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(54) **CIGARETTE**

(57) A cigarette comprising: a filter portion including filter sections arranged to be integrated with each other, a material paper winding around each filter section, and a shape-forming paper winding around the integrated filter sections around each of which the material paper is wound; a tobacco portion in which tobacco material is rolled by a cigarette paper; and a tipping paper wound around the entire filter portion and a base end part of the tobacco portion after placing the filter portion and the

tobacco portion opposite to each other at their ends, so that both portions are integrally connected with each other, wherein at least one of the sections contains black absorbents dispersed therein, the material paper winding around the section containing the absorbents has opacity of 78% or more, and the tipping paper has ventilation holes opened in advance in its part positioned on the section containing no absorbents.

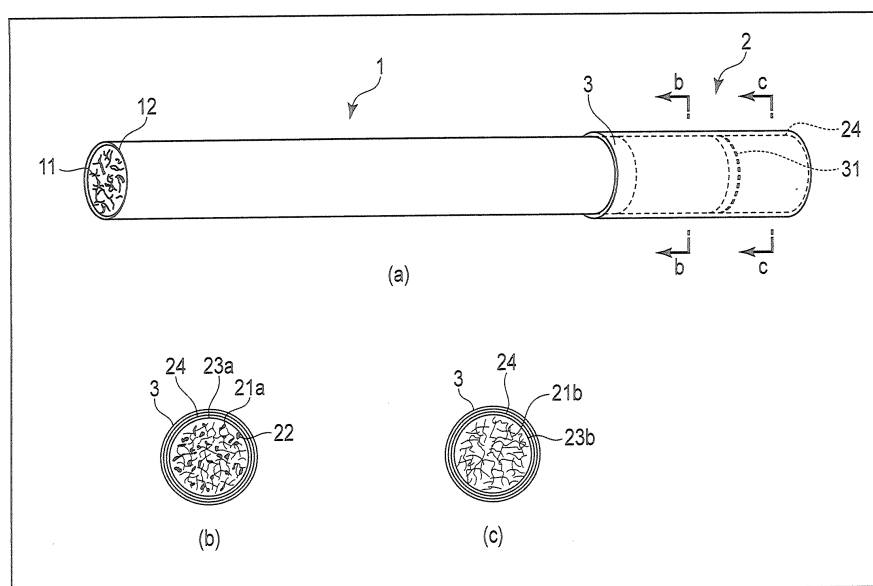


FIG. 2

Description

Technical Field

5 **[0001]** The present invention relates to a cigarette in which opacity of an outward appearance of a filter portion is improved.

Background Art

10 **[0002]** A cigarette with a filter (hereinafter, referred to simply as a cigarette) has a structure in which a filter portion and a tobacco portion containing cut tobaccos are placed opposite to each other at their ends and integrally connected with each other by wrapping the whole of the filter portion and a base end part of the tobacco portion with a tipping paper. In recent years, black absorbents such as activated carbons are dispersed in at least one of a plurality of filter sections constituting the filter portion of the above described cigarette from a viewpoint of a health risk or desire of a milder smoking taste. However, such a cigarette has a problem that the black absorbents in the filter portion can be seen through outwardly.

15 **[0003]** As a conventional technology to increase outward opacity of the filter portion, focusing on the tipping paper arranged as the outermost layer of the filter portion, and increasing the opacity of the tipping paper generally up to 85% is known by changing a type of filler, increasing a mixing proportion of filler or using micro-diameter filler (see Japanese Patent Application KOKAI Publication No. 8-246396, Japanese Patent Application KOKAI Publication No. 10-219599 and Japanese Patent Application KOKAI Publication No. 11-36196).

20 **[0004]** However, the tipping papers described in these documents create disadvantages such as a dramatic decrease in rigidity of the tipping paper (soft paper), a decrease of bonding force between the fiber and fiber in the tipping paper (paper easily peeled off) and the like. As a result, wrinkles or a breaking of the tipping paper arises in a printing process or in a rolling-up process, causing a large amount of paper dust. In addition, the above described tipping papers are more likely to be wet and thus, when a consumer puts the filter portion of the cigarette in his (her) mouth, the above described tipping paper is more likely to be broken due to saliva. Further, in such a tipping paper having a certain level of opacity, an effect of increasing opacity by increasing the filler is curbed so that a relatively large amount of filler is needed to further increase the opacity of the tipping paper.

25 **[0005]** Making the tipping paper thicker is effective in increasing opacity without increasing the filler. However, if the thick tipping paper is used to achieve high opacity, a difference between an inner circumferential length and an outer circumferential length in the thick tipping paper becomes large when the thick tipping paper is rolled, so that a roundness of the filter portion is likely to be distorted and many wrinkles is likely to be generated on the rolled thick tipping paper.

30 **[0006]** On the other hand, there is a tendency to use more black absorbents like activated carbons responding to a desire of the aforementioned milder smoking taste. Thus, if it is intended to obtain a white clean impression of the filter portion is intended to give, it is not necessarily sufficient to increase the opacity of the tipping paper to 80% to 85%, as disclosed in the above described documents.

Disclosure of Invention

40 **[0007]** An object of the present invention is to provide a cigarette having high quality in which outward opacity of a filter portion is improved to 92% or more, so that black absorbents of the filter portion are hard to be seen through and a white clean impression of the filter portion is obtained.

