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(54) VACUUM PACKAGING PRODUCT

(57) A vacuum packaging product (100), which comprises an outer packaging component (102) and a cartridge (101) used for an electronic cigarette, wherein the outer packaging component (102) covers the cartridge (101), the cartridge (101) is filled with an aerosol formation substrate, the outer packaging component (102) is in a vacuum state so that the inside and the outside of the outer packaging component have a pressure difference, and the outer packaging component (102) is contracted so as to allow the cartridge (101) that is already filled with the aerosol formation substrate to be sealed better and to prevent leaking due to an environment of high temperature, and high or negative pressure during transportation.

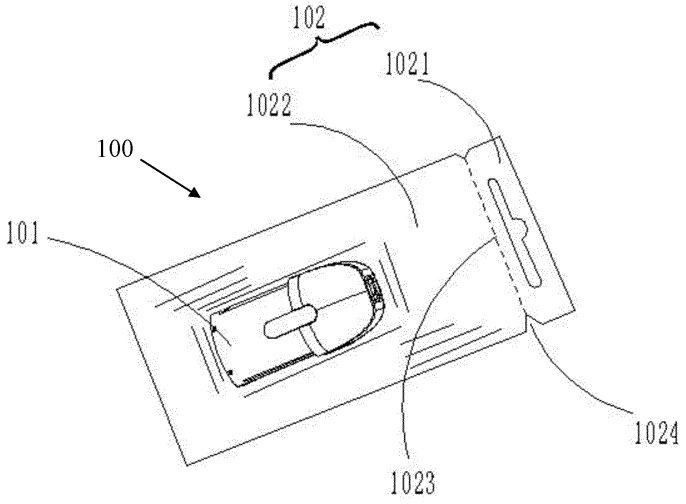

FIG. 1

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Description

FIELD OF TECHNOLOGY

[0001] The disclosure relates to the technical field of smoking simulation, and more particularly, relates to a vacuum packaging product.

BACKGROUND

[0002] Electronic cigarettes generally include a cartridge and a battery that can be connected to the cartridge. The cartridge is generally filled with an aerosol-forming substrate by manufacturer and then shipped with the battery to a sales company for sale. The aerosol-forming substrate is a nicotine-containing e-liquid or nicotine-free e-liquid. In the prior art, the cartridge is filled with an aerosol-forming substrate without other protection measures. During the transportation of the cartridge, an environment of high temperature, negative pressure or high pressure may cause the aerosol-forming substrate in the cartridge to leak, causing deterioration or pollution.

SUMMARY

[0003] Accordingly, it is necessary to provide a vacuum packaging product to solve at least one technical problem existed in the prior art.

[0004] This disclosure provides a vacuum packaging product, the vacuum packaging product includes an outer packaging member and a cartridge configured for use in an electronic cigarette, the cartridge is filled with an aerosol-forming substrate, the cartridge is packed and hermetically sealed in the outer packaging member in a vacuum state.

[0005] In one embodiment, an inner wall of the outer packaging member is provided with a reactive coating layer capable of reacting physically or chemically with the aerosol-forming substrate.

[0006] In one embodiment, the reactive coating layer is a color-changing coating layer.

[0007] In one embodiment, the reactive coating layer is coated on the inner wall of the outer packaging member in a manner of dipping, depositing, spraying, or pasting.

[0008] In one embodiment, a pattern or a character is provided on the reactive coating layer.

[0009] In one embodiment, the outer packaging member is made of a transparent or translucent material.

[0010] In one embodiment, the outer packaging member includes a receiving portion, the receiving portion is in a vacuum state, and the cartridge is packed and hermetically sealed in the receiving portion.

[0011] In one of the embodiments, the outer packaging member further includes a hanging portion connected with the receiving portion, the hanging portion and the receiving portion are integrally formed to form the outer packaging member, and the vacuum packaging product is capable of being hung in a fixed position through the hanging portion.

[0012] In one embodiment, a junction is provided between the hanging portion and the receiving portion, the junction is provided with at least one tearing opening, the junction is capable of being destroyed along the tearing opening to open the receiving portion and then take out the cartridge.

