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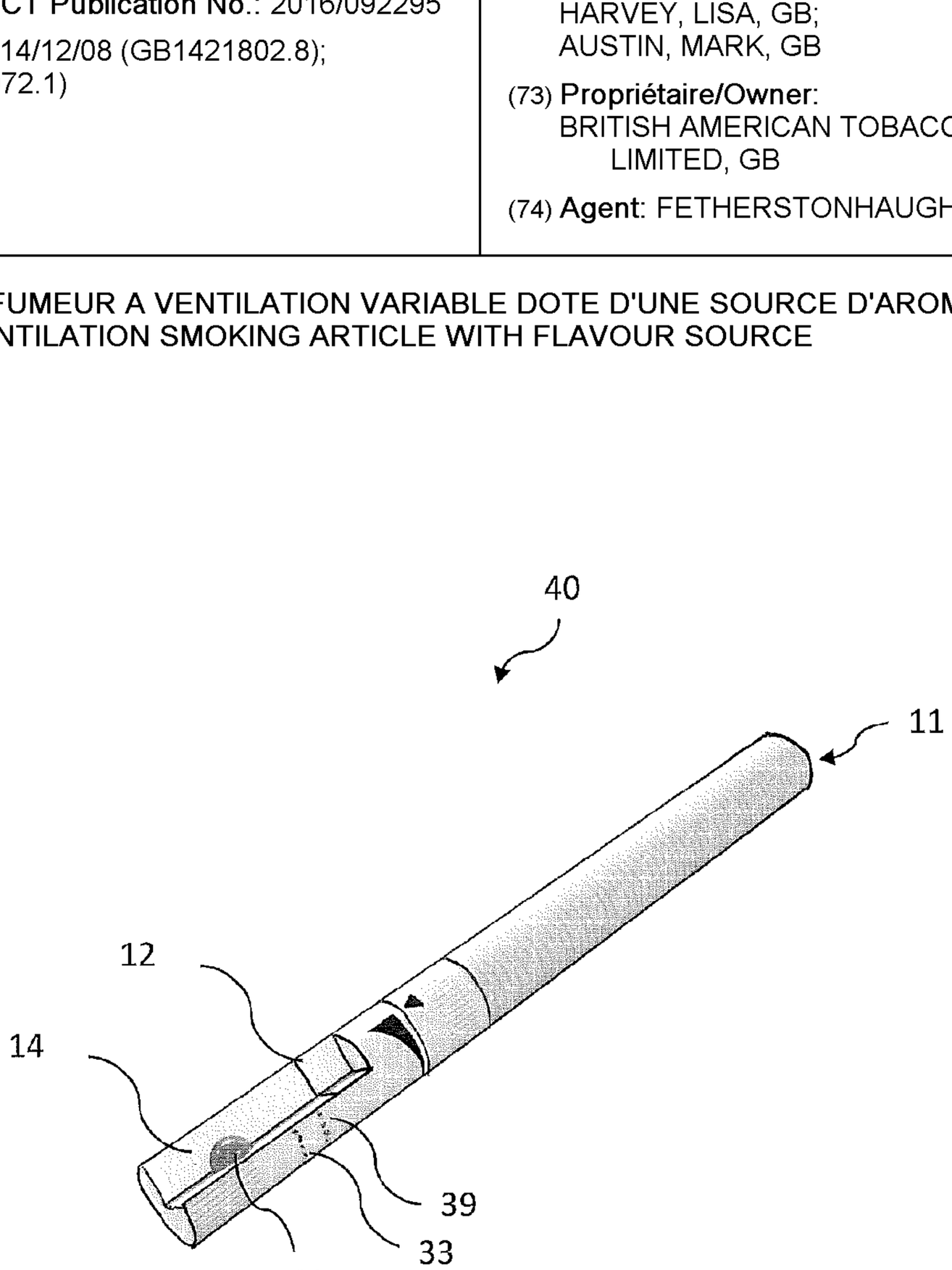

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A smoking article and a method of manufacturing a smoking article A smoking article has a filter section for receiving smoke and/or other aerosol generated by said smoking article, a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section and a flavour source configured to release flavour to said smoke and/or other aerosol generated by said smoking article at a location in said smoke and/or other aerosol downstream of said ventilation arrangement.

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(54) Title: A SMOKING ARTICLE, A SMOKING ARTICLE FILTER SECTION AND A METHOD OF MANUFACTURING A SMOKING ARTICLE

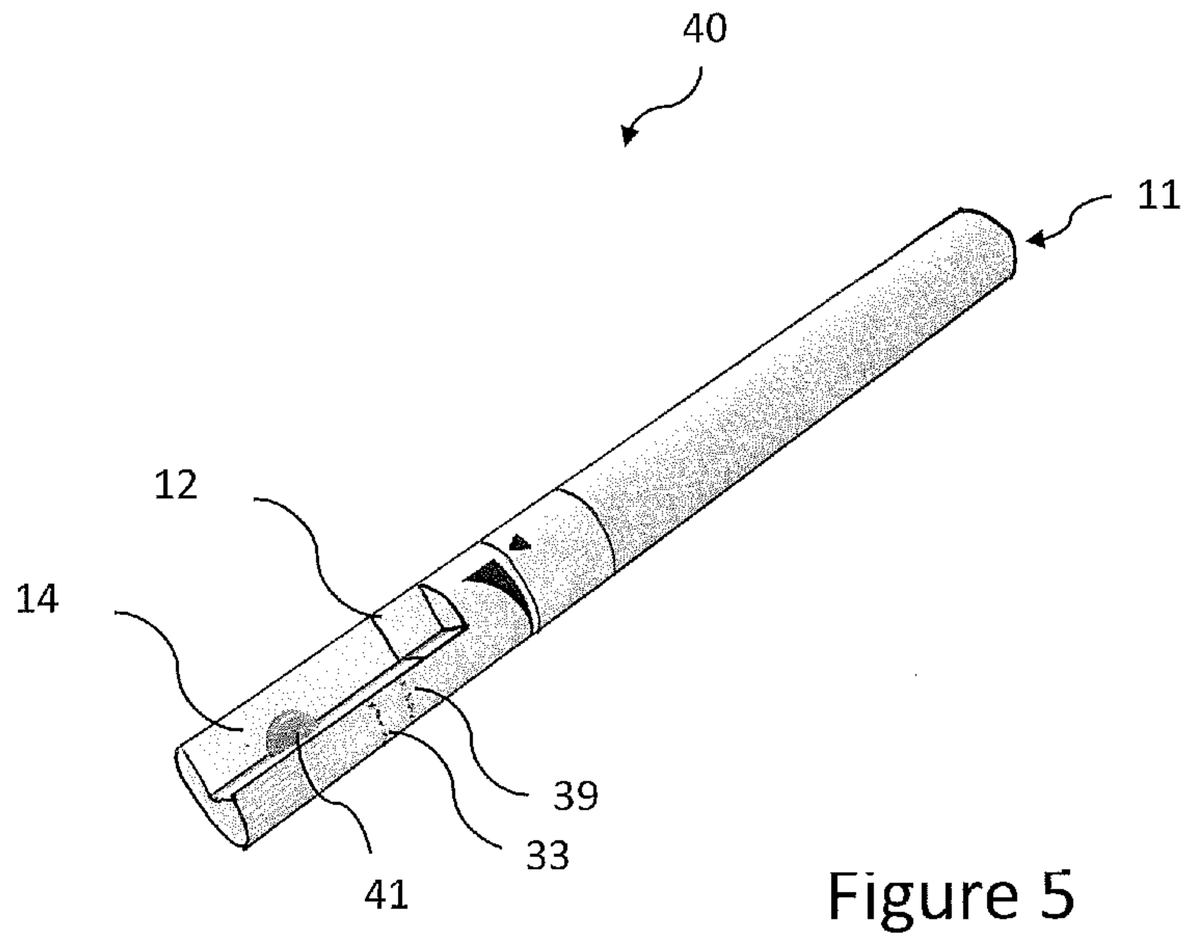

Figure 5

(57) Abstract: A smoking article and a method of manufacturing a smoking article A smoking article has a filter section for receiving smoke and/or other aerosol generated by said smoking article, a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section and a flavour source configured to release flavour to said smoke and/or other aerosol generated by said smoking article at a location in said smoke and/or other aerosol downstream of said ventilation arrangement.

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Variable ventilation smoking article with flavour source

Technical Field

Embodiments of the invention relate to a smoking article, a filter section for a smoking article and a method of manufacturing a smoking article.

Background

Cigarettes can include a filter section for filtering mainstream smoke. It is known to provide cigarettes with a flavour source, such as a flavour capsule, within the filter section, to add additional flavour to the smoke generated by the cigarette.

Summary

Embodiments of the invention provide, in a first aspect, a smoking article comprising: a filter section comprising filtration material arranged to filter at least one of smoke and other aerosol generated by said smoking article; a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section wherein the smoking article comprises a first part and a second part and the level of ventilation is selectable by selecting a position of the second part relative to the first part such that the at least one of smoke and other aerosol generated by said smoking article is diluted with a user controllable amount of external air; and a flavour source configured to provide a user controllable release of flavour to the diluted at least one of smoke and other aerosol passing through the filtration material of the filter section at a location in said at least one of smoke and other aerosol downstream of said ventilation arrangement, wherein the smoking article is configured such that the level of ventilation is controllable independently of the release of flavour.

The flavour source can comprise one or more capsules. The one or more capsules can each have a diameter of from 2mm to 6mm.

The flavour source can comprise at least one selected from plant material, a thread loaded with flavourant, flavourant dispersed in filter tow, flavour impregnated particles and a sheet material comprising a flavourant. The flavour source can be located within said filter section.

The smoking article can further comprise a further ventilation arrangement configured to

provide a level of ventilation into the filter section which is not user controllable.

The level of ventilation provided by the further variable ventilation arrangement can be within the range of from 5% to 50% of the volume of smoke and/or other aerosol generated by said smoking article passing through the filter section when said variable ventilation is at its minimum level.

The variable ventilation arrangement can provide ventilation which is user controllable within a sub-range within the range of from 0% to 90% of the volume of smoke and/or other aerosol generated by said smoking article passing through the filter section.

The filter section can form at least a component of a first part of the smoking article and the smoking article can further comprise a second part movable relative to the first part in order to control the level of ventilation provided by the variable ventilation arrangement. The first or second part can comprise a sleeve configured to move relative to the other of the first or second part to control the level of ventilation provided by the variable ventilation arrangement. The sleeve can be rotatable with respect to the filter section, and the level of ventilation is varied by altering an angular position of the sleeve relative to the filter section.

The filter section can comprise a first filter section having a length of 5 to 25 mm, and/or the smoking article can further comprise a second filter section having a length of 5 to 25 mm, and/or the variable ventilation arrangement can provide ventilating air at a position between 6 and 20 mm from a mouth end of the smoking article.

The filter section can comprise a first filter section and the smoking article can further comprise a second filter section, the second filter section being located downstream of the first filter section, and wherein a resistance to gaseous flow through the length of the second filter section is lower than a resistance to gaseous flow through the length of the first filter section and the resistance to gaseous flow through the length of the filter arrangement remains substantially constant as the level of ventilation is varied.

The first and second filter sections can comprise tow filaments, and the first filter section can differ from the second filter section by one or more of: tow weight, number of tow filaments in unit volume, cross-section of tow filaments and degree of crimping.

The second filter section can comprise at least one air passage extending longitudinally through the length thereof. The second filter section can comprise fibrous filtration material formed having an annular cross section.

The second filter section can comprise a tube of fibrous filtration material and the air passage extends along a central longitudinal axis through the length of the second filter section.

The smoking article can comprise a cigarette.

The flavour source can comprise a flavour additive release component configured to release a plurality of discrete deliveries of flavour additive.

The flavour additive release component can comprise an open cell structure which comprises the flavour additive and is at least partially surrounded by an additive-impermeable layer.

The smoking article can further comprise an encapsulating structure which at least partially surrounds the open cell structure and additive-impermeable layer.

The flavour source can be provided in a filter unit which is provided separately from the smoking article and is attachable to the smoking article by a user.

The smoking article can further comprise a sealing member configured to restrict the ingress of air into the smoking article between the filter unit and the smoking article.

The smoking article can comprise a recess and at least part of the filter unit can be arranged to be received in the recess when the filter unit is attached to the smoking article. The recess can be formed by a tubular filter element provided at the downstream end of the smoking article.

