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(54) **FILTER FOR CIGARETTE, AND CIGARETTE**

FILTER FÜR ZIGARETTEN UND ZIGARETTE DAMIT

FILTRE POUR CIGARETTE, ET CIGARETTE

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(56) References cited:
WO-A1-2006/117697
WO-A1-2006/136197
WO-A1-2009/094859
JP-A- 7 250 665
JP-A- 2003 304 856
JP-A- 2007 520 204
JP-A- 2008 528 053
JP-A- 2008 539 717
JP-A- 2008 546 400

- **H. Abramovic and C. Klofutar: "The temperature dependence of dynamic viscosity for some vegetable oils", Acta Chimica Slovenica , vol. 45, no. 1 7 January 1998 (1998-01-07), pages 69-77, XP002722856, Retrieved from the Internet: URL:http://acta.chem-soc.si/45/45-1-69.pdf [retrieved on 2014-04-07]**

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Description

Technical Field

[0001] The present invention relates to a cigarette filter including a flavor capsule, and a cigarette.

Background Art

[0002] Conventionally, a flavor capsule is incorporated in a cigarette filter and the flavor capsule is crushed in order to enjoy the flavor of the content liquid in smoking or in order to mask odor of a cigarette butt after the cigarette is extinguished (Patent Literatures 1 to 5). The details of the flavor capsule are described in, for example, Patent Literature 6. Such cigarette filters including the flavor capsule have various problems.

[0003] FIG. 1(a) shows a cigarette in which a tobacco rod 10 is connected to a filter 20 with a tipping paper 30, wherein the tobacco rod 10 is prepared by wrapping a tobacco filler 11 with a cigarette paper 12 and the filter 20 is prepared by wrapping a filter plug 22 having a flavor capsule 21 embedded therein with a plug wrapping paper 23. The flavor capsule 21 has a structure in which content liquid 21b is encapsulated with a shell 21a. When the shell 21a of the flavor capsule 21 is crushed in smoking of such a cigarette, the content liquid 21b flowed out of the capsule is absorbed by the filter plug 22, and thus the fluid is not soaked through the tipping paper 30 to the surface thereof, as shown in FIG. 1(b). Good usability, however, is not obtained because the flavor capsule 21 embedded in the filter plug 22 does not give a sense that the capsule is crushed.

[0004] A filter having a structure in which filter plugs are separated from each other and arranged through a cavity, with a flavor capsule provided in the cavity, can give the sense that the flavor capsule is crushed, and thus has a good usability.

[0005] FIG. 2(a) shows a cigarette in which a tobacco rod 10 is connected to a filter 20 with a tipping paper 30, wherein the tobacco rod 10 is prepared by wrapping a tobacco filler 11 with a cigarette paper 12 and the filter 20 has a structure that a flavor capsule 21 is provided in a cavity between two filter plugs 25. A material paper 26 is wrapped around each of the two filter plugs 25, and a shaping paper 27 is wrapped around the periphery where both plugs are separated from each other and arranged through the cavity. There is also a filter plug having either the material paper or the shaping paper, or having no material paper or shaping paper (in the case of FIG. 1, the plug has only the plug wrapping paper which serves as the material paper and the shaping paper). When a shell 21a of the flavor capsule 21 is crushed in smoking of such a cigarette, the content liquid 21b flowed out of the capsule is soaked through the tipping paper 30 to the surface thereof, as shown in FIG. 2B, because the shaping paper is generally made of a high-permeable material.

[0006] In order to suppress the soakage of the content liquid through the tipping paper to the surface thereof, it may be considered to use a liquid-impermeable tipping paper and/or filter wrapper (a material paper, a shaping paper or a plug wrapping paper). These materials are not limited to paper, and may be a wrapping material made of cellophane or plastic, or a composite material. When the shaping paper 27 is liquid-impermeable, the content liquid 21b flowed out of the capsule moves toward the tobacco rod 10 or the mouthpiece end along the gap between the inside of the liquid-impermeable shaping paper 27 and the filter plugs 25, as shown in FIG. 2(c). The liquid is finally passed through the tobacco filler 11 in the tobacco rod 10, and is soaked through the tipping paper 30 to the cigarette paper 12 of the tobacco rod 10. The liquid which moves toward the mouthpiece end along the gap between the inside of the shaping paper 27 and the filter plug 25 is soaked to the end face of the filter plug 25.

