



(43) International Publication Date
23 January 2014 (23.01.2014)

(51) International Patent Classification:

A24D 1/02 (2006.01) *A24D 3/06* (2006.01)
A24D 3/04 (2006.01)

(21) International Application Number:

PCT/EP2013/064687

(22) International Filing Date:

11 July 2013 (11.07.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12176784.2 17 July 2012 (17.07.2012) EP

(71) Applicant: **PHILIP MORRIS PRODUCTS S.A.**
[CH/CH]; Quai Jeanrenaud 3, CH-2000 Neuchâtel (CH).

(72) Inventor: **CAMUS, Alexandre**; Rue Basse, 21, CH-2013
Colombier (CH).

(74) Agent: **BRADFORD, Victoria**; Reddie & Grose LLP, 16
Theobalds Road, London Greater London WC1X 8PL
(GB).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY,
BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC,
SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ,
UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ,
TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished
upon receipt of that report (Rule 48.2(g))*

(54) Title: SMOKING ARTICLE INCLUDING FLAVOURED WRAPPER WITH CUT-OUT PORTION

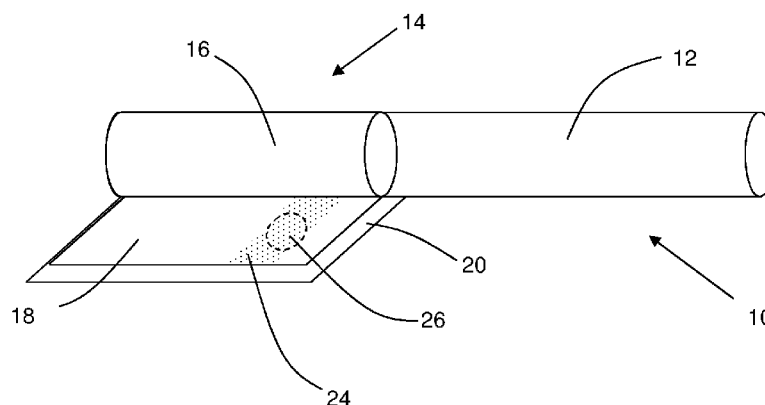


Fig 1

(57) Abstract: A smoking article (10) comprises: an aerosol generating substrate (12); a mouthpiece (14) connected to the aerosol generating substrate (12); a first wrapper (18) circumscribing the mouthpiece (14) along at least a part of its length; and an outer wrapper (20) circumscribing the mouthpiece and overlying the first wrapper (18). A plurality of frangible flavour containers (22) are provided in a flavoured region (24) of the outer surface of the first wrapper (18), wherein the plurality of frangible flavour containers (22) are adapted to be manually ruptured by a consumer during use, to release a flavourant from within the microcapsules (22). The outer wrapper (20) comprises at least one cut-out portion (26) exposing the frangible flavour containers (22) to the outer surface of the smoking article in at least a part of the flavoured region (24) of the first wrapper (18).



SMOKING ARTICLE INCLUDING FLAVOURED WRAPPER WITH CUT-OUT PORTION

The present invention relates to a smoking article having a mouthpiece circumscribed by an outer wrapper including a cut-out portion which exposes a plurality of frangible flavour
5 containers provided on the outer surface of an underlying wrapper, and to a method for producing such a smoking article.

Filter cigarettes typically comprise a cylindrical rod of tobacco cut filler surrounded by a paper wrapper and a cylindrical filter axially aligned in an abutting end-to-end relationship with the wrapped tobacco rod. Conventionally, the wrapped tobacco rod and the filter are joined by a
10 band of tipping wrapper, typically formed of an opaque paper material that circumscribes the entire length of the filter and an adjacent portion of the wrapped tobacco rod.

A number of smoking articles in which tobacco is heated rather than combusted have also been proposed in the art. In heated smoking articles, an aerosol is generated by heating a flavour generating substrate, such as tobacco. Known heated smoking articles include, for
15 example, electrically heated smoking articles and smoking articles in which an aerosol is generated by the transfer of heat from a combustible fuel element or heat source to a physically separate aerosol forming material. During smoking, volatile compounds are released from the aerosol forming substrate by heat transfer from the fuel element and entrained in air drawn through the smoking article. As the released compounds cool they condense to form an aerosol
20 that is inhaled by the consumer. Smoking articles in which a nicotine-containing aerosol is generated from a tobacco material, tobacco extract or other nicotine source, without combustion or heating, are also known.

It is well known to incorporate flavourant or odorant additives into smoking articles in order to provide additional flavours or smells to the consumer during smoking. Flavourants may
25 be used to enhance the tobacco flavours produced upon heating or combusting the tobacco material within the smoking article, or to provide additional non-tobacco flavours such as mint or menthol.

The flavourant additives used in smoking articles, such as menthol, are commonly in the form of a liquid flavourant which is incorporated into the filter or the tobacco rod of the smoking
30 article using a suitable liquid carrier. Liquid flavourants are often volatile and will therefore tend to migrate or evaporate from the smoking article during storage. The amount of flavourant available to flavour the mainstream smoke during smoking is therefore reduced. To address this problem, it has previously been proposed to reduce the loss of volatile flavourants from smoking articles during storage through the encapsulation of the flavourant, for example, in the form of a
35 capsule or microcapsule.

It is known to provide smoking articles including flavourants that are manually releasable by a consumer to modify the smoking characteristics of the smoking article. For example, it is

-2-

known to incorporate one or more breakable capsules of a flavourant into the mouthpiece of a smoking article, wherein the breakable capsules may be crushed by the consumer to release the flavourant. In certain types of smoking articles, one or more breakable capsules containing a flavourant are provided within the filtering material forming the mouthpiece, wherein pressure is indirectly applied to the capsule through the application of pressure to the mouthpiece.

In other types of smoking articles, a plurality of microcapsules containing a flavourant or odorant are provided on at least one surface of the tipping wrapper that connects the mouthpiece to the aerosol generating substrate. For example, WO-A-2007/052170 describes a smoking article having a plurality of frangible microcapsules of a flavourant or odorant provided on the outer surface. The microcapsules are capable of being manually ruptured by the consumer on the application of a frictional force, to provide a "Scratch and Sniff" effect.

