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(54) **CIGARETTE FILTER**

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(57) **ABSTRACT**

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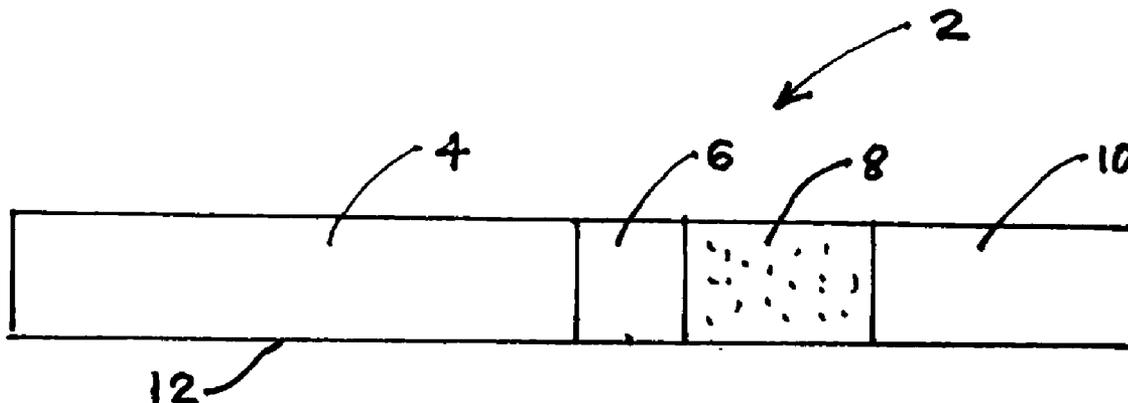
This invention is directed to a novel cigarette filter which filters harmful components of cigarette smoke while at the same time preserving a tobacco taste. A cigarette comprising: (a) a cigarette paper cylinder; (b) a shredded tobacco component occupying one end of the paper cigarette cylinder; (c) a first filter section located adjacent the tobacco section; (d) a second filter section which is comprised of shredded cork and shredded tobacco; (e) a third filter section comprising a porous filter section; and (f) activated charcoal incorporated in the second or the third filter section.

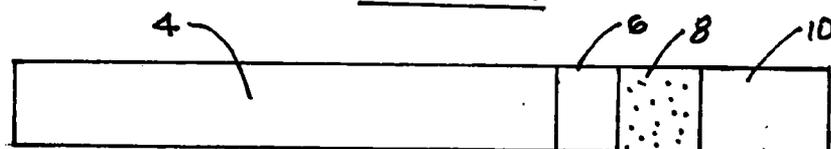
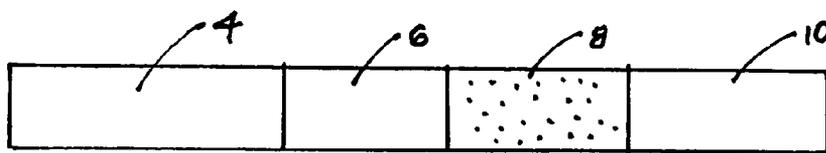
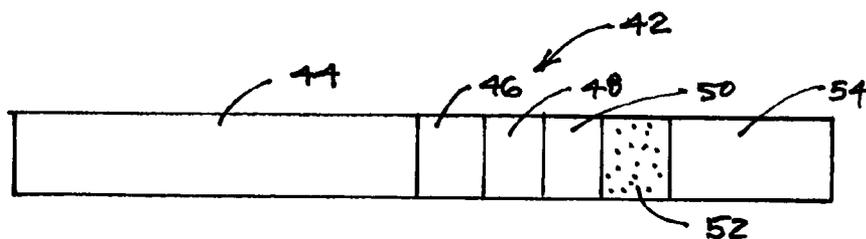
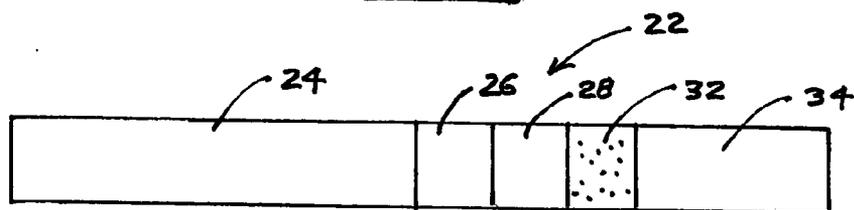
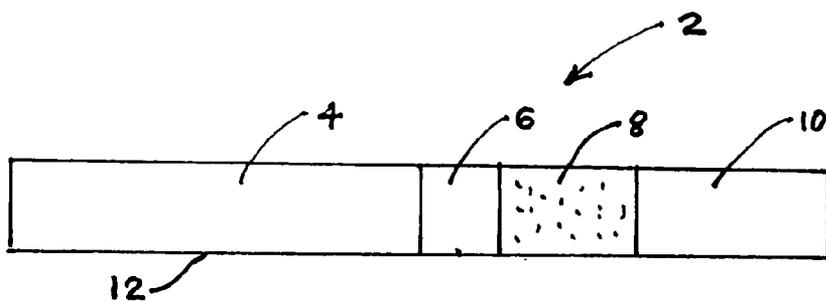
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## CIGARETTE FILTER

