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(54) **PACKAGING FOR A NON-COMBUSTIBLE
AEROSOL PROVISION SYSTEM**

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(57) **ABSTRACT**

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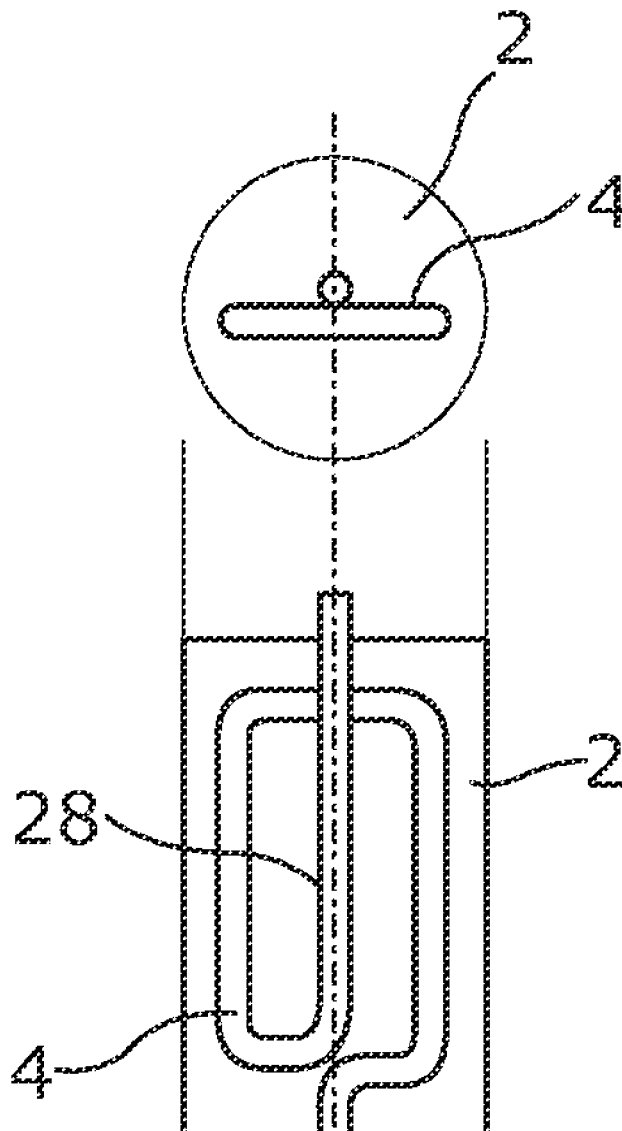
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Jun. 18, 2021 (GB) 2108734.1

Packaging for a non-combustible aerosol provision system, the non-combustible aerosol provision system having a heating element for heating an aerosol generating material, the packaging including means for extracting the heating element from the non-combustible aerosol provision system for disposal.