[0013] In one embodiment, the junction is provided with a sealing strip, the sealing strip seals an opening of the receiving portion, and after the junction is destroyed along the tearing opening, the sealing of the sealing strip on the opening of the receiving portion is removed.

[0014] Compared with the prior art, the vacuum packaging product of this disclosure includes an outer packaging member and a cartridge packed therein, and the outer packaging member is in a vacuum state, so that the cartridge packed therein has a reduced internal pressure due to the outer packaging member. Therefore, there is a pressure difference between the inside and the outside of the outer packaging member, and the outer packaging member is contracted, so that the cartridge that has been filled with the aerosol-forming substrate can be better sealed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015]

FIG. 1 is a perspective view of a vacuum packaging product according to one embodiment of the disclosure;

FIG. 2 is a perspective view of the cartridge of one embodiment of the disclosure;

FIG. 3 is a sectional view of the cartridge shown in FIG. 2;

FIG. 4 is a schematic view showing the effect after the reactive coating layer of the vacuum packaging product has reacted.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0016] In order to facilitate understanding of the present application, the present application will be described more fully below with reference to the related drawings. The drawings show the preferred embodiments of the present application. However, the present application can be implemented in many different forms and is not limited to the embodiments described herein. Rather, these embodiments are provided to provide a thorough understanding of the disclosure of the present application.

[0017] It should be noted that when an element is referred to as being "fixed to" another element, it may be directly on the other element or there may be an intervening element. When an element is referred to be "connected to" another element, it can be directly connected

to the other element or intervening elements may also be present.

[0018] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this application belongs. The terms used herein in the description of the present application are only for the purpose of describing specific embodiments, and are not intended to limit the present application. The term "and / or" as used herein includes any and all combinations of one or more of the associated listed items.

[0019] Referring to FIGs. 1-2, the embodiment provides a vacuum packaging product 100. The vacuum packaging product 100 includes a cartridge 101 and an outer packaging member 102. The cartridge 101 is prefilled with an aerosol-forming substrate. In this embodiment, the aerosol-forming substrate is in a liquid state, and may be a nicotine-containing e-liquid or a nicotine-free e-liquid.

[0020] In order to better hermetically seal the cartridge 101 that has been filled with the aerosol-forming substrate, and to avoid the leakage of the aerosol-forming substrate due to an environment of high pressure, negative pressure (such as, during air transportation) or high temperature that may exist during transportation, in this embodiment, the cartridge 101 that has been filled with the aerosol-forming substrate is packed in the outer packaging member 102 in a vacuum state. Since the outer packaging member 102 is in a vacuum state with the cartridge 101 packed therein, the internal pressure of the outer packaging member 102 is reduced, a pressure difference is generated between the inside and the outside of the outer packaging member 102, and the outer packaging member 102 is contracted, so that the cartridge 101 that has been filled with the aerosol-forming substrate can be better sealed.

[0021] The cartridge 101 is used for electronic cigarettes. Specifically, the cartridge 101 is used, when it is energized, to sense the user's smoking operation, such as triggering a sensor or a smoking button. The stored aerosol-forming substrate is heated by a heating element 1013, and when the user inhales, the smoke formed due to heating the aerosol-forming substrate is mixed with external air and then is sucked by the user, thereby producing a simulated smoking effect.

[0022] Specifically, referring to FIG. 2, one end of the cartridge 101 is provided with a liquid storage cavity 1011, and the aerosol-forming substrate is filled in the liquid storage cavity 1011. With reference to FIG. 3, the cartridge 101 is further provided with a heating element 1013 and a liquid absorption element 1012. The liquid absorption element 1012 absorbs the aerosol-forming substrate from the liquid storage cavity 1011 and supplies it to the heating element 1013 for heating and atomizing. The generated smoke flows out from the smoke outlet 1017 along the internal passage of the vent pipe 1016, and is inhaled by the user. It is understandable that in other cases, the cartridge 101 may also not include the heating element 1013 and the liquid absorbing element 1012.

