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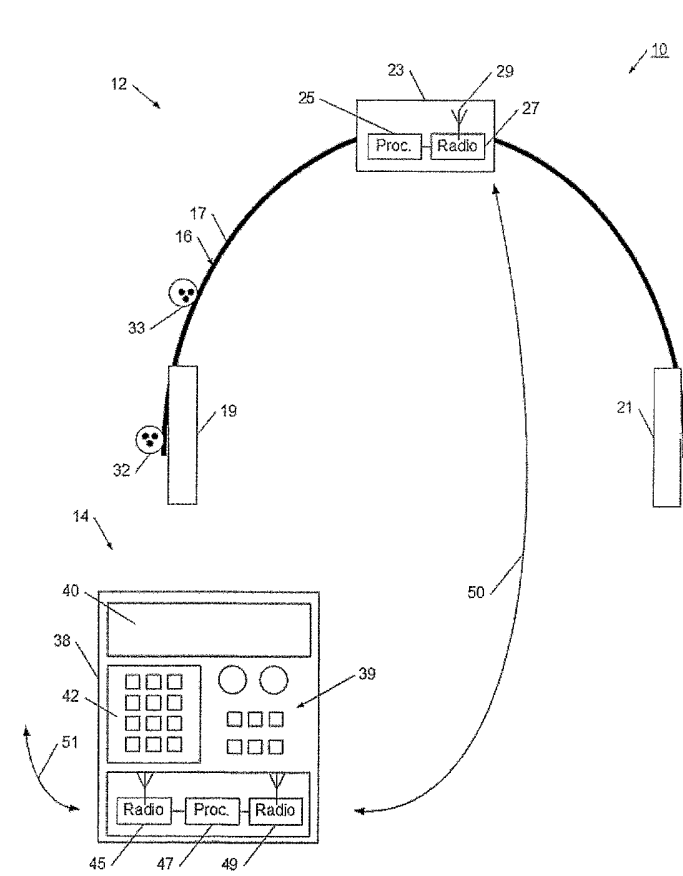
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(54) Title: HEADSET FOR SEPARATION OF SPEECH SIGNALS IN A NOISY ENVIRONMENT



(57) Abstract: A headset (12) is constructed to generate an acoustically distinct speech signal in a noisy acoustic environment. The headset positions a pair of spaced-apart microphones (32-33) near a user's mouth. The microphones each receive the user's speech, and also receive acoustic environmental noise (267). The microphone signals, which have both a noise and information component, are received into a separation process (355). The separation process generates a speech signal (356) that has a substantial reduced noise component. The speech signal is then processed for transmission (368). In one example, the transmission process includes sending the speech signal (370) to a local control module (14) using a Bluetooth radio (27).

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RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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A. CLASSIFICATION OF SUBJECT MATTER
 IPC(8) - G10K 11/16 (2006.01)
 USPC - 381/71.6, 74, 94.1, 94.2
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 351/158; 379/406.04; 381/26, 71.6, 71.7, 72, 74, 94.2, 120, 379, 381; 455/100, 569.1; 700/94

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 PUBWEST--PGPB, USPT, EPAB and JPAB--searched headset, headphone, speaker\$, microphone\$, processor, reduc\$, noise, adjust\$, position\$, mouth, wind, inch, blind source separation, independant component analysis, generalize sidelobe canc\$

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 5,251,263 A (ANDREA et al.) 05 October 1993 (05.10.1993) see col. 3 lines 51-54 and 63-67, col. 4 lines 1-7 and 23-29, col. 5 lines 41-43, col. 6 lines 45-49, col. 8 lines lines 27-31 and 47-56, col. 10 lines 58-61 24, col. 11 lines 5-7 and lines 54-60, col. 14 lines 29-52, figs. 4-6 and 10 See col. 3 lines lines 51-54 and 63-67, col. 4 lines 4-7 and lines 23-29, col. 5 lines 41-43, col. 8 lines 27-31 and 47-56	1-2, 5-7, 12-13, 16-22, 24-26, 28, 32-35, and 37-40 ----- 3-4, 8-11, 14-15, 23, 27, 29-31, 36, and 41
Y	US 2004/0120540 A1 (MULLENBORN et al.) 24 June 2004 (24.06.2004) see paragraph 69 and claim 10	3, 10-11, and 29
Y	US 6,606,506 B1 (JONES) 12 August 2003 (12.08.2003) see col. 6 lines 8-11	4
Y	US 5,715,321 A (ANDREA et al.) 03 February 1998 (03.02.1998) see col. 4 lines 38-41, col 5 lines 21-25 and lines 37-41 and lines 53-56, col. 7 lines 9-12, col. 14 lines 24-26	8-9, 23, 36, and 41
Y	US 6,002,776 A (BHADKAMKAR et al.) 14 December 1999 (14.12.1999) see col 17 lines 21-23 and col. 4 lines 12-27	14, 27 ,and 30
Y	US 2004/0039464 A1 (VIROLAINEN et al.) 26 February 2004 (26.02.2004) see paragraph 87	15 and 31
A	US 5,327,178 A (MCMANIGAL) 05 July 1994 (05.07.1994) see entire document	1-42
A	US 5,375,174 A (DENENBERG) 20 December 1994 (20.12.1994) see entire document	1-42
A	US 2004/0136543 A1 (WHITE et al.) 15 July 2004 (15.07.2004) see entire document	1-42

Further documents are listed in the continuation of Box C. See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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