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(57) Abrégé/Abstract:

Disclosed is an aerosolisable structure (1) for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material. The aerosolisable structure comprises a gathered layered structure (10, 20, 30, 40, 50) having a first sheet (11, 21, 31, 41) comprising aerosolisable material and a second sheet (12, 22, 32, 42) comprising heating material that is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first sheet. The second sheet is free from aerosolisable material.

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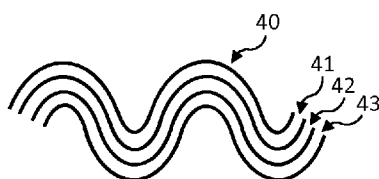


Fig. 6

(57) Abstract: Disclosed is an aerosolizable structure (1) for use in an article for use with apparatus for heating aerosolizable material to volatilise at least one component of the aerosolizable material. The aerosolizable structure comprises a gathered layered structure (10, 20, 30, 40, 50) having a first sheet (11, 21, 31, 41) comprising aerosolizable material and a second sheet (12, 22, 32, 42) comprising heating material that is heatable by penetration with a varying magnetic field to heat the aerosolizable material of the first sheet. The second sheet is free from aerosolizable material.



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AEROSOLISABLE STRUCTURE

Technical Field

5 The present invention relates to aerosolisable structures for use in articles for use with apparatus for heating aerosolisable material, methods of manufacturing an aerosolisable structure, articles for use with apparatus for heating aerosolisable material, methods of manufacturing an article for use with apparatus for heating aerosolisable material, and systems comprising such an article and such apparatus.

10

Background

Smoking articles such as cigarettes, cigars and the like burn tobacco during use to create tobacco smoke. Attempts have been made to provide alternatives to these articles by creating products that release compounds without combusting. Examples of such products are so-called “heat not burn” products or tobacco heating devices or products, which release compounds by heating, but not burning, material. The material may be, for example, tobacco or other non-tobacco products, which may or may not contain nicotine.

20

Summary

A first aspect of the present invention provides an aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, the aerosolisable structure comprising: a gathered layered structure having: a first sheet comprising aerosolisable material; and a second sheet comprising heating material that is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first sheet, wherein the second sheet is free from aerosolisable material.

30

In an exemplary embodiment, the aerosolisable material is reconstituted, cellulosic, or in gel form.

In an exemplary embodiment, the aerosolisable structure is free from any aerosolisable material between the heating material and the reconstituted or cellulosic aerosolisable material or the aerosolisable material in gel form.

5 In an exemplary embodiment, the reconstituted or cellulosic aerosolisable material or the aerosolisable material in gel form is in surface contact with the heating material.

10 In an exemplary embodiment, the second sheet consists of the heating material only.

In an exemplary embodiment, the layered structure is crimped.

15 In an exemplary embodiment, the heating material comprises one or more materials selected from the group consisting of: an electrically-conductive material, a magnetic material, and a magnetic electrically-conductive material.

20 In an exemplary embodiment, the heating material comprises a metal or a metal alloy.

25 In an exemplary embodiment, the heating material comprises one or more materials selected from the group consisting of: aluminium, gold, iron, nickel, cobalt, conductive carbon, graphite, steel, plain-carbon steel, mild steel, stainless steel, ferritic stainless steel, copper, and bronze.

In an exemplary embodiment, the first sheet comprises reconstituted tobacco.

In an exemplary embodiment, the second sheet comprises aluminium foil.

30 In an exemplary embodiment, the aerosolisable structure comprises a wrapper wrapped around the gathered layered structure.

In an exemplary embodiment, the aerosolisable structure is substantially cylindrical.

5 A second aspect of the present invention provides an aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, the aerosolisable structure comprising: a gathered layered structure having: a first sheet comprising aerosolisable material; a second sheet comprising heating material; and a third sheet comprising aerosolisable material; wherein the second sheet is located between the first and third
10 sheets, and wherein the heating material is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first and third sheets.

In an exemplary embodiment, the second sheet is free from aerosolisable material.
15

In an exemplary embodiment, the second sheet consists of the heating material only.

In an exemplary embodiment, the layered structure is crimped.
20

In an exemplary embodiment, the heating material comprises one or more materials selected from the group consisting of: an electrically-conductive material, a magnetic material, and a magnetic electrically-conductive material.

25 In an exemplary embodiment, the heating material comprises a metal or a metal alloy.

In an exemplary embodiment, the heating material comprises one or more materials selected from the group consisting of: aluminium, gold, iron, nickel, cobalt, conductive carbon, graphite, steel, plain-carbon steel, mild steel, stainless steel, ferritic
30 stainless steel, copper, and bronze.

In an exemplary embodiment, the aerosolisable material of the first sheet is reconstituted, cellulosic, or in gel form.

5 In an exemplary embodiment, the first sheet comprises reconstituted tobacco.

In an exemplary embodiment, the second sheet comprises aluminium foil.

10 In an exemplary embodiment, the aerosolisable material of the third sheet is reconstituted, cellulosic, or in gel form.

In an exemplary embodiment, the third sheet comprises reconstituted tobacco.

15 In an exemplary embodiment, the aerosolisable structure comprises a wrapper wrapped around the gathered layered structure.

In an exemplary embodiment, the aerosolisable structure is substantially cylindrical.

20 A third aspect of the present invention provides an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, the article comprising the aerosolisable structure of the first aspect of the present invention or the aerosolisable structure of the second aspect of the present invention.

25 In an exemplary embodiment, the article comprises a filter for filtering aerosol released from the aerosolisable structure in use, and a connector by which the filter is retained relative to the aerosolisable structure.

30 A fourth aspect of the present invention provides a system for heating aerosolisable material to volatilise at least one component of the aerosolisable material, the system comprising: an article according to the third aspect of the present invention; and apparatus for heating the aerosolisable material of the article to volatilise at least one component of the aerosolisable material, the apparatus comprising: a heating zone

for receiving the article, and a magnetic field generator for generating the varying magnetic field for penetrating the heating material of the article when the article is located in the heating zone.

5 A fifth aspect of the present invention provides a method of manufacturing an aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, the method comprising: providing a layered structure, the layered structure having a first sheet comprising aerosolisable material, and a second sheet comprising heating
10 material that is heatable by penetration with a varying magnetic field to heat the aerosolisable material; and gathering the layered structure to form a gathered layered structure.

 In an exemplary embodiment, the second sheet is free from aerosolisable
15 material.

 In an exemplary embodiment, the second sheet consists of the heating material only.

20 In an exemplary embodiment, the second sheet comprises aluminium foil.

 In an exemplary embodiment, the aerosolisable material of the first sheet is reconstituted, cellulosic, or in gel form.

25 In an exemplary embodiment, the first sheet comprises reconstituted tobacco.

 In an exemplary embodiment, the layered structure has a third sheet comprising aerosolisable material, the second sheet is located between the first and third sheets, and the heating material is heatable by penetration with a varying magnetic field to heat the
30 aerosolisable material of the first and third sheets.

 In an exemplary embodiment, the aerosolisable material of the third sheet is reconstituted, cellulosic, or in gel form.

In an exemplary embodiment, the third sheet comprises reconstituted tobacco.

5 In an exemplary embodiment, the gathering comprises feeding the layered structure through a converging funnel.

In an exemplary embodiment, the gathering causes the layered structure to become substantially cylindrical.

10 In an exemplary embodiment, the method comprises crimping the layered structure before the gathering.

In an exemplary embodiment, the providing the layered structure comprises causing the first sheet to come into contact with the second sheet.

