

US 8,571,544 B2

Oct. 29, 2013

## (12) United States Patent

Pelland et al.

#### (54) SYSTEM WITH WIRELESS EARPHONES

(75) Inventors: Michael J. Pelland, Princeton, WI (US); Michael J. Koss, Milwaukee, WI (US); Michael Sagan, Marshall, WI (US); Steven Reckamp, Brooklyn, NY (US);

Gregory J. Hallingstad, Madison, WI (US); Jeffrey K. Bovee, Lake Geneva, WI (US); Morgan J. Lowery, DeForest,

WI (US)

(73) Assignee: Koss Corporation, Milwaukee, WI (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 13/459,291

(22)Filed: Apr. 30, 2012

(65)**Prior Publication Data** 

> US 2012/0213381 A1 Aug. 23, 2012

### Related U.S. Application Data

(63) Continuation of application No. 12/936,488, filed as application No. PCT/US2009/039754 on Apr. 7, 2009, now Pat. No. 8,190,203.

Provisional application No. 61/123,265, filed on Apr. 7, 2008.

(51) **Int. Cl.** H04W 40/00 (2009.01)

(52) U.S. Cl. 

Field of Classification Search

USPC ....... 455/569.1, 462, 466, 556.1, 66.1, 455/343.2, 575.2, 553.1; 381/74, 57, 401, 381/17, 103, 309

See application file for complete search history.

(10) **Patent No.:** 

(56)

(45) **Date of Patent:** 

## **References Cited** U.S. PATENT DOCUMENTS

5,784,685 A 7/1998 Stanford et al. 6,792,091 B2 9/2004 Lemchen et al. (Continued)

#### FOREIGN PATENT DOCUMENTS

2004-320597 A 11/2004 JP WO WO 2006/047724 A2 5/2006

(Continued)

#### OTHER PUBLICATIONS

Supplementary European Search Report for European Application No. 09731146.8 mailed Jun. 10, 2011, 7 pages.

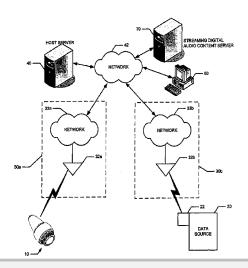
(Continued)

Primary Examiner — Kiet Doan (74) Attorney, Agent, or Firm — K&L Gates LLP

#### (57)ABSTRACT

A system comprising a wireless network adapter and a pair of earphone. The wireless network adapter is external to a digital audio player and configured to connect to the digital audio player via an audio jack of the digital audio player. The wireless network adapter is for encoding analog audio received from the digital audio player into digital format and wirelessly transmitting the digitally-formatted audio. The pair of earphones is in direct wireless communication with the wireless network adapter and are configured to be worn simultaneously by a user. Each earphone in the pair of earphones comprises: (i) a transceiver that is for receiving the digitally-formatted audio from the wireless network adapter via the wireless network, and converting the digitally-formatted audio received via the wireless network to analog audio signals; and (ii) at least one acoustic transducer connected to the transceiver, wherein the at least one acoustic transducer is for outputting the analog audio signals.