[0007] This disadvantage can be solved by coating the inside of the liquid-impermeable shaping paper 27 with wax or paste to fill the gap between the inside of the shaping paper 27 and the filter plug 25, thereby preventing the migration of the content liquid 21b. However, the residue of wax or paste adheres to a filter making machine, and thus it is difficult to perform mass production.

[0008] WO 2006/117697 describes cigarette filters comprising capsules containing flavor components wherein the capsules are provided in a cavity between a first and second absorbent member.

[0009] WO 2006/136197 describes a smoking device incorporating a breakable capsule in its filter element.

Citation List

Patent Literature

[0010]

Patent Literature 1: Jpn. Pat. Appln. KOKAI Publication No. 7-250665
Patent Literature 2: Jpn. Pat. Appln. KOKAI Publication No. 2003-304856
Patent Literature 3: Jpn. PCT National Publication No. 2007-520204

Patent Literature 4: Jpn. PCT National Publication No. 2008-528053
Patent Literature 5: Jpn. PCT National Publication No. 2008-539717
Patent Literature 6: Jpn. PCT National Publication No. 2008-546400

Summary of Invention

[0011] The object of the present invention is to provide a cigarette filter including a flavor capsule, capable of preventing soakage of the content liquid to the surface of the tipping paper, the cigarette paper of the tobacco rod and the filter mouthpiece end face when it is used, without causing trouble in the filter production; and a cigarette including this cigarette filter.

[0012] According to the present invention, there is provided a cigarette filter comprising: filter plugs separated from each other and arranged through a cavity; a flavor capsule encapsulating a content liquid including a flavor in a shell and provided in the cavity between the filter plugs; and a liquid-impermeable filter wrapper wrapped around the filter plugs and the flavor capsule, the liquid-impermeable filter wrapper is a oilproof paper, characterized in that the content liquid comprises the flavor, a solvent, and a thickener, the solvent is medium-chain fatty acid triglyceride (MCT), the thickener is sucrose diacetate hexaisobutyrate (SAIB) and the content liquid has a viscosity of 30 mPa·s or more at 25°C, wherein the liquid-impermeable filter wrapper is directly brought into contact with the flavor capsule and is not a film or a fluorine-containing resin.

[0013] According to the present invention, there is also provided a cigarette characterized by comprising: a tobacco rod; and the above cigarette filter.

[0014] The cigarette filter and the cigarette of the present invention can prevent the soakage of the content liquid to the surface of the tipping paper, the cigarette paper of the tobacco rod and the filter mouthpiece end face when it is used, by adding sucrose diacetate hexaisobutyrate (SAIB) as a thickener to the content liquid in the flavor capsule to adjust a viscosity of the content liquid to 30 mPa·s or more.

Brief Description of Drawings

[0015]

FIGS. 1(a) and 1(b) are schematic views showing absorption of the content liquid in a flavor capsule embedded in a conventional cigarette filter to a filter plug.
FIGS. 2(a) to 2(c) are schematic views showing soakage of the content liquid in a flavor capsule to the surface of a tipping paper, a cigarette paper of a tobacco rod and a filter mouthpiece end face in another conventional cigarette filter.
FIG. 3 is an exploded perspective view showing a cigarette filter of Example of the present invention.
FIG. 4 is a schematic view showing a state in which soakage of the content liquid in a flavor capsule to the surface of a tipping paper, a cigarette paper of a tobacco rod and a filter mouthpiece end face can be suppressed in a cigarette filter of Example of the present invention.
FIG. 5 is a graph showing a relationship between a viscosity of the content liquid in a flavor capsule and a length of the content liquid soaked to a cigarette paper after one week from breakage of the shell of the flavor capsule in a cigarette filter of Example of the present invention.

Description of Embodiments

[0016] In the cigarette filter of the present invention, a flavor capsule provided in a cavity between filter plugs contains a content liquid including a flavor and a thickener and having a viscosity of 30 mPa·s (25°C) or more.

[0017] In the present invention, if the viscosity of the content liquid is less than 30 mPa·s (25°C), particularly less than 18 mPa·s (25°C), the content liquid is soaked to a surface of a tipping paper, a cigarette paper of a tobacco rod and a filter mouthpiece end face when the flavor capsule is crushed. The viscosity of the content liquid is preferably 30 mPa·s (25°C) or more, more preferably 80 mPa·s (25°C) or more.

[0018] In the present invention, as the flavor, for example, menthol and refined vegetable oil can be used.

[0019] In the present invention, as the thickener which is added to the content liquid in the flavor capsule sucrose diacetate hexaisobutyrate (SAIB) is used.