15

In an exemplary embodiment, the providing the layered structure comprises causing the third sheet to come into contact with the second sheet.

20 In an exemplary embodiment, the method comprises wrapping a wrapper around the gathered layered structure to form a wrapped gathered layered structure.

In an exemplary embodiment, the method comprises severing the wrapped gathered layered structure to form a discrete wrapped gathered layered structure.

25 A sixth aspect of the present invention provides a method of manufacturing an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, the method comprising:

performing the method of the fifth aspect of the present invention; and

30 connecting a filter to the gathered layered structure using a connector that retains the filter relative to the gathered layered structure

Brief Description of the Drawings

Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

5

Figure 1 shows a schematic side view of an example of an aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

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Figure 2 shows a schematic cross-sectional view of the aerosolisable structure of Figure 1;

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Figure 3 shows a partial schematic cross-sectional view of an example of a layered structure of an aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

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Figure 4 shows a partial schematic cross-sectional view of an example of a layered structure of another aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

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Figure 5 shows a partial schematic cross-sectional view of an example of a layered structure of a further aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

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Figure 6 shows a partial schematic cross-sectional view of an example of a layered structure of a still further aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

Figure 7 shows a schematic cross-sectional side view of an example of another aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

5 Figure 8 shows a schematic cross-sectional side view of an example of an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

10 Figure 9 shows a schematic cross-sectional side view of an example of another article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

15 Figure 10 shows a schematic cross-sectional side view of an example of a system comprising the article of Figure 9 and apparatus for heating aerosolisable material of the article to volatilise at least one component of the aerosolisable material;

20 Figure 11 shows a flow diagram showing an example of a method of manufacturing an aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material;

25 Figure 12 shows a flow diagram showing an example of another method of manufacturing an aerosolisable structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material; and

30 Figure 13 shows a flow diagram showing an example of a method of manufacturing an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material.

Detailed Description

As used herein, the term “aerosolisable material” includes materials that provide volatilised components upon heating, typically in the form of vapour or an aerosol.

5 “Aerosolisable material” may be a non-tobacco-containing material or a tobacco-containing material. “Aerosolisable material” may, for example, include one or more of tobacco per se, tobacco derivatives, expanded tobacco, reconstituted tobacco, tobacco extract, homogenised tobacco or tobacco substitutes. The aerosolisable material can be in the form of ground tobacco, cut rag tobacco, extruded tobacco, reconstituted tobacco, reconstituted aerosolisable material, liquid, gel, gelled sheet, powder, or agglomerates, or the like. “Aerosolisable material” also may include other, non-tobacco, products, which, depending on the product, may or may not contain nicotine. “Aerosolisable material” may comprise one or more humectants, such as glycerol or propylene glycol.

15

As used herein, the term “sheet” denotes an element having a width and length substantially greater than a thickness thereof.

As used herein, where it is stated that a sheet is “free from aerosolisable material”, this means that the sheet itself does not comprise or consist of aerosolisable material, and is not coated or impregnated with aerosolisable material. However, it does not mean that the sheet may not be adjacent (directly or indirectly) to, or adhered to, a sheet that does comprise aerosolisable material.

25 As used herein, the term “gathered” includes wrinkled, folded, creased, or otherwise convoluted in shape, whether in a regular or an irregular manner. Correspondingly, as used herein, the term “gathering” includes wrinkling, folding, creasing, or otherwise convoluting in shape, whether in a regular or an irregular manner.

30 As used herein, the term “crimped” includes having a plurality of substantially parallel corrugations, or ridges and troughs, therein.

As used herein, the term “heating material” or “heater material” refers to material that is heatable by penetration with a varying magnetic field.

Induction heating is a process in which an electrically-conductive object is
5 heated by penetrating the object with a varying magnetic field. The process is described
by Faraday’s law of induction and Ohm’s law. An induction heater may comprise an
electromagnet and a device for passing a varying electrical current, such as an
alternating current, through the electromagnet. When the electromagnet and the object
to be heated are suitably relatively positioned so that the resultant varying magnetic
10 field produced by the electromagnet penetrates the object, one or more eddy currents
are generated inside the object. The object has a resistance to the flow of electrical
currents. Therefore, when such eddy currents are generated in the object, their flow
against the electrical resistance of the object causes the object to be heated. This process
is called Joule, ohmic, or resistive heating. An object that is capable of being
15 inductively heated is known as a susceptor.

It has been found that, when the susceptor is in the form of a closed electrical
circuit, magnetic coupling between the susceptor and the electromagnet in use is
enhanced, which results in greater or improved Joule heating.

20

Magnetic hysteresis heating is a process in which an object made of a magnetic
material is heated by penetrating the object with a varying magnetic field. A magnetic
material can be considered to comprise many atomic-scale magnets, or magnetic
dipoles. When a magnetic field penetrates such material, the magnetic dipoles align
25 with the magnetic field. Therefore, when a varying magnetic field, such as an
alternating magnetic field, for example as produced by an electromagnet, penetrates the
magnetic material, the orientation of the magnetic dipoles changes with the varying
applied magnetic field. Such magnetic dipole reorientation causes heat to be generated
in the magnetic material.

30

When an object is both electrically-conductive and magnetic, penetrating the
object with a varying magnetic field can cause both Joule heating and magnetic

hysteresis heating in the object. Moreover, the use of magnetic material can strengthen the magnetic field, which can intensify the Joule and magnetic hysteresis heating.

5 In each of the above processes, as heat is generated inside the object itself, rather than by an external heat source by heat conduction, a rapid temperature rise in the object and more uniform heat distribution can be achieved, particularly through selection of suitable object material and geometry, and suitable varying magnetic field magnitude and orientation relative to the object. Moreover, as induction heating and magnetic hysteresis heating do not require a physical connection to be provided between the
10 source of the varying magnetic field and the object, design freedom and control over the heating profile may be greater, and cost may be lower.

Referring to Figures 1 and 2, there are shown schematic side and cross-sectional views of an example of an aerosolisable structure according to an embodiment of the
15 invention. The aerosolisable structure 1 is for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, such as the article 100 shown in Figure 8 and described below.

The aerosolisable structure 1 is substantially cylindrical with a substantially
20 circular cross section (see Figure 2), but in other embodiments the aerosolisable structure 1 may have an oval or elliptical cross section or be other than cylindrical. In some embodiments, the aerosolisable structure 1 may have a polygonal, quadrilateral, rectangular, square, triangular, star-shaped, or irregular cross section, for example. In this embodiment, the aerosolisable structure 1 is a rod. In some other embodiments, the
25 aerosolisable structure may be tubular with a hollow inner region.

In this embodiment, the aerosolisable structure 1 is elongate and has a longitudinal axis A-A. A length of the aerosolisable structure 1 in the direction of the longitudinal axis A-A may fall within the range of 40 millimetres to 150 millimetres,
30 such as 70 millimetres to 120 millimetres. In other embodiments, the aerosolisable structure 1 may not be elongate. In some such other embodiments, the aerosolisable structure 1 still has an axial direction A-A that is perpendicular to the cross section of the aerosolisable structure 1 shown in Figure 2. A width of the aerosolisable structure

1 perpendicular to the axial direction A-A may fall within the range of 4 millimetres to 10 millimetres, such as 5 millimetres to 8 millimetres. A circumference of the aerosolisable structure 1 perpendicular to the axial direction A-A may fall within the range of 12 millimetres to 30 millimetres, such as 16 millimetres to 25 millimetres.

