

(54) **METHOD AND SYSTEM OF MANAGING VOLUME AND FUNCTIONALITY CONTROL BETWEEN AN AUDIO PLAYER AND WIRELESS EARPHONES**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 462 days.

6,684,063 B2 *	1/2004	Berger et al.	455/90.1
7,110,798 B2 *	9/2006	Nassimi	455/575.2
7,457,424 B2 *	11/2008	Katayama et al.	381/105
7,469,051 B2 *	12/2008	Sapashe et al.	381/104
7,529,545 B2 *	5/2009	Rader et al.	455/432.2
7,532,258 B1 *	5/2009	Galgano	348/734
7,599,679 B2 *	10/2009	Awiszus	455/403
7,620,433 B2 *	11/2009	Bodley	455/575.2
7,657,024 B2 *	2/2010	Huang	379/428.02
2002/0039424 A1	4/2002	Watanuki	
2004/0151336 A1 *	8/2004	Han et al.	381/370
2004/0247138 A1	12/2004	Wang	
2008/0025538 A1 *	1/2008	Zad-Issa	381/315

FOREIGN PATENT DOCUMENTS

EP	1 196 007	10/2002
EP	1 715 718	10/2006
WO	2004/093490	10/2004

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Related U.S. Application Data

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(51) **Int. Cl.**

H04M 3/00 (2006.01)

H04B 7/00 (2006.01)

(52) **U.S. Cl.** **455/419**; 455/420; 455/41.2; 455/575.2; 455/355

(58) **Field of Classification Search** 455/418, 455/419, 420, 41.2, 569.1, 575.2
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,721,783 A * 2/1998 Anderson 381/328

OTHER PUBLICATIONS

International Search Report for PCT/US2007/077633, Jan. 2008.

* cited by examiner

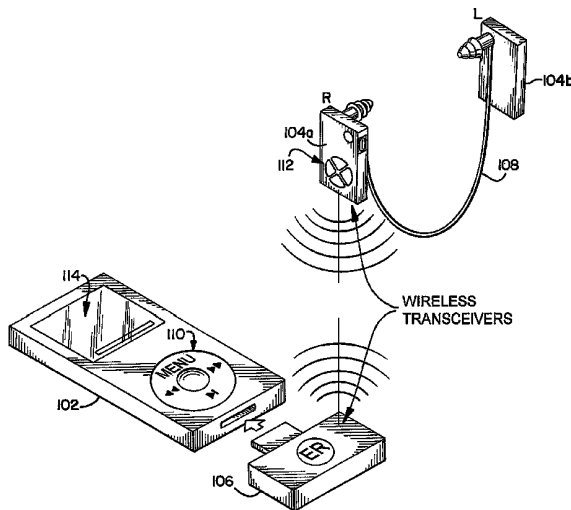
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(57) **ABSTRACT**

A method and system for providing low-noise, high-fidelity wireless Bluetooth earphones with control operation either at the earphone or the player that operate to control the volume and other functionality from either location in a seamless manner and provide probe volume control display regardless of which location is used.

