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(54) ELECTRONIC CIGARETTE

(57) This application provides an electronic cigarette. The electronic cigarette includes an accommodation portion, a transmission portion, a heating portion, and an air-outlet channel. The accommodation portion includes a first accommodation region and a second accommodation region that are in communication with each other. The first accommodation region and the second accommodation region respectively extend in a first direction and a second direction. The first accommodation region is a heating region. The transmission portion includes a transmission end. The transmission end is capable of moving in the first accommodation region or the second accommodation region in an extension direction of the accommodation region where the transmission end is located; and the heating portion is configured to generate heat, to heat the first accommodation region. The air-outlet channel is in communication with an output end of the first accommodation region.

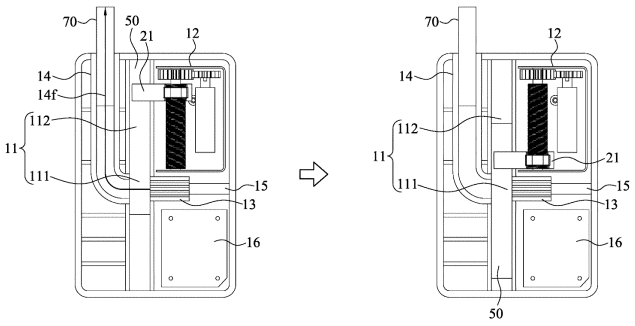

FIG. 10

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Description

TECHNICAL FIELD

[0001] This application generally relates to an electronic device, and specifically, to an electronic cigarette.

BACKGROUND

[0002] Conventional cigarettes must be lit by a fire source, and therefore, it is necessary to carry around a lighter. However, when in an environment without the fire source, the smoker cannot smoke, resulting in a poor experience. In addition, conventional cigarettes release nicotine by burning tobaccos, and the harmful substances generated by burning tobaccos are harmful to human body.

SUMMARY

[0003] In view of this, this application discloses an electronic cigarette to resolve the foregoing problems.

[0004] An embodiment of this application discloses an electronic cigarette. The electronic cigarette includes an accommodation portion, a transmission portion, a heating portion, and an air-outlet channel. The accommodation portion includes a first accommodation region and a second accommodation region that are in communication with each other. The first accommodation region and the second accommodation region respectively extend in a first direction and a second direction. The first accommodation region is a heating region. The transmission portion includes a transmission end. The transmission end is capable of moving in the first accommodation region or the second accommodation region in an extension direction of the accommodation region where the transmission end is located; and the heating portion is configured to generate heat, to heat the first accommodation region. The air-outlet channel is in communication with an output end of the first accommodation region.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The accompanying drawings are provided for further understanding of this application and constitute a part of the specification, and explain this application together with the following specific implementations, but do not constitute a limitation to this application. In the accompany drawings:

FIG. 1A and FIG. 1B are respectively an appearance diagram and a structural cross-sectional view of an electronic cigarette according to an embodiment of this application.

FIG. 2 is a schematic diagram of a transmission portion according to an embodiment of this application.

FIG. 3A and FIG. 3B are respectively a left view and a right view of a heating portion according to an embodiment of this application.

FIG. 4A and FIG. 4B are respectively a front view and a right view of a filtering mouthpiece sleeve according to an embodiment of this application.

FIG. 5A and FIG. 5B are respectively a right view and a left view of a support according to an embodiment of this application.

FIG. 6 is a schematic diagram of a support in transmission connection with a transmission end according to an embodiment of this application.

FIG. 7A, FIG. 7B, and FIG. 7C are respectively a right view, a front view, and a left view of a support according to another embodiment of this application.

FIG. 8 is a schematic diagram of a support in transmission connection with a transmission end according to another embodiment of this application.

FIG. 9A is a schematic diagram of a filtering mouthpiece disposed in an air-outlet channel according to an embodiment of this application.

FIG. 9B is a front view of a filtering mouthpiece disposed in an air-outlet channel according to an embodiment of this application.

FIG. 9C is a cross-sectional view of a filtering mouthpiece disposed in an air-outlet channel according to an embodiment of this application.

FIG. 10 is a schematic operation diagram of an electronic cigarette according to an embodiment of this application.

FIG. 11 is a structural cross-sectional view of an electronic cigarette according to another embodiment of this application.

FIG. 12A and FIG. 12B are respectively an appearance diagram and a structural cross-sectional view of an electronic cigarette according to another embodiment of this application.

FIG. 13 is a schematic diagram of a filtering mouthpiece disposed in an air-outlet channel according to another embodiment of this application.

FIG. 14 is a schematic operation diagram of a cartridge row according to an embodiment of this application.

FIG. 15 is a schematic operation diagram of an electronic cigarette according to another embodiment of this application.

DETAILED DESCRIPTION

[0006] A plurality of implementations or examples are provided below to implement different features of this disclosure. A specific example of an assembly and a configuration described below is used to simplify the disclosure. It is contemplated that such descriptions are merely examples, and are not intended to limit the disclosure. For example, in the following description, a first feature is formed on or above a second feature, and the description may include that, in some embodiments, the first feature and the second feature directly contact with each other; and the description may further include that, in

some embodiments, an additional assembly is formed between the first feature and the second feature so that the first feature and the second feature may not be in direct contact. In addition, the disclosure may repeat assembly symbols and/or labels in various embodiments. The repetition is for the purpose of brevity and clarity, but does not indicate a relationship between the various embodiments and/or configurations discussed.

[0007] Further, space-related terms such as "under", "below", lower", "above", and "over" are used herein for the ease of the description of a relationship between an assembly or a feature relative to another or a plurality of assemblies or features shown in the figure. The space-related terms are intended to encompass different orientations of the device in use or operation in addition to the orientations depicted in the figures. The device may be disposed at other orientations (for example, rotating by 90 degrees or being located at other orientations), and the space-related terms should interpret accordingly.

[0008] Value range and parameters that are used to define a relatively wide scope of this application are all approximate values, but related values in specific embodiment are presented herein as accurately as possible. However, any value numerical value inevitably includes a standard deviation caused by an individual test method. As described herein, the term "about" generally means that an actual value falls within plus or minus 10%, 5%, 1%, or 0.5% of a specific value or range. Alternatively, the term "about" means that the actual value falls within an acceptable standard error of an average value, depending on the consideration of a person of ordinary skill in the art of this application. It should be understood that, in addition to experimental examples, or unless otherwise clearly stated, all ranges, quantities, values, and percentages (for example, being used for describing material use amount, time length, temperature, operation condition, quantity ratio, and the like) used herein are all modified by "about". Therefore, unless otherwise stated, the values or parameters disclosed in this specification and the appended claims are all approximate values, and may be changed as required. At least these numerical parameters should be considered as indicated valid bits and the value obtained by applying the general rounding method. As described herein, the value range is expressed to move from one end to the other end or locate between the two ends; unless otherwise stated, the value range described herein include endpoints.

[0009] FIG. 1A and FIG. 1B are respectively an appearance diagram and a structural cross-sectional view of an electronic cigarette 1 according to an embodiment of this application. The electronic cigarette 1 includes a housing 10. An accommodation portion 11 is disposed in the housing 10. The accommodation portion 11 includes a first accommodation region 111 and a second accommodation region 112. The first accommodation region 111 is a heating region. The first accommodation region 111 and the second accommodation region 112 respectively extend in a first direction and a second direction. In this embodiment, the first direction is coincident with the second direction, that is, a z-axis direction, and the first accommodation region 111 and the second accommodation region 112 are arranged in the z-axis direction. The second accommodation region 112 includes a first end 112a and a second end 112b in the z-axis direction. In this embodiment, the first end 112a is an end far away from the first accommodation region 111, and the second end 112b is an end that is adjacent to the first accommodation region 111.

[0010] A transmission portion 12 is further disposed in the housing 10. Referring to FIG. 2 and FIG. 1B, where FIG. 2 is a schematic diagram of the transmission portion 12 according to an embodiment of this application. The transmission portion 12 includes a transmission portion outer frame support 20 and a transmission end 21. The transmission end 21 is disposed in the second accommodation region 112. An electric motor 201, gears 202 and 203, and a guide portion 204 are disposed in the transmission portion outer frame support 20. The electric motor 201 is connected to the gear 202, the gear 202 is in meshing transmission with the gear 203, the gear 203 is connected to the guide portion 204, and the guide portion 204 is connected to the transmission end 21. The guide portion 204 includes a screw cap 205 and a guide shaft 206, wherein the screw cap 205 is in thread connection with the guide shaft 206, and fixed to the transmission end 21.

[0011] In detail, when the electric motor 201 is started, the gear 202 starts rotating and drives the gear 203 that is meshed with the gear 202 to rotate. The rotation of the gear 203 causes the guide shaft 206 to rotate, to enable the screw cap 205 that is in thread connection with the guide shaft 206 to move in the z-axis direction, by which the transmission end 21 that is fixed to the screw cap 205 moves accordingly in the z-axis direction. Therefore, through the transmission portion 12, the transmission end 21 may move from the first end 112a to the second end 112b of the second accommodation region 112, or the transmission end 21 may move from the second end 112b to the first end 112a of the second accommodation region 112.

[0012] It should be noted that, the transmission portion 12 shown in FIG. 2 is merely an example for illustration, and a person skilled in the art may contemplate other implementations of the transmission portion 12 after deliberate consideration. This application is not limited to a detailed structure of the transmission portion 12. Provided that the transmission portion 12 can drive the transmission end 21 to move between the first end 112a and the second end 112b of the second accommodation region 112, the detailed structure shall fall within the scope of this application.

