(54) SMOKING ARTICLE WITH MODIFIED SMOKE DELIVERY
RAUCHARTIKEL MIT MODIFIZIERTER RAUCHZUFUHR
PRODUIT À FUMER D'UN SYSTÈME DE DÉGAGEMENT DE LA FUMÉE MODIFIÉ

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a smoking article with modified smoke delivery.

[0002] Smoking articles such as cigarettes comprise a rod of smokable material such as tobacco which is tightly wrapped in a paper wrapper (cigarette paper). A filter unit comprising one or more filter components may be joined to the wrapped tobacco rod using a tipping paper. For a uniform composition of tobacco rod, the smoke that is delivered through the tobacco rod from the burning tobacco, for any given puffing regime, is determined by three main factors: the amount of air drawn in through the coal during puffing (which depends upon the level of ventilation through the cigarette paper); the filtration of the smoke through the remaining unburnt part of the tobacco rod; and the speed of burn of the tobacco rod between puffs (smoulder rate). The smoke delivery from any single puff thus depends on the length of tobacco rod remaining, and for a standard puff volume taken from the end of the rod, will result in increased smoke delivery as the tobacco rod shortens.

[0003] The structure of the filter unit and any ventilation included therein (plus any ventilation that may be provided in the tipping paper) will modify the actual smoke/air combination delivered to the smoker. Hence, the features of the filter unit and the ventilation are typically adjusted to provide different brands of smoking article with different smoking properties as regards smoke delivery.

[0004] However, the structure of the tobacco rod also plays a part in the delivery of smoke to the smoker, owing to the passage of the smoke through the unburnt portion of the tobacco. Modification of the tobacco rod structure away from a uniform composition can therefore be used to further tailor smoke delivery.

SUMMARY OF THE INVENTION

[0005] Accordingly, a first aspect of the present invention is directed to a smoking article comprising: a tobacco rod; a paper wrapper encircling the tobacco rod; and a patch of material positioned between the tobacco rod and the paper wrapper and extending longitudinally along the tobacco rod from an intermediate point along the tobacco rod towards a mouth end of the tobacco rod, the material having a structure such that the patch provides a path for smoke from tobacco upstream of the patch to the mouth end that has less resistance to smoke flow than a path through the tobacco under the patch, and wherein the patch comprises at least one burn-enhancer to increase the static burn rate of the smoking article over the length comprising the patch.

[0006] This structure modifies the smoke flow compared to an equivalent smoking article without a such a patch. Smoke generated from tobacco in the first portion of the tobacco rod is provided with a preferential low resistance path through the smoking article when the smoker draws on the smoking article, so the smoke is delivered more efficiently. This improves the quality of the smoking experience for the smoker. An additional effect is also provided by the patch. The introduction of an open-structured material into the smoking article increases the static burn rate of the smoking article over the portion including the patch. The smoker can thus take fewer puffs from the second portion of the smoking article, thus receiving less smoke and a correspondingly reduced amount of the residues that can accumulate in the tobacco from the consumption of the first portion of the smoking article.

[0007] The length and position of the patch can be selected to provide the desired proportion of enhanced smoke delivery and reduced smoke delivery. For example, the patch may extend longitudinally from the intermediate point to the mouth end of the tobacco rod. Alternatively, the patch may extend longitudinally from the intermediate point to a second point between the intermediate point and the mouth end. The second point may be between 1% and 40% of the total length of the tobacco rod from the mouth end. A range of patch lengths are suitable, so that, for example, the patch may extend longitudinally over substantially 10% to 90% of the total length of the tobacco rod, or over substantially 40% to 80% of the total length of the tobacco rod.

[0008] The patch may extend substantially around the whole circumference of the tobacco rod. Alternatively, the patch may comprise one or more portions of material disposed around the circumference of the tobacco rod. These options can be chosen as desired to tailor the degree of smoke flow modification given by the patch.

[0009] A variety of combustible materials may be used for the patch. Any such material that provides the required low impedance smoke flow patch is suitable. The material may be chosen according to its structure with the aim of providing a particular level of smoke flow resistance, for example. In some embodiments, the patch may comprise a foam material.

[0010] In other embodiments, the patch may comprise a corrugated material having corrugations that extend substantially longitudinally along the tobacco rod. Various structures of corrugated material may be employed. For example, the corrugated material may have a laminate structure comprising a corrugated layer and a non-corrugated layer. The non-corrugated layer may be positioned between the tobacco rod and the corrugated layer, or between the corrugated layer and the paper wrapper. Alternatively, the corrugated material may have a laminate structure comprising a corrugated layer sandwiched between two non-corrugated layers. Also, a corrugated layer may be used alone with no non-corrugated layers.

