown in FIG. 4 to FIG. 10, the heating device 100 further includes:

at least one or more induction heaters 30 arranged discretely or in an array. The at least one or more induction heaters 30 are arranged between the receiving cavity

510 and the rear side 160. The at least one or more induction heaters 30 can be independently connected to the first portion 21 of the main circuit board 20, so that electric power can be independently provided by the main circuit board 20.

[0196] In the embodiments shown in FIG. 4 to FIG. 10, the at least one or more induction heaters 30 are configured to be electromagnetic induction heaters capable of generating a changing magnetic field, to induce heating of the base of the aerosol generating article 200 through the magnetic field. When the aerosol generating article 200 is received in the receiving cavity, the at least one or more induction heaters 30 induce heating of the aerosol generating article 200 by generating the magnetic field.

[0197] Alternatively, in more variant embodiments, the heating device 100 further includes at least one or more heaters 30, and the heater 30 includes at least one of a resistive heater, an infrared heater, an optical heater, or the like. When the aerosol generating article 200 is received in the receiving cavity, the heater 30 heats the aerosol generating substrate of the aerosol generating article 200 by transferring heat through resistance Joule heating. Alternatively, the heater 30 radiates infrared light, to heat the aerosol generating substrate of the aerosol generating article 200.

[0198] Specifically, as shown in FIG. 4 to FIG. 10, when the aerosol generating article 200 is received in the receiving cavity 510, the plurality of induction heaters 30 are respectively opposite to the aerosol generating substrate and/or the base such as the first base 241 or the second base 281, and each induction heater 30 can independently heat the opposite first base 241 or second base 281.

[0199] In the embodiments shown in FIG. 4 to FIG. 10, the induction heater 30 is substantially planar. In this embodiment, the induction heater 30 includes a planar spiral coil 30. The induction heater 30 is substantially arranged in parallel with the base such as the first base 241 or the second base 281 when the aerosol generating article 200 is received in the receiving cavity. In FIG. 4 to FIG. 10, the planar spiral coil 30 is of a circular shape. Alternatively, in still some other variant embodiments, the planar spiral coil 30 has a shape of a square, an ellipse, or the like.

[0200] In some embodiments, the planar spiral coil 30 is substantially arranged in parallel with the base such as the first base 241 or the second base 281 when the aerosol generating article 200 is received in the receiving cavity. In addition, a space between the planar spiral coil 30 and the base such as the first base 241 or the second base 281 is less than 15 mm. More preferably, the space between the planar spiral coil 30 and the base such as the first base 241 or the second base 281 is less than 10 mm. In some embodiments, the space between the planar spiral coil 30 and the base, for example, the first base 241 or the second base 281, is less than a diameter of the planar spiral coil 30.

[0201] In this embodiment, the plurality of planar spiral coils 30 are connected to the main circuit board 20, so that the main circuit board 20 can independently provide an alternating current, to independently generate a magnetic field by the plurality of planar spiral coils 30, thereby starting heating separately. For example, in some embodiments, several or a plurality of planar spiral coils 30 may be separately started. In this way, each planar spiral coil 30 can separately heat only an opposite base such as the first base 241 or the second base 281, so that the aerosol generating substrate on the base such as the first aerosol generating substrate 242 or the second aerosol generating substrate 282 is heated to generate an aerosol.

[0202] In some embodiments, the main circuit board 20 is configured to control several or the plurality of planar spiral coils 30 to be heated sequentially one after another in a predetermined order. In some embodiments, the main circuit board 20 is configured to control several or the plurality of planar spiral coils 30 to be heated at different times. Therefore, for example, during each inhalation of the user, the main circuit board 20 controls only one planar spiral coil 30 to be heated and generate an aerosol generating article satisfying one inhalation. In some embodiments, during each inhalation, the main circuit board 20 controls one of the several planar spiral coils 30 to individually heat a base of the aerosol generating article 200, such as the first base 241 or the second base 281, to produce a total particulate matter (TPM) amount of at least 1.5 mg, at least 1.7 mg, at least 2.0 mg, at least 2.5 mg, at least 3.0 mg, about 1.0 mg to about 5.0 mg, about 1.5 mg to about 4.0 mg, about 2.0 mg to about 4.0 mg, or about 2.0 mg to about 3.0 mg, at least 3 mg to about 7 mg, about 4 mg to about 8 mg, and about 5 mg to about 10 mg.

[0203] In some embodiments, during a plurality of inhalations of a user, the main circuit board 20 control the several planar spiral coils 30 to be heated sequentially one after another in a predetermined order. Specifically, for example, as shown in FIG. 4 to FIG. 10, during a first inhalation of the user, the main circuit board 20 provides power to a first planar spiral coil 30 that is closest to a left side from top to bottom for heating, so as to heat opposite bases such as the first base 241 and the first aerosol generating substrate 242, to generate the aerosol for one inhalation. When the user performs a next inhalation, the main circuit board 20 provides power to the second planar spiral coil 30 that is closest to a left side from top to bottom for heating, so as to heat opposite bases such as the first base 241 and the first aerosol generating substrate 242, to generate the aerosol for one inhalation. The foregoing is performed sequentially until all the aerosol generating substrates such as the first aerosol generating substrate 242 and the second aerosol generating substrate 282 in the aerosol generating article 200 are completely consumed after all the planar spiral coils 30 are heated, and the user is prompted to replace a new aerosol generating article 200. In the foregoing implementations, the planar spiral coil 30 are sequentially and individually started and not simultaneously started for

heating, which means minimizing excessive consumption of an aerosol generating substrate and reducing waste of energy. Alternatively, in some other implementations, several planar spiral coils 30 are sequentially started based on a predetermined order along an array arrangement direction.

[0204] Alternatively, in some other variant implementations, the main circuit board 20 controls the plurality of planar spiral coils 30 to be separately started sequentially, which is not performed at intervals along an arrangement direction of the planar spiral coils 30. Alternatively, in some other variant implementations, the main circuit board 20 controls the several planar spiral coils 30 to be separately started sequentially, with an interval or in a hopping manner.

[0205] In some embodiments, the several or plurality of planar spiral coils 30 can be energized in sequence, that is, energized once for each inhalation of a user to generate aerosol consistently based on each inhalation.

[0206] In the embodiments shown in FIG. 4 to FIG. 10, the heating device 100 includes:

an airflow sensor 80, for example, a microphone or a micro-electro-mechanical system (MEMS) sensor, configured to sense an inhalation action of the user. The main circuit board 20 sequentially supplies power to the several or plurality of planar spiral coils 30 based on a sensing result of the airflow sensor. In a preferred implementation, the main circuit board 20 controls the several planar spiral coils 30 to be sequentially started in a predetermined order based on the inhalation action of the user. In addition, in some other variant implementations, the main circuit board 20 controls the several planar spiral coils 30 to be started sequentially at a predetermined interval time. For example, the predetermined interval ranges from about 30 seconds to 300 seconds.

[0207] In some embodiments, the main circuit board 20 controls the several planar spiral coils 30 to be sequentially started in a predetermined order, which is performed based on removal or replacement of the aerosol generating article 200. Specifically, in some embodiments, after the main circuit board 20 controls the foregoing planar spiral coils 30 to be sequentially started, the user is prompted that the aerosol generating article 200 has been fully consumed, and the user is prompted to replace the aerosol generating article 200 with a new one.

[0208] In addition, in some embodiments, after it is detected that a new aerosol generating article 200 is received in the receiving cavity of the heating device 100 again, the planar spiral coils 30 are sequentially restarted in a predetermined order. The detection of replacing a new aerosol generating article 200 by the user may be performed through a sensor. For example, an optical sensor or a pressure sensor is arranged in an aerosol generating device, and is configured to sense that the aerosol generating article 200 is coupled to the receiving cavity or removed from the receiving cavity, and determine, based on the bonding and the removal, replacement or consumption of the aerosol generating article 200 by the user.

[0209] In some embodiments, the main circuit board 20 controls the foregoing planar spiral coils 30 to be sequentially started in a cyclic manner. For example, in some embodiments, a cycle is performed based on a predetermined number of times, for example, 6 times. Specifically, when a quantity of times of starting the planar spiral coil 30, and/or a quantity of times of inhalation of a user reaches a predetermined quantity of times, a new cycle is entered to control the planar spiral coil 30 to be sequentially started. In another example, in some embodiments, the cycle is performed based on removal or replacement of the aerosol generating article 200.

[0210] In some embodiments, the main circuit board 20 controls the several planar spiral coils 30 to generate a magnetic field, so as to induce an opposite base, for example, the first base 241 or the second base 281, to be heated based on a same heating curve. For example, in some specific embodiments, the main circuit board 20 controls generating of a magnetic field to induce an opposite base, for example, the first base 241 or the second base 281, to be heated at a temperature of 300°C. Alternatively, in some other variant embodiments, the main circuit board 20 controls the several planar spiral coils 30 to induce an opposite base, for example, the first base 241 or the second base 281, to be heated based on a different heating curve or a different heating temperature. For example, in some implementations, the main circuit board 20 controls the several planar spiral coils 30 to induce a heating temperature of an opposite base such as the first base 241 or the second base 281 to sequentially increase or sequentially decrease along a heating start-up sequence.