[0013] A heating portion 13 is further disposed in the housing 10, where the heating portion is configured to generate heat. Referring to FIG. 3A, FIG. 3B, and FIG. 1B, where FIG. 3A and FIG. 3B are respectively a left view and a right view of the heating portion 13 according

to an embodiment of this application. The heating portion 13 includes an input end 31 and an output end 32, where the input end 31 is in communication with one end of an air-inlet channel 15, and the other end of the air-inlet channel 15 is disposed on a side of the housing 10 to form an air-inlet vent. The output end 32 is in communication with the first accommodation region 111. The heating portion 13 includes a ceramic portion 33, a ceramic carrying portion 34, a vacuum tube 35, and a support 36. In some embodiments, the ceramic portion 33 may be implemented by honeycomb ceramic, so that the air may flow through voids in the honeycomb ceramic. The ceramic carrying portion 34 is configured to fix the ceramic portion 33. The vacuum tube 35 is configured to insulate heat. In some embodiments, the support 36 may be implemented by a high-temperature resistant plastic support. It should be noted that the heating portion 13 further includes other component parts that are not depicted in the figure. For example, the heating portion 13 includes a heating circuit, where the heating circuit receives a current and generates heat to raise the temperature of the ceramic portion 33, thereby heating the air. In addition, the heating portion 13 in the embodiment of FIG. 3 is in the shape of a square. However, this application does not limit thereto, and the heating portion 13 may be in the shape of a circle or a polygon in other embodiments.

[0014] Referring to FIG. 1B, the housing 10 further includes a filtering mouthpiece sleeve 14. Referring to FIG. 4A and FIG. 4B, where FIG. 4A and FIG. 4B are respectively a front view and a right view of the filtering mouthpiece sleeve 14 according to an embodiment of this application. The filtering mouthpiece sleeve 14 includes an air-inlet end 141, an air-outlet end 142, and an air-outlet channel 143 in communication with the air-inlet end 141 and the air-outlet end 142. The air-inlet end 141 is in communication with the first accommodation region 111. The air-outlet end 142 is disposed on a surface of the housing 10 facing upwardly. The heating portion 13 and the first accommodation region 111 are disposed on the side of the air-inlet end 141 of the air-outlet channel 143, and therefore, after the air is heated by the heating portion 13, hot air flows into the air-outlet channel 143 through the first accommodation region 111.

[0015] In some embodiments, the filtering mouthpiece sleeve 14 may be implemented by a high-temperature resistant plastic support. It should be noted that, in the embodiment of FIG. 4, a cross section of the air-outlet channel 143 is in the shape of a square. However, this application does not limit thereto, and the cross section of the air-outlet channel 143 may be in the shape of a circle or a polygon in other embodiments. In the embodiment of FIG. 4, an extension direction of the air-outlet channel 143 is parallel to the z-axis direction. However, this application does not limit thereto. In other embodiments, a disposition position of the air-outlet end 142 is adjustable. With different positions of the air-outlet end 142, a specific included angle is formed between the extension direction of the air-outlet channel 143 and the z-axis direction.

[0016] The first accommodation region 111 includes a first position 111a and a second position 111b, where the first position 111a is in communication with the heating portion 13, and the second position 111b is in communication with the air-outlet channel 143. A phase angle difference is formed between the first position 111a and the second position 111b around the first direction (that is, the z-axis direction). In this embodiment, a phase angle that is formed between the first position 111a and the second position 111b around the first direction (that is, the z-axis direction) is 180 degrees. However, this application does not limit thereto. In other embodiments, the phase angle formed between the first position 111a and the second position 111b around the first direction (that is, the z-axis direction) may be enabled to be other angles by adjusting the position of the first position 111a or the second position 111b.

[0017] In some embodiments, the heating portion 13 may be disposed on a lower side of the first accommodation region 111 and be in communication with a third position 111c of the first accommodation region 111, and the air-outlet channel 143 is located on a left side of the first accommodation region 111 and is in communication with the second position 111b. In this way, a phase angle formed between the third position 111c and the second position 111b around the first direction (that is, the z-axis direction) is 90 degrees.

[0018] The electronic cigarette 1 may further include other components. For example, the electronic cigarette 1 further includes a control portion 16. The control portion 16 is configured to control a heating action of the heating portion 13 and a transmission action of the transmission portion 12. For example, the electronic cigarette 1 further includes elements such as a battery (not shown) configured to provide power.

[0019] In addition, the electronic cigarette 1 may further include a support filled with tobaccos or edible e-liquid media, where the support is in transmission connection with the transmission portion 21.

[0020] FIG. 5A and FIG. 5B are respectively a right view and a left view of a support 50 according to an embodiment of this application. The support 50 may be disposed in the accommodation portion 11 and extend in the z-axis direction. A side of the support 50 is provided with a slot structure 511, and the transmission end 21 may be disposed as a jaw structure and be engaged with the slot structure 511. In some embodiments, the support 50 is a middle-hollowed structure, an enclosed region of the support 50 may be filled with the tobaccos or the edible e-liquid media, and a side 512 and a side 513 of the support 50 are designed as a hollow structure, so that the air may flow into the support 50. In some embodiments, one (such as the side 513) of the side 512 and the side 513 of the support 50 is designed as a hollow steel sheet. In some embodiments, the remaining part of the support 50 may be implemented by a high-temperature resistant plastic.

[0021] FIG. 6 is a schematic diagram of the support 50 in transmission connection with the transmission end 21 according to an embodiment of this application. The transmission end 21 may be fixed to the slot structure 511 on the side of the support 50, so that the support 50 is capable of moving in the accommodation portion 11 in the z-axis direction.

[0022] FIG. 7A, FIG. 7B, and FIG. 7C are respectively a right view, a front view, and a left view of a support 52 according to another embodiment of this application. The support 52 includes storage spaces 521 and 522 and a thermal insulating region 523. The support 52 may be disposed in the accommodation portion 11 and extend in the z-axis direction. The storage space 521 and the storage space 522 are arranged in the accommodation portion11 in the z-axis direction. An inner side of each of the storage spaces 521 and 522 is hollow, which is configured to be filled with the tobaccos or the edible e-liquid media. The slot structure may be disposed on a side of the support 52, as shown by the reference numeral 524. The transmission end 21 may be engaged with the slot structure 524.

[0023] Sides 5211 and 5212 of the storage space 521 are designed as a hollow structure. Sides 5221 and 5222 of the storage space 522 are likewise designed as a hollow structure, so that an evaporated flue gas passes through and flows into the air-outlet channel 143. The thermal insulating region 523 is disposed between the storage spaces 521 and 522, and is configured to insulate heat transfer between the storage spaces 521 and 522. In some embodiments, one (such as the side 5211) of the sides 5211 and 5212 is designed as a hollow steel sheet. In some embodiments, the remaining part of the support 52 may be implemented by a high-temperature resistant plastic.

[0024] FIG. 8 is a schematic diagram of the support 52 in transmission connection with the transmission end 21 according to an embodiment of this application. The transmission end 21 may be fixed to the slot structure 524 on the side of the support 52, so that the support 52 is capable of moving in the accommodation portion 11 in the z-axis direction.

[0025] It should be noted that this application is not limited to a quantity of the storage spaces disposed in the support 52. In other embodiments, the support 52 may include a plurality of storage spaces that are arranged in the z-axis direction, and a thermal insulating region is disposed between adjacent storage spaces to insulate heat transfer.

[0026] The electronic cigarette 1 may further include a filtering mouthpiece. The filtering mouthpiece is inserted into the air-outlet channel 143 of the filtering mouthpiece sleeve 14 through the air-outlet end 142 of the filtering mouthpiece sleeve 14, and the filtering mouthpiece is configured to filter a flue gas. FIG. 9A is a schematic diagram of a filtering mouthpiece 70 disposed in the air-outlet channel 143 according to an embodiment of this application. As shown in FIG. 9A, when the filtering mouthpiece 70 is inserted into the air-outlet channel 143, a part of the filtering mouthpiece 70 is exposed out of the housing 10, so that the user may inhale the flue gas that is filtered by the filtering mouthpiece 70. In some embodiments, the filtering mouthpiece 70 may be implemented by a conventional filtering mouthpiece. However, this application does not limit thereto.

[0027] FIG. 9B and FIG. 9C are respectively a front view and a cross-sectional view of a filtering mouthpiece 71 disposed in the air-outlet channel 143 according to another embodiment of this application. In some embodiments, the filtering mouthpiece 71 may be implemented by a plastic filtering mouthpiece or a silicone filtering mouthpiece. The filtering mouthpiece 71 includes an air-inlet channel 713, where the air-inlet channel 713 is in communication with the air-outlet channel 143. The user inhales the flue gas that is filtered by the filtering mouthpiece 71. In some embodiments, the filtering mouthpiece 70 or 71 is detachably disposed in the air-outlet channel 143.

[0028] FIG. 10 is a schematic operation diagram of an electronic cigarette 1 according to an embodiment of this application. In detail, when the support 50 or 52 is disposed in the accommodation portion 11, the transmission end 21 is engaged with the slot structure 511 of the support 50 or the slot structure 524 of the support 52. When the transmission portion 12 starts a forward transmission operation, the transmission end 21 moves downward together with the support 50 or the support 52 in the z-axis direction. When the support 50 or 52 is disposed in the first accommodation region 111, the air heated by the heating portion 13 can flow into the support 50 or 52 to heat tobaccos or atomize the e-liquid media because a side of the support 50 or 52 is designed to be hollow, and gas generated through atomization flows into the air-outlet channel 143 and is filtered by the filtering mouthpiece 70 or 71 and then inhaled by a user, in which way the user can have a feeling of smoking. A direction of an arrow 14f in FIG. 10 is an air flow direction. When the tobaccos or the e-liquid media located in the first accommodation region 111 are continuously converted into the flue gas, the transmission portion 12 continuously operates to drive the transmission end 21 to continuously move downward together with the support 50 or 52 in the z-axis direction, thereby avoiding a continual heating after the tobaccos or the e-liquid media are used up.

[0029] Taking the support 50 for example, in some embodiments, each time the user inhales, the transmission end 21 may move downward with the support 50. Taking the support 50 for example, in some embodiments, when the transmission end 21 moves to a lowermost end of the transmission portion 12, a user may press a button (not shown) disposed on the housing 10 to instantly reset the transmission end 21 together with the support 50 to an uppermost end.