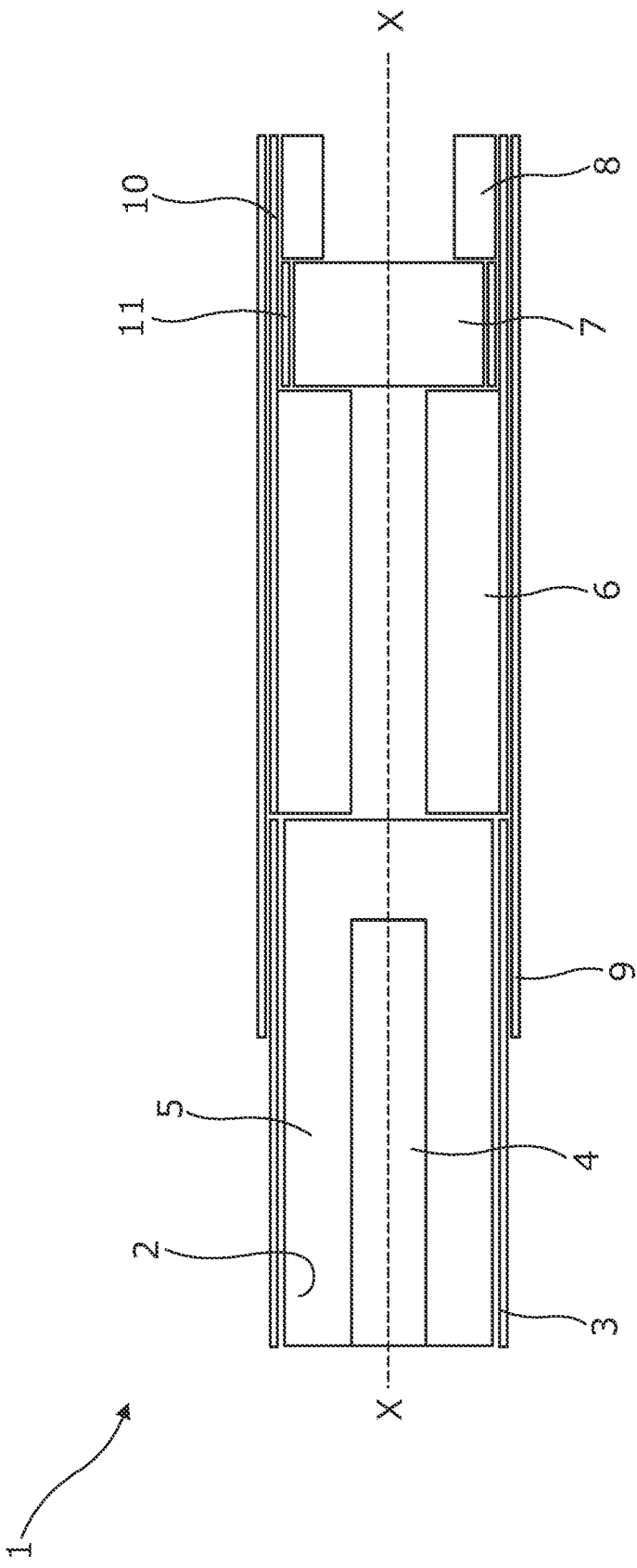


Figure 1

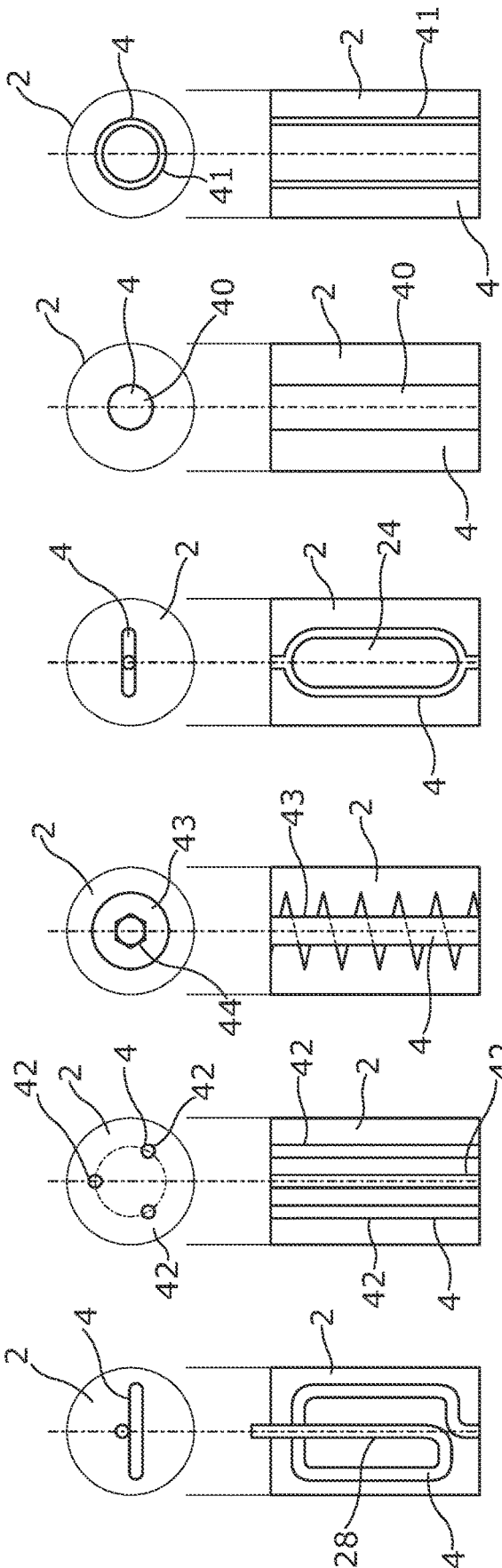


Figure 2 Figure 3 Figure 4 Figure 5 Figure 6 Figure 7

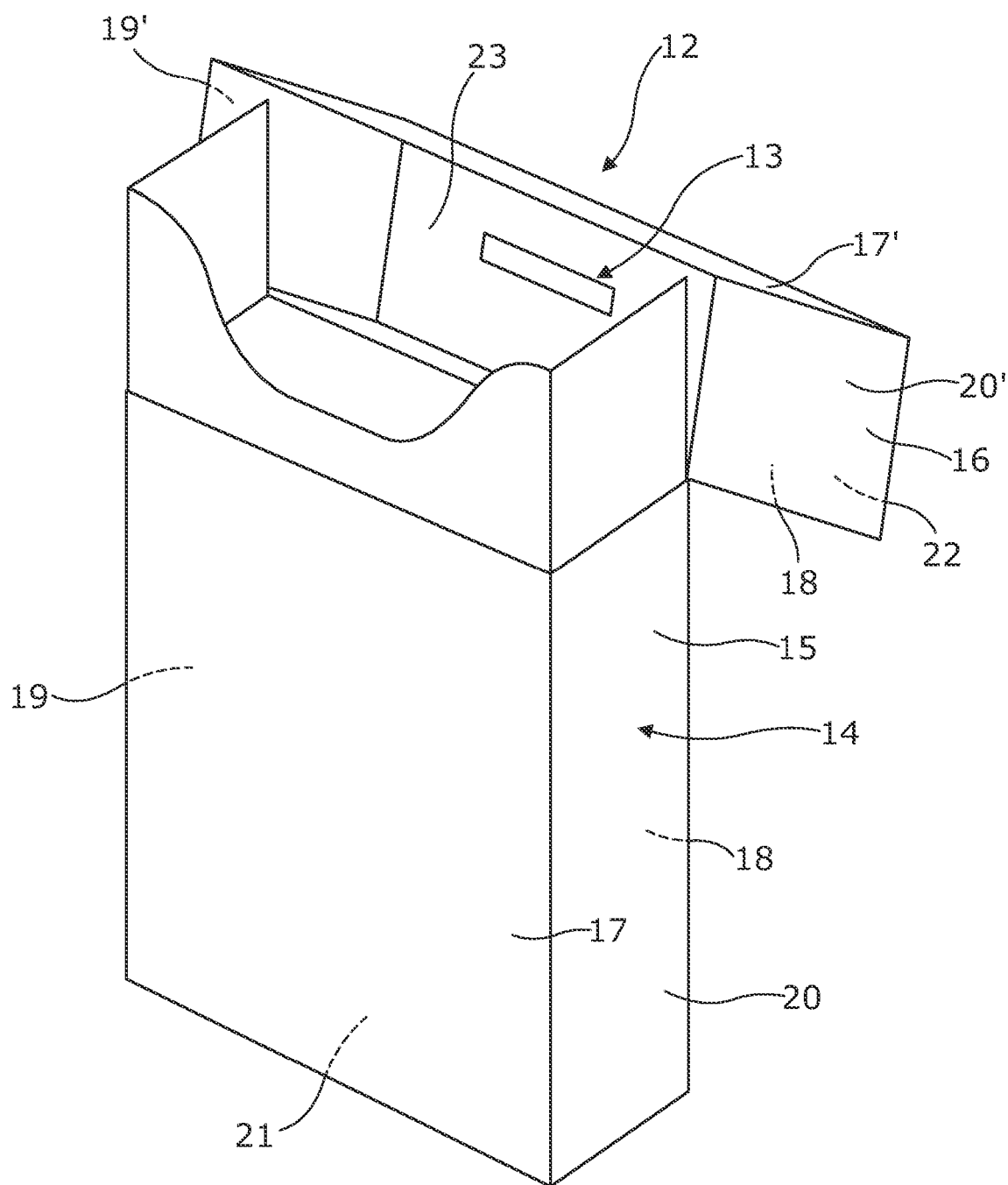


Figure 8

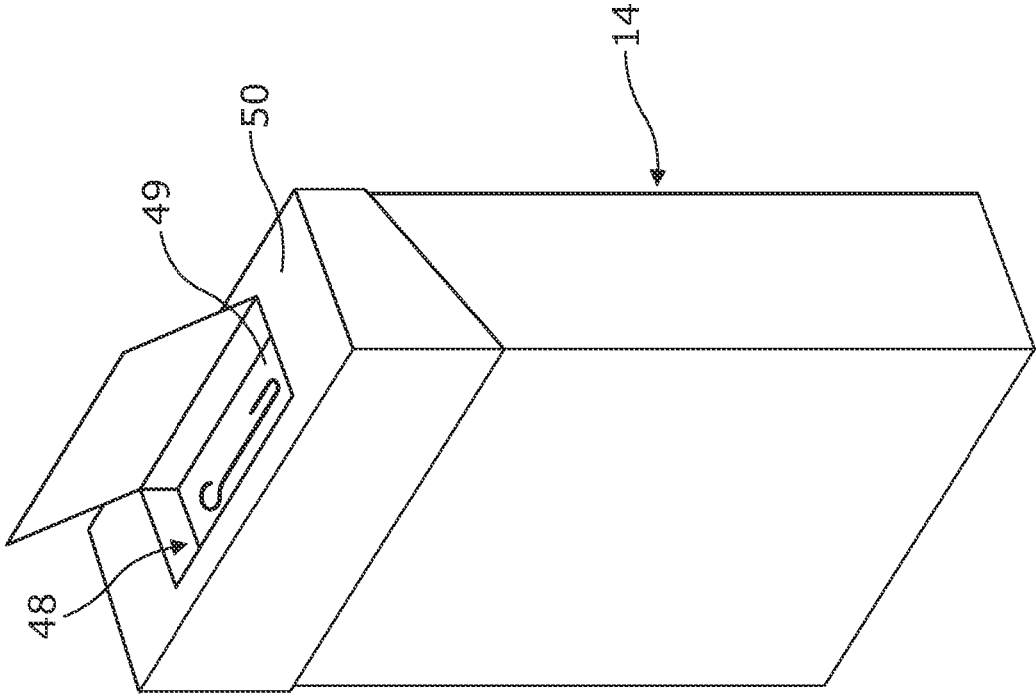


Figure 9

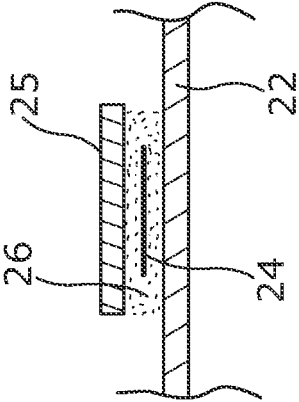


Figure 10

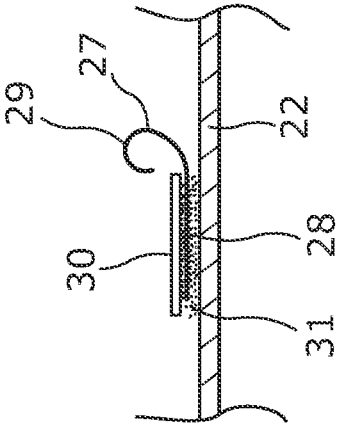


Figure 11

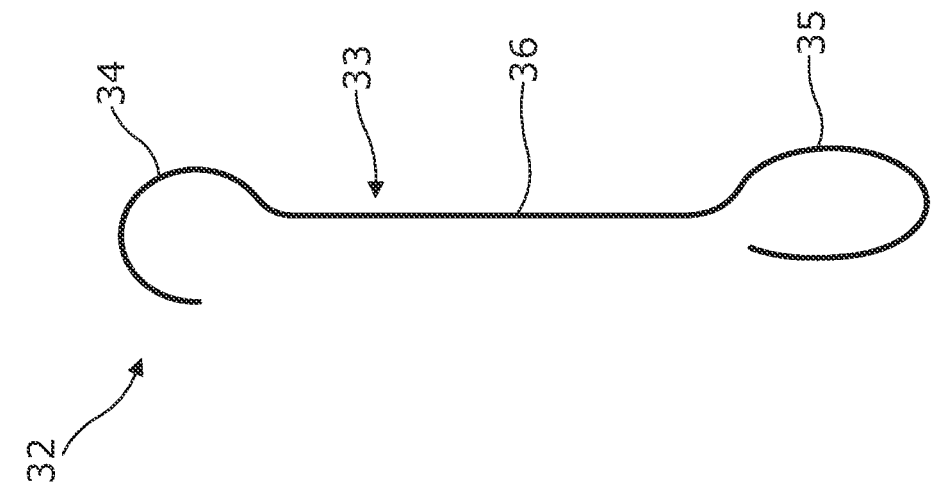


Figure 12

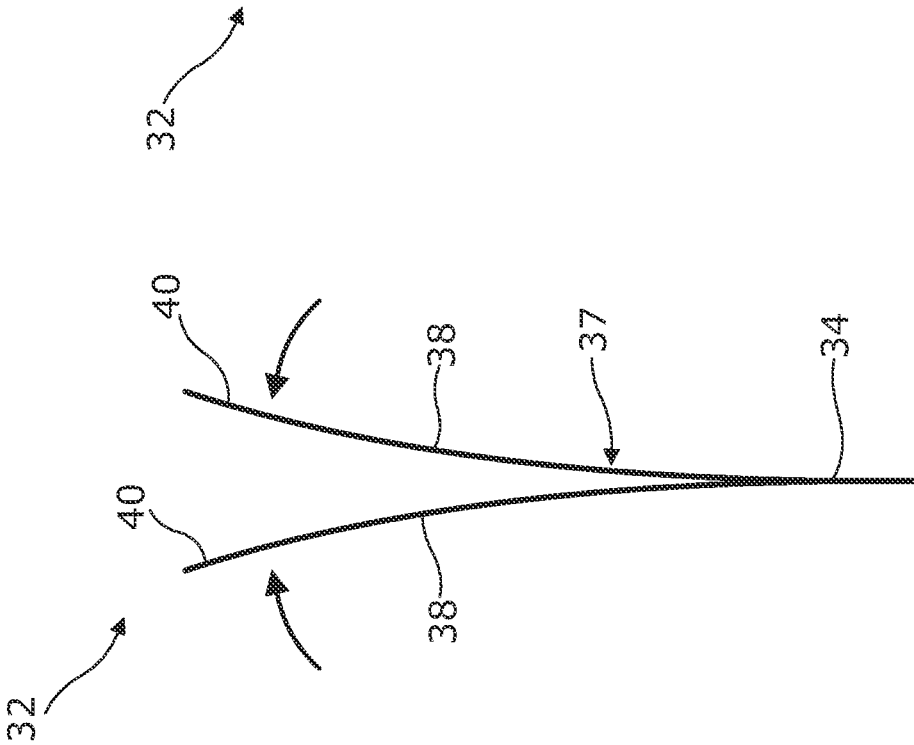


Figure 13

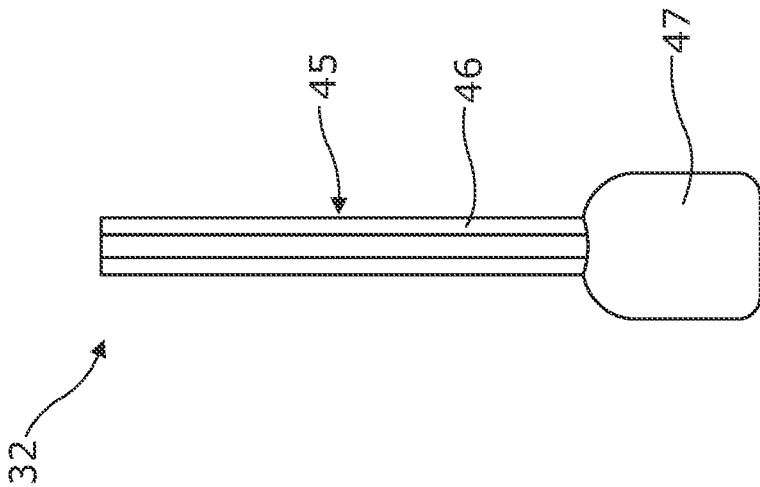


Figure 14

PACKAGING FOR A NON-COMBUSTIBLE AEROSOL PROVISION SYSTEM

RELATED APPLICATIONS

[0001] The present application is a National Phase entry of PCT Application No. PCT/GB2022/051521 filed Jun. 16, 2022, which claims priority to GB Application No. 2108734.1 filed Jun. 18, 2021, each of which is hereby incorporated by reference in their entirety.

TECHNICAL FIELD

[0002] The present invention relates to packaging for a non-combustible aerosol provision system and a method of using the same.

BACKGROUND