5

The aerosolisable structure 1 comprises a layered structure 10. Figure 3 shows a partial schematic cross-sectional view of the layered structure 10 of the aerosolisable structure 1. The layered structure 10 comprises a first sheet 11 and a second sheet 12. In some embodiments, the layered structure 10 is a laminate. In some embodiments, 10 the first sheet 11 is bonded to the second sheet 12, such as by an adhesive or by a chemical bond. Examples adhesives are polyvinyl acetate (PVA) and ethylene-vinyl acetate (EVA). In other embodiments, the first sheet 11 may be unbonded to the second sheet 12.

15 In this embodiment, the first sheet 11 comprises aerosolisable material. The aerosolisable material of the first sheet 11 may be any of the aerosolisable materials discussed herein, such as reconstituted aerosolisable material (e.g. reconstituted tobacco) or in the form of a gel. The first sheet 11 may comprise a substrate, such as a paper, that is impregnated or coated with an aerosolisable material, such as a gel. The 20 aerosolisable material of the first sheet 11 may be cellulosic aerosolisable material.

In this embodiment, the second sheet 12 comprises heating material that is heatable by penetration with a varying magnetic field. More specifically, the heating material is heatable by penetration with the varying magnetic field to heat the 25 aerosolisable material of the first sheet 11. That is, the heating material is in thermal contact with the aerosolisable material. Since the first and second sheets 11, 12 are part of the same layered structure 10, the heat generated in the second sheet 12 by the penetration with the varying magnetic field is proximate to the first sheet 11 and so relatively efficient heating of the aerosolisable material of the first sheet 11 may be 30 achieved. In some embodiments, the aerosolisable material of the first sheet 11 is in surface contact with the heating material of the second sheet 12. Thus, heat may be conducted directly from the heating material to the aerosolisable material. This can help to further increase the efficiency of heating of the aerosolisable material of the first sheet

11. In other embodiments, the heating material may be kept out of surface contact with the aerosolisable material. For example, in some embodiments, a thermally-conductive barrier that is free from heating material and aerosolisable material may space the heating material from the aerosolisable material. In some embodiments, the thermally-
5 conductive barrier may be a coating on the first sheet 11 or on the second sheet 12. The provision of such a barrier may be advantageous to help to dissipate heat to alleviate hot spots in the heating material.

In some embodiments in which the aerosolisable material of the first sheet 11 is
10 reconstituted, cellulosic or in gel form, the aerosolisable structure 1 may be free from any aerosolisable material between the reconstituted, cellulosic or gel-form aerosolisable material of the first sheet 11 and the heating material of the second sheet 12. In some embodiments, a benefit of this is that a greater proportion of the heat generated in the second sheet 12 by penetrating the heating material with the varying
15 magnetic field is usable to heat the aerosolisable material of the first sheet 11.

In this embodiment, the heating material is aluminium, and the second sheet 12 is a sheet of aluminium foil. However, in other embodiments, the heating material may be any one or more of those described herein and/or the sheet 12 comprising heating
20 material may take any of the forms described herein.

In this embodiment, the second sheet 12 is free from aerosolisable material. In some embodiments, the second sheet 12 consists of the heating material only. In other embodiments, such as will be described below with reference to Figures 5 and 6, this
25 may not be the case. In some embodiments, a benefit of omitting aerosolisable material from the second sheet 12 in this way is that a greater proportion of the heat generated in the second sheet 12 by penetrating the heating material with the varying magnetic field is usable to heat the aerosolisable material of the first sheet 11.

30 As is best seen in Figure 2, the layered structure 10 of the aerosolisable structure 1 is a gathered layered structure 10. In other words, the layered structure 10 has been gathered. Example methods for gathering the layered structure 10 are described in more detail below. This gathering of the layered structure 10 enables a greater proportion of

the second sheet 12 comprising heating material to be proximate to the first sheet 11 comprising the aerosolisable material to be heated, as compared to, for example, wrapping the second sheet 12 comprising heating material just around the outside of a plug or gathering of the aerosolisable material or locating a blade or bar of heating material in a relatively concentrated way in a plug or gathering of the aerosolisable material. Accordingly, improved efficiency of heating of the aerosolisable material of the first sheet 11 may be achieved. Moreover, a sheet comprising aerosolisable material can have a relatively high surface area to volume ration, and gathering a sheet comprising aerosolisable material can leave a large proportion of a surface area of the sheet exposed for release of aerosol in use. Furthermore, the gathered sheet can define one or more flow paths along which aerosol generated in use is able to escape from the aerosolisable structure.

In a variation to the embodiment of Figures 1 to 3, the layered structure may be crimped. Figure 4 shows a partial schematic cross-sectional view of an example of a gathered layered structure of another aerosolisable structure according to an embodiment of the invention, in which embodiment the layered structure is crimped. The gathered layered structure 20 of Figure 4 again comprises a first sheet 21 comprising aerosolisable material, and a second sheet 22 comprising heating material that is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first sheet 21. Still further, the second sheet 22 is again free from aerosolisable material. In some embodiments, the second sheet 22 consists of the heating material only. In some variations to this embodiment, the first and second sheets 21, 22 may have any of the optional or alternative features described herein in relation to the first and second sheets 11, 12 shown in Figures 2 and 3.

Such crimping can aid gathering of the layered structure 20, and/or dictate how the layered structure 20 becomes gathered, during manufacture of the aerosolisable structure. For example, the distance by which the layered structure 20 is crimped can help to determine the path that the convolutions of the layered structure 20 will take when gathered, and may help to determine a porosity of the resultant gathered layered structure 20. Additionally, or alternatively, such crimping can further increase the proportion of the second sheet 22 that is proximate to the first sheet 21, which in turn

helps to increase the efficiency with which the aerosolisable material of the first sheet 21 is heated in use. Some, most or all of the plurality of substantially parallel corrugations, or ridges and troughs, present in the layered structure 20 as a result of the crimping may be parallel to an axial direction A-A of the aerosolisable structure in which the layered structure 20 is comprised.

In each of the embodiments shown in Figures 1 to 3 and Figure 4 and described herein, the gathered layered structure 10, 20 comprises two sheets 11, 12, 21, 22. However, in some embodiments, the gathered layered structure may comprise more than two sheets. Figure 5 shows a partial schematic cross-sectional view of an example of a gathered layered structure 30 of a further aerosolisable structure according to an embodiment of the invention.

The gathered layered structure 30 of Figure 5 has a first sheet 31, a second sheet 32, and a third sheet 33. The second sheet 32 is located between the first sheet 31 and the third sheet 33. Each of the first and second sheets 31, 33 comprises aerosolisable material. The aerosolisable material of the first sheet 31 may be any of the aerosolisable materials discussed herein, such as reconstituted tobacco or in the form of a gel. Similarly, the aerosolisable material of the third sheet 33 may be any of the aerosolisable materials discussed herein, such as reconstituted tobacco or in the form of a gel. One or each of the first and third sheets 31, 33 may be cellulosic aerosolisable material.

The second sheet 32 comprises heating material that is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first and third sheets 31, 33. Locating the second sheet 32 between the first and third sheets 31, 33 enables a greater proportion of the total area of the surfaces of the second sheet 32 to be proximate to a sheet 31, 33 comprising aerosolisable material. In turn, this permits heat energy emitted from both surfaces of the second sheet 32 in use to heat aerosolisable material of the layered structure 30.