[0030] Taking the support 50 for example, in some embodiments, to match the structure of the support 50, the accommodation portion 11 in the housing 10 may be a

through-hole formed by running through the housing 10 from top to bottom. When the transmission end 21 moves to a lowermost end of the transmission portion 12, the user may draw the support 50 out of the bottom of the housing 10 and then again insert the support 50 into the accommodation portion 11 from the top of the housing 10.

[0031] Taking the support 50 as an example, in some embodiments, when the transmission end 21 moves to a lowermost end of the transmission portion 12, which represents that all the tobaccos or the e-liquid media in the housing 10 are all used up, and the user may discard the support 50 after drawing the support 50 out of the bottom of the housing 10, and then insert a new support 50.

[0032] Taking the support 52 as an example, in some embodiments, in a case that the tobaccos or the e-liquid media in the storage space 522 are used up, the user may draw the support 52 out, and insert the storage space 521 downward into the accommodation region 11 to reuse.

[0033] FIG. 11 is a structural cross-sectional view of an electronic cigarette 2 according to another embodiment of this application. The electronic cigarette 1 is substantially the same as the electronic cigarette 2, with the only difference in that: one end of an air-inlet channel 261 of the electronic cigarette 2 is in communication with the heating portion 13, and the other end of the air-inlet channel 261 is in communication with a blower portion 262. The blower portion 262 feeds air into the heating portion 13 through the air-inlet channel 261, thereby heating air. The heated air flows into the first accommodation region 111 and the filtering mouthpiece sleeve 14. The component parts with the same labels in the electronic cigarette 1 and the electronic cigarette 2 are not described in detail herein again.

[0034] Resistance felt by the user when inhaling from the filtering mouthpiece sleeve 14 may be adjusted by operating the blower portion 262. In some embodiments, the blower portion 262 may increase the inhalation resistance felt by the user. In some embodiments, the blower portion 262 may reduce the inhalation resistance felt by the user.

[0035] FIG. 12A and FIG. 12B are respectively an appearance diagram and a structural cross-sectional view of an electronic cigarette 8 according to an embodiment of this application. The electronic cigarette 8 includes a housing 80. An accommodation portion 81 is disposed in the housing 80. The accommodation portion 81 includes a first accommodation region 811 and a second accommodation region 812. The first accommodation region 811 is a heating region. The first accommodation region 811 and the second accommodation region 812 respectively extend in a first direction and a second direction. In this embodiment, the first direction is an x-axis direction, the second direction is a z-axis direction, and the first accommodation region 811 and the second accommodation region 812 are arranged in the z-axis direction.

[0036] A transmission portion 82 is further disposed in the housing 80. The transmission portion 82 includes a transmission end 821 and an elastic structure 822 disposed around the transmission end 821. The transmission end 821 is disposed in the first accommodation region 811. The user presses the transmission portion 82 to drive the transmission end 821 to move in the x-axis direction from a first end 811a to a second end 811b of the first accommodation region 811. In this embodiment, the first end 811a of the first accommodation region 811 is an end adjacent to the transmission portion 82, and the second end 811b of the first accommodation region 811 is an end far away from the transmission portion 82.

[0037] It should be noted that, the transmission portion 82 shown in FIG. 12B is merely an example for illustration, and a person skilled in the art may contemplate other implementations of the transmission portion 82 after deliberate consideration. This application is not limited to a detailed structure of the transmission portion 82. Provided that the transmission portion 82 can drive the transmission end 821 to move between the first end 811a and the second end 811b of the first accommodation region 811, the detailed structure shall fall within the scope of this application.

[0038] A heating portion 83 is further disposed in the housing 80. In this embodiment, structures and functions of the heating portion 83 are the same as those of the heating portion 13, and therefore, details are not described herein again. The heating portion 83 includes an input end and an output end, where the input end is in communication with one end of an air-inlet channel 85, and the output end is in communication with the first accommodation region 811. The other end of the air-inlet channel 85 may be disposed above the housing 80 or be in communication with the blower portion. A person of ordinary skill in the art shall understand detailed implementations after reading the foregoing embodiments.

[0039] The housing 80 further includes a filtering mouthpiece sleeve 84. The filtering mouthpiece sleeve 84 includes an air-inlet end 841, an air-outlet end 842, and an air-outlet channel 843 in communication with the air-inlet end 841 and the air-outlet end 842. The air-inlet end 841 is in communication with the first accommodation region 811. The air-outlet end 842 is disposed on a surface of the housing 80 facing upwardly. The heating portion 83 and the first accommodation region 811 are disposed on the side of the air-inlet end 841, and therefore, after air is heated by the heat generated by the heating portion 83, the hot air flows into the air-outlet channel 843 through the first accommodation region 811. In the embodiment of FIG. 12B, an extension direction of the air-outlet channel 843 is parallel to the z-axis direction. However, this application does not limit thereto. In other embodiments, a disposition position of the air-outlet end 842 is adjustable. With different positions of the air-outlet end 842, a specific included angle may be formed between the extension direction of the air-outlet channel 843 and the z-axis direction.

[0040] The first accommodation region 811 includes a first position 811p and a second position 811q, where the first position 811p is in communication with the heating portion 83, and the second position 811q is in communication with the air-outlet channel 843. A phase angle difference is formed between the first position 811p and the second position 811q around the first direction (that is, the x-axis direction). In this embodiment, a phase angle formed between the first position 811p and the second position 811q around the first direction (that is, the x-axis direction) is 180 degrees. However, this application does not limit thereto. In other embodiments, the phase angle formed between the first position 811p and the second position 811q around the first direction (that is, the x-axis direction) may be enabled to be other angles by adjusting the position of the first position 811p and the second position 811q.

[0041] In some embodiments, the heating portion 83 may be disposed on a left side of the first accommodation region 811 and be in communication with the first position 811p, the air-outlet channel 843 is located on an upper side of the first accommodation region 811 and is in communication with the second position 811q. In this way, a phase angle formed between the first position 811p and the second position 811q around the first direction (that is, the x-axis direction) is 90 degrees.

[0042] The electronic cigarette 8 may further include other component parts. For example, the electronic cigarette 8 further includes a control portion 86. The control portion 86 is configured to control a heating action of the heating portion 83. For example, the electronic cigarette 8 further includes a lead-out region 87, where the lead-out region 87 is in communication with the second end 811b of the first accommodation region 811, so that the transmission end 821 may move from the first end 811a of the first accommodation region 811 to the lead-out region 87. In some embodiments, the lead-out region 87 may accommodate a discarded cartridge. In some embodiments, an ashtray is disposed in the lead-out region 87, and configured to accommodate flue dust. In some embodiments, the lead-out region 87 is detachably connected to the housing 80, to facilitate a user to clean the discarded cartridge or flue dust in the lead-out region 87. In some embodiments, the lead-out region 87 is connected to the housing 80 by using a magnet. For example, the electronic cigarette 8 further includes a battery (not shown) configured to provide power.

[0043] The electronic cigarette 8 may further include a filtering mouthpiece, where the filtering mouthpiece is inserted into the air-outlet channel 843 of the filtering mouthpiece sleeve 84 through the air-outlet end 842 of the filtering mouthpiece sleeve 84, and the filtering mouthpiece is configured to filter a flue gas.

[0044] FIG. 13 is a schematic diagram of a filtering mouthpiece 90 disposed in an air-outlet channel 843 according to an embodiment of this application. As shown in FIG.13, when the filtering mouthpiece 90 is inserted into the air-outlet channel 843, a part of the filtering mouthpiece 90 is exposed out of the housing 80, so that the user may inhale the flue gas filtered by the filtering mouthpiece 90.

[0045] FIG. 14 is a schematic operation diagram of a cartridge row YDS according to another embodiment of this application. The cartridge row YDS may be disposed in the accommodation portion 81 and extend in the z-axis direction. The cartridge row YDS includes a plurality of cartridges YD arranged in the z-axis direction. The cartridge YD may be a cake tobacco, or the cartridge YD may include a cartridge case with a middle hollow structure in which tobaccos or e-liquid media are located. In some embodiments, the cartridge YD may include tobaccos or edible e-liquid media. Upper and lower surfaces of the cartridge YD are designed to be a hollow structure, so that air may flow into the cartridge YD. In some embodiments, the cartridge YD may include a compressed tobacco quid. In some embodiments, the cartridge YD may include a solid tobacco quid.

[0046] FIG. 15 is a schematic operation diagram of an electronic cigarette 87 according to an embodiment of this application. In detail, after the cartridge row YDS is disposed in the accommodation portion 81, a cartridge (such as a cartridge YD1) located at a lowermost end enters the first accommodation region 811, and the user pushes the cartridge YD1 inside by pressing the transmission portion 82. In this way, air heated by the heating portion 83 may flow into the cartridge YD1 to heat tobaccos or atomize e-liquid media. A gas generated by heating the tobaccos or atomizing the e-liquid media flows into the air-outlet channel 843 and is filtered by the filtering mouthpiece 90 and then inhaled by a user, in which way, the user can have a feeling of smoking. Nicotine in the tobaccos may be released in a manner of heating rather than combustion, and compared with a conventional cigarette, the electronic cigarette may significantly reduce harmful substances generated by burning tobaccos.

[0047] A direction of an arrow 90f in FIG. 15 is an air flow direction. When the tobaccos or the e-liquid media in the cartridge YD1 are used up, the user may again press the transmission portion 82. In this way, a new cartridge (such as a cartridge YD2) is pushed inside, and the used-up cartridge YD1 is transferred to the lead-out region 87.

Claims

1. An electronic cigarette, comprising a housing, wherein the housing comprises:

   an accommodation portion, wherein the accommodation portion comprises a first accommodation region and a second accommodation region that are in communication with each other, the first accommodation region and the second accommodation region respectively extend in a

first direction and a second direction, and the first accommodation region is a heating region;
a transmission portion, comprising a transmission end, wherein the transmission end is capable of moving in the first accommodation region or the second accommodation region in an extension direction of the accommodation region where the transmission end is located;
a heating portion, configured to generate heat to heat the first accommodation region; and
an air-outlet channel, in communication with an output end of the first accommodation region.

