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(54) Title: AN ADDITIVE UNIT FOR A SMOKING ARTICLE, A SMOKING ARTICLE AND A METHOD OF MANUFACTURE

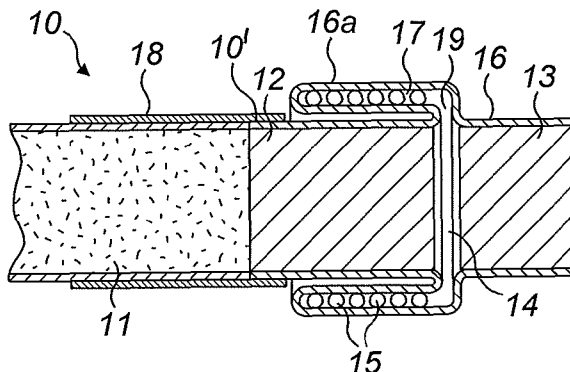


FIG. 1

(57) Abstract: An additive unit (10) for a smoking article comprising an extendable section (16) configured to allow a change in length of the additive unit. One or more compartments (17) are at least partially defined by the extendable section. An additive is contained in at least one of said compartments.

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An additive unit for a smoking article, a smoking article and a method of manufacture

Technical Field

5 Embodiments of the present invention relate to an additive unit for a smoking article, a smoking article, and a method of manufacturing an additive unit.

Background

10 As used herein, the term “smoking article” includes smokeable products such as cigarettes, cigars and cigarillos whether based on tobacco, tobacco derivatives, expanded tobacco, reconstituted tobacco or tobacco substitutes and also heat-not-burn products (i.e. products in which flavour is generated from a smoking material by the application of heat without causing combustion of the material). Typically, smoking articles are provided with filters removing constituents from
15 the gaseous flow.

It is known to provide a frangible capsule containing a flavourant such as menthol inside the filter of a smoking article. By applying pressure to the outside of the filter, the smoker may break the capsule therein and release the
20 flavourant. Thus, a smoker wishing to add flavour to the gaseous flow may do so by simply squeezing the filter.

Summary

25 According to a first aspect, an embodiment of the invention provides an additive unit for a smoking article comprising, an extendable section configured to allow a change in length of the additive unit, one or more compartment at least partially defined by the extendable section, and an additive contained in a said compartment.

30 According to a second aspect, an embodiment of the invention provides a smoking article comprising: a source of smokable material connected to an additive unit, the additive unit comprises an extendable section configured to allow a change in length of the additive unit, one or more compartments at least partially defined by the extendable section, an additive contained in one or more of the said
35 compartments.

According to a third aspect, a method of manufacturing an additive unit for a smoking article comprising: forming an extendable section configured to allow a change in length of the additive unit, forming one or more compartments at least partially defined by the extendable section, inserting additive in a said
5 compartment.

Brief Description of the Drawings

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

Figure 1 shows an axial cross-sectional view of a first embodiment of an additive unit according to the invention incorporated in a smoking article;

15 Figure 2 shows an axial cross-sectional view of an additive unit of a second embodiment of the invention;

Figure 3 shows an axial cross-sectional view of an additive unit of a third embodiment of the invention;

20 Figure 4 shows an axial cross-sectional view of a fourth embodiment of an additive unit according to the invention incorporated in a smoking article;

Figure 5 shows an axial cross-sectional view of an additive unit of a fifth
25 embodiment of the invention;

Figure 6 shows an axial cross-sectional view of an additive unit of a sixth embodiment of the invention;

30 Figure 7 shows an axial cross-sectional view of an additive unit of a seventh embodiment of the invention incorporated in a smoking article;

Figure 8 shows a partial axial cross-sectional view of an additive unit of an eighth embodiment of the invention;

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Figure 9 shows a partial axial cross-sectional view of an additive unit of a ninth embodiment of the invention;

Figure 10 shows an axial cross-sectional view of an additive unit of a tenth
5 embodiment of the invention incorporated in a smoking article;

Figure 11 shows a partial axial cross-sectional view of an additive unit of an eleventh embodiment of the invention, and

10 Figure 12 shows a partial axial cross-sectional view of an additive unit of an twelfth embodiment of the invention.

Figure 1 shows a smoking article 10 including an additive unit 10' according to a first embodiment of the present invention. The smoking article 10 comprises a
15 source of smokable material, which may be tobacco, in the form of a cylindrical tobacco rod 11. The additive unit 10' forms a filter which is co-axially attached to the tobacco rod 11, as described below. The filter of the additive unit 10' comprises a plurality of co-axial filter sections, described in further detail below.

20 The additive unit 10' is configured to contain additive in the smoking article. The additive may be, for example, a flavourant, and will be described in more detail below. The additive unit 10' may further comprise the filter(s). The additive unit may alternatively be termed a filter or filter unit which contains the additive.

25 In the example of Figure 1, the additive unit 10' is co-axially attached to the tobacco rod to form the smoking article, for example by means of tipping paper 18. The additive unit 10' comprises a first filter section 12 and a second filter section 13. The first filter section 12 is adjacent to the tobacco rod 11, and the second filter section 13 is co-axially aligned with a mouthpiece end of the first
30 filter section 12. The second filter section 13 may form a mouthpiece of the smoking article. Alternatively, the second filter section 13 is attached to a further filter section. Alternatively, the second filter section 13 is replaced by a hollow tube.

35 The elongate smoking article defines a longitudinal axis. The additive unit is also substantially elongate, defining a longitudinal axis which is generally the same as

the longitudinal axis as the smoking article. The additive unit 10' is configured to be attached to an elongate tobacco rod, and so the longitudinal axis of the additive unit also refer to the longitudinal axis when connected to the source of smokable material to form the smoking article. The first filter section 12 is
5 movable relative to the second filter section 13. The movement is at least partially in a longitudinal direction, such that the additive unit may be considered as longitudinally extendable.

The first filter section 12 comprises filtration material surrounded by a porous
10 sheet material, which may be plug wrap. The porous sheet material is permeable to liquids and to gaseous flow. In some examples, the filtration material is cellulose acetate tow, as is conventionally known. The filtration material is homogenous. The term "homogenous" is used to mean that the filtration material is substantially uniform throughout the first filter section 12, and in
15 particular, is uniform in a radial direction through the first filter section 12. The second filter 13 has the same construction. The first and second filter sections 12,13 comprise a single filter section. Alternatively, one or both of the first and second filter sections comprise more than one filter section co-axially connected.

20 A chamber 14 is defined between the first and second filter sections 12,13. The length of the chamber 14 is variable as the second filter section 13 moves longitudinally relative to the first filter section 12. In some aspects, the length of the chamber 14 is variable between zero length, in which the first and second filter sections 12,13 are abutting, and a pre-determined maximum length.

25 The first and second filter sections 12,13 are connected by an extendable section. The extendable section is configured to allow relative movement between two parts of the additive unit, in particular, between a part containing the first filter section 12 and a part containing the second filter section 13. The extendable
30 section is configured generally with a pre-determined length of material which connects the two parts of the additive unit. The pre-determined length of material may be folded or arranged at least partially laterally to a longitudinal axis of the additive unit, to vary the effective longitudinal extent of the material. The extendable section may have additive attached, such that an arrangement or
35 movement of the extendable section is configured to release or allow release of the additive into or around the additive unit.

In the example of Figure 1, the extendable section comprises a covering layer 16 that connects the first and second filter sections 12,13. The covering layer extends around the chamber 14 to define an exterior surface of the chamber 14.
5 The covering layer 16 extends around the first and second filter sections 12,13. In some aspects, the covering layer 16 also connects the first filter section 12 to the tobacco rod 11. A separate tipping paper is not required to connect the tobacco rod and first filter, and may be omitted.

10 The covering layer 16 is formed of a flexible material. The covering layer 16 comprises one or more layers of sheet material, for example, paper. The covering layer 16 is formed of an air impermeable material, and in some aspects defines one or more ventilation apertures (not shown). In some examples, the covering layer is formed of tipping paper. Alternatively, the covering layer is formed of a
15 plastics material, and is optionally be formed of an extruded plastics material. In some examples, the covering defines a substantially tubular member, which provides for movement of at least a part of the additive unit.

The second filter section 13, and attached movable parts of covering layer 16,
20 define a movable part configured to move to release additive from the additive release components.

The covering layer 16 is configured to allow the second filter section 13 to move longitudinally relative to the first filter section 12. In some aspects the covering
25 layer 16 is also configured to make available an additive, for example, flavourant, when the second filter section 13 is moved relative to the first filter section 12.