45 **[0008]** According to the present invention, a cigarette is provided, the cigarette comprising:

a filter portion including a plurality of filter sections arranged to be integrated with each other, a material paper winding around each of the filter sections and a shape-forming paper winding around the integrated filter sections around each of which the material paper is wound;

a tobacco portion in which tobacco material is rolled by a cigarette paper; and

50 a tipping paper wound around the entire filter portion and a base end part of the tobacco portion after placing the filter portion and the tobacco portion opposite to each other at their ends, so that the filter portion and the tobacco portion are integrally connected with each other,

wherein at least one of the filter sections contains black absorbents dispersed therein,

the material paper winding around the filter section containing the black absorbents has opacity of 78% or more, and

55 the tipping paper has ventilation holes opened in advance in its part positioned on the filter section containing no black absorbents.

Brief Description of Drawings

[0009]

FIG. 1 is a diagram showing a relationship between a change of outward opacity of a filter portion (around which a tipping paper is wound and which includes a filter section in which activated carbons are dispersed) and a degree (visual sensory value) which indicates how activated carbons in the filter section can be seen through the tipping paper on the filter portion.

FIG. 2 shows a cigarette including a dual type filter portion according to an embodiment.

FIG. 3 shows a cigarette including a triple type filter portion according to the embodiment.

Best Mode for Carrying Out the invention

[0010] A cigarette according to an embodiment of the present invention will be described in detail below.

[0011] The cigarette according to the embodiment comprises a filter portion having a plurality of filter sections arranged to be integrated with each other, a material paper winding around each filter section and a shape-forming paper winding around the integrated filter sections around each of which the material paper is wound, and a tobacco portion in which tobacco material is rolled by a cigarette paper. The filter portion and the tobacco portion are placed opposite to each other at their ends and integrally connected with each other by wrapping the whole of the filter portion and a base end part of the tobacco portion with a tipping paper. At least one of the filter sections contains black absorbents dispersed therein. The material paper winding around the filter section containing the black absorbents has opacity of 78% or more. Ventilation holes are opened in advance in a part of the tipping paper positioned on the filter section containing no black absorbents.

[0012] The inventors studied a relationship between a change of outward opacity of a filter portion (a region in which a tipping paper is wound around and which includes a filter section in which activated carbons are dispersed) and a degree (visual sensory value) which indicates how activated carbons in the filter section can be seen through the tipping paper on the filter portion, and obtained a result shown in FIG. 1. In FIG. 1, "a" is a characteristic line when a filter section to which 25 mg of activated carbons is added per 10 mm is used, "b" is a characteristic line when a filter section to which 50 mg of activated carbons is added per 10 mm is used and "c" is a characteristic line when a filter section to which 75 mg of activated carbons is added per 10 mm is used. Arrows in FIG. 1 indicate opacity of the tipping paper.

[0013] As a result in FIG. 1, shadows of the activated carbons can be easily seen when a general-purpose tipping paper having opacity (about 78% to 85%) is used and the shadows becomes denser with an increase of an added amount of the activated carbons. An extremely high level of opacity of 92% or more is required for a tipping paper to make a level of opacity of the tipping paper still being less visible than a level of "dimly visible" at which it is difficult to recognize the shadows if it is not tried enough to see them through the tipping paper. As described above, it is extremely difficult to make practically a tipping paper having such opacity.

[0014] Also, as the result, it becomes obviously that outward opacity of the filter portion of at least 92%, preferably 94%, is needed to realize a level of "dimly visible", in other words "hardly visible", in the filter portion. In this connection, outward opacity of the filter portion when the shadows are not able to be seen through at all is 98%.

[0015] Based on the above described result of FIG. 1, the inventors found that there is a limit to improve opacity of the filter portion by increasing opacity of the tipping paper. And, the inventors particularly focus on a material paper wound around each of filter sections, among a filter wrapping paper (generic name for both of a material paper and a shape-forming paper) of the filter portion, and produce a cigarette with a filter portion having outward opacity of 92% or more to produce a white clean impression of the filter portion while a conventional tipping paper can be used and a filter ventilation can be maintained.

[0016] That is, the main function required for the filter wrapping paper is a shape-forming function for a filter and a predetermined permeability. And, since the filter wrapping paper is hidden by the tipping paper and normally invisible, the filter wrapping paper has not been required to have high opacity. Requiring the filter wrapping paper to have such an arbitrarily high level of opacity can be firstly focused on only by the above described view point of the present inventors and it is difficult even for those skilled in the art to think of such an idea.

[0017] A permeability required for the wrapping paper is to maintain filter ventilation. In general, a level of opacity of each of a filter wrapping paper and a tipping paper and permeability thereof are correlated, and the permeability tends to decrease with an increase of the level of opacity. That is, the filter wrapping paper with a high level of opacity has air permeability lower than that of a conventional filter wrapping paper, so that it is difficult to maintain sufficient filter ventilation.

[0018] As described above, according to the embodiment, a cigarette including a filter portion having outward opacity of at least 92% while sufficient ventilation being maintained can be obtained by winding only a material paper with opacity higher (78% or more) than that of a conventional material paper around a filter section containing black absorbents,

using a conventional paper with high permeability as the material paper winding around a filter section containing no black absorbents and as a shape-forming paper winding around all of the filter sections, and further setting opening positions of ventilation holes of a tipping paper wrapping around the filter portion and the tobacco portion within a range of the filter section containing no black absorbents.

