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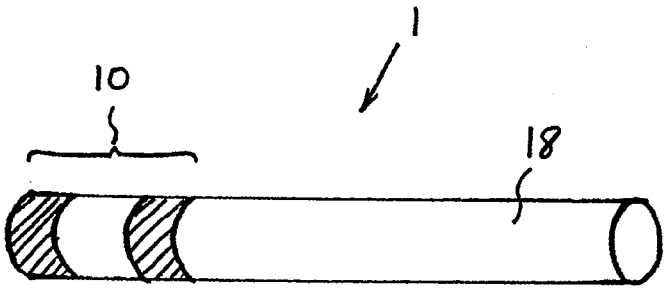
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(54) Title: FILTER FOR A SMOKING ARTICLE

FIG. 1



(57) Abstract: A filter (10) for a smoking article (1) comprising a cylindrical plug (12a, 12b) of filtration media and a tipping wrapper (14) formed from a transparent material wrapped around the plug. An opaque coating is applied to a portion of said tipping wrapper so that the inside of the filter is visible through said tipping wrapper.

Filter for a Smoking Article

Description

The present invention relates to a filter for a smoking article and, more particularly, to a filter having a window portion formed therein.

Conventional smoking articles can include a filter formed at one end thereof generally comprising a plug of filtration material wrapped around its circumference by a paper tipping wrapper. The tipping wrapper extends beyond one end of the plug of filtration material and extends over, and is attached to, an end of a cylinder of smoking material contained within a paper sleeve, also known as a 'tobacco rod', such that the tipping wrapper attaches the plug of filtration material to the tobacco rod to form a single smoking article.

Typically, a separate plugwrap is disposed around the plug of filtration material so that the plugwrap is disposed underneath the tipping wrapper.

Alternative forms of filters for smoking articles are known, for example, as disclosed in WO 2004/068975, which describes a filter for a smoking article having a pair of filter segments spaced from each other and a tipping paper which surrounds the filter segments and secures the filter to a tobacco rod to form a smoking article. The tipping wrapper is formed from discrete sections of opaque paper either side of a discrete section of transparent material, which are bonded together to form the tipping wrapper. This prior art filter construction thereby provides a window from the transparent material so that a space between the filter segments is visible therethrough, and thereby produces a different visual effect from previously known filters.

However, the above prior art filter suffers the disadvantage that the complex construction of the tipping paper formed from discrete sections of material bonded together, means that manufacture is more complicated and thereby costly.

The present invention seeks to provide an alterative construction of filter for a smoking article which is easy to manufacture and overcomes the problems of the prior art filters mentioned above.

Accordingly, the present invention provides a filter for a smoking article comprising a cylindrical plug of filtration media and a tipping wrapper formed from a transparent material wrapped around the plug, wherein an opaque coating is applied to a portion of said tipping wrapper so that the inside of the filter is visible through said tipping wrapper.

The filter preferably comprises a plurality of axially aligned cylindrical plugs of filtration media spaced from each other to define a region between said plugs.

Said region defined between the plugs of filtration media may comprise an empty cavity, or may be filled with an adsorbent material. In a further alternative embodiment, a plug of secondary material may be disposed in said region between the plugs of filtration media.

The plug of secondary material preferably abuts and is in contact with the plugs of filtration media between which it is disposed, and may comprise a secondary filtration media, which may be cellulose acetate with carbon dispersed therethrough. The secondary material may also comprise a design on an outer surface thereof so as to be visible through said tipping wrapper.

Said region between said plugs and the tipping wrapper may be configured such that the region is visible through the tipping wrapper.

A preferred embodiment comprises a first end adapted to abut a rod of smoking material and a second free end adapted for insertion into a smoker's mouth, wherein the opaque coating is preferably applied to a portion of the tipping wrapper at the second end of the filter.

A further opaque coating is preferably applied to the tipping wrapper at the first end so that said first and second ends are separated by a transparent window portion.

The opaque coating preferably comprises a coloured ink, and is preferably printed onto the tipping wrapper. The opaque coating preferably comprises a matt finish.

An alternative preferred embodiment further comprising a plugwrap underlying the tipping wrapper, said plugwrap comprising a transparent material so that the inside of the filter is visible through the tipping wrapper and through the plugwrap.

The plugwrap preferably extends longitudinally to the end of the or each plug at the distal ends of the filter.

The plugwrap preferably has a base weight of between 28 – 60 g/m^2 and/or preferably has a material thickness of between 19 – 42 μm.

The plugwrap may be provided with an area of adhesive on an inner surface thereof to adhere the plugwrap to the or each plug. Alternatively, the, or one or more of each of the, plug(s) may be provided with an area of adhesive on the outside thereof to adhere the plug(s) to the plugwrap.

The plugwrap may be formed of a translucent and/or tinted material.

The plugwrap may be provided with an area of adhesive on an outer surface thereof to adhere the plugwrap to the tipping wrapper. Alternatively, the tipping wrapper may be provided with an area of adhesive on an inner surface thereof to adhere the tipping wrapper to the plugwrap.