In the example of Figure 1, the covering layer 16 is folded on itself to form a folded section 16a. The folded section 16a is a substantially tubular section of the
30 covering layer 16 which is folded in a substantially annular loop, and defined by two adjacent layers of sheet material. The covering layer forms a single longitudinal extending connection between two parts of the additive unit. The covering layer 16 is continuous between the first and second filter sections 12,13. The length of material used for the folded section determines the length of the
35 remaining material, and hence the longitudinal length of separation between the filters.

The exterior of the two adjacent layers of sheet material is configured to slide over the interior of the two layers to reduce the extent of the folded section 16a, and increase the longitudinal length of the chamber 14 and separation of the first and section filter sections 12,13. The covering layer 16 is folded to form three radially adjacent layers, including two layers defining a compartment. In some aspects, the folded section 16a extends radially outwardly from a position over the chamber 14. The folded section 16a is folded forwardly over an exterior of the first filter section 12.

10

The folded section 16a at least partially defines an annular cavity or compartment 17. A major part of the folded section 16a forming the compartment extends substantially parallel to the longitudinal axis of the additive unit and/or substantially parallel to the remainder of the covering layer, as shown in the cross-section of Figure 1. The compartment may be toroidal. Thus, the folded section 16a defines the compartment 17, which is defined by a section of covering layer folded to overlie an adjacent section of covering layer. The compartment extends longitudinally and circumferentially, with an axis of the compartment extends longitudinally, parallel and co-axial with the longitudinal axis of the additive unit and smoking article. The section of covering layer defining a said compartment is located radially alongside an adjacent section of covering layer, i.e. overlying an adjacent section of covering layer. The overlying section of covering layer is substantially parallel to the adjacent section of covering layer and/or substantially parallel to the longitudinal axis of the additive unit.

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The compartment 17 comprises additive. The additive is contained within one or more additive release components 15. The additive release components 15 are of any form described. For example, the additive release components 15 comprise a shell containing additive. The shell is configured to be frangible, such that the shell can be crushed by a force to break and release the additive. In particular, the additive release components are a frangible capsule or microcapsule of any known type or construction. The additive release components are alternatively in the form of a powder or elements impregnated with additive.

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As shown in Figure 1, the compartment 17 comprises an opening 19, such that the compartment can be open to the interior of the additive unit or smoking article, in particular, open to the chamber 14. The compartment being open to the interior of the additive unit or smoking article means that the additive is in contact with smoke passing through the smoking article during use, or releases additive into the chamber 14 to contact smoke. As such, the opening 19 of the compartment faces into an interior of the smoking article. Thus, the opening is within the covering layer forming an exterior of the additive unit. The opening allows communication of the compartment with smoke passing through the additive unit during use. The additive is considered as released if the additive is able to interact with the interior or exterior of the smoking article, smoke or with the air surrounding the smoking article. The interaction is possible whilst the additive is located in the compartment or the additive may exit the compartment 17 and interact. The opening 19 extends around the whole circumference of the additive unit.

The first and second filter sections 12, 13, and the surrounding covering layer 16 define a core of the additive unit having a core diameter. The tobacco rod has a substantially similar diameter. The compartment 17 is arranged radially outside of this core diameter. The compartment can be considered as formed externally, i.e. radially externally, of the central core of the additive unit or smoking article.

The opening 19 of the compartment is variable in size, depending on the longitudinal extent of the extendable section. As the extendable section extends in length, the opening 19 increases in longitudinal size, and hence area. In the configuration shown, the opening 19 has a relatively small area. The small area provides for a relatively low rate of release of the additive, and so the effect on the smoke from the additive is relatively low. As the extendable section is increased in length, the opening 19 increases in area, allowing a higher rate of release of the additive. In addition, in some examples the extension of the extendable is configured to rupture the additive release components and release (more) additive. Thus, extension of the extendable section provides for both additive release from the additive release components and improved release of the additive from the compartment 17. In some examples, the opening 19 is always open to allow interaction between the smoke and additive. The additive release components provide the only encapsulation of the additive, which are

configured to release additive on application of an external force (e.g. radial compression), and/or by extension of the extendable section exerting a force on the additive release components.

5 In some examples, the additive release components are attached to one or more walls of the compartment 17. For example, the additive unit 10' is configured with the additive release components attached to one or both walls such that the relative movement of the two layers of covering layer 16 during extension ruptures the additive release components. Alternatively, the additive release
10 components may be loose within the compartment 17, and ruptured by extension of the extendable section. Alternatively, the additive release components are ruptured only by an external radial compressive force.

In some embodiments, the opening 19 can be closed or sealed to form a sealed
15 compartment. The sealed compartment prevents contact of additive within the compartment from the smoke. The compartment provides an enclosure or encapsulation around the additive, which is separate to any encapsulation provided by the additive release components. The sealing of the enclosure is releasable, in particular, by extending the extendable section, to define an
20 opening 19 through which smoke and/or additive can pass. In summary, the seal of the compartment 17 can be provided by one of: abutting surfaces of the opening, a frangible seal connecting abutting or separated surfaces of the opening, or the opening and further areas of the overlying layers forming the compartment abutting to form a plurality of compartments around the additive.
25 These embodiments for forming the sealed compartment will now be described.

Figure 2 shows a second embodiment of additive unit 20, according to the present invention. The additive unit 20 may be attached to a source of smokable material, e.g. tobacco rod, as described above, to form a smoking article. The
30 additive unit 20 comprises a first filter section 12, second filter section 13, chamber 14, covering layer 16 having a folded section 16a, and defining a compartment 17, substantially as described with respect to Figure 1.

The compartment 17 is further defined by a seal 29. The seal 29 is configured to
35 substantially seal the compartment 17 against ingress of air into the compartment 17, and/or seal the compartment against egress of additive from

the compartment. In some aspects, the seal 29 is frangible. The seal 29 is configured to rupture to break the closure of the compartment. The rupture of the seal defines an opening, allowing release of the additive from the compartment.

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In the embodiment of Figure 2, the seal 29 is in the form of a membrane 29. The membrane 29 is at an opening of the compartment 17 into the chamber 14. The membrane is in the form of a cylinder or annular, and extends longitudinally, e.g. substantially parallel to the longitudinal axis of the smoking article. The membrane is substantially aligned and in the plane of the covering layer 16, extending around in an annulus around a core of the additive unit 20. The membrane forms a radially exterior surface defining the chamber 14.

The additive unit 20 initially comprises additive located in the compartment 17. The additive may be in any suitable form for use in a smoking article. For example, the additive may be in a form which has an effect directly on release, as the seal is broken. The additive is not encapsulated within the compartment. For example, the additive can be in the form of powder (e.g. spray-dried) or in liquid form. The sealed compartment maintains the additive during storage in a condition ready to be used. The covering layer 16 and seal are impermeable to air. The location of the additive in the sealed compartment has the advantage of avoiding the need to separately encapsulate the additive. Removal of the seal of the compartment directly releases the additive.

Alternatively, the additive is in an encapsulated form within the sealed compartment. The additive is contained within one or more additive release components 15, for example, capsules or microcapsules, for example, having a diameter less than 1mm, or less than 0.5mm. The additive needs to be released from this encapsulation prior to having an effect. In some aspects, the release from the encapsulation is by rupturing the encapsulation. In particular, the encapsulation is frangible (e.g. brittle), and is ruptured by applying pressure.

In some examples, the additive release components in the compartment 17 are configured to release the contained additive simultaneously with the rupture of the frangible seal forming the compartment. The additive release components 15 are configured to release additive when the second filter section 13 is slid

rearwardly, apart from the first filter section 12. For example, the additive release components are affixed to one or two interior surfaces of the compartment. Extension of the additive unit moves apart the surfaces connected by the frangible seal and moves apart the interior surfaces of the compartment.

5 The compartment seal and additive release compartments are then ruptured with the same action, i.e. relative movement of the parts of the additive unit.

Optionally, the additive release components are affixed with adhesive to the covering layer forming the compartment . The relative movement between an exterior layer and an interior layer of the compartment exerts a force on the additive release components 15 which causes rupture of the additive release components and release of the additive. The release of the additive from additive release components in an extendable section may be independent of any other features. For example, the additive unit or smoking article is configured to

15 release additive by extension without the compartment comprising a frangible seal. Alternatively, longitudinally contraction of the additive unit is configured to rupture the compartment seal and/or additive release components.