[0019] Also according to the embodiment, since a general-purpose tipping paper having appropriate rigidity and thickness and also having a good roll-up characteristic can be used, there is no need to add a large amount of fillers to the tipping paper or to make the tipping paper thicker and, therefore an excellent cigarette in which streaks of wrinkles are hardly visible can be obtained.

[0020] As the plurality of filter sections used in the embodiment, there is, for example two-sections type (dual type) or three-sections type (triple type).

[0021] The filter section can be formed from, for example, a tow of cellulose acetate fibers. The tow of cellulose acetate fibers can be bound by treating it with triacetin.

[0022] For example, activated carbons can be used as the black absorbents dispersed in the filter section. It is preferable that 25 mg or more, more preferably 50 mg or more, of the black absorbents are dispersed for a length (10 mm) of the filter section.

[0023] The material paper wound around the filter section containing the black absorbents has opacity of 78% or more. Such a material paper preferably has a composition of, for example, pulp and fillers such as calcium carbonate, titanium oxide, etc. The more preferable opacity of the material paper is 85% or more. If opacity of the material paper is increased excessively, it becomes difficult to make the material paper. Therefore, it is preferable to set the upper limit of opacity to 95%.

[0024] The material paper wound around the filter section containing the black absorbents preferably has a thickness of 30 μ m to 100 μ m.

[0025] Opacity can be measured by a measuring method of an example described later.

[0026] As the material paper wound around the filter section containing no black absorbents is a conventional product. For example, the material paper whose opacity is 20% to 40% can be used. The conventional material paper preferably has a thickness of 30 μ m to 100 μ m.

[0027] The shape-forming paper wound around the filter sections around each of which the material paper is wound and which are arranged to be integrated with each other is a conventional product. For example, the shape-forming paper having opacity of 20% to 40% can be used. The shape-forming paper preferably has a thickness of 30 μ m to 100 μ m.

[0028] The tipping paper is a conventional product. For example, the tipping paper having opacity of 78% to 85% can be used. The tipping paper preferably has a thickness of 30 μ m to 100 μ m.

[0029] Next, the cigarette according to the embodiment will be described more concretely with reference to drawings.

[0030] FIG. 2 shows a cigarette having a dual type filter portion according to the embodiment. FIG. 2(a) is a front perspective view, FIG. 2(b) is a sectional view along a line b-b in FIG. 2(a) and FIG. 2(c) is a sectional view along a line c-c in FIG. 2(a).

[0031] The cigarette having the dual type filter portion includes a tobacco portion 1 and a filter portion 2.

[0032] The tobacco portion 1 is formed by rolling a cigarette paper 12 around cut tobaccos 11 in a cylindrical shape.

[0033] As shown in FIGS. 2(b) and 2(c), the filter portion 2 includes a first filter section 21a arranged in a side of the tobacco portion 1 and a second filter section 21b adjacent to the first filter section 21a.

[0034] As shown in FIG. 2(b), the first filter section 21a is shaped by winding a first material paper 23a around a tow of acetate fibers or folded nonwoven fabrics of pulp, in which black absorbents, for example activated carbons 22, are dispersed, to form a cylindrical shape. As described above, the first material paper 23a has opacity of 78% or more and the thickness of, for example, 30 μ m to 100 μ m.

[0035] As shown in FIG. 2(c), the second filter section 21b is shaped by winding a second material paper 23b around a tow of acetate fibers or folded nonwoven fabrics of pulp to form a cylindrical shape. That is, the second filter section 21b contains no black absorbents. The second material paper 23a is a conventional material paper having, for example, opacity of 20% to 40% and a thickness of 30 μ m to 100 μ m.

[0036] These two filter sections 21a, 21b wound by the material papers 23a, 23b respectively have their ends placed opposite to each other and are wound and integrated by a shape-forming paper 24. The shape-forming paper 24 is a conventional shape-forming paper having, for example, opacity of 20% to 40% and a thickness of 30 μ m to 100 μ m.

[0037] The tobacco portion 1 and the filter portion 2 are integrated by placing their ends to be opposite to each other and by wrapping the whole of an outer circumferential surface of the filter portion 2 and a part of an outer circumferential surface of the tobacco portion 1 near the opposed ends with a tipping paper 3. The tipping paper 3 has ventilation holes 31 opened in advance in a part of the tipping paper 3 corresponding to the second filter section 21b containing no black absorbents and positioned in a free end side of the filter portion 2, the part extending in a circumferential direction of the filter portion. The tipping paper 3 is a conventional tipping paper having, for example, opacity of 78% to 85% and a thickness of 30 μ m to 100 μ m.

[0038] FIG. 3 shows a cigarette having a triple type filter portion according to the embodiment. FIG. 3(a) is a front

perspective view, FIG. 3(b) is a sectional view along a line b-b in FIG. 3(a), FIG. 3(c) is a sectional view along a line c-c in FIG. 3(a) and FIG. 3(d) is a sectional view along d-d line in FIG. 3A. In FIG. 3, the same reference numerals indicate members similar to those in FIG. 2 and descriptions thereof are omitted.