The microcapsules will typically be applied to the outer surface of the tipping paper of such a smoking article during production of the tipping paper, or during assembly of the smoking articles. However, during these processes, the microcapsules may unavoidably be subjected to different frictional forces due to the interaction of the tipping paper or the smoking articles with the manufacturing apparatus, or due to the interaction of the smoking articles with each other. The assembled smoking articles may also be subjected to frictional forces during subsequent processing and packing of the smoking articles.

These frictional forces may cause at least a portion of the microcapsules to rupture, thereby prematurely releasing the flavourant. This reduces the amount of flavourant that is subsequently available for manual release by the consumer. In addition, the flavourant that is prematurely released from the microcapsules may contaminate, stain or damage other components of the smoking article.

It would be desirable to provide a smoking article having a novel wrapper arrangement with flavourant containers on the outer surface that are adapted to be manually ruptured by the consumer but are provided in such a way that the risk of premature rupture of the containers during production or processing of the smoking articles is reduced. It would be particularly desirable if the wrapper arrangement of such a smoking article could be readily produced using conventional processing techniques and apparatus.

According to the invention there is provided a smoking article comprising: an aerosol generating substrate; a mouthpiece connected to the aerosol generating substrate; a first wrapper circumscribing the mouthpiece along at least a part of its length; and an outer wrapper circumscribing the mouthpiece and overlying the first wrapper. A plurality of frangible flavour containers are provided in a flavoured region of the outer surface of the first wrapper, wherein the plurality of frangible flavour containers are adapted to be manually ruptured by a consumer during use, to release a flavourant from within the containers. The outer wrapper overlying the first wrapper comprises at least one cut-out portion exposing the frangible flavour containers to

-3-

the outer surface of the smoking article in at least a part of the flavoured region of the first wrapper.

The term "frangible flavour containers" is used herein to mean any container which is suitable for housing a flavourant and which can be manually ruptured by a consumer. Preferably the frangible flavour containers are frangible microcapsules. Therefore, further aspects of the invention may be described with reference to frangible microcapsules, although the skilled person will understand that the such aspects are equally applicable when used with other forms of frangible flavour container.

Smoking articles according to the present invention incorporating the combination of the first wrapper and the outer wrapper defined above may be in the form of filter cigarettes or other smoking articles in which tobacco material is combusted to form smoke. The present invention additionally encompasses smoking articles in which tobacco material is heated to form an aerosol, rather than combusted, and smoking articles in which a nicotine-containing aerosol is generated from a tobacco material, tobacco extract, or other nicotine source, without combustion or heating. The present invention further encompasses smoking articles in which a nicotine-containing aerosol is generated from a tobacco material, tobacco extract or other nicotine source, without combustion or heating. In the smoking articles of the present invention, the frangible flavour containers are provided at the outer surface of the mouthpiece, but at least some of the flavour containers are deposited within the cut-out portion in the overlying outer wrapper. The flavour containers are thereby preferably at least partially recessed from the remainder of the outer surface of the mouthpiece, corresponding to the outer surface of the outer wrapper. This arrangement of the cut-out portion over the flavoured region of the first wrapper therefore protects the flavour containers to a certain extent from frictional forces. The shape and size of the cut-out portion provided in the outer wrapper can readily be adapted to provide improved protection from frictional forces in both the lengthwise and crosswise directions relative to the longitudinal axis of the smoking article.

This protection of the flavour containers within the cut-out portion advantageously reduces the risk of premature rupture of the flavour containers due to frictional forces applied to the outer wrapper during production and packing. The integrity of the flavour containers can therefore be retained so that a larger proportion of the flavour containers remain unbroken until the consumer chooses to manually rupture them. In this way, a higher level of the flavourant applied to the smoking article can be retained in the flavour containers at the surface of the smoking article during production and storage of the smoking articles. This may in turn enable a lower total number of flavour containers to be used for each smoking article whilst providing the same level of flavourant release.

The reduction or prevention of the early rupture of the flavour containers also advantageously reduces the risk of contamination or staining of the outer wrapper and any

-4-

underlying components of the mouthpiece. This ensures that a consistent quality and appearance of smoking articles is provided to the consumer.

The use of flavour containers that are ruptured manually by the consumer, rather than, for example, upon combustion of the smoking article, advantageously provides the consumer with a greater degree of control over when the flavourant can be released from the flavour containers. The consumer can therefore release the flavourant in a controlled manner before, during or after smoking.

The provision of a cut-out portion in the outer wrapper provides a clear, visual indication to the consumer of the location of the flavoured region on the outer surface of the mouthpiece. The combination of the cut-out portion and the flavour containers within the recess formed by the cut-out portion may additionally provide a unique tactile effect on the outer surface of the mouthpiece, due to the contrast between the relative smoothness of the outer wrapper and the rougher texture produced by the flavour containers.

The outer wrapper of smoking articles according to the invention may be provided with a single cut-out portion or two or more cut-out portions may be provided at different positions over the flavoured region on the underlying first wrapper. The two or more cut-out portions may be spaced from each other in the longitudinal direction of the smoking article, or the circumferential direction of the smoking article, or both. In one preferred embodiment, a pair of cut-out portions is provided in the outer wrapper, wherein the cut-out portions are positioned substantially opposed to one another in the assembled smoking article. Each cut-out portion exposes an area of the underlying flavoured region such that the frangible flavour containers are exposed in two separate areas at the surface of the mouthpiece.

Preferably, the size and dimensions of the at least one cut-out portion in the outer wrapper are selected to maximise the total area of the exposed frangible flavour containers whilst minimising the risk of any tearing of the outer wrapper.

The at least one cut-out portion preferably extends around less than the full circumference of the mouthpiece, such that the outer wrapper can be conveniently formed of a single piece of sheet material which can be wrapped around the mouthpiece using standard apparatus and techniques. In this way, the outer wrapper remains an integral outer wrapper even once the cut-out portion has been removed from the outer wrapper. Preferably, the cut-out portion extends around at least about 25% of the circumference of the mouthpiece, more preferably at least 35% and most preferably at least 50%. Preferably, the cut-out portion extends around less than 80% of the circumference of the mouthpiece, more preferably less than 75%.

