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61/196,163 14 October 2008 (14.10.2008) US
- (71) **Applicant** (for all designated States except US): **SANDVIK INNOVATIONS, LLC** [US/US]; 460 East Swedesford Road, Wayne, PA 19087 (US).
- (72) **Inventor; and**
- (75) **Inventor/Applicant** (for US only): **BURROWS, Roger** [GB/US]; 51 Cedar Road, Wilton, CT 06897 (US).
- (74) **Agents:** **BLANCO WHITE, Henry** et al.; Drinker Biddle & Reath LLP, One Logan Square, 18th And Cherry Streets, Philadelphia, PA 19103-6996 (US).
- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,

CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

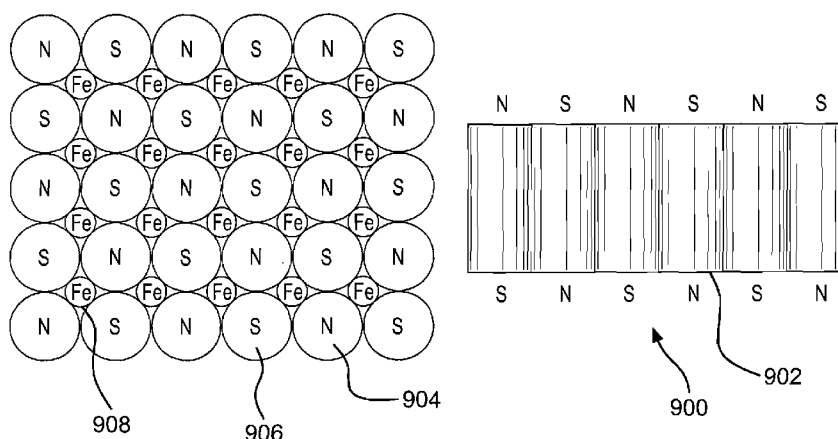
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Published:

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

- (88) **Date of publication of the international search report:**
22 July 2010

(54) **Title:** MAGNETIC LOAD SUPPORTING INKS

**FIG. 9**

(57) **Abstract:** A magnetizable ink contains at least 65% of magnetizable particles having a modal diameter between 3 μm and 10 μm . The particles may have a size distribution with 0% above 18 micron and not greater than 20% under 0.5 micron. The particles may have a surface area less than 50,000 cm^2 per cm^3 , and/or the ink may have a viscosity less than 16,000 cps when ready to print. Where the particles are rounded, magnetically soft iron particles, the surface area may be less than 12,000 cm^2 per cm^3 and the viscosity may be less than 1,500 cps.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/060438**A. CLASSIFICATION OF SUBJECT MATTER*****C09D 11/00(2006.01)i, C09D 5/23(2006.01)i***

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)

C09D 11/00; B32B 3/00; G03G 9/00; G03G 9/08; G03G 9/083; G09F 7/04; H05K 3/02; H05K 3/10

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 models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: magnetizable ink, diameter, surface area, viscosity, iron and ferrite.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2004-0241394 A1 (BURROWS ROGER I.) 02 December 2004 See claims 60-69, paras. 10-12 and figs. 9-16	1, 11, 13, 18-31
A	JP 2005-250213 A (TOYO INK MFG CO LTD) 15 September 2005 See abstract	1, 9, 11, 18
A	US 2003-0167634 A1 (KEIICHI NAKAO) 11 September 2003 See claims 13, 25 and paras. 67, 115	1, 3-6, 10, 13-18
A	US 6108506 A1 (UMETANI; YOSHINOBU) 22 August 2000 See claims 1, 7-9 and column 7, line 25	1, 3-6, 10, 13-18
A	US 5843329 A1 (DEETZ; DAYTON J.) 01 December 1998 See claims 1-8	1-31

☐ 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

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of 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

31 MAY 2010 (31.05.2010)

Date of mailing of the international search report

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Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-
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Authorized officer

CHUNG, Ki Ju

Telephone No. 82-42-481-5564



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2009/060438**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.: 32
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:

I. Claims 1-10, 18-26 directed to a magnetizable ink or a substrate, comprising magnetizable particles having a specific range of a modal diameter and a specific range of a surface area.

II. Claims 11-17, 27-28 directed to a magnetizable ink or a substrate, comprising magnetizable and rounded or sintered particles having a specific range of a modal diameter.

III. Claims 29-31 directed to a magnetic inducer.

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.

PCT/US2009/060438

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004-0241394 A1	02.12.2004	CN 100471687 C0 CN 1590122 A EP 1473686 A2 EP 1473686 A3 US 7192628 B2	25.03.2009 09.03.2005 03.11.2004 12.04.2006 20.03.2007
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US 6108506 A1	22.08.2000	JP 11-038671 A	12.02.1999
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