[0039] As shown in FIGS. 3(b), 3(c) and 3(d), the cigarette having the triple type filter portion includes a filter portion 2 having a first filter section 201a, a second filter section 201b and a third filter section 201c. The first to third filter sections 201a to 201c are arranged in this order from a tobacco portion 1.

[0040] As shown in FIGS. 3(b) and 3(d), each of the first and third filter sections 201a, 201c is shaped by winding first or third material paper 203a or 203c around a tow of acetate fibers or folded nonwoven fabrics of pulp to form a cylindrical shape. That is, the first and third filter sections 201a, 201c contain no black absorbents. Each of the first and third material papers 203a, 203c is a conventional material paper having, for example, opacity of 20% to 40% and the thickness of 30 μ m to 100 μ m.

[0041] As shown in FIG. 3(c), the second filter section 201b arranged between the first and third filter sections 201a, 201c is shaped by winding a second material paper 203b around a tow of acetate fibers or folded nonwoven fabrics of pulp, in which black absorbents, for example, activated carbons 202, are dispersed, to form a cylindrical shape. As described above, the second material paper 203b has opacity of 78% or more and a thickness of, for example, 30 μ m to 100 μ m.

[0042] These three filter sections 201a to 201c wound by the first to third material papers 203a to 203c respectively have their ends placed opposite to each other and are integrated with each other by wrapping a shape-forming paper 204 thereon. The shape-forming paper 204 is a conventional shape-forming paper having, for example, opacity of 20% to 40% and a thickness of 30 μ m to 100 μ m.

[0043] In a part of the tipping paper 3 wrapping a part of the tobacco portion 1 and the whole of the filter portion 2 and integrating them with each other, the part corresponding to the third filter section 201c containing no black absorbents and positioning in a free end of the filter portion, ventilation holes 31 are opened in advance to be arranged along a circumferential direction of the part. The tipping paper 3 is a conventional tipping paper having, for example, opacity of 78% to 85% and a thickness of 30 μ m to 100 μ m. Incidentally, the ventilation holes may be opened in advance in another part of the tipping paper 3 to be arranged in a circumferential direction of the other part, the other part corresponding to the first filter section 201a positioned in a side of the tobacco portion 1. Alternatively, the ventilation holes may be opened in advance in each of both of the parts (two locations) of the tipping paper 3 to be arranged in the circumferential direction of each of both of the parts, these parts corresponding to both of the first and third filter sections 201a, 201c.

[0044] Examples of the present invention will be described in detail below.

(Comparative Examples 1 and 2)

[0045] A first filter section (charcoal section) is formed by dispersing coconut shell activated carbons of the center grain size of 50 meshes in acetate fibers of 3 denier and then by rolling the acetate fibers with a first material paper to have a circumferential length of 24.5 mm. An amount of dispersed activated carbons is set to 50 mg for a length of 10 mm of the filter section.

[0046] In addition, a second filter section without coconut shell activated carbons dispersed therein is formed by rolling acetate fibers of 3 denier with a second material paper to have a circumferential length of 24.5 mm.

[0047] The first and second filter sections wound by such material papers are placed opposite to each other at their ends and then integrally wound by the shape-forming paper, so that the filter portion of the dual type shown in FIG. 2 is formed.

[0048] The formed filter portion and a tobacco portion formed by rolling cut tobaccos with a cigarette paper to a cylindrical shape are placed opposite to each other at their ends, and then the whole of an outer circumferential surface of the filter portion and a part of an outer circumferential surface of the tobacco portion near to the opposed end are wrapped by a tipping paper to make them being integrated, so that the cigarette shown in FIG. 2 is formed. Ventilation holes are opened in advance in a part of the tipping paper corresponding to the second filter section containing no black absorbents and positioned in a free end side of the filter portion cigarette holder side, the ventilation holes being arranged along a circumferential direction of the filter portion.

[0049] The obtained cigarette has a total length of 55 mm, in which a length of the tobacco portion is 30 mm and a length of the filter portion is 25 mm (the first filter section (charcoal filter section): 10 mm, the second filter section: 15 mm).

[0050] In the cigarettes of Comparative Examples 1 and 2, first and second material papers, a shape-forming paper and a tipping paper individually having a basis weight, a thickness, a composition and opacity shown in Table 1 below are used.

[0051] Paper quality is measured as described below.

[0052] Before testing these papers, these papers are conditioned for 24 hours or more under a conditioning environment at 22°C and 50% humidity.

[0053] Their opacities are measured based on JIS P 8148-1993 by an "ISO white-opacity measuring apparatus WMS-

EP 2 818 060 A1

1" manufactured by MURAKAMI COLOR RESEARCH LABORATORY.

[0054] Their thicknesses are measured based on JIS P 8118 by "DIGI-THICKNESS TESTER" manufactured by Toyo Seiki Seisakusho.

[0055] Measurement results are rounded off to the nearest integers.