[0020] SAIB is used as the thickener, preferably in an amount within a range of 40% by weight or more of the content liquid, preferably 60% by weight or more.

[0021] In the present invention, as a solvent for the flavor and the thickener contained in the content liquid, medium-chain fatty acid triglycerides (MCTs) are used.

[0022] In the present invention, the content liquid may further contain other additives such as a solvent, a dye and an

emulsifier.

[0023] In the present invention, the shell of the flavor capsule may be formed using, for example, starch, dextrin, polysaccharides, agar, gellan gum, gelatin, various natural gelling agents, glycerol, sorbitol, calcium chloride, or the like, and the shell may further contain a flavor and a coloring agent.

[0024] In the present invention, the filter wrapper (a material paper, a shaping paper or a plug wrapping paper) is liquid-impermeable, which means that it is oil-resistant. An oilproof paper is used for the shaping paper 27,of at least the filter wrapper, which is directly brought into contact with the flavor capsule 21. Of the oilproof papers, for example, a oilproof paper manufactured by Nippon Paper Papylia Co., Ltd. is preferable, because it does not use a film or a fluorine-containing resin. Properties of the oilproof paper manufactured by Nippon Paper Papylia Co., Ltd. are shown in Table 1.

Table 1

	Basis weght (g/m2)	Thickness (μm)	Tensile Strength (kN/m)
Oilproof paper 1	35	40	3.0
Oilproof paper 2	50	52	5.0

[0025] In the present invention, the flavor capsule may be provided in a cavity between filter plugs, or it may be embedded in the filter plug as in FIG. 1.

[0026] The flavor capsule of the present invention can be applied to chewing tobacco, SNUS, and a non-combustible flavor inhalation pipe described in International Application PCT/JP2010/052835.

Examples

[0027] Examples of the present invention will be described below.

[0028] FIG. 3 is a perspective view showing sizes of a cigarette filter produced in this Example. A material paper (not shown) is wrapped around the two filter rods 25 made of acetate at a side of a tobacco rod and a side of a mouthpiece. The two filter rods 25 are separated from each other and arranged through a cavity, and a liquid-impermeable (oil-resistant) shaping paper 27 is wrapped around the rods. A flavor capsule 21 is put in a cavity between the two filter rods 25. The flavor capsule 21 has a structure that a content liquid 21b is encapsulated with a shell 21a. Length L1 of the filter rod 25 at the tobacco rod side is 11.0 mm; length L2 of the filter rod 25 at the mouthpiece side is 10.0 mm; length S of the cavity is 6.0 mm; total length TL is 27.0 mm; and diameter D of the flavor capsule 21 is 4.5 mm. In the present invention, the content liquid 21b in the flavor capsule 21 has a viscosity of 30 mPa·s or more.

[0029] The production method of the flavor capsule is not particularly limited, and it is preferable to use, for example, a dropping method, because a flavor capsule having a seamless shell can be produced by this method. According to this method, the content liquid and a liquid shell material are discharged at the same time from an inside nozzle and an outside nozzle respectively, using a double nozzle, whereby the content liquid can be encapsulated seamlessly with the shell liquid.

[0030] As shown in FIG. 4, the cigarette filter of this Example can suppress soakage of the content liquid 21b, which is flowed out by crushing the shell 21a of the flavor capsule 21, to the surface of the tipping paper, the cigarette paper of the tobacco rod, and the filter mouthpiece end face, because the content liquid 21b in the flavor capsule 21 has a viscosity of 30 mPa·s (25°C) or more. In addition, a filter making machine is not adversely affected.

Comparative Example 1

[0031] Menthol and refined vegetable oil as a flavor, and medium-chain fatty acid triglyceride (MCT) as a solvent were provided (no thickener), and they were mixed in a ratio of each sample A to C in Table 2 to prepared a content liquid of a flavor capsule. The viscosity of the content liquid was measured by using a rotary viscometer (TVB-10M manufactured by Toki Sangyo Co., Ltd.).

[0032] Eight percent by weight or 20% by weight of a mixture of starch, dextrin and polysaccharides as a shell material was mixed with 92% by weight or 80% by weight of the content liquid described above, and a flavor capsule having a diameter of 4.5 mm was produced by a dropping method. A cigarette filter shown in FIG. 3 was produced using the flavor capsule, and further a cigarette similar to that shown in FIG. 2(a) was produced.