[0211] For example, in some embodiments, the main circuit board 20 is configured to sequentially supply electric power to the planar spiral coils 30 based on a given power, so that an opposite base, for example, the first base 241 or the second base 281, reaches an operating temperature in a predetermined time. For example, the main circuit board 20 provides power to the planar spiral coil 30 each time, so that the opposite base such as the first base 241 or the second base 281 reaches a temperature of about at least 200 degrees, or at least 300 degrees, or at least 400 degrees within 0.5 s, and is stopped after being maintained for a time of about 2.5 s.

[0212] In some embodiments, the planar spiral coil 30 is spirally wound of a wire material having a low resistivity. For example, the planar spiral coil 30 is spirally wound of an electricallyconductive copper wire, silver wire, or the like. In some embodiments, the wire material wound the planar spiral coil 30 has a circular cross-sectional shape. Alternatively, in some other embodiments, the wire material wound the planar spiral coil 30 has a cross-sectional shape such as a rectangle, an ellipse, or a triangle. In some embodiments, the wire material wound the planar spiral coil 30 is a Litz wire, and has a plurality of wires or a plurality of stranded wires.

[0213] Alternatively, in some other embodiments, the

planar spiral coil 30 is a track or a line that is formed on a planar substrate in a manner such as printing, depositing, or spraying a conductive paste. For example, in some specific embodiments, the planar spiral coil 30 in a thin layer form is formed by printing, depositing, or spraying on a rigid or flexible electrically isolating substrate such as a ceramic, a glass, a quartz, or a PI film.

[0214] As shown in FIG. 4 to FIG. 10, the heating device 100 further includes:

a first support 50, at least partially defines a receiving cavity 510, so as to accommodate and receive the aerosol generating article 200. At least a part of the first support 50 is arranged between the planar spiral coil 30 and the front side 150. At least a part of the first support 50 is of a recess shape, so as to surround and define the receiving cavity 510.

[0215] The first support 50 is substantially flat in shape. The first support 50 has a front end 520 and an end 530 facing away from each other. The front end 520 is mounted toward the proximal end 110, and the end 530 is mounted toward the distal end 120/battery core 10. In some embodiments, a length dimension of the first support 50 is greater than a width dimension, and the width dimension is greater than a thickness dimension.

[0216] In some embodiments, the first support 50 is made of a non-sensitive rigid material. For example, the first support 50 is made of a material such as polymer plastic and ceramics.

[0217] During assembly, at least one retaining rib 182 is arranged on an inner side surface of the second housing 180, which is configured to position and match with the groove on the first support 50 to assist the mounting and fixation of the first support 50 in the second housing 180. A side wall surface of the first support 50 close to the first side 130 is provided with a first convex edge 511, and a side wall surface close to the second side 140 is provided with a second convex edge 512. When the aerosol generating article 200 is received in the receiving cavity 510, the first convex edge 511 and the second convex edge 512 abut against and clamp the aerosol generating article 200 from two sides in a width direction of the aerosol generating article 200.

[0218] As shown in FIG. 4 to FIG. 10, the suction nozzle member 111 is hollow. The suction nozzle member 111 has an inhalation port 113 at a proximal end 110. In addition, an air outlet channel 112 is arranged inside the suction nozzle member 111.

[0219] The air outlet channel 112 is in airflow communication with the receiving cavity 510 through a first air outlet communication port 513 and a second air outlet communication port 514 arranged on the support 50, to output the aerosol to the inhalation port 113, as shown by the arrow R30 in the figure. The first air outlet communication port 513 and the second air outlet communication port 514 are arranged on a wall of the receiving cavity 510 toward the front end 520 of the proximal end 110.

[0220] As shown in FIG. 4 to FIG. 10, a first air inlet communication port 515 and a second air inlet communication port 516 are further provided on a wall of an end 530 of the first support 50 towards the distal end 120, to allow air to enter the receiving cavity 510 during inhalation.

[0221] As shown in FIG. 4 to FIG. 10, a first air inlet 131 is provided on a first side 130 of the shell, to allow the external air to enter during inhalation. A second air inlet 141 is provided on a second side 140 of the shell. The first support 50 further has an extension portion 52 that extends toward an end 530 and terminates at the end 530. In an embodiment, the extension portion 52 is located between the receiving cavity 510 and the end 530. In an embodiment, the extension portion 52 is hollow, and has at least one empty cavity therein. During assembly, the extension portion 52 has at least one or more connecting portions 525. During mounting, the first support 50 is mechanically connected to the main circuit board 20 by extending through the connecting portion 525 with fasteners such as screws.

[0222] The extension portion 52 of the first support 50 is further provided with:

a first air inlet channel R11, extending from the first air inlet 131 to the first air inlet communication port 515; and

a second air inlet channel R12, extending from the second air inlet 141 to the second air inlet communication port 516.

[0223] As shown in FIG. 10, when the aerosol generating article 200 is received in the receiving cavity 510 of the first support 50, the first air inlet 251 of the second end 220 of the aerosol generating article 200 is aligned with and in airflow communication with the first air inlet communication port 515. Moreover, the second air inlet 252 of the second end 220 of the aerosol generating article 200 is aligned with and in airflow communication with the second air inlet communication port 515.

[0224] As shown in FIG. 10, when the aerosol generating article 200 is received in the receiving cavity 510 of the first support 50, the first air outlet 261 of the first end 210 of the aerosol generating article 200 is aligned with and in airflow communication with the first air outlet communication port 513. Moreover, the second air outlet 262 of the first end 210 of the aerosol generating article 200 is aligned with and in airflow communication with the second air outlet communication port 514.

[0225] Further, during use, the first airflow channel extending from the first air inlet 131 to the inhalation port 113 is jointly defined and formed by the first air inlet channel R11 of the first support 50, the first air channel R21 of the aerosol generating article 200, and the air outlet channel 112 in the suction nozzle member 111. In addition, the first airflow channel passes through the aerosol generating article 200, to deliver the aerosol generated by the first aerosol generating substrate 242 to the inhalation port 113. In addition, during use, the second airflow channel extending from the second air

inlet 141 to the inhalation port 113 is jointly defined and formed by the second air inlet channel R12 of the first support 50, the second air channel R22 of the aerosol generating article 200, and the air outlet channel 112 in the suction nozzle member 111. In addition, the second airflow channel passes through the aerosol generating article 200, to deliver the aerosol generated by the second aerosol generating substrate 282 to the inhalation port 113.

[0226] In an embodiment, the first airflow channel is isolated from the second air channel R22 of the aerosol generating article 200. In addition, the second airflow channel is isolated from the first air channel R21 of the aerosol generating article 200.

[0227] On a joint and communication structure between parts of the first airflow channel and/or the second airflow channel, a first joint 521 extending toward the first side 130 in the width direction and a second joint 522 extending toward the second side 140 in the width direction are arranged on the extension portion 52 of the first support 50. The first joint 521 is configured to cause the first air inlet channel R11 to be in airflow communication with the first air inlet 131. The second joint 522 is configured to cause the second air inlet channel R12 to be in airflow communication with the second air inlet 141. A flexible first seal sleeve 57 is arranged between the first joint 521 and the second housing 180. The first seal sleeve 57 at least partially surrounds the first joint 521, and elastically abuts between the first joint 521 and the second housing 180, thereby providing a hermetical sealing between the first joint and the second housing. A flexible second seal sleeve 58 is arranged between the second joint 522 and the second housing 180. The second seal sleeve 58 at least partially surrounds the second joint 522, and elastically abuts between the second joint 522 and the second housing 180, thereby providing a hermetical sealing between the second joint and the second housing.

[0228] As shown in FIG. 4 to FIG. 10, the heating device 100 further includes:

the first elastic element 53/the first elastic element 54, substantially constructed in an annular shape, where When the aerosol generating article 200 is received in the receiving cavity 510, the first elastic element 53 at least partially elastically abut between the first end 210 of the aerosol generating article 200 and the first support 50, and surrounds the first air outlet 261 of the aerosol generating article 200 and/or the first air outlet communication port 513 of the first support 50, so as to provide a hermetical sealing between the first air outlet 261 and the first air outlet communication port 513. When the aerosol generating article 200 is received in the receiving cavity 510, the first elastic element 54 at least partially elastically abut between the second end 220 of the aerosol generating article 200 and the first support 50, and surrounds the second air outlet 262 of the aerosol generating article 200 and/or the second air outlet communication port 514 of the first support 50, so as to provide a hermetical sealing between the first air outlet 261 and the first air outlet communication port 513.

[0229] Similarly, the heating device 100 further includes:

a second elastic element 55/a second elastic element 56, substantially constructed in an annular shape, and arranged close to or at a front end 520 of the first support 50, where when the aerosol generating article 200 is received in the receiving cavity 510, the second elastic element 55 at least partially elastically abut between the second end 220 of the aerosol generating article 200 and the first support 50, and surrounds the first air inlet 251 of the aerosol generating article 200 and/or the first air inlet communication port 515 of the first support 50, so as to provide a hermetical sealing between the first air inlet communication port 515 and the first air inlet 251. When the aerosol generating article 200 is received in the receiving cavity 510, the second elastic element 56 at least partially elastically abut between the second end 220 of the aerosol generating article 200 and the first support 50, and surrounds the second air inlet 252 of the aerosol generating article 200 and/or the second air inlet communication port 516 of the first support 50, so as to provide a hermetical sealing between the second air inlet communication port 516 and the second air inlet 252.