Alternatively, the compartment seal and additive release components are ruptured by separate actions or processes. When the compartment seal is ruptured, as described in any embodiment, the additive release components are arranged to remain intact. A separate action is required to release the additive from the additive release components, for example, a user applying pressure to (e.g. squeezing) the additive unit in the area of the additive release components.

25 The additive release components and compartment seal are ruptured independently, in any order.

The location of the additive release components in the sealed compartment has the advantage of providing additional sealing for the additive. For example, when the additive is encapsulated in microcapsules, the microcapsules may not provide an encapsulation which is as durable or long lasting as desired. The compartment seal provides an additional seal to supplement the encapsulation around the additive, which improves the length of time or reliability for which the additive is inactive.

Once the seal 29 is broken, the additive is released through the open end of the compartment into the chamber 14, and/or optionally into the first and/or second filter sections 12,13. The seal ruptures when the second filter section 13 is moved longitudinally relative to the first filter section 12, for example, in a direction
5 apart from the first filter section 12. The membrane itself is configured to rupture. Alternatively or in addition, one or more connections of the membrane to an adjacent surface is configured to rupture to break the seal.

10 In the embodiment of Figure 2, the membrane 29 is arranged to divide the compartment 17 from an interior of the additive unit, i.e. an interior of the smoking article. Thus, rupture of the membrane 29 provides communication between the compartment 17 and interior of the smoking article.

Figure 3 shows a third embodiment of additive unit 30 for a smoking article. The
15 additive unit 30 is substantially the same as additive unit 20, described with respect to Figure 2 above, and corresponding reference numerals refer to the same features. The additive unit 30 comprises a seal 39, having the same function as seal 29 of the additive unit 20 for closing the compartment 17. The seal 39 is in the form of a connection between two adjacent surfaces of the
20 compartment, and does not comprise a longitudinally extending membrane. When the compartment 17 is sealed, the sides of the compartment are arranged to abut or be in close proximity at the opening of the compartment. The seal 39 connects these adjacent surfaces to seal the compartment. The seal 39, which is termed a connection 39 in this embodiment, provides a frangible connection
25 across an area which may be, or become, an opening of the compartment 17. For example, the seal is an adhesive seal forming the connection.

The seal 39 comprises adhesive adhering to and connecting the adjacent parts of the sides of the compartment, which in some aspects are formed by the covering
30 layer 16. The seal is frangible, configured to rupture and allow additive to be released from the compartment into the interior of the smoking article, as described above. The seal is configured to rupture when the second filter section 13 is moved longitudinally, apart from the first filter section 12. The additive can be in any form, encapsulated or not encapsulated, as described above.

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In an alternative embodiment, the two adjacent surfaces of the compartment at the opening are abutting and not frangibly connected. The abutting of the surfaces at the opening provides a seal for the compartment and encloses the additive. The seal is broken only by longitudinally moving apart the surfaces to
5 define the opening.

Figure 4 shows a fourth embodiment of smoking article 40 and additive unit 40'. The smoking article 40 comprises an additive unit 40' attached to a source of smokable material, in particular, a tobacco rod 41 e.g. by tipping paper (not
10 shown), to form the smoking article 40, substantially as described above. The additive unit 40' comprises a first filter section 42, and a second filter section 43 located co-axially and rearwardly of the first filter section 42. The second filter section 43 is movable longitudinally relative to the first filter section 42. A chamber 44 is selectively defined between the first and second filter sections
15 42,43. The length of the chamber is variable as the second filter section 43 moves relative to the first filter section 42. In some aspects, the length of the chamber 44 is variable from zero (as shown), where the filter sections 42,43 abut, to a second pre-determined maximum length.

20 An extendable section is formed by a covering layer 46 which extends between the first and second filter sections 42,43. The covering layer 46 connects the first and second filter sections 42,43, and extends around the chamber to define an exterior surface of the chamber 44. The covering layer 46 is substantially as described with respect to Figure 1, with the described differences. The covering
25 layer 46 optionally connects the first filter section 42 to the tobacco rod 41. The covering layer 46 is one or more layers of sheet material, for example, paper. The covering layer 46 is formed of an air impermeable material, and defines one or more ventilation apertures. In some examples, the covering layer is formed of tipping paper.

30 The covering layer 46 is configured to allow the second filter section 43 to move longitudinally relative to the first filter section 42. The covering layer 46 is also configured to release an additive, for example, flavourant, when the second filter section 43 is moved apart from the first filter section 42.

35

The covering layer 46 is folded on itself to form a compartment 47. In some aspects, the compartment 47 is open to the interior of the smoking article, in particular, open to the chamber 44. The compartment 47 is formed by a folded section 46a of the covering layer 46. The folded section 46a is a tubular section of the covering layer 46 which is folded in an annular loop, and defined by two adjacent layers of sheet material. The interior of the two adjacent layers of sheet material is configured to slide over the exterior of the two layers to reduce the extent of the folded section 46a, and increase the longitudinal length of the chamber and separation of the first and section filter sections 42,43. In some aspects, the folded section 46a extends radially inwardly from a position around the chamber 44. The folded section 46a extends adjacent the chamber 44, and extends parallel and adjacent to an interior of the covering layer 46 defining an exterior of the chamber 44.

The first and second filter sections 42, 43, and the surrounding covering layer 46 define a core diameter of the additive unit. The tobacco rod has substantially the same diameter. The compartment 47 is arranged radially within this core diameter. A radially exterior section of covering layer 46a defining the compartment 46 is substantially aligned with an exterior of the first and/or second filter sections 42,43. The compartment 47 and the radially adjacent layers forming the compartment of the folded section 46a are within the core, i.e. within the core diameter.

The compartment 47 contains an additive, substantially as described in any embodiment. In particular, the compartment may comprise one or more additive release components 45 containing additive, configured to release additive on extension of the extendable section and/or radial compression.

Similarly to the embodiment of Figure 1, the compartment 47 is toroidal. Thus, the folded section 46a defines the compartment 47, which is defined by a section of covering layer folded to lie within an adjacent section of covering layer. The section of covering layer defining a said compartment is located radially alongside an adjacent section of covering layer, i.e. extending within an adjacent section of covering layer. The underlying section of covering layer is substantially parallel to the adjacent section of covering layer and/or substantially parallel to the longitudinal axis of the additive unit.

The first and/or second filter section comprises a spigot 43a of filtration material, being a section of reduced diameter, and extending within folded section 46a of covering layer 46. The spigot 43a is shown as integrally formed with the second filter section 43. Alternatively, the spigot 43a is a separate filter section attached to the second filter section 43, integrally formed with the first filter section 42, or a separate filter section attached to the first filter section 42. The chamber 44 is defined between the filter sections which are separate. The chamber 44 is between the spigot 43a of the second filter and the first filter 42, in the embodiment shown. The length of the chamber is variable from a first pre-determined length, which is zero or non-zero, to a second pre-determined maximum length. Alternatively, the spigot 43a is not present, and the chamber 44 has a non-zero minimum longitudinal length between the separate full diameter first and second filter section 42,43. The first filter section 42 is longitudinally forward of the folded section 46a, and the second filter section 43 is longitudinally rearwardly of the folded section 46a. The filter sections 42,43 are always separated. The folded section 46a is in the chamber 44.

In some examples, a release member 48 is affixed to an exterior of the covering layer 46. The release member 48 is affixed around the second filter section 43. The release member 48 provides a grip for a user to move the second filter section 43 longitudinally apart from the first filter section 42. The release member or grip 48 is attached to the covering layer 46 rearwardly of the folded section 46a, and extends forwardly to overlie the folded section 46a. The release member 48 is optional, and can be included or not be included in any embodiment.

The second filter section 43, release member 48 and attached movable parts of covering layer 46 define a movable part configured to move to release additive from additive release components 45 in the compartment 47.

Figure 5 shows a fifth embodiment of additive unit 50 for a smoking article. The additive unit 50 has substantially the same arrangement as the additive unit 40' described with respect to Figure 4 above. The additive unit 50 is attached to a source of smokable material, e.g. tobacco rod, as described above, to form a smoking article. The additive unit 50 comprises a first filter section 42, second

filter section 43, optional spigot 43a of filtration material, grip 48, an extendable section which is formed by covering layer 46 having a folded section 46a, and defining a compartment 47. The additive in the compartment is in any form described, e.g. contained within additive release components 45 as shown, or not
5 encapsulated. The additive unit 50 comprises a seal to selectively seal the compartment. In some examples, the seal is provided by an abutting surface of the first filter 42. The abutment of the first filter 42 substantially closes an opening 59 of the compartment. In some examples, a rearward surface of the first filter 42 comprises an impermeable annulus arranged to coincide with the
10 compartment. Alternatively, the first filter section 42 is formed of conventional filtration material at the area of abutment with the covering layer 46a.