In a further preferred embodiment, the, or one or more of each of the, plug(s) is provided with an area of adhesive to adhere the plug(s) to the tipping wrapper. Alternatively, the tipping wrapper may be provided with an area of adhesive on an inner surface thereof to adhere the tipping wrapper to the or each plug.

Preferably, the tipping wrapper has a base weight of between 28 – 60 g/m^2, and/or preferably has a material thickness of between 19 – 42 μm.

The tipping wrapper may be formed from a translucent and/or tinted material.

In a preferred embodiment, the tipping wrapper extends in an axial direction beyond the distal end of the plug remote from a mouth end portion to allow the filter to be attached to a rod of smoking material.

The present invention also provides a smoking article comprising a rod of smoking material having any filter as described above attached to one end thereof.

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

Figure 1 is a perspective view of a smoking article including a filter according to the present invention;

Figure 2 is an exploded perspective view of a filter according to a first embodiment of the present invention;

Figure 3 is a plan view of a tipping wrapper of the filter of Figure 2;

Figure 4 is a cross-sectional view of the filter of Figure 2;

Figure 5 is a cross-sectional view of a filter according to a second embodiment of the present invention;

Figure 6 is an exploded perspective view of a filter according to a third embodiment of the present invention;

Figure 7 is a cross-sectional view of the filter of Figure 6;

Figure 8 is an exploded perspective view of a filter according to a fourth embodiment of the present invention;

Figure 9 is a cross-sectional view of a filter of Figure 8;

Figure 10 is a cross-sectional view of a filter according to a fifth embodiment of the present invention;

Figure 11 is a cross-sectional view of a filter according to a sixth embodiment of the present invention; and

Figures 12A – 12C show plan views of alternative exemplary tipping wrappers within the scope of the invention.

Referring now to Figures 1 to 4, a smoking article 1 comprising a filter 10 of a first embodiment of the present invention is shown, the filter 10 comprising first and second cylindrical plugs 12a, 12b of filtration media longitudinally aligned with each other and spaced apart. The plugs are surrounded by a tipping wrapper 14 which extends entirely around the outer circumference of the plugs 12a, 12b and encloses a space between the plugs 12a, 12b to form a closed cavity 16 within the filter 10.

The tipping wrapper 14 extends beyond the distal end of the plug 12b remote from the mouth end of the filter 10 to extend over and adhere to a distal end of a tobacco rod 18, to secure the tobacco rod 18 to the filter 10 to form the smoking article 1.

The tipping wrapper 14 is shown in more detail in Figure 3, and comprises a single piece of transparent material, which can be, but is not limited to, one of polypropylene, polyvinyl chloride (PVC), cellulose acetate film, polyethylene terephthalate (PET), polyethylene oxide (PEOX), polyethylene, cellophane, Natureflex™ or polyactic acid (PLA). The tipping wrapper 14 has an opaque coating 14a,14b on distal end portions to leave a transparent uncoated middle section between the coated portions 14a,14b which defines a window 14c in the filter 10 so that the cavity 16 is visible through the window 14c. The width of each of the opaque coated portions 14a,14b is preferably equal to the lengths of the plugs 12a, 12b, so that the opaque coated portions 14a,14b are aligned with the plugs 12a, 12b and the window 14c is the same width as that of the cavity 16, although any other dimensions of the opaque coated portions 14a, 14b may be used.

The opaque coating 14a,14b on the tipping wrapper 14 comprises a coloured ink that is printed onto the tipping wrapper 14 during manufacture. The ink preferably has a matt finish so that the texture of the coating closely resembles that of conventional paper filters used with known smoking articles to simulate a tactile quality of a conventional paper

filter. In addition, the colour and pattern of the opaque ink coating may be provided to resemble the cork-colouring of conventional filters to increase acceptability to consumers.

The thickness of the tipping wrapper 14 can vary within the scope of the invention, but is preferably of a minimum thickness or base weight such that the tipping wrapper 14 can provide a required degree of stiffness to the filter 10 to avoid the filter 10 becoming distorted or damaged during manufacture, packing of the smoking articles 1 or in use by a consumer. This is especially important when the cavity 16 is empty, as opposed to being filled with a filler material or a further plug of secondary material (described in more detail below) since the empty cavity 16 constitutes an unsupported section of the tipping wrapper 14 between the two sections which are supported by the plugs 12a, 12b.

Referring now to Figure 5, a cross-sectional view similar to that of Figure 4 is shown, but of a second embodiment of the present invention. The features described above with reference to the first embodiment are identical to those of the second embodiment and retain the same reference numerals. However, the cavity 16 in the filter 10 is not empty, but is filled with an adsorbent filler material 20, such as activated charcoal/carbon or other known suitable material. This embodiment provides a different but still attractive aesthetic effect, with the additional benefit that the filler material 20 adsorbs some further constituents of the smoke not captured by the filtration media plugs 12a,12b. A specific filler material 20 can be chosen in dependence upon which constituents of smoke are intended to be adsorbed, or a general adsorbent can be selected which is capable of adsorbing many different types of smoke constituents. Alternatively, a mixture of different adsorbents can be used.