[0230] The first elastic element 53/the first elastic element 54 and the second elastic element 55/the second elastic element 56 are made of an elastic material such as a flexible silicon or a thermoplastic elastomer, so as to cause the elastic elements to be elastic.

[0231] In an embodiment, at least a part of the first elastic element 53 extends into the receiving cavity 510 from the first air outlet communication port 513, and at least a part of the first elastic element 54 extends into the receiving cavity 510 from the second air outlet communication port 514. At least a part of the second elastic element 55 extends into the receiving cavity 510 from the first air inlet communication port 515, and at least a part of the second elastic element 56 extends into the receiving cavity 510 from the second air inlet communication port 516. When the aerosol generating article 200 is received in the receiving cavity 510, the aerosol generating article 200 is elastically clamped or held between the first elastic element 53/54 and the second elastic element 55/56.

[0232] In some embodiments, the extension portion 52 is open at an end 530, and defines an opening. Correspondingly, the heating device 100 is further provided with:

a closing element 70, located between the battery core 10 and the first support 50. The closing element 70 is coupled to the end 530 of the first support 50, and closes an opening of the extension portion 52 at the end 530. The closing element 70 is connected to the extension portion 52 through a mechanical connection mechanism such as a snap or a screw.

[0233] As shown in FIG. 6, FIG. 7, FIG. 8, and FIG. 10, an accommodating wall 529 extending toward the rear side 160 is arranged on the extension portion 52 of the

first support 50. The accommodating wall 529 is configured to accommodate and hold the airflow sensor 80. After being mounted, the airflow sensor 80 is located between the receiving cavity 510 and the battery core 10. The airflow sensor 80 is located between the extension portion 52 of the first support 50 and the main circuit board 20. The airflow sensor 80 is soldered to the first portion 21 of the main circuit board 20 through a conductive pin, thereby forming a conductive connection. In addition, a flexible wrapping element 81 is arranged between the airflow sensor 80 and the accommodating wall 529. The wrapping element 81 elastically abuts between the airflow sensor 80 and the accommodating wall 529, to stably hold the airflow sensor 80 in the accommodating wall 529.

[0234] In addition, generally, the airflow sensor 80 includes:

a first sensing surface, facing the front side 150/the extension portion 52, where the first sensing surface is configured to sense a pressure of the first airflow channel and/or the second airflow channel; and a second sensing surface, facing the rear side 160/the main circuit board 20, where the second sensing surface is in communication with the external atmosphere to sense a pressure of the external atmosphere. The airflow sensor 80 is configured to determine an inhalation action of a user through a difference between a pressure sensed by the first sensing surface and a pressure sensed by the second sensing surface. During use, the wrapping element 81 is further configured to wrap the airflow sensor 80 in the peripheral direction, so as to hermetically isolate the first sensing surface and the second sensing surface of the airflow sensor 80.

[0235] As shown in FIG. 4 to FIG. 10, a partition wall 53 that extends toward the end 530 and terminates at the end 530 is further arranged in the extension portion 52, so as to isolate the first air inlet channel R11 from the second air inlet channel R12.

[0236] As shown in FIG. 4 to FIG. 10, a first sensing hole 531 and a second sensing hole 532 that are located at two sides of the partition wall 53 in the width direction are further provided in the extension portion 52. The airflow sensor 80/the first sensing surface accommodated and held in the accommodating wall 529 is in communication with the first air inlet channel R11/the first airflow channel through the first sensing hole 531, so as to sense a change of airflow flowing through the first air inlet channel R11/the first airflow channel when the user inhales. The airflow sensor 80/the first sensing surface is in communication with the second air inlet channel R12/the second airflow channel through the second sensing hole 532, so as to sense a change of airflow flowing through the second air inlet channel R12/the second airflow channel when a user inhales.

[0237] As shown in FIG. 4 to FIG. 10, a first shielding wall 527 and a second shielding wall 528 that are arranged to extend along a longitudinal direction are further arranged in the extension portion 52. The first shielding wall 527 and the second shielding wall 528 are respectively located at two sides of the partition wall 53 along a width direction of the first support 50 and/or the extension portion 52. The first shielding wall 527 and/or the second shielding wall 528 is arranged parallel to the partition wall 53. Moreover, the first shielding wall 527 is arranged to extend from the first air inlet communication port 515 to the end 530, and the second shielding wall 528 is arranged to extend from the second air inlet communication port 516 to the end 530. An extension length of the first shielding wall 527 and/or the second shielding wall 528 is less than a length of the partition wall 53. The first shielding wall 527 and/or the second shielding wall 528 does not extend to the end 530, and has a gap with the end 530.

[0238] In an embodiment, the first sensing hole 531 is located between the first shielding wall 527 and the partition wall 53. In addition, the first shielding wall 527 isolates the first sensing hole 531 from the first air inlet channel R11, to prevent a residue or an aerosol condensate in the first air inlet channel R11 from flowing to the first sensing hole 531 to cause a blockage. In addition, the first sensing hole 531 maintains airflow communication with the first air inlet channel R11 through the gap between the first shielding wall 527 and the end 530, to sense a change of airflow of the first airflow channel. Similarly, the second sensing hole 532 is located between the second shielding wall 528 and the partition wall 53. In addition, the second shielding wall 528 isolates the second sensing hole 532 from the second air inlet channel R12, to prevent a residue or an aerosol condensate in the second air inlet channel R12 from flowing to the second sensing hole 532 to cause a blockage. In addition, the second sensing hole 532 maintains airflow communication with the second air inlet channel R12 through the gap between the second shielding wall 528 and the end 530, to sense a change of airflow of the first airflow channel.

[0239] In this embodiment, the airflow sensor 60 is in communication with both the first airflow channel and the second airflow channel. When an inhalation airflow exists in at least one of the first airflow channel and the second airflow channel, the airflow sensor 60 can be triggered.

[0240] As shown in FIG. 4 to FIG. 10, the first air inlet channel R11 and the second air inlet channel R12 are substantially completely symmetrical. Specifically, as shown in FIG. 10, the first air inlet channel R11 and the second air inlet channel R12 are substantially in mirror symmetry to each other in a width direction. The first air inlet channel R11 and/or the second air inlet channel R12 are arranged in a circuitous and meandering manner.

[0241] Specifically, as shown in FIG. 4 to FIG. 10, a first airflow guide wall 523 and a second airflow guide wall 524 that are arranged to extend in a longitudinal direction are further arranged in the extension portion 52. The first airflow guide wall 523 is arranged to extend from the first air inlet communication port 515 to the end 530, and does not extend to the end 530 or terminates at the end 530, so

that a gap is still defined between the first airflow guide wall 523 and the end 530. The second airflow guide wall 524 is arranged to extend from the second air inlet communication port 516 to an end 530, and does not extend to the end 530 or terminates at the end 530, so that a gap is still defined between the second airflow guide wall 524 and the end 530.

[0242] During use, as shown by the first air inlet channel R11 in FIG. 10, air entering the extension portion 52 from the first joint 521 is first guided by the first airflow guide wall 523 to flow toward the end 530, and then passes between the first airflow guide wall 523 and the first shielding wall 527 to the first air inlet communication port 515 in a direction from the end 530 toward the front end 520, to deliver the air to the first air inlet communication port 515. Alternatively, the first air inlet channel R11 includes a first path portion 5251 extending from the first joint 521 toward the end 530 and a second path portion 5252 extending from the end 530 toward the front end 520 to the first air inlet communication port 515. Further, the first air inlet channel R11 extends in a circuitous manner. In addition, in the first air inlet channel R11, a path length of the first path portion 5251 is less than a path length of the second path portion 5252.

[0243] Similarly, during use, as shown by the second air inlet channel R12 in FIG. 10, air entering the extension portion 52 from the second joint 522 is first guided by the second airflow guide wall 524 to flow toward the end 530, and then passes between the second airflow guide wall 524 and the second shielding wall 528 to the second air inlet communication port 516 in a direction from the end 530 toward the front end 520, to deliver the air to the second air inlet communication port 516. Alternatively, the second air inlet channel R12 includes a third path portion 5261 extending from the second joint 522 toward the end 530 and a fourth path portion 5262 extending from the end 530 toward the front end 520 to the second air inlet communication port 516. Further, the second air inlet channel R12 extends in a circuitous manner. In addition, in the second air inlet channel R12, a path length of the third path portion 5261 is less than a path length of the fourth path portion 5262.

[0244] As shown in FIG. 4 to FIG. 10, the heating device 100 further includes:

a second support 40, configured to accommodate and support the planar spiral coil 30. The second support 40 is arranged close to the rear side 160. Alternatively, the second support 40 is located between the planar spiral coil 30 and the second housing 180. Specifically, after assembly, the first support 50 and the second support 40 accommodate and hold the planar spiral coil 30 between the first support and the second support.