Alternatively, the seal has the same arrangement as the seal 29 of the additive unit 20 for closing the compartment 17, as described with respect to Figure 2.
15 The seal is in the form of a membrane between two adjacent surfaces of the compartment 47, substantially as described with respect to seal 29, described with respect to Figure 2 above. The membrane extends in an annulus, for example extending in a plane substantially laterally or perpendicular to the longitudinal axis of the additive unit 50. The frangible membrane connects the
20 two layers of covering layer 46a adjacent the opening of the compartment 47, to selectively seal the compartment 47.

Alternatively, the seal is formed as a separate sealing element to extend across the opening of the compartment. In some examples, the separate sealing element
25 is in the form of an O-ring. Alternatively, the sealing unit comprises flanges to attach to the covering layer, in some examples similarly to that described with respect to Figure 8 below. The sealing element is annular, and the seal is broken by extension of the extendable section.

30 Any of the seal types described in any embodiment can be used in any embodiment of the invention, replacing or in addition to the described seal.

Figure 6 shows a sixth embodiment of additive unit 60 for a smoking article. The additive unit 60 has substantially the same arrangement as the additive unit
35 described with respect to Figure 4 above. The additive unit 60 is attached to a source of smokable material, e.g. tobacco rod, as described above, to form a

smoking article. The additive unit 60 comprises a first filter section 42, second filter section 43, grip 48, an extendable section which is formed by covering layer 46 having a folded section 46a, and defining a compartment 47. The additive unit 60 comprises a seal 69, having the same function as seal 39 of the additive unit 30 for closing the compartment. The seal 69 is in the form of a connection 5 69, instead of a membrane, between two adjacent surfaces of the compartment, substantially as described with respect to seal 39, described with respect to Figure 3 above. The seal 69 is formed between adjacent surfaces forming the compartment, at a forward end of the compartment. In some examples, one or 10 more portions of the material forming the compartment 47 is curved or folded to substantially close the compartment, and allow connection seal 69. The additive in the compartment is in any form described, e.g. contained within additive release components 45 as shown, or not encapsulated. The seal 69 comprises a frangible seal, for example, formed with adhesive. Alternatively, the seal 69 is 15 formed only by the abutment of the surfaces at the opening. The seal is removed by extension of the extendable section.

Figure 7 shows a seventh embodiment of additive unit 40' for a smoking article. The additive unit 40' has substantially the same arrangement as the additive unit 20 40 described with respect to Figure 4 above. The additive unit 40' is attached to a source of smokable material 41, e.g. tobacco rod, as described above, to form a smoking article. The additive unit 40' comprises a first filter section 42, second filter section 43, grip 48, and an extendable section which is formed by covering layer 46 having a folded section 46a, and defining one or more compartment 47'. 25 The additive unit 40' comprises one or more seals 49, providing a seal for closing the compartments 47'. The compartments 47' are formed closely around the additive. In contrast to the other embodiments in which only a mouth or opening of the compartment is sealed, in the embodiment of Figure 7 the seals 49 are around each quantity of additive to form a plurality of compartments. The 30 additive unit comprises a plurality of compartments, each containing a relatively small quantity of additive, e.g. one additive release component. The covering layers can be considered as directly forming an encapsulation for each unit of additive. Each compartment is shown containing only a single additive release component. Alternatively, each compartment contains more than one additive release 35 component.

The seals 49 are formed over substantially the whole area of the two overlying layers between which the additive is enclosed, except for the area of the additive itself. The seals 49 are formed by abutment of the two overlying layers, and not by a frangible seal. The seals 49 are formed by opposed major faces of the
5 compartment 47', which are abutting over an area around the additive to form a seal around the additive. The major faces are substantially parallel to each other, and are arranged as the surfaces of concentric tubes with a longitudinal axis co-axial with the longitudinal axis of the additive unit. Alternatively, the seals 49 have the same configuration and are formed by a frangible connection, e.g. formed by adhesive.

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In the example shown, the additive is encapsulated in additive release components 45, as previously described. Alternatively, the additive is loose within the compartments 47', and not further encapsulated.

15 In some examples, the plurality of sealed compartments 47' are formed by deforming the sheet material of the covering layer 46 around the additive. The deformation of one or both of the two layers of the folded covering layer 46a defining the compartments provides for abutment of the covering layer 46a sheets around the additive. For example, the covering layer is wetted (e.g. with
20 water) during manufacturing to allow deformation of the sheet material. Subsequent drying of the covering layer in that configuration provides sealed compartments around the additive.

As the extendable section is extended, the compartments are opened sequentially
25 according to their longitudinal position. The extent of the folded section 46a reduces as the additive unit is extended, and when the folded section is reduced such that a compartment is at an end (left hand end as shown) of the folded section, the compartment is opened and the additive is released or is available to release.

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In the example of the folded section shown, the folded section 46a is within the core diameter and the additive is configured to be released into a chamber (not shown) of the additive unit. Alternatively, the seals 49 and compartments 47' described apply to any arrangement of the covering layer and folded section
35 forming an extendable section.

Figure 8 shows an additive unit 70 according to an eighth embodiment of the present invention. The additive unit 70 is attached to a source of smokable material, e.g. tobacco rod, as described above, to form a smoking article. The additive unit 70 comprises first and second filter sections 72, 73, a covering layer 76, and a chamber 74 substantially as described with respect to Figure 1. The additive unit 70 comprises an extendable section in the form of a folded section 76a, which is related to the folded section described with respect to Figure 1 and 2. In particular, the folded section 76a at least partially defines a compartment 77, in the form of a cavity, e.g. annular cavity. In some aspects of the embodiment, the compartment 77 is open to the exterior of the smoking article. The compartment 77 is formed between an exterior of the smoking article, and two overlying folded layers 76a of the continuous covering layer 76. Additive release components 75 are located in the compartment 77. Alternatively, additive is located in the compartment without being encapsulated.

An opening of the compartment is arranged to be initially closed to seal the compartment. Any of the embodiments of sealing an end of the compartment to form a sealed compartment are applicable to the arrangement shown. For example, the compartment 77 is closed or sealed, substantially as described with respect to Figure 2 or 3. For example, the closure is effected by a frangible membrane 79. The membrane 79 extends in an annulus, substantially laterally or perpendicular to the longitudinal axis of the additive unit 70. The seal 79 is configured to rupture and allow additive to be released from the compartment onto, or adjacent to, an exterior surface of the smoking article. In particular, air which is external to the smoking article can enter the compartment. For an additive in the form of a flavourant, the flavourant can be distributed externally to the smoking article.

The frangible membrane 79 is shown attached to the covering layer 46 at each side of the compartment, extending across the opening. The membrane 79 comprises a body 79a extending across the opening. The membrane 79 further comprises integral flanges 79a,79b configured to affix to the adjacent covering layer 46. In particular, the flanges 79a, 79b extend parallel to the covering layer, i.e. in an annulus extending circumferentially and longitudinally. Thus, the flanges 79a,79b provide a larger surface area to attach to the underlying covering layer, e.g. by adhesive. The frangible membrane of any embodiment can be

configured as described with respect to Figure 8, or in any form to extend across the opening and affix to the adjacent surfaces.

Figure 9 shows an additive unit 80 according to a ninth embodiment of the present invention. The additive unit 80 is attached to a source of smokable material, e.g. tobacco rod, as described above, to form a smoking article. The additive unit 80 comprises first and second filter sections 82, 83, and a covering layer 86, substantially as described with respect to Figure 4. The additive unit 80 comprises an extendable section in the form of a folded section 86a, which is related to the folded section described with respect to Figure 1 and 2. The folded section 86a partially defines an annular cavity or compartment 87. In some aspects, the compartment 87 is open to the exterior of the smoking article. The compartment is defined between the two radially innermost layers of the folded back section 86a of the covering layer 86. The radially outermost layer of covering layer 86 does not form the compartment. The arrangement of folded section 86a has a reflection symmetry to the folded section 16a of Figure 1, with the exterior of the folded section 86a substantially aligned with an exterior of the core of the additive unit, as described with respect to Figure 4.

