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KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ,
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(54) **Title:** SUBSTANTIALLY PLANATE PARAMETRIC EMITTER AND ASSOCIATED METHODS

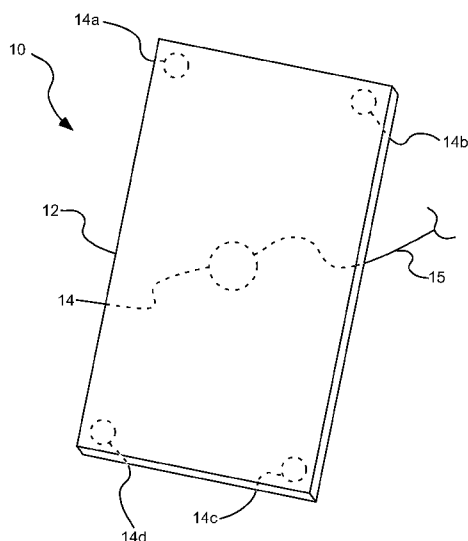


FIG. 1

(57) **Abstract:** A parametric speaker comprises a generally planate radiating element (12), suitable for radiating ultrasonic vibrations into a fluid medium, and an emitter (14), having an ultrasonic output and/or resonant frequency, the emitter being intimately coupled to the radiating element. The radiating element is physically configured to have a mechanical resonance that substantially matches the output and/or resonant frequency of the emitter.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - H04R 1/00 (2015.01)

CPC - H04R 1/00, H04R 7/04, H04R 7/18, H04R 17/00, H04R 2217/03

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)

CPC: H04R 1/00, H04R 7/04, H04R 7/18, H04R 17/00, H04R 2217/03

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

CPC: H04R 1/00, H04R 7/04, H04R 7/18, H04R 17/00, H04R 2217/03, H04R 2307/025, H04R 2307/023

IPC(8): H04R 1/00 (2015.01); USPC: 381/98 (see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PatBase, PubWEST, Google Scholar. Search terms used: speaker, loudspeaker, transducer, resonant, parametric, radiating, diaphragm, membrane, planate, planar, panel, ultrasonic, audio, audible, electromechanical, mechanical, force, movement, vibrate, alumina silicate, sheet, metallic, polymer, piezoelectric

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 2003/0059069 A1 (Bank et al.) 27 March 2003 (27.03.2003), entire document, especially fig. 1-4, 13-14, para [0007]-[0008], [0032]-[0035], [0048]-[0069], [0072], [0079], [0082], [0086]	1, 8-10, 13, 14 ----- 2-7, 11, 12, 15
Y	WO 1999/037121 A1 (Azima et al.) 22 July 1999 (22.07.1999), entire document, especially pg 34, ln 21-pg 35, ln 26; pg 23, ln 28-pg 24, ln 16; Fig 1-4; Claims 25-27	2, 15-17
Y	US 2012/0275100 A1 (Pakula et al.) 01 November 2012 (01.11.2012), entire document, especially fig. 2A, 23A, para [0094]-[0096], [0175]	3-5, 11
Y	US 2001/0033124 A1 (Norris et al.) 25 October 2001 (25.10.2001), entire document, especially fig. 2-9, para [0022]-[0028], [0031], [0037]-[0047].	6, 7, 12, 16, 17
A	US 2012/0148082 A1 (Norris) 14 June 2012 (14.06.2012), entire document	1-17
A	US 2005/0248233 A1 (Pompei) 10 November 2005 (10.11.2005), entire document	1-17

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

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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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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

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