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[Continued on next page]

(54) Title: NONWOVEN ABRASIVE WHEEL

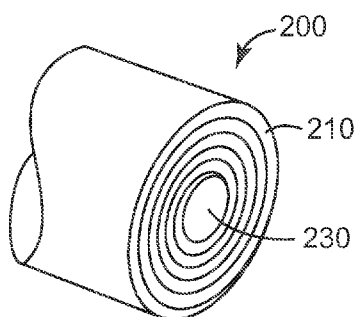


Fig. 2

(57) Abstract: A nonwoven abrasive wheel comprising one or more layers of a nonwoven fiber web, a plurality of super abrasive particles having a Vickers hardness greater than 40 GPa, a polyurethane binder adhering the plurality of super abrasive particles to the nonwoven fibers and adhering the layers of the nonwoven fiber web to each other, and wherein the nonwoven abrasive wheel comprises a Flexural Modulus from 4.0 to 128.0 lb/inch of thickness per inch of displacement.



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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.1 7(H))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

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29 March 2012

Published:

- with international search report (Art. 21(3))

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/042015**A. CLASSIFICATION OF SUBJECT MATTER****B24D 5/00(2006.01)i, B24D 3/28(2006.01)1, C09K 3/14(2006.01)1, B24D 18/00(2006.01)1**

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)

B24D 5/00; B24D 13/00; B24B 7/18; C09K 3/14; B24D 11/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility modelsElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: abrasive, wheel, nonwoven, layer, fiber, particle**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008-0127572 Al (LUDWIG BRET W.) 05 June 2008 see paragraph 98 - paragraph 135 and figures 1-3 .	1-3,7
A	US 2006-0148393 Al (KOICHI ONO et al.) 06 July 2006 see paragraph 145- paragraph 542 and figure 1.	1-3,7
A	KR 10-2008-0007225 A (HTC SWEDEN AB) 17 January 2008 see paragraph 42 - paragraph 53 and figure 4.	1-3,7

☐ 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 application or patent but published on or after the international filing date

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"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

19 JANUARY 2012 (19.01.2012)

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Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2011/042015**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.: 4-6
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:

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.:

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.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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