In some aspects of the embodiment, the compartment 87 is open to the exterior of the smoking article. The compartment 87 is formed between an exterior of the smoking article, and two overlying folded layers 86a of the covering layer 86. Additive release components 85 are located in the compartment 87. Alternatively, additive may be located in the compartment without being encapsulated.

The compartment 87 is closed by the abutment of the opposed faces of the folded section 86, as described previously with reference to Figure 3. Alternatively, the compartment is closed by a seal in the form of a membrane, substantially as described with respect to Figure 2, or alternatively, closed by a frangible connection 89 substantially as described with respect to Figure 3. The seal is configured to be broken to allow additive to be released from the compartment onto, or adjacent to, an exterior surface of the smoking article.

Figure 10 shows a tenth embodiment of additive unit 90'. A smoking article 90 comprises the additive unit 90' attached to a source of smokable material, in

particular, a tobacco rod 91. The additive unit 90' comprises a first filter section 92 and a second filter section 93, located co-axially and rearwardly of the first filter section 92. The second filter section 93 is movable longitudinally relative to the first filter section 92. A chamber 94 is defined between the first and second
5 filter sections 92,93. The length of the chamber 94 is variable as the second filter section 93 moves relative to the first filter section 92. In some aspects, the length of the chamber 94 is variable from zero, where the filter sections 92,93 abut, to a second pre-determined maximum length. Alternatively, the length of the chamber 94 is variable from a first pre-determined length, which is non-zero, to
10 a second pre-determined maximum length, such that the filter sections 92,93 are always separated.

An extendable section in the form of a covering layer 96 extends around the first and second filter sections 92,93. The covering layer 96 connects the first and
15 second filter sections 92,93, and extends around the chamber 94 to define an exterior surface of the chamber 94. The covering layer 96 optionally also connects the first filter section 92 to the tobacco rod 91. The covering layer 96 is one or more layers of sheet material, for example, paper or a plastics material. In some examples, the covering layer 96 is formed of an air impermeable material,
20 and may define one or more ventilation apertures (not shown).

The extendable section is configured to allow relative movement between two parts of the additive unit, in particular, between a part containing the first filter section 92 and a part containing the second filter section 93. The extendable
25 section may be configured generally with a pre-determined length of material which connects the two parts of the additive unit. The pre-determined length of material may be folded or arranged at least partially laterally to a longitudinal axis of the additive unit, to vary the effective longitudinal extent of the material. The extendable section may have additive attached, such that an arrangement or
30 movement of the extendable section is configured to release or allow release of the additive into or around the additive unit.

The covering layer 96 is configured to allow the second filter section 93 to move longitudinally relative to the first filter section 92. The covering layer 96 is also
35 configured to release an additive, for example, flavourant, when the second filter section 93 is moved apart from the first filter section 92.

The extendable section is in the form of a concertina section 98. The concertina section 98 is a tubular section of the covering layer 96 surrounding the chamber 94. The concertina section 98 can fold as a concertina in order to vary the length of the chamber 94. The concertina section 98 has a plurality of folded segments 98a of variable diameter (variable angles), defined by fold lines formed around the circumference of the concertina section 98 at lines of maximum and minimum diameter.

10 In some aspects, the folded segments 98a are adjacent to one another. Optionally, folded segments 98a are separated longitudinally.

In a retracted state, the first and second filter sections 92,93 are relatively close, such that the concertina section 98 is compressed. The folded segments 98a of the concertina section 98 increase in angle, and the segments are orientated towards a plane perpendicular to the longitudinal axis of the smoking article. The chamber 94 has a relatively short length.

20 In some aspects, alternate folded segments 98a may be different lengths such that the concertina section 98 is skewed longitudinally. The folded segments 98a can fold towards the longitudinal axis of the smoking article when compressed.

In an extended state, the first and second filter sections 92,93 are urged apart. In some examples, the folded segments 98a of the concertina section 98 decrease in angle, and the segments are orientated towards a plane parallel to the longitudinal axis of the smoking article. The chamber 94 has a relatively long length. The concertina section 98 allows the chamber 94 to vary in length without requiring parts sliding relative to each other.

30 The folded segments 98a at least partially define annular cavities or compartments 97. In some aspects, the compartments 97 are open to the interior of the smoking article, in particular, open to the chamber 94. The folded segments 98a alternatively define one or more compartments open to an exterior of the additive unit. Any of the compartments may comprise additive, for example, in the form of one or more additive release components 95. Any embodiment may comprise an extendable section having affixed one or more

additive release components located on an exterior surface of the extendable section, and configured to release additive to an exterior of the additive unit.

5 A plurality of additive release components 95 are located in the compartments 97. The additive release components 95 are capsules, and more particularly microcapsules, for example substantially as described in any embodiment. The additive release components 95 are configured to rupture and release additive when the second filter section 93 is moved rearwardly, apart from the first filter section 92. The additive release components 95 are affixed to the interior
10 surfaces of the folded segments 98a of the concertina section 98. In some examples, the additive release components 95 are affixed with adhesive. The relative movement between the segments 98a exerts a force on the additive release components 95 which causes rupture of the additive release components 95 and release of the additive. In particular, expansion of the extendable section
15 causes separation of the folded segments 98a, and pulls apart the additive release components. In some aspects, the expansion of the concertina section urges the additive release components 95 against an exterior of the first and/or second filter section, which provides a reaction surface against which the additive release components 95 are compressed. The additive is released into the
20 chamber 94, and/or into the first and/or second filter sections 92,93.

The second filter section 93 and concertina section 98 define a movable part configured to move to release additive from the additive release components.

25 The one or more of the compartments 97 are closed with one or more seals 99. The seal 99 is in the form of a membrane 99, substantially as described with respect to Figure 2. The frangible seal 99 extends longitudinally on an interior of the concertina section 98, to frangibly seal the compartments 97. The seal 99 is in the form of a cylinder. The seal 99 is substantially aligned with an exterior of
30 the core of the additive unit 100 affixed within the covering layer 96 (as shown). Alternatively, the seal 99 is aligned with the covering layer 96, and extends only over the concertina section 98.

35 The seal 99 is ruptured by extension of the concertina section 98. The one or more compartments comprise additive within one or more encapsulations 95 or not within an encapsulation, as described in any embodiment above. The

compartments 97 open into an interior of the additive unit, for example into the chamber 94, and/or onto one or more of the first and second filter sections 92,93.

5 Figure 11 shows an additive unit 100 according to an eleventh embodiment of the present invention. The additive unit 100 is attached to a source of smokable material, e.g. tobacco rod, as described above, to form a smoking article. The additive unit 100 comprises a first filter section 92, second filter section 93, chamber 94, covering layer 96 having a folded section forming a concertina
10 section 98 having segments 98a, substantially as described with respect to Figure 99. The extendable section at least partially defines one or more compartments 97.

The additive unit 100 comprises a seal 109 which extends on an exterior of the
15 concertina section 98, allowing release of the additive from the defined compartments onto an exterior of the additive unit. The seal, which is in the form of a frangible membrane, extends as a cylinder extending around exterior points of the concertina 98 to form one or more compartments 97 containing additive. The membrane extends longitudinally, at a constant radius or distance
20 greater than that of the core of the additive unit. The relative movement, in particular extension, of the extendable section exerts a force on the seal, which causes rupture of the seal 109. The additive in the compartments 97 is in the form of frangible additive release components 95 (as shown). Alternatively, the additive is loose within the compartments 97, and not further encapsulated.

25 Alternatively, the concertina section of any embodiment does not comprise a seal. The compartments defined by the folded sections of the concertina contain additive, within additive release components. Extension of the extendable section is arranged to release the additive from the additive release components.
30 Alternatively, the concertina section has an exterior or interior seal formed by abutment of the exterior or interior respectively of the folded segments 98a.

Figure 12 shows an additive unit 110 according to a twelfth embodiment of the invention. The additive unit 110 is attached to a source of smokable material, e.g.
35 tobacco rod, as described above, to form a smoking article. The additive unit 110 comprises a first filter section 92, second filter section 93, chamber 94.