The filter section can comprise a further flavour source configured to release flavour to said smoke and/or other aerosol generated by said smoking article at a location in said smoke and/or other aerosol downstream or upstream of said ventilation arrangement.

The further flavour source can comprise one or more capsules.

Embodiments of the invention provide, in a second aspect, a filter section for a smoking article, the filter section comprising: filtration material arranged to filter at least one of smoke and other aerosol generated by said smoking article; a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section wherein the filter section comprises a first part and a second part and the level of ventilation is selectable by selecting a position of the second part relative to the first part such that the at leasat one of smoke and other aerosol generated by said smoking article is diluted with a user controllable amount of external air; and a flavour source configured to provide a user controllable release of flavour to the diluted at least one of smoke and other aerosol passing through the filtration material of the filter section at a location in said at least one of smoke and other aerosol downstream of said ventilation arrangement, wherein the filter section is configured such that the level of ventilation is controllable independently of the release of flavour.

The flavour source can comprise a flavour additive release component configured to release a plurality of discrete deliveries of flavour additive.

The flavour source can be provided in a filter unit which is provided separately from remaining components of the filter section and is attachable to the filter section by a user.

Embodiments of the invention provide, in a third aspect, a method of manufacturing a smoking article, the method comprising: forming a filter section comprising filtration material arranged to filter at least one of smoke and other aerosol generated by said smoking article; providing a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section wherein the smoking article comprises a first part and a second part and the level of ventilation is selectable by selecting a position of the first part relative to the second part such that the at least one of smoke and other aerosol generated by said smoking article is diluted with a user controllable amount of external air; and providing a flavour source configured to provide a user controllable release of flavour to the diluted at least one of smoke and other aerosol passing through the filtration material of the filter section at a location in said at least one of smoke and other aerosol downstream of

said ventilation arrangement, wherein the smoking article is configured such that the level of ventilation is controllable independently of the release of flavour.

Brief Description of the Drawings

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

Figure 1 is a longitudinal cross-sectional view of a part of a smoking article according to a first embodiment;

Figure 2 is a perspective view of the smoking article illustrated in Figure 1;

Figure 3a is a plan view of a blank for forming a wrapper for a smoking article according to a second embodiment;

Figure 3b is a longitudinal cross-sectional view of the smoking article according to the second embodiment;

Figure 4 is a perspective view of the smoking article according to the second embodiment;

Figure 5 is a perspective view of a smoking article according to a third embodiment;

Figure 6 is a schematic flow diagram showing a method of manufacturing a smoking article;

Figure 7a is a perspective view of a smoking article according to a fourth embodiment having a separate filter unit; and

Figure 7b is a perspective view of an alternative filter unit which can be used with the smoking article of the fourth embodiment.

Detailed Description

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 and other nicotine delivery devices capable of generating an aerosol for delivery to a consumer. Such smoking articles may be provided with a filter for the gaseous flow drawn by the smoker.

Smoking articles such as cigarettes and their formats are often named according to the cigarette length: "regular" (typically in the range 68 -75 mm, e.g. from about 68 mm to about 72 mm), "short" or "mini" (68 mm or less), "king-size" (typically in the range 75 - 91mm, e.g. from about 79 mm to about 88 mm), "long" or "super-king" (typically in the range 91-105 mm, e.g. from about 94 mm to about 101 mm) and "ultra-long" (typically in the range from about 110 mm to about 121 mm).

They are also named according to the cigarette circumference: "regular" (about 23-25 mm), "wide" (greater than 25 mm), "slim" (about 22-23 mm), "demi-slim" (about 19-22 mm), "super-slim" (about 16-19 mm), and "micro-slim" (less than about 16 mm). Accordingly, a cigarette in a king-size, super-slim format will, for example, have a length of about 83 mm and a circumference of about 17 mm. Cigarettes in the regular, king-size format are preferred by many customers, namely with a circumference of from 23 to 25 mm and an overall length of from 75 to 91 mm.

Each format may be produced with filters of different lengths, smaller filters being generally used in formats of smaller lengths and circumferences. Typically the filter length will be from 15mm, associated with short, regular formats, to 30mm, associated with ultra-long super-slim formats. The tipping paper will have a greater length than the filter, for example from 3 to 10mm longer.

Smoking articles and filters described hereinafter can be manufactured in any of the

above formats. The smoking article can, for instance, be from 70 to 100mm in length and from 14 to 25mm in circumference.

The terms 'upstream' and 'downstream' used herein are relative terms defined in relation to the direction of mainstream smoke (or other aerosol) drawn though a smoking article in use.

Figure 1 illustrates a smoking article 10 according to a first embodiment. The smoking article 10 is a cigarette in the present example. However, other smoking articles can be used.

The smoking article 10 comprises a source of smokable material, such as tobacco, attached to a filter arrangement which comprises a first filter section 12 and a second filter section 14. The source of smokable material is in the form of a tobacco rod 11, which is attached to the first filter section 12. The second filter section 14 is located downstream of the first filter section 12 and tobacco rod 11. A ventilation arrangement 17 provides a user controllable variable level of ventilation into the first filter section 12, as described in more detail below.

The second filter section 14 comprises a flavour source configured to release flavour to the smoke and/or other aerosol generated by the smoking article 10 at a location downstream of the ventilation arrangement 17. In the present example, the flavour source comprises plant flavour particles, although other flavour sources as described herein can be used. Plant-based flavourants and plant flavour particles are referred to respectively as botanicals and botanical particles, and will be described in more detail below.

The smoking article 10 comprises a first part comprising the tobacco rod 11 and the first filter section 12. The tobacco rod 11 and first filter section 12 are connected with a covering layer to affix the first filter section 12 to the tobacco rod 11, which is formed of tipping paper. The tobacco rod 11 and first filter section 12 are referred to as a tobacco unit. The elongate tobacco rod 11 and first filter section 12 define a longitudinal axis of the smoking article.

A second part of the smoking article comprises the second filter section 14 and a sleeve 13 which is movable relative to the first part of the smoking article. The sleeve 13 is in

the form of a tube extending around the circumference of the tobacco rod 11 and/or first filter section 12. The tube can be cylindrical. The sleeve 13 is formed of paper in the present example, although other materials can be used. The first and second filter sections 12,14 each comprise filtration material which is wrapped in a sheet material, which may be paper, e.g. plugwrap. The first and second filter sections 12, 14 form a filter arrangement. The first filter section 12 is upstream of the second filter section 14. The second filter section 14 is at a mouth end of the sleeve 13, adjacent to, and separate from, the first filter section 12.

The tobacco rod 11 and attached first filter section 12 are connected by tipping paper (not shown). The tipping paper is a standard tipping paper, or a relatively thick recessed tipping paper, or a board type tipping paper.

The ventilation arrangement 17 is configured to allow adjustment of a ventilation level of the smoking article 10. The ventilation arrangement 17 comprises one or more first ventilation areas 15 on the sleeve 13. In the present example, the first ventilation areas 15 are at a location closer to the downstream end of the first filter section 12 than to the upstream end. The smoking article further comprises one or more second ventilation areas 16 around the first filter section 12. For example, the one or more second ventilation areas 16 are defined by a layer(s) of sheet material around the first filter section 12 or around the filtration material of the first filter section 12. The ventilation arrangement 17 provides for ventilating air to enter into the first filter section.

Ventilation areas 15,16 are formed as ventilation apertures or air permeable material. In some embodiments, when ventilation areas 15 on the sleeve 13 are exposed, air can flow into the body of the smoking article 10. When first ventilation areas 15 on the sleeve 13 and the corresponding second ventilation areas 16 around the second filter section 12 are aligned, air can flow into the body of the smoking article 10. Ventilation areas 15,16 are aligned by rotation of the first part of the smoking article relative to the second part. In particular, the ventilation is controlled by rotation of the sleeve 13 relative to the first filter section 12. The ventilation arrangement 17 provides a selectable variable level of ventilation controlled by adjusting the overlap of the first ventilation area 15 with the second ventilation area 16. The amount of ventilation depends on the effective ventilating area, which is determined by the area of the overlap of the first and second ventilation areas. The level of ventilation can be selected by selecting a position of the second part relative to the first part e.g. by rotation of the

second part relative to the first part. Thus, the ventilation arrangement 17 provides for a variable size of effective ventilation area, providing a variable intake of air.

The first filter section 12 and second filter section 14 are made of a known filtration material. The filtration material for both filter sections can be tow, for example, cellulose acetate tow. The filtration material of the first filter section is homogenous, and independently, the filtration material of the second filter section is homogenous. The term "homogenous" is used to mean that the filtration material is substantially uniform throughout each filter section, and in particular, is uniform in a longitudinal and/or radial direction through each of the first and second filter sections 12,14. At least one physical property of the homogenous first filter section may be different to the homogenous second filter section.

The first and second filter sections both comprise fibrous material, comprising tow filaments. The tow weight is a measure of the amount of tow fibres in a certain volume. The tow weight can provides an indication of the density of a fibrous material within the filter section. The first and second filter sections are manufactured using filtration material formed or treated to have required properties, for example, providing the different pressure drop per unit length for the first and second filter sections.

The second filter section 14 comprises botanical particles (not shown) embedded in the fibrous material. The second filter section 14 is similar to a "Dalmatian" type filter, comprising fibrous filtration material through which botanical particles have been sprinkled before the fibrous material is folded and wrapped in a wrapping material. The botanical particles are comprised of dried and chopped plant materials, and may be formed from botanicals such as menthol, juniper, coffee, anise or any other botanical having suitable taste and aroma characteristics. Any part of a chosen plant, for example the roots, leave, flowers, stems, or buds, can be used in the formation of botanical particles.

The plurality of botanical particles in the second filter section 14 impart a taste and/or aroma to the smoke which passes through the second filter section 14. As the level of ventilation is varied the level of dilution of the unflavoured smoke is changed. However, the amount of flavoured smoke which reaches the mouth end of the smoking article remains more constant than the unflavoured smoke, resulting in an overall smoking article 10 in which the intensity of smoke can be controlled while providing a relatively

stable level of additional flavour. The added flavour is, however, altered as a proportion of the overall taste which the smoker receives from the combination of smoke and added flavour, and therefore the smoking article 10 provides a new consumer experience in this regard.

As illustrated in Figure 2, the tobacco rod 11 and first filter section 12 are dimensioned to rotate as a unit around a longitudinal axis with the second filter section 14 positioned within the sleeve 13. A restraining means (not shown) retains the first part and second part in a fixed longitudinal arrangement, and prevents extension of the smoking article 10. Thus, the first part cannot slide longitudinally relative to the second part, i.e. the sleeve is not movable longitudinally relative to the second filter section 14.

The level of ventilation can be selected by selecting an angular position of the sleeve 13 relative to the second filter section 14.

In some examples, the first ventilation areas 15 are configured to increase in size non-linearly with respect to angular position. The first and second ventilation areas 15, 16 are configured such that the level of ventilation has a substantially linear dependence on the angular position of the sleeve 13 relative to the second filter section 14.

In some aspects, the one or more first and second ventilation areas 15, 16 maintain a fixed longitudinal position relative to the first and second filter sections, when the sleeve 13 is rotated relative to the second filter section 14.

In the present embodiment, the second filter section 14 is securely attached and fixed within the sleeve 13. Rotation of the second filter section 14 relative the first filter section 12 therefore causes rotation of the first filter section 12 within the sleeve 13.

By selecting a different angular position of the second filter section 14 relative to the first filter section 12, the registry between the first ventilation areas 15 in the sleeve 13 and the second ventilation areas 16 in the sheet material or plugwrap around the first filter section 12 can be selectively increased or decreased. The level of ventilation in the smoking article 10 can therefore be increased or decreased.

The second filter section 14 comprises botanical particles which lie downstream of the ventilation areas 15. The level of ventilation in the smoking article 10 controls the

dilution of smoke which passes through the first part of the smoking article 10 with air which enters the smoking article 10 through the ventilation areas 15. Therefore, while the level of ventilation controls the dilution of smoke, it does not substantially influence the level of additional flavour in the smoking article which can therefore be maintained as relatively constant.

Figure 3a is a plan view of a blank 30 forming a wrapper for a smoking article according to a second embodiment. Figure 3b is longitudinal cross-sectional view of a smoking article 32 to which the blank 30 of Figure 3a has been applied. The smoking article 32 comprising the blank 30 has substantially the same functions as described above. Features have the same arrangement and function unless otherwise described.