Preferably, the total area of the at least one cut-out portion in the outer wrapper is at least about 30 square millimetres, more preferably at least about 60 square millimetres and most preferably at least about 100 square millimetres. Preferably, the total area of the at least

one cut-out portion in the outer wrapper is no more than about 250 square millimetres, more preferably no more than about 200 square millimetres.

Each cut-out portion preferably extends at least about 5 mm along the length of the mouthpiece. Preferably, each cut-out portion extends no more than about 15 mm along the length of the mouthpiece, more preferably no more than about 10 mm.

In one set of embodiments, the at least one cut-out portion in the outer wrapper is preferably provided at least about 17 mm from the mouth end of the mouthpiece, more preferably at least about 20 mm from the mouth end, so that the exposed areas of the flavoured region do not come into contact with the lips of the consumer during smoking. Preferably, the at least one cut-out portion is positioned approximately where the consumer's fingers are likely to contact the mouthpiece during smoking.

Alternatively, in another set of embodiments, the at least one cut-out portion in the outer wrapper is preferably provided less than about 15 mm from the mouth end of the mouthpiece, more preferably less than about 10 mm from the mouth end so that the exposed areas of the flavoured region do not come into contact with the fingers of the consumer during smoking. Preferably, the at least one cut-out portion is positioned approximately where the consumer's lips are likely to contact the mouthpiece during smoking.

The at least one cut-out portion is preferably provided at least about 5 mm from the edge of the outer wrapper at the rod end of the outer wrapper, or at least about 5 mm from the edge of the outer wrapper at the mouth end of the outer wrapper, or both. This reduces the risk of tearing of the outer wrapper at these edges and ensures satisfactory adhesion of the outer wrapper to the underlying wrapper at the edges. Where the outer wrapper is a tipping wrapper connecting the mouthpiece and the aerosol generating substrate, providing the at least one cut-out portion at least about 5 mm from the edge of the outer wrapper at the rod end ensures that the cut-out portion overlies the mouthpiece and not the aerosol generating substrate.

The at least one cut-out portion may be any suitable shape, including but not limited to a circle, oval, square, triangle, diamond or rectangle. In certain embodiments, the shape of the at least one cut-out portion may be selected to incorporate the shape of a brand or logo. Where two or more cut-out portions are provided, the cut-out portions may be the same size and shape, or at least one of the size and shape may be different.

Preferably, the outer wrapper has a thickness of at least about 30 microns, more preferably at least about 40 microns and most preferably at least about 50 microns. Preferably, the outer wrapper has a thickness of less than about 100 microns. The thickness of the outer wrapper determines the depth of the recess formed by the cut-out portion. Preferably, the depth of the recess is greater than the average diameter of the frangible flavour containers in the flavoured region. Particularly preferably, the depth of the recess is at least about two times the average diameter of the frangible flavour containers in the flavoured region, more preferably at

least about five times the average diameter, most preferably at least about ten times greater. This ensures that at least the bottom layer or layers of flavour containers provided within the cut-out portion are entirely below the level of the outer surface of the outer wrapper in order to achieve maximum protection of the flavour containers from frictional forces.

5 In relation to the present invention, the "average diameter" of the frangible flavour containers refers to the mean diameter of the flavour containers provided on the first wrapper, wherein the diameter of an individual flavour container is measured as the largest dimension of that flavour container. The mean diameter is a number average, rather than a weight average. The diameter of a flavour container may be measured using suitable known techniques,
10 including for example, a sieve test, or by individually examining a sampling of the flavour containers

Preferably, the depth of the recess defined by the cut-out portion is greater than the diameter of at least about 90% of the flavour containers, more preferably at least about 95% of the microcapsules. This ensures that the majority of the microcapsules are entirely below the
15 level of the outer surface of the wrapper.

The outer wrapper of smoking articles according to the invention may be formed of any suitable sheet material but is preferably formed of a paper material. The outer wrapper may extend along the full length of the mouthpiece, or may extend along only a part of the mouthpiece. In certain preferred embodiments, the outer wrapper additionally circumscribes a
20 portion of the aerosol generating substrate adjacent to the mouthpiece. Preferably, the outer wrapper is a tipping paper circumscribing the mouthpiece and connecting the mouthpiece to the aerosol generating substrate.

The outer wrapper is provided over the first wrapper and is preferably glued or laminated onto the first wrapper.

25 The cut-out portions in the outer wrapper may be provided using any suitable means, including for example laser cutting or rotary die-cutting or punching methods. Suitable apparatus for laser cutting includes the High-Speed Laser Die Cutting Machine or Finecut-Plus-Rotary™ System from Spartanics of Illinois, USA. Suitable apparatus for rotary die-cutting or rotary punching includes the Small Web Punching Machine from Schober GmbH of Germany.
30 The cutting of the outer wrapper to provide the cut-out portions is preferably carried out on a continuous sheet of the wrapper material, prior to the cutting of the material to form discrete outer wrappers for each smoking article. However, it may also be possible to use certain cutting techniques with which the cut-out portions can be formed in the outer layer only, once the tipping material is in place around the mouthpiece.

35 The first wrapper of smoking articles according to the invention circumscribes the mouthpiece and is provided underneath the outer wrapper. The first wrapper may partially

-7-

circumscribe the mouthpiece, such that the first wrapper extends only part way around the circumference of the mouthpiece, or the first wrapper may fully circumscribe the mouthpiece.

The first wrapper may extend along the full length of the mouthpiece, or may extend along only a part of the mouthpiece, for example only under the portion of the outer wrapper
5 corresponding to the cut-out and the area immediately adjacent the cut-out. Preferably, the first wrapper is a plug wrap circumscribing the mouthpiece or a segment of the mouthpiece along substantially its full length.

The outer surface of the first wrapper is provided with one or more flavoured regions in which a plurality of frangible flavour containers are provided. The one or more flavoured regions
10 on the first wrapper may cover substantially the entire surface of the first wrapper. Alternatively, the one or more flavoured regions may cover specific areas of the first wrapper to coincide with the position of the at least one cut-out portion in the outer wrapper such that the cut-out portion overlies at least a part of the flavoured region. In this case, some regions of the first wrapper will not have flavour containers provided on the outer surface.

Where one or more flavoured regions are provided on the first wrapper, the one or more
15 flavoured regions may have a shape and size that substantially corresponds to the shape and size of the cut-out portion. Alternatively, the one or more flavoured regions may have a shape and size such that the flavoured regions extend beyond the area of the cut-out portion in one or more directions.