[0003] There is a drive toward increasing the recyclability and sustainability of consumer products to reduce harm to the environment. Manufacturers and suppliers may also benefit from recycling as manufacturing costs can be reduced by reusing recycled components.

[0004] There is often a difficulty in engaging consumers with recycling, particularly where the act of recycling imposes an additional burden on them, such as sorting their waste into different recyclable categories.

SUMMARY

[0005] In accordance with some embodiments described herein, in a first aspect there is provided packaging for a non-combustible aerosol provision system, the non-combustible aerosol provision system having a heating element for heating an aerosol generating material, the packaging comprising means for extracting the heating element from the non-combustible aerosol provision system for disposal.

[0006] In accordance with some embodiments described herein, in a second aspect there is provided a method of disposing of a heating element of a non-combustible aerosol provision system comprising:

[0007] providing packaging having means for extracting the heating element from the non-combustible aerosol provision system; and

[0008] extracting the heating element from the non-combustible aerosol provision system for disposal.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a side-on cross sectional view of an article comprising a heating element for use with a non-combustible aerosol provision device;

[0010] FIG. 2 is a detail view of a heating element for an aerosol provision system;

[0011] FIG. 3 is a detail view of a heating element for an aerosol provision system;

[0012] FIG. 4 is a detail view of a heating element for an aerosol provision system;

[0013] FIG. 5 is a detail view of a heating element for an aerosol provision system;

[0014] FIG. 6 is a detail view of a heating element for an aerosol provision system;

[0015] FIG. 7 is a detail view of a heating element for an aerosol provision system;

[0016] FIG. 8 is a package for an aerosol provision system;

[0017] FIG. 9 is a package for an aerosol provision system comprising a disposal compartment;

[0018] FIG. 10 is a detail view of a heat element extraction means;

[0019] FIG. 11 is a detail view of a heat element extraction means;

[0020] FIG. 12 is a tool for removing a heating element from an aerosol provision system;

[0021] FIG. 13 is a tool for removing a heating element from an aerosol provision system; and

[0022] FIG. 14 is a tool for removing a heating element from an aerosol provision system.

DETAILED DESCRIPTION

[0023] According to the present disclosure, a “non-combustible” aerosol provision system is one where a constituent aerosol-generating material of the aerosol provision system (or component thereof) is not combusted or burned in order to facilitate delivery of at least one substance to a user.

[0024] In some embodiments, the delivery system is a non-combustible aerosol provision system, such as a powered non-combustible aerosol provision system.

[0025] In some embodiments, the non-combustible aerosol provision system is an electronic cigarette, also known as a vaping device or electronic nicotine delivery system (END), although it is noted that the presence of nicotine in the aerosol-generating material is not a requirement.

[0026] In some embodiments, the non-combustible aerosol provision system is an aerosol-generating material heating system, also known as a heat-not-burn system. An example of such a system is a tobacco heating system.

