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(54) Title: HORN ANTENNA, WAVEGUIDE OR APPARATUS INCLUDING LOW INDEX DIELECTRIC MATERIAL

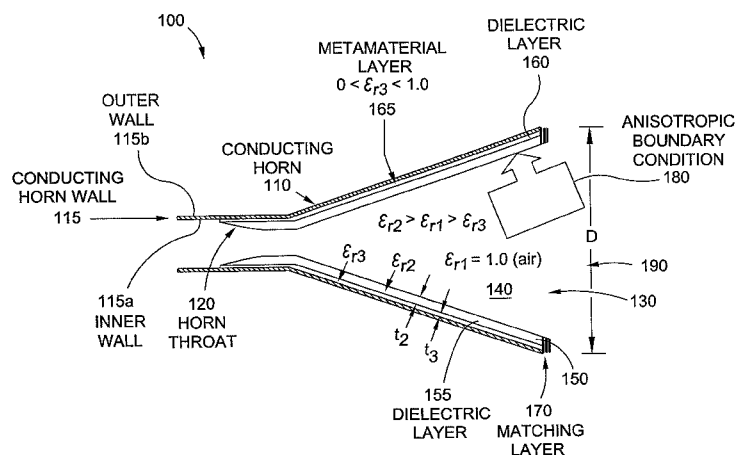


FIG. 1

(57) Abstract: A horn antenna includes a conducting horn having an inner wall and a first dielectric layer lining substantially the entire inner wall of the conducting horn. The first dielectric layer includes a metamaterial having a dielectric constant of greater than 0 and less than 1. The horn antenna may further include a dielectric core abutting at least a portion of the first dielectric layer. In one aspect, the dielectric core includes a fluid. A waveguide and a power combiner assembly, each including a metamaterial, are also disclosed.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 09/30355

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - H01Q 13/00 (2009.01) USPC - 343/772 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) USPC: 343/772 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 343/772, 700R, 785, 786 (text search - see terms below) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST(USPT,PGPB,EPAB,JPAB); Google Scholar Search Terms: dielectric fluid, gas, liquid, core, horn, dielectric constant, metamaterial, impedance, aperture, hybrid, radio, waveguide, microstrip, antenna		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,992,639 B1 (LIER) 31 January 2006 (31.01.2006), entire document, especially; FIG. 1, FIG. 18, col 2, ln 53-59, col 5, ln 15 to col 8, ln 7, col 11, ln 25-35.	1 - 20
Y	US 6,985,118 B2 (ZARRO et al.) 10 January 2006 (10.01.2006), entire document, especially; col 10, ln 66 to col 11, ln 9.	1 - 20
Y	US 2001/0020920 A1 (SHIGIHARA) 13 September 2001 (13.09.2001), entire document, especially; para [0011].	19
A	US 6,879,297 B2 (BROWN et al.) 12 April 2005 (12.04.2005), entire document.	1 - 20
☐ Further documents are listed in the continuation of Box C. ☐		
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774