2. The electronic cigarette of Claim 1, wherein the first accommodation region is in communication with the heating portion at a first position, and in communication with the air-outlet channel at a second position, and a phase angle difference is formed between the first position and the second position around the first direction.

3. The electronic cigarette of Claim 2, wherein the phase angle difference is 180 degrees.

4. The electronic cigarette of Claim 1, wherein the first accommodation region comprises a first end and a second end in the first direction, and the transmission end is capable of moving from the first end toward the second end in the first direction; or
the second accommodation region comprises a first end and a second end in the second direction, and the transmission end is capable of moving from the first end toward the second end in the second direction.

5. The electronic cigarette of Claim 1, wherein the first direction is coincident with the second direction, and the first accommodation region and the second accommodation region are arranged in the first direction or the second direction.

6. The electronic cigarette of Claim 1, wherein there is an included angle between the first direction and the second direction, and the first accommodation region is located at a second end of the second accommodation region.

7. The electronic cigarette of Claim 1, wherein the second direction is substantially parallel to or has an included angle with an extension direction of the air-outlet channel.

8. The electronic cigarette of Claim 1, wherein an air-inlet channel in communication with the air-outlet channel is disposed in the housing, and the heating portion and the first accommodation region are successively disposed in the air-inlet channel in an airflow direction.

9. The electronic cigarette of Claim 1, wherein the heating portion is located at an air-inlet end of the air-outlet channel.

10. The electronic cigarette of Claim 1, wherein the housing is provided with an air-inlet vent in communication with the heating portion, an air-inlet channel is formed between the air-inlet vent and the heating portion, and a blower portion is further provided in the air-inlet channel.

11. The electronic cigarette of Claim 1, further comprising a support disposed in the second accommodation region, wherein the transmission portion is in transmission connection with the support to drive the support to move in the second direction.

12. The electronic cigarette of Claim 11, wherein the support is provided with at least two storage spaces, and a thermal insulating region is disposed between adjacent storage spaces.

13. The electronic cigarette of Claim 12, wherein the storage spaces are each arrange in the second direction.

14. The electronic cigarette of Claim 1, wherein a lead-out region is further provided in the housing and in communication with the first accommodation region.

15. The electronic cigarette of Claim 14, wherein the lead-out region is located downstream of the first accommodation region in the first direction, and the transmission end is capable of moving from the first accommodation region to the lead-out region.

16. The electronic cigarette of Claim 1, wherein a control portion is further disposed in the housing and configured to control a heating action of the heating portion and transmission of the transmission portion.

17. The electronic cigarette of Claim 1, further comprising a filtering mouthpiece, disposed in the air-outlet channel and configured to filter a flue gas.