### FIELD OF THE INVENTION

[0001] This invention is directed to a novel cigarette filter which filters harmful components of cigarette smoke while at the same time preserving a tobacco taste to the smoke.

### BACKGROUND OF THE INVENTION

[0002] Numerous patents have been issued over the years protecting various designs of cigarette filter. Many cigarette filters are ineffective or only partially effective in removing harmful components from the cigarette smoke. Another problem with many cigarette filters is that while they may filter tar and other harmful components from the smoke that is inhaled by the smoker, they also filter components which provide "taste" to the smoke inhaled by the smoker.

[0003] U.S. Pat. No. 5,845,648, granted Dec. 8, 1998, Martin, discloses a cigarette filter which includes tobacco dust as one of the components of the filter. The tobacco dust component of the cigarette filter acts as an absorber to absorb small amounts of tar and nicotine. The filter is multi-component and includes a normal filter compartment containing cellulose acetate, a compartment which contains tobacco dust, and a third compartment which contains cellulose acetate fibres. The tobacco dust particles can be flavored with tobacco flavor or menthol.

[0004] German Patent No. 4,309,457 A1, Oetzuerk et al., issued Jan. 13, 1994, disclose a multi-component cigarette filter which extends half the length of the cigarette, leaving half the length of the cigarette for tobacco. In the filter region, the cigarette sleeve is of a thicker material than the region surrounding the cigarette tobacco. The thickened sleeve material may extend to a width of 1 to 5 mm of the cigarette tobacco region. The purpose of the extended filter length is to reduce volume of tobacco in the cigarette.

### SUMMARY OF INVENTION

[0005] The invention is directed to a cigarette comprising: (a) a cigarette paper cylinder; (b) a shredded tobacco section occupying one end of the interior of the paper cigarette cylinder; (c) a first smoke filter section located adjacent the tobacco section in the interior of the cylinder; (d) a second smoke filter section which is comprised of cork particles and tobacco shred adjacent the first filter section in the interior of the cylinder; (e) a third smoke filter section comprising a porous filter section adjacent the second filter section in the interior of the cylinder; and (f) activated charcoal incorporated either in the second filter section (d) or the third section (e).

[0006] The length of the shredded tobacco in the cigarette paper cylinder can extend from  $\frac{1}{3}$  to  $\frac{2}{3}$  the length of the cylinder. The lengths of the three filter sections in sum can total  $\frac{1}{3}$  to  $\frac{2}{3}$  the length of the cigarette paper cylinder.