[0027] In some embodiments, the non-combustible aerosol provision system is a hybrid system to generate aerosol using a combination of aerosol-generating materials, one or a plurality of which may be heated. Each of the aerosol-generating materials may be, for example, in the form of a solid, liquid or gel and may or may not contain nicotine. In some embodiments, the hybrid system comprises a liquid or gel aerosol-generating material and a solid aerosol-generating material. The solid aerosol-generating material may comprise, for example, tobacco or a non-tobacco product.

[0028] Typically, the non-combustible aerosol provision system may comprise a non-combustible aerosol provision device and a consumable for use with the non-combustible aerosol provision device.

[0029] In some embodiments, the disclosure relates to consumables comprising aerosol-generating material and configured to be used with non-combustible aerosol provision devices. These consumables are sometimes referred to as articles throughout the disclosure.

[0030] FIG. 1 shows an article 1 that, in some embodiments, form part of a non-combustible aerosol provision system comprising the article 1 and a non-combustible aerosol provision device.

[0031] The article 1 comprises a rod shaped aerosol generating section 2 circumscribed by a wrapper 3. A heating element 4 extends axially within the aerosol generating section 2. In some embodiments the heating element 4 is a susceptor. In the present example, the heating element 4 is a ferrous material configured for heating by induction. The heating element 4 may be heated by an induction heater, for example when the article 1 is inserted into a non-combustible aerosol provision system. Therefore, the heating ele-

ment 4 is configured to heat the aerosol generating section 2 when the article 1 is used with a non-combustible aerosol provision system. Heat from the heating element 4 is transferred from the heating element to aerosol generating material 5 of the aerosol generating section 2 to generate an aerosol for inhalation by a user.

[0032] The article of FIG. 1 further comprises a cooling tube 6, filter plug 7 and mouth end tube 8 all arranged in coaxial alignment with the aerosol generating section 2 and attached thereto by a series of overlapping wrapping materials 9, 10, 11. Such articles 1 are typically discarded following use. There is an environmental benefit if consumer participation of recycling can be encouraged.

[0033] The heating element 4 may be made from any material suitable for induction heating. In the present example, the heating element is made from a ferrous material, such as steel. Such materials must be separated from the aerosol generating section 2 for recycling.

[0034] The present invention provides packaging 12 for a non-combustible aerosol provision system. The packaging 12 comprises means 13 for extracting the heating element from the non-combustible aerosol provision system for separate disposal or recycling. In the examples described with reference to FIGS. 8 and 9, the packaging 12 is configured to receive articles 1 of a non-combustible aerosol provision system, substantially as shown in FIG. 1. However, it will be appreciated that the packaging 12 can take any form, such as any conventional form of packaging 12 for aerosol provision systems in general. The key requirement is that the packaging 12 is provided with means 13 for extracting a heating element of the aerosol provision system that the packaging 12 is configured for.

[0035] In the example of FIG. 8, the packaging 12 takes the form of a conventional hinge-lid pack 14, such as the sort of pack 14 widely used for rod shaped articles of the tobacco industry. The pack 14 comprises a box shaped base portion 15, a box shaped lid portion 16 and an inner frame 17 that extends from the base portion 15 to engage the lid portion 16 when the lid portion 16 is closed. Both the lid portion 16 and the base portion 15 comprise front and rear panels 17, 18, 17', 18' separated by side panels 19, 20, 19', 20'. The base portion 15 also comprises a base panel 21 that extends across respective lower edges of the front, rear and side panels 17, 18, 19, 20. The lid portion 16 also comprises a top panel 22 that extends across respective upper edges of the front, rear and side panels 17', 18', 19', 20'. The lid portion 16 hinges where the lower edge of the rear panel 18' of the lid portion 16 and the upper edge of the rear panel 18 of the base portion 15 coincide. The pack 14 may be formed from a folded blank of card in the conventional way.

[0036] Means 13 for extracting the heating element 4 from an article 1 of the pack 14 is shown schematically in FIG. 8. In this example the means 13 are disposed on the inside face 23 of the top panel 22 of the lid portion 16. It will be appreciated that said means 13 is not limited to any particular form, rather said means 13 is limited only by the function of removing a heating element 4 from a non-combustible aerosol provision system.

[0037] In one embodiment in which the heating element 4 is made from a ferromagnetic material, said means is a magnet 24. In the example of FIG. 7, a user may press the aerosol generating section 2 of a spent article 1 against the inside face 23 of the top panel 22, over the magnet 24. On removing the article away from the magnet 24, the heating

element 4 is drawn out of the aerosol generating section 2 by its attraction to the magnet 24. The user may then pick the heating element 4 off the magnet 24 and dispose of the heating element 4 and the article 1 separately.

[0038] The magnet 24 may be applied to the top panel 22 of the pack 14 by adhesive or may be integrated into the top panel 22 by, for example, sandwiching the magnet 24 between the top panel 22 and a layer of card 25, as shown in FIG. 10. FIG. 10 is a cross section in which the various layers are shown spaced apart for ease of reference. To construct the example of FIG. 10, the magnet 24 is first applied to a card blank (not shown) for forming the pack 14; the layer of card 25 is then applied over the magnet 24 and adhered to the blank by an adhesive 26. The pack 14 may then be formed from the blank by folding the blank in the usual way.