[0245] As shown in FIG. 4 to FIG. 10, an annular protruding edge 41 and an annular protruding edge 42 are arranged on a surface of the second support 40 that faces the front side 150 and/or the first support 50. At least one or more accommodating cavities 43 are defined between the annular protruding edge 41 and the annular protruding edge 42. After assembly, the plurality of planar spiral coils 30 are respectively accommodated and mounted in the plurality of accommodating cavities 43, so as to be respectively surrounded by the annular protruding edge 41. Several gaps are further provided on the annular protruding edge 41, so that a conductive lead of the planar spiral coil 30 passes out of the annular protruding edge 41 through the gaps, and then extends through the second support 40 and is connected to the main circuit board 20.

[0246] It should be noted that, preferred embodiments of this application are provided in the specification and the accompanying drawings of this application, but are not limited to the embodiments described in the specification. Further, a person of ordinary skill in the art may make improvements or modifications according to the above descriptions, and all of the improvements and modifications shall fall within the protection scope of the appended claims of this application.

Claims

1. An aerosol generating system, comprising:

a replaceable aerosol generating article, comprising at least one aerosol generating substrate, wherein the at least one aerosol generating substrate is configured to generate an aerosol upon being heated; and

a reusable heating device, configured to removably receive the aerosol generating article, and heat the at least one aerosol generating substrate of the aerosol generating article, wherein the heating device comprises:

a first support, at least partially defining a receiving cavity, to receive the aerosol generating article; and

an airflow sensor, configured to detect a change of an airflow flowing through the aerosol generating system when a user inhales; and the airflow sensor is accommodated or held by the first support, and avoids the receiving cavity in a longitudinal direction of the heating device.

2. The aerosol generating system according to claim 1, wherein the heating device further comprises:

at least one heater, wherein the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and

a controller, configured to control, based on a sensing result of the airflow sensor, the at least one heater to separately heat one of the at least

one aerosol generating substrate each time, to generate an aerosol satisfying one inhalation.

3. The aerosol generating system according to claim 2, wherein the heating device further comprises a proximal end and a distal end facing away from each other in a length direction;

a battery core, located between the receiving cavity and the distal end, to supply power to the at least one heater; and
a main circuit board, comprising a first portion and a second portion that are arranged in the length direction, wherein the controller is arranged in the first portion, and the airflow sensor is electrically connected to the first portion; and the battery core is electrically connected to the second portion.

4. The aerosol generating system according to any of claims 1 to 3, further comprising: an inhalation port;

a first airflow channel, defining a first airflow path for delivering the aerosol to the inhalation port; and
a second airflow channel, defining a second airflow path for delivering the aerosol to the inhalation port, wherein
the airflow sensor is in airflow communication with both the first airflow channel and the second airflow channel, so as to sense a change of airflow flowing through the first airflow channel and/or the second airflow channel.

5. The aerosol generating system according to claim 4, wherein a partition wall is further arranged in the first support, to partition the first airflow channel and the second airflow channel; a first sensing hole and a second sensing hole are respectively provided on two sides of the partition wall; and
the airflow sensor is in airflow communication with the first airflow channel through the first sensing hole, and is in airflow communication with the second airflow channel through the second sensing hole.

6. The aerosol generating system according to claim 5, wherein a first shielding wall is further arranged in the first support, to shield an aerosol condensate that is in the first airflow channel from flowing to the first sensing hole; and/or
a second shielding wall is further arranged in the first support, to shield an aerosol condensate that is in the second airflow channel from flowing to the second sensing hole.

7. The aerosol generating system according to claim 4, wherein the heating device further comprises a first air inlet and a second air inlet that are arranged at intervals;
the first airflow channel comprises a first air inlet channel extending from the first air inlet to the receiving cavity; the second airflow channel comprises a second air inlet channel extending from the second air inlet to the receiving cavity; and the airflow sensor is in airflow communication with both the first air inlet channel and the second air inlet channel.

8. The aerosol generating system according to claim 7, wherein the first air inlet channel and the second air inlet channel are formed or defined in the first support, and are isolated from each other in the first support.

9. The aerosol generating system according to claim 7, wherein the first air inlet channel and the second air inlet channel are substantially in mirror symmetry.

10. The aerosol generating system according to claim 7, wherein the first air inlet channel and the second air inlet channel are arranged in the first support in a circuitous and meandering extending manner.

11. The aerosol generating system according to claim 1 or 2, wherein the heating device further comprises a proximal end and a distal end facing away from each other in a longitudinal direction; and

a battery core, located between the receiving cavity and the distal end, to supply power, wherein
the first support comprises an extension portion located between the receiving cavity and the battery core; and the airflow sensor is accommodated or held in the extension portion of the first support.

12. The aerosol generating system according to any of claims 1 to 3, wherein the aerosol generating article is substantially constructed in a shape of a sheet; and the aerosol generating article is asymmetric in a length direction and/or a width direction.

13. The aerosol generating system according to claim 12, wherein the heating device further comprises:

a receiving cavity, configured to removably receive the aerosol generating article, wherein
the receiving cavity is arranged to enable only the aerosol generating article to be received in the receiving cavity based on a first predetermined direction, and prevent the aerosol generating article to be received in the receiving cavity based on a second predetermined direction; and the second predetermined direction is defined by reversing the aerosol generating article in the first predetermined direction by 180

degrees in the length direction and/or the width direction.

14. The aerosol generating system according to claim 1 or 2, wherein the aerosol generating article further comprises:

an external body, defining a closed volume, wherein the aerosol generating substrate is accommodated and held in the external body; and at least one base, located in the external body, and being capable of generating heat by being penetrated by a changing magnetic field, so as to heat the at least one aerosol generating substrate to generate the aerosol.

15. The aerosol generating system according to claim 14, wherein the heating device comprises:
at least one induction heater, wherein the at least one induction heater is configured to generate a changing magnetic field that penetrates the at least one base when the aerosol generating article is received in the receiving cavity.

16. The aerosol generating system according to claim 14, wherein a heat conductivity coefficient of at least a part of the external body is less than 20 W/m k, to prevent heat of the base from being transferred to the heating device as much as possible.

17. The aerosol generating system according to any of claims 1 to 3, wherein the heating device further comprises:

a front side and a rear side, facing away from each other in a thickness direction;
a receiving cavity, configured to removably receive the aerosol generating article; and
at least one heater, arranged between the receiving cavity and the rear side, wherein the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity.

18. The aerosol generating system according to claim 17, wherein the at least one heater is substantially constructed to be planar; and/or
the at least one heater comprises a planar spiral coil or is a planar spiral coil.

19. The aerosol generating system according to claim 17, wherein the at least one heater is arranged substantially parallel to the receiving cavity.

20. The aerosol generating system according to claim 17, wherein the heating device further comprises:
a second support, at least partially arranged between the at least one heater and the rear side, and at least partially accommodating or supporting the at least one heater.

21. An aerosol generating system, comprising:

a replaceable aerosol generating article, comprising at least one aerosol generating substrate, wherein the at least one aerosol generating substrate is configured to generate an aerosol upon being heated;
a reusable heating device, configured to removably receive the aerosol generating article, and heat the at least one aerosol generating substrate of the aerosol generating article;
an inhalation port;
a first airflow channel, defining a first airflow path for delivering the aerosol to the inhalation port;
a second airflow channel, defining a second airflow path for delivering the aerosol to the inhalation port; and
an airflow sensor, arranged to be in airflow communication with both the first airflow channel and the second airflow channel, so as to sense a change of airflow flowing through the first airflow channel and/or the second airflow channel.

22. A heating device, configured to heat an aerosol generating article to generate an aerosol, wherein the aerosol generating article comprises at least one aerosol generating substrate, configured to generate an aerosol upon being heated; and the heating device comprises a front side and a rear side facing away from each other in a thickness direction;

a first support, at least partially defining a receiving cavity, to receive the aerosol generating article; and
at least one heater, arranged between the receiving cavity and the rear side, wherein the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and
an airflow sensor, configured to detect a change of an airflow flowing through the heating device when a user inhales, wherein the airflow sensor is accommodated or held by the first support, and avoids the receiving cavity in a longitudinal direction of the heating device.

23. A heating device, configured to heat an aerosol generating article to generate an aerosol, wherein the aerosol generating article comprises at least one aerosol generating substrate, configured to generate an aerosol upon being heated; and the heating device comprises:

a receiving cavity, configured to receive the aerosol generating article;
at least one heater, wherein the at least one heater is configured to heat the at least one aerosol generating substrate of the aerosol generating article when the aerosol generating article is received in the receiving cavity; and
a first air inlet and a second air inlet;
a first air inlet channel, arranged to extend from the first air inlet to the receiving cavity, to provide a first air inlet path through which air enters the receiving cavity when a user inhales;
a second air inlet channel, arranged to extend from the second air inlet to the receiving cavity, to provide a second air inlet path through which air enters the receiving cavity when a user inhales; and
an airflow sensor, arranged to be in airflow communication with both the first air inlet channel and the second air inlet channel, so as to sense a change of airflow flowing through the first air inlet channel and/or the second air inlet channel.