30

In some embodiments, the second sheet 32 is free from aerosolisable material. In some embodiments, the second sheet 32 consists of the heating material only. However, in other embodiments, the second sheet 32 itself may comprise aerosolisable

material, such as through the provision of a coating of aerosolisable material, or the impregnation or interweaving of the second sheet 32 with aerosolisable material. In some variations to this embodiment, one or each of the first and third sheets 31, 33 may have any of the optional or alternative features described herein in relation to the first sheet 11 shown in Figures 2 and 3. In some variations to this embodiment, the second sheet 32 may have any of the optional or alternative features described herein in relation to the second sheet 12 shown in Figures 2 and 3.

In a variation to the embodiment of Figure 5, the layered structure may be crimped. Figure 6 shows a partial schematic cross-sectional view of an example of a gathered layered structure of a still further aerosolisable structure according to an embodiment of the invention. The gathered layered structure 40 of Figure 6 is the same as the gathered layered structure 30 of Figure 5, except that the gathered layered structure 40 of Figure 6 is crimped. The layered structure 40 of Figure 6 again comprises first and third sheets 41, 43 comprising aerosolisable material, and again comprises a second sheet 42 therebetween comprising heating material that is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first and third sheets 41, 43. Any of the herein-described possible variations to the embodiment of Figure 5 may be made to the embodiment of Figure 6 to form further embodiments.

Figure 7 shows a schematic cross-sectional side view of an example of another aerosolisable structure according to an embodiment of the invention. The aerosolisable structure 5 of Figure 7 is again substantially cylindrical with a substantially circular cross section and a longitudinal axis A-A. A length and/or a width of the aerosolisable structure 5 may, for example, be any one of those discussed herein for the aerosolisable structure 1 of Figures 1 to 3. In other embodiments, the aerosolisable structure 5 may have a different cross section, such as any of those discussed herein, or be other than cylindrical, or not be elongate.

The aerosolisable structure 5 of Figure 7 comprises a gathered layered structure 50. The gathered layered structure 50 may be the same as any one of the gathered

layered structures 10, 20, 30, 40 discussed above, or any of the variants thereof discussed herein.

5 The aerosolisable structure 5 also comprises a wrapper 51 that is wrapped around the gathered layered structure 50. The wrapper 51 encircles the gathered layered structure 50, may help to avoid or prevent unravelling or ungathering of the layered structure 50, and helps to protect the gathered layered structure 50 from damage during transport and use. During use, the wrapper 51 may also help to direct the flow of air into and through the gathered layered structure 50, and may help to direct the flow of
10 vapour or aerosol through and out of the gathered layered structure 50.

In this embodiment, the wrapper 51 is wrapped around the gathered layered structure 50 so that free ends of the wrapper 51 overlap each other. The wrapper 51 may form all of, or a majority of, a circumferential outer surface of the aerosolisable
15 structure 5. The wrapper 51 could be made of any suitable material, such as paper, card, reconstituted aerosolisable material (e.g. reconstituted tobacco), or heating material (e.g. a metal or metal alloy foil, such as aluminium foil). The wrapper 51 may also comprise an adhesive (not shown) that adheres the overlapped free ends of the wrapper 51 to each other. The adhesive may comprise one or more of, for example, gum Arabic,
20 natural or synthetic resins, starches, and varnish. The adhesive helps prevent the overlapped free ends of the wrapper 51 from separating. In other embodiments, the adhesive may be omitted or the wrapper 51 may take a different form to that described. Any one of these types of wrapper may be applied to the other aerosolisable structures described or illustrated herein to form further embodiments.

25

Any one of the aerosolisable structures described or illustrated herein may itself be employed as an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, such as the apparatus 500 shown in Figure 10 and described below. However, in other embodiments, the
30 article may comprise an aerosolisable structure along with one or more further components.

For example, Figure 8 shows a schematic cross-sectional side view of an example of an article according to an embodiment of the invention. The article 100 of Figure 8 comprises the aerosolisable structure 1 of Figures 1 to 3. However, in other embodiments, the aerosolisable structure of the article may be any other one of the aerosolisable structures described herein, for example.

The article 100 is substantially cylindrical with a substantially circular cross section, but in other embodiments the article 100 may have an oval or elliptical cross section or be other than cylindrical. In some embodiments, the article 100 may have a polygonal, quadrilateral, rectangular, square, triangular, star-shaped, or irregular cross section, for example. In this embodiment, the article 100 is a rod. In some other embodiments, the article may be tubular with a hollow inner region.

In this embodiment, the article 100 is elongate and has a longitudinal axis B-B. The longitudinal axis B-B of the article 100 is coincident with the longitudinal axis A-A of the aerosolisable structure 1. A length of the article 100 in the direction of the longitudinal axis B-B may fall within the range of 40 millimetres to 150 millimetres, such as 70 millimetres to 120 millimetres. In other embodiments, the article 100 may not be elongate. In some such other embodiments, the article 100 still has an axial direction B-B that is perpendicular to the cross section of the article 100. A width of the article 100 perpendicular to the axial direction B-B may fall within the range of 4 millimetres to 10 millimetres, such as 5 millimetres to 8 millimetres. A circumference of the aerosolisable structure 1 perpendicular to the axial direction B-B may fall within the range of 12 millimetres to 30 millimetres, such as 16 millimetres to 25 millimetres.

The article 100 of Figure 8 also comprises a filter 1b. The filter 1b is for filtering aerosol or vapour released from the aerosolisable structure 1 of the article 100 in use. The filter 1b could be of any type used in the tobacco industry. For example, the filter 1b may be made of cellulose acetate. In this embodiment, the filter 1b is substantially cylindrical with a substantially circular cross section and a longitudinal axis. In other embodiments, the filter 1b may have a different cross section, such as any of those discussed herein for aerosolisable structures, or be other than cylindrical, or not be elongate.

In this embodiment, the filter 1b abuts a longitudinal end of the aerosolisable structure 1 and is axially aligned with the aerosolisable structure 1. In other embodiments, the filter 1b may be spaced from the aerosolisable structure, such as by a gap and/or by one or more further components of the article 100. Example further component(s) are an additive or flavour source (such as an additive- or flavour-containing capsule or thread), which may be held by a body of filtration material or between two bodies of filtration material, for example.

The article 100 also comprises a wrap 1c that is wrapped around the aerosolisable structure 1 and the filter 1b to retain the filter 1b relative to the aerosolisable structure 1. The wrap 1c encircles the aerosolisable structure 1 and the filter 1b, may help to avoid or prevent unravelling or ungathering of the layered structure of the aerosolisable structure 1, and helps to protect the gathered layered structure from damage during transport and use. During use, the wrap 1c may also help to direct the flow of air into and through the aerosolisable structure 1, and may help to direct the flow of vapour or aerosol through and out of the aerosolisable structure 1.

In this embodiment, the wrap 1c is wrapped around the aerosolisable structure 1 and the filter 1b so that free ends of the wrap 1c overlap each other. The wrap 1c may form all of, or a majority of, a circumferential outer surface of the article 100. The wrap 1c could be made of any suitable material, such as paper, card, or reconstituted aerosolisable material (e.g. reconstituted tobacco). The wrap 1c may also comprise an adhesive (not shown), such as one of those discussed elsewhere herein, that adheres the overlapped free ends of the wrap 1c to each other. The adhesive helps prevent the overlapped free ends of the wrap 1c from separating. In other embodiments, the adhesive may be omitted or the wrap 1c may take a different form to that described. In other embodiments, the filter 1b may be retained relative to the aerosolisable structure 1 by a connector other than the wrap 1c, such as an adhesive.

