Title: PERSONAL INHALATION FILTER

Abstract: The present disclosure includes a cylindrical or other suitably shaped filter container for insertion into a user's nares to filter inhaled air to remove airborne items. The filter container has two open ends forming a container surrounding filter material. In a currently preferred embodiment of the present invention, polypropylene may be used to form the container or tube, other suitable material such as rubber or other softer material may also be used. The present disclosure further includes a respiration mask having a peripheral seal composed of treated and fluffed polypropylene fibers. An edge seal according to the present disclosure lowers the respiratory resistance of a mask and improves the filtration efficiency. Treated, fluffed, polypropylene may also be used to form a respiration mask, such a mask may also include an edge seal to improve filtration and comfort. Treated, meltblown, polypropylene may also be used to form a filter napkin or handkerchief that may be carried and used in short term or unexpected situation. It is emphasized that this abstract is provided to comply with the rules requiring an abstract which will allow a searcher or other reader to quickly ascertain the subject matter of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims.
Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
10 November 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

| IPC | A41D13/11 | A62B23/06 |

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)

| IPC | A41D | A62B |

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)

EP0-Internal, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category *</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
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</table>
| X | US 4 052 983 A (BOVENDER ET AL)  
11 October 1977 (1977-10-11)  
column 1, line 10 - line 11  
column 1, line 27 - line 34  
column 2, line 59 - line 59  
column 3, line 61 - line 64 | 1, 2 |
| Y | US 5 817 584 A (SINGER ET AL)  
6 October 1998 (1998-10-06)  
column 9, line 28 - line 29; claim 1 | 3 |

Further documents are listed in the continuation of box C.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance.
- "E" earlier document but published on or after the international filing date.
- "L" 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.
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is taken in combination with one or more other such documents, such combination being obvious to a person skilled in the art.
- "Z" document member of the same patent family.

Date of the actual completion of the international search: 25 May 2005

Date of mailing of the International search report: 7.10.2005

Name and mailing address of the ISA:

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Authorized officer:

Monné, E

Form PCT/ISA/16 (second sheet) [January 2004]
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<tr>
<td>Y</td>
<td>KANG AND SHAH: &quot;Filtration of nanoparticles with Dimethyldioctadecylammonium Bromide Treated microporous Polypropylene Filters&quot; LANGMUIR, vol. 13, no. 6, 1997, pages 1820-1826, XP002329414 abstract</td>
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<td>A</td>
<td>US 5 674 481 A (WAHI ET AL) 7 October 1997 (1997-10-07) column 1, line 15 - line 16 column 2, line 25 - line 41 column 3, line 27 - line 32 column 7, line 43 column 8, line 34 - line 35</td>
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INTERNATIONAL SEARCH REPORT

Box II  Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
   because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
   because they are dependant claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III  Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

   see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

   1-5.

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5

A nasal filter for attracting and capturing bacteria and virus comprising:
a first portion of filter fibers having a positive electrical charge;
a second portion of filter fibers having a positive electrical charge;
a first filter body containing the first portion of positively charged filter fibers;
a second filter body containing the second portion of positively charged filter fibers;
the first and second filter bodies being sized to engage the nares of a user.

2. claims: 6-24

A personal inhalation filter for attracting and capturing bacteria and virus comprising:
a generally planar layer of first filter fibers;
a generally planar layer of second filter fibers having a positive electrical charge, the first filter fibers and the second filter fibers overlapping to form a multilayer filter with the first filter layer forming an exterior side and the second filter layer forming a contact side;
means for securing the multilayer filter to the face of a user.
<table>
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<th>Publication date</th>
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From: PCT/ISA/110 (patent family annex) (January 2004)