



(51) International Patent Classification:

G01V 1/52 (2006.01) **G01V 1/16** (2006.01)
G01V 1/44 (2006.01) **G01L 21/02** (2006.01)

(21) International Application Number:

PCT/US2011/027518

(22) International Filing Date:

8 March 2011 (08.03.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/311,888 9 March 2010 (09.03.2010) US

(71) Applicant (for all designated States except US): **BAKER HUGHES INCORPORATED** [US/US]; PO Box 4740, Houston, Texas 77210-4740 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DIFOGGIO, Rocco** [US/US]; 12006 Plumpoint Drive, Houston, Texas 77272-0734 (US). **STEINSIEK, Roger** [US/US]; 3131 Summerwind Ct., Houston, Texas 77584 (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, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

[Continued on next page]

(54) Title: ACOUSTIC TRANSDUCER WITH A LIQUID-FILLED POROUS MEDIUM BACKING AND METHODS OF MAKING AND USING SAME

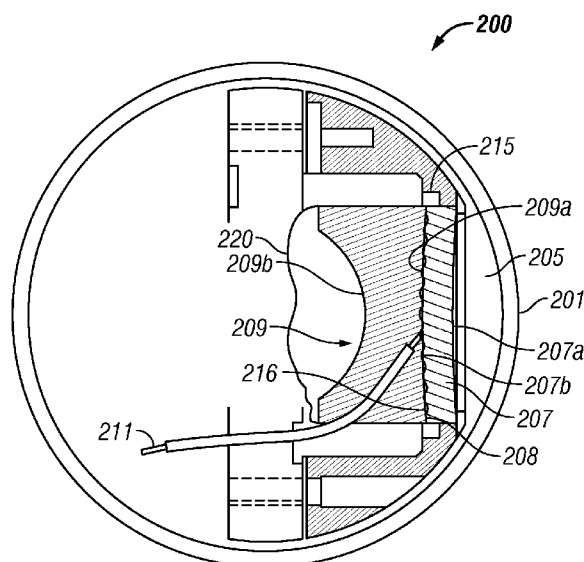


FIG. 2

(57) Abstract: In one aspect, the disclosure provides an apparatus that includes an acoustic transducer, and a backing coupled to the transducer, wherein the backing includes solid grains with fluid between the grains.



- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))* — *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))*

Published:

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

(88) Date of publication of the international search report:

19 January 2012

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/027518**A. CLASSIFICATION OF SUBJECT MATTER***G01V 1/52(2006.01)i, G01V 1/44(2006.01)i, G01V 1/16(2006.01)i, G01L 21/02(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)

G01V 1/52; E21B 47/00; B32B 27/38; E21B 43/17; H04R 17/00; A61B 8/00; G01N 29/00

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 practicable, search terms used)
eKOMPASS(KIPO internal) & "Keywords : transducer, backing, grain, liquid, impedance, viscosity and similar terms"**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005-0000279 A1 (YOGESWAREN, E.) 06 January 2005 See the paragraphs 27,28,30,46,48, claim 45,47 and fig 3,7.	1-24
A	US 6514618 B1 (MCKEIGHEN, R.) 04 February 2003 See the whole document.	1-24
A	US 6302847 B1 (GLEN, W. E. & DINEV, P. D.) 16 October 2001 See the whole document.	1-24
A	US 6354146 B1 (BIRCHAK, J. R. et al.) 12 March 2002 See the whole document.	1-24

☐ 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

30 NOVEMBER 2011 (30.11.2011)

Date of mailing of the international search report

30 NOVEMBER 2011 (30.11.2011)

Name and mailing address of the ISA/KR

Korean Intellectual Property Office
Government Complex-Daejeon, 189 Cheongsu-ro,
Seo-gu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Kim, Hye Won

Telephone No. 0424815456



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2011/027518

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-0000279 A1	06.01.2005	US 2006-0185430 A1	24.08.2006
US 6514618 B1	04.02.2003	None	
US 6302847 B1	16.10.2001	US 06066097A A	23.05.2000
US 6354146 B1	12.03.2002	None	