27 Claims, 6 Drawing Sheets



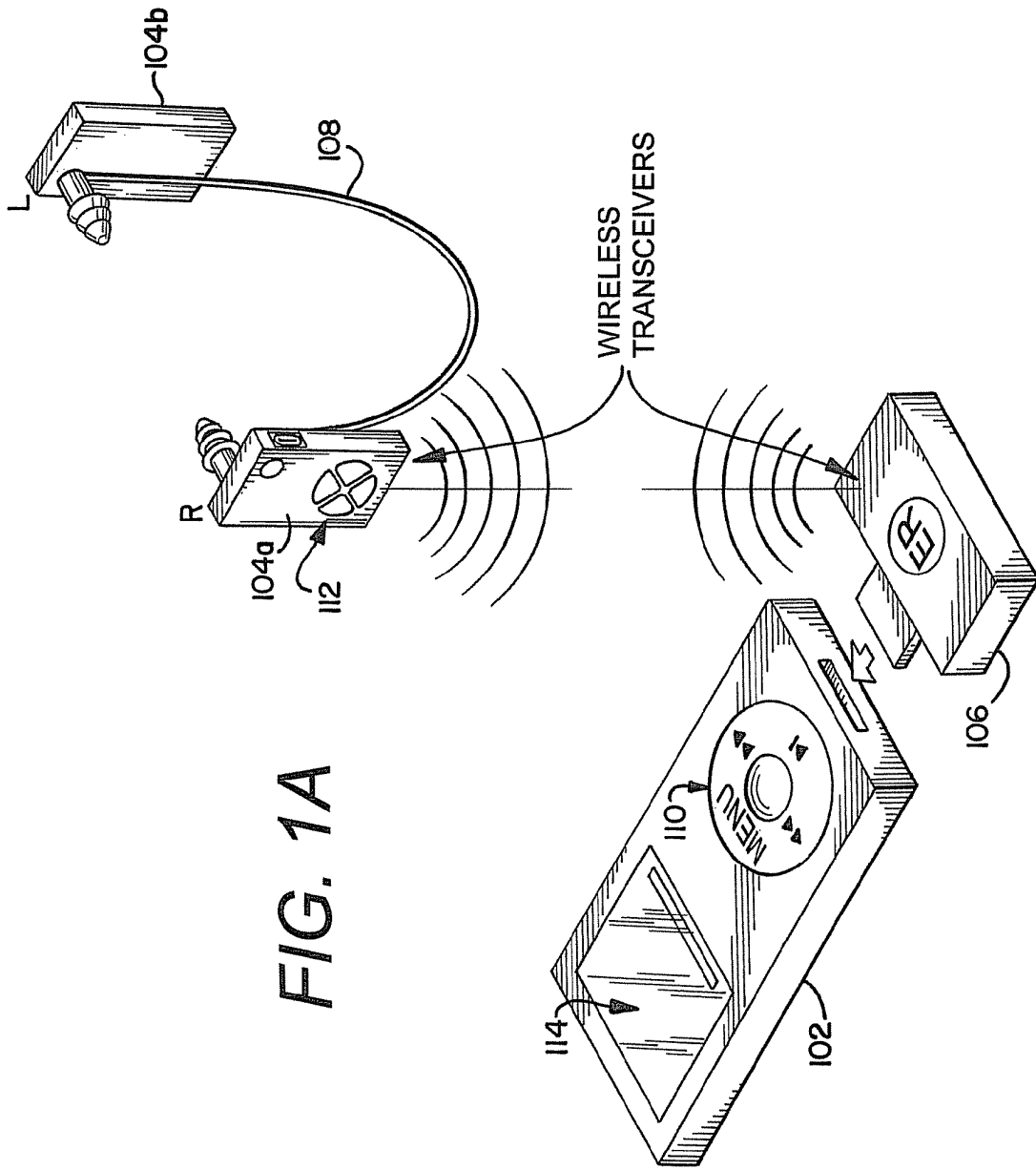


FIG. 1C

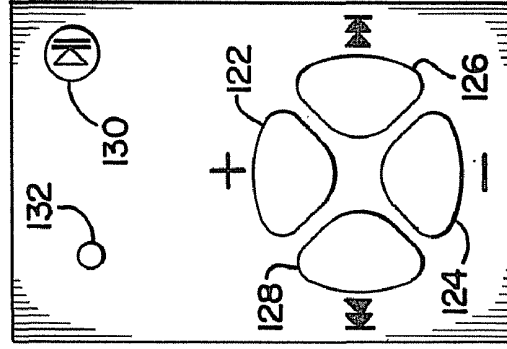


FIG. 1B