Comparative Example 2

[0033] Menthol and refined vegetable oil as a flavor, medium-chain fatty acid triglyceride (MCT) as a solvent, and

rapeseed oil as a thickener were provided, and they were mixed in a ratio of each sample D to H in Table 2 to prepare a content liquid of a flavor capsule. The viscosity of the content liquid was measured by using a rotary viscometer (TVB-10M manufactured by Toki Sangyo Co., Ltd.).

[0034] Eight percent by weight or 20% by weight of a mixture of starch, dextrin and polysaccharides as a shell material was mixed with 92% by weight or 80% by weight of the content liquid described above to produce a flavor capsule having a diameter of 4.5 mm by a dropping method. A cigarette filter shown in FIG. 3 was produced using the flavor capsule, and further a cigarette similar to that shown in FIG. 2(a) was produced.

Example 3

[0035] Menthol and refined vegetable oil as a flavor, medium-chain fatty acid triglyceride (MCT) as a solvent, and sucrose diacetate hexaisobutyrate (SAIB) as a thickener were provided, and they were mixed in a ratio of each sample I to K in Table 2 to produce a content liquid of a flavor capsule. The viscosity of the content liquid was measured by using a rotary viscometer (TVB-10M manufactured by Toki Sangyo Co., Ltd.).

[0036] Twenty percent by weight of a mixture of starch, dextrin and polysaccharides as a shell material was mixed with 80% by weight of the content liquid described above to produce a flavor capsule having a diameter of 4.5 mm by a dropping method. A cigarette filter shown in FIG. 3 was produced using the flavor capsule, and further a cigarette similar to that shown in FIG. 2(a) was produced.

[0037] The shell of the flavor capsule of each cigarette of samples A to K was broken, and after 10 minutes, soakage of the content liquid to the surface of the tipping paper, the cigarette paper of the tobacco rod and the filter mouthpiece end face were checked. The results are also shown in Table 2.

[0038] It can be found from the results of Table 2 that when the content liquid in the flavor capsule had a viscosity of 30 mPa·s (25°C) or more, the soakage of the content liquid to the surface of the tipping paper, the cigarette paper of the tobacco rod and the filter mouthpiece end face can be suppressed. In addition, it is found that when the content liquid in the flavor capsule has a viscosity of 80 mPa·s (25°C) or more, the soakage of the content liquid to the surface of the tipping paper, the cigarette paper of the tobacco rod and the filter mouthpiece end face can be more certainly suppressed.

Table 2

	Sample	Capsule formulation					Test results			Note
		Diameter (mm)	Shell (wt%)	Content liquid			Viscosity (mPa·s)	Number of cigarettes tested (cigarettes)	Number of cigarettes soaked (cigarettes)	Type of thickner
				Flavor (wt%)	Solvent (wt%)	Thickner (wt%)				
Comparative Example 1	A	4.5	8.0	15.4	76.6	0.0	16.9	10	8	None
	B	4.5	20.0	13.7	66.3	0.0	17.7	10	4	
	C	4.5	20.0	13.7	66.3	0.0	17.7	10	7	
Comparative Example 2	D	4.5	8.0	15.4	57.4	19.1	36.2	10	0	Rapeseed oil
	E	4.5	8.0	15.4	38.3	38.3	88.1	10	0	
	F	4.5	8.0	15.4	19.1	57.4	352.8	10	0	
	G	4.5	8.0	22.1	17.5	52.4	124.1	10	0	
	H	4.5	20.0	19.2	15.2	45.6	124.1	10	0	
Example 3	I	4.5	20.0	17.6	14.4	48.0	58.7	10	0	SAIB
	J	4.5	20.0	17.6	9.6	52.8	90.0	10	0	
	K	4.5	20.0	17.6	4.8	57.6	137.1	10	0	

Example 4

[0039] According to the tests of Examples 1 to 3, the soakage of the content liquid to the surface of the tipping paper, the cigarette paper of the tobacco rod and the filter mouthpiece end face was checked within 10 minutes from the breakage of the shell of the flavor capsule, which was a usual smoking time. It is preferable, however, that only a small amount of the content liquid soaks to the cigarette paper of the tobacco rod, even if a longer time elapses from the breakage of the shell of the flavor capsule. The soakage of the content liquid after a long time was checked as described below. In the following tests, the content liquid in the capsule did not contain any flavor.

Sample L (Comparative)

[0040] Only medium-chain fatty acid triglyceride (MCT) as a solvent was used for a content liquid in a capsule.

Sample M (Comparative)

[0041] A content liquid in a capsule was prepared by mixing 43% by weight of medium-chain fatty acid triglyceride (MCT) as a solvent with 57% by weight of rapeseed oil as a thickener.