[0011] In further embodiments, the patch may comprise an embossed material having indentations that extend substantially longitudinally along the tobacco rod, or a grooved material having grooves that extend substantially longitudinally along the tobacco rod, or a fibrous
The method may comprise: trimming tobacco from the outside of the rod of tobacco over an area from which tobacco has been trimmed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] For a better understanding of the invention and to show how the same may be carried into effect reference is now made by way of example to the accompanying drawings in which:

Figure 1 shows a longitudinal cross-sectional view through a smoking article according to an embodiment of the present invention;

Figure 2 shows a simplified version of Figure 1 indicating smoke flow through the smoking article;

Figure 3 shows a transverse cross-sectional view through a smoking article having a patch configured according to one embodiment of the invention;

Figure 4 shows a transverse cross-sectional view through a smoking article having a patch configured according to a further embodiment of the invention;

Figure 5 shows a longitudinal cross-sectional view through part of a smoking article having a patch comprised of foam material;

Figures 6A and 6B to 9A and 9B show side views of corrugated patch material and transverse cross-sectional views through smoking articles having corrugated patches, for four different corrugated patch materials;

Figure 10 shows a side view of a tobacco rod having a trimmed section according to an embodiment of the invention; and

Figure 11 shows a longitudinal cross-sectional view of a smoking article according to an embodiment of the invention comprising a filter unit.

DETAILED DESCRIPTION

[0020] The present invention aims to provide a smoking article such as a cigarette that delivers smoke to the smoker with improved efficiency for a first portion of the smoking article, and also generates less smoke than a conventional smoking article from all or part of the remainder of the smoking article. To address this, a patch of material that allows a more free passage of smoke therethrough than does the tobacco of the smoking article is positioned under part of the outer wrapping paper of the smoking article.

[0021] Figure 1 shows a longitudinal cross-sectional view through a smoking article according to an embodiment of the invention. The smoking article 10 comprises, in the conventional manner, a cylinder or rod of tobacco 12 that is encircled or encased in a paper wrapper 14 (cigarette paper) that forms a tube around the tobacco 12. The smoking article 10 has a first end A that is intended to be lit, and a second end B that is received in the mouth of the smoker. Again conventionally, the paper wrapper 14 has a porosity to air that is low enough for air to preferentially enter through the end A of the tobacco rod 12.

sheet material.

[0012] The patch comprises at least one burn-enhancer to increase the static burn rate of the smoking article over the length comprising the patch. This can be used to tailor the static burn rate and consequently the number of puffs that can be taken from the latter part of the smoking article.

[0013] The patch may have a different colour from the paper wrapper and/or the tobacco rod. This allows detection of the patch by an optical defect detection system, sometimes used to provide quality control during smoking article manufacture.

[0014] The tobacco rod may have a reduced weight of tobacco per unit length under the patch compared to upstream of the patch. This both provides space to accommodate the patch, and further increases the static burn rate of the portion of the smoking article that includes the patch. Any suitable method can be employed to provide such a tobacco rod. For example, the reduced weight may be created by trimming tobacco from the outside of the tobacco rod, or by trimming tobacco from a tobacco bead from which the tobacco rod is to be cut.

[0015] The smoking article may further comprise a filter unit attached to the mouth end of the tobacco rod. The filter unit may be provided with one or more ventilation holes.

[0016] A second aspect of the present invention is directed to a method of fabricating a smoking article comprising: providing a rod of tobacco; disposing a patch of material over the rod of tobacco such that the patch extends longitudinally along the rod from an intermediate point along the rod towards a mouth end of the rod, the material having a structure and the patch being oriented such that, in the completed smoking article, the patch provides a path for smoke from tobacco upstream of the patch towards the mouth end that has less resistance to smoke flow than a path through the tobacco under the patch, wherein the patch comprises at least one burn-enhancer to increase the static burn rate of the smoking article over the length comprising the patch; and wrapping a paper wrapper around the rod.

[0017] Disposing the patch of material may comprise positioning the patch on the rod of tobacco before wrapping the paper wrapper around the rod. Alternatively, disposing the patch of material may comprise adhering the patch to an inner surface of the paper wrapper before wrapping the paper wrapper around the rod.

[0018] The method may comprise: trimming tobacco from the outside of the rod of tobacco over an area where the patch is to be disposed, thereby creating a reduced weight of tobacco per unit length; and disposing the patch over the rod of tobacco so that the patch covers the area from which tobacco has been trimmed. Alternatively, the method may comprise trimming tobacco from the outside of a bead of tobacco over an area where the patch is to be disposed, thereby creating the reduced weight; cutting a rod of tobacco from the bead; and disposing the patch over the rod of tobacco so that the patch covers the area from which tobacco has been trimmed.
when the smoker draws on the lit smoking article, rather than through the paper wrapper, thus allowing the smoking article to be smoked.