[0039] It will be appreciated that, while in the example of FIG. 8, the means 13 for removing the heating element 4 is applied to the inside face 23 of the top panel 22, where said means is a magnet 24, the magnet 24 may be as easily applied to any other panel of the pack 14 in the same way as described above. Furthermore, the user is not required to apply the article 1 to the side of the panel to which the magnet 23 is attached, as the magnetic field will extend through the panel. Therefore, in the example of FIG. 8, the user may equally apply the article 1 to the outside face of the top panel 22 with similar effect.

[0040] FIGS. 2 to 7 show various forms that the heating element 4 of the article 1 shown in FIG. 1 may take. Each figure shows a cross-section of the aerosol generating section 2 in the longitudinal and a third angle projection of the cross-section, transverse to the longitudinal. It will be appreciated that the preferred configuration of the means 13 for removing the heating element 4 will depend largely on the form of the heating element 4. For example, in another embodiment, the means 13 comprises a hook 27. A hook 27 is preferred where the heating element 4 comprises a loop 28 or aperture 29, such as the heating elements 4 of FIGS. 2 and 5. This is because a hook 27 can be used to engage an inside edge of the loop or aperture 28, 29 to pull the heating element from the aerosol generating section 2.

[0041] Where in the example of FIG. 8 said means is a hook 27, the hook 27 may be integrated in the top panel 22 of the pack 14 or it may be removably attached to the top panel 22. However it will be appreciated that the hook 27 may be integrated or removably attached to any panel of the pack 14, as will be explained below.

[0042] The hook 27 may be integrated into a panel of the pack 14 so that it upstands from the panel as shown in FIG. 11—in this case the top panel 22. In the illustrated example, the hook 27 is formed from a length of wire having a straight section 28 and a hooked end 29. The straight section 28 is sandwiched between the panel 22 and an overlying layer of card 30 adhered to the panel 22. To construct the example FIG. 11, the hook 27 is first applied to a card blank (not shown) for forming the pack 14; the layer of card 30 is then applied over the straight section 28 of the hook 27 and adhered to the blank by an adhesive 31. The pack 14 may then be formed from the blank by folding the blank in the usual way.

[0043] In the example of FIG. 8, the means 13 may alternatively comprise a tool 32 removably attached to the inside face 23 of the top panel 22 of the pack 14. The tool 32 may take the form of any of the examples of FIGS. 12 to

14. It shall be appreciated that the tools 32 of FIGS. 12 to 14 are not required to be attached to the inside face 23 of the top panel 22 of the pack 14, but may be removably attached to any other panel of the pack as required.

[0044] In one example, the tool 32 takes the form of a hook 33 as shown in FIG. 12. The hook 33 is formed from a single length of wire and comprises a hooked end 34 and a looped end 35 separated by a straight section 36. The looped end 35 serves as a handle. The tool 32 may be removably attached to the pack by a re-stick adhesive. A user may remove the tool 32 when required and then replace the tool 32 in the same spot by pressing into the adhesive. The hooked end 34 of the tool 32 may be used to engage the loop 28 or aperture 29 of the heating elements 4 of FIGS. 2 and 5.

[0045] The tool 32 of FIG. 13 takes the form of a pair of tongs or tweezers 37. In other words, the tool 32 comprises two resiliently flexible arms 38 attached at proximal end 39 of the tool 32. The arms 38 cantilever with respect to the proximal end 39 so that distal ends 40 of the arms 38 may be pressed together to effect a gripping action. In use, the distal ends 40 of the arms 38 may be inserted into the aerosol generating section 2 of an article 1 so that the ends 40 of the arms 38 overlie an end of the heating element 4. A user may then press the arms 38 together to grip the heating element 4 before pulling to remove the heating element 4 from the article 1. The tool of FIG. 13 can be used to remove any of the heating elements shown in FIGS. 2 to 7, but is most suited to the heating elements of FIGS. 3, 6 and 7 whose shapes are unlikely to catch on aerosol generating material of the aerosol generating section 2. In particular the heating elements of FIGS. 3, 6 and 7 have a constant cross sectional area along the longitudinal axis of the aerosol generating section. This means that when pulled in a longitudinal direction, the heating elements 4 of FIGS. 3, 6 and 7 do not displace aerosol generating material within the aerosol generating section 2 and can be removed with relatively little force. In particular, FIG. 6 shows a cylindrical heating element 40 extending centrally along a longitudinal axis of the aerosol generating section 2. In the example of FIG. 7, a tubular heating element 41 extends along the longitudinal axis. Both the examples of FIGS. 6 and 7 can be easily and simply removed using the tool of FIG. 13. In the example of FIG. 3, the heating element 4 comprises three cylindrical elements 42 evenly spaced about a pitch of the aerosol generating section 2. When using the tool of FIG. 13, each cylindrical element 42 may be removed separately. Furthermore, if any of the examples of FIGS. 3, 6 and 7 are made of a ferromagnetic material, they be easily and simply removed by a magnet, such as the magnet 24 of the examples described above.