Samples N, O and P

[0042] A content liquid in a capsule was produced by mixing 60% by weight, 50% by weight or 40% by weight of medium-chain fatty acid triglyceride (MCT) as a solvent with 40% by weight, 50% by weight or 60% by weight of SAIB as a thickener.

[0043] The viscosity of the content liquid was measured by using a rotary viscometer (TVB-10M manufactured by Toki Sangyo Co., Ltd.). The composition and the viscosity of the content liquid in the capsule are shown in Table 3.

[0044] Twenty percent by weight of a mixture of starch, dextrin and polysaccharides as a shell material was mixed with 80% by weight of the content liquid described above to produce a capsule having a diameter of 4.5 mm by a dropping method. A cigarette filter shown in FIG. 3 was produced using the capsule, and further a cigarette similar to that shown in FIG. 2(a) was produced.

[0045] The shell of the flavor capsule of each cigarette of samples L to P was broken, and after one week, soakage of the content liquid to the cigarette paper of the tobacco rod was checked. In this case, the length of the content liquid soaked refers to a distance measured from the end of the tobacco rod 10 in contact with one filter plug 25, to a position in the cigarette paper to which the soaked content liquid reached. The results are also shown in Table 3.

[0046] FIG. 5 is a graph showing a relationship between the viscosity of the content liquid and the length of the content liquid soaked in samples M to P.

[0047] As shown in Table 3, in the case of sample L containing no thickener, the length of the content liquid soaked was 57 mm after one week, and the content liquid reached the cigarette paper at the tip end of the tobacco rod in all of the 10 cigarettes checked. On the other hand, in the case where the rapeseed oil or SAIB was used as the thickener, the content liquid did not reach the cigarette paper at the tip end of the tobacco rod even after one week. In addition, it can be seen from Table 3 and FIG. 5 that the length of the content liquid soaked in the case where the rapeseed oil is used is shorter than that in the case where SAIB is used, even if the content liquid has the same viscosity.

[0048] When the soakage length of the content liquid is large, a problem that components of the content liquid penetrating into the cigarette paper are separated by a paper chromatograph phenomenon may sometimes occur. The content liquid containing SAIB as the thickener , however, can suppress the separation of the components of the content liquid, which is caused by the paper chromatograph phenomenon, even after one week, because the soakage length is small.

Table 3

Sample	Content liquid			Viscosity (25°C)		Length of soakage		
	MCT (wt%)	Rapeseed oil (wt%)	SAIB (wt%)	Number of samples tested	Average (mPa·s)	Number of cigarettes tested (cigarettes)	Average (mm/ week)	SD
L	100.0	-	-	3	17.7	10	57.0	-
M	43.0	57.0	-	3	88.1	10	40.0	5.5
N	60.0	-	40.0	3	58.7	10	31.9	2.8
O	50.0	-	50.0	3	90.0	10	16.8	6.3

(continued)

Sample	Content liquid			Viscosity (25°C)		Length of soakage		
	MCT (wt%)	Rapeseed oil (wt%)	SAIB (wt%)	Number of samples tested	Average (mPa·s)	Number of cigarettes tested (cigarettes)	Average (mm/ week)	SD
P	40.0	-	60.0	3	137.1	10	8.6	2.5

Claims

1. A cigarette filter comprising:

filter plugs separated from each other and arranged through a cavity;
a flavor capsule encapsulating a content liquid including a flavor in a shell and provided in the cavity between the filter plugs; and
a liquid-impermeable filter wrapper wrapped around the filter plugs and the flavor capsule, the liquid-impermeable filter wrapper is a oilproof paper,
characterized in that the content liquid comprises the flavor, a solvent, and a thickener, the solvent is medium-chain fatty acid triglyceride (MCT), the thickener is sucrose diacetate hexaisobutyrate (SAIB) and the content liquid has a viscosity of 30 mPa·s or more at 25°C,
wherein the liquid-impermeable filter wrapper is directly brought into contact with the flavor capsule and is not a film or a fluorine-containing resin.

2. The cigarette filter according to claim 1, **characterized in that** the content liquid further comprises a dye and/or an emulsifier.

3. The cigarette filter according to one of the preceding claims, **characterized in that** the shell of the flavor capsule further comprises a dye.

4. A cigarette **characterized by** comprising: a tobacco rod; and the cigarette filter according to one of the preceding claims.

