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(54) Robust composite quantization with sub-quantizers and inverse sub-quantizers using illegal space

(57) A sub-quantizer for sub-quantization of a vector includes a sub-codevector generator that generates a set of candidate sub-codevectors, and transformation logic that transforms each candidate sub-codevector into a corresponding codevector. A memory stores an illegal space definition representing illegal vectors. A legal status tester determines legal codevectors among the codevectors based on the illegal space definition. An error calculator generates error terms corresponding to the candidate sub-codevectors, and a sub-codevector selector determines a best one of the sub-codevectors corresponding to a legal codevector and a best error term. The vector includes parameters relating to a speech and/or audio signal, such as Line Spectral Frequencies (LSFs).

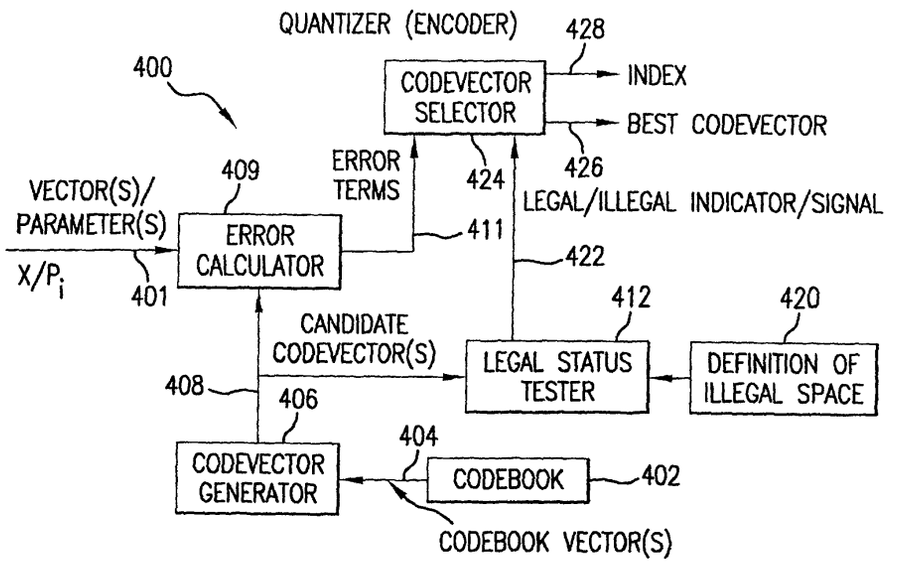

FIG.4A

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EUROPEAN SEARCH REPORT

Application Number
EP 02 25 5722

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	SMITH A M ET AL: "Normalization and polygon error detection for split VQ of line spectral frequencies" 2000 IEEE WORKSHOP ON SPEECH CODING.PROCEEDINGS., 17 September 2000 (2000-09-17), pages 123-125, XP010520062 PISCATAWAY,NJ, IEEE,USA	1-3, 10-13, 15,17, 18, 20-23, 26,28, 29, 35-37, 39,41, 43,44, 46-49, 51,54-60	G10L19/06 G10L19/06
Y	* the whole document *	4-9,14, 16,19, 24,25, 27, 30-34, 38,40, 42,45, 50,52,53	
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Y	SHOHAM Y: "Coding the line spectral frequencies by jointly optimized MA prediction and vector quantization" SPEECH CODING PROCEEDINGS, 1999 IEEE WORKSHOP ON PORVOO, FINLAND 20-23 JUNE 1999, PISCATAWAY, NJ, USA,IEEE, US, 20 June 1999 (1999-06-20), pages 46-48, XP010345559 PISCATAWAY,NJ,IEEE,USA ISBN: 0-7803-5651-9 * page 46, left-hand column, line 1 - page 47, left-hand column, line 32 * * page 48, left-hand column, line 30 - line 46 *	4-9,16, 19,24, 25,27, 30-34, 38,42, 45,50, 52,53	G10L
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	1 July 2004	Dobler, E

CATEGORY OF CITED DOCUMENTS

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A	HITOSHI OHMURO ET AL: "CODING OF LSP PARAMETERS USING INTERFRAME MOVING AVERAGE PREDICTIONAND MULTI-STAGE VECTOR QUANTIZATION" IEICE TRANSACTIONS ON FUNDAMENTALS OF ELECTRONICS, COMMUNICATIONS AND COMPUTER SCIENCES, INSTITUTE OF ELECTRONICS INFORMATION AND COMM. ENG. TOKYO, JP, vol. 76A, no. 7, 1 July 1993 (1993-07-01), pages 1181-1183, XP000394726 ISSN: 0916-8508 * the whole document *	1-60	TECHNICAL FIELDS SEARCHED (Int.Cl.7)

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