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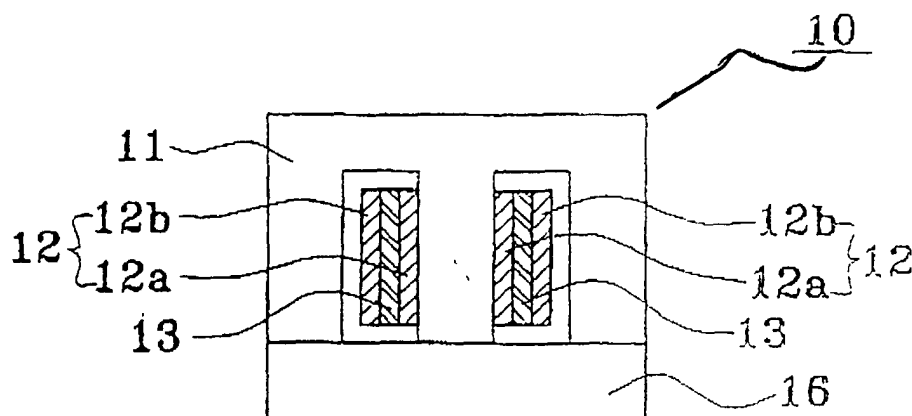
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(54) **Transformer for piezoelectric speaker and piezoelectric speaker operative with said transformer**

(57) The transformer (10) for a piezoelectric speaker includes an E-shaped magnetic core (11). An inner secondary winding (12a) having a number of turns corresponding to approximately one-half of the number of turns of a secondary winding (12) is wound around a shaft portion of the magnetic core (11). A primary winding (13) is wound around the shaft portion of the mag-

netic core (11) over the inner secondary winding (12a). Further, an outer secondary winding (12b) having a number of turns corresponding to the another half of the number of turns of the secondary winding (12) is wound around the shaft portion of the magnetic core (11) over the primary winding (13). An I-shaped core (16) is provided at the open side of the E-shaped magnetic core (11).

Fig. 1





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EUROPEAN SEARCH REPORT

Application Number
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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.6)
A	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 07, 31 July 1996 (1996-07-31) & JP 08 064432 A (MATSUSHITA ELECTRIC WORKS LTD), 8 March 1996 (1996-03-08) * abstract * * figure 34 *	1	H04R17/00 H01F1/00 H01F19/02
A	DE 195 19 594 A1 (TABUCHI ELECTRIC CO., LTD., SANDA, HYOGO, JP; TABUCHI ELECTRIC CO., LT) 7 December 1995 (1995-12-07) * column 1, line 66 - column 2, line 20 * * figure 10 *	1	
A	PATENT ABSTRACTS OF JAPAN vol. 006, no. 185 (E-132), 21 September 1982 (1982-09-21) & JP 57 099899 A (SANYO ELECTRIC CO LTD), 21 June 1982 (1982-06-21) * abstract *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			H04R H01F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 May 2005	Examiner Kunzelmann, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 08064432	A	08-03-1996	NONE
DE 19519594	A1	07-12-1995	JP 3404180 B2 06-05-2003
		JP 8051035 A 20-02-1996	
		US 5696477 A 09-12-1997	
JP 57099899	A	21-06-1982	NONE