Patentansprüche

1. Zigarettenfilter, umfassend:

Filterstopfen, die voneinander getrennt und über einen Hohlraum angeordnet sind;
eine Aromakapsel, die eine Inhaltsflüssigkeit einschließlich eines Aromas in einer Hülle einkapselt und in dem Hohlraum zwischen den Filterstopfen angeordnet enthält; und
eine flüssigkeitsundurchlässige Filterhülle, die um die Filterstopfen und die Geschmackskapsel gewickelt ist, wobei die flüssigkeitsundurchlässige Filterhülle ein öldichtes Papier ist,
dadurch gekennzeichnet, dass die Inhaltsflüssigkeit das Aroma, ein Lösungsmittel und ein Verdickungsmittel umfasst, das Lösungsmittel mittelkettiges Fettsäuretriglycerid (MCT) ist, das Verdickungsmittel Saccharose-Diacetat-Hexaisobutyrat (SAIB) ist, und die Inhaltsflüssigkeit eine Viskosität von 30 mPa·s oder mehr bei 25°C aufweist,
wobei die flüssigkeitsundurchlässige Filterhülle direkt mit der Geschmackskapsel in Kontakt gebracht wird und keine Folie oder ein fluorhaltiges Harz ist.

2. Zigarettenfilter nach Anspruch 1, **dadurch gekennzeichnet, dass** die Inhaltsflüssigkeit weiterhin einen Farbstoff und/oder einen Emulgator enthält.

3. Zigarettenfilter nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Hülle der Geschmackskapsel weiterhin einen Farbstoff enthält.

4. Zigarette, **dadurch gekennzeichnet, dass** sie umfasst: eine Tabakstange; und den Zigarettenfilter gemäß einem

der vorhergehenden Ansprüche.

Revendications

1. Filtre de cigarette comprenant :

   des bouchons de filtre séparés les uns des autres et disposés à travers une cavité ;
   une capsule d'arôme encapsulant un contenu liquide comprenant un arôme dans une coquille et disposée dans la cavité entre les bouchons de filtre ; et
   un enveloppement de filtre imperméable aux liquides autour des bouchons de filtre et de la capsule d'arôme, l'enveloppement de filtre imperméable aux liquides étant un papier étanche à l'huile,
   caractérisé en ce que le contenu liquide comprend l'arôme, un solvant, et un épaississant, le solvant est un triglycéride d'acide gras à chaîne moyenne (MCT), l'épaississant est le diacétate-hexaisobutyrate de saccharose (SAIB) et le contenu liquide a une viscosité de 30 mPa·s ou plus à 25°C,
   dans lequel l'enveloppement de filtre imperméable aux liquides est directement porté au contact de la capsule d'arôme et n'est pas un film ou une résine fluorée.

2. Filtre de cigarette selon la revendication 1, **caractérisé en ce que** le contenu liquide comprend en outre un colorant et/ou un émulsionnant.

3. Filtre de cigarette selon l'une des revendications précédentes, **caractérisé en ce que** la coquille de la capsule d'arôme comprend en outre un colorant.

4. Cigarette **caractérisée en ce qu'**elle comprend : un bâtonnet de tabac ; et le filtre de cigarette selon l'une quelconque des revendications précédentes.