30

Figure 9 shows a schematic cross-sectional side view of an example of another article according to an embodiment of the invention. The article 200 of Figure 9 is the same as that of Figure 8, except that the article 200 has the aerosolisable structure 5 of

Figure 7 in place of the aerosolisable structure 1. Accordingly, the wrap 1c of the article 200 of Figure 9 is wrapped around the wrapper 51 of the aerosolisable structure 5 and the filter 1b to retain the filter 1b relative to the aerosolisable structure 5. Any of the possible variations to the article 100 of Figure 8 discussed herein may be made to the article 200 of Figure 9 to form further embodiments.

In some embodiments, the article may be provided together with the apparatus for heating the aerosolisable material of the article to volatilise at least one component of the aerosolisable material. The apparatus may comprise a heating zone for receiving the article, and a magnetic field generator for generating a varying magnetic field for penetrating the heating material of the article when the article is located in the heating zone, thereby to heat the aerosolisable material of the article.

For example, Figure 10 shows a schematic cross-sectional side view of an example of a system according to an embodiment of the invention. The system 1000 comprises the article 200 of Figure 9 and apparatus 500 for heating aerosolisable material of the article 200 to volatilise at least one component of the aerosolisable material. In other embodiments, the article 200 may be replaced by any of the other articles described herein. In this embodiment, the apparatus 500 is a tobacco heating product (also known in the art as a tobacco heating device or a heat-not-burn device).

Broadly speaking, the apparatus 500 comprises a heating zone 511 for receiving the article 200, and a magnetic field generator 512 for generating the varying magnetic field for penetrating the heating material of the article 200 when the article 200 is located in the heating zone 511.

More specifically, the apparatus 500 of this embodiment comprises a body 510 and a mouthpiece 520. The mouthpiece 520 may be made of any suitable material, such as a plastics material, cardboard, cellulose acetate, paper, metal, glass, ceramic, or rubber. The mouthpiece 520 defines a channel 522 therethrough. The mouthpiece 520 is locatable relative to the body 510 so as to cover an opening into the heating zone 511. When the mouthpiece 520 is so located relative to the body 510, the channel 522 of the mouthpiece 520 is in fluid communication with the heating zone 511. In use, the

channel 522 acts as a passageway for permitting volatilised material to pass from aerosolisable material of an article inserted in the heating zone 511 to an exterior of the apparatus 500. In this embodiment, the mouthpiece 520 is releasably engageable with the body 510 so as to connect the mouthpiece 520 to the body 510. In other
5 embodiments, the mouthpiece 520 and the body 510 may be permanently connected, such as through a hinge or flexible member. In some embodiments, such as embodiments in which the article itself comprises a mouthpiece, the mouthpiece 520 of the apparatus 500 may be omitted.

10 The apparatus 500 may define an air inlet (not shown) that fluidly connects the heating zone 511 with the exterior of the apparatus 500. Such an air inlet may be defined by the body 510 and/or by the mouthpiece 520. A user may be able to inhale the volatilised component(s) of the aerosolisable material by drawing the volatilised component(s) through the channel 522 of the mouthpiece 520. As the volatilised
15 component(s) are removed from the article 200, air may be drawn into the heating zone 511 via the air inlet of the apparatus 500.

In this embodiment, the body 510 comprises the heating zone 511. In this embodiment, the heating zone 511 comprises a recess 511 for receiving at least a portion
20 of the article 200. In other embodiments, the heating zone 511 may be other than a recess, such as a shelf, a surface, or a projection, and may require mechanical mating with the article in order to co-operate with, or receive, the article. In this embodiment, the heating zone 511 is elongate, and is sized and shaped to accommodate the whole article 200. In other embodiments, the heating zone 511 may be dimensioned to receive
25 only a portion of the article 200.

In this embodiment, the magnetic field generator 512 comprises an electrical power source 513, a coil 514, a device 516 for passing a varying electrical current, such as an alternating current, through the coil 514, a controller 517, and a user interface 518
30 for user-operation of the controller 517.

The electrical power source 513 of this embodiment is a rechargeable battery. In other embodiments, the electrical power source 513 may be other than a rechargeable

battery, such as a non-rechargeable battery, a capacitor, a battery-capacitor hybrid, or a connection to a mains electricity supply.

The coil 514 may take any suitable form. In this embodiment, the coil 514 is a
5 helical coil of electrically-conductive material, such as copper. In some embodiments,
the magnetic field generator 512 may comprise a magnetically permeable core around
which the coil 514 is wound. Such a magnetically permeable core concentrates the
magnetic flux produced by the coil 514 in use and makes a more powerful magnetic
field. The magnetically permeable core may be made of iron, for example. In some
10 embodiments, the magnetically permeable core may extend only partially along the
length of the coil 514, so as to concentrate the magnetic flux only in certain regions. In
some embodiments, the coil may be a flat coil. That is, the coil may be a two-
dimensional spiral. In this embodiment, the coil 514 encircles the heating zone 511.
The coil 514 extends along a longitudinal axis that is substantially aligned with a
15 longitudinal axis of the heating zone 511. The aligned axes are coincident. In a
variation to this embodiment, the aligned axes may be parallel or oblique to each other.

In this embodiment, the device 516 for passing a varying current through the
coil 514 is electrically connected between the electrical power source 513 and the coil
20 514. In this embodiment, the controller 517 also is electrically connected to the
electrical power source 513, and is communicatively connected to the device 516 to
control the device 516. More specifically, in this embodiment, the controller 517 is for
controlling the device 516, so as to control the supply of electrical power from the
electrical power source 513 to the coil 514. In this embodiment, the controller 517
25 comprises an integrated circuit (IC), such as an IC on a printed circuit board (PCB). In
other embodiments, the controller 517 may take a different form. In some
embodiments, the apparatus may have a single electrical or electronic component
comprising the device 516 and the controller 517. The controller 517 is operated in this
embodiment by user-operation of the user interface 518. In this embodiment, the user
30 interface 518 is located at the exterior of the body 510. The user interface 518 may
comprise a push-button, a toggle switch, a dial, a touchscreen, or the like. In other
embodiments, the user interface 518 may be remote and connected to the rest of the
apparatus wirelessly, such as via Bluetooth.

In this embodiment, operation of the user interface 518 by a user causes the controller 517 to cause the device 516 to cause an alternating electrical current to pass through the coil 514. This causes the coil 514 to generate an alternating magnetic field.

5 The coil 514 and the heating zone 511 of the apparatus 500 are suitably relatively positioned so that, when the article 200 is located in the heating zone 511, the varying magnetic field produced by the coil 514 penetrates the heating material of the article 200. In this embodiment, the heating material is an electrically-conductive material, and so this penetration causes the generation of one or more eddy currents in the heating

10 material. The flow of eddy currents in the heating material against the electrical resistance of the heating material causes the heating material to be heated by Joule heating. When the heating material is made of a magnetic material, the orientation of magnetic dipoles in the heating material changes with the changing applied magnetic field, which causes heat to be generated in the heating material.

15

The apparatus 500 of this embodiment comprises a temperature sensor 519 for sensing a temperature of the heating zone 511. The temperature sensor 519 is communicatively connected to the controller 517, so that the controller 517 is able to monitor the temperature of the heating zone 511. On the basis of one or more signals

20 received from the temperature sensor 519, the controller 517 may cause the device 516 to adjust a characteristic of the varying or alternating electrical current passed through the coil 514 as necessary, in order to ensure that the temperature of the heating zone 511 remains within a predetermined temperature range. The characteristic may be, for example, amplitude or frequency or duty cycle. Within the predetermined temperature

25 range, in use the aerosolisable material within an article located in the heating zone 511 is heated sufficiently to volatilise at least one component of the aerosolisable material without combusting the aerosolisable material. Accordingly, the controller 517, and the apparatus 500 as a whole, is arranged to heat the aerosolisable material to volatilise the at least one component of the aerosolisable material without combusting the

30 aerosolisable material. In some embodiments, the temperature range is about 50°C to about 300°C, such as between about 50°C and about 250°C, between about 50°C and about 150°C, between about 50°C and about 120°C, between about 50°C and about 100°C, between about 50°C and about 80°C, or between about 60°C and about 70°C.