In accordance with the invention, the smoking article is modified from the conventional design by the inclusion of a patch of material arranged between the tobacco rod and the paper wrapper. The patch extends from the mouth end and the end intended to be lit. The patch is highly porous to the flow of air and smoke in a direction along the length of the smoking article (and hence will typically be formed from a material with a relatively open structure or be constructed so that the path itself provides an open structure), so that it offers a path for smoke generated by the lit end of the smoking article and drawn through the smoking article during smoking that is less resistive to the flow of smoke than a path through the tobacco that is overlain by the patch. Hence, smoke produced by burning tobacco from the part of the tobacco rod upstream of the patch has a more free passage to the mouth end through the patch material than through the tobacco.

Figure 2 shows a simplified version of Figure 1 (in which the shading for the tobacco and the patch is omitted for clarity) that shows the path taken by smoke through the smoking article. When a smoker draws on the lit smoking article, smoke generated by the burning tobacco propagates through the first part of the tobacco rod towards the mouth end in the usual manner. On reaching the intermediate point of the smoking article at which the patch begins, two propagation paths are available for the smoke, a first, low resistance, path through the patch and a second, higher resistance, path through the tobacco. The path through the patch material is relatively clear and has a little filtration efficiency compared to the tobacco path. The difference in resistance means that the majority of the smoke travels to the mouth end through the patch. Hence, the smoke from the upstream portion of the tobacco rod is delivered to the smoker with less impedance and hence more efficiently than for a conventional tobacco rod without a patch. The smoker therefore receives the same amount of smoke for less effort in drawing on the smoking article, or a higher percentage of the smoke generated during the first puffs on the smoking article is delivered than normal.

When the burn line of the lit smoking article reaches the patch, the open structure of the patch increases the static burn rate or smoulder rate of the smoking article (this being the rate at which material of the smoking article burns away in the absence of puffs by the smoker). This reduces the number of puffs that can be taken from the second portion of the smoking article (the portion including the patch), so that the overall amount of smoke delivered to the smoker from the second portion is reduced compared to that delivered from a conventional smoking article without a patch. This is beneficial in that a larger amount of the residues from the first upstream portion of the smoking article that accumulate in the tobacco of the downstream portion is burnt away and a smaller amount delivered to the smoker.

The increased burn rate given by the open structure of the patch can be further enhanced by providing the material from which the patch is fabricated with one or more burn enhancers. These are substances that increase the rate of burning of a material to which they are applied (as a surface layer or by impregnation, for example). The amount and type of burn enhancer can be chosen in conjunction with the types of patch material, tobacco and paper wrapper to provide a desired burn rate. Suitable burn enhancers include citrates, such as sodium or potassium citrate. Burn rate additives known to those skilled in the art.

Overall, therefore, a smoking article provided with a patch according to the invention has increased smoke delivery from a first portion of the tobacco rod and decreased smoke delivery from a second portion of the tobacco rod, compared to an equivalent smoking article without a patch.

Figures 1 and 2 show a patch that extends from the mouth end of the smoking article substantially to the midpoint of the tobacco rod. However, the invention is not so limited, and other lengths of patch may be used. The length can be chosen to select any desired ratio between the portion of increased smoke delivery and the portion of decreased smoke delivery. Lengths between 10% and 90% of the total length of the tobacco rod have been found to be useful, for example lengths in the range 40% to 80%.

Also, the patch need not extend all the way to the mouth end of the smoking article. A patch that terminates short of the mouth end will still provide the above-described effects of increased smoke delivery from the portion upstream of the patch and decreased smoke delivery from the portion including the patch. The remaining portion downstream of the patch will provide smoke delivery corresponding to that from a conventional smoking article with no patch. Any spacing between the patch and mouth end may be chosen, to give the desired overall balance between the three types of smoke delivery. For example, the patch may extend from an intermediate upstream point along the tobacco rod to a point in the range 1% to 40% of the total length of the tobacco rod from the mouth end.

To provide the maximum smoke delivery modification effect for a given length of patch, the patch should extend around the full circumference of the tobacco rod.

Figure 3 shows a transverse cross-section through the smoking article of Figure 1, along the line X-X. In the example, the patch completely encircles...
the tobacco rod 12. Note that although a gap is shown between the patch 16 and the paper wrapper 14, this is for clarity only; the paper wrapper 16 will generally be in contact with the patch 16.

[0031] Further variation in the amount of smoke delivery modification can be provided by using a patch 16 that does not extend all the way around the tobacco rod 12. In such an embodiment, the patch 16 comprises one or more separate portions of patch material. For more than one portion, the portions are spaced apart around the circumference of the tobacco rod 12. For even burning of the smoking article, the portions can be symmetrically spaced around the circumference.

[0032] Figure 4 shows a transverse cross-section through a smoking article 10 in which the patch 16 comprises three individual portions 26 evenly positioned around the tobacco rod 12, under the paper wrapper 14.