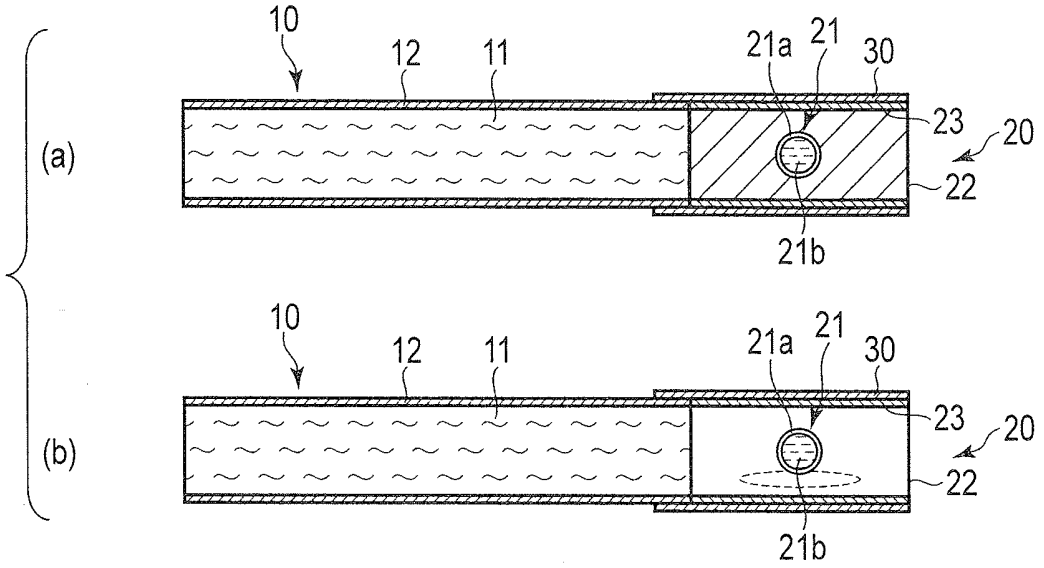
(a)
(b)
10
12
11
21a
21
30
23
20
22
21b

FIG. 1

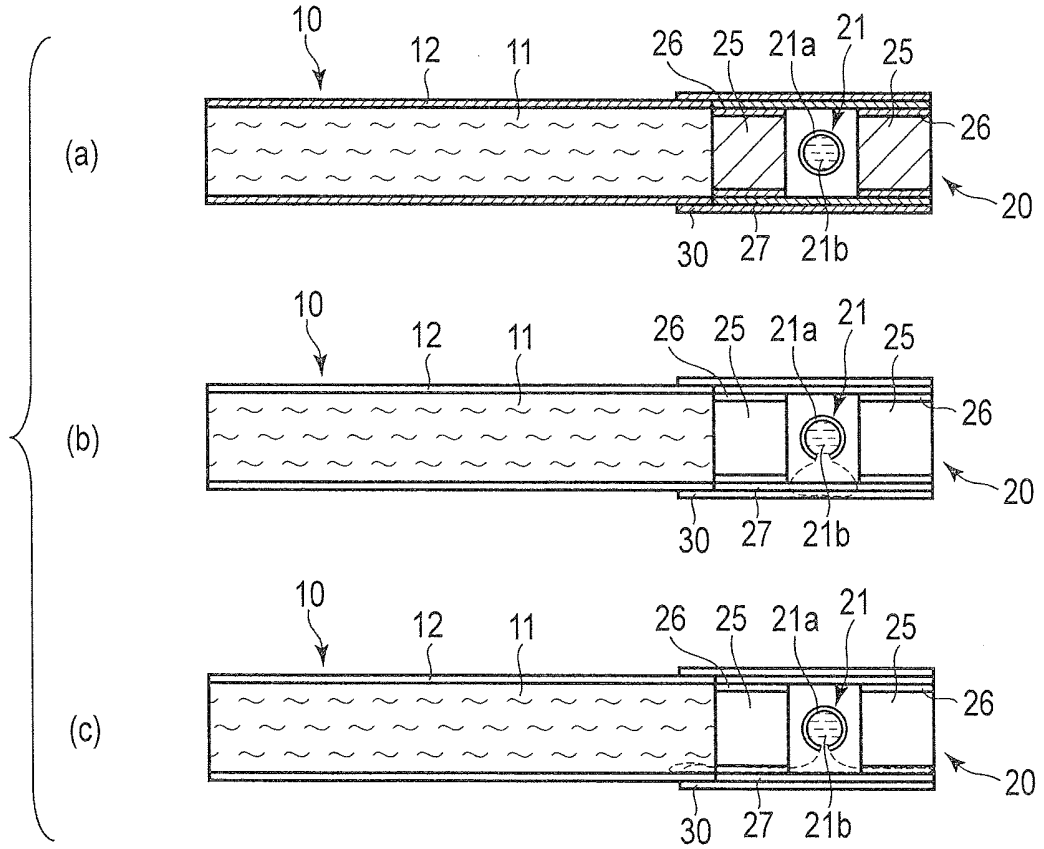
(a)
(b)
(c)
10
12
11
26
25
21a
21
25
26
20
30
27
21b