In some embodiments, the temperature range is between about 170°C and about 220°C. In other embodiments, the temperature range may be other than this range. In some embodiments, the upper limit of the temperature range could be greater than 300°C. In some embodiments, the temperature sensor 519 may be omitted. In some embodiments, the heating material may have a Curie point temperature selected on the basis of the maximum temperature to which it is desired to heat the heating material, so that further heating above that temperature by induction heating the heating material is hindered or prevented.

Figures 11 and 12 show flow diagrams showing respective examples of methods of manufacturing an aerosolisable structure.

The method of Figure 11 is usable to manufacture any of the aerosolisable structures described herein. The method comprises providing 11a a layered structure, the layered structure having a first sheet 11, 21, 31, 41 comprising aerosolisable material, and a second sheet 12, 22, 32, 42 comprising heating material that is heatable by penetration with a varying magnetic field to heat the aerosolisable material; and gathering 11b the layered structure to form a gathered layered structure 10, 20, 30, 40.

The second sheet 12, 22, 32, 42 may be free from aerosolisable material. The second sheet 12, 22, 32, 42 may consist of heating material only. In some embodiments, the second sheet comprises aerosolisable material.

The gathering 11b may comprise feeding the layered structure through a converging funnel. The gathering 11b may cause the layered structure to become substantially cylindrical. The method may comprise crimping the layered structure before the gathering 11b. The providing 11a the layered structure may comprise causing the first sheet 11, 21, 31, 41 to come into contact with the second sheet 12, 22, 32, 42. The method may comprise wrapping a wrapper around the gathered layered structure to form a wrapped gathered layered structure. In some embodiments, the method comprises severing the wrapped gathered layered structure to form a discrete wrapped gathered layered structure.

The method of Figure 12 is useable in the manufacture of an aerosolisable structure that has a gathered layered structure comprising three sheets, such as those shown in Figures 5 and 6.

5 The method comprises providing a layered structure, the layered structure having a first sheet 31, 41 comprising aerosolisable material, a second sheet 32, 42 comprising heating material that is heatable by penetration with a varying magnetic field, and a third sheet comprising aerosolisable material, wherein the second sheet 32, 42 is located between the first and third sheets 31, 33, 41, 43, and wherein the heating
10 material is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first and third sheets 31, 33, 41, 43.

 In some embodiments, the second sheet 32, 42 is free from aerosolisable material. In some embodiments, the second sheet 32, 42 consists of the heating material
15 only. In some embodiments, the second sheet comprises aerosolisable material.

 In this embodiment, the providing comprises causing 12a the first sheet 31, 41 to come into contact with the second sheet 32, 42. The first and second sheets 31, 41, 32, 42 may be drawn from respective supplies, such as respective bobbins (not shown),
20 before being brought into contact with each other. In other embodiments, the first and second sheets may already be in contact with each other, and so the method does not include this causation. Rather, a combination (such as a laminate) of the first and second sheets 31, 41, 32, 42 may be drawn from a supply, such as a bobbin (not shown).

25 In this embodiment, the providing comprises causing 12b the third sheet 33, 43 to come into contact with the second sheet 32, 42. The third sheet 33, 43 may be drawn from a supply, such as a bobbin (not shown), before being brought into contact with the second sheet 32, 42. In other embodiments, the second and third sheets may already be in contact with each other, and so the method does not include this causation. Rather,
30 a combination (such as a laminate) of the second and third sheets 32, 33, 42, 43 may be drawn from a supply, such as a bobbin (not shown). Alternatively, a combination (such as a laminate) of the first, second and third sheets 31, 32, 33, 41, 42, 43 may be drawn from a supply, such as a bobbin (not shown).

In embodiments in which the aerosolisable structure being manufactured is to have a crimped layered structure, such as that shown in Figure 6, the method comprises crimping 12c the provided layered structure. The crimping may be performed by
5 transporting the layered structure between a pair of co-operable crimping rollers, which engage and crimp the layered structure as it passes. In other embodiments, in which the aerosolisable structure being manufactured is to have an uncrimped layered structure, such as that shown in Figure 5, the crimping may be omitted.

10 The method comprises gathering 12d the layered structure to form a gathered layered structure 30, 40. In embodiments in which the layered structure is to be crimped, the crimping 12c may occur before the gathering 12d. The gathering 12d may comprise transporting the layered structure 30, 40 through a converging funnel. In other
15 embodiments, the gathering 12d may involve an alternative process, such as squeezing the layered structure 30, 40 between bodies or plates that are movable relative to each other, or such as twisting (e.g. into a helical form). In embodiments in which the layered structure is crimped, the gathering may occur in a direction substantially perpendicular to that of the corrugations, or ridges and troughs, present in the layered structure as a
20 result of the crimping.

The gathering 12d may cause the layered structure 30, 40 to become substantially cylindrical. This may be caused by the shape of the converging funnel, if
25 used. In other embodiments, the gathering 12d may cause the layered structure 30, 40 to adopt a shape other than cylindrical.

25 In this embodiment, the method comprises wrapping 12e a wrapper 51 around the gathered layered structure 30, 40 to form a wrapped gathered layered structure. The wrapper 51 may be drawn from a supply (such as a bobbin) and enveloped around the gathered layered structure 30, 40 by a garniture or endless belt conveyor. The wrapper
30 51 may comprise adhesive, which may be applied thereto before or during the wrapping 12e, so that when opposite free ends of the wrapper 51 overlap each other the adhesive adheres the opposite free ends to each other. The method may involve passing the wrapped gathered layered structure through or past a dryer to dry the adhesive. As

discussed herein, in some embodiments such a wrapper may be omitted. That is, the gathered layered structure may be free from a wrapper. As such, the method of may not include such wrapping 12e.

5 In this embodiment, the method comprises severing 12f the wrapped gathered layered structure to form a discrete wrapped gathered layered structure for use in an article, the article being for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material. In embodiments in which the wrapping 12e is omitted, the method may comprise severing 12f the gathered
10 layered structure to form a discrete gathered layered structure for use in the article. The severing may comprise cutting, such as by a rotary cutter. In some further other embodiments, the severing 12f may be omitted. For example, in some embodiments, the gathered, or wrapped gathered, layered structure produced so far according to the method may already be dimensioned to suit use in the article without requiring severing.

15 Figure 13 shows a flow diagram showing an example of a method of manufacturing an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material. The method of Figure 13 comprises performing 13a the method of Figure 11 or Figure 12 (or any of the
20 variants thereof described herein), and connecting 13b a filter to the gathered layered structure using a connector that retains the filter relative to the gathered layered structure. The filter may, for example, be the filter 1b discussed above. The connector may, for example, be any of the connectors discussed herein, such as one of the described wraps 1c.