[0033] The patch can be fabricated from any material that has appropriate combustion and compositional properties for inclusion in a smoking article and which provides the required low resistance passage for smoke propagation. Materials which inherently have the desired structure can be used, such as a fibrous sheet material having a sufficiently open structure. The fibrous sheet material may be cellulosic sheet material or tobacco-containing sheet material such as reconstituted tobacco sheet material or tobacco substitute sheet material, for example. Alternatively, materials can be specifically fabricated so as to have a suitable open structure.

[0034] For example, a foamed material can be used, wherein the bubbles formed in the foaming process provide an open structure and a substantially free path for smoke. Examples of suitable foamed materials are extruded tobacco reconstituted materials and foamed band-cast tobacco sheet.

[0035] Figure 5 shows a longitudinal cross-sectional view of part of a smoking article 10 in which the patch 16 comprises a foam material.

[0036] In other embodiments, the patch may comprise corrugated material, such as corrugated paper or cardboard. By arranging the corrugations or ridges/troughs in the material to run lengthwise along the tobacco rod, a plurality of parallel longitudinal open passages are provided around the circumference of the tobacco rod. A number of configurations of corrugated material can be used.

[0037] Figure 6A shows a side view of a first example of corrugated material 30. The material 30 has a laminated structure and comprises a corrugated layer 32 sandwiched between an outer flat, non-corrugated layer 34 and an inner flat, non-corrugated layer 36. The extremities of the corrugations are adhered to the flat layers to form a composite laminate. The various layers may be made of the same or different materials.

[0038] Figure 6B shows a transverse cross-section through a smoking article 10 having a patch 16 fabricated from the corrugated material 30 of Figure 6A. The outer flat layer 34 is encased by the paper wrapper 14 and the tobacco 12 is in contact with the inner flat layer 36. A first group of smoke passages is defined between the inner flat layer 36 and the corrugated layer 32 and a second group of smoke passages is provided between the corrugated layer 32 and the outer flat layer 34.

[0039] Figure 7A shows a side view of a second example of corrugated material 38. In this case, the corrugated material comprises only a corrugated layer 32 and an inner flat layer 36.

[0040] Figure 7B shows a transverse cross-section through a smoking article 10 using the patch material 38 of Figure 7A. The absence of an outer layer 34 such as that in Figure 6A brings the corrugated layer 32 into contact with the paper wrapper 14. The overall structure is equivalent to that of Figure 6B, but the second group of smoke passages is defined between the corrugated layer 32 and the paper wrapper 14 rather than between the corrugated layer 32 and the flat outer layer 34. This alternative arrangement uses less material but may be found structurally less robust than the embodiment of Figure 6B, owing to the open spaces directly under the paper wrapper 14. Also, the burn rate will be different owing to the reduced amount of material.

[0041] Figure 8A shows a side view of a third example of corrugated material 40, comprising a corrugated layer 32 and an outer flat layer 34. This is equivalent to the corrugated material 38 of Figure 7A turned upside-down, but the provision of an outer instead of an inner flat layer gives a different structure to the resulting smoking article.

[0042] Figure 8B shows a transverse cross-section through a smoking article 10 comprising the corrugated patch material 40 of Figure 8A. The outer flat layer 34 is in contact with the paper wrapper 14, and a group of smoke passages are defined between the outer flat layer 34 and the corrugated layer 32. However, the absence of an inner layer (such as that in Figures 6B and 7B) means that there is no further group of smoke passages defined on the inner side of the corrugated layer 32. Instead, the troughs on this side of the corrugated layer are filled with tobacco 12. This configuration provides both a reduced increase in the smoke delivered from the upstream part of the tobacco rod compared to the embodiments of Figures 6B and 7B, and also a different burn rate. Hence, the structure of the patch material can be chosen to tailor the modification of smoke delivery given by the presence of the patch.

[0043] Figure 9A shows a side view of a fourth example of corrugated material 42, comprising only a corrugated layer 32, with no inner or outer flat layers.

[0044] Figure 9B shows a transverse cross section through a smoking article 10 having a patch formed from the corrugated material of Figure 9A. The same structure is achieved as that provided by the corrugated material 40 shown in Figure 8B, with smoke passages on the outside of the corrugated layer 32 only (in this case defined by the corrugated layer 32 and the paper wrapper 14, and tobacco 12 in the troughs on the inner side of corrugated layer 32. Less material is used to produce the same
structure, but as in the embodiment of Figure 7B, the outer robustness of the smoking article may be reduced by the absence of an outer flat layer underlying the paper wrapper 14.

[0045] Patch materials fabricated to have a similar structure to corrugated material may also be used, for example a pair of flat layers having a plurality of parallel ribs extending between the layers. When the patch is applied to the tobacco rod, the ribs run longitudinally along the length of the rod, and extend radially between the two flat layers. The term "corrugated material" is intended to include structurally similar patch materials that provide a plurality of parallel longitudinal smoke paths.

