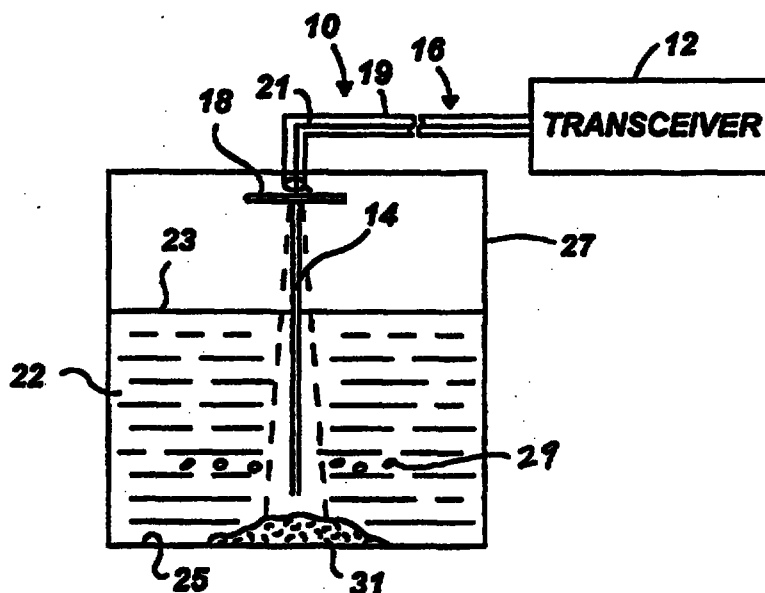




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(21) International Application Number: PCT/US95/15775 (22) International Filing Date: 5 December 1995 (05.12.95) (30) Priority Data: 08/359,090 19 December 1994 (19.12.94) US (71) Applicant: THE REGENTS OF THE UNIVERSITY OF CALIFORNIA [US/US]; 22nd floor, 300 Lakeside Drive, Oakland, CA 94612 (US). (72) Inventor: McEWAN, Thomas, E.; 1734 Cairo Street, Livermore, CA 94550 (US). (74) Agent: SARTORIO, Henry, P.; P.O. Box 808, Livermore, CA 94550 (US).		(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TT, UA, UG, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, LS, MW, SD, SZ, UG). Published <i>With international search report.</i>

(54) Title: ELECTRONIC MULTI-PURPOSE MATERIAL LEVEL SENSOR



(57) Abstract

A sensor for determining the surface or interface level of a material comprising a transceiver (12) and an inner conductor (21) of a coaxial cable (16) electrically coupling the transceiver (12) to a guide wire (14) partially immersed in the material. A launcher plate (18) is connected to the outer shield (19) of the cable (16) and an impedance (20) connects the launcher plate (18) to the guide wire (14). The launcher plate (18) produces a fiducial pulse back to the transceiver (12). Electromagnetic waves transmitted from the launcher plate (18) propagate along the guide wire (14). The waves are reflected by the surface or interface, received by the launcher plate (18) and transmitted as reflected pulses to the transceiver (12). The transceiver (12) determines a time delay between the fiducial and reflected pulses to establish the surface or interface level relative to the launcher plate (18).