25 In some embodiments, the heating material is aluminium. However, in other embodiments, the heating material may comprise one or more materials selected from the group consisting of: an electrically-conductive material, a magnetic material, and a magnetic electrically-conductive material. In some embodiments, the heating material
30 may comprise a metal or a metal alloy. In some embodiments, the heating material may comprise one or more materials selected from the group consisting of: aluminium, gold, iron, nickel, cobalt, conductive carbon, graphite, steel, plain-carbon steel, mild steel,

stainless steel, ferritic stainless steel, copper, and bronze. Other heating material(s) may be used in other embodiments.

In some embodiments, the sheet comprising heating material is a free from holes or discontinuities. In some embodiments, the sheet comprising heating material comprises a foil, such as a metal or metal alloy foil, e.g. aluminium foil. However, in some embodiments, the sheet comprising heating material may have holes or discontinuities. For example, in some embodiments, the sheet comprising heating material may comprise a mesh, a perforated sheet, or a perforated foil, such as a metal or metal alloy perforated foil, e.g. perforated aluminium foil.

In some embodiments, such as those in which the heating material comprises iron, such as steel (e.g. mild steel or stainless steel) or aluminium, the sheet comprising heating material may be coated to help avoid corrosion or oxidation of the heating material in use. Such coating may, for example, comprise nickel plating, gold plating, or a coating of a ceramic or an inert polymer. In some embodiments, the sheet comprising heating material comprises or consists of nickel plated aluminium foil.

The heating material may have a skin depth, which is an exterior zone within which most of an induced electrical current and/or induced reorientation of magnetic dipoles occurs. By providing that the heating material has a relatively small thickness, a greater proportion of the heating material may be heatable by a given varying magnetic field, as compared to heating material having a depth or thickness that is relatively large as compared to the other dimensions of the heating material. Thus, a more efficient use of material is achieved and, in turn, costs are reduced.

In some embodiments, the aerosolisable material comprises tobacco. However, in other embodiments, the aerosolisable material may consist of tobacco, may consist substantially entirely of tobacco, may comprise tobacco and aerosolisable material other than tobacco, may comprise aerosolisable material other than tobacco, or may be free from tobacco. In some embodiments, the aerosolisable material may comprise a vapour or aerosol forming agent or a humectant, such as glycerol, propylene glycol, triacetin, or diethylene glycol. In some embodiments, the aerosolisable material is non-liquid

aerosolisable material, and the apparatus is for heating non-liquid aerosolisable material to volatilise at least one component of the aerosolisable material.

In some embodiments, the article 100, 200 is a consumable article. Once all, or
5 substantially all, of the volatilisable component(s) of the aerosolisable material in the article 100, 200 has/have been spent, the user may remove the article 100, 200 from the heating zone 511 of the apparatus 500 and dispose of the article 100, 200. The user may subsequently re-use the apparatus 500 with another of the articles 100, 200. However, in other respective embodiments, the article may be non-consumable, and the apparatus
10 and the article may be disposed of together once the volatilisable component(s) of the aerosolisable material has/have been spent.

In some embodiments, the article 100, 200 is sold, supplied or otherwise provided separately from the apparatus 500 with which the article 100, 200 is usable.
15 However, in some embodiments, the apparatus 500 and one or more of the articles 100, 200 may be provided together as a system, such as a kit or an assembly, possibly with additional components, such as cleaning utensils.

In order to address various issues and advance the art, the entirety of this
20 disclosure shows by way of illustration and example various embodiments in which the claimed invention may be practised and which provide for superior aerosolisable structures for use in articles for use with apparatus for heating aerosolisable material, articles for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, methods of manufacturing an aerosolisable
25 structure for use in an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, methods of manufacturing an article for use with apparatus for heating aerosolisable material to volatilise at least one component of the aerosolisable material, and systems comprising such an article and such apparatus. The advantages and features of the disclosure are
30 of a representative sample of embodiments only, and are not exhaustive and/or exclusive. They are presented only to assist in understanding and teach the claimed and otherwise disclosed features. It is to be understood that advantages, embodiments, examples, functions, features, structures and/or other aspects of the disclosure are not

to be considered limitations on the disclosure as defined by the claims or limitations on equivalents to the claims, and that other embodiments may be utilised and modifications may be made without departing from the scope and/or spirit of the disclosure. Various embodiments may suitably comprise, consist of, or consist in essence of, various combinations of the disclosed elements, components, features, parts, steps, means, etc.

5 The disclosure may include other inventions not presently claimed, but which may be claimed in future.

CLAIMS

1. A system for heating an aerosolisable material to volatilise at least one component of the aerosolisable material, the system comprising
 - 5 an aerosolisable structure with a gathered layered structure having:
 - a first sheet comprising the aerosolisable material; and with
 - a second sheet having a heating material that is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first sheet, wherein the second sheet is free from aerosolisable material; and
 - 10 an apparatus for heating the aerosolisable material of the aerosolisable structure to volatilise at least one component of the aerosolisable material, the apparatus having:
 - a heating zone for receiving the aerosolisable structure, and also having
 - a magnetic field generator for generating the varying magnetic field for penetrating the heating material of the aerosolisable structure when the
 - 15 aerosolisable structure is located in the heating zone.
2. The system of claim 1, wherein the aerosolisable material is reconstituted, cellulosic, or in gel form.
- 20 3. The system of claim 2, wherein the aerosolisable structure is free from any aerosolisable material between the heating material and the reconstituted or cellulosic aerosolisable material or the aerosolisable material in gel form.
4. The system of claim 2 or claim 3, wherein the reconstituted or cellulosic aerosolisable material or the aerosolisable material in gel form is in surface contact with the heating material.
- 25 5. The system of any one of claims 1 to 4, the gathered layered structure further having
 - 30 a third sheet comprising the aerosolisable material;
 - wherein the second sheet is located between the first and third sheets, and wherein the heating material is heatable by penetration with a varying magnetic field to heat the aerosolisable material of the first and third sheets.

6. The system of any one of claims 1 to 5, wherein the layered structure is crimped.
7. The system of any one of claims 1 to 6, wherein the heating material comprises
5 one or more materials selected from the group consisting of: an electrically-conductive material, a magnetic material, and a magnetic electrically-conductive material.
8. The system of any one of claims 1 to 7, wherein the heating material comprises a metal or a metal alloy.
10
9. The system of any one of claims 1 to 8, wherein the heating material comprises one or more materials selected from the group consisting of: aluminium, gold, iron, nickel, cobalt, conductive carbon, graphite, steel, plain-carbon steel, mild steel, stainless steel, ferritic stainless steel, copper, and bronze.
15
10. The system of any one of claims 1 to 9, wherein the first sheet comprises reconstituted tobacco.
11. The system of any one of claims 1 to 10, wherein the second sheet comprises
20 aluminium foil.
12. The system of any one of claims 1 to 11 comprising a wrapper wrapped around the gathered layered structure.
13. The system of any one of claims 1 to 12, wherein the aerosolisable structure is
25 substantially cylindrical.
14. The system of any one of claims 1 to 13, comprising a filter for filtering aerosol released from the aerosolisable structure in use, and a connector by which the filter is
30 retained relative to the aerosolisable structure.