18. The electronic cigarette of Claim 1, wherein an ashtray is further disposed in the housing.

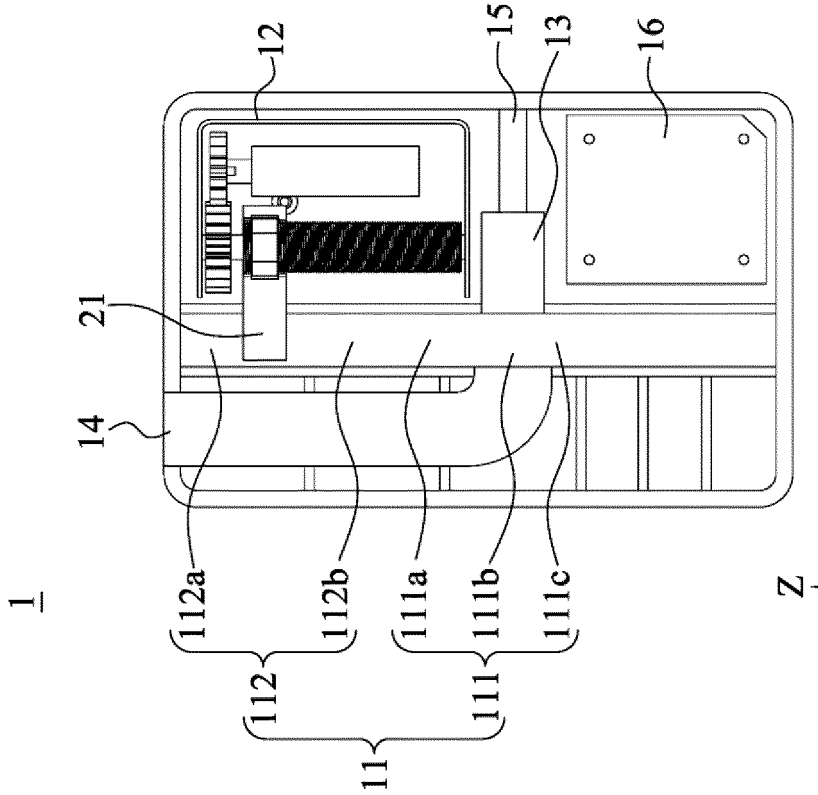

FIG. 1B

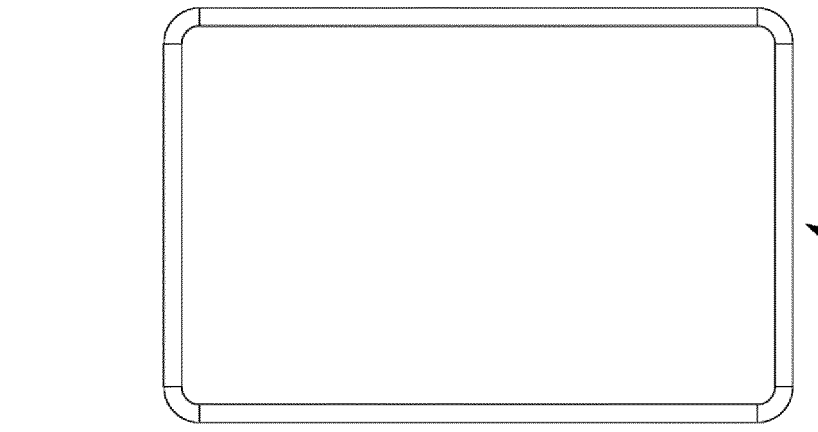

FIG. 1A

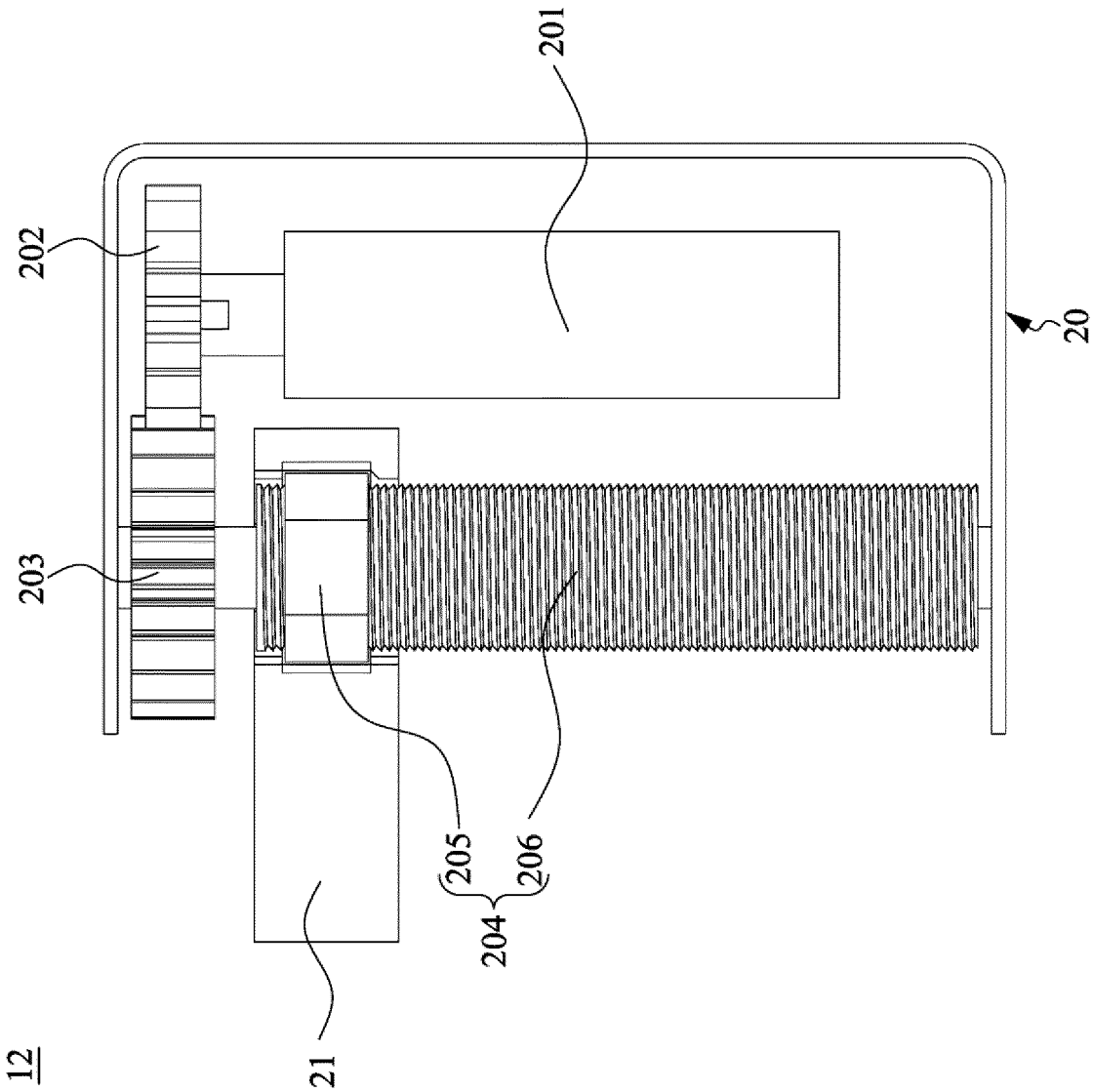

FIG. 2

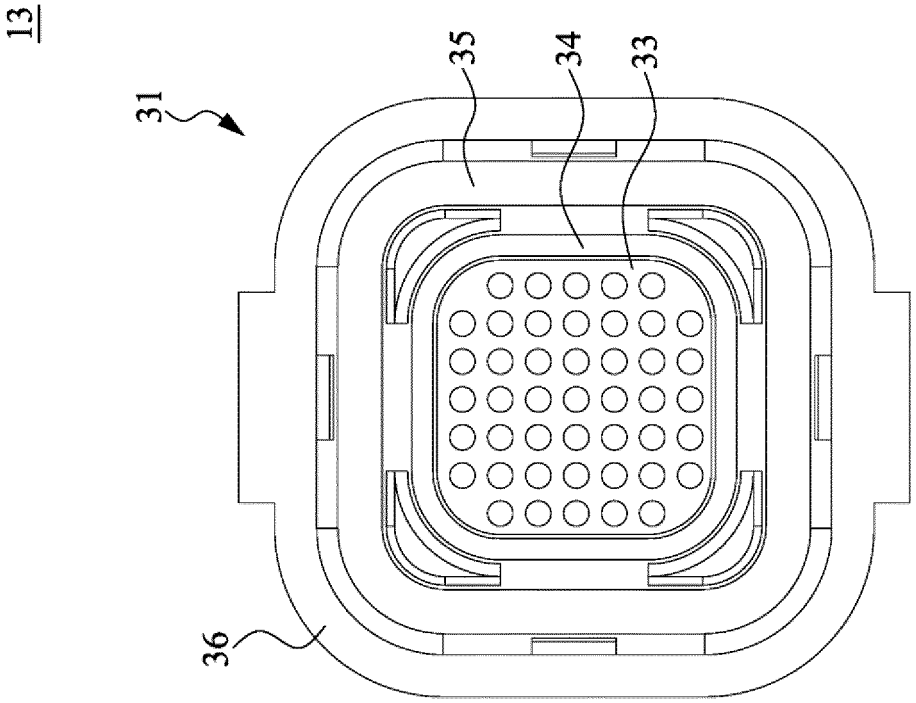

FIG. 3B

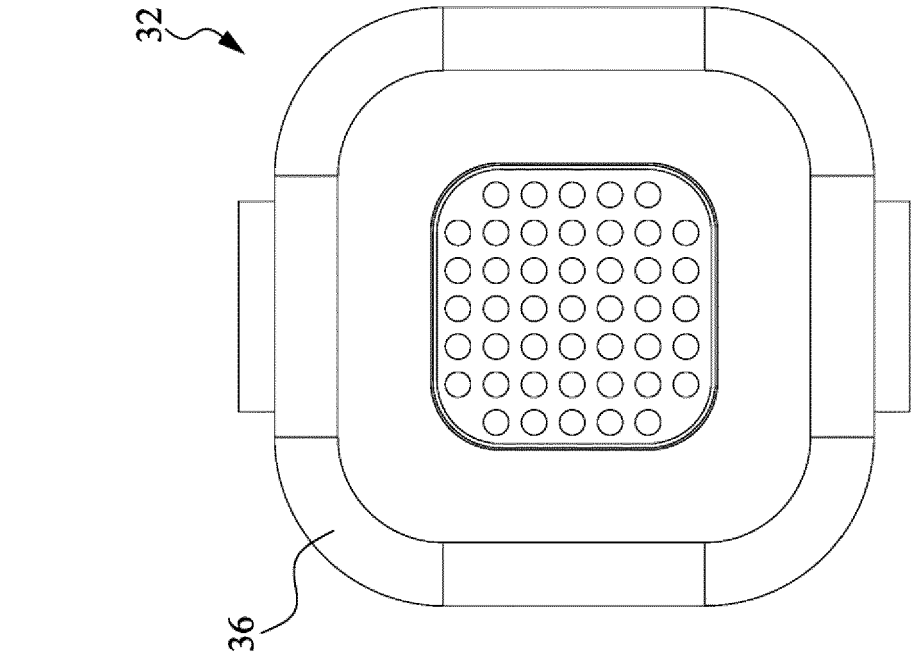

FIG. 3A

