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Koss et al.

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(54) **SYSTEM WITH 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 0 days.

This patent is subject to a terminal disclaimer.

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(51) **Int. Cl.**
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H04R 1/10 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***H04R 1/1041*** (2013.01); ***H03G 3/02*** (2013.01); ***H03K 17/9622*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC H04R 1/1016; H04R 1/1008
(Continued)

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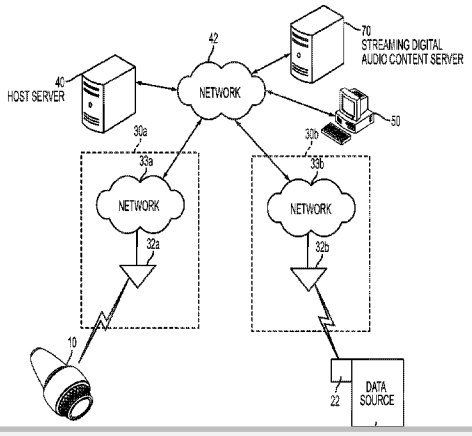
(57) **ABSTRACT**

Apparatus comprises adapter and speaker system. Adapter is configured to plug into port of personal digital audio player. Speaker system is in communication with adapter, and comprises multiple acoustic transducers, programmable processor circuit, and wireless communication circuit. In first operational mode, processor circuit receives, via adapter, and processes digital audio content from personal digital audio player into which adapter is plugged, and the multiple acoustic transducers output the received audio content from the personal digital audio player. In second operational mode, wireless communication circuit receives digital audio content from a remote digital audio source over a wireless network, processor circuit processes the digital audio content received from remote digital audio source, and the
(Continued)



multiple acoustic transducers output the audio content received from the remote digital audio source.

14 Claims, 16 Drawing Sheets

Related U.S. Application Data

continuation of application No. 15/650,362, filed on Jul. 14, 2017, now Pat. No. 9,986,325, which is a continuation of application No. 15/293,785, filed on Oct. 14, 2016, now Pat. No. 9,729,959, which is a continuation of application No. 15/082,040, filed on Mar. 28, 2016, now Pat. No. 9,497,535, which is a continuation of application No. 14/695,696, filed on Apr. 24, 2015, now Pat. No. 9,438,987, which is a continuation of application No. 13/609,409, filed on Sep. 11, 2012, now Pat. No. 9,049,502, which is a continuation of application No. 13/459,291, filed on Apr. 30, 2012, now Pat. No. 8,571,544, which is a continuation of application No. 12/936,488, filed as application No. PCT/US2009/039754 on Apr. 7, 2009, now Pat. No. 8,190,203.

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(51) **Int. Cl.**

H04M 1/02	(2006.01)
H04R 5/033	(2006.01)
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H04W 48/20	(2009.01)
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H04L 29/12	(2006.01)
H04W 4/80	(2018.01)
H04R 25/00	(2006.01)
H04W 84/18	(2009.01)
H04W 84/12	(2009.01)

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CPC ***H04H 20/95*** (2013.01); ***H04L 61/6068*** (2013.01); ***H04M 1/0254*** (2013.01); ***H04R 1/02*** (2013.01); ***H04R 1/1091*** (2013.01); ***H04R 3/00*** (2013.01); ***H04R 5/033*** (2013.01); ***H04R 5/04*** (2013.01); ***H04W 4/80*** (2018.02); ***H04W 48/20*** (2013.01); *H03K 2217/960785* (2013.01); *H04R 25/554* (2013.01); *H04R 2201/103* (2013.01); *H04R 2201/107* (2013.01); *H04R 2225/55* (2013.01); *H04R 2420/07* (2013.01); *H04W 84/12* (2013.01); *H04W 84/18* (2013.01)

(58) **Field of Classification Search**

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See application file for complete search history.

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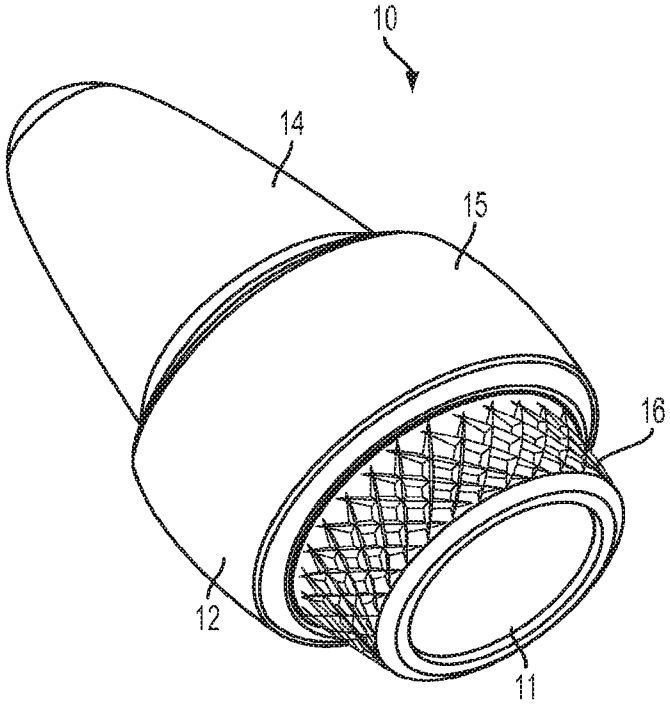