The additive unit 110 comprises an extendable section, which is formed with a covering layer 116, substantially in the form of a concertina section 118. The concertina section having folded segments 98a is related to that described with respect to the Figure 10. The annular concertina folds are longitudinally spaced from an adjacent concertina fold, by a longitudinally extending section of covering layer 116a. The additive unit 110 comprises one or more compartments 117 which are closed only by abutment of the internal circumferential edges of the folded sections. Alternatively, the compartments may be closed with a seal (not shown). The seals 119 are for example in the form of frangible connections 119, substantially as described with respect to Figure 3, between adjacent surfaces forming the compartments. In particular, the seals 119 are ruptured by extension of the concertina section 118. The one or more compartments comprise additive within one or more encapsulations 95, or not within an encapsulation, as described in any embodiment above. The compartments open into an interior of the smoking article, e.g. into the chamber, and/or onto one or more of the first and second filter sections. Alternatively, the seals 119 extend on an exterior of the concertina section 118, allowing release of the additive from compartments defined between the concertina section onto an exterior of the additive unit.

The smoking article of any embodiment can be configured to have variable ventilation. In particular, the movable part is configured to move to vary ventilation, in addition to causing release of additive. For the embodiments of Figures 1 to 9, the folded sections can be configured to selectively cover or uncover ventilation apertures in the covering layer around the first, second and/or third filter sections, or chamber, which allow ventilation air into filtration material of the respective filter section or chamber. For the embodiments of Figures 10 to 12, the concertina section can be provided with ventilation apertures which allow ventilation dependent on the extension of the smoking article.

For convenience, a single additive form has been described in the embodiments described. Alternatively, any embodiment may comprise one or more types of additive contained within a said compartment, or within an additive unit.

An embodiment of the invention further comprises a method of manufacturing an additive unit for a smoking article or a smoking article. Forming the additive unit may comprise forming an extendable section configured to allow a change in length of the additive unit. For example, the extendable section may be formed
5 by wrapping a layer of sheet material (e.g. paper) into tube, or extruding a tube of material, e.g. a plastics material. The folds defining the compartment(s) may be formed by folding the formed tube, or formed at the same time as the tube. The method further comprises inserting an additive in at least one of said sealed compartment(s). For liquid, powder or additive release components with a small
10 diameter substantially acting substantially as a fluid, the additive may be inserted by allowing the fluid-type material to flow into the compartments. Larger additive release components may be inserted individually.

The method may optionally further comprise enclosing the additive within the
15 compartments, e.g. by bringing the adjacent faces of the compartment into contact with each other, or, alternatively, forming a frangible seal arranged to seal at least one of the compartment(s), wherein the frangible seal is configured to rupture and open the compartment containing additive. For example, an adhesive may be applied in the area of the opening of the compartment(s), and a
20 frangible membrane adhered to the adhesive and extending over an opening of a compartment. Alternatively, the seal may be formed by applying an adhesive to connect adjacent surfaces of the compartments.

The diameter of the additive unit or filter of any embodiment is within the range
25 4 to 10 mm. The capsule diameter may be within the range 0.1 – 3.5 mm, and more particularly 0.5 to 1.2 mm. In some examples, the capsule diameter may be 0.8mm to 1.2mm, or approximately 1mm. Alternatively, the capsule diameter may be less than 1mm. Alternatively, the additive release component diameter may be less than 1.5mm, or less than 1mm, or less than 0.7mm, or less than
30 0.5mm, or less than 0.3mm.

These ranges are not, however, intended to be limiting and the skilled person would understand that larger or smaller filter diameters or capsules could be employed.

A filter may be formed so as to have more than one type of additive. For example, additive release components may be formed so that one or more additive release components in a filter contain a first additive, and one or more additive release components in the filter contain a different, second, additive.

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The additive may be a flavourant, for example, menthol. As used herein, the terms "flavour" and "flavourant" refer to materials which, where local regulations permit, may be used to create a desired taste or aroma in a product. Alternatively, the additive may be a different type of material. For example, the additive may be an adsorbent, e.g. carbon, optionally in the form of activated charcoal.

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The additive release components may be capsules having an outer shell, containing additive fluid (liquid or powder) in an interior cavity. The outer shell of each additive release component is frangible to release all of the additive on application of pressure.

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Alternatively, each additive release component may release its additive contents in a plurality of discrete doses, for example, actuated by a plurality of separate applications of pressure. This type of additive release component may comprise a resiliently or plastically deformable outer shell, for example, configured to release additive through a slit formed in a pre-determined area. Alternatively, this type of additive release components may comprise a porous absorbent substrate having an open cell structure (e.g. open cell foam), in which the additive is contained. The substrate may be at least partially resiliently deformable. The substrate is surrounded by an outer shell to retain the additive, which may be frangible, resiliently deformable, plastically deformable, or a thin coating. The substrate may form discrete additive release components, or may be in the form of an annulus in the first filter section. Alternatively, this type of additive release component may comprise a porous matrix containing the additive in discrete cavities and having a closed cell structure (e.g. closed cell foam), which is plastically deformable to release the additive.

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The additive release components have been described as spherical. Alternatively, the additive release components may be elongate, with a longitudinal axis extending parallel to a longitudinal axis of the filter. The elongate additive

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release component may have a circular or elliptical cross-section, and contain more additive than an additive release component of the same diameter. The elongate additive release component may have a maximum lateral extent of less than 3.5mm, or less than 3mm, or from 2mm to 3mm. Alternatively, or in addition, the elongate additive release component may have a radial cross-sectional area which is less than 50% of the radial cross-sectional area of the smoking article, and optionally, less than 40% or less than 30%. Such an additive release component is optimised for use in a small diameter smoking article, e.g. having a diameter of 5mm to 6mm, or 6mm to 7mm.

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The additive release components have been described as individually located in the smoking article. Alternatively, a plurality of the additive release components may be surrounded by an outer wall or outer encapsulation. The outer encapsulation may be porous or configured to rupture or deform to allow release of additive on compression. The outer encapsulation may itself be contained within a further encapsulation. The additive may be contained within a plurality of discrete cavities within an open cell substrate, or a closed cell substrate. The open cell substrate, and optionally the closed cell substrate, have an outer encapsulation. One or more additive release components may be affixed to an exterior of a substantially larger additive release component. Alternatively, a plurality of additive release components, of the same or different sizes, may be affixed together. Any of these embodiments may be considered as a plurality of components connected in a unitary structure.

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The additive release components have been described as formed of gelatine, other types may be used in combination with a filter of the present invention. The additive release components may be manufactured by a known co-extrusion process, for an additive release component size of 500µm to 10 mm. In the co-extrusion process, two fluids may be extruded together so that an additive release component is created by surface tension.

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The shell fluid may be a warm gelatin solution, and liquid contents, e.g. menthol, are respectively delivered under pressure from separate tanks into a two-fluid nozzle. The shell fluid and liquid contents flow from a nozzle where they form droplets in a carrier fluid, the droplets having an outer shell of shell fluid and an inner core of liquid contents. A cooling mechanism is provided to cool and

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solidify the shell fluid. Alternatively, the shell material may be alginate, agar-agar, gum arabicum, latices or waxes.

Alternatively, the additive release components may be formed by any suitable
5 process for encapsulating a liquid. For example, the additive release components may be formed by interfacial polymerisation, which may produce an additive release component size of 0.2µm to a few millimetres. The shell may be made of a polymer, for example, polyester, polyamide, polyurea, polyurethane, or a biodegradable polymer e.g. protein, polysaccharides or oligosaccharides.

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Alternatively, the additive release components may be formed by complex coacervation, which may produce a particle size of 10µm to a few millimetres. The additive release component may be made from gelatine and gum arabic.

15 Alternatively, the additive release components may be formed by single extrusion, which may produce a particle size of 200µm to a few millimetres. The additive release component shell may be made from alginate, chitosan, carrageenan, cellulose derivatives, or waxes.

20 Alternatively, the additive release components may be formed by melt extrusion, which may produce a particle size of 300µm to a few millimetres. The additive release component shell may be made from gelatine, sugars, maltodextrins, corn syrup, food polymers or modified starches.

25 Alternatively, the additive release components may be formed by melt injection, which may produce a particle size of 200µm to a few millimetres. The additive release component shell may be made from carbohydrate materials, e.g. sucrose, glucose syrups and modified starches.

30 Alternatively, the additive release components may be formed by a spray drying microencapsulation process, which may produce a particle size of 10µm to a few millimetres. The additive release component shell may be made from polysaccharides (starch, alginate, agar, pectin, carrageenan, gums), proteins (gelatine, casein), fats and fatty acids, cellulose derivatives, lipids (waxes,
35 shellac, carnuba or beeswax).