[0023] Referring to FIG. 3, a mouthpiece cover 1014 is provided on one end of the cartridge 101 opposite to the liquid storage cavity 1011, and the liquid storage cavity 1011 is also provided with a sealing rubber plug 1015 at one end thereof near the mouthpiece cover 1014. When filling liquid, the protection of the liquid storage cavity 1011 by the mouthpiece cover 1014 is removed, the sealing rubber plug 1015 is pulled out, and then the aerosol-forming substrate can be filled into the liquid storage cavity 1011. It is understandable that in other embodiments, the cartridge 101 may also be a disposable cartridge or a non-repeatable liquid injection cartridge.

[0024] In one embodiment, the inner wall of the outer packaging member 102 is provided with a reactive coating layer 103 that can physically or chemically react with the aerosol-forming substrate. The reactive coating layer 103 is coated on the inner wall of the outer packaging member 102 by dipping, depositing, spraying or pasting. When the vacuum state inside the outer packaging member 102 is destroyed during transportation, causing the aerosol-forming substrate stored in the cartridge 101 to leak, the reactive coating layer 103 will physically or chemically react with the leaked aerosol-forming substrate, so as to achieve the effect of intuitively remind the leakage of the aerosol-forming substrate.

[0025] The reactive coating layer 103 may include silica gel desiccant, which is insoluble in water or other common solvents, is non-toxic, odorless, has stable chemical properties and strong moisture absorption performance, and is a highly active adsorption material. Once the aerosol-forming substrate leaks from the cartridge 101, the aerosol-forming substrate can be absorbed by and concentrated around the reactive coating layer 103 as soon as possible, so as to ensure a sufficient response to produce a reminder effect.

[0026] In another embodiment not shown, the reactive coating layer 103 is a color-changing coating layer. In a normal state, that is, when the aerosol-forming substrate does not leak, the color-changing coating layer has the same color as the outer packaging member 102. In an abnormal state, that is, when the aerosol-forming substrate leaks, the color-changing coating layer reacts physically or chemically with the leaked aerosol-forming substrate, turning into striking colors such as green, yellow or red, so as to achieve the effect of intuitive reminder. Referring to FIG. 4, the reactive coating layer 103 may also include a pattern or a character. For example, in FIG. 4, when the aerosol-forming substrate leaks, the reactive coating layer 103 changes color and displays "warning" character to remind the user. In this embodiment, the outer periphery of the reactive coating layer 103 is further provided with an oval pattern, and the oval pattern encloses the "warning" character as a whole, so that the "warning" character is surrounded by the boundary of the oval pattern. It is understandable that, in order to highlight the display effect, the material of the outer packaging member 102 may be a transparent or trans-

lucent material, so that the effect of the leakage reminder display is not excessively blocked.

[0027] Referring to FIG. 1, the outer packaging member 102 is composed of a hanging portion 1021 and a receiving portion 1022 connected to each other, and the cartridge 101 is packed in the receiving portion 1022. The vacuum packaging product can be hung in a fixed position through the hanging portion 1021, for example, it can be hung on a hook in a supermarket or a convenience store for sales and so on. In this embodiment, the hanging portion 1021 and the receiving portion 1022 can be integrally formed to form the outer packaging member 102, and then a junction 1023 similar to a dashed line is formed by a cutting knife. Therefore, an opening of the receiving portion 1022 can be opened relatively easily from the junction 1023. In another embodiment, the junction 1023 may also be provided with a sealing strip 1025 as shown in FIG. 4, opening the sealing strip 1025 from the junction 1023 can remove the sealing effect of the sealing strip 1025 on the opening of the receiving portion 1022. In this way, the outer packaging member 102 can be recycled after being cleaned and disinfected to avoid waste and environmental pollution.

[0028] Referring to FIG. 4, in one embodiment, only the receiving portion 1022 is provided, that is, no hanging portion 1021 is provided, as long as the cartridge 101 is packed in the receiving portion 1022 of the outer packaging member 102 and the receiving portion 1022 is vacuumed, the technical effect as described above can also be achieved, namely preventing the leakage of the aerosol-forming substrate during the transportation of the cartridge 101.