[0046] The tool of FIG. 14 is a hex key 45 configured for the removal of a threaded heating element. Such a threaded heating element 43 is shown in FIG. 4. In the present example, the heating element 43 comprises a hexagonal socket 44 in a distal end of the heating element 43 that is coincident with a distal end of the article 1. Therefore, a user may insert the hex key 45 into the hexagonal socket 44 and unscrew the heating element 43 from the aerosol generating section 2. The hex key 45 comprises a hexagonal shaft 46 with a flattened end 47 which a user can manipulate to turn the hex key 45.

[0047] In some embodiments of the invention, the pack 14 further comprises a disposal compartment 48 for collection

of heating elements 4 for separate disposal. In the example of FIG. 9, the disposal compartment 48 is provided in the lid portion 16 of the pack 14. With the exception of the disposal compartment, the pack 14 of FIG. 8 is substantially as described with reference to FIG. 7 with like features retaining the same reference numbers. However, it will be appreciated that the precise form of the pack 14 can vary. In the present example, the disposal compartment 48 comprises a pocket 49 recessed into an upper face 50 of the pack 15. Such a pack 14 may be formed from a card blank in the way described above, but with additional panels (not shown) for forming the pocket 49. During construction of the pack 14, the additional panels are folded to underlie an opening in the top panel and adhered thereto.

[0048] The means 13 for extracting a heating element 4 may be provided within the disposal compartment 48 as shown. The particular example illustrated by FIG. 9 shows the tool of FIG. 12 removably attached to a floor of the pocket 49, but any of means described herein may be removably attached or integrated into the floor of the pocket as described.

[0049] The various embodiments described herein are presented only to assist in understanding and teaching the claimed features. These embodiments are provided as a representative sample of embodiments only, and are not exhaustive and/or exclusive. It is to be understood that advantages, embodiments, examples, functions, features, structures, and/or other aspects described herein are not to be considered limitations on the scope of the invention as defined by the claims or limitations on equivalents to the claims, and that other embodiments may be utilized and modifications may be made without departing from the scope of the claimed invention. Various embodiments of the invention may suitably comprise, consist of, or consist essentially of, appropriate combinations of the disclosed elements, components, features, parts, steps, means, etc., other than those specifically described herein. In addition, this disclosure may include other inventions not presently claimed, but which may be claimed in future.

1. Packaging for a non-combustible aerosol provision system, the non-combustible aerosol provision system having a heating element for heating an aerosol generating material, the packaging comprising means for extracting the heating element from the non-combustible aerosol provision system for disposal.

2. Packaging according to claim 1, wherein the means for extracting the heating element comprises a magnet.

3. Packaging according to claim 1, wherein the means for extracting the heating element comprises a hook.

4. Packaging according to claim 1, wherein the packaging comprises a base portion and a lid portion.

5. Packaging according to claim 4, wherein the lid portion is hingedly attached to the base portion.

6. Packaging according to claim 1, wherein the packaging comprises a primary compartment and a disposal compartment and wherein the means for extracting the heating element is provided within the disposal compartment.

7. Packaging according to claim 6, wherein the packaging comprises a base portion and a lid portion, wherein the disposal compartment is provided in the lid portion.

8. Packaging according to claim 1, wherein the means for extracting the heating element is integrated into the packaging.

9. Packaging according to claim 1, wherein the means for extracting the heating element is a tool removable from the packaging.

10. Packaging according to claim 9, wherein the tool comprises a pair of gripping tongs.

11. Packaging according to claim 9, wherein the packaging comprises a base portion and a lid portion, wherein the tool is releasably attached to an inside of the lid portion.

12. Packaging according to claim 1, wherein the non-combustible aerosol provision system comprises an article for use in a device configured to inductively heat the heating element, the packaging comprising a bundle of said articles.

13. Packaging according to claim 12, wherein the heating element comprises a magnetic material.

14. Packaging according to claim 12, wherein the heating element comprises a loop or aperture.

15. Packaging according to claim 12, when dependent on claim 3, wherein the heating element comprises an eyelet for cooperating with the hook of the means for extracting the heating element.

16. Packaging according to claim 12, wherein the heating element comprises a threaded portion, the threaded portion being engaged with an aerosol generating material of the article, and wherein said means for extracting the heating element comprises means to unscrew the heating element from the aerosol generating material.

17. A method of disposing of a heating element of a non-combustible aerosol provision system comprising:
providing packaging having means for extracting the heating element from the non-combustible aerosol provision system; and
extracting the heating element from the non-combustible aerosol provision system for disposal.

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