[0046] Alternatively, embossed material may be used for the patch, having a pattern of indentations embossed into its surface and arranged to provide paths along the length of the patch when positioned in the smoking article. The indentations may be substantially straight and arranged parallel to the length of the tobacco rod, providing a structure largely equivalent to a single-sided corrugated patch. Alternatively, the indentations may be curved, or straight but arranged at an angle to the length of the tobacco rod. Such configurations provide smoke paths that are longer than the longitudinal extent of the patch, which can be used to further modify the smoke delivery from the tobacco upstream of the patch.

[0047] A similar effect to embossed material can be achieved by using a grooved material, by arranging the grooves to provide paths for smoke upstream of the patch.

[0048] The patch may be coloured to assist recognition by defect detection systems commonly employed during smoking article manufacture to identify completed or partially completed smoking articles that have one or more missing or defective components. Such detection systems may be optical systems that monitor the amount of light at one or more wavelengths that is transmitted by or reflected from various components. Thus, if the patch is a different colour from the tobacco and/from the paper wrapper, its presence or absence from the completed smoking article can be determined using an optical detection system.

[0049] In many examples, in order to provide a useful level of modification to the smoke delivery, the patch will have a thickness that is much greater than the typical thickness of a standard paper wrapper (cigarette paper). The thickness of the patch may be between 5 and 50 times the thickness of the paper wrapper, for example. This corresponds to a patch with a thickness substantially in the range 0.2 mm to 2 mm. During fabrication of the smoking article, the patch may be positioned around the tobacco rod before the paper wrapper is applied, or the patch may be adhered to the paper wrapper before the latter is wrapped around the tobacco rod (in a similar manner to the technique described in WO 2005/082180 for providing a web of adsorbent material and flavou rant under the wrapper of a smoking article). In either case, to achieve a substantially constant diameter along the length of the smoking article, the tobacco under the patch will be compressed. The tobacco in the upstream portion of the tobacco rod will therefore be less dense than the tobacco in the downstream portion of the tobacco rod. This will further affect both the relative resistance to smoke flow offered by the tobacco and the patch, and the static burn rate of the second portion of the smoking article.

[0050] To address these additional effects, it is proposed according to a further embodiment that the width of the tobacco rod be reduced under the patch, to give a reduced weight of tobacco per unit length under the patch compared to upstream of the patch. This can be achieved by removing some tobacco from the tobacco rod, for example by using one or more trimmer (ecrètreur) discs (such as are conventionally used to size, shape and tidy the tobacco bead in smoking article manufacture) to cut away a portion of tobacco from the continuous bead of tobacco from which the rods are cut.

[0051] Figure 10 shows a side view of a tobacco rod 12 which has been shaped in this way. One end of the rod 12, destined to be the upstream end A of the smoking article has a diameter a, and the other end of the rod 12, destined to the downstream, mouth, end B of the smoking article has a smaller diameter b. The difference between these diameters is substantially the same as the thickness of the material forming the patch, so that when the patch is positioned around the smaller diameter part of the tobacco rod, the tobacco rod and patch combination is of a substantially uniform diameter. This gives a finished smoking article with a smooth outer surface and a constant tobacco density.

[0052] Thus far, the smoking articles described herein have comprised tobacco rods, wrapping papers and patches, thus providing filterless smoking articles. In such a case, a colour or other distinguishing mark or feature may be applied to the outside of the wrapper at the mouth end of the finished smoking article, to assist the consumer in correctly identifying the mouth end before smoking. Alternatively, the tobacco rods may be provided with filter units to provide filter-tipped smoking articles in the conventional manner, wherein a filter unit is joined to the mouth end of a wrapped tobacco rod by a tipping paper. The filter unit may have any configuration, including single component or multiple component, and may or may not be provided with ventilation such as a circumferential row or zone of ventilation holes made by on-line laser machining or provided by pre-perforations. Thus, the term "smoking article" as used herein is intended to include filterless smoking articles comprising a tobacco rod with no filter unit, filter-tipped smoking articles comprising a tobacco rod with an attached filter unit, and tobacco rods without filters but to which a filter unit may be attached by a later fabrication stage to form a filter-tipped smoking article.

[0053] Figure 11 shows a longitudinal cross-sectional view of a filter-tipped smoking article 10 comprising a tobacco rod 12, paper wrapper 14 and patch 16 as illus-
to 4, in which the patch comprises a foam material.

6. A smoking article according to any one of claims 1 to 4, in which the patch comprises a corrugated material having corrugations that extend substantially longitudinally along the tobacco rod.

7. A smoking article according to claim 6, in which the corrugated material has a laminate structure comprising a corrugated layer and a non-corrugated layer, wherein optionally the non-corrugated layer is positioned between the tobacco rod and the corrugated layer and optionally the non-corrugated layer is positioned between the corrugated layer and the paper wrapper, and optionally the laminate structure comprises a corrugated layer sandwiched between two non-corrugated layers.