Preferably, the first wrapper is formed of a sheet material that is substantially
20 impermeable to air in order to retain an acceptable level of ventilation to the mouthpiece. Ventilation may be provided on the outer wrapper in the form of one or more rows of perforations. The first wrapper may be formed of a paper material, such as a conventional paper plug wrap material, or may be formed of a polymeric film. In certain embodiments, the first
25 wrapper is formed of a transparent sheet material, such as reconstituted cellulose, which potentially enables the underlying filter material to be seen through the cut-out portion in the outer wrapper.

In certain embodiments, a coloured coating layer is applied to the outer surface of the first wrapper in the one or more flavoured regions on the outer surface of the wrapper, where
30 the flavour containers are provided. The coloured coating may be of a contrasting colour to the outer surface of the outer wrapper, such that the cut-out portion is more visually prominent on the surface of the mouthpiece. This advantageously provides the consumer with a visual indication of the position of the flavoured region, such that it can readily be seen where the appropriate force should be applied to rupture the flavour containers and release the flavourant.

Alternatively or in addition to the application of a coloured coating layer on the outer
35 surface of the outer wrapper, at least some of the frangible flavour containers provided in the flavoured regions of the first wrapper may be coloured. For example, at least one of the outer

shell or the flavourant within the outer shell may be coloured through the use of a suitable dye or colourant.

The flavoured region or regions in which the frangible flavour containers are applied to the first wrapper will typically have a rougher surface texture than the outer wrapper. The exposed area of the first wrapper with the flavour containers will therefore provide a contrasting texture to the surrounding outer wrapper. This provides a unique tactile effect on the outer surface of the mouthpiece and enables the consumer to physically perceive by touch where the flavour containers are provided.

The smoothness of the surface of a sheet material can be quantified by measuring the Bekk smoothness of the surface using a Bekk smoothness tester in accordance with ISO 5627:1995. In this test, air at a specified pressure is leaked between a smooth glass surface and the sample of the sheet material, and the time (in seconds) for a fixed volume of air (10 ml) to seep between these surfaces is measured. This time corresponds to the Bekk smoothness, which is therefore also expressed in units of seconds. The higher the Bekk smoothness value, the smoother the surface of the sheet material.

Preferably, the Bekk smoothness of the flavoured region on the first wrapper is at least about 30 times lower than the Bekk smoothness of the outer surface of the outer wrapper, more preferably at least about 40 times. Typically, the Bekk smoothness of the outer surface of the outer wrapper is at least about 200 seconds, more preferably at least about 250 seconds. Preferably, the Bekk smoothness of the flavoured region of the first wrapper is less than about 20 seconds, more preferably less than about 12 seconds, most preferably less than about 8 seconds. Alternatively or in addition, the Bekk smoothness of the flavoured region is preferably greater than about 5 seconds.

The outer surface of the first wrapper may be textured in at least the flavoured regions, for example, through the application of a pattern of embossments on the surface of the first wrapper within the flavoured regions. The embossments provide further contrast between the surface textures of the flavoured region exposed in the cut-out portion and the surrounding outer wrapper. The provision of an embossed pattern on the first wrapper may advantageously provide additional protection to the flavour containers in the flavoured region, since the flavour containers can be provided within the one or more depressions defined by the embossed pattern. In this case, the flavour containers may be provided below the level of the peaks defined by the embossed pattern, such that the peaks further protect the flavour containers from frictional forces.

The term "embossed" is used herein to refer to a sheet material which has a pattern or image impressed or imprinted onto the surface such that the pattern or image is raised from the overall surface of the sheet material. The term "embossment" refers herein to the impression produced by the embossing process. Embossments may be formed on the outer surface of the

outer wrapper with a variety of known embossing techniques using, for example, embossing dies or rollers. Suitable apparatus for forming an embossed outer wrapper for use in smoking articles according to the present invention is commercially available from various sources, for example Boegli-Gravures S.A.

5 In such embodiments in which the first wrapper is embossed within the flavoured region, the effective depth of the recess formed by the cut-out portion corresponds to the sum of the thickness of the outer wrapper and the depth of the embossments. The "depth" of an embossment corresponds to the distance from the lowest point of the depression defined by the embossment to the highest point of the peak defined by the embossment. Preferably the
10 embossments on the first wrapper have a depth of at least about 20 microns, more preferably at least about 30 microns, most preferably at least about 50 microns. Preferably the embossments on the first wrapper have a depth of less than about 100 microns.

Alternatively or in addition to any embossment of the first wrapper, at least a portion of the outer wrapper may be embossed, for example, in the region of the outer wrapper
15 surrounding the cut out portion. Preferably the embossments on the outer wrapper have a depth of at least about 20 microns, more preferably at least about 30 microns, most preferably at least about 50 microns. Preferably, the embossments have a depth of less than about 100 microns.

In such embodiments where embossments are provided around the cut-out portion in the outer wrapper, the effective depth of the recess formed by the cut-out portion corresponds
20 to the distance from the highest point of the peaks defined by the embossments to the lower point of the surface of the first wrapper underlying the cut-out portion. Where both the first wrapper and the outer wrapper are embossed in the region of the cut-out portion, the effective depth of the recess formed by the cut-out portion corresponds to the distance from the highest point of the peaks defined by the embossments on the outer wrapper to the lowest point of the
25 depressions defined by the embossments on the first wrapper.

Where the plurality of frangible flavour containers are frangible microcapsules, each of the microcapsules provided on the outer surface of the outer wrapper within the one or more flavoured regions comprises a core including a flavourant material and a frangible shell encapsulating the core. Suitable methods for the manufacture of such microcapsules are well
30 known. For example, a suitable method is described in US-A-2009/0104251 of Sensient Flavors, Inc. Suitable microcapsules are available from, for example, Schubert International.

The flavourant encapsulated within the frangible flavour containers preferably comprises one or more volatile flavour compounds which will volatilise upon rupture of the flavour containers by the consumer. Preferably, the flavourant is additionally an odorant which is
35 capable of producing an olfactory sensation, so that a scent or aroma is generated upon rupture of the flavour containers. Suitable flavourants for use in the flavour containers of the present invention are well known to the skilled person. The flavourant in the flavour containers may

include one or more natural flavourants, one or more synthetic flavourants, or a combination of natural and synthetic flavourants.