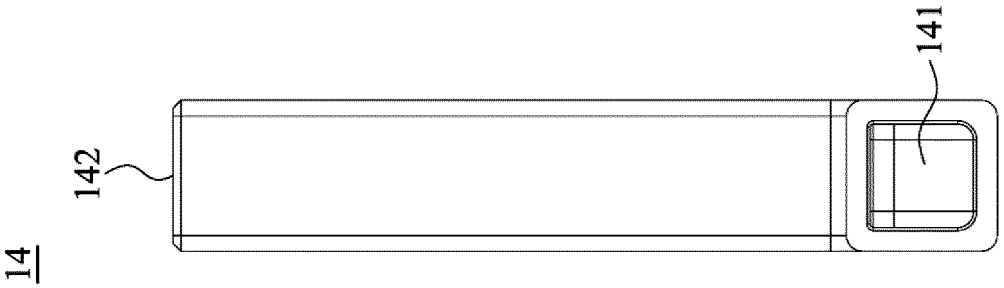

FIG. 4B

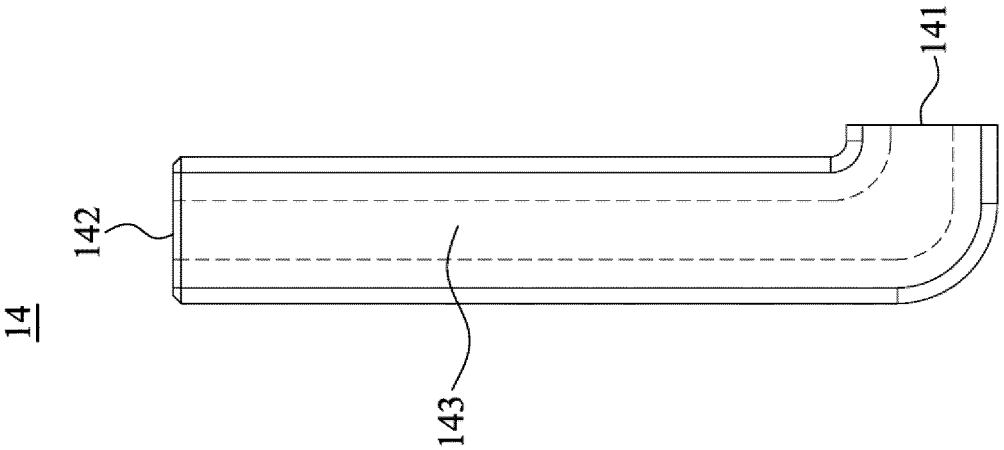

FIG. 4A

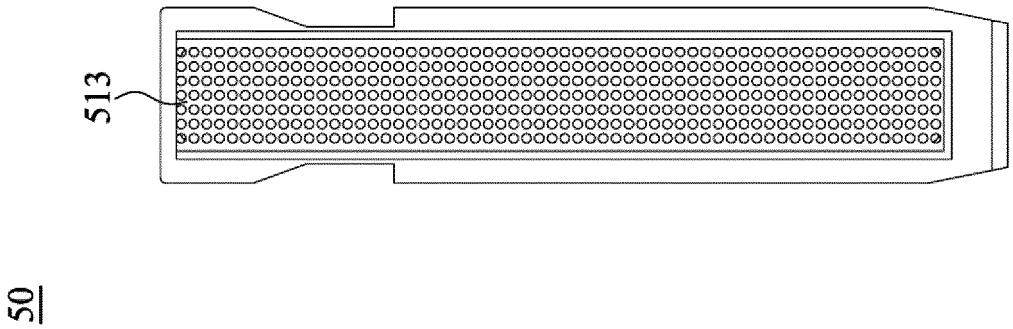

FIG. 5B

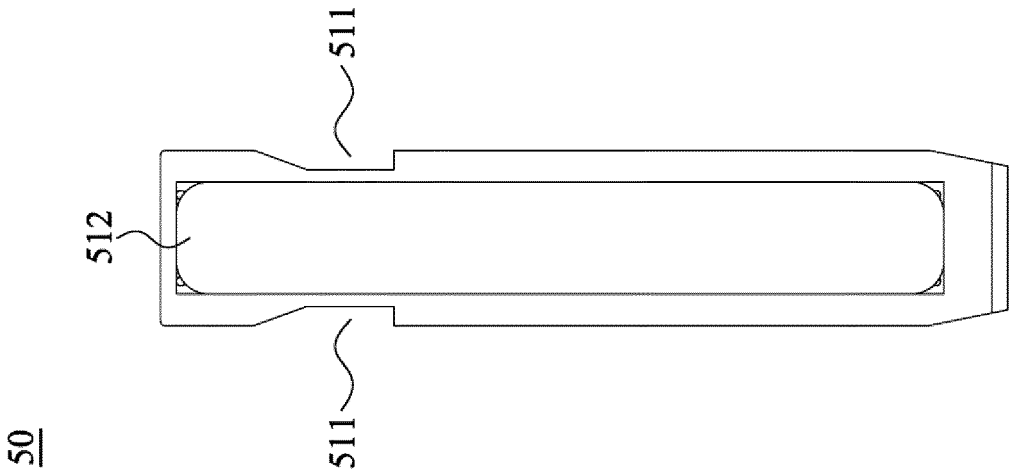

FIG. 5A

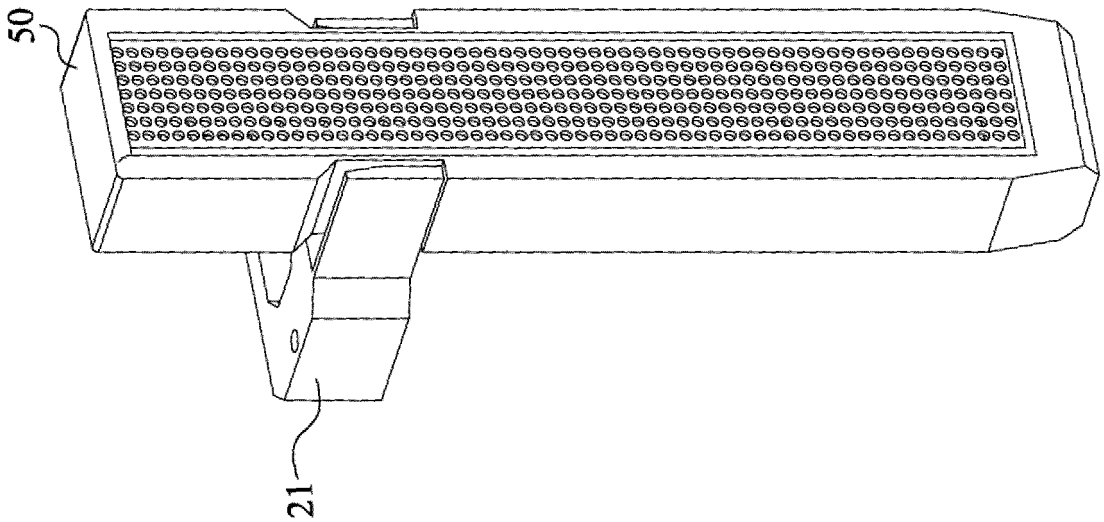

FIG. 6

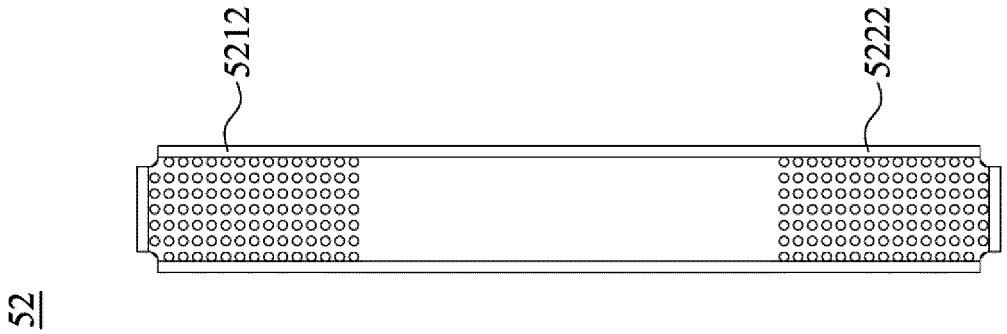

FIG. 7C

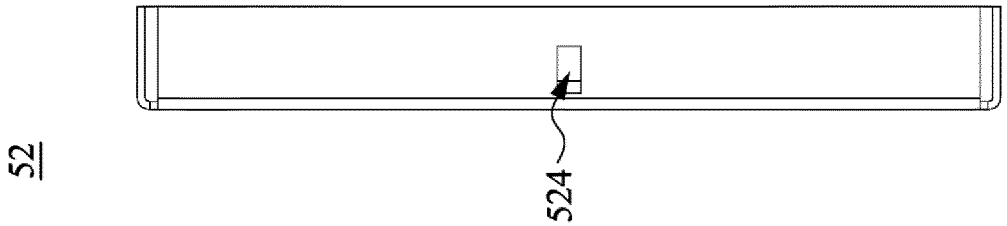

FIG. 7B