Materials for the additive release components or filter comply with and/or are subject to applicable regulatory requirements/approvals. Embodiments of the invention may be configured to comply with applicable laws and/or regulations, such as, by way of non-limiting example, regulations relating to flavours, additives, emissions, constituents, and/or the like. For example, the invention may be configured such that a smoking article implementing the invention is compliant with applicable regulations before and after manipulation or release of an additive by a user. In some embodiments, the implementation is such that a smoking article meets or exceeds required regulatory test(s) in all user-configurable positions, such as, by way of non-limiting example, the testing threshold(s)/ceiling(s) for cigarette emissions and/or smoke constituents.

Any of the features described in any embodiment may be used in combination with any other features of any other embodiment.

As used herein, the terms “flavour” and “flavourant” refer to materials which, where local regulations permit, may be used to create a desired taste or aroma in a product for adult consumers. They may include extracts (e.g., licorice, hydrangea, Japanese white bark magnolia leaf, chamomile, fenugreek, clove, menthol, Japanese mint, aniseed, cinnamon, herb, wintergreen, cherry, berry, peach, apple, Drambuie, bourbon, scotch, whiskey, spearmint, peppermint, lavender, cardamon, celery, cascarilla, nutmeg, sandalwood, bergamot, geranium, honey essence, rose oil, vanilla, lemon oil, orange oil, cassia, caraway, cognac, jasmine, ylang-ylang, sage, fennel, piment, ginger, anise, coriander, coffee, or a mint oil from any species of the genus *Mentha*), flavour enhancers, bitterness receptor site blockers, sensorial receptor site activators or stimulators, sugars and/or sugar substitutes (e.g., sucralose, acesulfame potassium, aspartame, saccharine, cyclamates, lactose, sucrose, glucose, fructose, sorbitol, or mannitol), and other additives such as charcoal, chlorophyll, minerals, botanicals, or breath freshening agents. They may be imitation, synthetic or natural ingredients or blends thereof. They may be in any suitable form, for example, oil, liquid, or powder.

In order to address various issues and advance the art, the entirety of this disclosure shows by way of illustration various embodiments in which the claimed invention(s) may be practiced and provide for superior containment of additive. The advantages and features of the disclosure are 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 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
5 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 essentially of, various combinations of the disclosed elements, components, features, parts, steps, means, etc. In addition, the disclosure includes other inventions not
10 presently claimed, but which may be claimed in future.

Claims

1. An additive unit for a smoking article comprising,
5 an extendable section configured to allow a change in length of the additive unit,
one or more compartment at least partially defined by the extendable section, and
an additive contained in a said compartment.
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2. The additive unit as claimed in claim 1 wherein the compartment substantially encloses the additive within the compartment.
3. The additive unit as claimed in claim 1 or 2 wherein the one or more
15 compartment is a sealed compartment.
4. The additive unit as claimed in any one of the preceding claims further comprising a frangible seal arranged to seal at least one compartment,
wherein the frangible seal is configured to be ruptured and unseal the
20 compartment containing additive.
5. The additive unit as claimed in claim 4 wherein the frangible seal is on an interior of the additive unit, such that the compartment opens onto an interior of the additive unit.
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6. The additive unit as claimed in claim 4 wherein the frangible seal is on an exterior of the additive unit, such that the compartment opens onto an exterior of the additive unit.
- 30 7. The additive unit as claimed in any one of claims 4 to 6 wherein the frangible seal comprises a membrane extending between two spaced apart sides of the compartment.
8. The additive unit as claimed in any one of claims 4 to 6 wherein the
35 frangible seal comprises a frangible connection between two adjacent sides of the compartment.

9. The additive unit as claimed in any one of the preceding claims wherein the additive is not contained in an encapsulation within the compartment.
- 5 10. The additive unit as claimed in any one of the preceding claims wherein the additive is contained within one or more additive release components, wherein the one or more additive release components are contained within the compartment(s).
- 10 11. The additive unit as claimed in any one of the preceding claims wherein the extension member comprises a covering layer, and
one or more compartments are at least partially defined by a folded section of the covering layer.
- 15 12. The additive unit as claimed in any one of the preceding claims wherein the extendable section comprises a covering layer movable to change the length of the additive unit, wherein the one or more compartments are defined by a section of covering layer folded to overlie an adjacent section of covering layer.
- 20 13. The additive unit as claimed in claim 12 wherein the section of covering layer defining a said compartment extends substantially parallel to a longitudinal axis of the additive unit and/or substantially parallel to an overlying or underlying adjacent section of covering layer.
- 25 14. The additive unit as claimed in any one of the preceding claims wherein the compartment is located on a radial exterior of a core of the additive unit, or, the compartment is located radially within a core of the additive unit.
- 30 15. The additive unit as claimed in any one of the preceding claims wherein the compartment is sealed by opposed faces of an opening of the compartment being in contact.
16. The additive unit as claimed in any one of the preceding claims wherein the extendable section defines a separate compartment for each unit of additive.

17. The additive unit as claimed any one of the preceding claims wherein opposed major faces of the compartment are substantially parallel and abutting over an area closely around the additive to form a seal around the additive.

5 18. The additive unit as claimed in any one of claims 1 to 11 wherein the extendable section comprises a concertina section.

19. The additive unit as claimed in any one of the preceding claims wherein the additive unit comprises a first filter section and a second filter section,
10 wherein the first and second filter sections are movably connected by the extending section, wherein a chamber is defined between the first filter section and second filter section when the additive unit is extended.

20. The additive unit as claimed in claim 10 wherein the additive release
15 components are selected from one of: microcapsules, and additive release components having an average diameter of between 0.5mm and 1.5mm, less than 1mm, and less than 0.5mm.

21. The additive unit as claimed in any one of claims 10 or 20 wherein a said
20 additive release components is affixed to one or more internal surfaces of a said compartment.

22. The additive unit as claimed in any one of claims 10, 20 or 21 wherein the
25 said additive release component is configured to release additive on extension of the extendable section.

23. The additive unit as claimed in any one of claims 10, 20, 21 or 22 wherein
a said additive release component is affixed to two adjacent internal surfaces of a
said compartment.

30

24. The additive unit as claimed in any one of the preceding claims wherein the additive unit comprises a grip to move a part of the additive unit relative to another part of the additive unit, to change a length of the filter unit.

35 25. The additive unit as claimed in any one of the preceding claims wherein the additive release unit is a filter for a smoking article.

26. A smoking article comprising:
a source of smokable material connected to an additive unit as claimed in
any one of the preceding claims.

5

27. A method of manufacturing an additive unit for a smoking article
comprising:

forming an extendable section configured to allow a change in length of
the additive unit,

10 forming one or more compartments at least partially defined by the
extendable section,
inserting additive in a said compartment.