Referring to Figure 3b, the rod article 32 includes a tobacco rod 11, similar to that previously described, and first and second filter sections 12, 14 downstream of the tobacco rod 11. The second filter section 14 is provided in a first part 14' at the mouth-end of the smoking article 32 and a second part 14" upstream of the first part 14'. Both the first and second parts 14', 14" are provided downstream of the first filter section 12 and tobacco rod 11, at the mouth end of the smoking article. The first filter section 12 is provided between the second part 14" of the second filter section 14 and the tobacco rod 11. The second part 14" of the second filter section 14 comprises botanical particles 18, as described with respect to the first embodiment. The first filter section 12 is divided into a first part 12' and a second part 12" by a cut 12"', allowing the first part 12' of the first filter section 12 to move relative to the second part 12".

The blank 30 is configured to wrap twice, and in the present example twice only, around the whole circumference of the rod article 32. The blank 30 has a first section 30a which first wraps around the rod article 32 forming an inner layer and a second section 30b which then wraps around the first section 30a, forming an outer layer. The blank 30 is therefore configured to define two complete layers extending around the circumference of the rod article 32, and comprises areas 30a, 30b to define an inner layer and an outer layer.

The first section 30a of the blank 30 comprises a first end portion 30a' connected to the second filter section 14 and to the first part 12' of the first filter section 12, and therefore connecting the second filter section 14 and the first part 12' of the first filter section 12 together. The first section 30a of the blank 30 also comprises a second end portion

30a" connected to the second part 12" of the first filter section 12 and to the tobacco rod 11. The second section 30b of the blank 30 is separated into a first part 30b' and a second part 30b" by a cut 31.

The blank 30 comprises, on the first section 30a, a control element 34 movable in a circumferentially extending channel 36, configured to control ventilation and limit movement.

The control element 34 is movable circumferentially within a limited range. The control element 34 is movable between a first engaging surface and a second engaging surface. The first engaging surface and second engaging surface define the circumferentially extending channel 36 in which the control element 34 is movable.

The control element 34 defines first and second limiting surfaces 34a, 34b at the edges of the control element in the direction of movement, i.e. at the circumferential edge of the control element 34. Contact of the first and second limiting surfaces 34a, 34b of the control element 34 with the first engaging surface and the second engaging surface of the circumferentially extending channel 36 limits relative rotation between the first and second parts of the smoking article.

The first and second limiting surfaces 34a, 34b extend at an angle to a longitudinal axis of the smoking article. The first and second engaging surfaces also extend at an angle to the longitudinal axis of the smoking article, and/or at an angle to the axis of movement of the control element. The first and second engaging surfaces extend at the same angle and/or have a complementary shape to the first and second limiting surfaces 34a, 34b.

A longitudinal movement restricting arrangement 35 comprises a sliding element 37 which is arranged to move between first and second restricting elements 38a and 38b. Sliding element 37 is attached to first and second restricting elements 38a and 38b with a frangible connection. The frangible connection is a circumferentially extending line of perforations. The part of the blank including the sliding element 37, control element 34, first and second restricting elements 38a and 38b and circumferentially extending channel 36 extends one time around the whole circumference of the smoking article, e.g. to form a tube. The sliding element 37 is attached to first part 30b' of the second section 30b of the blank 30, together with the first part 30a' of the first section 30a of the blank, and therefore moves, together with the first part 30a' of the first section 30a,

the second filter section 14 and the first part 12' of the first filter section 12, relative to the second part 30a" of the first section 30a of the blank 30 and the second part 12" of the first filter section 12, and the tobacco rod 11.

The second section 30b of the blank 30 forming the outer layer, comprises a ventilation area 39' at a location 39 on the blank. In some examples, the ventilation area 39' comprises a single aperture. Alternatively, the ventilation area 39' comprises a plurality of discrete permeable areas or apertures. For example, the apertures are formed by electroperforation (EP). The ventilation area 39' is arranged to align with the channel 36 when the blank 30 is wrapped around the rod article 32.

The control element 34 has a further function in controlling the ventilation of the smoking article. In particular, the control element 34 directly controls the ventilation of the smoking article by selectively blocking one or more ventilation areas. The control element 34 is configured to be movable relative to one or more ventilation areas in a radially adjacent, and integrally formed, part of the smoking article. The control element 34 is formed of a material which is substantially impermeable to air, in particular, paper which is not permeable to air. The control element 34 is configured to move between the ventilation area 39' and the underlying rod article 32 of the smoking article, such that ventilation air cannot enter the smoking article through the channel 36 which is blocked by the control element 34. The control element is impermeable to air between the first and second limiting surfaces 34a, 34b. The first and second limiting surfaces 34a, 34b define both the limits of rotation and define the amount of ventilation area which is covered or uncovered.

Thus, the control element 34 has the dual function of both directly controlling a level of ventilation by covering a part of a ventilation area and limiting relative movement of the first and second parts of the smoking article between maximum and minimum levels of ventilation.

In some embodiments, the second part 14" of the second filter section 14 comprises flavourant in the form of botanical particles. However, the second filter section 14 can comprise other forms of flavourant, such as one or more capsules, a thread loaded with flavourant, flavourant dispersed in filter tow, flavour impregnated particles or a sheet material comprising a flavourant, which lie upstream of the ventilation area 39' and can be included in the first and/or second parts 14', 14" of the second filter section 14. The

level of ventilation in the smoking article 10 controls the dilution of smoke which passes through the first part of the smoking article 10 with air which enters the smoking article 10 through the ventilation area 39'. However, this does not significantly influence the level of additional flavour applied to the gaseous flow through the smoking article by the flavour source. Therefore level of flavour added to mainstream smoke can be kept relatively constant as the dilution of smoke is varied.

In some aspects, the blank 30 comprises a further ventilation area (not shown) at a location 33 on the blank downstream of the variable ventilation arrangement 39'. The further ventilation area comprises a plurality of discrete ventilation areas or apertures, for example, in a circumferentially extending line. The further ventilation area can be formed by a laser. Generally, one or more of the ventilation areas comprise a plurality of discrete ventilation areas or apertures. The further ventilation area provides a constant minimum level of ventilation which is unaffected by the variable amount of ventilation from the ventilation area 39'. The amount of ventilation provided by the further ventilation area can be predetermined in the manufacture of the smoking article 10 and is, for instance, between 5% to 50% of the volume of smoke and/or other aerosol generated by said smoking article passing through the filter section when said variable ventilation is at its minimum level. The variable ventilation arrangement 39', 36 can be arranged to provide ventilation which is user controllable within a sub-range within the range of from 0% to 90% of the volume of smoke and/or other aerosol generated by said smoking article passing through the filter section, for instance from 0% to 50% ventilation.

Figure 4 is a perspective view of the smoking article 32 according to the second embodiment.

Figure 5 is a perspective view of a smoking article 40 according to a third embodiment, which is the same as the smoking article 32 of the second embodiment, except that in the third embodiment, the second filter section 14 is provided as a single continuous filter component, rather than in first and second parts, and comprises a user activated flavour release component in place of the botanical particles 18. The flavourant release component is preferably in the form of a capsule 41 which comprises an outer wall and an inner volume filled with fluid flavourant. The flavourant can be selectively released by the user of the smoking article 40 into the adjacent filtration material by squeezing the outside of the filter to deform or rupture the outer wall of the capsule 41. In the

present example, the capsule has a diameter of 3.5mm, although other sizes can be used, for instance diameters of 2.5, 3, 4 or 4.5 mm, micro capsules or macro capsules with diameters in the range from 1mm to 7mm or larger.

The capsule 41 defines a cavity having a volume which is filled with flavourant. The outer wall or shell may be formed using gelatin, hydroxypropyl methylcellulose (HPMC), a polysaccharide, polysaccharide derivative or any other suitable material, using methods known in the art. The outer shell surrounds and encapsulates the flavourant. The capsule 41 is configured to release all of the flavourant contents when the outer wall is ruptured. The outer shell is frangible on compression, and is configured to break apart over substantially the whole surface of the outer shell, or alternatively rupture only in a predefined area when compressed.

Alternatively, capsule 41 is configured to release only a part of the flavourant on inward pressure from a user, such that the flavourant contents are released in a plurality of discrete deliveries. The outer shell is resiliently deformable and may be configured to rupture in a predetermined area, or over a part of the surface area only, to form one or more slits or apertures when compressed.

The outer shell may be formed from a single part, or a plurality of parts sealed together. An outer shell formed from two parts may be configured to rupture at a weakened region, for example along a longitudinal or circumferential seam joining the two parts, which opens under pressure to define a slit. The capsule 41 may only release a part of the contents through the slit when the capsule 41 is compressed before returning at least partially to its original shape, when the compression of the capsule 41 ceases.

Additionally, the capsule 41 may comprise a substrate, which is a body of absorbent material impregnated with the flavourant. The substrate is a porous matrix with an open structure, in particular, an open cell structure, e.g. an open cell foam structure. The substrate is configured to be progressively compressible and configured to release at least a part, and preferably only a part, of the flavourant contents when partly compressed. The flavourant is distributed within the substrate, and preferably, absorbed by the substrate. The substrate is preferably formed of a filtration material, for example, cellulose acetate. The filtration material may be in the form of a known tow of filtration material suitable as a filter. The outer shell does not inhibit release of the flavourant once ruptured. The substrate may be at least partially resiliently

deformable and may at least partially return towards the original shape, when the compression of the capsule 49 ceases. In the partial expansion of the substrate following release of the compressive force, the substrate may re-absorb a part of the released flavourant. References to release of the flavourant are therefore intended to refer to the net release of flavourant after the compressive force has ended.

The substrate may be formed by extrusion of the material containing the flavourant, which is then cut to a suitable length. A closed cell foam substrate may not require an outer shell to retain the flavourant, and so may form the capsule 41 without an outer shell. Alternatively, the capsule 41 may comprise the closed cell foam substrate encapsulated in an outer shell.

The second filter section 14 comprises one or more capsules 41 which lie downstream of the ventilation areas 39, 36. The level of ventilation in the smoking article 40 controls the dilution of smoke which passes through the first part of the smoking article with air which enters the smoking article 40 through the variable ventilation area 39'. After the flavourant has been released from the one or more capsules by compression of the first filter section, the level of flavour in the smoking article is relatively unaffected by user changes in the level of ventilation provided into the smoking article, as compared to the dilution of the mainstream smoke.

In the embodiments described herein, a flavour source is provided downstream of a variable ventilation arrangement. In addition, a further, second flavour source can be provided upstream of the variable ventilation arrangement. For instance, the first filter section 12 can comprise one or more first flavour release components and the second filter section 14 can comprise one or more second flavour release components. The first and second flavour release components can each be any of the flavour sources described herein. The amount of flavour provided by the flavour source which lies upstream of the variable ventilation area 17, 39' can be increased or decreased by varying the level of ventilation of the smoking article. The amount of flavour provided by the flavour release component downstream of the variable ventilation area 17, 39' can be predetermined and is substantially unaffected by the level of ventilation of the smoking article. In this way, a baseline amount of flavour can be provided by the first flavour release component as a minimum level. The total amount of flavour can be increased to a maximum level by reducing the amount of ventilating air which dilutes the flavour of the second flavour release component. Accordingly, the amount of flavour

provided by the smoking article may be varied over a wide range to suit the taste of a user.

In some embodiments, a first flavour release component comprises a first capsule and a second flavour release component comprises a second capsule.

Figure 6 illustrates schematically a method of manufacturing smoking articles according to the invention. The method comprises forming a filter section (step S1), in the present example from a known filtration material, for example, cellulose acetate tow. A variable ventilation arrangement, for instance an arrangement as described herein, is provided (step S2) which is configured to provide a user controllable level of ventilation into the filter section. The variable ventilation arrangement can be provided, for instance, by inner and outer wrappers having selectably overlapping ventilation areas.

A flavourant source is provided (step S3) to release flavour at a location downstream of the ventilation arrangement. In some embodiments, the flavourant source is a plurality of botanical particles, as described herein, and these are applied to the filter tow of a filter section upstream of the filter section into which the variable ventilation is applied. In alternative embodiments, other flavour sources as described herein can be used, for instance capsules or flavour loaded threads.

The first and second filter sections may be longitudinally aligned with a source of smokeable material.

Any other known filter components can be added to the smoking articles described herein. Examples of further filter components include a third filter section, for instance a filter section with particulate material (e.g. carbon, activated charcoal) or an additional hollow section having an air passage therethrough. The first and/or second filter sections can each be considered as comprising one or more discrete filter sections. The filter sections can be considered as generally upstream and downstream of the variable ventilation area.