[0007] The first and third filter sections can be cellulose acetate. The cork particles and the tobacco shred in the second filter section can be separate from one another in two subsections. The activated charcoal and the porous filter in the third filter section can be separate from one another in two subsections.

[0008] The invention is also directed to a cigarette filter comprising: (a) a first smoke filter section which is com-

prised of a smoke filtering material; (b) a second smoke filter section which is comprised of cork particles and tobacco shred; and (c) a third smoke filter section which is comprised of a smoke filtering material; and (d) activated charcoal incorporated in the second smoke filter section or the third smoke filter section.

[0009] The shredded cork particles and tobacco shred in the second section can be separate from one another in two subsections. The porous filter material in the third section and the activated charcoal can be separate from one another in two subsections.

### BRIEF DESCRIPTION OF DRAWINGS

[0010] In drawings which illustrate specific embodiments of the invention, but which should not be construed as restricting the spirit or scope of the invention in any way:

[0011] FIG. 1 illustrates a front section view of a cigarette including cigarette filter according to the invention.

[0012] FIG. 2 illustrates a front section view of an alternative embodiment of cigarette with filter.

[0013] FIG. 3 illustrates a front section view of an alternative embodiment of cigarette with filter.

[0014] FIG. 4 illustrates a cigarette filter where the tobacco occupies  $\frac{1}{3}$  of the length of the cigarette and the filter components occupy  $\frac{2}{3}$  of the length of the cigarette.

[0015] FIG. 5 illustrates a cigarette filter where the tobacco occupies  $\frac{2}{3}$  of the length of the cigarette and the filter components occupy  $\frac{1}{3}$  of the length of the cigarette.

### DETAILED DESCRIPTION OF SPECIFIC EMBODIMENTS OF THE INVENTION

[0016] Throughout the following description, specific details are set forth in order to provide a more thorough understanding of the invention. However, the invention may be practiced without these particulars. In other instances, well known elements have not been shown or described in detail to avoid unnecessarily obscuring the invention. Accordingly, the specification and drawings are to be regarded in an illustrative, rather than a restrictive, sense.

[0017] Referring to the drawings, FIG. 1 illustrates a section front view of a cigarette equipped with a multi-component cigarette filter according to the invention. As seen in FIG. 1, the cigarette 2 comprises a shredded tobacco section 4, which is lit by the smoker, a cellulose acetate filter-tobacco separation section 6, a cork particle and tobacco shred section 8, and an activated charcoal-cellulose acetate filter section 10. The foregoing components are wrapped in a paper cylinder 12, according to standard cigarette production technology. It will be understood that separation section 6 can be of a suitable smoke transmitting filter material other than cellulose acetate. If desirable, the activated charcoal can be incorporated with the cork particles and tobacco shred in section 8, rather than section 10.

[0018] The length of the three filter components 6, 8 and 10 can extend anywhere from about  $\frac{1}{8}$  to about  $\frac{7}{8}$  the overall length of the cigarette 2. Accordingly, the length of the shredded tobacco section 4 in the cigarette 2 can correspondingly range from about  $\frac{7}{8}$  to  $\frac{1}{8}$  the length of the cigarette. Preferably, the three filter components can extend anywhere

from 1/3 to 1/2 to 2/3 the length of the cigarette. Many smokers get the most satisfaction from the first three to five puffs of a cigarette. Those puffs have the most taste. After that, burning the remaining length of the tobacco and inhaling the remaining smoke contents is merely a habit. It is well established by evidence that smokers would suffer less damage to their lungs if they smoked a smaller portion of the cigarette. Consequently, a cigarette which has only about 1/3 to 2/3 of its length as shredded tobacco has fewer health risks for a smoker than a cigarette which is 3/4 or more of tobacco.

[0019] A major advantage of the three component filter according to the invention is that not only does the activated charcoal in section 10 and the shredded cork in section 8 absorb harmful components from the smoke passing through the filter as the smoker inhales the smoke generated by the burning tobacco, but also the tobacco shred in the middle filter section 8 of the three component filter reinforces the tobacco "taste" to the smoke and this taste is not extracted as the smoke passes through the final activated charcoal-cellulose acetate filter section 10 of the three component filter.