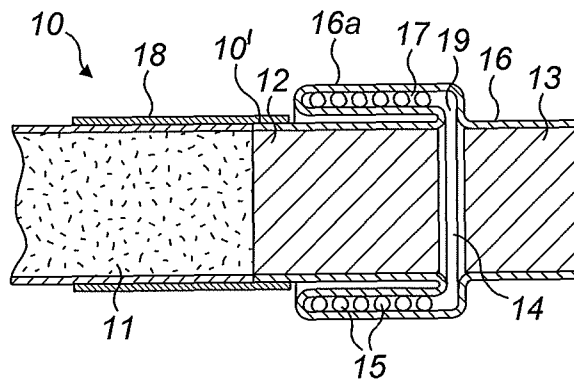


FIG. 1

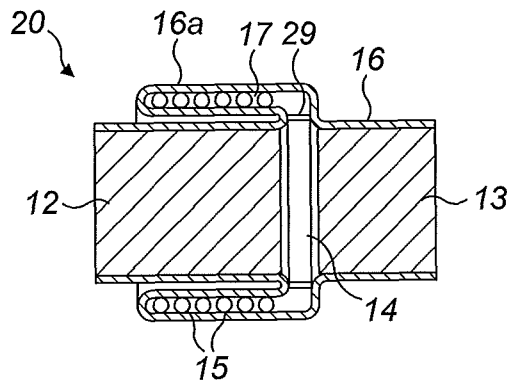


FIG. 2

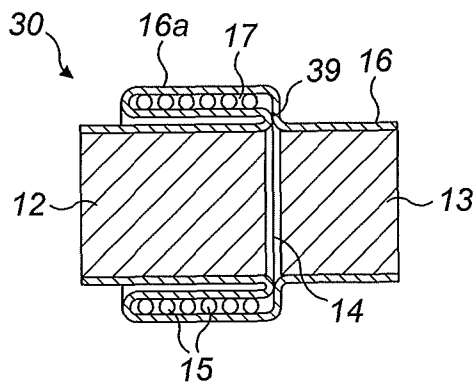


FIG. 3

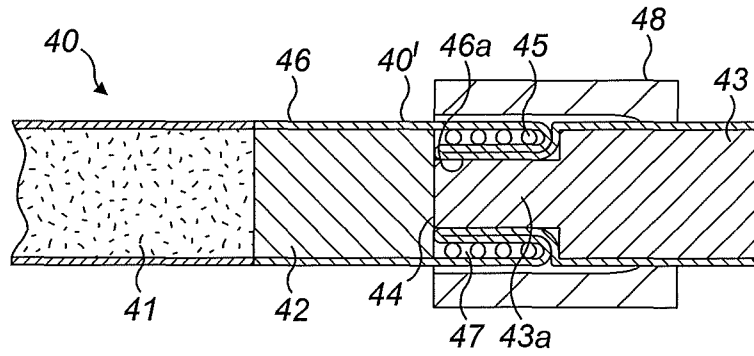


FIG. 4

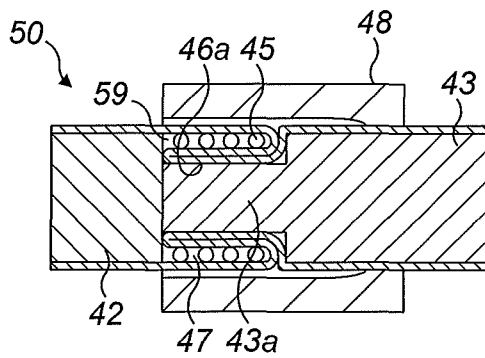


FIG. 5

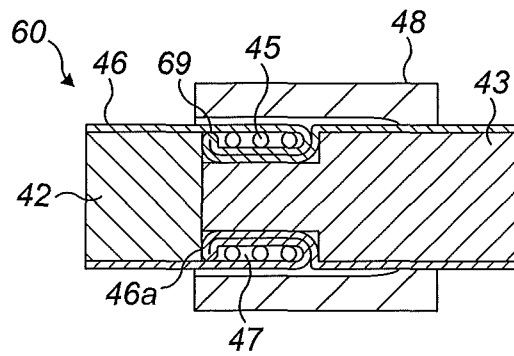


FIG. 6

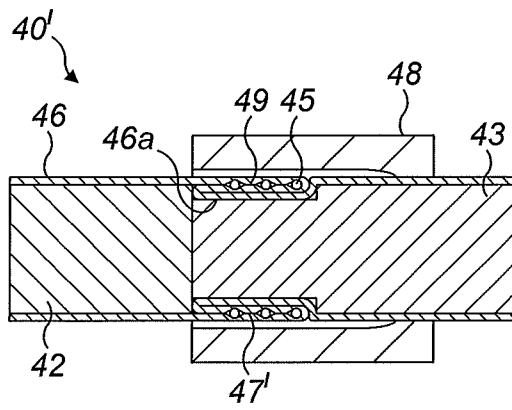


FIG. 7

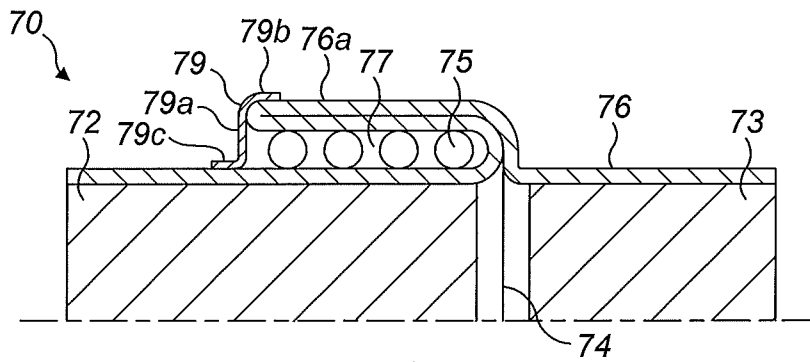


FIG. 8

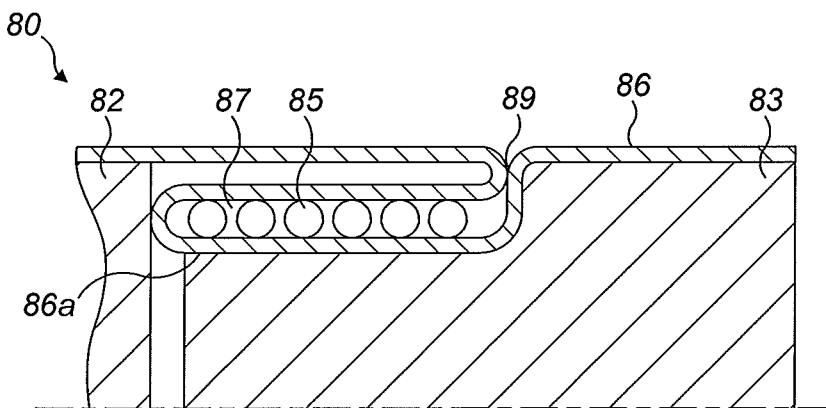


FIG. 9

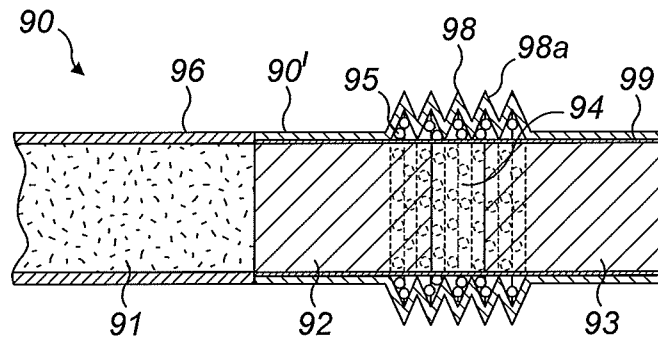


FIG. 10

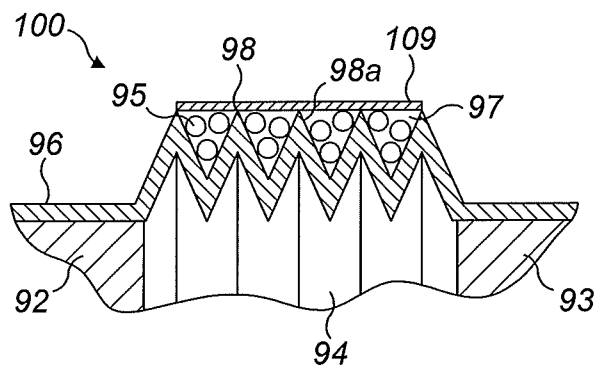


FIG. 11

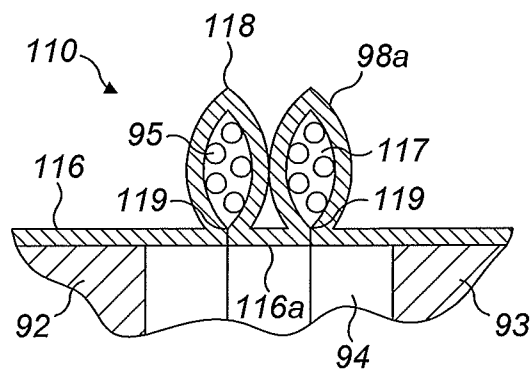


FIG. 12

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2012/051045

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24D3/04
ADD.

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

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
A24D A24F

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 696 314 A (KALLIANOS ANDREW G [US] ET AL) 29 September 1987 (1987-09-29)	1,2, 10-14, 18-27
Y	column 4, lines 19-51 -----	19
X	US 5 133 367 A (KERITSIS GUS D [US]) 28 July 1992 (1992-07-28)	1-10, 14-17, 21-27
Y	column 3, line 42 - column 8, line 37 -----	19
X,P	WO 2011/121326 A2 (BRITISH AMERICAN TOBACCO CO [GB]; BRITISH AMERICAN TOBACCO JAPAN LTD []) 6 October 2011 (2011-10-06) page 7, line 26 - page 9, line 18 -----	1,2,4,5, 8-12,14, 16-20, 22,24-27

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

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 30 August 2012	Date of mailing of the international search report 07/09/2012
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Koob, Michael
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/GB2012/051045

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4696314	A	29-09-1987	NONE

US 5133367	A	28-07-1992	NONE

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		WO 2011121326 A2	06-10-2011
