

**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶: G01F 23/284, H01P 1/08	A1	(11) International Publication Number: ✓ WO 97/12211 (43) International Publication Date: 3 April 1997 (03.04.97)
(21) International Application Number: PCT/US96/15297 ✓ (22) International Filing Date: 25 September 1996 (25.09.96) ✓ (30) Priority Data: 08/536,471 29 September 1995 (29.09.95) ✓ US (71) Applicant: ROSEMOUNT INC. [US/US]; 12001 Technology Drive, Eden Prairie, MN 55344 (US). ✓ (72) Inventors: PALAN, Donald, F.; 2208 Grimm Road, Chaska, MN 55318 (US). MILLER, Jon, D.; 8455 Carriage Hill Bay, Savage, MN 55378 (US). (74) Agents: WESTMAN, Nickolas, E. et al.; Westman, Champlin & Kelly, P.A., Suite 1600 - International Centre, 900 Second Avenue South, Minneapolis, MN 55402-3319 (US).		(81) Designated States: BR, CA, CN, JP, KR, MX, RU, SG, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: MICROWAVE WAVEGUIDE FOR TANK LEVEL SENSORS**(57) Abstract**

A level sensor assembly (14) is mounted on a flange (24) surrounding a port (16) of a tank (10), and has a waveguide adapter (30, 40) for transmitting microwave energy from a source of microwave energy to an aperture (50) of an antenna (48) on the interior of the tank (34). The waveguide includes apertures (38, 46) that carry microwaves to the antenna (48). A mechanical barrier (54) in a portion (46) of the aperture (38, 46) prevents escape of a fluid under pressure or liquid from the interior of the tank (10), and also serves to reduce impedance mismatch between the air, vapor, or liquid filled waveguide and antenna apertures (38, 46, 50). The adapter (30, 40) includes an adapter plate (40) having a second waveguide aperture (38). The aperture (38) has a process sealed mechanical barrier (62) mounted coaxially with the mechanical barrier (54).