8. A smoking article according to any one of claims 1 to 7, in which the patch comprises an embossed material having indentations that extend substantially longitudinally along the tobacco rod, or the patch comprises a grooved material having grooves that extend substantially longitudinally along the tobacco rod, or the patch comprises a fibrous sheet material.

9. A smoking article according to any one of claims 1 to 8, in which the patch has a different colour from the wrapper and/or the tobacco rod.

10. A smoking article according to any one of claims 1 to 9, in which the tobacco rod has a reduced weight of tobacco per unit length under the patch compared to upstream of the patch which may be created by trimming tobacco from the outside of the tobacco rod or by trimming tobacco from a tobacco bead from which the tobacco rod is to be cut.

11. A smoking article according to any one of claims 1 to 10, in which the smoking article further comprises a filter unit attached to the mouth end of the tobacco rod, which optionally is provided with one or more ventilation holes.

12. A method of fabricating a smoking article comprising:

- providing a rod of tobacco;
- disposing a patch of material over the rod of tobacco such that the patch extends longitudinally along the rod from an intermediate point along the rod towards a mouth end of the rod, the material having a structure and the patch being oriented such that, in the completed smoking article, the patch provides a path for smoke from tobacco upstream of the patch towards the mouth end that has less resistance to smoke flow than a path through the tobacco under the patch, wherein the patch comprises at least one ventilation hole.

Claims

1. A smoking article (10) comprising:

- a tobacco rod (12)
- a wrapper (14) around the tobacco rod (12), and
- a patch (16) of material positioned between the tobacco rod (12) and the wrapper (14) and extending longitudinally along the tobacco rod (12) from an intermediate point along the tobacco rod towards a mouth end (B) of the tobacco rod (12), the material having structure such that the patch (16) provides a path (22) for smoke (20) from tobacco upstream of the patch (16) towards the mouth end (B) that has less resistance to smoke flow than a path (24) through the tobacco under the patch (16) characterised in that the patch (16) comprises at least one bum-enhancer to increase the static burn rate of the smoking article (10) over the length comprising the patch (16).

2. A smoking article according to claim 1, in which the patch extends longitudinally from the intermediate point to the mouth end of the tobacco rod or the patch extends longitudinally from the intermediate point to a second point between the intermediate point and the mouth end, and optionally the second point is between 1% and 40% of the total length of the tobacco rod from the mouth end.

3. A smoking article according to any one of claims 1 to 2, in which the patch extends longitudinally over substantially 10% to 90% of the total length of the tobacco rod, and optionally over substantially 40% to 80% of the total length of the tobacco rod.

4. A smoking article according to any one of claims 1 to 3, in which the patch extends substantially around the whole circumference of the tobacco rod, or the patch comprises one or more portions of material disposed around the circumference of the tobacco rod.

5. A smoking article according to any one of claims 1 to 4, in which the patch comprises a corrugated material having corrugations that extend substantially longitudinally along the tobacco rod.
bum-enhancer to increase the static burn rate of the smoking article over the length comprising the patch; and wrapping a wrapper around the rod.

13. A method according to claim 12, in which disposing the patch of material comprises positioning the patch on the rod of tobacco before wrapping the wrapper around the rod or comprises adhering the patch to an inner surface of the paper wrapper before wrapping the wrapper around the rod.

14. A method according to any of claims 12 or 13, comprising:

trimming tobacco from the outside of the rod of tobacco over an area where the patch is to be disposed, thereby creating the reduced weight; and

disposing the patch over the rod of tobacco so that the patch covers the area from which tobacco has been trimmed or trimming tobacco from the outside of a bead of tobacco over an area where the patch is to be disposed, thereby creating the reduced weight; cutting a rod of tobacco from the bead; and disposing the patch over the rod of tobacco so that the patch covers the area from which tobacco has been trimmed.

15. A method according to any one of claims 12 to 14, further comprising attaching a filter unit to the smoking article, and optionally providing one or more ventilation holes in the filter unit.

Patentansprüche

1. Rauchartikel bzw. rauchbarer Artikel (10) mit:

Einem Tabakstrang (12), einem Flecken bzw. Stück bzw. Patch (16) aus Material, das zwischen Tabakstrang (12), und der Umhüllung (14) angeordnet ist und sich längs des Tabakstrangs (12) von einem Zwischenpunkt längs des Tabakstrangs zu einem Mundende (B) des Tabakstrangs (12) erstreckt, wobei das Material eine solche Struktur hat, dass der Patch (16) einen Pfad (22) für den Rauch (20) von dem Tabak in Strömungsrichtung gesehen vor dem Patch (16) zu dem Mundende (B) hin zur Verfügung stellt, der einen geringeren Widerstand für die Rauchströmung als ein Pfad (24) durch den Tabak unter dem Patch (16) hat,
dadurch gekennzeichnet, dass der Patch (16) we-


3. Rauchbarer Artikel nach einem der Ansprüche 1 oder 2, wobei der Patch sich im Wesentlichen rund um den gesamten Umfang des Tabakstrangs erstreckt, oder der Patch einen oder mehr Materialbereiche aufweist, die um den Umfang des Tabakstrangs angeordnet sind.

