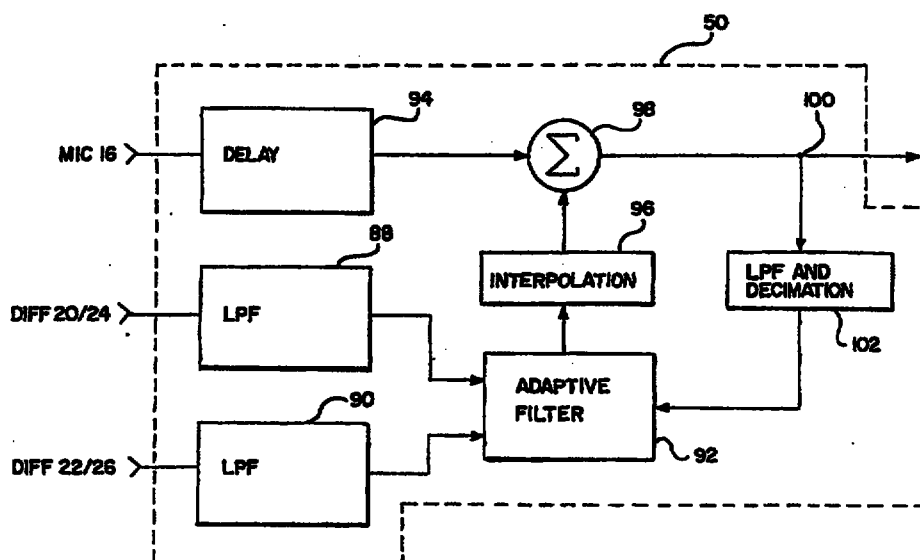




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04R 3/00	A1	(11) International Publication Number: WO 99/33324 (43) International Publication Date: 1 July 1999 (01.07.99)
(21) International Application Number: PCT/US98/27326 (22) International Filing Date: 21 December 1998 (21.12.98) (30) Priority Data: 08/995,714 22 December 1997 (22.12.97) US (71) Applicant: AUDIO-TECHNICA, U.S., INC. [US/US]; 1221 Commerce Drive, Stow, OH 4424 (US). (72) Inventors: GREEN, Jacquelyn; 700 Stone Cliff Drive, Akron, OH 44313 (US). GREEN, Robert, T., III; 700 Stone Cliff Drive, Akron, OH 44313 (US). KIKUTANI, Tadashi; 7592 Redwing Trail, Stow, OH 44224 (US). (74) Agents: SHEKLETON, Gerald, T. et al.; Welsh & Katz, Ltd., 22nd floor, 120 S. Riverside Plaza, Chicago, IL 60606 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the</i> <i>claims and to be republished in the event of the receipt of</i> <i>amendments.</i>

(54) Title: DIGITAL AND ANALOG DIRECTIONAL MICROPHONE



(57) Abstract

A directional microphone comprises a shotgun microphone (16) having an elongated tube which is designed to control directivity at frequencies above a predetermined frequency and at least four reference microphones (20, 22, 24, 26) spatially arranged about said shotgun microphone (16). A signal processor (50), which is electrically connected to the shotgun and reference microphones, generates interference cancelling signals (from 96) from the portions of the signals from the reference microphones (20, 22, 24, 26) which have frequencies generally below the predetermined frequency. The signal processor (50) combines (98) the cancelling signals with the signal from the shotgun microphone (16) to generate an output signal (100) in which signals originating from in front of the directional microphone in a direction along the longitudinal axis of the tube are enhanced and signals originating from locations other than in front of the directional microphone in a direction along the longitudinal axis of the tube are suppressed.