[0029] At least one tearing opening 1024 is provided at the junction 1023 between the hanging portion 1021 and the receiving portion 1022. Referring to FIG. 1, in one embodiment, there are two tearing openings 1024, and they are symmetrically arranged on the outer wall of the outer packaging member 102, the junction 1023 can be torn along the tearing opening 1024 to open the receiving portion 1022 and take out the cartridge 101. In another embodiment, the junction 1023 is provided with creases along the two opposite tearing openings 1024, and the creases can guide the user to tear or cut along the creases from the tearing openings 1024.

[0030] The embodiments described above are merely preferred embodiments, but not intended to limit the present application. Any modifications, alternatives or improvements made within the principle and spirit of the present application should be interpreted as falling within the protection scope of the present application. The claims are not limited to the features or acts described above. Rather, the proper scope of the present application is defined by the appended claims.

Claims

1. A vacuum packaging product, comprising an outer packaging member and a cartridge configured for use in an electronic cigarette, wherein the cartridge is filled with an aerosol-forming substrate, the cartridge is packed and hermetically sealed in the outer packaging member in a vacuum state.

2. The vacuum packaging product according to claim 1, wherein an inner wall of the outer packaging member is provided with a reactive coating layer capable of reacting physically or chemically with the aerosol-forming substrate.

3. The vacuum packaging product according to claim 2, wherein the reactive coating layer is a color-changing coating layer.

4. The vacuum packaging product according to claim 3, wherein the reactive coating layer is coated on the inner wall of the outer packaging member in a manner of dipping, depositing, spraying, or pasting.

5. The vacuum packaging product according to claim 3, wherein a pattern or a character is provided on the reactive coating layer.

6. The vacuum packaging product according to any one of claims 1 to 5, wherein the outer packaging member is made of a transparent or translucent material.

7. The vacuum packaging product according to claim 1, wherein the outer packaging member comprises a receiving portion, the receiving portion is in a vacuum state, and the cartridge is packed and hermetically sealed in the receiving portion.

8. The vacuum packaging product according to claim 7, wherein the outer packaging member further comprises a hanging portion connected with the receiving portion, the hanging portion and the receiving portion are integrally formed to form the outer packaging member, the vacuum packaging product is capable of being hung in a fixed position through the hanging portion.

9. The vacuum packaging product according to claim 8, wherein a junction is provided between the hanging portion and the receiving portion, the junction is provided with at least one tearing opening, the junction is capable of being destroyed along the tearing opening to open the receiving portion and then take out the cartridge.

10. The vacuum packaging product according to claim 9, wherein the junction is provided with a sealing strip, the sealing strip seals an opening of the receiving portion, and after the junction is destroyed along the tearing opening, the sealing of the sealing strip on the opening of the receiving portion is removed.