A third embodiment of the present invention is shown in Figures 6 and 7, which correspond generally to the views of the first embodiment shown in Figures 2 and 4. However, the third embodiment differs from the first embodiment in that an additional plug 24 made from a secondary material, is disposed between and in contact with plugs of filtration media 12a, 12b. The plug of secondary material can be of any suitable material, such as, but not limited to, known cellulose acetate filter material, or a cellulose acetate filter with adsorbant carbon dispersed therethrough, or any selective adsorbant material. Furthermore, the plug of secondary material may be provided with a coloured or patterned

surface, or a consumer-recognisable characteristic, to be visible through the window 14c of the filter 10, or may be a material with colour activation properties such that a colour change in the secondary material can be visible through the window 14c of the filter 10. The third embodiment of the invention provides the advantage in that the structural strength of the filter 10 is increased because the tipping wrapper 14 is supported along the entire length of the filter 10 by the plugs of filtration media 12a, 12b and by the plug of secondary material 24.

A fourth embodiment of the present invention is shown in Figures 8 and 9, which are an exploded perspective view and a cross-sectional view respectively, similar to Figures 2 and 4 of the first embodiment. However, the fourth embodiment shown in Figures 8 and 9 differs from those of the previous embodiments in that the filter 10 comprises an additional layer of material or 'plugwrap' 22 interposed between the tipping wrapper 14 and the plugs 12a, 12b. The plugwrap 22 is made of a transparent material as with the tipping wrapper 14, and can be selected from, but is not limited to, a material as listed above. The tipping wrapper 14 and the plugwrap 22 do not necessarily need to be made of the same material. The plugwrap 22 is sized such that it is equal in length to the distance between the distal ends of the plugs 12a, 12b so that it extends around the plugs 12a, 12b and encircles the space therebetween to enclose the cavity 16, but does not extend beyond the distal ends of the plugs 12a, 12b. The plugwrap 22 can thereby function to secure the plugs 12a, 12b together and define the cavity 16 as a single unit prior to assembly of the smoking article 1 by applying the tipping wrapper 14 to secure the single unit of plugs 12a,12b and plugwrap 22 to a tobacco rod 18. The plugwrap 22 also provides additional stiffening to the filter 10 in addition to that provided by the tipping wrapper 14. In such an embodiment, it is possible to use a thinner/lower base-weight tipping wrapper 14 than in the embodiments of Figures 1 – 7, since it is not the tipping wrapper 14 alone which provides the structural rigidity to the filter 10. The filter 10 of Figures 8 and 9 also has a visible cavity 16 since both the plugwrap 22 and the tipping wrapper 14 are of a transparent material.

A fifth embodiment of the present invention is shown in Figure 10, which is similar to the fourth embodiment shown in Figures 8 and 9, except that the cavity 16 is not empty, but is filled with an adsorbent material 20, such as that described above with reference to the second embodiment of the present invention shown in Figure 5, and thereby provides the

additional advantages described above, with the adsorbent filler material 20 being visible though both the plugwrap 22 and the tipping wrapper 14 layers of the filter 10.

A sixth embodiment of the present invention is shown in Figure 11, which is similar to the fourth embodiment shown in Figures 8 and 9, except that an additional plug 24 made from a secondary material, is disposed between and in contact with plugs of filtration media 12a, 12b, such as that described above with reference to the third embodiment of the present invention shown in Figures 6 and 7, and thereby provides the additional advantages described above, with the plug of secondary material 24 being visible though both the plugwrap 22 and the tipping wrapper 14 layers of the filter 10.

One advantage of the filter 10 of the present invention in which the tipping wrapper 14 is provided as a single piece of material having one or more sections of opaque coating 14a,14b formed thereon, is that it makes manufacture of a tipping wrapper 14 having a window portion 14c much simpler and therefore cheaper, than, for example, forming the window from a separate discrete transparent material bonded to one or more sections of opaque tipping wrapper material. With the appropriate selection of coating ink, this advantage can be achieved without sacrificing the tactile quality of the filter 10 so as to be acceptable to consumers.

Although various embodiments of the invention have been shown and described, it will be appreciated that these are exemplary embodiments only and that modifications may be made to these embodiments within the scope of the invention as defined in the claims hereafter. In particular, the embodiments shown comprise an opaque coating 14a, 14b provided on each end of the tipping wrapper 14. However, a section of opaque coating may be provided on only one end of the tipping wrapper 14. Furthermore, the tipping wrapper may be provided with alternative configurations of opaque coating to provide various shaped windows 14c in the filter 10, within the scope of the invention, for example rounded, oval, longitudinal, and any other shaped window 14c in the filter 10 are intended to fall within the scope of the invention. Examples of such various alternative window shapes provided by different configurations of opaque coatings are shown in Figures 12A – 12C.

Although the tipping wrapper 14 and plugwrap 22 are described as being transparent, they may also be translucent with a coloured tint or pattern to provide a different aesthetic effect to the filter 10 whilst still allowing the cavity 16 or inside of the filter 10 to be visible through the plugwrap and/or tipping wrapper.

