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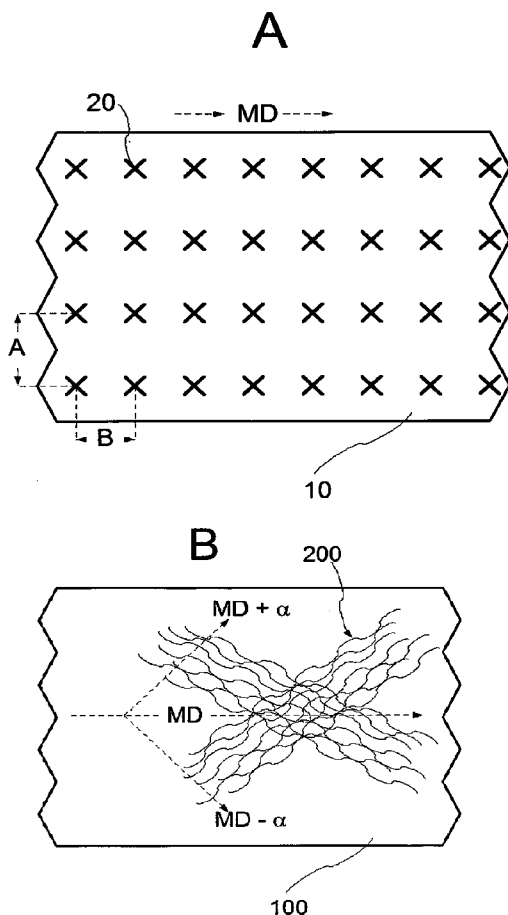
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[Continued on next page]

(54) Title: ANISOTROPIC EXTENSIBLE NONWOVENS



(57) Abstract: This invention relates to nonwoven fabrics in which the fibers of the fabric are laid down such that a majority of the fibers have a fiber direction making an angle substantially parallel to or within an angle in a range of +/- 45° of the machine direction. The invention also relates to a nonwoven fabric bonded web having bonding points in a pattern arranged along an axis perpendicular to the machine direction spaced and more widely apart than the bonding points arranged along an axis parallel to the machine direction. The resulting nonwoven having a very low elongation in the machine direction can be elongated with relatively little force in the cross machine direction.

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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL,
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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

INV. D04H1/54 D04H1/74 D04H3/02 D04H3/14 D04H13/00

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)

D04H B32B

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, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 538 250 A (PHOENIX INTELLECTUALS AND TECH [TW]) 8 June 2005 (2005-06-08) paragraphs [0010], [0017] - [0019] -----	1-3
X	US 6 537 644 B1 (KAUSCHKE MICHAEL [DE] ET AL) 25 March 2003 (2003-03-25) column 1, lines 37-40 column 1, line 64 - column 2, line 37 table figures 1-3 -----	1,3,4
X	US 4 999 232 A (LEVAN MARTIN DOUGLAS [US]) 12 March 1991 (1991-03-12) column 3, lines 17-41 column 4, lines 41-51 claims ----- -/--	5

☒ Further documents are listed in the continuation of Box C.

☒ 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
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *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
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/040477 A (KIMBERLY CLARK CO [US]; BROCK THOMAS W [US]; FORBES BRIAN S [US]; HAYN) 6 May 2005 (2005-05-06) figure 4a; example page 1, line 24 - page 4, line 25 page 14, line 20 - page 16, line 9 -----	6
A	US 3 812 553 A (MARSHALL P ET AL) 28 May 1974 (1974-05-28) figures 1,2,6,7 -----	6
A	GB 1 499 899 A (DU PONT) 1 February 1978 (1978-02-01) figures 2,3 -----	5
A	US 3 969 561 A (MARSHALL PRESTON F) 13 July 1976 (1976-07-13) the whole document -----	5
A	EP 1 520 569 A (PROCTER & GAMBLE [US]) 6 April 2005 (2005-04-06) figures 2-8 -----	1-4
A	US 2005/095943 A1 (GRIFFIN REBECCA W [US] ET AL) 5 May 2005 (2005-05-05) the whole document -----	1-6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/010360

Box No. 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 dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. 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 allsearchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
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.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-3

An extensible nonwoven having substantially different properties in the machine direction versus the cross direction, characterized in that said nonwoven has a cross direction elongation of at least 50 percent.

2. claim: 4

A process for making an extensible nonwoven comprising the steps of laying down a fibrous web and bonding the web by selecting a bonding pattern comprising a plurality of bonding points and wherein the bonding points arranged along an axis perpendicular to the machine direction are spaced more widely than the bond points arranged along an axis parallel to the machine direction and wherein the bonding points are provided by thermal energy.

3. claims: 5, 6

A process for making an extensible nonwoven comprising the steps of :

- aligning carded bats of fibers; or
- laying down a fibrous web using randomizing air jets; such that a majority of the fibers have a fiber direction making an angle substantially parallel to or within an angle in a range of +/- 45 degrees of the machine direction and bonding the web.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2007/010360

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