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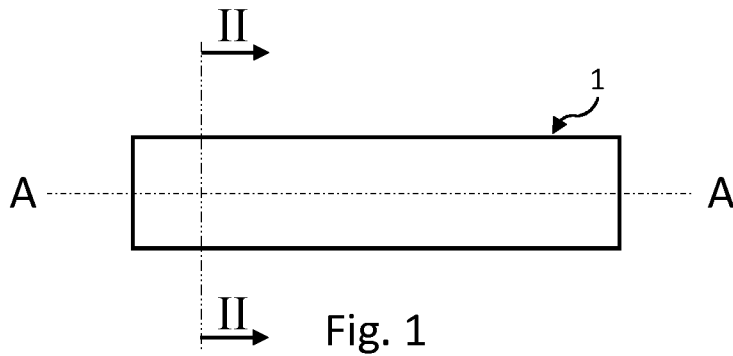


Fig. 1

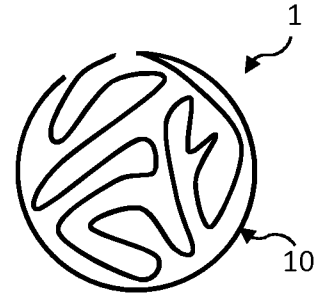


Fig. 2



Fig. 3

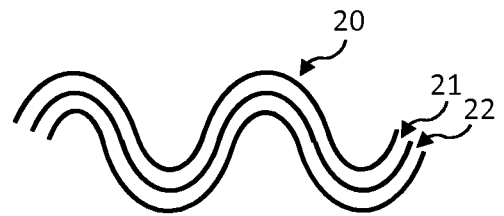


Fig. 4

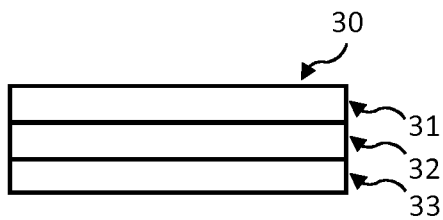


Fig. 5

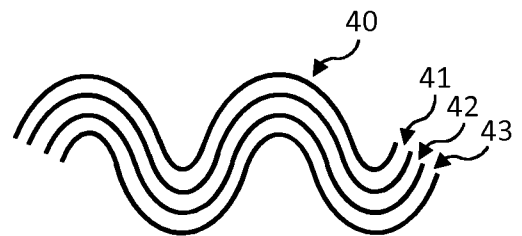


Fig. 6

2/3

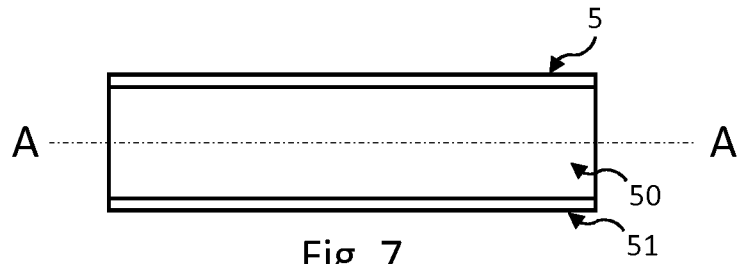


Fig. 7

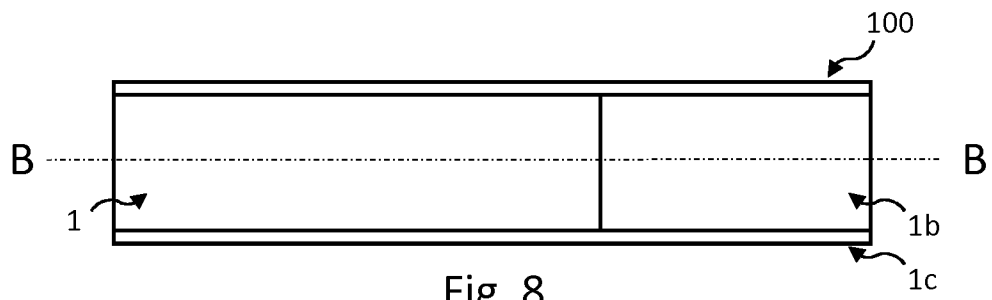


Fig. 8

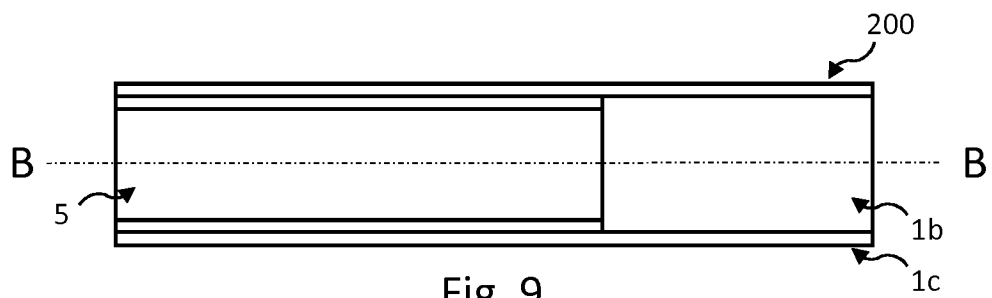


Fig. 9

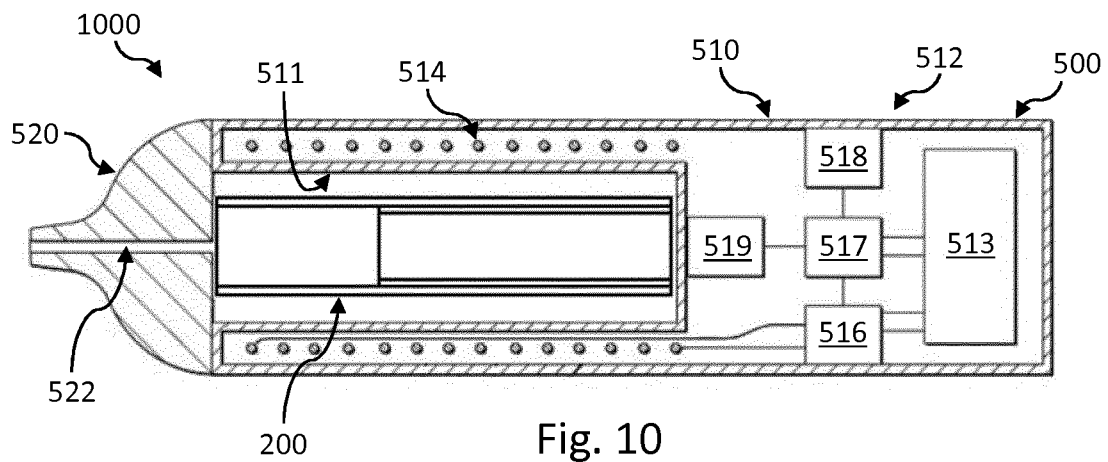


Fig. 10

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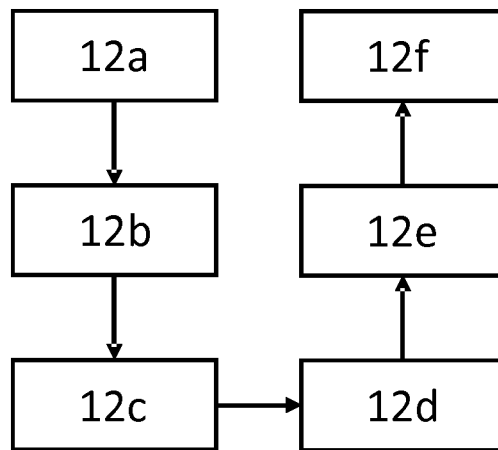


Fig. 12

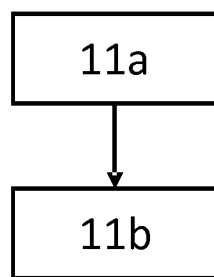


Fig. 11

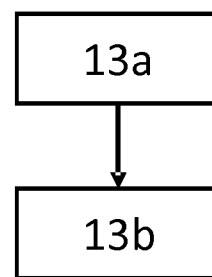


Fig. 13