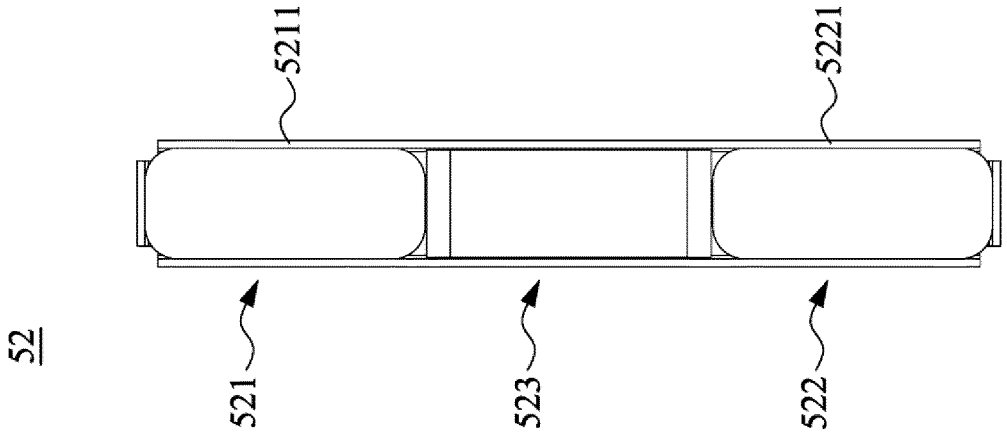

FIG. 7A

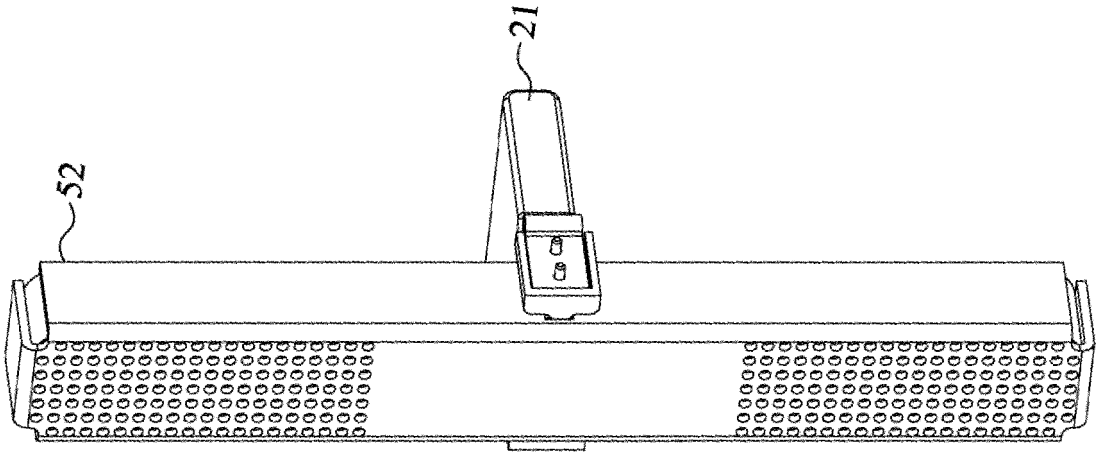

FIG. 8

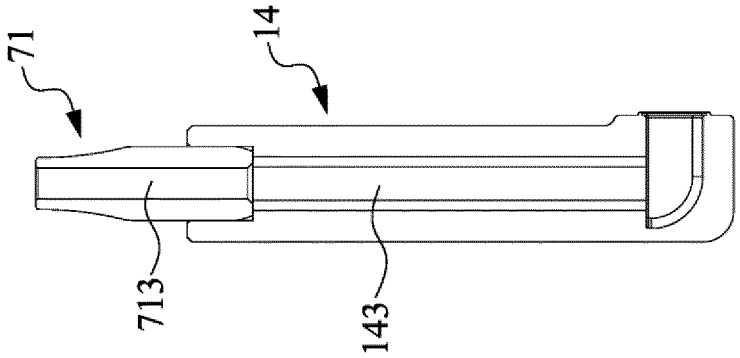

FIG. 9C

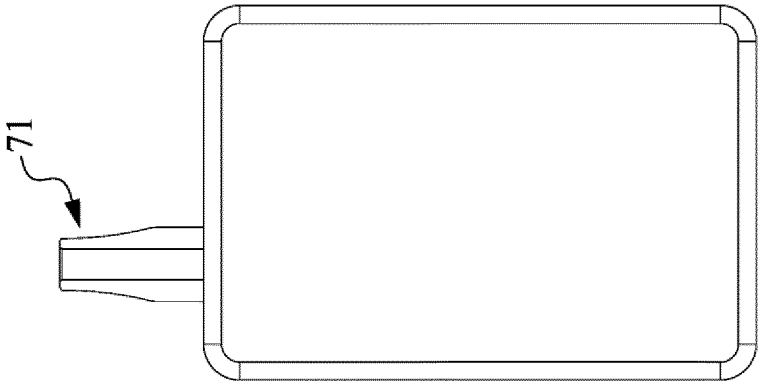

FIG. 9B

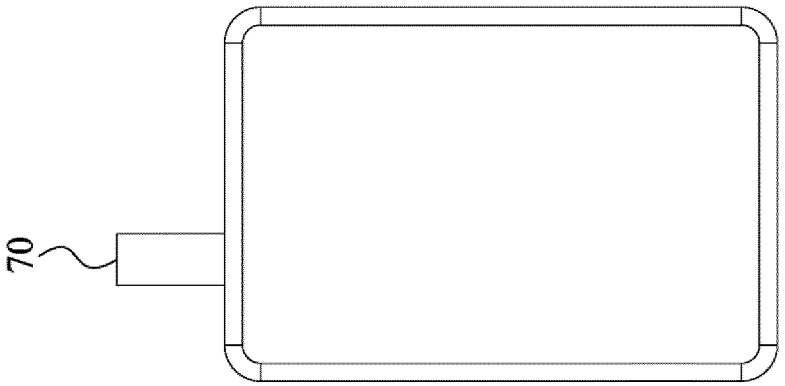

FIG. 9A

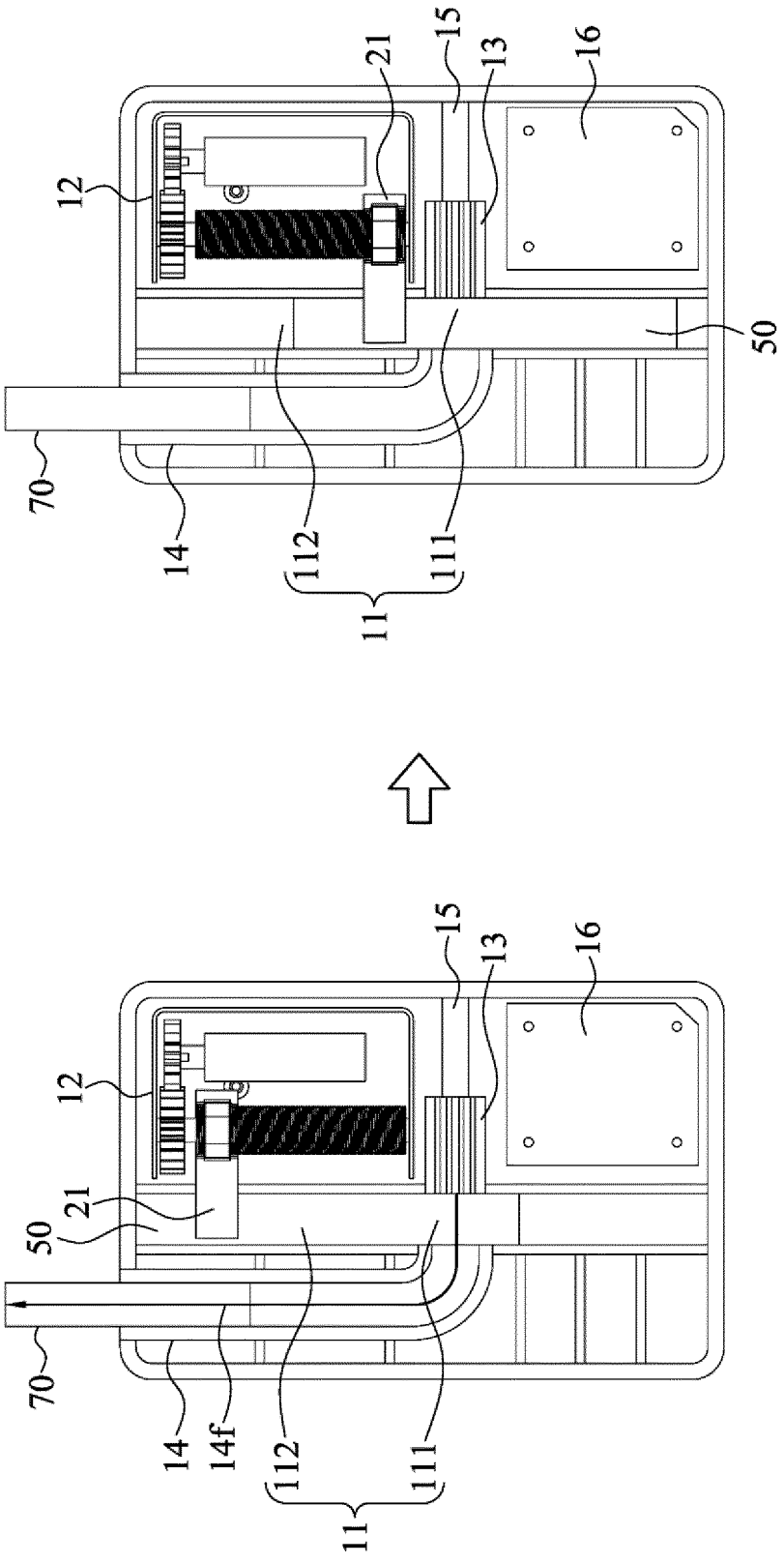
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FIG. 10