All embodiments described above show the filter 10 comprising two plugs 12a, 12b spaced from each other with either a single empty cavity 16, a filler material 20 or a plug of secondary material 24 therebetween. However, the filter 10 may also comprise more than two plugs of filtration media spaced from each other, thereby creating more than one space within the filter 10 which may all be empty, or one or more may have an adsorbent filler material therein, or a plug of secondary material therein, or any combination thereof. The material in each cavity may be the same or may be different. In such embodiments, the tipping wrapper may include opaque coatings aligned with each plug, or have just one section of opaque coating.

In addition to the above-described embodiments, it will be appreciated that the invention may also comprise a single cylindrical plug of filtration media with a tipping wrapper as described above, disposed therearound, within the scope of the claims. In such an embodiment, a portion of the single cylindrical plug of filtration media would be visible through the tipping wrapper (and plugwrap if applicable) and could include a colour, pattern or consumer-recognisable characteristic to be visible through the window.

The plugs of filtration media may be provided with a line of adhesive or gum provided thereon to affix the tipping wrapper or plugwrap to the plugs. Alternatively, or in addition, the tipping wrapper and/or plugwrap may include a line of adhesive or gum thereon to affix the plugwrap and/or tipping wrapper to the plugs, and/or to adhere the tipping wrapper to the plugwrap.

The various embodiments of filter 10 described and shown, and claimed within the scope of the present invention, can be manufactured in appropriate dimensions to be suitable for use in conjunction with various size formats of smoking articles, such as those commonly referred to as 'slim', 'superslim', 'kingsize', as well as regular smoking articles.

Throughout the specification, reference to 'smoking material' can mean any material which can be used in the smoking article such as tobacco material or tobacco substitute.

Claims

1. A filter for a smoking article comprising a cylindrical plug of filtration media and a tipping wrapper formed from a transparent material wrapped around the plug, wherein an opaque coating is applied to a portion of said tipping wrapper so that the inside of the filter is visible through said tipping wrapper.

2. A filter according to claim 1 comprising a plurality of axially aligned cylindrical plugs of filtration media spaced from each other to define a region between said plugs.

3. A filter according to claim 2 wherein said region between the plugs of filtration media comprises an empty cavity.

4. A filter according to claim 2 wherein said region between the plugs of filtration media is filled with an adsorbent material.

5. A filter according to claim 2 wherein a plug of secondary material is disposed in said region between the plugs of filtration media.

6. A filter according to claim 5 wherein the plug of secondary material abuts and is in contact with the plugs of filtration media between which it is disposed.

7. A filter according to claim 5 or claim 6 wherein said secondary material comprises a secondary filtration media.

8. A filter according to claim 7 wherein the secondary filtration media comprises cellulose acetate with carbon dispersed therethrough.

9. A filter according to any of claims 5 - 8 wherein the secondary material comprises a design on an outer surface thereof so as to be visible through said tipping wrapper.

10. A filter according to any of claims 2 – 9 wherein said region between said plugs and the tipping wrapper are configured such that the region is visible through the tipping wrapper.

11. A filter according to any preceding claim, comprising a first end adapted to abut a rod of smoking material and a second free end adapted for insertion into a smoker's mouth, wherein the opaque coating is applied to a portion of the tipping wrapper at the second end of the filter.

12. A filter according to claim 11 wherein a further opaque coating is applied to the tipping wrapper at the first end so that said first and second ends are separated by a transparent window portion.

13. A filter according to any preceding claim, wherein the opaque coating comprises a coloured ink.

14. A filter according to any preceding claim wherein the opaque coating is printed onto the tipping wrapper.

15. A filter according to any preceding claim wherein the opaque coating comprises a matt finish.

16. A filter according to any preceding claim further comprising a plugwrap underlying the tipping wrapper, said plugwrap comprising a transparent material so that the inside of the filter is visible through the window in the tipping wrapper and through the plugwrap.

17. A filter according to claim 16 wherein the plugwrap extends longitudinally to the end of the or each plug at the distal ends of the filter.

18. A filter according to claim 16 or claim 17, wherein the plugwrap has a base weight of between 28 – 60 g/m^2.

19. A filter according to any of claims 16 to 18, wherein the plugwrap has a material thickness of between 19 – 42 μm.

20. A filter according to any of claims 16 – 19, wherein the plugwrap is provided with an area of adhesive on an inner surface thereof to adhere the plugwrap to the or each plug.

21. A filter according to any of claims 16 – 19, wherein the, or one or more of each of the, plug(s) is provided with an area of adhesive on the outside thereof to adhere the plug(s) to the plugwrap.

22. A filter according to any of claims 16 – 21 wherein the plugwrap is formed of a translucent and/or tinted material.

23. A filter according to any of claims 16 – 22, wherein the plugwrap is provided with an area of adhesive on an outer surface thereof to adhere the plugwrap to the tipping wrapper.

24. A filter according to any of claims 16 – 22, wherein the tipping wrapper is provided with an area of adhesive on an inner surface thereof to adhere the tipping wrapper to the plugwrap.

25. A filter according to any of claims 1 – 15, wherein the, or one or more of each of the, plug(s) is provided with an area of adhesive to adhere the plug(s) to the tipping wrapper.