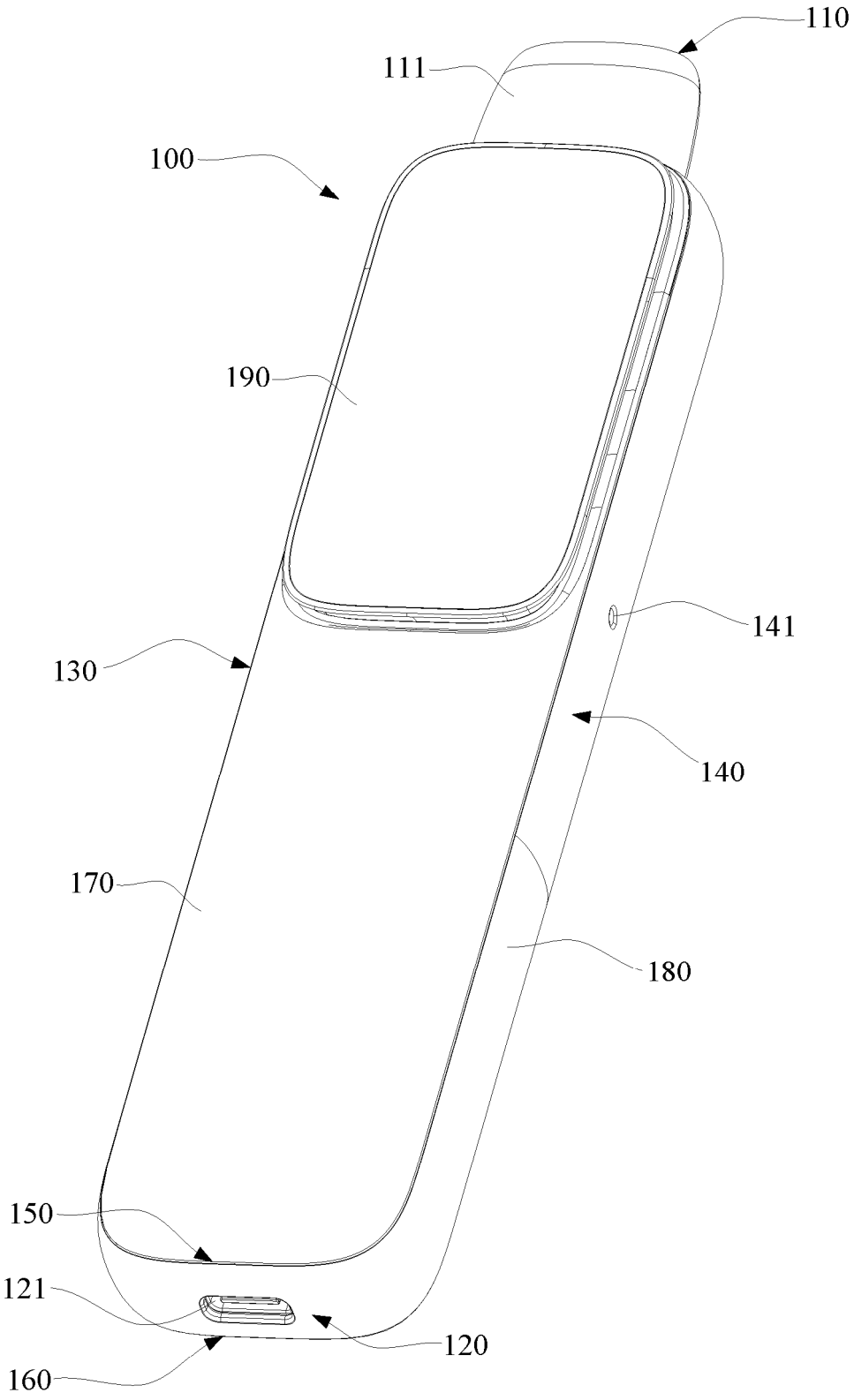


FIG. 1

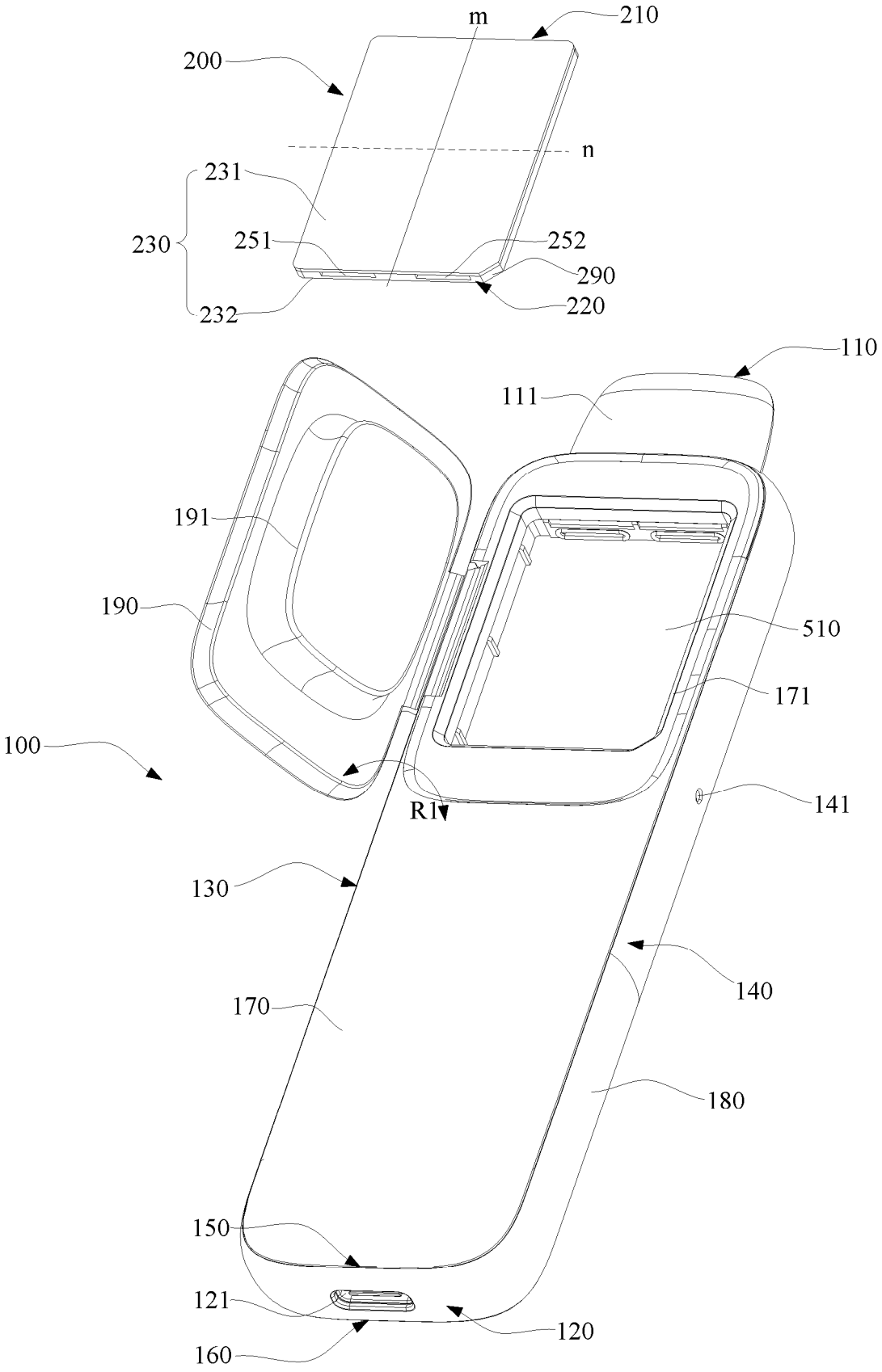

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FIG. 2

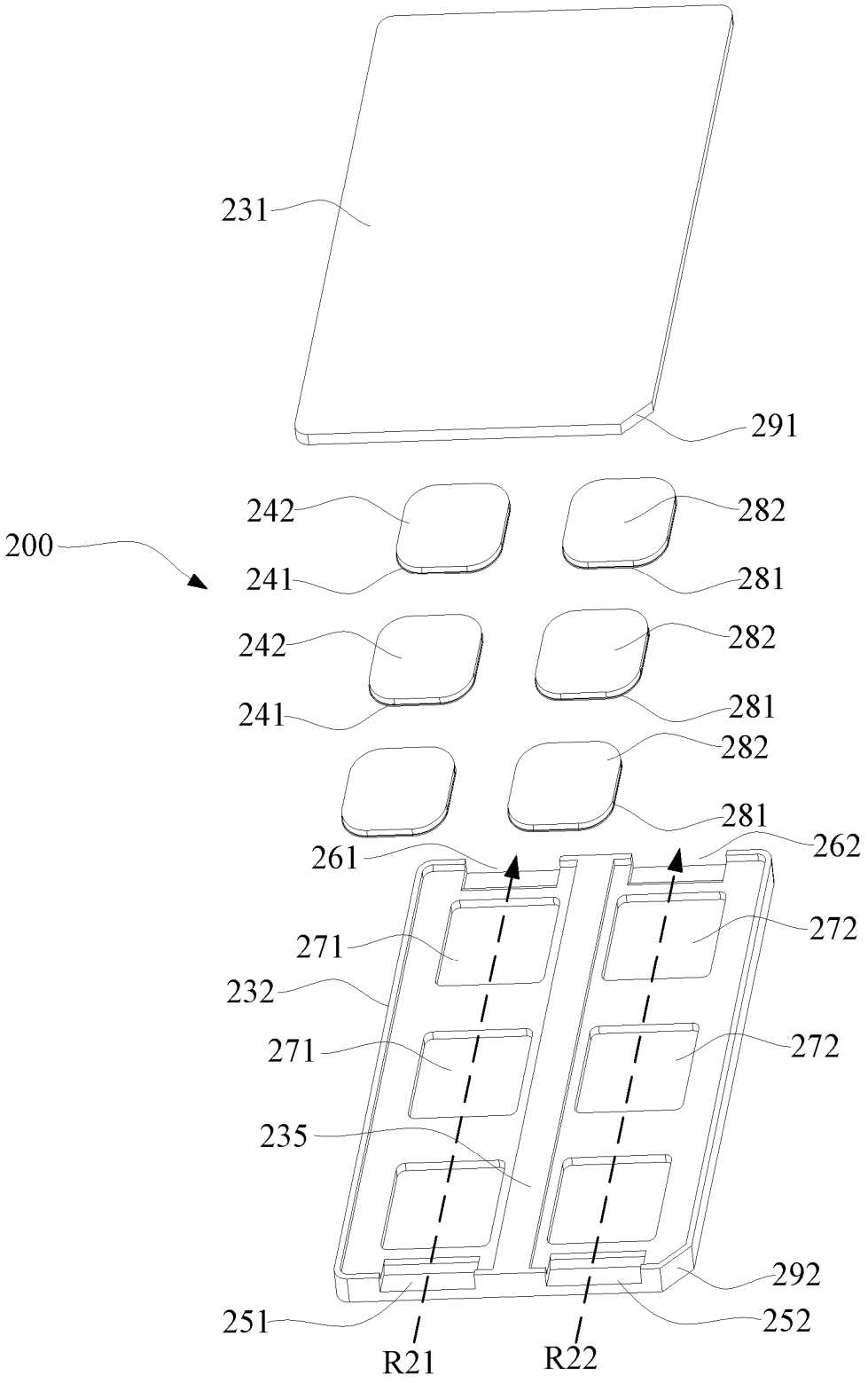

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FIG. 3

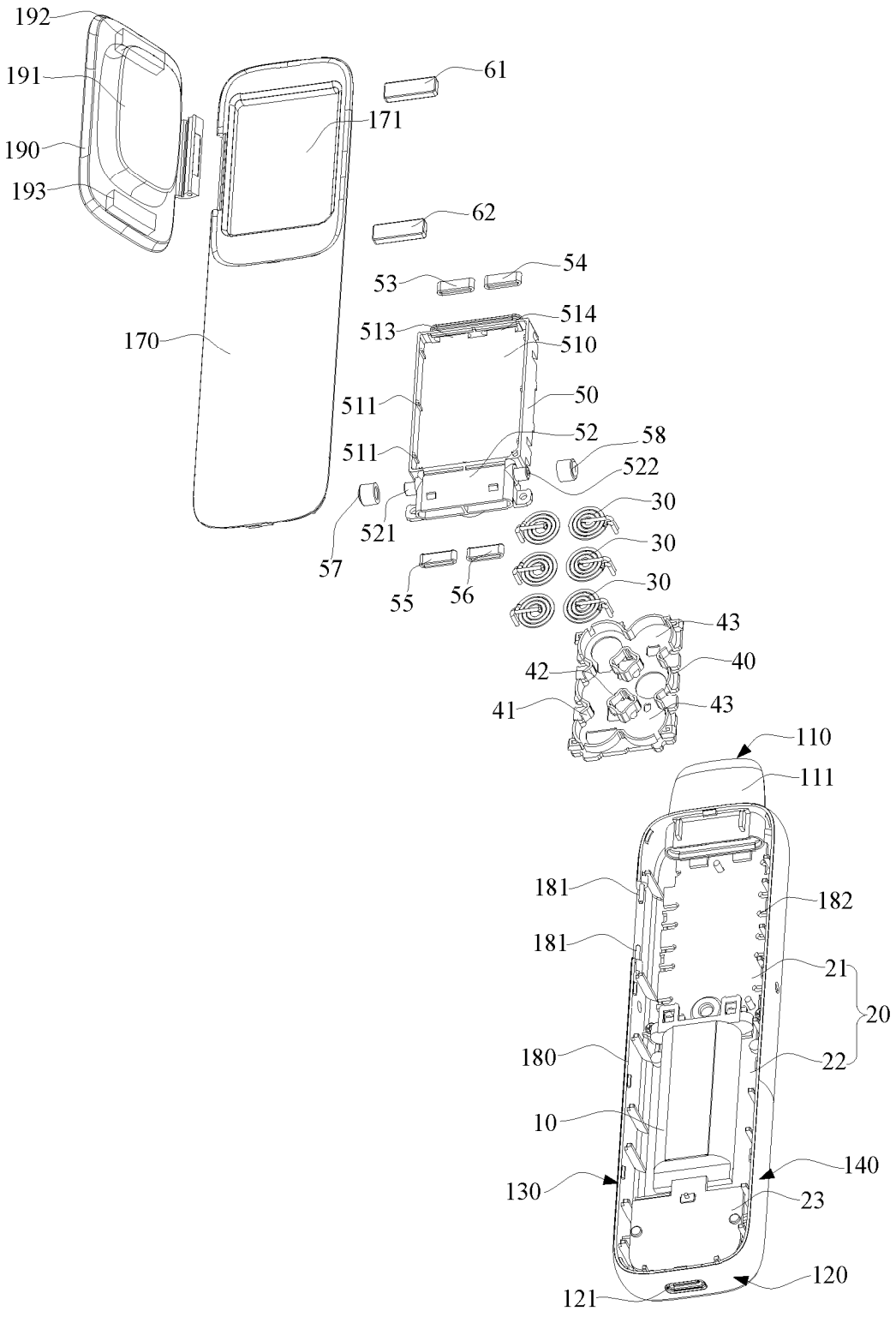

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FIG. 4

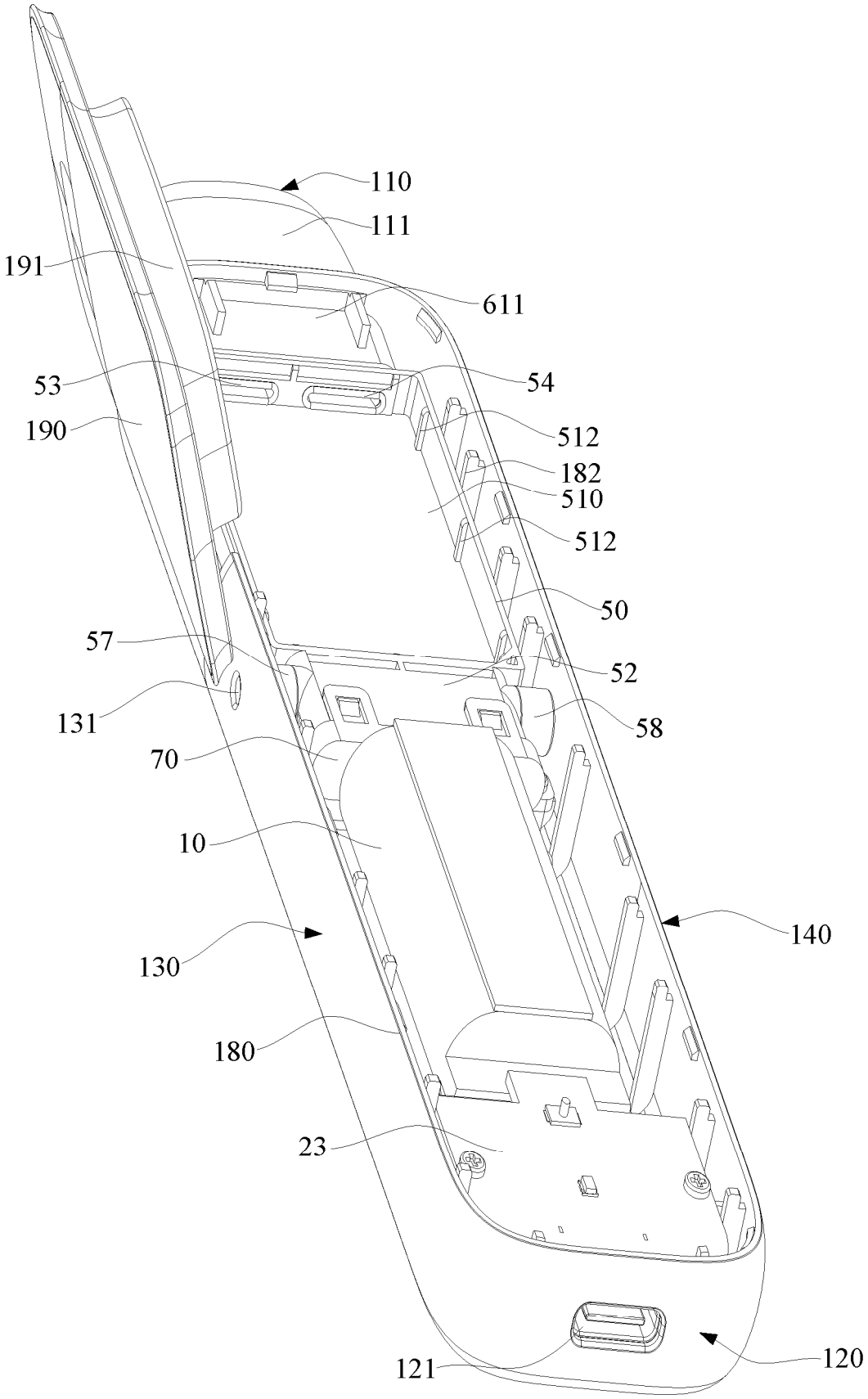

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FIG. 5

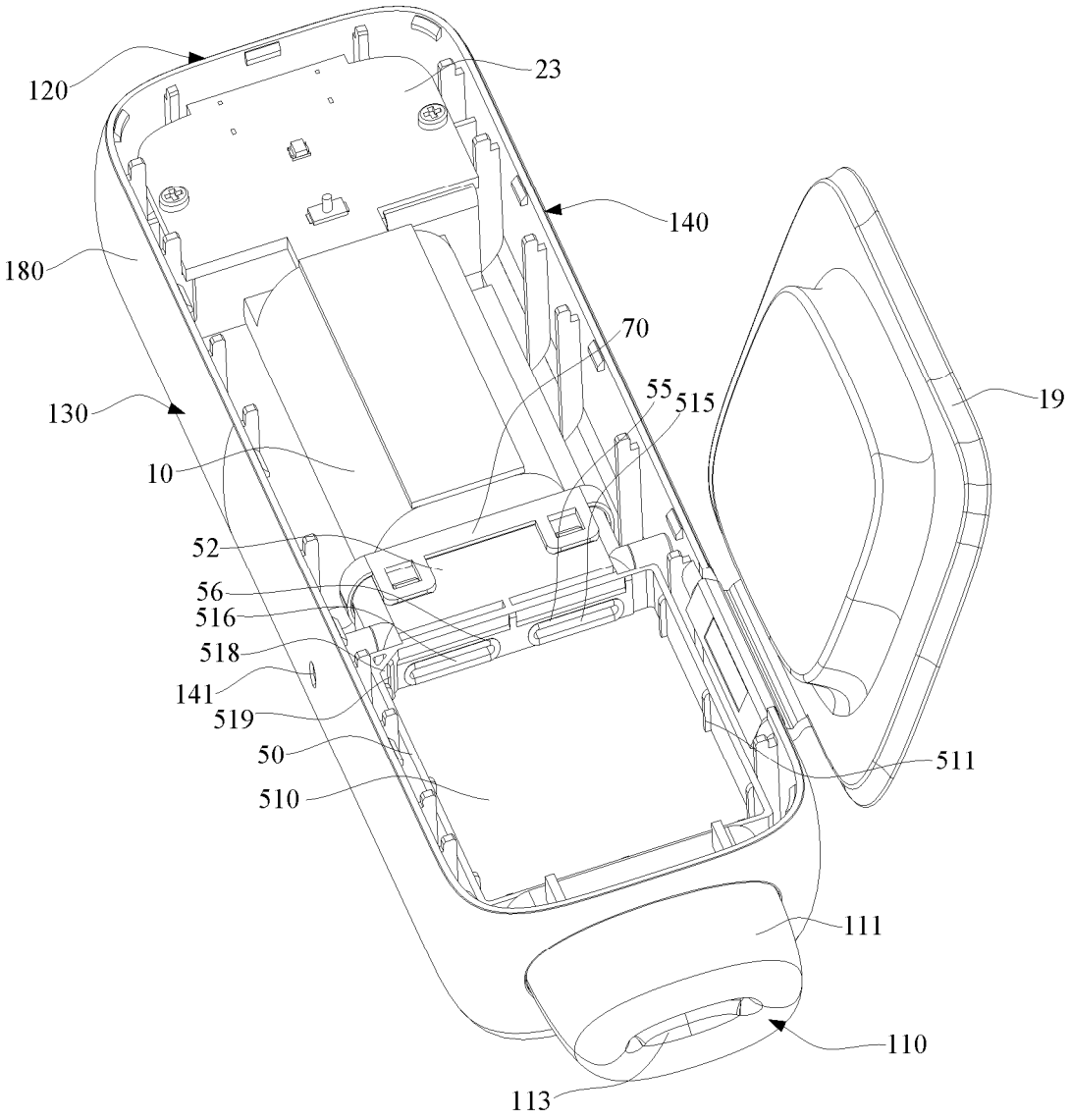

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FIG. 6

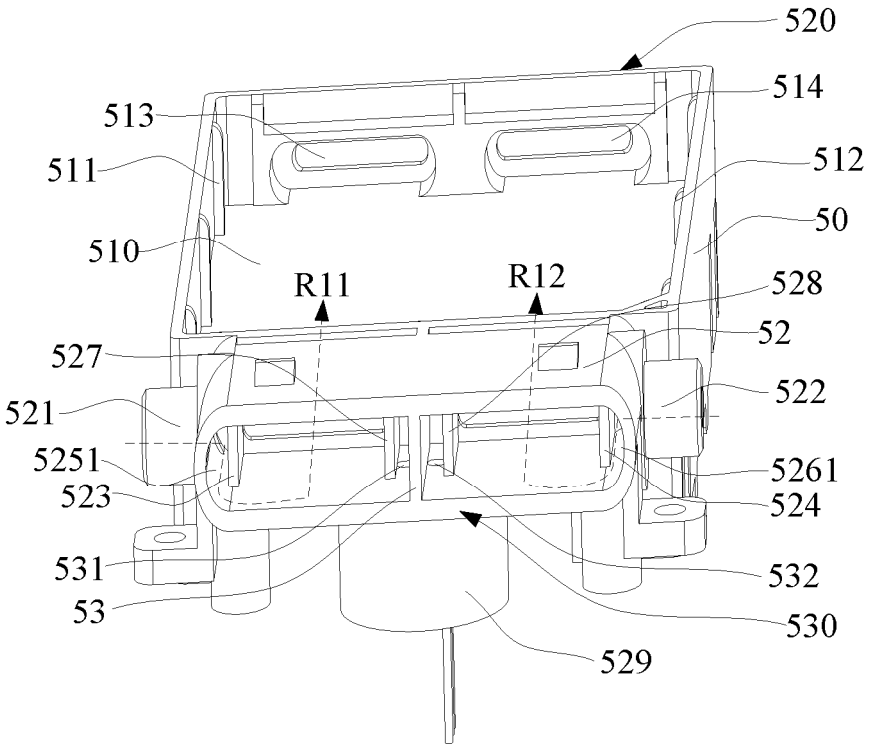

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FIG. 7

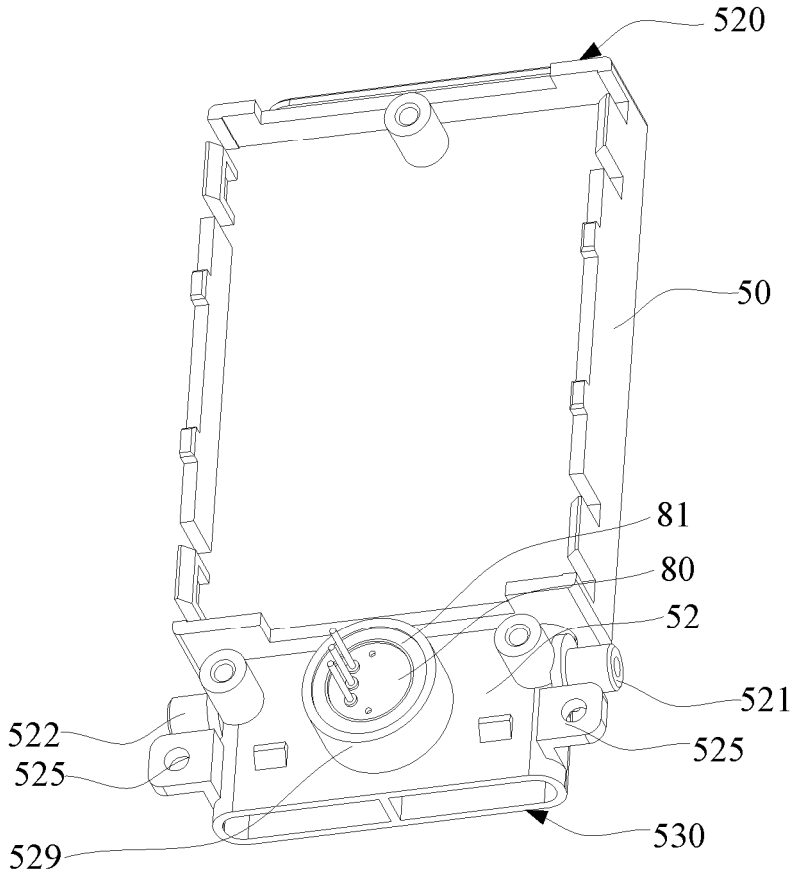

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FIG. 8

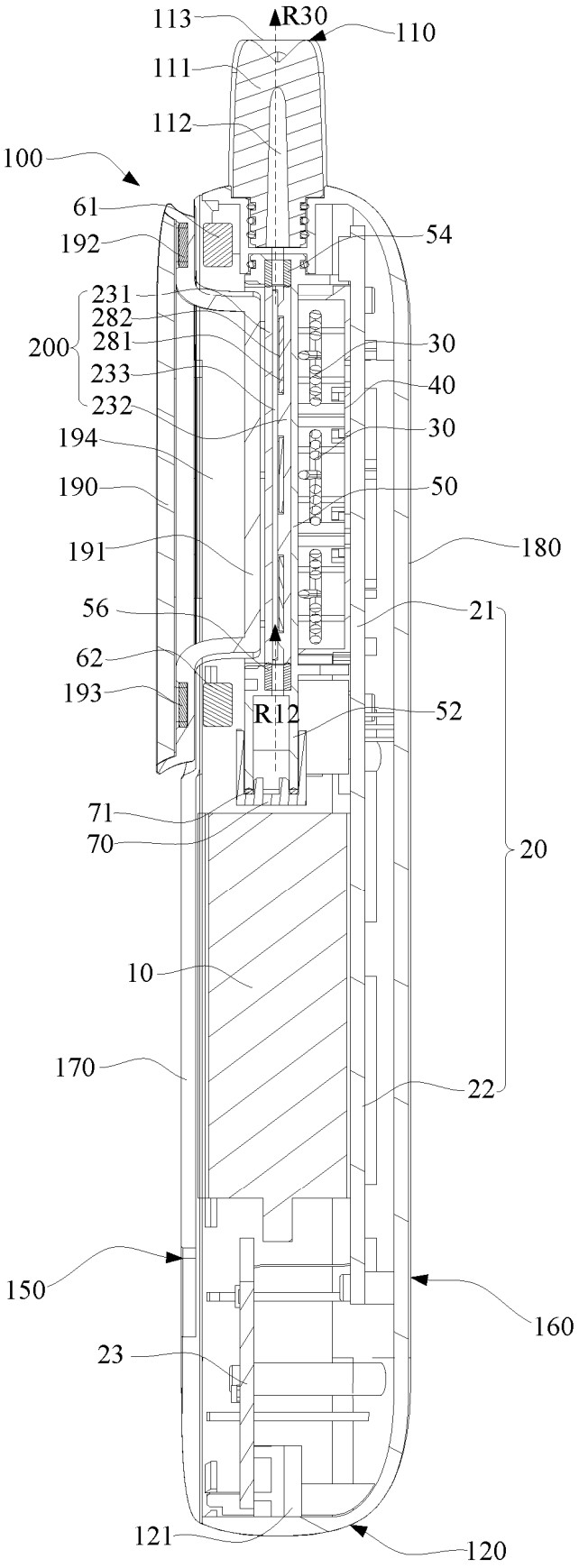

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FIG. 9

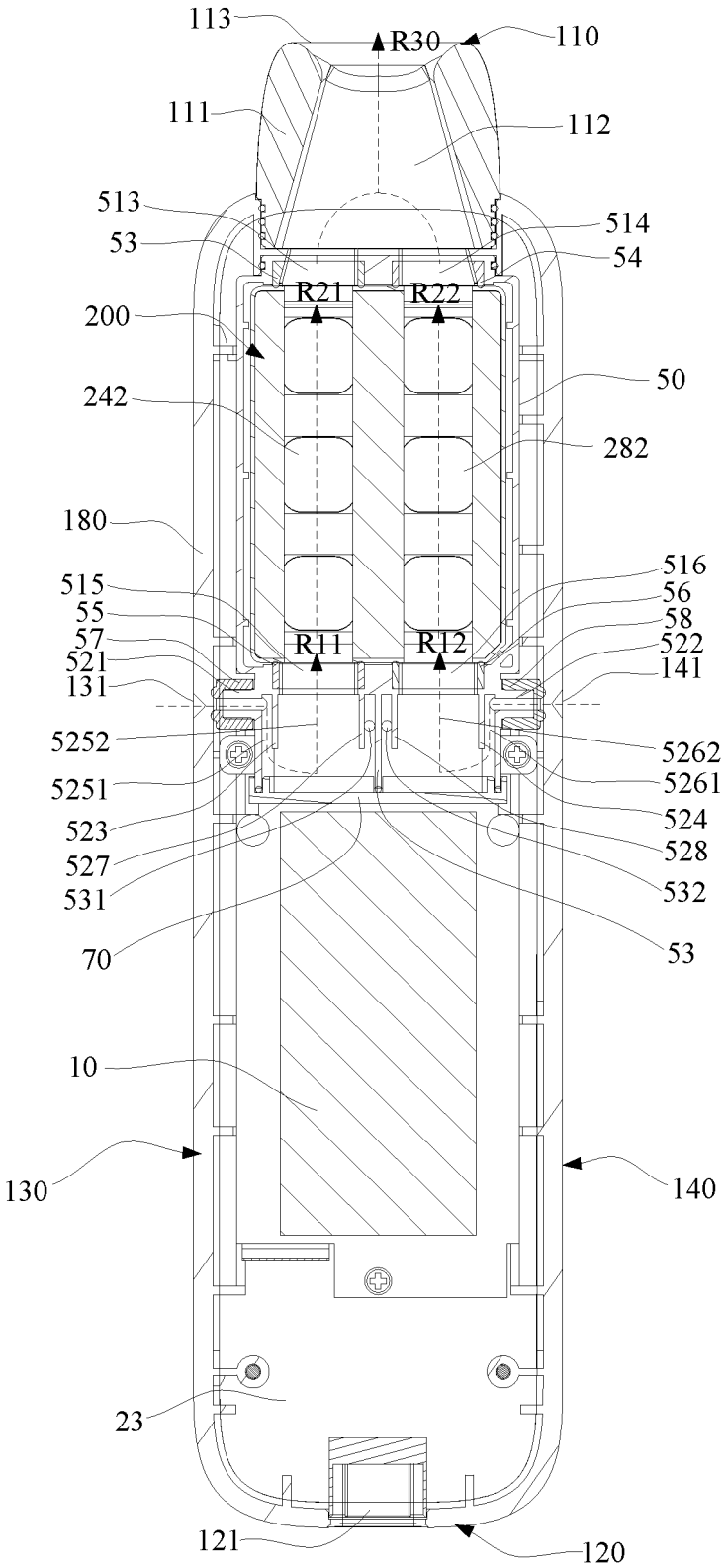

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FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/139633