[0020] It is understood that if desirable, the activated charcoal can be incorporated with the shredded cork and tobacco shred in section 8, rather than section 10.

[0021] FIG. 2 illustrates a front section view of an alternative embodiment of cigarette with filter according to the invention. As seen in FIG. 2, the cigarette 22 comprises a shredded tobacco section 24, which is ignited by the smoker, a cellulose acetate filter-tobacco separation section 26, a cork particle and tobacco shred section 28, an activated charcoal section 30 and a cellulose acetate filter section 32. The activated charcoal can be incorporated in section 28. It will be understood that the relative positions of sections 28 and 30 can be reversed.

[0022] FIG. 3 illustrates a front section view of a third alternative embodiment of cigarette with filter according to the invention. As seen in FIG. 3, the cigarette 42 comprises a shredded tobacco section 44, which is ignited by the smoker, a cellulose acetate filter-tobacco separation section 46, a cork particle section 48, a tobacco shred section 50, an activated charcoal section 52 and a cellulose acetate filter section 54. It will be understood that the juxtapositioning of sections 48, 50 and 52 can be rearranged.

[0023] FIG. 4 illustrates a cigarette filter according to the invention where the shredded tobacco 4 occupies about 1/3 of the length of the cigarette and the filter components 6, 8 and 10 occupy about 2/3 of the length of the cigarette.

[0024] FIG. 5 illustrates a cigarette filter where the shredded tobacco 4 occupies about 2/3 of the length of the cigarette and the filter components 6, 8 and 10 occupy about 1/3 of the length of the cigarette.

[0025] As will be apparent to those skilled in the art in the light of the foregoing disclosure, many alterations and

modifications are possible in the practice of this invention without departing from the spirit or scope thereof. Accordingly, the scope of the invention is to be construed in accordance with the substance defined by the following claims.

What is claimed is:

1. A cigarette comprising:

- (a) a cigarette paper cylinder;
- (b) a shredded tobacco section occupying one end of the interior of the paper cigarette cylinder;
- (c) a first smoke filter section located adjacent the tobacco section in the interior of the cylinder;
- (d) a second smoke filter section which is comprised of cork particles and tobacco shred adjacent the first filter section in the interior of the cylinder;
- (e) a third smoke filter section comprising a porous filter section adjacent the second filter section in the interior of the cylinder; and
- (f) activated charcoal incorporated either in the second filter section (d) or the third section (e).

2. A cigarette as claimed in claim 1 wherein the length of the shredded tobacco in the cigarette paper cylinder extends from 1/3 to 2/3 the length of the cylinder.

3. A cigarette as claimed in claim 1 wherein the lengths of the three filter sections in sum total 1/3 to 2/3 the length of the cigarette paper cylinder.

4. A cigarette as claimed in claim 1 wherein the first and third filter sections are cellulose acetate.

5. A cigarette as claimed in claim 1 wherein the cork particles and the tobacco shred in the second filter section are separate from one another in two subsections.

6. A cigarette as claimed in claim 1 wherein the activated charcoal and the porous filter in the third filter section are separate from one another in two subsections.

7. A cigarette filter comprising:

- (a) a first smoke filter section which is comprised of a smoke filtering material;
- (b) a second smoke filter section which is comprised of cork particles and tobacco shred; and
- (c) a third smoke filter section which is comprised of a smoke filtering material; and
- (d) activated charcoal incorporated in the second smoke filter section or the third smoke filter section.

8. A cigarette filter as claimed in claim 7 wherein the shredded cork particles and tobacco shred in the second section are separate from one another in two subsections.

9. A cigarette filter as claimed in claim 8 wherein the porous filter material in the third section and the activated charcoal are separate from one another in two subsections.

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