In a further embodiment, the second filter section, located downstream of the first filter section, can be arranged such that a resistance to gaseous flow through the length of the second filter section is lower than a resistance to gaseous flow through the length of the

first filter section. The resistance to gaseous flow through the length of the filter arrangement remains substantially constant as the level of ventilation is varied. The first filter section can for instance, differ from the second filter section by one or more of: tow weight, number of tow filaments in unit volume, cross-section of tow filaments and degree of crimping. The second filter section can, for instance, be a tubular section having at least one air passage extending longitudinally through the length thereof. The second filter section could, for instance, comprise fibrous filtration material formed having an annular cross section, in particular a tube of fibrous filtration material with the air passage extending along a central longitudinal axis through the length of the second filter section.

Figure 7a is a perspective view of a smoking article 50 according to a fourth embodiment, in this case provided with a separate filter unit 52.

The smoking article 50 comprises a first filter section 12 and a second filter section 14. A source of smokable material is in the form of a tobacco rod 11, as previously described, which is attached to the first filter section 12 using a tipping paper. The second filter section 14 is, in the present example, a tubular filter section having a channel 14' extending through its centre and forming a recess at the downstream end of the smoking article 50. The second filter section 14 is located downstream of the first filter section 12 and tobacco rod 11. A ventilation arrangement comprising a ventilation area 39 which can be controlled by a used, and further ventilation area 33 providing a base level of ventilation, are provided, as previously described with reference to the second and third embodiments. The filter unit 52 is arranged to be coupled to the second filter section 14 of the smoking article 50 by a user.

The filter unit 52 comprises a surface 52' configured to at least partially face an end surface 14'' of the second filter section 14 when the filter unit 52 is coupled to the smoking article 50. The filter unit 52 further comprises a sealing member 62 extending over at least part of the filter unit surface 52' and configured to restrict the ingress of air into the smoking article 50 between the filter unit 52 and smoking article 50 when the filter unit 52 is coupled to the second filter section 14. The sealing member 62 may also be referred to herein as a sealing element 62. The sealing member 62 may comprise, but is not limited to, a gasket and/or one or more adhesive layers. The surface 52' is also referred to herein as a surface portion 52.

The filter unit 52 can be configured to be connected onto the end surface 14" of the second filter section 14 using the sealing member 62. For instance, the sealing member 62 can comprise adhesive for connecting the surface portion 52' of the filter unit 52 to the end surface 14" of the second filter section 14.

The filter unit 52 comprises a first portion 58, in the present embodiment having a generally cylindrical shape and an outer diameter corresponding to the outer diameter of the smoking article 50. The first portion 58 is formed as a tube of filter material, for instance plasticised cellulose acetate tow, wrapped in a tipping paper 60, although could be formed from other materials and/or wrapped with other materials or provided as an unwrapped filter section. The filter unit surface 52' is provided on the first portion 58.

The filter unit 52 also comprises a second portion 54 extending from the first portion 58 and arranged to be inserted into the recess formed by the channel 14' extending through the second filter section 14. The second portion 54 can be inserted into the recess by a user to couple the filter unit 52 to the smoking article 50. In the present example, the second portion 54 extends away from the filter unit surface 52' of the first portion 58 and has a generally cylindrical shape with a smaller diameter than the first portion 58. The first and second portions 58, 54 are coaxially arranged. The second portion 54 extends proud of the sealing member 62 provided on the filter unit surface 52'. The second portion 54 also extends through the first portion 58. The second portion 54 is formed as a cylinder of filter material, in the present case plasticised cellulose acetate tow, wrapped in an air impermeable plug wrap 56. However, alternatively, the second portion 54 can be formed from other materials, such as paper, or may be provided as a non-wrapped acetate filter portion.

The channel 14' of the second filter section 14 is sized to accommodate at least a part of the second portion 54 of the filter unit 52 when the filter unit 52 is coupled to the smoking article 50.

The sealing element 62 may comprise a body which is air impermeable in at least one direction. For instance, the sealing element 62 may allow smoke flowing longitudinally through the smoking article 50 to pass through it, but prevent smoke from passing through the element 62 laterally so as to exit between the filter unit 52 and the smoking article 50 when these components are connected together.

The sealing element 62 may comprise any suitable thickness, for example between 0.1 mm and 3mm, between 0.1mm and 2mm or between 0.1mm and 1mm. The sealing element can, for instance, have a thickness of 0.5mm or 1mm.

The sealing element 62 may comprise any one or more of one or more adhesive portions and one or more air impermeable bodies. The air impermeable body can be a closed cell foam such as, but not limited to, closed cell polymeric foams such as polyurethane foam or polystyrene foam. The air impermeable body comprises a body which is impermeable to air passing through the body in at least one direction.

The filter unit 52 may be attached to the smoking article 52 in any suitable way. This may include forming an interference fit between the side walls of the recess formed by the second filter section 14 and the longitudinal outer walls of the second portion 54 of the filter unit 52. Additionally or alternatively the filter unit 52 may be attached to the smoking article 50 via the sealing element 62. The sealing element 62 can be attached to the surface portion 52' of the first portion 58 by any means including an adhesive forming part of the sealing element 62 and/or any other suitable securing means such as being thermally bonded. The sealing element 62 can be attached to the end surface 14" of the second filter section 14 by any means including an adhesive forming part of the sealing element 62 and/or an adhesive located upon the end surface 14" of the second filter section 14.

The adhesive material used herein may comprise a natural adhesive (bio-adhesive) and/or a synthetic adhesive. The synthetic adhesive may be based on any of: an elastomer material; a thermoplastic material; an emulsion and a thermosetting material such as epoxy, polyurethane, cyanoacrylate or acrylic. The adhesive may be any non-reactive adhesive such as: a drying adhesive, a pressure sensitive adhesive, a contact adhesive, a hot adhesive. The adhesive may be a reactive adhesive. The adhesive may be a permanently tacky adhesive, for instance allowing the smoking article 50, filter unit 52 and sealing member 62 to be separated and repositioned.

In alternative examples, the sealing element 62 may not have adhesive or may be omitted entirely. As an alternative or in addition to the sealing member 62, the filter unit 52 can be coupled to the end surface 14" via the second portion 54 of the filter unit 52 which is received in the recess at the downstream end of the smoking article. The

outer surface of the second portion 54 and/or the inner surface of the recess 14' may include protrusions, other surface features, adhesives, or be dimensioned to result in an interference fit, which couples the filter unit 52 onto the end surface 14" of the second filter section 14.

In use, the smoking article 50 can be provided to users as a separate component to the filter unit 52, wherein the annular sealing element 62 is adhered to the surface portion 52' by an adhesive layer.

The user can select whether or not to attach the filter unit 52 to the smoking article 50 prior to smoking the smoking article 50, and can in this way control the length of filter of the smoking article 52 and therefore the level of filtration of the aerosol generated by the smoking article 50.

The filter unit 52 further comprises a source of flavourant, in the present example a pressure rupturable capsule 64. The capsule can take any form described herein, and is preferably a hard shelled seamless substantially spherical capsule with a diameter between 3mm and 6mm, containing a liquid flavour additive, such as menthol. The source of flavourant in the filter unit can alternatively be provided in any of the other forms described herein, such as at least one selected from plant material, a thread loaded with flavourant, flavourant dispersed in filter tow, flavour impregnated particles and a sheet material comprising a flavourant.

In addition to the source of flavourant in the filter unit 52, a further source of flavourant can be provided in at least one of the first and second filter sections 12, 14, which can be modified to receive the further source of flavourant as required. The further flavour source can be configured to release flavour to said smoke and/or other aerosol generated by the smoking article 50 at a location in the smoke and/or other aerosol downstream or upstream of the ventilation arrangement 39. The further source of flavourant can be provided as a pressure rupturable capsule. The capsule can take any form described herein, and is preferably a hard shelled seamless substantially spherical capsule with a diameter between 3mm and 6mm, containing a liquid flavour additive, such as menthol. The further source of flavourant can alternatively be provided in any of the other forms described herein, such as at least one selected from plant material, a thread loaded with flavourant, flavourant dispersed in filter tow, flavour impregnated particles and a sheet material comprising a flavourant.

Figure 7b is a perspective view of an alternative filter unit 70 which can be used with the smoking article 50 of the fourth embodiment. The alternative filter unit 70 is, in the present example, sized to fit substantially within the recess 14' at the downstream end of the smoking article 50. However, alternatively, the alternative filter unit 70 can be formed in a similar way to the filter unit 52 described with reference to Figure 7a.

Figure 7b shows an exemplary flavour additive release component 72, also referred to as an additive release component, within the filter unit 70. The flavour additive release component 72 is configured to release a plurality of discrete deliveries of flavour additive. In the present example, the flavour additive release component 72 comprises an open cell structure containing an additive which is held within the open cells of said structure (not shown) by an additive-impermeable layer. The flavour additive release component 72 is at least partially elongate in shape and extends longitudinally in a filter plug 74 within the filter unit 70. The filter plug 74 is formed from cellulose acetate tow which surrounds the flavour additive release component 72, and is wrapped in a plug wrap 76 which is impermeable to air and/or liquid. The flavour additive release component 72 has an aperture 72' through which the contents of the component 72, for instance within the open cell structure, can be released. The aperture 72' is at a longitudinal end of the additive release component 70, and is preferably located on a central longitudinal axis.

A portion of the additive contents, preferably a fluid flavourant, is ejected from additive release component 72 on an initial partial compression, and further doses of additive may be released on subsequent compressions. The aperture 72' may be formed by a frangible area of weakness, or alternatively, a slit valve for example. For example, the outer wall of the component 72 may be provided with a narrow slit, which substantially prevents additive from exiting when the additive release component 72 is not compressed. On compression of the additive release component 72, the additive-impermeable layer is ruptured, opening the interconnected open cells to the exterior of the open cell structure. The encapsulating structure of the component 72 may partially contain the additive, and allow exit of the additive through the aperture 72'.

The aperture 72' has been shown at only one end of the flavour additive release component 72. Alternatively, the flavour additive release aperture 72' may be at both

longitudinal ends of the component 72. Alternatively, the additive release component 72 may define apertures at any two spaced apart locations.

The flavour additive release component 72 is arranged so that under the application of force, additive is ejected, squirted or driven forcibly from the additive release component. The ejection of additive from the additive release component 72 means that the additive may be deposited further from the component and over a larger area than would otherwise be possible. For example, the encapsulating structure may comprise a region configured such that additive is released is ejected or squirted through that (optionally relatively small) region when a force is applied thereto.

In some embodiments, the encapsulating structure may include one or more apertures. In some embodiments, these apertures may be closed before actuation of the additive release component 72. Alternatively, the encapsulating structure may be configured to rupture or break in a predetermined region only upon actuation, for example by compression. A region of the encapsulating structure may have a greater tendency to rupture because it has a reduced thickness compared to other parts of the encapsulating structure, or because it is formed from an otherwise weaker or weakened material, and/or as a result of the overall shape of the encapsulating structure and/or other parts of the additive release component.

In some embodiments, the encapsulating structure is configured to transmit force to the open cell structure in such a way that facilitates the release of additive from the open cell structure. For example, the encapsulating structure may be configured to spread the compressive force applied by the user so that it will be applied over a greater area of the open cell structure, so that a greater number of the cells are distorted and/or compressed than would be distorted and/or compresses by application of the same amount of force to an additive release component which does not include the encapsulating structure.

The additive release component 72 may comprise one or more open cell structures. In some embodiments, the additive release component 72 comprises a plurality of open cell structures and these may comprise the same or different additives.

Any encapsulating structure included as part of the additive release component 72 comprises an encapsulating material and this material may be the same as or different

from the support material forming the body of the open cell structure and/or the material of the additive-impermeable layer.

Thus, in some embodiments, the encapsulating material may comprise one or more polymers. These polymers may be natural or synthetic, and may be crosslinked. For example, one or more of the polymers may be polysaccharides, and for example, one or more of these polysaccharides may be cellulose, or any suitable derivative thereof, such as cellulose acetate. In some embodiments, both the encapsulating structure and the support material are formed from cellulose acetate. Alternatively or in addition, both the encapsulating structure and the support material may comprise gelatin.

In some embodiments, polysaccharide polymers are preferred because they are biocompatible, non-toxic and hypo-allergenic. In addition, they can be made water insoluble and relatively heat stable at lower temperatures (e.g. below approximately 75°C) through crosslinking, they can be crosslinked by salt bridges, and they can be heated and burned to yield tasteless products.