#### 7 Claims, 16 Drawing Sheets

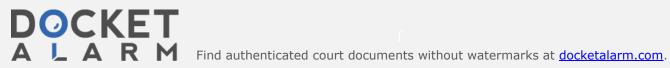


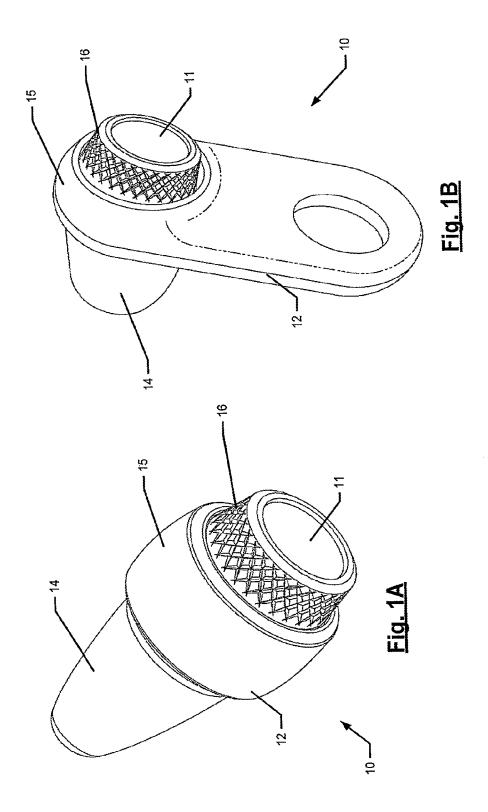


## US 8,571,544 B2

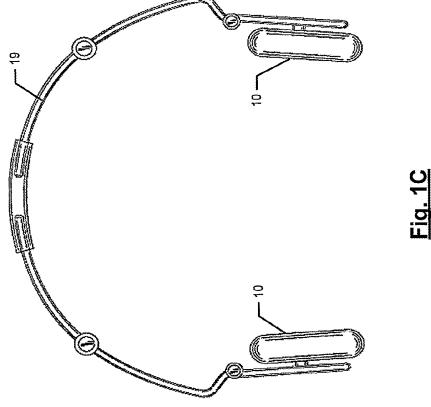
## Page 2

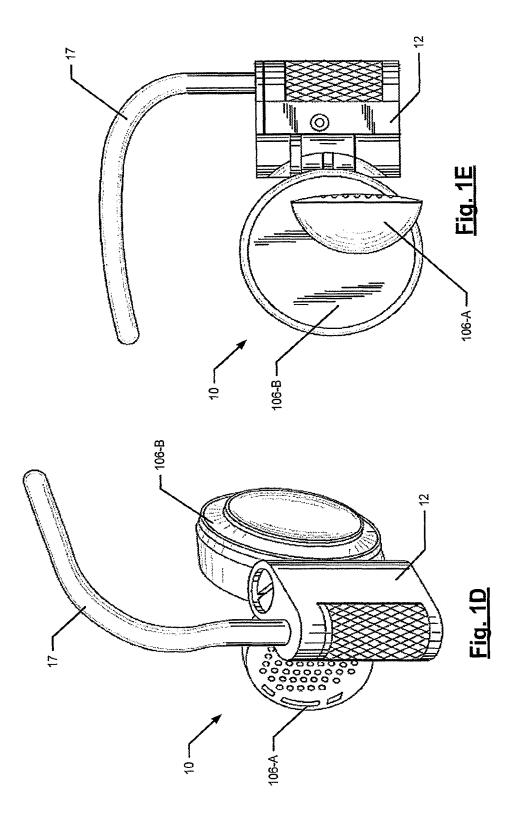
(56) References Cited				/0004052 /0062939		1/2008 3/2008	Bloebaum et al 455/466 Van Horn
U.S	S. PATENT	DOCUMENTS		0076489		3/2008 5/2008	Rosener et al 455/575.2 Russell
6,937,712 B2 7,003,515 B1 7,027,311 B2 7,099,370 B2 7,120,388 B2	2/2006 4/2006 8/2006	Lemchen et al. Glaser Vanderelli Takahashi Hall	2009/	(0291891 (0063703 (0246788 FO	A1 * A1	11/2008 3/2009 9/2010 N PATE	Jerlhagen Finkelstein et al 709/240 Menard et al. NT DOCUMENTS
7,139,585 B2 7,599,679 B2 7,697,899 B2 7,764,775 B2 7,805,210 B2 2004/0157649 A1	10/2009 4/2010 7/2010 9/2010 * 8/2004	Hachimura et al. Awiszus Rofougaran Tarkoff et al. Cucos Jannard et al	WO WO WO WO	WO 200 WO 200	07/139 08/054 09/086	620 A2 578 A1 985 A2 555 A1	11/2007 12/2007 5/2008 7/2009 BLICATIONS
2005/0064853 A1 2005/0198233 A1 2005/0240296 A1 2006/0210442 A1 2006/0212444 A1 2007/0008984 A1 2007/0049198 A1 2007/0116316 A1 2007/0147630 A1 2007/0150963 A1 2007/0165875 A1	* 9/2005 * 10/2005 9/2006 9/2006 9/2006 1/2007 2/2007 3/2007 5/2007 6/2007 * 6/2007	Radpour Manchester Nishiguchi et al	International Search Report for International Application No. PCT/US09/39754 mailed Jun. 11, 2009, 2 pages.  International Preliminary Examination Report for International Application No. PCT/US09/39754 mailed Oct. 28, 2010, 8 pages.  Written Opinion of the International Searching Authority for International Application No. PCT/US09/39754 mailed Jun. 11, 2009, 5 pages.  IT Review, "LTB 802.11 WiFi Headphones", http://itreview.belproject.com/item/1536 accessed on Mar. 13, 2008 (4 pages).				
2007/0230727 A1		Sanguino	* cited	l by exan	niner		













# DOCKET A L A R M

## Explore Litigation Insights



Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## **Real-Time Litigation Alerts**



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## **Advanced Docket Research**



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## **Analytics At Your Fingertips**



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

### API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

#### **LAW FIRMS**

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

#### **FINANCIAL INSTITUTIONS**

Litigation and bankruptcy checks for companies and debtors.

## **E-DISCOVERY AND LEGAL VENDORS**

Sync your system to PACER to automate legal marketing.