Suitable flavours to be provided by the flavourant within the flavour containers include, but are not limited to, natural or synthetic menthol, peppermint, spearmint, coffee, tea, spices
5 (such as cinnamon, clove, ginger, cardamom, sage, rosemary, basil and such like), cocoa, vanilla, fruit flavours, chocolate, geranium, linalool and essences (such as pine, Cyprus, cedar, sandalwood, amber, eucalyptus and such like).

Preferably the flavour comprises at least one of cardamom, sage, rosemary and basil. Alternatively, or in addition, the flavour preferably comprises an essential oil, or a mixture of one
10 or more essential oils. An "essential oil" is a volatile oil having the characteristic odour and flavour of the plant from which it is obtained. Suitable essential oils for inclusion in the microcapsules on the outer wrapper include, but are not limited to, pine, Cyprus, cedar, sandalwood, amber and eucalyptus. The one or more essential oils may be provided in a solution of, for example, ethanol.

15 The plurality of frangible flavour containers provided in the flavoured region of the first wrapper of smoking articles according to the present invention may contain the same or different flavourants and each flavour containers may contain a single flavourant or a combination or two or more flavourants.

The number of frangible microcapsules provided in the flavoured region of the first
20 wrapper of smoking articles according to the present invention and the amount of flavourant encapsulated within the plurality of microcapsules is such that by manually rupturing the microcapsules the consumer releases sufficient flavourant to produce the desired level of flavour and scent. The quantity of microcapsules required will depend upon the size of the microcapsules as well as the nature and concentration of the encapsulated flavourant. Smoking
25 articles according to the present invention may have several thousand frangible microcapsules provided on the outer surface of the first wrapper, for example at least about 2500 or at least about 10,000 frangible microcapsules. The smoking articles according to the present invention may have less than about 100,000 frangible microcapsules provided on the outer surface of the first wrapper.

30 Preferably, the frangible microcapsules have a mean diameter of between about 5 microns and about 40 microns, more preferably between about 10 microns and about 20 microns.

The frangible microcapsules provided on the outer surface of the outer wrapper are adapted to be manually ruptured upon application of a physical force by the consumer during
35 use of the smoking article, to release the flavourant encapsulated within the microcapsules. For example, the shape and configuration of the microcapsules may be such that the microcapsules rupture upon application of a force. Alternatively or in addition, the materials forming the outer

shell of the microcapsules may be such that the outer shell is sufficiently brittle that it is broken apart upon application of a force. Alternatively or in addition, the way in which the microcapsules are incorporated onto the outer wrapper may be such that the microcapsules rupture upon application of a force.

5 The frangible microcapsules provided in the flavoured region of the first wrapper may be adapted to be manually ruptured by the consumer applying a physical force to the microcapsules using their hands, or an alternative tool such as for example a part of the container in which the smoking articles are packaged or a coin. For example, the frangible microcapsules may be adapted to be manually ruptured upon application of a frictional force to
10 the flavoured region of the outer surface of the outer wrapper by the consumer through rubbing or scratching of the part of the flavoured region exposed through the cut-out portion in the outer wrapper.

 In certain embodiments of the invention, at least some of the plurality of frangible microcapsules exposed through the cut-out portion in the outer wrapper may be initially covered
15 by a removable layer of paper, film or other sheet material, which is releasably affixed to the outer surface of the outer wrapper of the smoking article. In such embodiments, the frangible microcapsules may be adapted to be ruptured upon removal of the removable layer of material from the outer surface of the outer wrapper by the consumer.

 Frangible microcapsules may be applied to the first wrapper by printing or otherwise
20 depositing the microcapsules on the outer surface of a layer of sheet material, such as paper or film, used to form the first wrapper. Preferably, the microcapsules are printed or deposited on the sheet material in the form of a suspension. For example, a suspension of the microcapsules may be applied to the first wrapper by gravure or offset printing, or by spraying. The frangible microcapsules may be applied to the first wrapper before the first wrapper is assembled around
25 the mouthpiece. Alternatively, the frangible microcapsules may be applied to the first wrapper when it is in place around the mouthpiece of the smoking article and prior to the application of the outer wrapper.

 Smoking articles according to the invention comprise a mouthpiece incorporating the combination of wrappers described above, connected to a rod of aerosol generating substrate.
30 Preferably, the mouthpiece is attached to the aerosol generating substrate by means of the outer wrapper described above. The mouthpiece may be connected directly to the rod of aerosol generating substrate such that the end of the mouthpiece abuts the end of the rod of aerosol generating substrate. Alternatively, the mouthpiece may be indirectly connected to the rod of aerosol generating substrate, for example, by means of one or more intermediate
35 segments.

 In certain preferred embodiments of the present invention, the aerosol generating substrate of the smoking article comprises a tobacco rod and the mouthpiece comprises a filter

comprising one or more filter segments. Preferably, the outer wrapper is a tipping paper which joins the tobacco rod to the filter.

Where the mouthpiece comprises a filter, the filter may be formed of a single segment or may be a multi-segment filter comprising two or more filter segments which are connected in a longitudinal direction. Where two or more filter segments are provided, the filter segments may be of the same construction and materials as each other but more preferably have a different construction, or contain different filtration material or additives.

In certain embodiments of the present invention, the mouthpiece comprises a filter including a filter segment comprising a particulate material. The filter segment comprising the particulate material may be the only segment forming the filter, or may be connected to other filter segments to form a multi-segment filter.

Any particulate material in the filter may be dispersed through a plug of filtration material. Preferably, the filtration material within the filter segment is a plug of fibrous filtration material, such as cellulose acetate tow or paper. A filter plasticiser may be applied to the fibrous filtration material in a conventional manner, by spraying it onto the separated fibres, preferably before applying the particulate material to the filtration material.