In certain embodiments, the encapsulating structure may be formed from one or more of the following encapsulating materials: polysaccharides (including, for example, starch, alginate, agar, pectin, carrageenan and gums), proteins (including, for example, gelatine and casein), fats and fatty acids, cellulose derivatives, lipids (including, for example, waxes, shellac, carnuba and beeswax).

In some embodiments, the encapsulating structure may be constructed from a frangible material. In one embodiment the encapsulating structure is composed of a low solubility, high molecular weight polyvinyl alcohol. A number of suitable alternative materials are known, and by way of example, capsules typically utilized in the pharmaceutical industry may be used. Such capsules may be gelatin-based, for example, or may be formed from a polymeric material, such as modified cellulose. One type of modified cellulose which may be used is hydroxypropylmethyl cellulose. Many biodegradable materials are known which may be suitable for use in the production of additive release components and these include high molecular weight polyethylene glycols, polylactic acid, plastarch material, polycaprolactone, polyglycolide, a polyhydroxyalkanoate such as poly-3-hydroxybutyrate, and zein-derived bioplastics.

Any suitable method of manufacture may be used to fabricate the open cell structure of the additive release component comprising open cells defined by walls of a support material, with at least some of the open cells holding an additive. For example, a person skilled in the art would have no difficulty in forming a suitable open cell structure by creating and reticulated form.

Any materials for the additive, additive release component or filter must be safe to use, and are subject to regulatory approval.

One or more additive release components may be incorporated into the filter unit 70, or as the flavour source in any of the smoking articles 10, 32, 40 described herein. An additive release component may be positioned at any suitable location in a smoking article and may be, for instance, provided as the further flavour source described above, in addition to or instead of being provided as the primary flavour source described in the embodiments herein.

In yet further embodiments, the additive release component 72 may be positioned so that at least part of it is external to the smoking article 50. For example, the additive release component may be attached to an external, radial recess or groove formed in the surface of the smoking article, for example around a part of the filter section.

Where the additive release component is located within a filter, the filter material in which the component is held may comprise any suitable filter material, such as cellulose acetate, polypropylene, paper or any other suitable material. The filter may comprise a reaction surface against which the additive release component can be urged, in order to facilitate actuation of the additive release component and release of the additive. In some embodiments, the additive release components may be located on a periphery of the filter. The radially adjacent filter material may provide a reaction surface against which the additive release component can be urged. Preferably, the filter material may be relatively hard (e.g. containing an increased amount of plasticiser) to form the reaction surface, and may have a hardness on the Filtrona scale of more than 90%. The additive release component may be located within the filter material, or may be located in a cavity adjacent to the filter material. The cavity may be formed by an elongate inner rod of filter material, which one or two annular outer sections of filter material surround. A covering layer forming an exterior of the filter is attached to one or both of the outer sections of filter material, and spaced from the

inner rod to define a cavity. Preferably, the inner rod is harder than the annular outer sections, optionally by containing more plasticiser.

As discussed above, the open cell structure may collapse after being compressed to release the additive contained therein. Where the additive release component collapses following actuation (for example, because the open cell structure is not resiliently deformable, or is not enclosed in an encapsulating structure which reverts substantially to its original size and shape after actuation), actuation will either cause the section of the smoking article containing the additive release component to collapse, or the outer shape of the section of the smoking article will be retained and a void will be created within the section. The smoking article may be provided with a strengthened outer section surrounding the additive release component to ensure that the smoking article retains its shape after actuation of the additive release component. This strengthened outer section may constitute an annular portion of greater structural rigidity, such as an additional surrounding layer or a layer of filter material having increased hardness (as described above). A void in the smoking article created by actuation of the additive release component may generally correspond to the difference between the original shape of the additive release component and its shape after actuation. In embodiments where the additive release component is embedded in filter material in the filter section of a smoking article, actuation of a collapsing additive release component will leave a void around the component. In some embodiments, the filter is designed to allow for this creation of a void and its effect on the airflow through the filter.

The additive release component may be sized, shaped, or positioned so that at least a portion of the component is within the smoking article, and a portion is external to the smoking article. In other words, at least a portion of the external component may not be encompassed by the smoking article. For example, when the smoking article is a cigarette, at least a portion of the external component may not be encompassed by the plugwrap, cigarette paper, tipping paper, or any other paper or covering of the cigarette. In other words, at least a portion of the component may be outside of all of the other components of the smoking article both prior to and during use. In particular, the user may be able to see, touch, and feel at least a portion of the component directly. In some embodiments, the component may protrude from the smoking article filter. The external portion may merely comprise a single surface. For example, the component may be shaped to fit within a cavity in a smoking article filter, one surface

of the component being shaped so that when the component is combined with the filter, the external surface of the component is flush with the outer surface of the filter.

Where at least a portion of the component is external to the smoking article, at least this portion of the component will be directly accessible to the user. Therefore, the user will be able to readily detect the release of the additive from the component, for example, by simply feeling the movement of the component, by observing the release of the additive, or by detecting an aroma. Furthermore, in some embodiments, release of the additive from the component may be accompanied by an audible noise, or a detectable change in the feel of the component.

The portion of the component that is at or near the surface of the smoking article, or is external to the smoking article may be a section of the component structure towards which force should preferably be exerted in order to release the additive. For example, in components in which the additive is released due to one part of the component being pushed into another part of the component, the part of the component that is pushed may be at or near the surface, or may protrude from the surface, of the smoking article. The smoking article may include some indication that force should be exerted in this region in order to release the additive. For example, the component may comprise a surface having pimples or ridges, or other features, that may be detectable through any filter material or wrapping layers of the smoking article; alternatively or in addition, the smoking article filter may comprise a graphic or other printed indication on the outer surface.

The size of the additive release component and/or open cell structure may be dependent on the volume of additive required, which in turn may be dependent on a number of factors, including the potency of the additive and the degree of smoke modification desired. Generally, it is preferable for the volume of the additive release component and/or open cell structure to be as large as possible, so that as much additive as possible may be provided, to modify the smoke as significantly as possible.

It should be noted that in some embodiments, air flow through the open cell structure may be possible once the additive-impermeable layer has been ruptured or otherwise opened. In some embodiments, this airflow will be minimal. In other embodiments, no air flow through the additive release component will be possible.

The additive release component and/or open cell structure should not be so large that it has an adverse effect on the filtration or draw characteristics of the filter. Furthermore, as the size of the additive release component and/or open cell structure is increased, the risk of accidental release of additive from the component may also be increased.

In some embodiments, the length of the component is within the range 1 mm to 50 mm, and may be from 3 mm to 350 mm, or from 15 mm to 35 mm. The diameter of the component is preferably within the range 0.1 mm to 6 mm, and more preferably 1 mm to 5 mm. In one particular embodiment, the component is at least 7mm in length. In some embodiments the component is elongate in shape, being longer than it is wide.

The additive release component and the open cell structure incorporated therein may have essentially any shape. The component and/or open cell structure may be, for example, spherical, toroidal, hemispherical, conical, trapezoidal, pyramidal, oblate, ellipsoidal, elongate, cylindrical, cubic, or any other suitable shape. The shape of the component and/or open cell structure may only be restricted by the desired manner of release of the additive.

The size and/or shape of the additive release component and the open cell structure incorporated therein may be substantially identical or may be different.

If a large amount of additive is required, then more than one additive release component may be incorporated into a smoking article. The components may have the same or different shapes, may be of the same or of different sizes, and may comprise the same, similar or different additives.

In the embodiments described herein, wrapping material is applied to the smoking article assembly to attach the component parts. The paper wrapping material is typically tipping paper, which is substantially impermeable prior to the inclusion of apertures as described herein. In addition, a sleeve is wrapped around the smoking article. The sleeve is configured to move relative to the first filter section and, optionally, is securely attached to the second filter section.

The smoking article is configured to allow the ingress of a selectively variable amount of air upstream of the second filter section. For example, ventilation apertures are formed in the outermost layer of paper wrap and/or the paper sleeve. The ventilation apertures

are formed by a mechanical cutting tool or a laser. The ventilation apertures are formed in the wrapping material prior to the assembly of the smoking article (i.e. pre-perforated apertures) or, optionally, when the smoking article is assembled.

The ventilation has been described as entering the smoking article upstream of the second filter section, and in particular, into the first filter section. Alternatively, the ventilation can be at least partially into the second filter section, e.g. adjacent an upstream end of the second filter section.

The smoking article can comprise one or more ventilation areas providing a base level of ventilation. Such ventilation areas are not variable in size.

In order to address various issues and advance the art, the entirety of this disclosure illustrates by way of illustration various embodiments in which the claimed invention(s) may be practiced and provide for a superior smoking article. 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. Various embodiments may suitably comprise, consist of, or consist essentially of, various combinations of the disclosed elements, components, features, parts, steps, means, etc.

EMBODIMENTS IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A smoking article comprising:

a filter section comprising filtration material arranged to filter at least one of smoke and other aerosol generated by said smoking article;

a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section wherein the smoking article comprises a first part and a second part and the level of ventilation is selectable by selecting a position of the second part relative to the first part such that the at least one of smoke and other aerosol generated by said smoking article is diluted with a user controllable amount of external air; and

a flavour source configured to provide a user controllable release of flavour to the diluted at least one of smoke and other aerosol passing through the filtration material of the filter section at a location in said at least one of smoke and other aerosol downstream of said ventilation arrangement,

wherein the smoking article is configured such that the level of ventilation is controllable independently of the release of flavour.

2. The smoking article according to claim 1, wherein said flavour source comprises one or more capsules.

3. The smoking article according to claim 2, wherein said one or more capsules each have a diameter of from 2mm to 6mm.

4. The smoking article according to claim 1, wherein said flavour source comprises at least one selected from plant material, a thread loaded with flavourant, flavourant dispersed in filter tow, flavour impregnated particles and a sheet material comprising a flavourant.

5. The smoking article according to any one of claims 1 to 4, wherein the flavour source is located within said filter section.

6. The smoking article according to any one of claims 1 to 5, further comprising a further ventilation arrangement configured to provide a level of ventilation into the filter section which is not user controllable.

7. The smoking article according to claim 6, wherein the level of ventilation provided by said further ventilation arrangement is within the range of from 5% to 50% of the volume of the at least one of smoke and other aerosol generated by said smoking article passing through the filter section when said variable ventilation is at its minimum level.

8. The smoking article according to any one of claims 1 to 7, wherein said variable ventilation arrangement provides ventilation which is user controllable within a sub-range within the range of from 0% to 90% of the volume of the at least one of smoke and other aerosol generated by said smoking article passing through the filter section.

9. The smoking article according to any one of claims 1 to 8, wherein said filter section forms at least a component of the first part of the smoking article.

10. The smoking article according to claim 9, wherein said first or second part comprises a sleeve configured to move relative to the other of the first or second part to control the level of ventilation provided by the variable ventilation arrangement.

11. The smoking article according to claim 10, wherein the sleeve is rotatable with respect to the filter section, and the level of ventilation is varied by altering an angular position of the sleeve relative to the filter section.

12. The smoking article according to any one of claims 1 to 11, wherein the filter section comprises a first filter section having a length of 5 to 25 mm, the smoking article further comprising a second filter section having a length of 5 to 25 mm, and the variable ventilation arrangement provides ventilating air at a position between 6 and 20 mm from a mouth end of the smoking article.

13. The smoking article according to any one of claims 1 to 11, wherein the filter section comprises a first filter section and the smoking article further comprises a second filter section, the first and second filter sections forming a filter arrangement, and the second filter section being located downstream of the first filter section; and wherein

a resistance to gaseous flow through the length of the second filter section is lower than a resistance to gaseous flow through the length of the first filter section; and

the resistance to gaseous flow through the length of the filter arrangement remains substantially constant as the level of ventilation is varied.

14. The smoking article according to claim 13, wherein the first and second filter sections comprise tow filaments, and the first filter section differs from the second filter section by one or more of: tow weight, number of tow filaments in unit volume, cross-section of tow filaments and degree of crimping.

15. The smoking article according to claim 13 or 14, wherein the second filter section comprises at least one air passage extending longitudinally through the length thereof.

16. The smoking article according to claim 15, wherein the second filter section comprises fibrous filtration material formed having an annular cross section.

17. The smoking article according to claim 16, wherein the second filter section comprises a tube of fibrous filtration material and the air passage extends along a central longitudinal axis through the length of the second filter section.

18. The smoking article according to any one of claims 1 to 17, wherein the flavour source comprises a flavour additive release component configured to release a plurality of discrete deliveries of flavour additive.