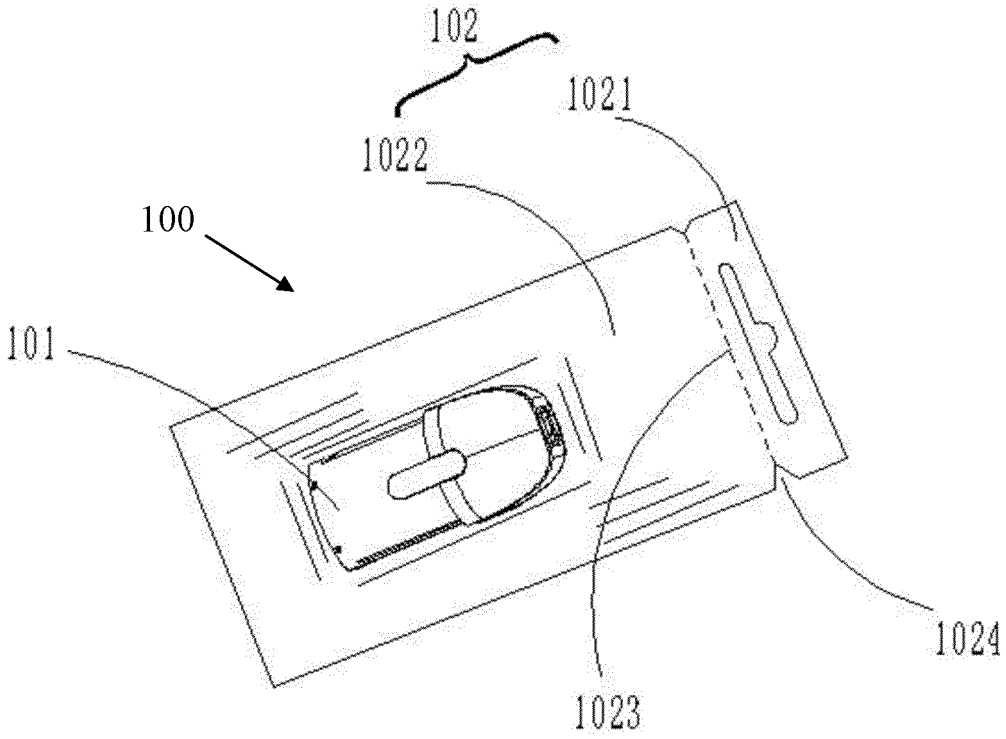

FIG. 1

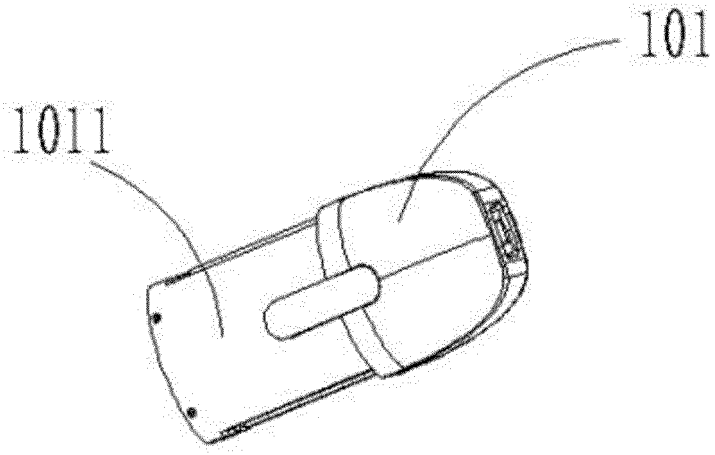

FIG. 2

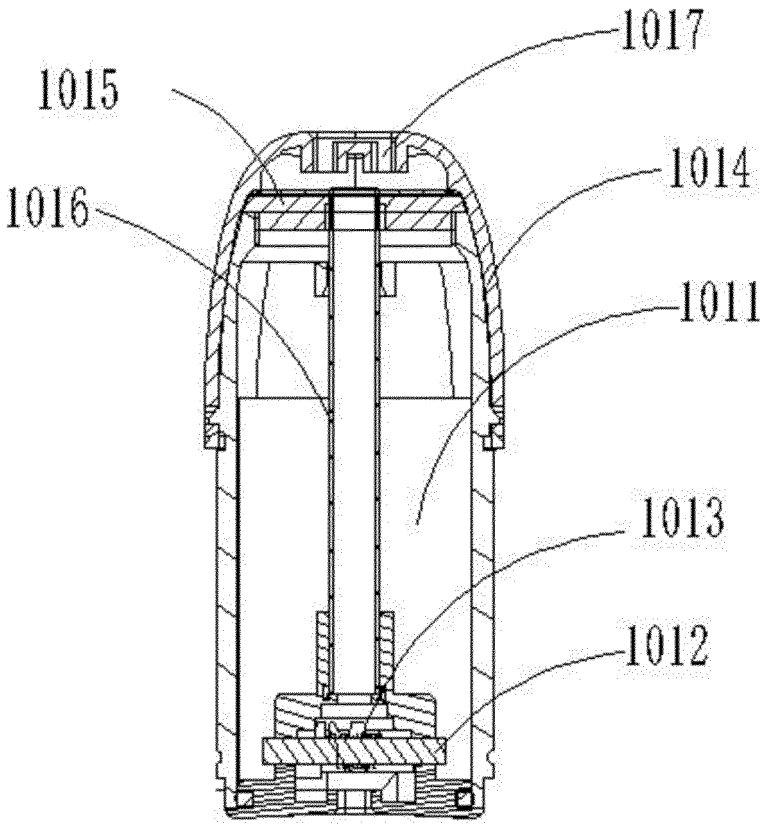

FIG. 3

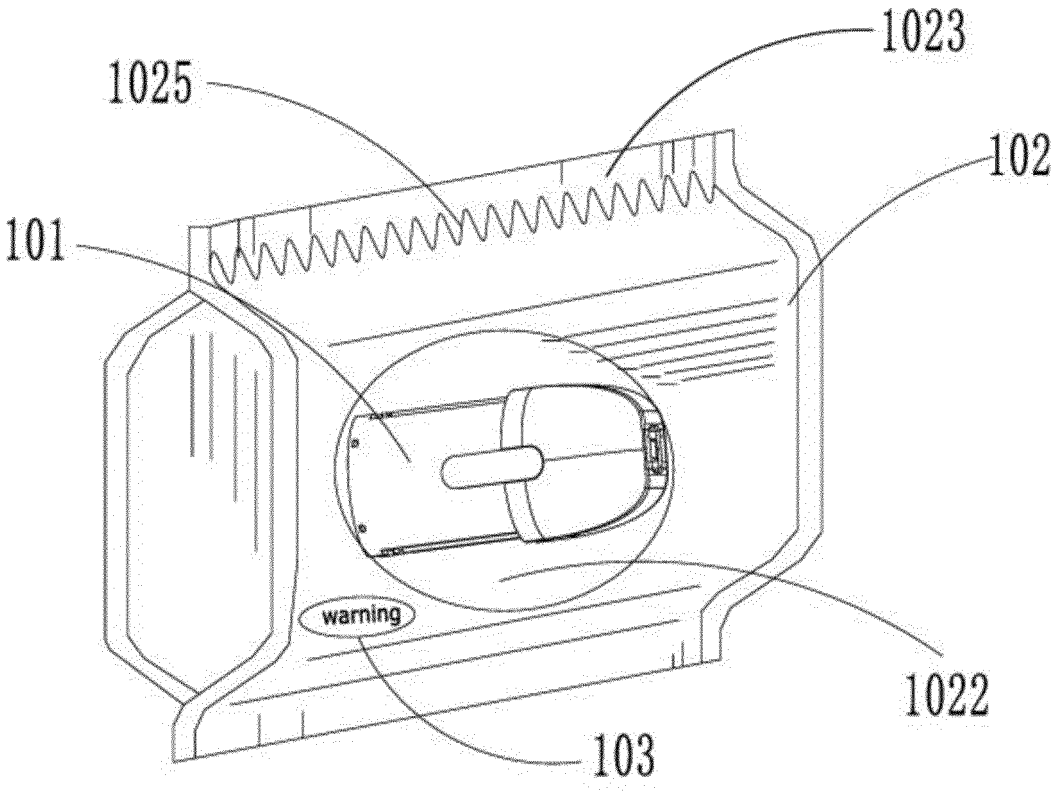

FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/094205

A. CLASSIFICATION OF SUBJECT MATTER

B65D 81/20(2006.01)i; A24F 47/00(2006.01)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)

B65D,B65B,A24F

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)

DWPI; USTXT; CNABS; CNTXT: 包装, 胶囊, 真空, 涂层, 烟弹, 电子烟, 烟液, 气溶胶, 撕口, 密封条, smoking, vapor, capsule, package, cigarette, pack

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	CN 108025817 A (G.D. S.P.A.) 11 May 2018 (2018-05-11) description, paragraphs 24 and 25, and figures 1a-1d	1-10
Y	CN 201272534 Y (DANG, LINGJUN) 15 July 2009 (2009-07-15) description, pages 3 and 4, and figure 1	1-10
Y	US 2005121341 A1 (DARWISH, A. M.) 09 June 2005 (2005-06-09) description, paragraphs 82 and 83, and figures 1 and 2	1-10
A	US 2014216482 A1 (WRAPS LLC J) 07 August 2014 (2014-08-07) entire document	1-10
A	CN 104379006 A (JAPAN TOBACCO INC.) 25 February 2015 (2015-02-25) entire document	1-10

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

* Special categories of cited documents:

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
05 August 2019	**23 August 2019**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	Authorized officer
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/CN2019/094205

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