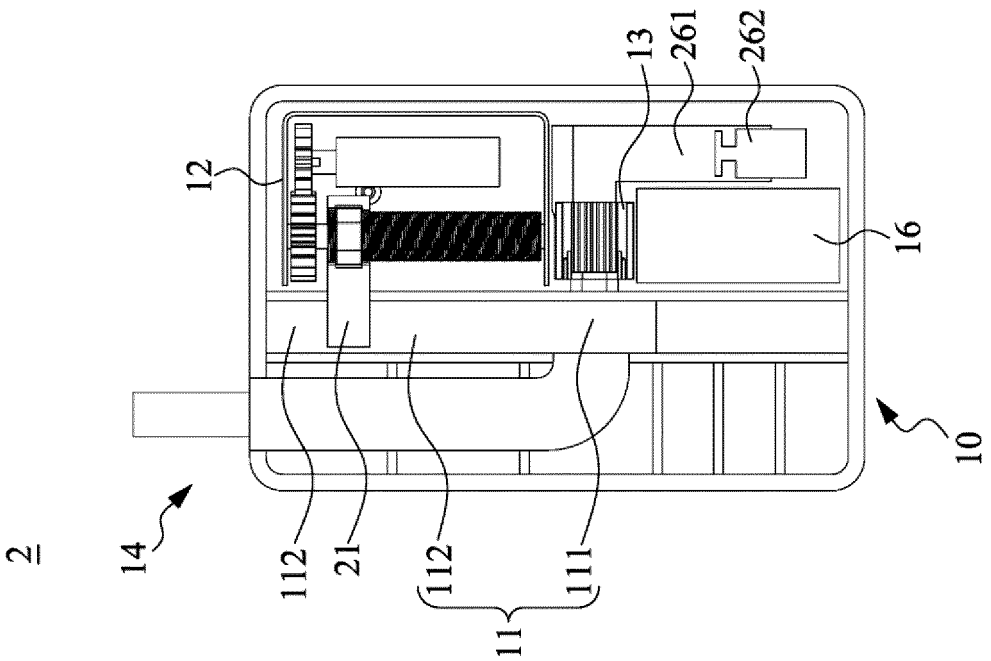

FIG. 11

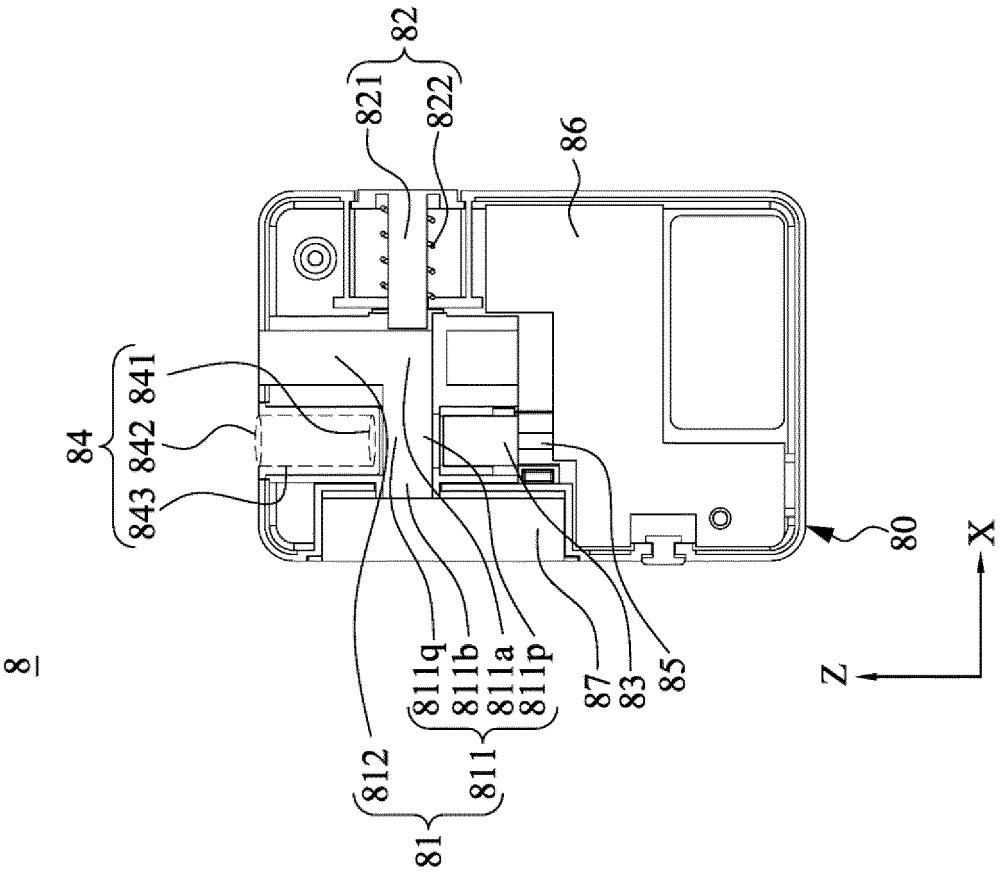

FIG. 12B

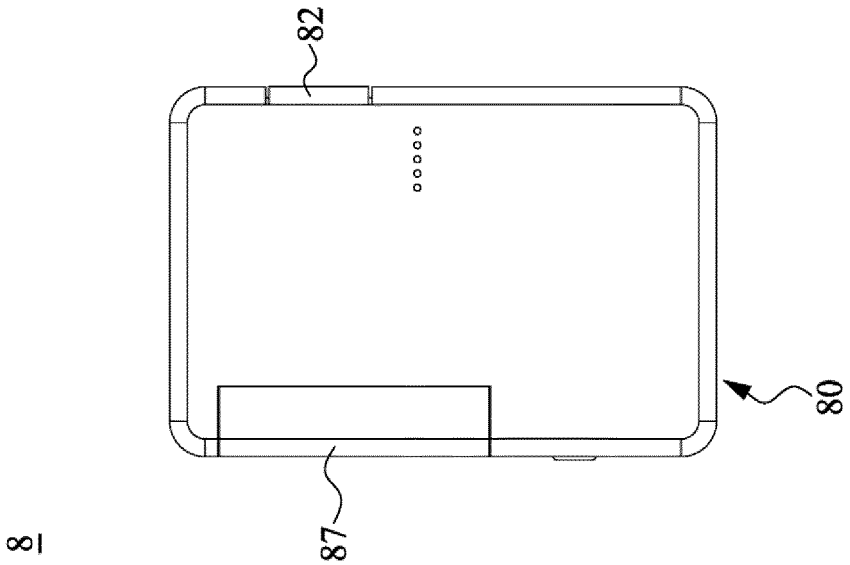

FIG. 12A

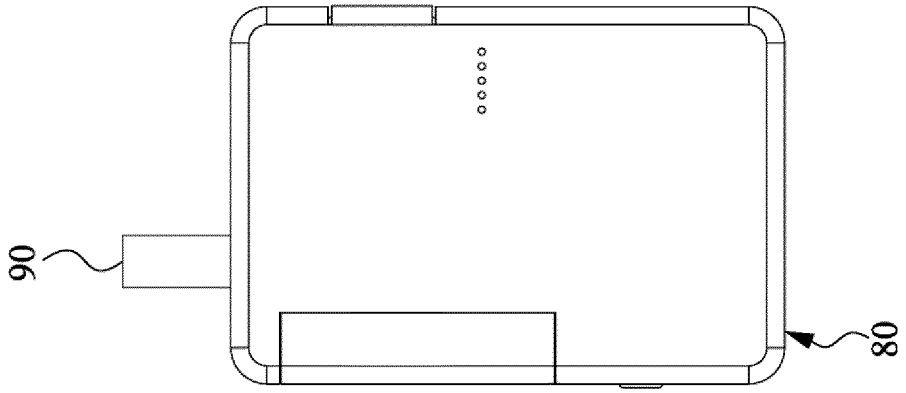

FIG. 13

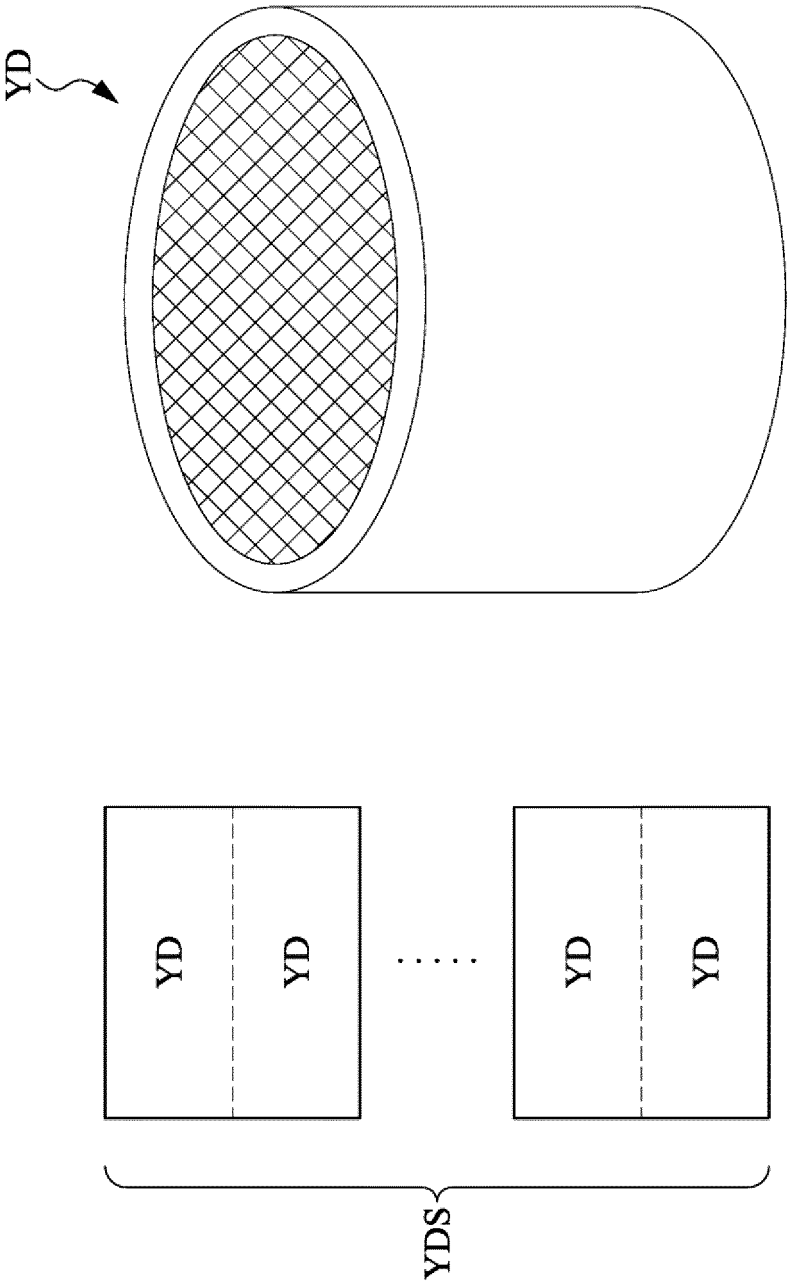

FIG. 14

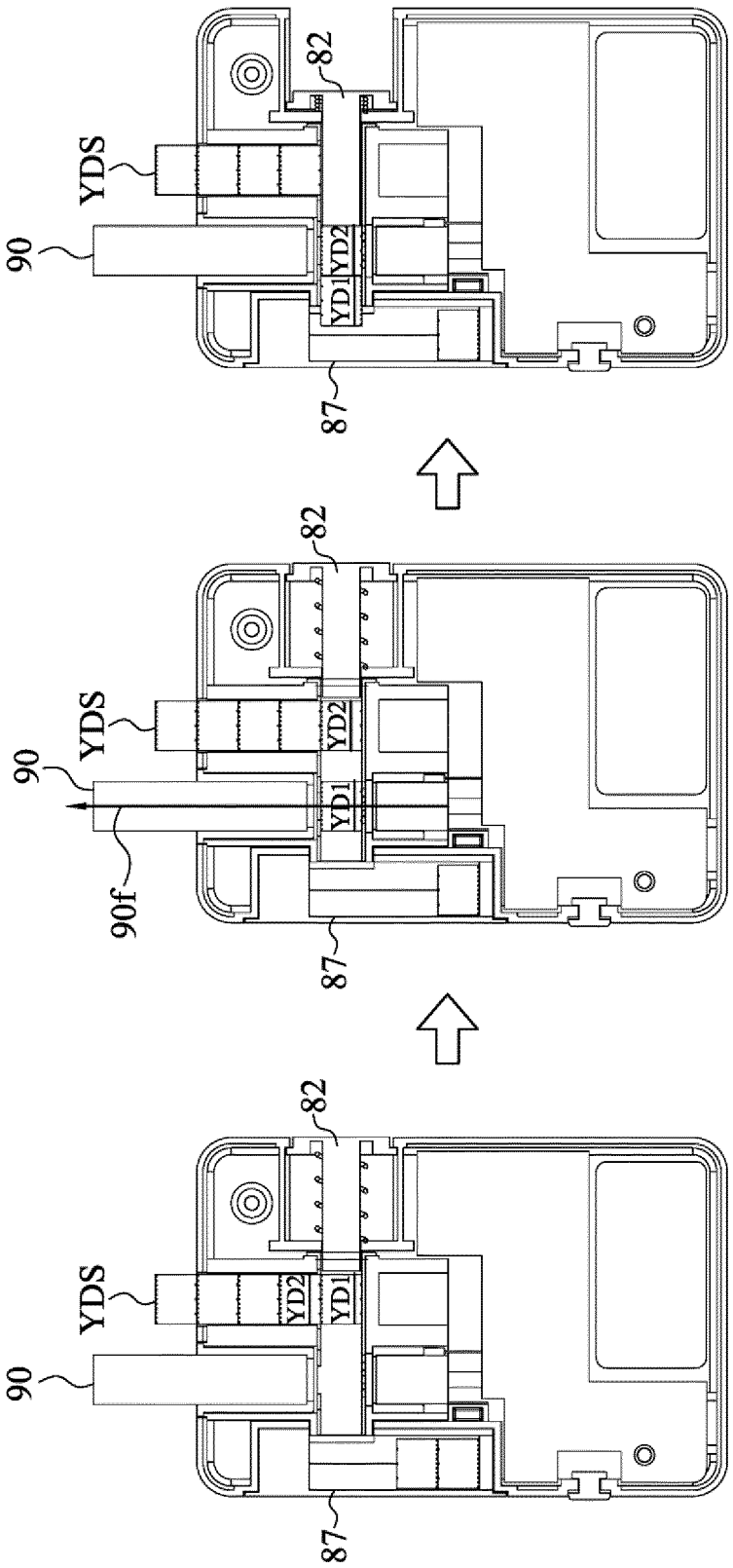

FIG. 15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2020/133540

A. CLASSIFICATION OF SUBJECT MATTER

A24F 40/40(2020.01)i; A24F 40/46(2020.01)i; A24F 40/50(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)

A24F47/-; A24F40/-

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)

CNPAT, CNKI, WPI, EPODOC: 烟, 平移, 移动, 传动, 加热, 蒸发, 进气, 出气, Smok+, cigarette, translat+, move, heat+, evapor +, air, inlet, outlet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 1333657 A (H.F. & PH. F. REEMTSMA GMBH) 30 January 2002 (2002-01-30) description page 5 line 4- page 9 line 14, figure 1	1, 4-10, 14, 16-18
A	CN 107920593 A (FONTEM HOLDINGS 1 B.V.) 17 April 2018 (2018-04-17) entire document	1-18
A	CN 110944534 A (FONTEM HOLDINGS 1 BV) 31 March 2020 (2020-03-31) entire document	1-18
A	CN 108685199 A (HUBEI CHINA TOBACCO INDUSTRY CO., LTD.) 23 October 2018 (2018-10-23) entire document	1-18
A	CN 209950384 U (SHENZHEN L-RIDER TECHNOLOGY CO., LTD.) 17 January 2020 (2020-01-17) entire document	1-18
A	CN 111227311 A (ZHONGYAN XIANGCHENG (BEIJING) TECHNOLOGY CO., LTD. et al.) 05 June 2020 (2020-06-05) entire document	1-18
A	US 2018249765 A1 (ALTRIA CLIENT SERVICES L.L.C.) 06 September 2018 (2018-09-06) entire document	1-18

☐ 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
"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
01 March 2021	**29 March 2021**

Name and mailing address of the ISA/CN	Authorized officer
China National Intellectual Property Administration (ISA/CN) **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088** **China**	
Facsimile No. **(86-10)62019451**	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2020/133540

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				WO	2013126770	A1	29 August 2013
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				EP	2817051	A1	31 December 2014
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				US	10299516	B2	28 May 2019

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2020/133540

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
		US 2013213418 A1	22 August 2013

Form PCT/ISA/210 (patent family annex) (January 2015)