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/465(2020.01)i; A24F 40/51(2020.01)i; A24F 40/48(2020.01)i; A24F 40/57(2020.01)i; A24F 40/40(2020.01)i; A24D 1/20(2020.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC:A24F; A24D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT, ENTXTC, CNKI, web of science: 合元科技, 吴涛, 胡瑞龙, 林福文, 徐中立, 李永海, 电子烟, 气溶胶, 可更换, 可替换, 拆卸, 加热, 电热, 凝胶, 支架, 框, 气流传感, 咪头, electronic cigarette, atomiz+, aerosol, chang+, detach+, heat+, replaceable, bracket, airflow, sensor, imidazole

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 221962889 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 08 November 2024 (2024-11-08) description, paragraphs [0370]-[0508], and figures 1-10	1-23
PX	CN 221962888 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 08 November 2024 (2024-11-08) description, paragraphs [0307]-[0445], and figures 1-10	1-23
PX	CN 221769358 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 27 September 2024 (2024-09-27) description, paragraphs [0305]-[0442], and figures 1-10	1-23
PX	CN 221769359 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 27 September 2024 (2024-09-27) description, paragraphs [0374]-[0511], and figures 1-10	1-23
PX	CN 221769342 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 27 September 2024 (2024-09-27) description, paragraphs [0051]-[0162], and figures 1-10	1-23

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"D" document cited by the applicant in the international application
"E" earlier application or patent but published on or after the international filing date
"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)
"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
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
04 March 2025	**10 March 2025**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2024/139633

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	CN 222466094 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 14 February 2025 (2025-02-14) description, paragraphs [0047]-[0166], and figures 1-12	1-23
Y	WO 2023037215 A1 (PHILIP MORRIS PRODUCTS S.A.) 16 March 2023 (2023-03-16) description, pages 17-19, and figures 1-5	1-23
Y	CN 217446684 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 20 September 2022 (2022-09-20) claims 1-10, description, paragraphs [0079]-[0117], and figures 5-11	1-23
A	CN 107427086 A (BRITISH AMERICAN TOBACCO CO.) 01 December 2017 (2017-12-01) entire document	1-23
A	CN 114727658 A (JT INTERNATIONAL S.A.) 08 July 2022 (2022-07-08) entire document	1-23
A	CN 219613048 U (SHENZHEN FIRST UNION TECHNOLOGY CO., LTD.) 01 September 2023 (2023-09-01) entire document	1-23
A	US 5649554 A (PHILIP MORRIS INC.) 22 July 1997 (1997-07-22) entire document	1-23

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Information on patent family members

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PCT/CN2024/139633

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 221962889 U	08 November 2024	None	
CN 221962888 U	08 November 2024	None	
CN 221769358 U	27 September 2024	None	
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CN 221769342 U	27 September 2024	None	
CN 222466094 U	14 February 2025	None	
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