19. The smoking article according to claim 18, wherein the flavour additive release component comprises an open cell structure which comprises the flavour additive and is at least partially surrounded by an additive-impermeable layer.

20. The smoking article according to claim 19, further comprising an encapsulating structure which at least partially surrounds the open cell structure and additive-impermeable layer.

21. The smoking article according to any one of claims 1 to 20, wherein said flavour source is provided in a filter unit which is provided separately from the smoking article and is attachable to the smoking article by a user.

22. The smoking article according to claim 21, further comprising a sealing member configured to restrict the ingress of air into the smoking article between the filter unit and the smoking article.

23. The smoking article according to claim 21 or 22, wherein the smoking article comprises a recess and at least part of the filter unit is arranged to be received in the recess when the filter unit is attached to the smoking article.

24. The smoking article according to claim 23, wherein the recess is formed by a tubular filter element provided at the downstream end of the smoking article.

25. The smoking article according to any one of claims 1 to 24, wherein the filter section comprises a further flavour source configured to release flavour to said at least one of smoke and other aerosol generated by said smoking article at a location in said at least one of smoke and other aerosol downstream or upstream of said ventilation arrangement.

26. The smoking article according to claim 25, wherein the further flavour source comprises one or more capsules.

27. A filter section for a smoking article, the filter section comprising:

filtration material arranged to filter at least one of smoke and other aerosol generated by said smoking article;

a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section wherein the filter section comprises a first part and a second part and the level of ventilation is selectable by selecting a position of the second part relative to the first part such that the at leasat one of smoke and other aerosol generated by said smoking article is diluted with a user controllable amount of external air; and

a flavour source configured to provide a user controllable release of flavour to the diluted at least one of smoke and other aerosol passing through the filtration material of the filter section at a location in said at least one of smoke and other aerosol downstream of said ventilation arrangement,

wherein the filter section is configured such that the level of ventilation is controllable independently of the release of flavour.

28. The filter section according to claim 27, wherein the flavour source comprises a flavour additive release component configured to release a plurality of discrete deliveries of flavour additive.

29. The filter section according to claim 27 or 28, wherein said flavour source is provided in a filter unit which is provided separately from remaining components of the filter section and is attachable to the filter section by a user.

30. A method of manufacturing a smoking article, the method comprising:

forming a filter section comprising filtration material arranged to filter at least one of smoke and other aerosol generated by said smoking article;

providing a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section wherein the smoking article comprises a first part and a second part and the level of ventilation is selectable by selecting a position of the first part relative to the second part such that the at least one of smoke and other aerosol generated by said smoking article is diluted with a user controllable amount of external air; and

providing a flavour source configured to provide a user controllable release of flavour to the diluted at least one of smoke and other aerosol passing through the filtration material of the filter section at a location in said at least one of smoke and other aerosol downstream of said ventilation arrangement,

wherein the smoking article is configured such that the level of ventilation is controllable independently of the release of flavour.