26. A filter according to any of claims 1 – 15, wherein the tipping wrapper is provided with an area of adhesive on an inner surface thereof to adhere the tipping wrapper to the or each plug.

27. A filter according to any preceding claim wherein the tipping wrapper has a base weight of between 28 – 60 g/m^2.

28. A filter according to any preceding claim, wherein the tipping wrapper has a material thickness of between 19 – 42 μm.

29. A filter according to any preceding claim wherein the tipping wrapper is formed from a translucent and/or tinted material.

30. A filter according to any preceding claim wherein the tipping wrapper extends in an axial direction beyond the distal end of the plug remote from a mouth end portion to allow the filter to be attached to a rod of smoking material.

31. A smoking article comprising a rod of smoking material having a filter according to any preceding claim attached to one end thereof.

32. A filter substantially as hereinbefore described with reference to the accompanying drawings.

33. A smoking article substantially as hereinbefore described with reference to the accompanying drawings.

FIG. 1

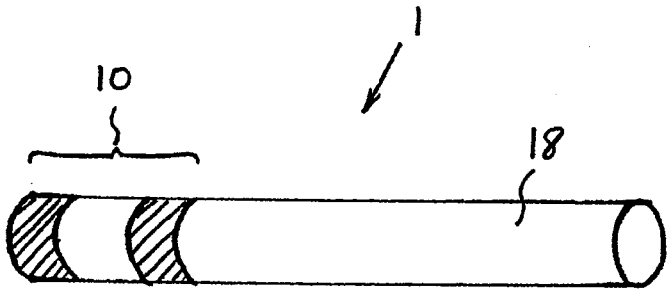


FIG. 2

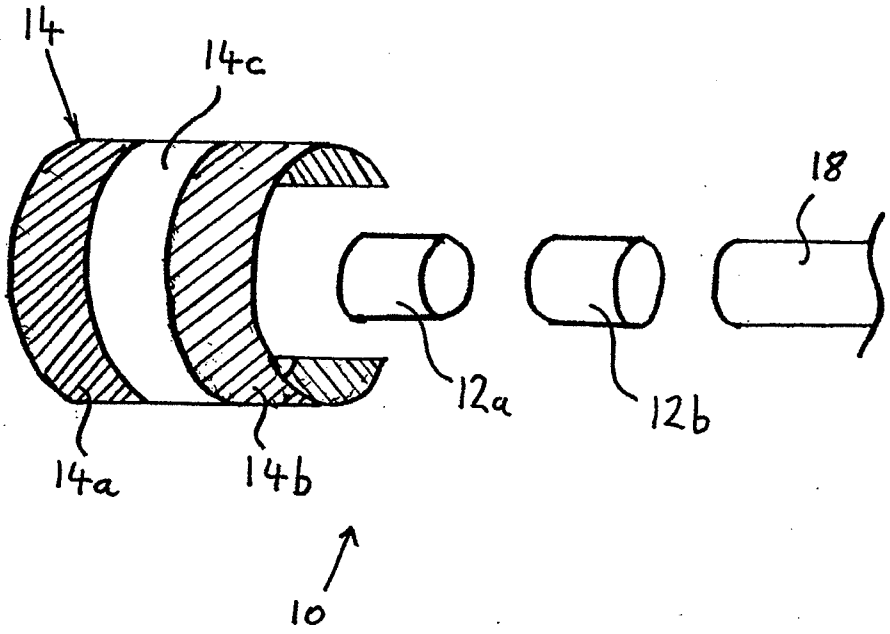


FIG. 3

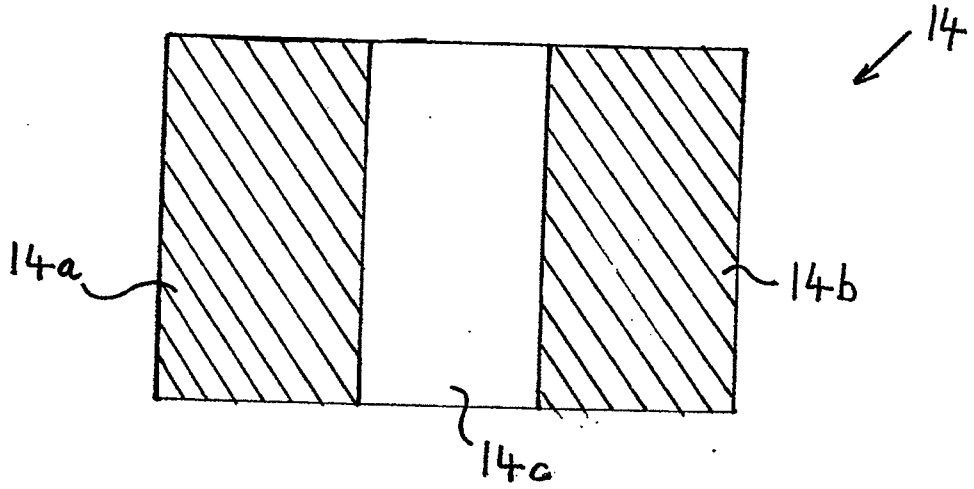


FIG. 4

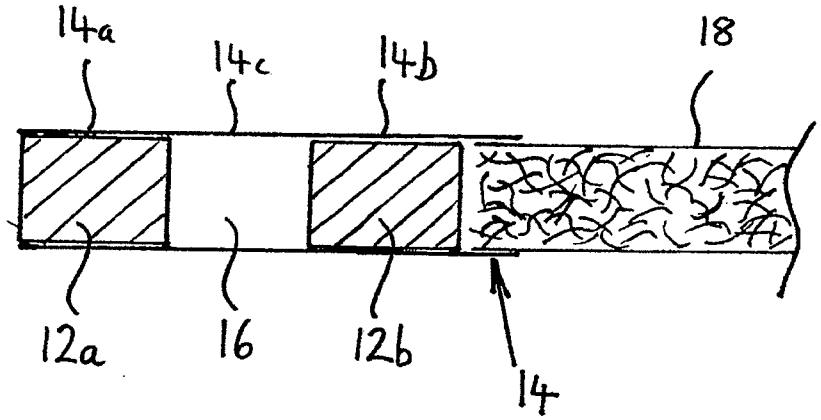


FIG. 5

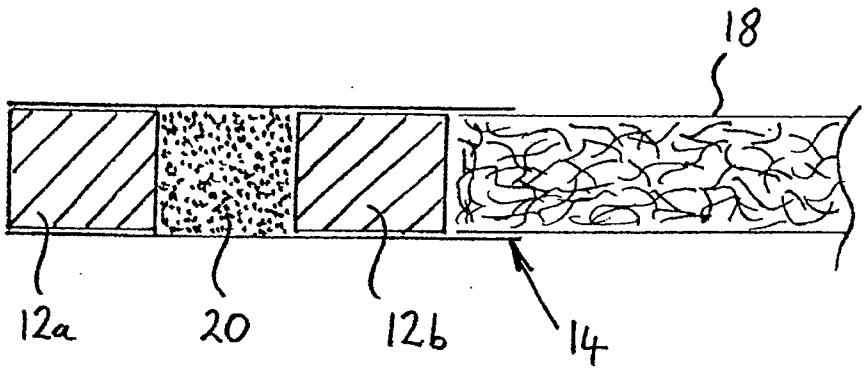


FIG. 6

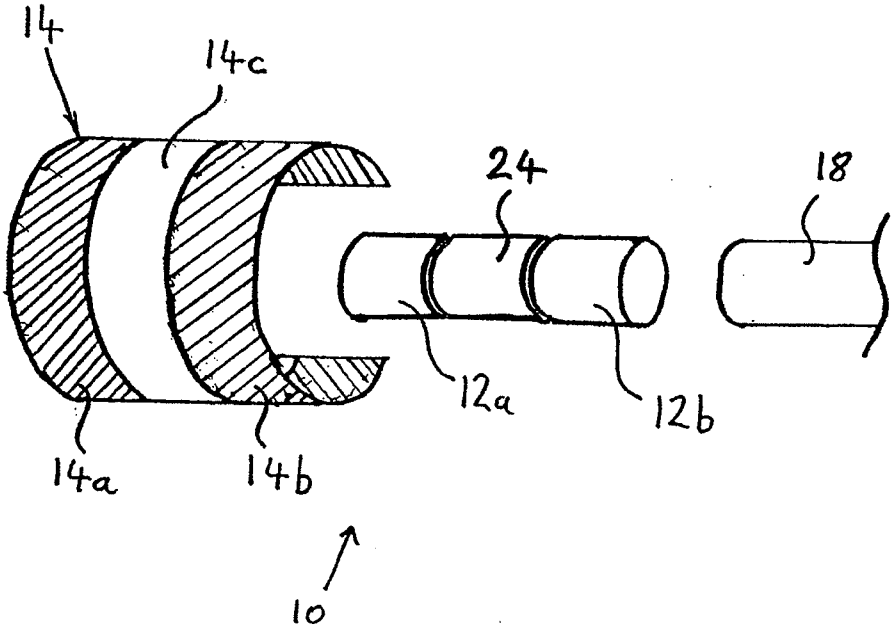


FIG. 7

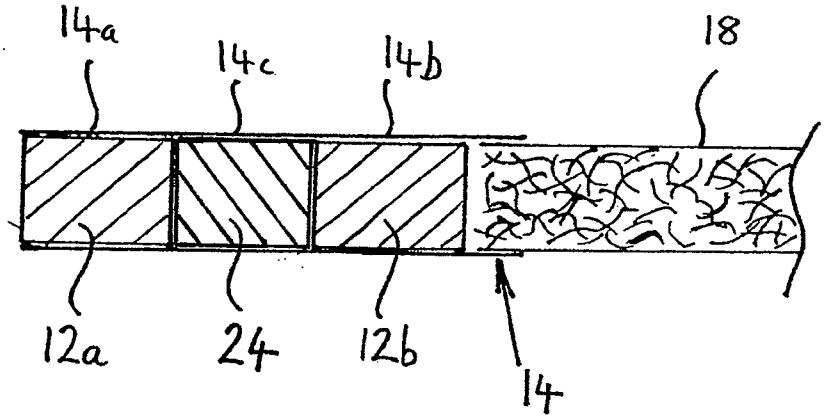