4. Rauchbarer Artikel nach einem der Ansprüche 1 bis 3, bei dem der Patch sich im Wesentlichen rund um den gesamten Umfang des Tabakstrangs erstreckt, oder der Patch einen oder mehr Materialbereiche aufweist, die um den Umfang des Tabakstrangs angeordnet sind.

5. Rauchbarer Artikel nach einem der Ansprüche 1 bis 4, bei dem der Patch ein Schaummaterial aufweist.


8. Rauchbarer Artikel nach einem der Ansprüche 1 bis 7, bei dem der Patch ein getriebenes bzw. geprägtes Material mit Vertiefungen aufweist, die sich im Wesentlichen in Längsrichtung längs des Tabakstrangs erstrecken, oder der Patch ein mit Nuten versehenes Material mit Nuten aufweist, die sich im Wesentlichen in Längsrichtung längs des Tabakstrangs erstrecken, oder der Patch ein faseriges Blattmaterial
aufweist.

9. Rauchbarer Artikel nach einem der Ansprüche 1 bis 8, bei dem der Patch eine andere Farbe als die Umhüllung und/oder der Tabakstrang hat.


11. Rauchbarer Artikel nach einem der Ansprüche 1 bis 10, bei dem der rauchbare Artikel weiterhin eine Filterfeinheit aufweist, die an dem Mundende des Tabakstrangs angebracht ist, die optional mit einem oder mehr Ventilationslöchern versehen ist.

12. Verfahren zur Herstellung eines Rauchartikels bzw. eines rauchbaren Artikels mit den folgenden Merkmalen:


13. Verfahren nach Anspruch 12, bei dem die Anordnung des Material-Patches das Positionieren des Patchs auf dem Tabakstrang umfasst, bevor die Umhüllung um den Strang umwickelt.

14. Verfahren nach einem der Ansprüche 12 oder 13, mit den Merkmalen:

Es wird Tabak von der Außenseite des Tabakstrangs über einem Bereich abgetrennt bzw. abgeschnitten, wo der Patch angeordnet werden soll, wodurch das reduzierte Gewicht erzeugt wird; und der Patch wird über dem Tabakstrang so angeordnet, dass der Patch den Bereich bedeckt, von dem der Tabak abgetrennt worden ist, oder es wird Tabak von der Außenseite eines Tabakwulstes (bead of tobacco) über einem Bereich abgetrennt, wo der Patch angeordnet werden soll, wodurch das reduzierte Gewicht erzeugt wird; es wird ein Tabakstrang von dem Wulst bzw. bead abgeschnitten; und der Patch wird über dem Tabakstrang so angeordnet, dass der Patch den Bereich bedeckt, von dem Tabak abgeschnitten worden ist.

15. Verfahren nach einem der Ansprüche 12 bis 14, weiterhin umfassend das Anbringen einer Filtereinheit an dem rauchbaren Artikel und optional das Vorsehen eines oder mehrerer Ventilationslöcher in der Filtereinheit.

**Revendications**

1. Produit à fumer (10) comprenant :

   une tige de tabac (12) ;
   une cape (14) autour de la tige de tabac (12) ; et
   une pièce (16) de matériau positionnée entre la tige de tabac (12) et la cape (14) et s'étendant longitudinalment le long de la tige de tabac (12) à partir d'un point intermédiaire le long de la tige de tabac vers une extrémité buccale (B) de la tige de tabac (12), le matériau ayant une structure de sorte que la pièce (16) fournit une trajectoire (22) pour la fumée (20) du tabac en amont de la pièce (16) vers l'extrémité buccale (B) qui a moins de résistance à l'écoulement de fumée qu'une trajectoire (24) passant par le tabac sous la pièce (16), caractérisé en ce que la pièce (16) comprend au moins un dispositif d'amélioration de combustion pour augmenter l'état de combustion statique du produit à fumer (10) sur la longueur comprenant la pièce (16).

2. Produit à fumer selon la revendication 1, dans lequel la pièce s'étend longitudinalment à partir du point intermédiaire vers l'extrémité buccale de la tige de tabac - ou la pièce s'étend longitudinalment à partir du point intermédiaire jusqu'à un second point entre le point intermédiaire et l'extrémité buccale, et facul-
tativement le second point est compris entre 1% et 40% de la longueur totale de la tige de tabac à partir de l’extrémité buccale.