[Table 1]

			Tipping paper	First material paper	Second material paper	Shape-forming paper
Comparative Example 1	Basis weight (gsm)		33	27	27	27
	Thickness (μm)		41	65	65	65
	Composition (wt%)	Wood pulp	86	70	70	70
		Rayon	0	30	30	30
		CaCO ₃	2	0	0	0
		TiO ₂	12	0	0	0
	Opacity		78	40	40	40
			Tipping paper	First material paper	Second material paper	Shape-forming paper
Comparative Example 2	Basis weight (gsm)		40	27	27	27
	Thickness (μm)		41	65	65	65
	Composition (wt%)	Wood pulp	76	70	70	70
		Rayon	0	30	30	30
		CaCO ₃	12	0	0	0
		TiO ₂	12	0	0	0
	Opacity		85	40	40	40

(Examples 1 and 2)

[0056] Cigarettes having structures similar to those of Comparative Examples 1 and 2, except that papers having basis weights, thicknesses, compositions and opacities shown in Table 2 below are used for the first and second material papers, the shape-forming paper and the tipping paper, are formed. The thickness and opacity of each paper are measured similarly to those of Comparative Examples 1 and 2.

[Table 2]

			Tipping paper	First material paper	Second material paper	Shape-forming paper
Example 1	Basis weight (gsm)		33	33	27	27
	Thickness (μm)		41	41	65	65
	Composition (wt%)	Wood pulp	86	86	70	70
		Rayon	0	0	30	30
		CaCO ₃	2	2	0	0
		TiO ₂	12	12	0	0
	Opacity		78	78	40	40

(continued)

		Tipping paper	First material paper	Second material paper	Shape-forming paper
5	Example 2	Basis weight (gsm)	33	40	27
		Thickness (μm)	41	41	65
10		Composition (wt%)	Wood pulp	86	76
			Rayon	0	0
			CaCO ₃	2	12
			TiO ₂	12	12
15		Opacity	78	85	40

(Examples 3 and 4)

[0057] Cigarettes having structures similar to those of Comparative Examples 1 and 2, except that papers having basis weights, thicknesses, compositions and opacities shown in Table 3 below are used for the first and second material papers, the shape-forming paper and the tipping paper, are formed. The thickness and opacity of each paper are measured similarly to those of Comparative Examples 1 and 2.

[Table 3]

		Tipping paper	First material paper	Second material paper	Shape-forming paper
25	Example 3	Basis weight (gsm)	40	33	27
		Thickness (μm)	41	41	65
30		Composition (wt%)	Wood pulp	76	86
			Rayon	0	0
			CaCO ₃	12	2
35			TiO ₂	12	12
		Opacity	85	78	40
		Tipping paper	First material paper	Second material paper	Shape-forming paper
40	Example 4	Basis weight (gsm)	40	40	27
		Thickness (μm)	41	41	65
45		Composition (wt%)	Wood pulp	76	76
			Rayon	0	0
			CaCO ₃	12	12
			TiO ₂	12	12
50		Opacity	85	85	40

[0058] For each of the cigarettes obtained in Comparative Examples 1 and 2 and Examples 1 to 4, opacity when the first material paper, the shape-forming paper and the tipping paper are layered up and opacity when the second material paper, the shape-forming paper and the tipping paper are layered up are measured similarly to those of the Comparative Examples 1 and 2.

[0059] Also, for each of the cigarettes obtained in Comparative Examples 1 and 2 and Examples 1 to 4, a degree which indicates how activated carbons can be seen through a part of each cigarette corresponding to a charcoal filter section is evaluated by the following sensory test.

[0060] That is, 16 panelists with normal eyesight visually evaluate each cigarette in a room illuminated in illumination

of about 600 lux by common fluorescent lamps.

[0061] The evaluation is indicated by one of 5 degrees, in which how an appearance of the filter portion originating from activated carbons in the charcoal filter section can be seen from gray to black. In the visual sensory test by 16 panelists, apparently different visual sensory values from those of other panelists are canceled.

<Visual sensory value>

[0062]

- 1: Activated carbons are not able to be seen through.
- 2: Activated carbons can be dimly seen through.
- 3: Activated carbons can be rather seen through.
- 4: Activated carbons can be clearly seen through.
- 5: Activated carbons can be considerably seen through.

[0063] The opacities shown above and the visual sensory values are shown in Table 4 below.

[Table 4]

	Opacity of tipping paper	Opacity of first material paper	Opacity of second material paper	Opacity of shape-forming paper	Opacity *1 when these papers being layered	Visual Sensory value
Comparative Example 1	78	40	40	40	86 86	4
Comparative Example 2	85	40	40	40	89 89	4
Example 1	78	78	40	40	92 86	2
Example 2	78	85	40	40	93 86	2
Example 3	85	78	40	40	93 89	2
Example 4	85	85	40	40	94 89	2

[0064] Note) The upper part of Opacity *1 shows opacity when the first material paper, the shape-forming paper and the tipping paper are layered up, and the lower part thereof shows opacity when the second material paper, the shape-forming paper and the tipping paper are layered up.

[0065] As apparent from Table 4, in each of Comparative Example 1 using the tipping paper which has the lower limit of opacity (78%) and Comparative Example 2 using the tipping paper which has higher opacity (85%), outward opacity obtained by layering the first material paper, the shape-forming paper and the tipping paper in the filter portion (first filter section in which activated carbons are dispersed) is lower than 92% expected as outward opacity. And, the visual sensory value in each of these Comparative Examples is "4" (Activated carbons can be clearly seen through) which is not preferable for a quality of visual appearance.

[0066] In the Comparative Examples 1 and 2, the second filter section containing no activated carbons is wound by the second material paper having air permeability of 10000 CU and the shape-forming paper. And, even after winding a tipping paper around the second filter section, a sufficient ventilation effect can be achieved at a part of the tipping paper corresponding to the second filter section because ventilation holes are opened in advance in the part of the tipping paper.