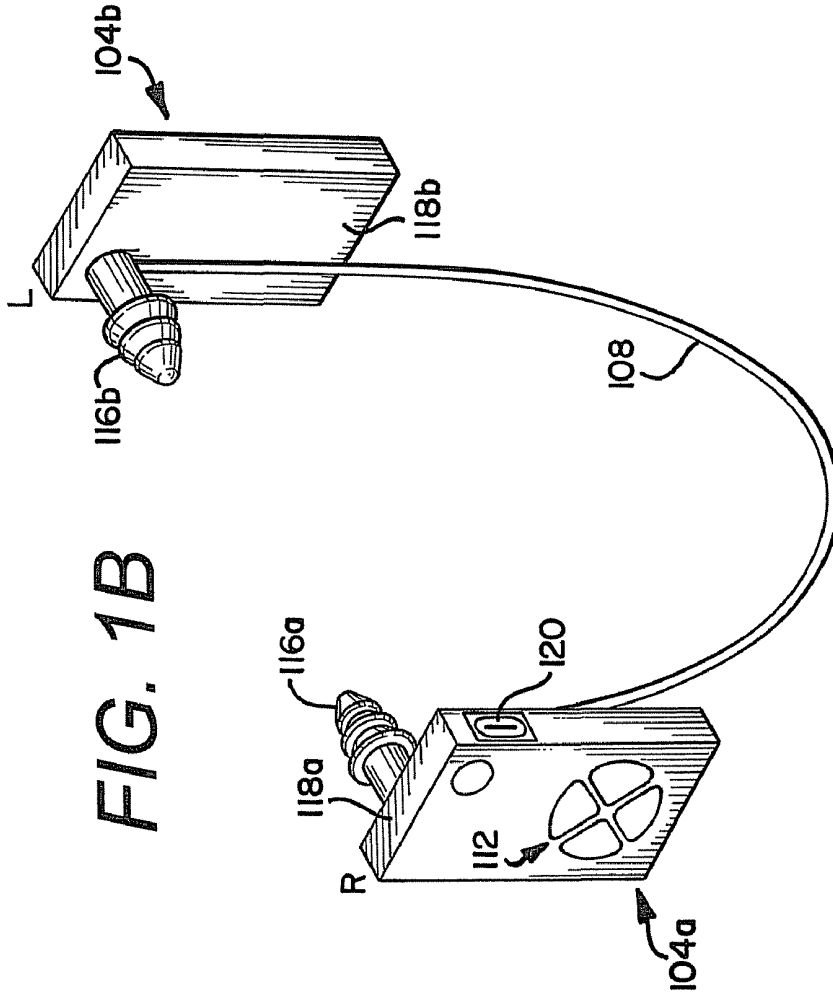
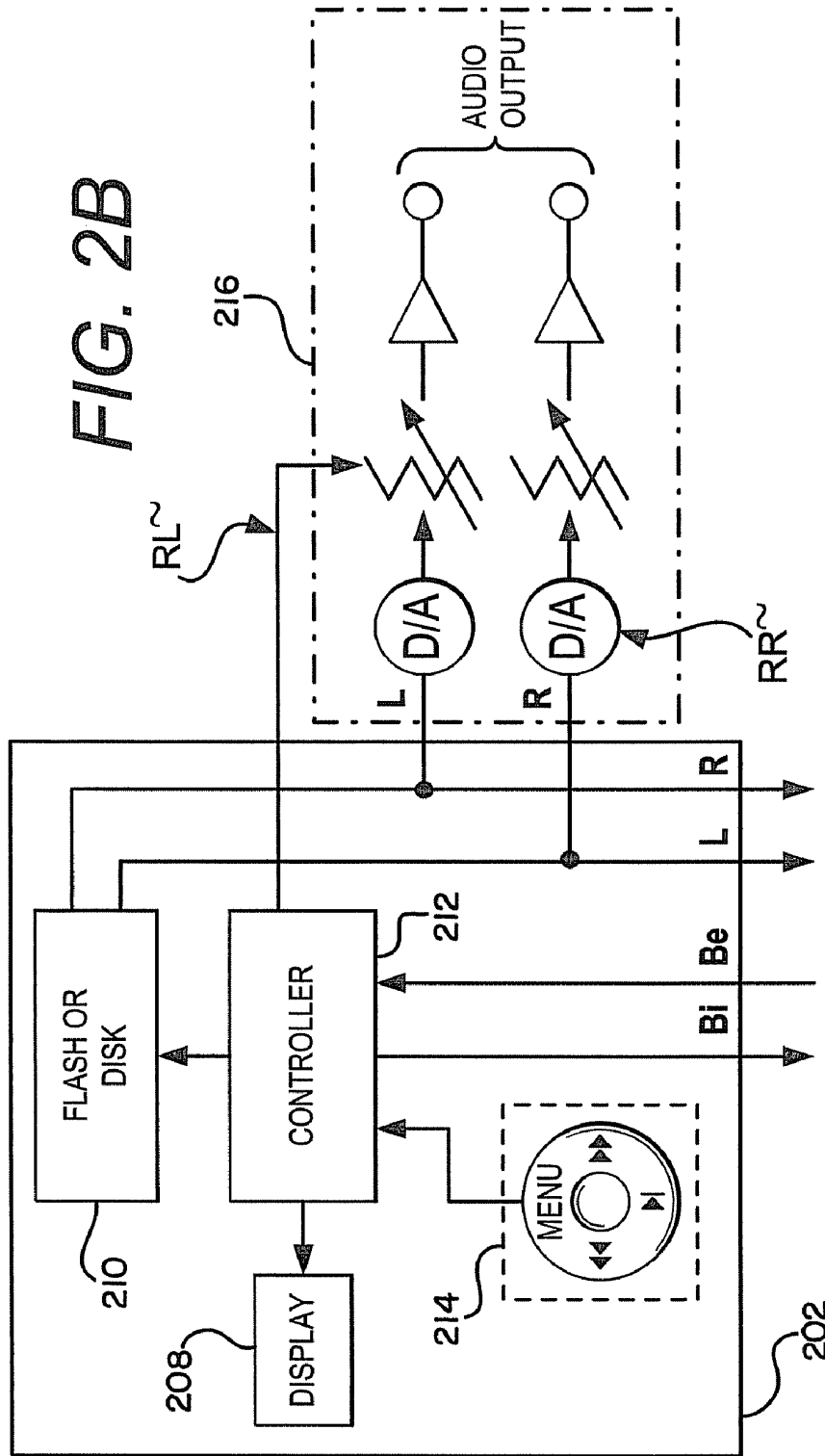


FIG. 2B



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