FIG. 1A

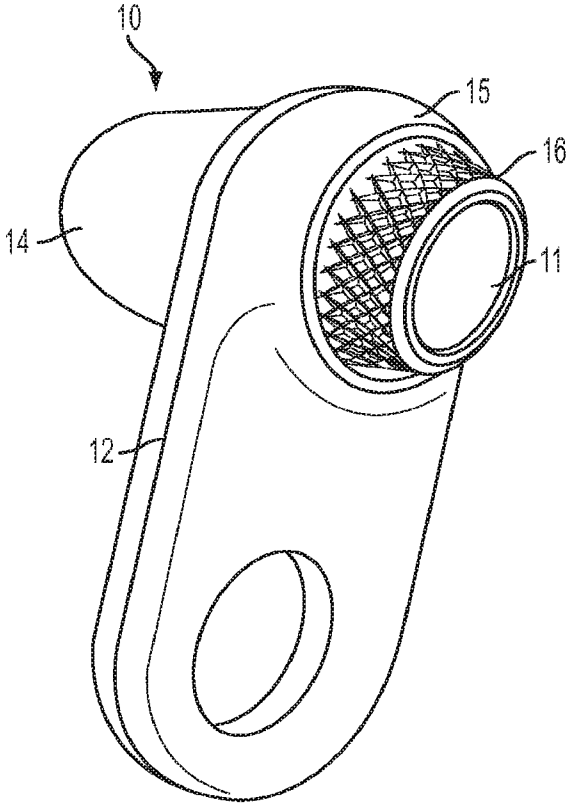

FIG. 1B

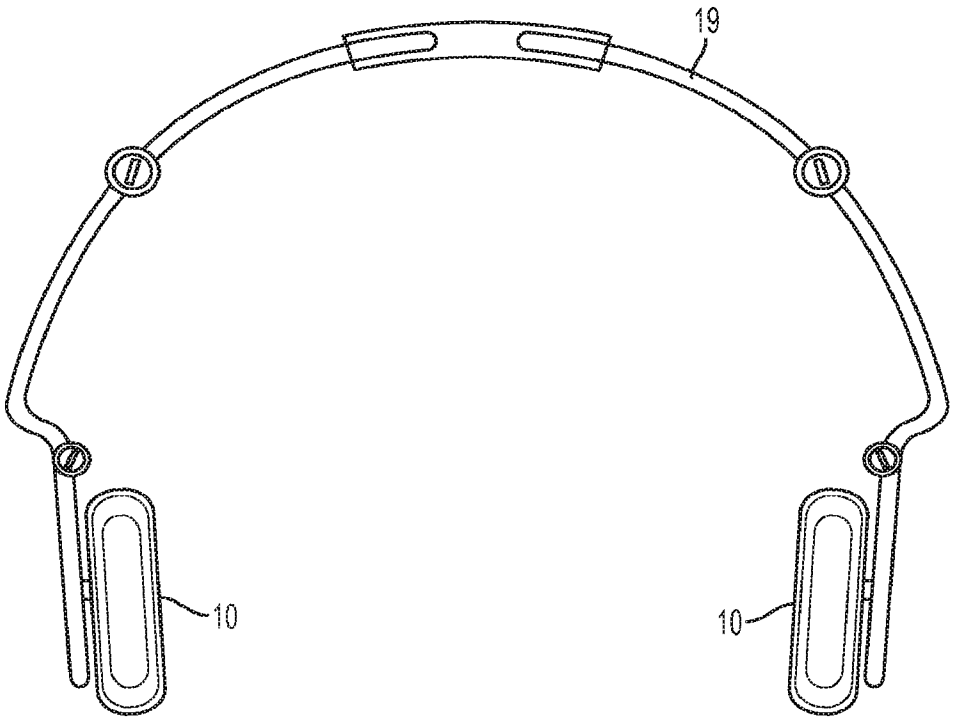

FIG. 1C

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