



- (51) **International Patent Classification:**
G01N 22/04 (2006.01) *H01P 7/04* (2006.01)
- (21) **International Application Number:**
PCT/GB2013/053052
- (22) **International Filing Date:**
19 November 2013 (19.11.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
1220783.3 19 November 2012 (19.11.2012) GB
1220781.7 19 November 2012 (19.11.2012) GB
1313728.6 31 July 2013 (31.07.2013) GB
- (71) **Applicant:** SALUNDA LIMITED [GB/GB]; Unit 14A Oddington Grange, Weston-on-the-Green, Oxfordshire OX25 3QW (GB).
- (72) **Inventors:** HARRISON, Martin Roy; c/o Salunda Limited, 14A Oddington Grange, Weston-on-the-Green, Oxfordshire OX25 3QW (GB). WHERRIT, Peter; c/o Salunda Limited, Unit 14A Oddington Grange, Weston-on-the-Green, Oxfordshire OX25 3QW (GB).
- (74) **Agent:** MERRYWEATHER, Colin Henry; 14 South Square, Gray's Inn, London, Greater London WC1R 5JJ (GB).

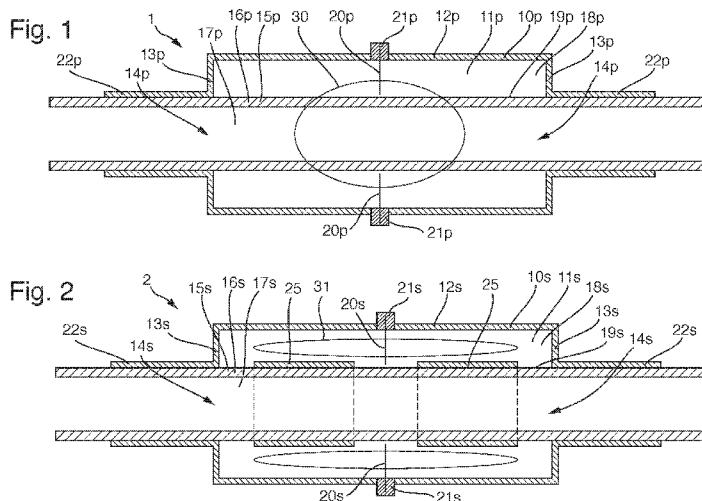
(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, 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, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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, KM, ML, MR, NE, SN, TD, TG).

Published:

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

(54) **Title:** CAVITY RESONATOR SYSTEM



(57) **Abstract:** A cavity resonator system for measuring EM properties of the contents of a pipe portion (15p, 15s) comprises a primary resonator (1) and a secondary resonator (2) each with the same configuration comprising a conductive casing (10p, 10s) that defines a cavity (11p, 11s) and has openings (14p, 14s) for receiving a pipe portion, insulator material (18p, 18s) disposed inside the cavity, and antennae (20p, 20s) for generating and detecting a resonant EM field inside the cavity. In addition, the secondary resonator (2) comprises at least one conductive screening ring (25) that extends around the location occupied by a pipe portion (15s) for screening the interior of the ring from the field generated inside the cavity of the secondary resonator. By combining measures of parameters of the field from both resonators, the system may be used to generate a measure representative of EM properties of the contents of the pipe portion that is compensated for variation in the EM properties of the insulator material due to e.g. temperature and pressure.