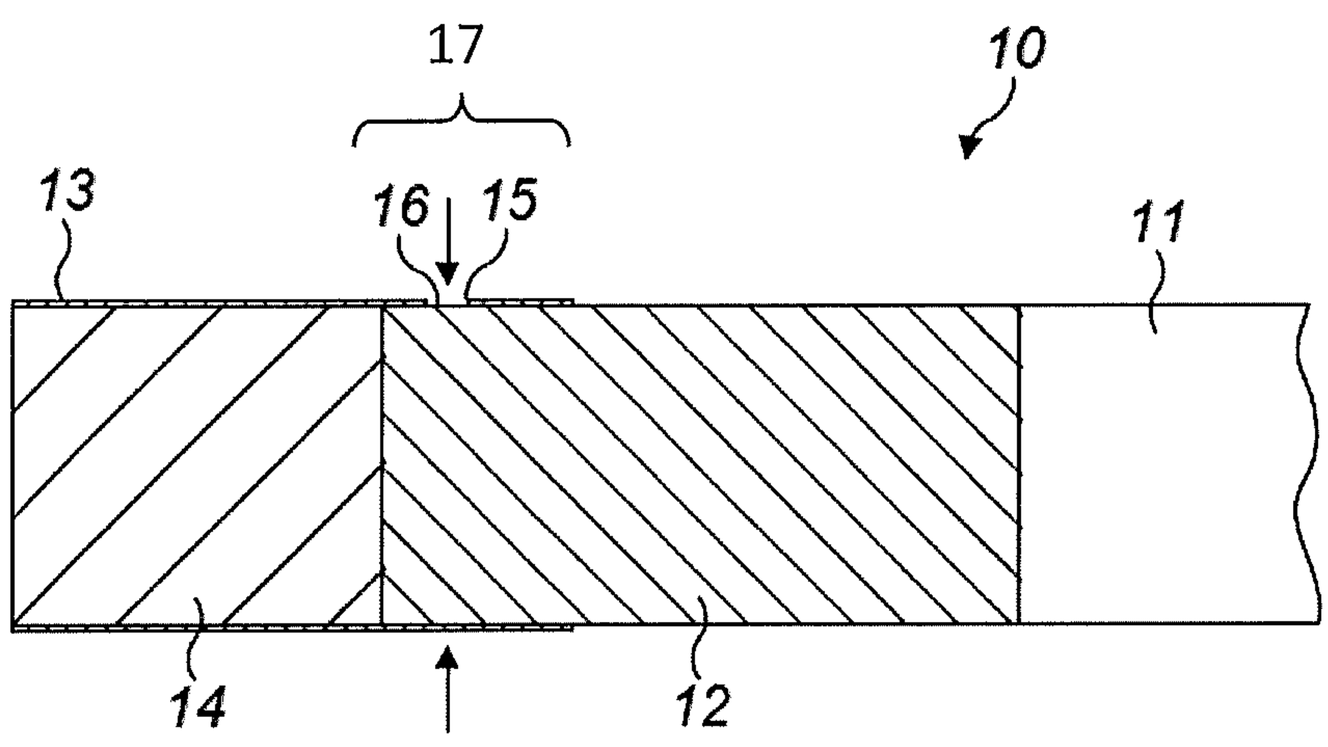


Figure 1

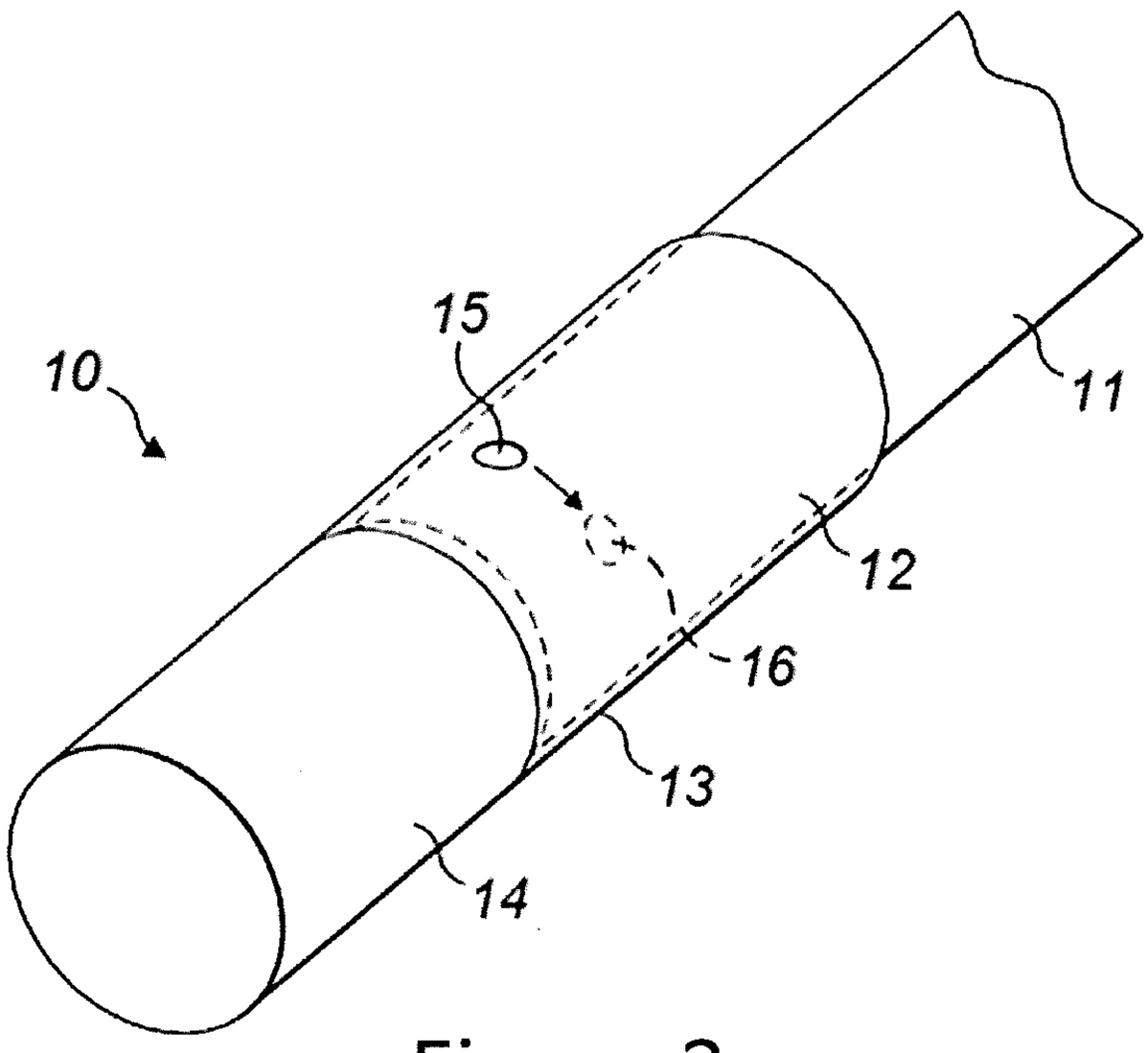


Figure 2

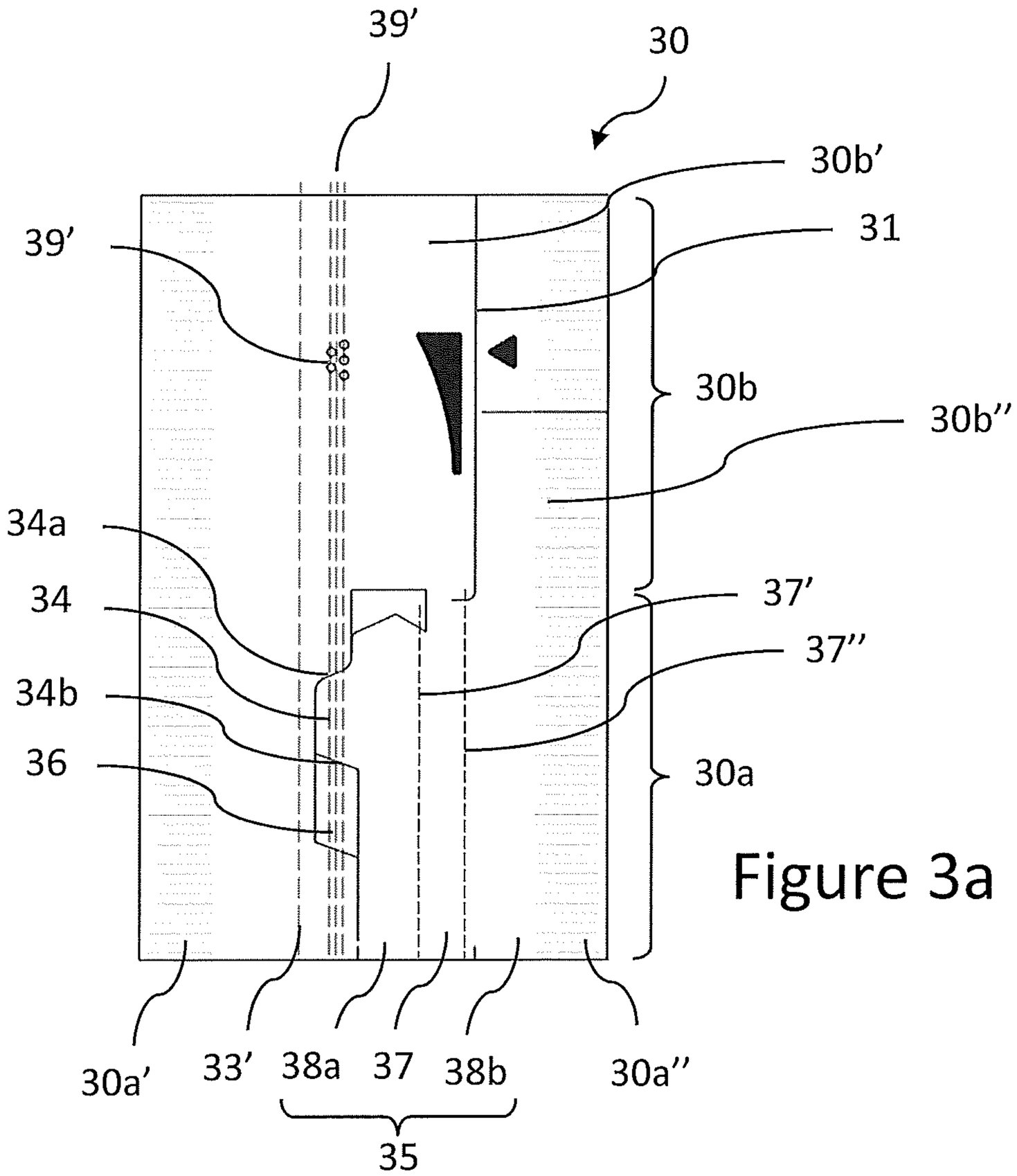


Figure 3a

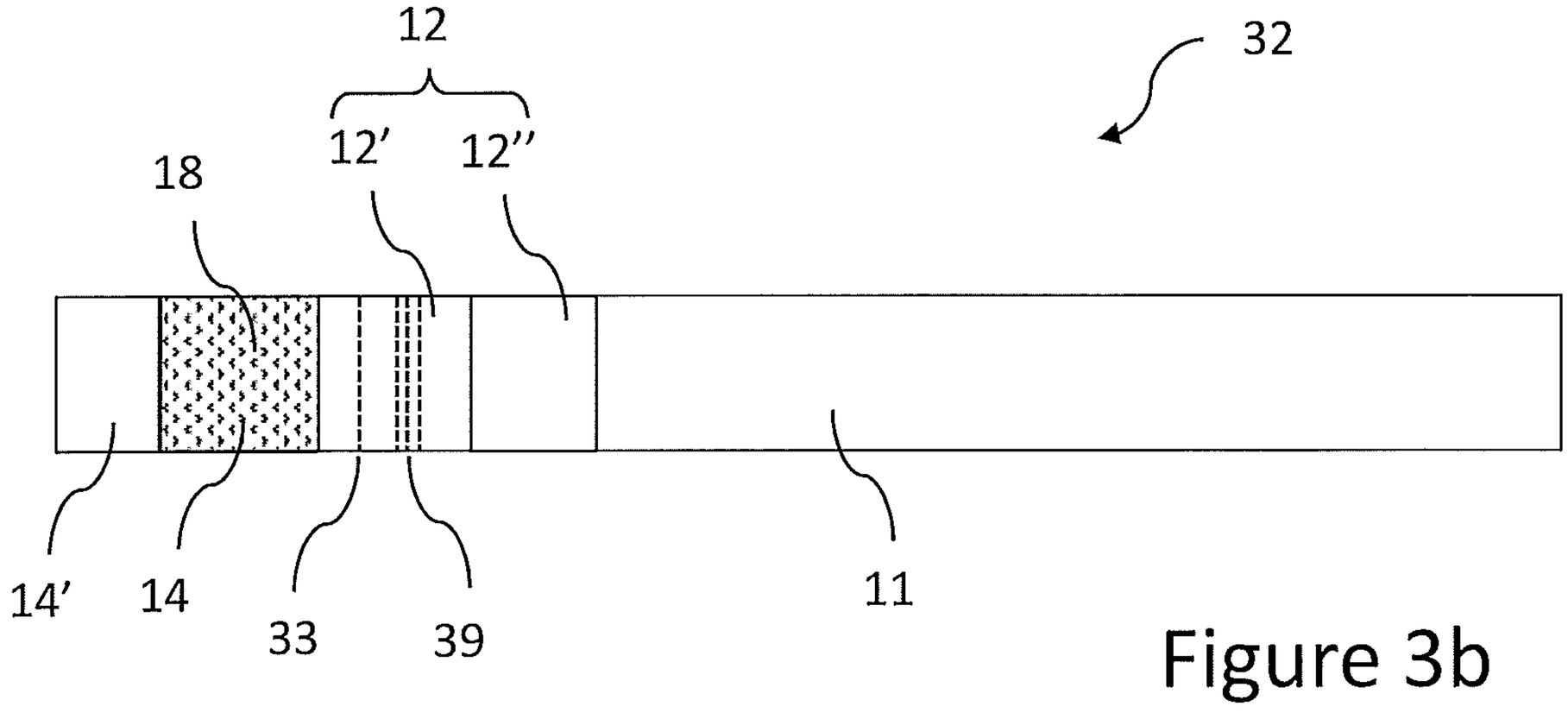


Figure 3b

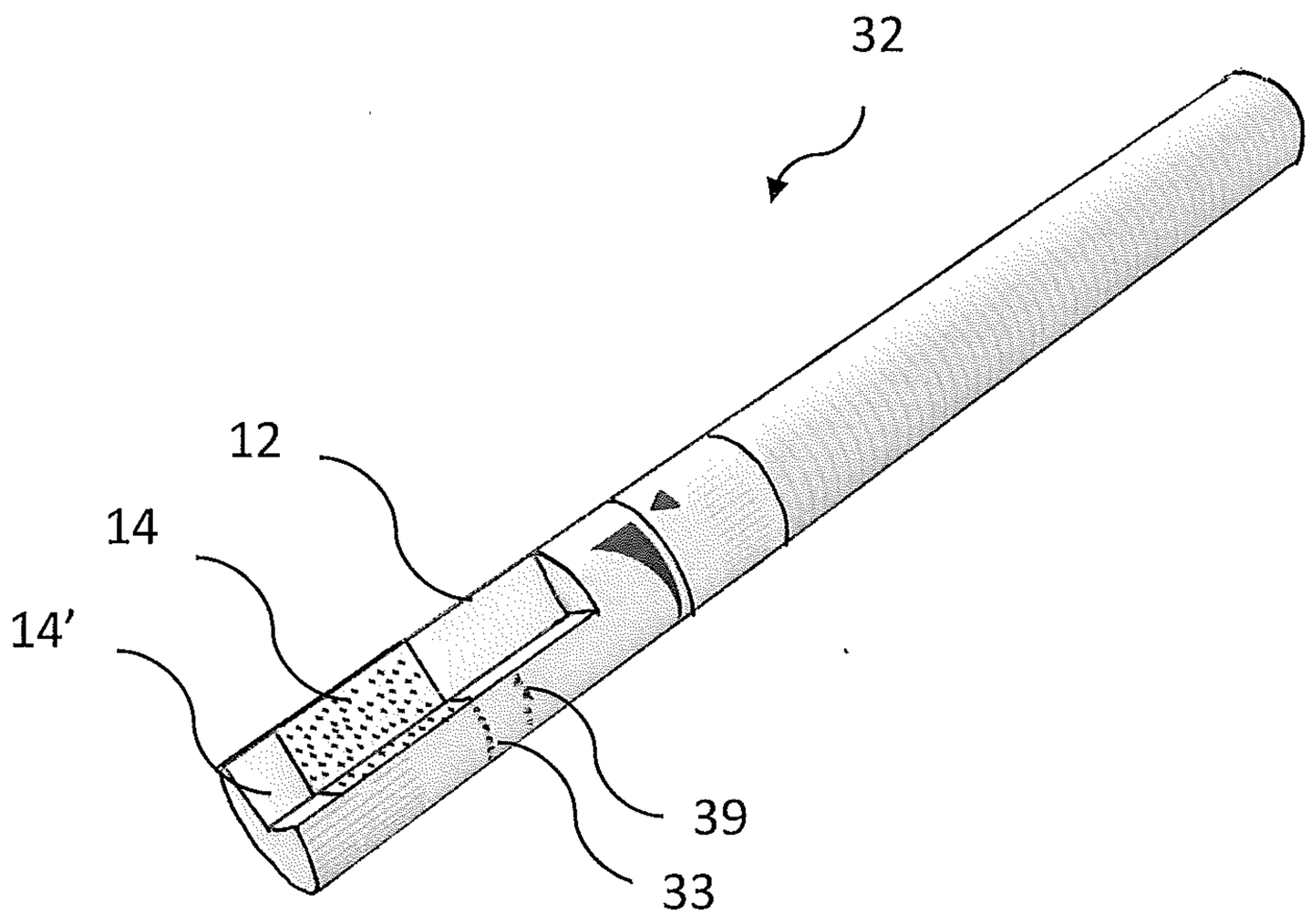


Figure 4

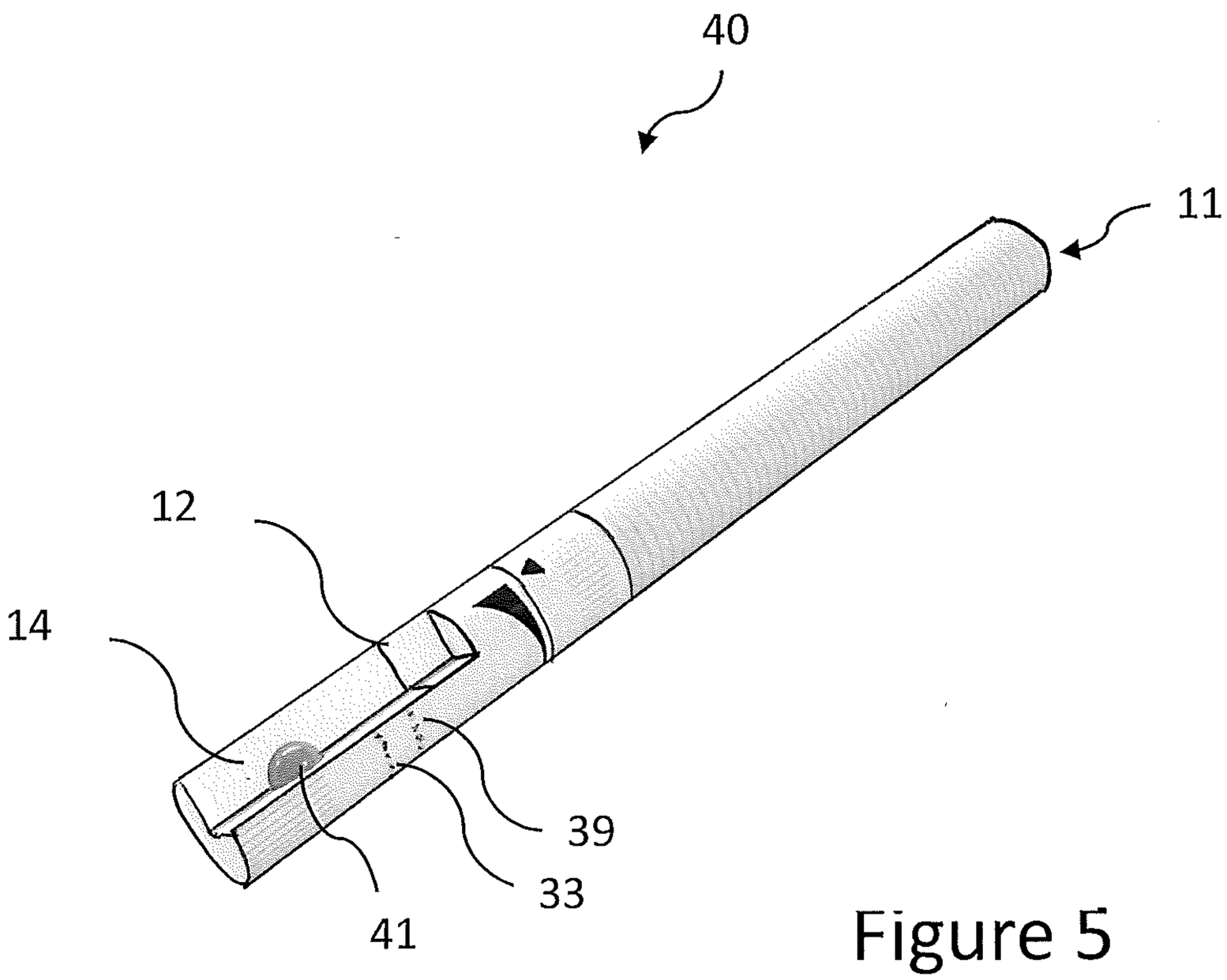


Figure 5

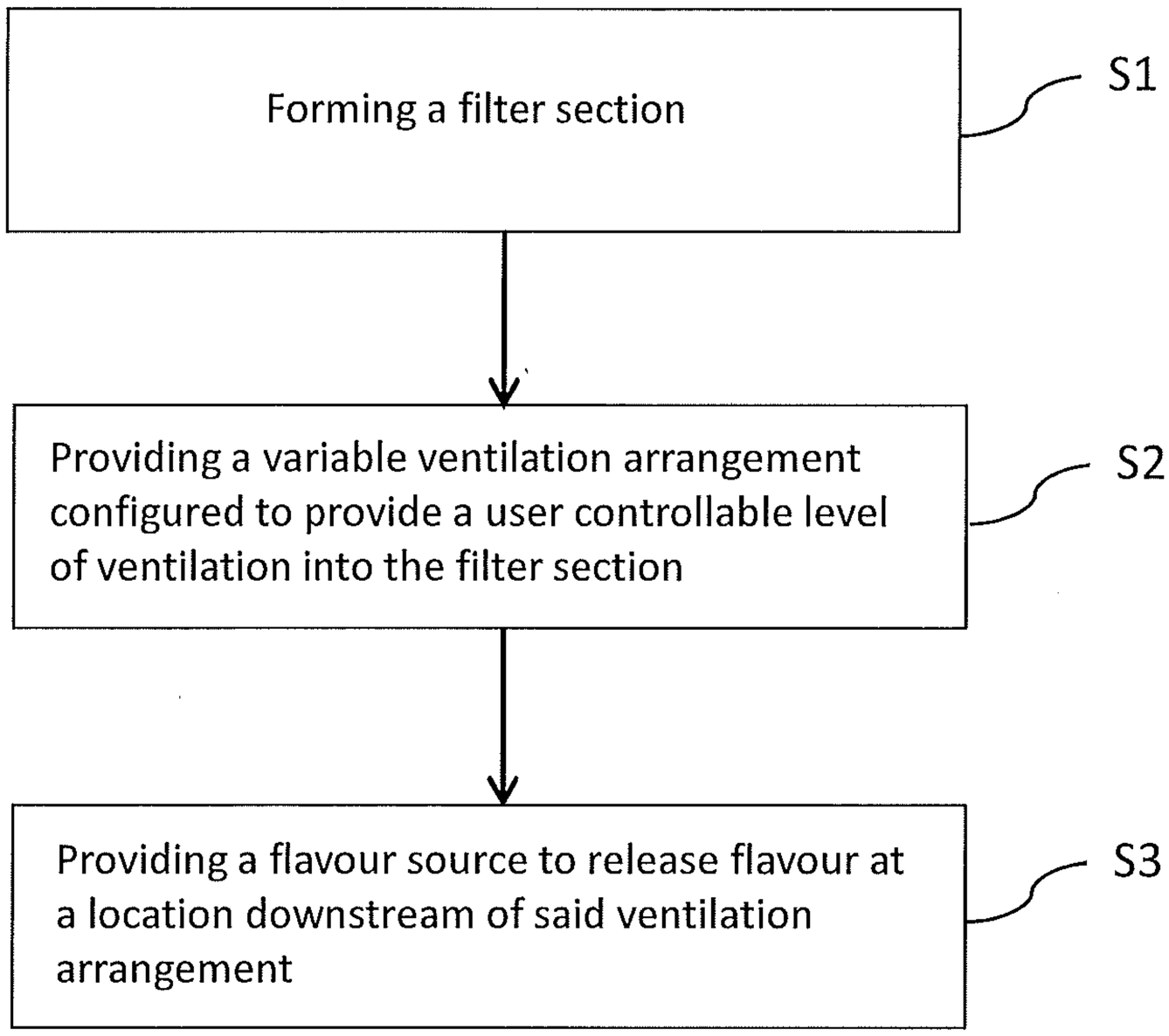

Forming a filter section
S1
