



- (51) **International Patent Classification:**
H04R 17/00 (2006.01)
- (21) **International Application Number:**
PCT/US2011/021507
- (22) **International Filing Date:**
18 January 2011 (18.01.2011)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
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- (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:

— of inventorship (Rule 4.17(iv))

Published:

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

(54) **Title:** AN IMPROVED FOCUSED ACOUSTIC TRANSDUCER

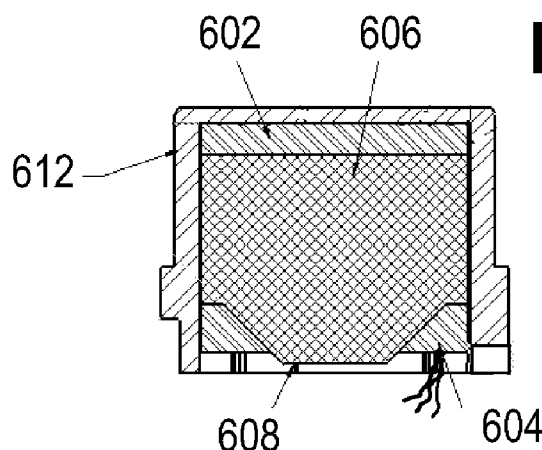


Fig. 6

(57) **Abstract:** A focused acoustic transducer suitable for use in a downhole environment is disclosed. At least some embodiments employ a disk of piezoelectric material with low planar coupling and low Poisson's ratio mounted on a backing material and sealed inside an enclosure. The piezoelectric material disk has a pattern of electrodes deposited on an otherwise smooth, ungrooved surface. Despite the lack of grooves, the material's low planar coupling and low Poisson's ratio enables the electrodes to operate in a phased relationship to provide and receive focused acoustic pulses. Moreover, the elimination of deep cuts offers a much lower cost of construction. The electrode material may be any conductive material, though silver and silver alloys are contemplated. The patterning of electrodes can occur during the deposition process (e.g., using a silk-screen or other printing technique) or afterwards (e.g., mechanically or chemically with an etch technique that uses a pre- or post-deposition photoresist layer).