[0067] In the Examples 1 to 3, since the first material paper having opacity of 78% to 85% is used to wind around the first filter section in which activated carbons are dispersed and the tipping paper having opacity (78%) of the lower limit is used, outward opacity obtained by overlaying the first material paper, the shape-forming paper and the tipping paper on the first filter section in which activated carbons are dispersed exceeds 92% expected as outward opacity. As a result

of this, a visual sensory value of "2"(Activated carbons can be dimly seen through) can be obtained to provide a white clean impression meaning a good quality on a visual appearance.

[0068] In the Example 4, since the first material paper having opacity of 85% is used to wind around the first filter section in which activated carbons are dispersed and the tipping paper having high opacity (85%) is used, outward opacity obtained by overlaying the first material paper, the shape-forming paper and the tipping paper on the first filter section in which activated carbons are dispersed exceeds 94% expected as outward opacity to provide a more white clean impression.

[0069] In the Examples 1 to 4, the second filter section containing no activated carbons is wound by the second material paper having air permeability of 10000 CU and the shape-forming paper. And, even after winding a tipping paper around the second filter section, a sufficient ventilation effect can be achieved at a part of the tipping paper corresponding to the second filter section because ventilation holes are opened in advance in the part of the tipping paper.

Claims

1. A cigarette comprising:

a filter portion including a plurality of filter sections arranged to be integrated with each other, a material paper winding around each of the filter sections, and a shape-forming paper winding around the integrated filter sections around each of which the material paper is wound;

a tobacco portion in which tobacco material is rolled by a cigarette paper; and

a tipping paper wound around the entire filter portion and a base end part of the tobacco portion after placing the filter portion and the tobacco portion opposite to each other at their ends, so that the filter portion and the tobacco portion are integrally connected with each other,

wherein at least one of the filter sections contains black absorbents dispersed therein,

the material paper winding around the filter section containing the black absorbents has opacity of 78% or more, and

the tipping paper has ventilation holes opened in advance in its part positioned on the filter section containing no black absorbents.

2. The cigarette according to claim 1, wherein the black absorbents are activated carbons.

3. The cigarette according to claim 1, wherein 25 mg or more per 10 mm filter length of the black absorbents is dispersed in the filter section.

4. The cigarette according to claim 1, wherein 50 mg or more per 10 mm filter length of the black absorbents is dispersed in the filter section.

5. The cigarette according to claim 1, wherein the tipping paper has opacity of 78% to 85% and a thickness of 30 μm to 100 μm .