Providing a variable ventilation arrangement configured to provide a user controllable level of ventilation into the filter section
S2
Providing a flavour source to release flavour at a location downstream of said ventilation arrangement
S3

Figure 6

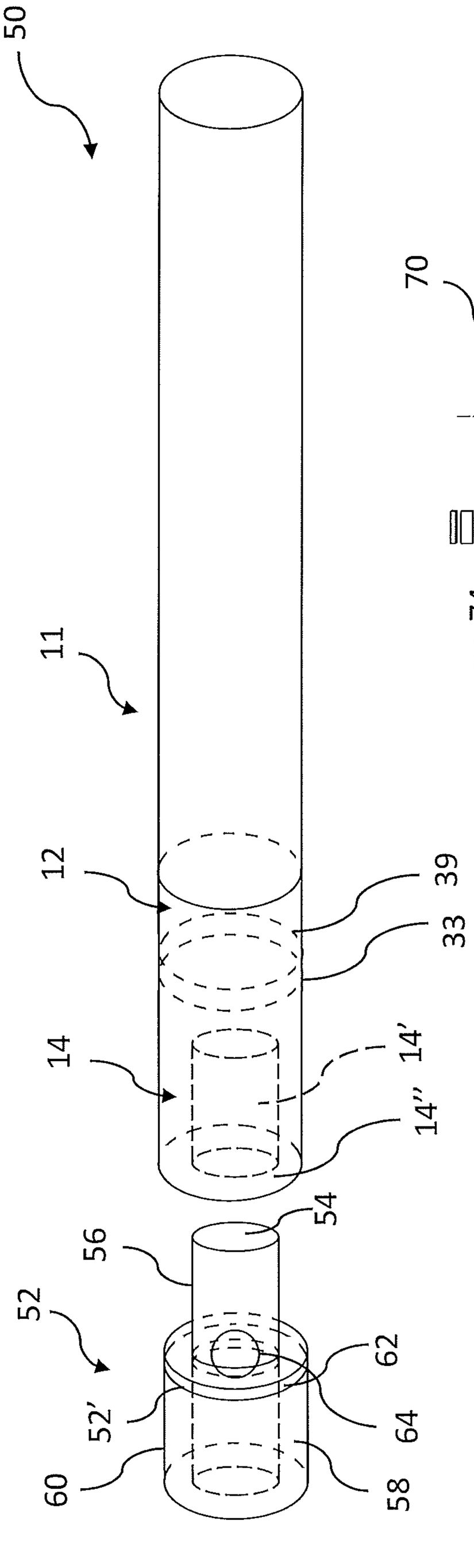


Figure 7a

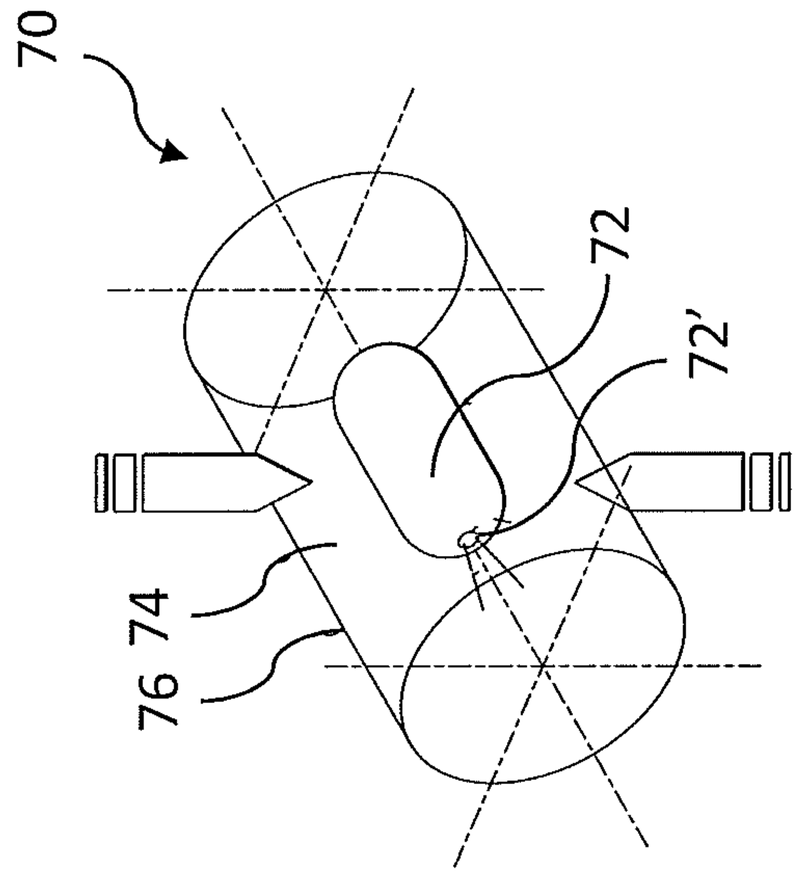
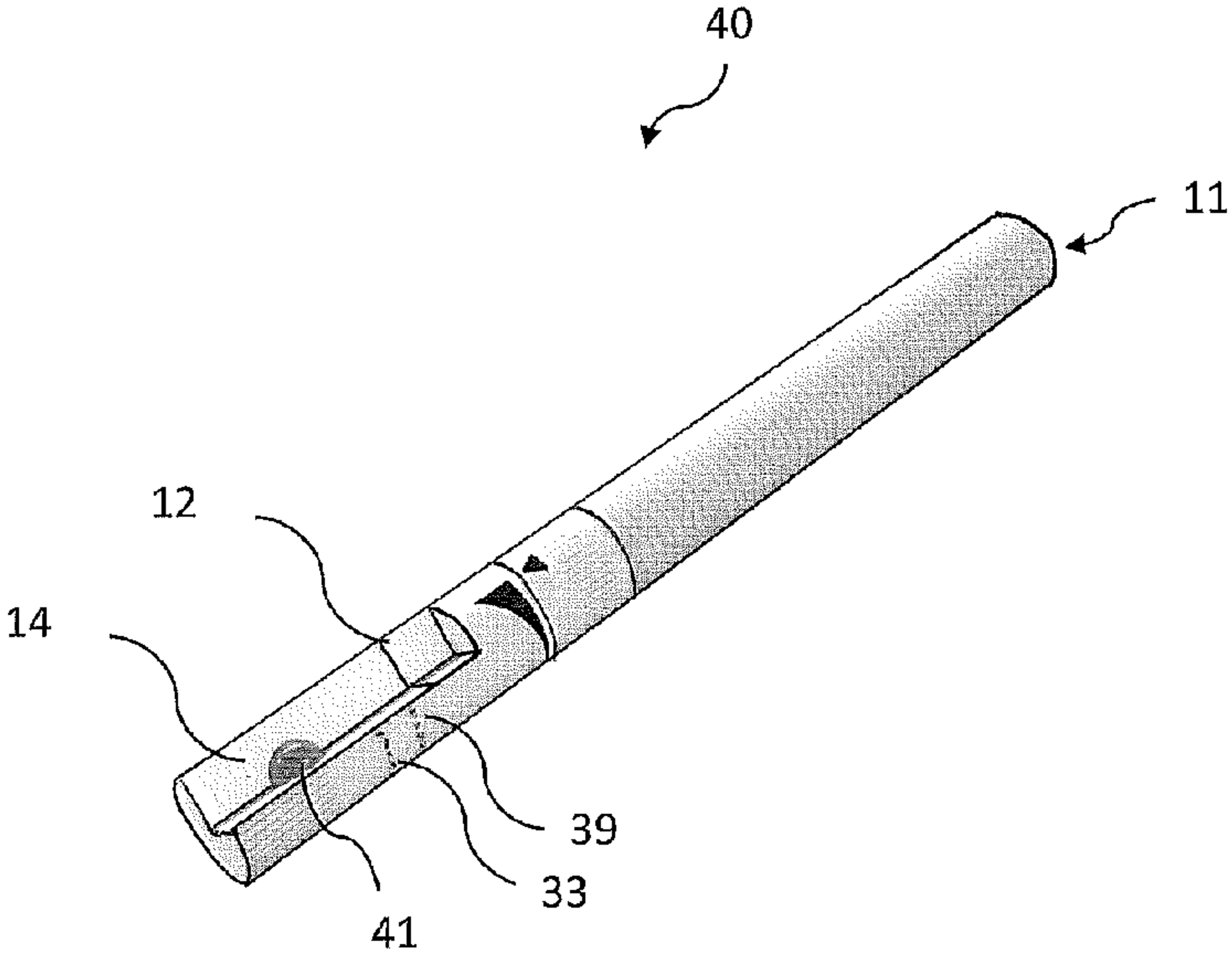


Figure 7b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