Alternatively or in addition to the filter segment described above, the filter may include a hollow cavity at least partially filled with a particulate material. In such embodiments, the hollow cavity is preferably provided between two plugs of a filtration material, for example a mouth end filter segment downstream of the cavity and a rod end filter segment upstream of the cavity. Preferably, between 40% and 100% of the volume of the cavity is filled with particulate material, more preferably between 60% and 80% of the volume of the cavity. Cavity filters according to the invention may be produced using known machinery for producing charcoal filters, such as that described in EP-A-1,571,933. Such machinery is commercially available, for example from Filtrona International Ltd., Great Britain.

The particulate material incorporated into the filter segments described above may include at least one sorbent capable of removing at least one gas phase constituent from mainstream smoke drawn through the filter. Preferably, the at least one sorbent is selected from the group consisting of activated carbon, coated carbon, active aluminium, zeolites, sepiolites, molecular sieves and silica gel.

Alternatively or in addition to the at least one sorbent, the particulate material may include at least one flavourant material. For example, the particulate flavourant material may include particles of a sorbent or cellulosic material impregnated with a liquid flavourant. Alternatively, the particulate material may comprise particles of plant material. The plant material may be in the form of plant leaf, as described in EP-A-1,958,523. For example, the filter segment may include leaf from tobacco, green tea, mint, such as peppermint or spearmint,

laurel, eucalyptus, basil, sage, verbenas and tarragon. The plant material may alternatively be in the form of a seed, root, bark or flower, such as those typically used as spices.

Smoking articles according to the present invention may include a variety of different types of filter segments or combinations of filter segments, including those described above as well as other types of filter segments that would be known to the skilled person.

Preferably, the overall length of mouthpieces of smoking articles according to the present invention is between about 18 mm and about 36 mm, more preferably about 27 mm. Preferably, the overall length of smoking articles according to the present invention is between about 70 mm and about 128 mm, more preferably about 84 mm. Preferably, the external diameter of smoking articles according to the invention is between about 5.0 mm and 8.5 mm, more preferably about 7.9 mm.

Smoking articles according to the invention may be packaged in containers, for example in soft packs or hinge lid packs. The smoking articles within the container may be wrapped in an inner liner, which may optionally have a flavourant applied to at least one surface.

The present invention further provides a method for the production of smoking articles according to the invention, as described above. The method of the present invention comprises the steps of providing a plurality of discrete, wrapped mouthpieces each wrapped with a first wrapper including a flavoured region on the outer surface, the flavoured region including a plurality of frangible flavour containers; providing a plurality of rods of aerosol generating substrate; providing a sheet of outer wrapper having a succession of cut-out portions therein; disposing one of the wrapped mouthpieces adjacent to and in axial alignment with one of the rods of aerosol generating substrate; and wrapping the sheet of outer wrapper around at least a portion of the wrapped mouthpiece and at least a portion of the adjacent rod of aerosol generating substrate such that the sheet of outer wrapper attaches the wrapped mouthpiece to the rod of wrapped tobacco and the cut-out portions overlie the flavoured regions of the first wrappers.

The cutting of the outer wrapper to provide the cut-out portions may be carried out online on a cigarette maker, by incorporating cutting apparatus at any position on the machine after the outer wrapper has been unwound and before the outer wrapper is wrapped around the smoking article components.

Alternatively, the cutting of the outer wrapper to provide the cut-out portions may be carried out offline from the cigarette maker, using separate apparatus which may be provided at the same or a different location to the cigarette maker. In this case, the steps of the method of the present invention can be carried out using standard wrapping techniques and apparatus to apply the novel arrangement of the substantially transparent wrapper and outer wrapper with cut-out portions.

The application of the frangible flavour containers to the outer surface of the first wrapper may also be carried out online on the cigarette. The apparatus for the application of the flavour containers may be provided upstream or downstream of the apparatus for wrapping and gluing the first wrappers around the mouthpieces.

5 Alternatively, the application of the frangible flavour containers to the outer surface of the first wrapper may be carried out offline from the cigarette maker, using separate apparatus which may be provided at the same or a different location to the cigarette maker.

A suitable vision system, including for example one or more cameras, may be used to ensure registration of the cut-out portions in the desired position over the flavoured region on
10 the first wrapper.

The invention will be further described, by way of example only, with reference to the accompanying drawings (not to scale) in which:

Figure 1 shows a perspective view of a smoking article according to a first embodiment of the invention, with the filter unwrapped;

15 Figure 2 shows a schematic longitudinal cross section of the filter of the smoking article of Figure 1; and

Figure 3 shows a perspective view of a smoking article according to a second embodiment of the invention, with the filter unwrapped.

The filter cigarette 10 shown in Figures 1 and 2 comprises a wrapped rod 12 of tobacco
20 cut filler which is attached at one end to an axially aligned filter 14 comprising a single filter segment 16 formed of cellulose acetate tow which has been wrapped with a first wrapper 18. The wrapped tobacco rod 12 and the filter 14 are joined by an outer wrapper 20 formed of tipping paper, which circumscribes the entire length of the filter 14 and an adjacent portion of the tobacco rod 12.

25 The first wrapper 18 is formed of a conventional paper plug wrap material which is substantially air impermeable. A plurality of frangible microcapsules 22 are deposited over part of the outer surface of the first wrapper 18 to provide a flavoured region 24 extending circumferentially around the filter 14. The flavoured region 24 is indicated in Figure 1 by the shaded area. The flavoured region 24 has a width of about 8 mm and is provided about 5 mm
30 from the rod end of the filter segment 16. The microcapsules 22 each have a diameter of about 10 microns.

The outer wrapper 20 comprises a circular cut-out portion 26 having a diameter of approximately 8 mm, which is positioned over the flavoured region 24 of the first wrapper. The underlying area of the flavoured region 24 on the first wrapper 18 is exposed through the cut-out
35 portion 26 in the outer wrapper 20 such that a plurality of microcapsules 22 is exposed at the surface of the filter 14.

The outer wrapper 20 is formed of a paper material having a thickness of about 30 microns. The cut-out portion 26 therefore defines a circular recess at the surface of the filter 14, having a depth of about 30 microns, which is more than twice the diameter of the microcapsules 22 in the flavoured region 24. As indicated schematically in Figure 2 (not to scale) at least the microcapsules 22 in the recess that are directly in contact with the surface of the first wrapper 18 are therefore entirely below the level of the outer surface of the surrounding outer wrapper 20.