FIG. 2

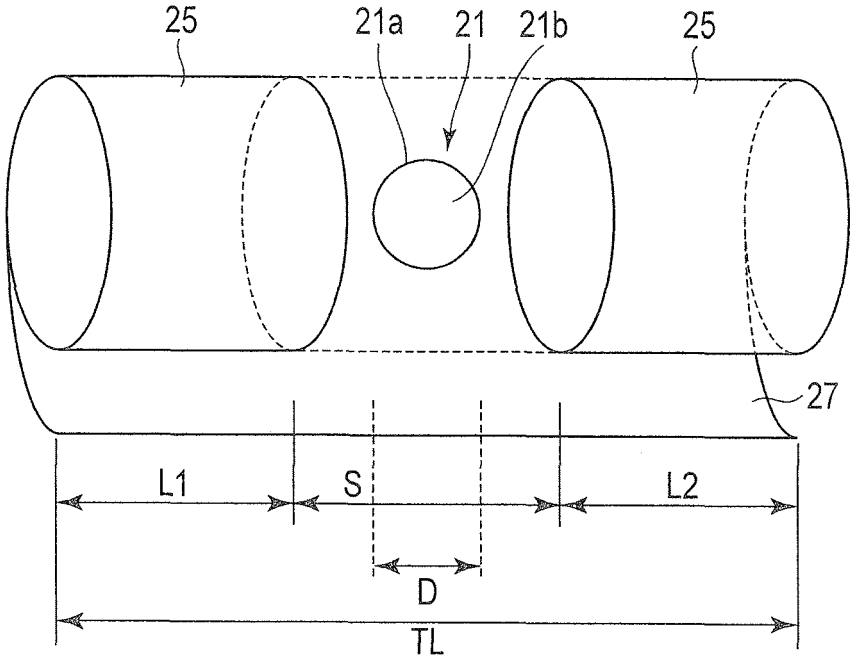
25
21a
21
21b
25
27
L1
S
L2
D
TL

FIG. 3

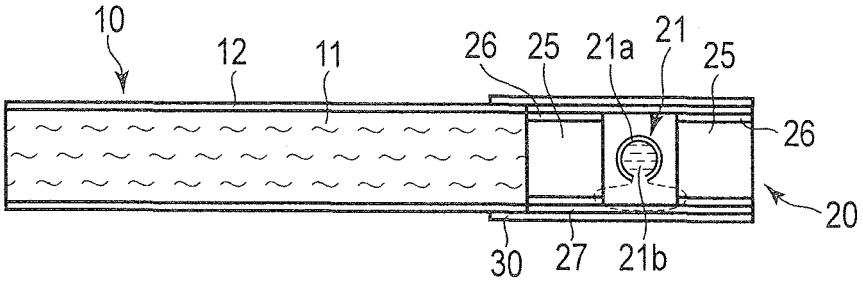
10
12
11
26
25
21a
21
25
26
20
30
27
21b

FIG. 4

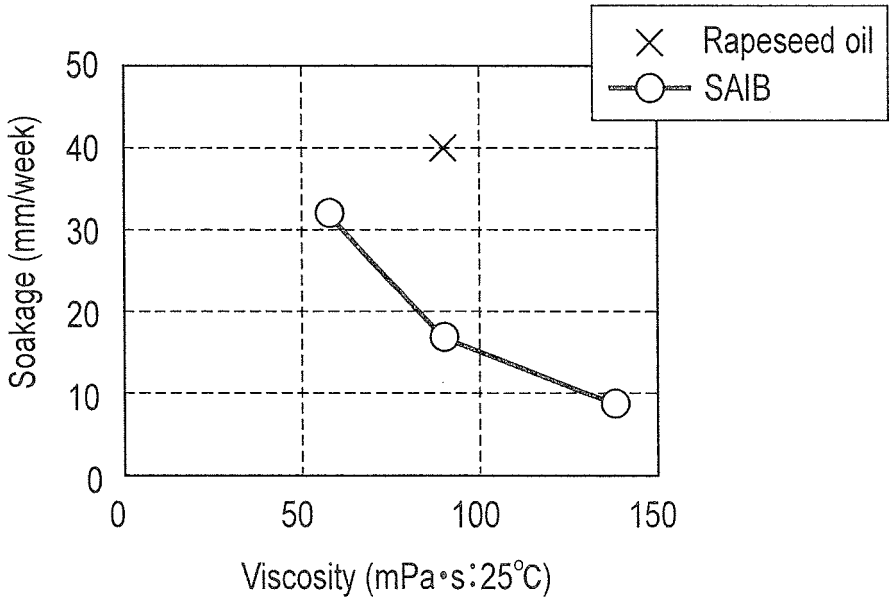
Rapeseed oil
SAIB
Soakage (mm/week)
50
40
30
20
10
0
0
50
100
150
Viscosity (mPa•s:25°C)

FIG. 5

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2006117697 A **[0008]**
- WO 2006136197 A **[0009]**
- JP 7250665 A **[0010]**
- JP 2003304856 A **[0010]**
- JP 2007520204 PCT **[0010]**
- JP 2008528053 PCT **[0010]**
- JP 2008539717 PCT **[0010]**
- JP 2008546400 PCT **[0010]**
- JP 2010052835 W **[0026]**