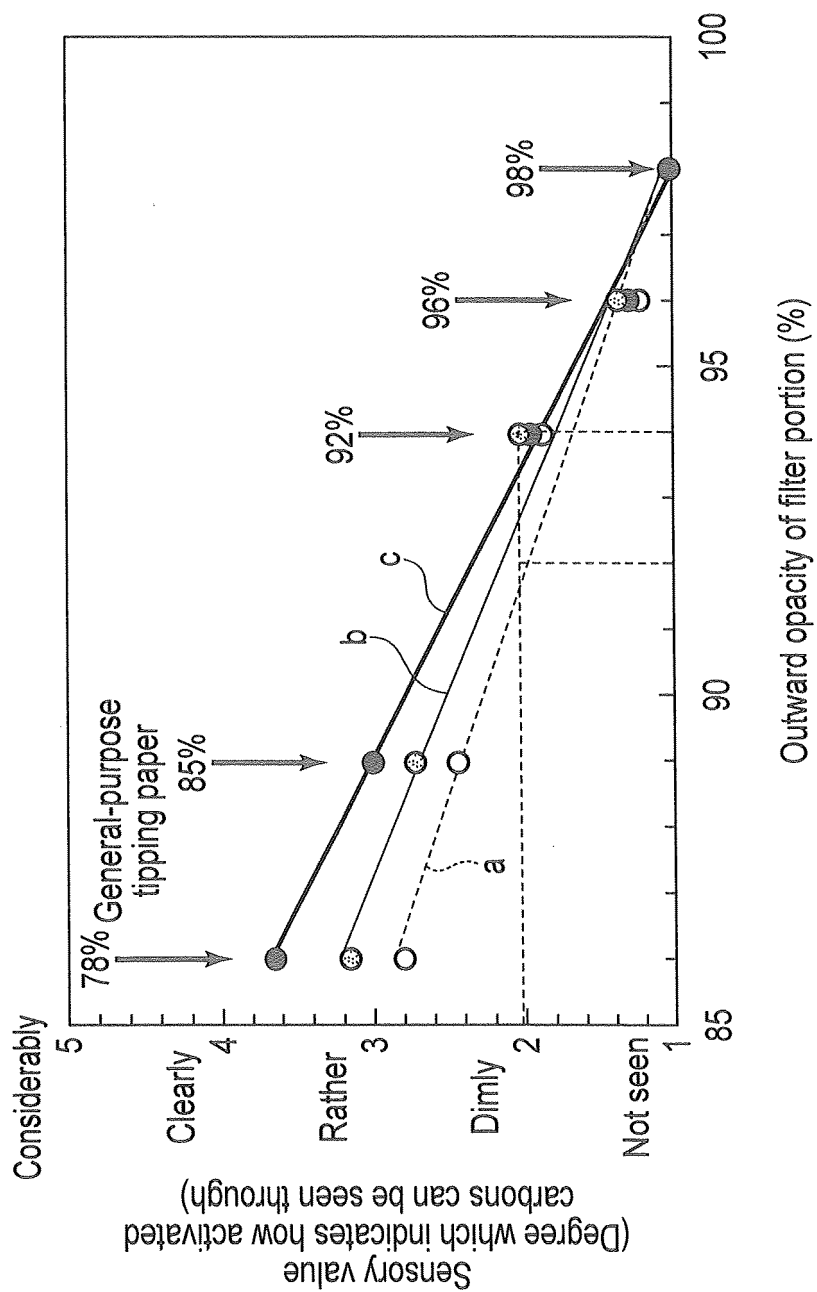


FIG. 1

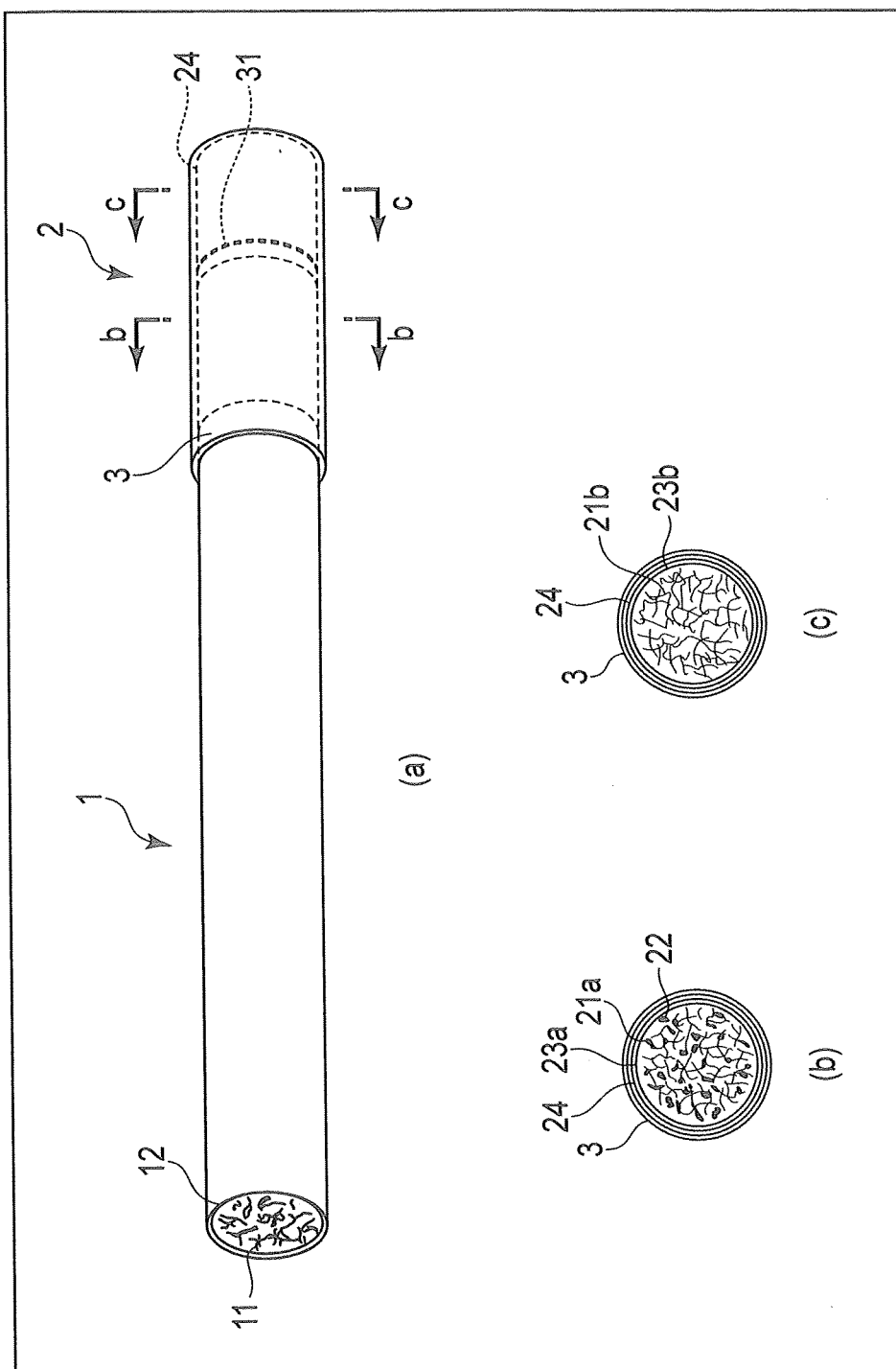


FIG. 2

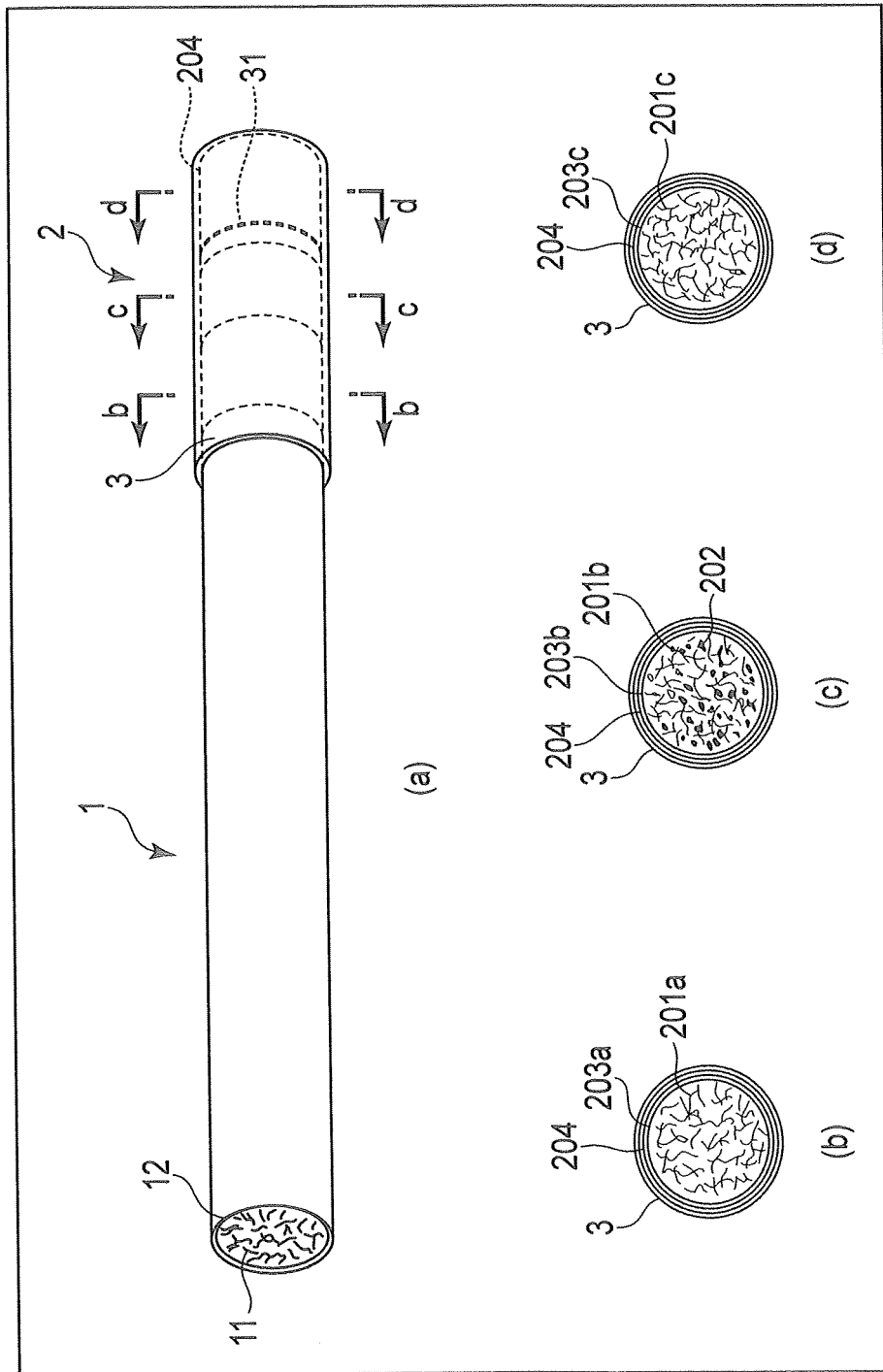


FIG. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2012/053984

A. CLASSIFICATION OF SUBJECT MATTER

A24D1/02 (2006.01) i, D21H27/00 (2006.01) i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A24D1/02, D21H27/00

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

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2012
Kokai Jitsuyo Shinan Koho	1971-2012	Toroku Jitsuyo Shinan Koho	1994-2012

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2009-545324 A (R.J. Reynolds Tobacco Co.), 24 December 2009 (24.12.2009), paragraph [0041] & US 2008/0029111 A1 & US 2010/0294289 A1 & EP 2046153 A2 & WO 2008/019281 A2	1-5
A	JP 4191273 B2 (Schweitzer-Mauduit International, Inc.), 03 December 2008 (03.12.2008), entire text & JP 10-219599 A & US 5830318 A & EP 838166 A1 & DE 69709026 D & DE 69709026 T & AT 210392 T & ES 2168568 T & CA 2215552 A & MX 9707935 A & CA 2215552 A1	1-5

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

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"&" document member of the same patent family

Date of the actual completion of the international search
25 June, 2012 (25.06.12)Date of mailing of the international search report
03 July, 2012 (03.07.12)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2012/053984

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 4863603 B2 (Schweitzer-Mauduit International, Inc.), 25 January 2012 (25.01.2012), claim 6; paragraphs [0045] to [0051]; table 1 & JP 2005-507031 A & JP 2001-159098 A & JP 11-36196 A & US 2002/0157678 A1 & US 6305382 B1 & US 5893372 A & US 2001/0032653 A1 & EP 1450632 A & EP 1093727 A2 & EP 870871 A1 & WO 2003/034846 A1 & DE 60020658 D & DE 69806993 D & CA 2464421 A & BR 213495 A	1-5

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 8246396 A [0003]
- JP 10219599 A [0003]
- JP 11036196 A [0003]