The microcapsules 22 within the recess defined by the cut-out portion 26 are therefore protected from frictional forces that may be inadvertently applied to the surface of the filter, for example, during production. At least a significant proportion of the microcapsules 22 will therefore be retained in an unbroken state until the consumer chooses to manually rupture the microcapsules in the manner described below.

The consumer may manually rupture the microcapsules 22 either before, during or after smoking in order to release the flavourant encapsulated therein. This may be achieved through the rubbing or scratching of the part of the flavoured region 24 exposed by the cut-out portion 26, to generate a frictional force that breaks the shell of at least some of the microcapsules 22 and releases the flavourant from the core. Where the consumer uses their fingers to apply the frictional force, the flavourant released from the microcapsules may advantageously be transferred to the consumer's fingers.

The smoking article 50 shown in Figure 3 comprises a wrapped rod 52 of tobacco cut filler which is attached at one end to an axially aligned filter 54 comprising three filter segments in abutting end-to-end relationship: a mouth end segment 56, distant from the wrapped tobacco rod 52; a central segment 58, located upstream of the mouth end segment 56; and a rod end segment 60 adjacent to and abutting the wrapped tobacco rod 52 and located upstream of the central segment 58. The mouth end segment 56 and the central segment 58 are each wrapped with a conventional paper plug wrap (not shown), in a known manner. The rod end segment 60 is wrapped with a substantially transparent plug wrap 62.

The wrapped tobacco rod 52 and the filter 54 are joined by an outer wrapper 64 formed of tipping paper, which circumscribes the entire length of the filter 54 and an adjacent portion of the tobacco rod 52.

A plurality of frangible microcapsules are deposited over the outer surface of the transparent plug wrap 62 to provide a flavoured region 66 covering the entire outer surface of the rod end segment 60. The microcapsules have a mean diameter of about 10 microns.

The outer wrapper 64 comprises a pair of substantially opposed, rectangular cut-out portions 68 each of which extends circumferentially around the filter 54 and is positioned over the rod end segment 60 and therefore over the flavoured region 66. Each cut-out portion 68 has a diameter of approximately 8 mm and extends approximately one third of the way around the

-16-

circumference of the filter 54. The flavoured region 66 on the surface of the transparent plug wrap 62 is exposed through both of the cut-out portions 68 in the outer wrapper 68 such that a plurality of microcapsules is exposed at opposed sides of the surface of the filter 54. The underlying rod end segment 60 is also partially visible through the transparent plug wrap 62 exposed through the cut-out portions 68 in the outer wrapper 64.

The outer wrapper 64 is formed of a paper material having a thickness of about 30 microns and the cut-out portions 68 define a pair of recesses having a depth of 30 microns. The microcapsules exposed through the cut-out portions 68 are protected from frictional forces at the surface of the filter 54, as described above in relation to the smoking article 10.

CLAIMS

1. A smoking article comprising:
an aerosol generating substrate;
5 a mouthpiece connected to the aerosol generating substrate;
a first wrapper circumscribing the mouthpiece along at least a part of its length, wherein
a plurality of frangible flavour containers are provided in a flavoured region of the outer surface
of the first wrapper, wherein the plurality of frangible flavour containers are adapted to be
manually ruptured by a consumer during use, to release a flavourant from within the flavour
10 containers; and
an outer wrapper circumscribing the mouthpiece, wherein the outer wrapper overlies the
first wrapper and comprises at least one cut-out portion exposing the frangible flavour
containers to the outer surface of the smoking article in at least a part of the flavoured region of
the first wrapper.
15
2. A smoking article according to claim 1 wherein the at least one cut-out portion extends
circumferentially at least 25% around the filter.
3. A smoking article according to claim 1 or 2 wherein the outer wrapper comprises two
20 substantially opposed cut-out portions exposing the frangible flavour containers in the flavoured
region of the first wrapper.
4. A smoking article according to any of claims 1 to 3 wherein the total area of the at least
one cut-out portion is at least 30 square millimetres.
25
5. A smoking article according to any preceding claim wherein the at least one cut-out
portion extends between 5 mm and 10 mm along the length of the filter.
6. A smoking article according to any preceding claim wherein the frangible flavour
30 containers are at least partially recessed from the remainder of the outer surface of the
mouthpiece.
7. A smoking article according to any preceding claim wherein the thickness of the outer
wrapper is at least twice the average diameter of the frangible flavour containers.
35
8. A smoking article according to any preceding claim wherein the first wrapper is formed of
a polymeric film.

9. A smoking article according to any preceding claim wherein the first wrapper is substantially impermeable to air.

5 10. A smoking article according to any preceding claim wherein the at least one cut-out portion in the outer wrapper is provided at least 15 mm from the mouth end of the filter.

11. A smoking article according to any preceding claim wherein an embossed pattern is provided over at least a portion of the flavoured region of the first wrapper and wherein the
10 plurality of frangible flavour containers are provided within one or more depressions defined by the embossed pattern.

12. A smoking article according to any preceding claim wherein the plurality of frangible flavour containers have a mean diameter of between 5 and 40 microns.

15 13. A smoking article according to any preceding claim wherein the plurality of frangible flavour containers are frangible microcapsules.

14. A smoking article according to any preceding claim wherein the Bekk smoothness of the
20 flavoured region of the first wrapper is less than about 20 seconds.

15. A smoking article according to any preceding claim wherein the outer wrapper is a tipping paper that joins the mouthpiece and the aerosol generating substrate.

25 16. A method of producing a smoking article according to any preceding claim comprising:
providing a plurality of discrete, wrapped mouthpieces each wrapped with a first wrapper including a flavoured region on the outer surface, the flavoured region including a plurality of frangible flavour containers;
providing a plurality of rods of aerosol generating substrate;
30 providing a sheet of outer wrapper having a succession of cut-out portions therein;
disposing one of the wrapped mouthpieces adjacent to and in axial alignment with one of the rods of aerosol generating substrate; and
wrapping the sheet of outer wrapper around at least a portion of the wrapped mouthpiece and at least a portion of the adjacent rod of aerosol generating substrate such that
35 the sheet of outer wrapper attaches the wrapped mouthpiece to the rod of wrapped tobacco and the cut-out portions overlie the flavoured regions of the first wrappers.

