



(51) International Patent Classification:
F04B 17/00 (2006.01) *F04B 35/04* (2006.01)

(21) International Application Number:
PCT/SG2009/000488

(22) International Filing Date:
22 December 2009 (22.12.2009)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US):
NANYANG TECHNOLOGICAL UNIVERSITY [SG/
SG]; 50 Nanyang Avenue, Singapore 639798 (SG).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BOEY, Yin, Chi-
ang, Freddy** [SG/SG]; 8, Linden Drive, Singapore
288685 (SG). **MA, Jan** [SG/SG]; 367, Corporation Drive,
#08-437, Singapore 610367 (SG). **LI, Tao** [CN/SG]; 826
Jurong West St 81, #08-432, Singapore 640826 (SG).

(74) Agent: **PATEL, Upasana**; Marks & Clerk Singapore
LLP, Tanjong Pagar, P O Box 636, Singapore 910816
(SG).

(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.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ,
TM), European (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, SE, SI, SK, SM,
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
ML, MR, NE, SN, TD, TG).

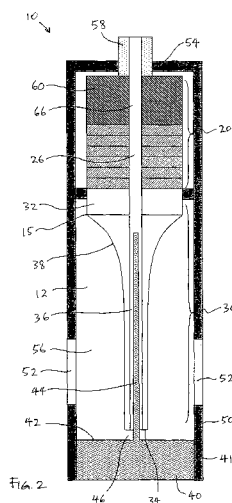
Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

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

(54) Title: AN ULTRASONIC FLUID PRESSURE GENERATOR



(57) Abstract: An ultrasonic fluid pressure generator for generating high pressure head in a fluid. The ultrasonic fluid pressure generator comprises a transducer comprising a piezoelectric actuator and a displacement amplifier, the displacement amplifier having a fluid channel there through, the displacement amplifier being connected to the piezoelectric actuator at one end and having a free vibrating tip at another end; a reflecting condenser disposed at the vibrating tip of the displacement amplifier to form a gap between the vibrating tip and a reflecting surface of the reflecting condenser; and a casing configured for establishing a standing wave in the fluid contained within the casing, the transducer and the reflecting condenser being at least in part within the casing.