3. Produit à fumer selon l’une quelconque des revendications 1 à 2, dans lequel la pièce s’étend longitudinallement sensiblement sur 10% à 90% de la longueur totale de la tige de tabac, et facultativement sensiblement sur 40% à 80% de la longueur totale de la tige de tabac.

4. Produit à fumer selon l’une quelconque des revendications 1 à 3, dans lequel la pièce s’étend sensiblement autour de toute la circonférence de la tige de tabac, ou bien la pièce comprend une ou plusieurs parties de matériau disposées autour de la circonférence de la tige de tabac.

5. Produit à fumer selon l’une quelconque des revendications 1 à 4, dans lequel la pièce comprend un matériau en mousse.

6. Produit à fumer selon l’une quelconque des revendications 1 à 4, dans lequel la pièce comprend un matériau ondulé ayant des ondulations qui s’étendent sensiblement longitudinallement le long de la tige de tabac.

7. Produit à fumer selon la revendication 6, dans lequel le matériau ondulé a une structure stratifiée comprenant une couche ondulée et une couche non ondulée, dans lequel facultativement la couche non ondulée est positionnée entre la tige de tabac et la couche ondulée et facultativement la couche non ondulée est positionnée entre la couche ondulée et la cape de papier, et facultativement la structure stratifiée comprend une couche ondulée prise en sandwich entre deux couches non ondulées.

8. Produit à fumer selon l’une quelconque des revendications 1 à 7, dans lequel la pièce comprend un matériau gaufré ayant des dentelures qui s’étendent sensiblement longitudinalêment le long de la tige de tabac, ou bien la pièce comprend un matériau rainuré ayant des rainures qui s’étendent sensiblement longitudinalêment le long de la tige de tabac, ou bien la pièce comprend un matériau en feuille fibreux.

9. Produit à fumer selon l’une quelconque des revendications 1 à 8, dans lequel la pièce a une couleur différente de la cape et/ou de la tige de tabac.

10. Produit à fumer selon l’une quelconque des revendications 1 à 9, dans lequel la tige de tabac a un poids de tabac réduit par unité de longueur sous la pièce par rapport à la partie en aval de la pièce qui peut être créée en coupant le tabac depuis l’extérieur de la tige de tabac ou en coupant le tabac à partir d’un boudin de tabac à partir duquel la tige de tabac doit être coupée.

11. Produit à fumer selon l’une quelconque des revendications 1 à 10, dans lequel le produit à fumer comprend en outre une unité de filtre fixée à l’extrémité buccale de la tige de tabac, qui est facultativement prévue avec un ou plusieurs trous d’aération.

12. Procédé pour fabriquer un produit à fumer comprenant les étapes consistant à :

- prévoir une tige de tabac ;
- disposer une pièce de matériau sur la tige de tabac de sorte que la pièce s’étend longitudinalêment le long de la tige à partir d’un point intermédiaire le long de la tige vers une extrémité buccale de la tige, le matériau ayant une structure et la pièce étant orientée de sorte que, dans le produit à fumer terminé, la pièce fournit une trajectoire pour la fumée du tabac en amont de la pièce vers l’extrémité buccale qui a moins de résistance à l’écoulement de fumée qu’une trajectoire passant par le tabac sous la pièce, dans lequel la pièce comprend au moins un dispositif d’amélioration de combustion pour augmenter la vitesse de combustion statique du produit à fumer sur la longueur comprenant la pièce ; et
- envelopper une cape autour de la tige.

13. Procédé selon la revendication 12, dans lequel l’étape consistant à disposer la pièce de matériau comprend l’étape consistant à positionner la pièce sur la tige de tabac avant l’envelopper la cape autour de la tige, ou bien comprend l’étape consistant à faire adhérer la pièce sur une surface interne de la cape de papier avant d’envelopper la cape autour de la tige.

14. Procédé selon l’une quelconque des revendications 12 ou 13, comprenant les étapes consistant à :

- couper le tabac depuis l’extérieur de la tige de tabac sur une zone où la pièce doit être disposée, créant ainsi le poids réduit ; et
- disposer la pièce sur la tige de tabac de sorte que la pièce recouvre la zone à partir de laquelle le tabac a été coupé, ou bien couper le tabac depuis l’extérieur d’un boudin de tabac sur une zone où la pièce doit être disposée, créant ainsi le poids réduit ;
- couper une tige de tabac à partir du boudin ; et
- disposer la pièce sur la tige de tabac de sorte que la pièce recouvre la zone à partir de laquelle le tabac a été coupé.

15. Procédé selon l’une quelconque des revendications 12 à 14, comprenant en outre l’étape consistant à
fixer une unité de filtre sur le produit à fumer, et pré-
voir facultativement un ou plusieurs trous d’aération
dans l’unité de filtre.
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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