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Gao et al.

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(54) **HIGH-IMPEDANCE LINE AND DETECTING SYSTEM HAVING THE SAME**

(56) **References Cited**

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U.S. PATENT DOCUMENTS

3,761,842	A *	9/1973	Gandrud	333/1
5,113,159	A	5/1992	Adriaenssens et al.	
5,774,789	A *	6/1998	van der Kaay et al.	455/16
5,939,952	A *	8/1999	Noda et al.	333/1
6,222,129	B1 *	4/2001	Siekierka et al.	174/113 R
6,504,246	B2 *	1/2003	Roth et al.	257/750
6,625,682	B1 *	9/2003	Simon et al.	710/305
7,271,985	B1 *	9/2007	Buhler et al.	360/245.9
8,119,919	B2 *	2/2012	Tagi et al.	174/254
2009/0085706	A1	4/2009	Baarma et al.	
2009/0237183	A1	9/2009	Chen et al.	

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FOREIGN PATENT DOCUMENTS

EP	0400885	12/1990
GB	380101	9/1932
TW	207834	6/1993
TW	M294675	7/2006
TW	200938017	9/2009
TW	200941937	10/2009

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OTHER PUBLICATIONS

Tables of AWG wire sizes, used since 1857, http://en.wikipedia.org/wiki/American_wire_gauge.*

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* cited by examiner

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(52) **U.S. Cl.**

USPC **333/245; 333/236**

(58) **Field of Classification Search**

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See application file for complete search history.

(57) **ABSTRACT**

A high-impedance line includes a plurality of windings successively arranged. Each of the windings includes an upper portion and a lower portion parallel to the upper portion. The upper portions of each of the windings are electrically connected to the lower portions of adjacent windings. A resistance unit electrically connected between every two adjacent windings.

16 Claims, 7 Drawing Sheets