1/2

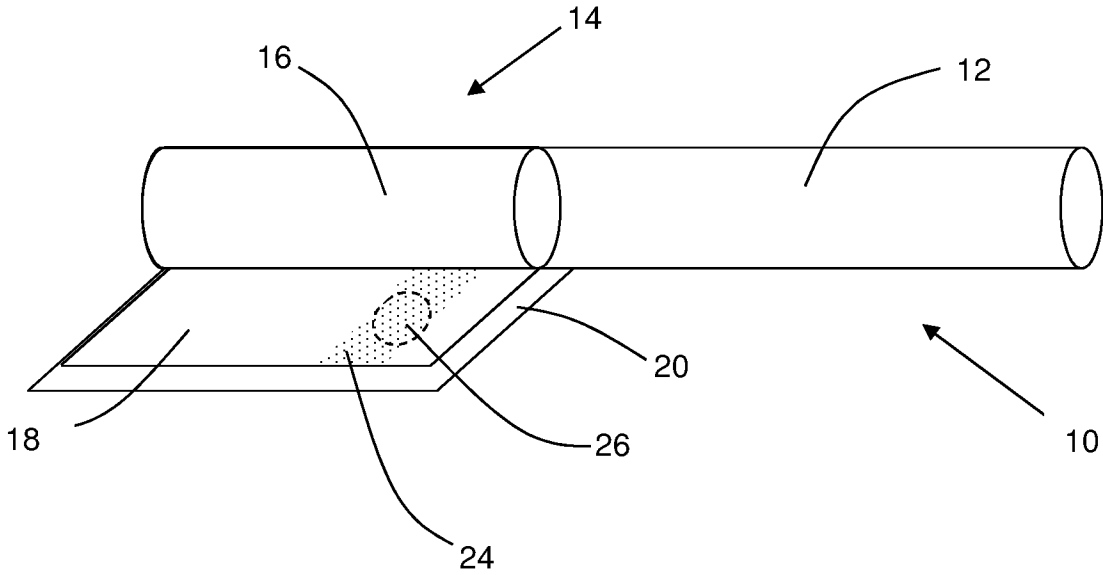


Fig 1

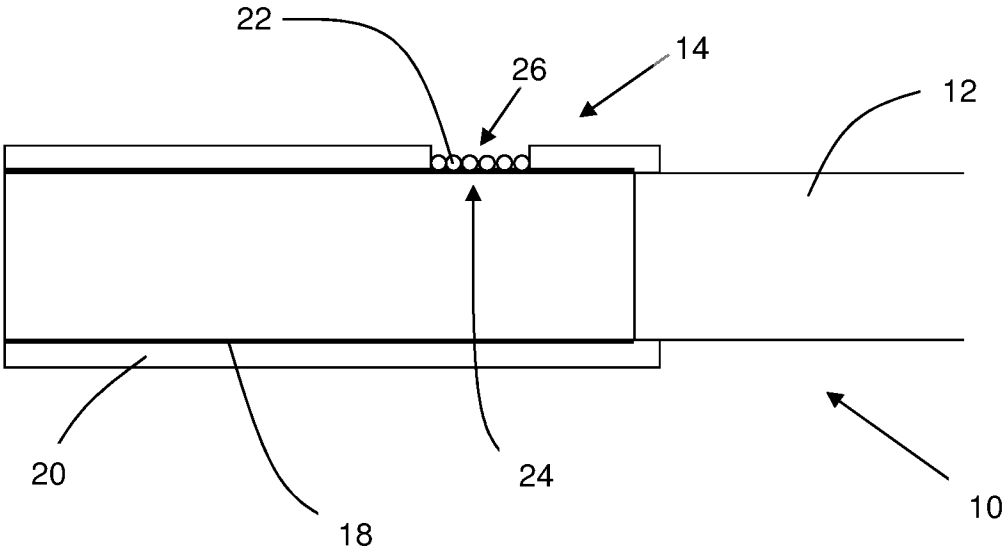


Fig 2

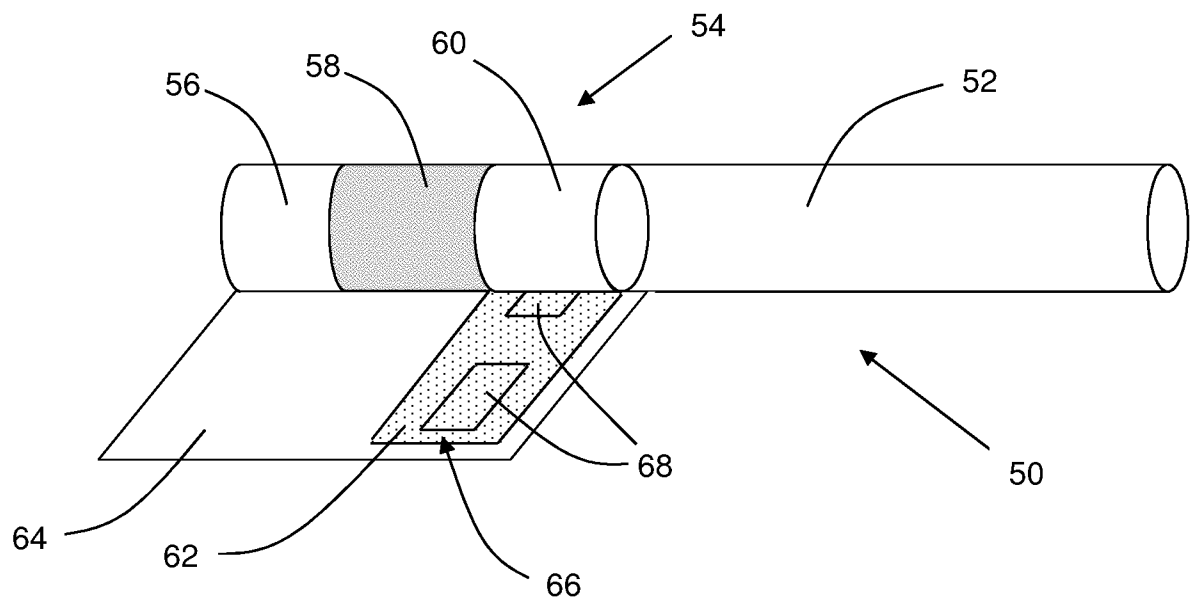


Fig 3