FIG. 8

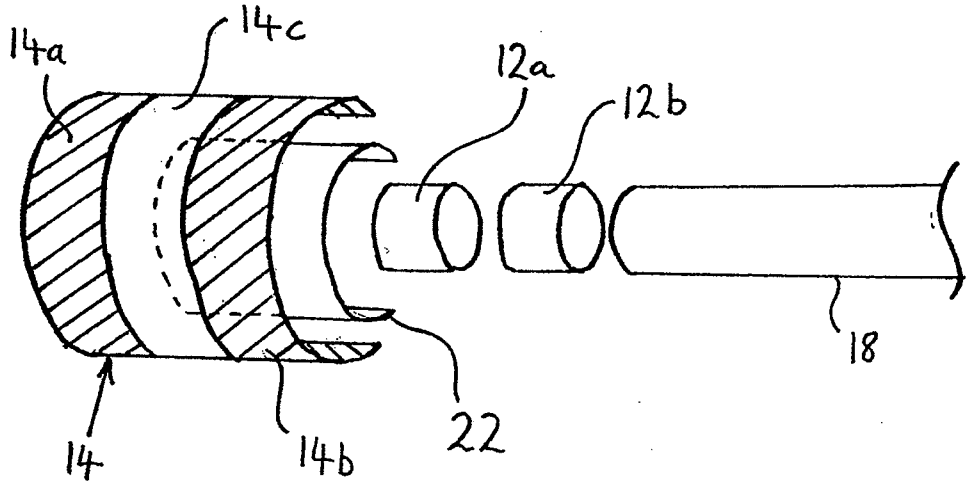


FIG. 9

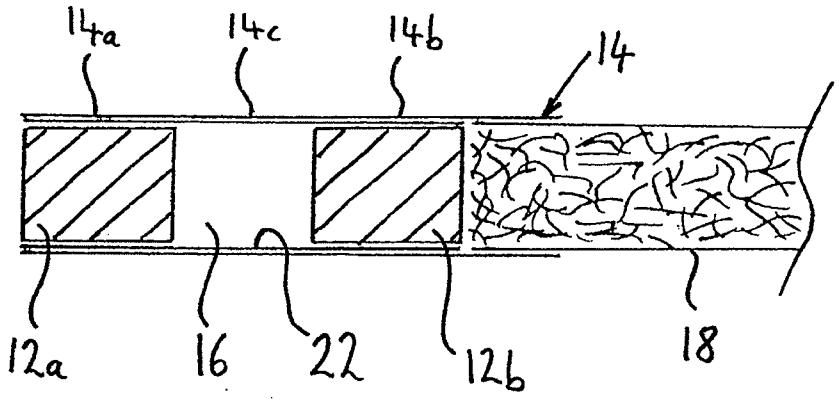


FIG. 10

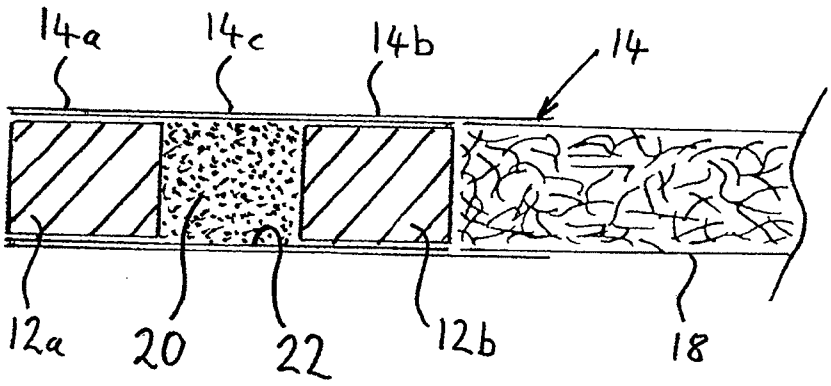


FIG. 11

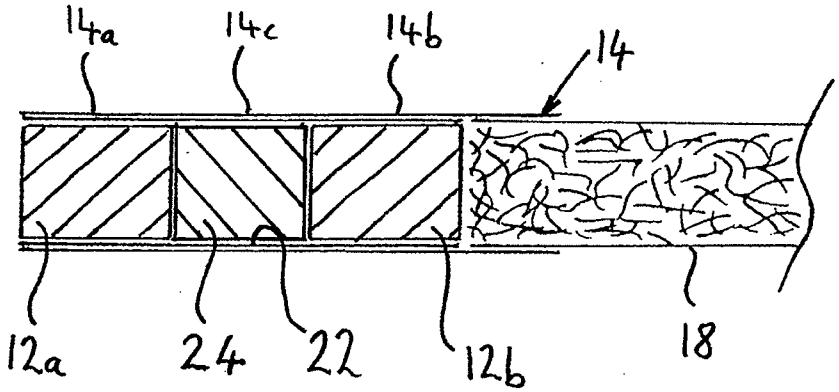


FIG. 12A

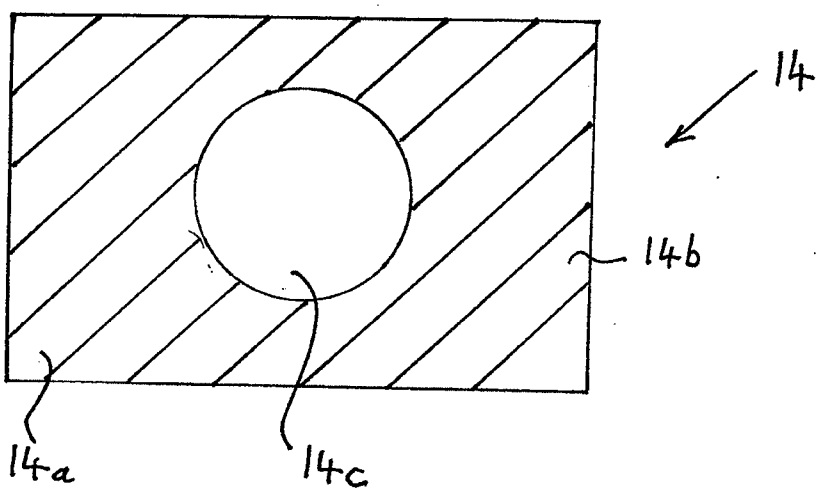


FIG. 12B

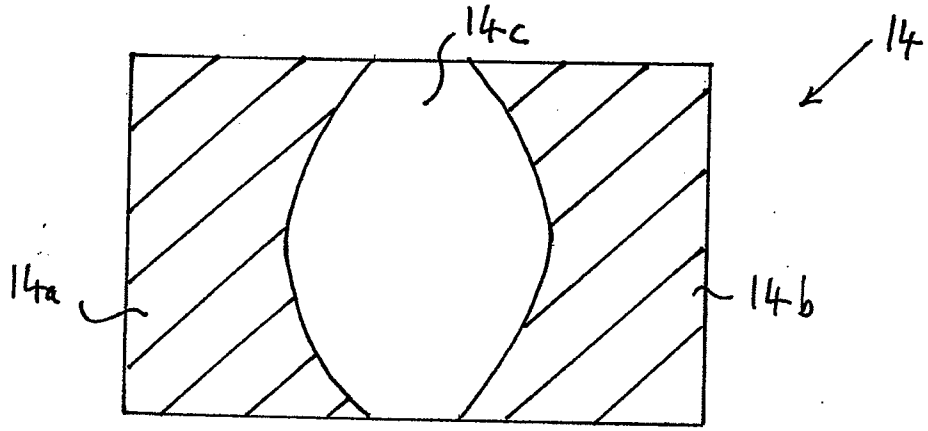
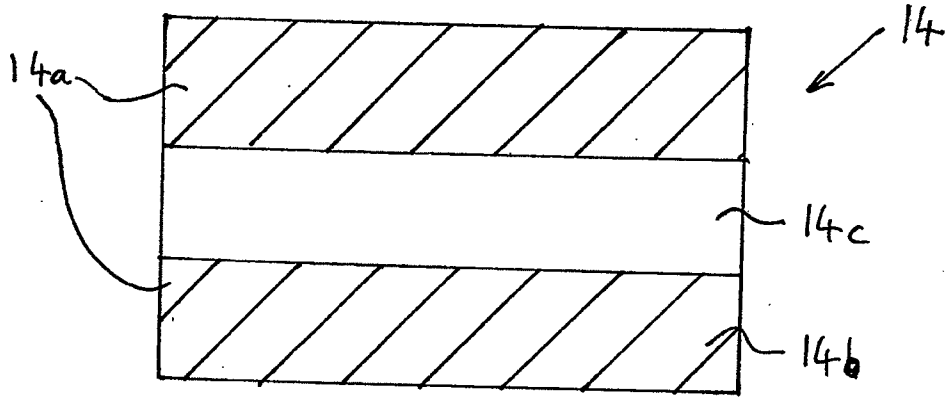


FIG. 12C



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/050279

A. CLASSIFICATION OF SUBJECT MATTER
INV. A24D3/04

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)
A24D A24C

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	EP 1 972 213 A (PHILIP MORRIS PROD [CH]) 24 September 2008 (2008-09-24) paragraph [0051]; figures	1-33
A	US 5 396 909 A (GENTRY THOMAS L [US] ET AL) 14 March 1995 (1995-03-14) column 4, line 25 - line 55; figures	1
A	EP 1 252 832 A (HAUNI MASCHINENBAU AG [DE]) 30 October 2002 (2002-10-30) paragraph [0007] - paragraph [0011]; figures	1
A	US 4 015 610 A (PASCHE RENE C) 5 April 1977 (1977-04-05) the whole document	1-4

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
7 April 2009	21/04/2009

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Fax: (+31–70) 340–3016	Marzano Monterosso

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2009/050279

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	US 2006/150991 A1 (LEE HYUNG [KR]) 13 July 2006 (2006-07-13) figure 7	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/EP2009/050279

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