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Burnett et al.

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(54) **WIRELESS CONFERENCE CALL TELEPHONE**

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G10L 21/0216 (2013.01)

(52) **U.S. Cl.**
CPC *H04M 3/568* (2013.01); *H04R 1/1083* (2013.01); *H04M 2203/509* (2013.01); *G10L 2021/02165* (2013.01); *H04R 2420/07* (2013.01); *H04M 3/56* (2013.01); *H04R 3/04* (2013.01); *G10L 21/0208* (2013.01); *H04R 3/005* (2013.01); *H04M 2250/62* (2013.01); *H04R 1/406* (2013.01)

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USPC **455/569.1**; 455/570

(73) Assignee: **AliphCom**, San Francisco, CA (US)

(58) **Field of Classification Search**
USPC 455/569.1, 570
See application file for complete search history.

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 132 days.

This patent is subject to a terminal disclaimer.

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(Continued)

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(22) Filed: **Jul. 15, 2011**

Primary Examiner — Howard Weiss

(65) **Prior Publication Data**

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(74) *Attorney, Agent, or Firm* — Kokka & Backus, PC

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/139,333, filed on Jun. 13, 2008, now Pat. No. 8,503,691, and a continuation-in-part of application No. 10/667,207, filed on Sep. 18, 2003, now Pat. No. 8,019,091.

(60) Provisional application No. 61/364,675, filed on Jul. 15, 2010.

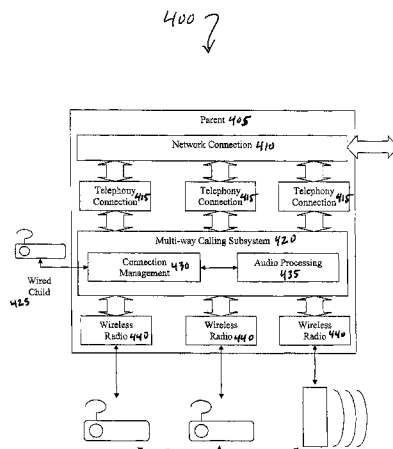
(57) **ABSTRACT**

A wireless conference call telephone system uses body-worn wired or wireless audio endpoints comprising microphone arrays and, optionally, speakers. These audio-endpoints, which include headsets, pendants, and clip-on microphones to name a few, are used to capture the user's voice and the resulting data may be used to remove echo and environmental acoustic noise. Each audio-endpoint transmits its audio to the telephony gateway, where noise and echo suppression can take place if not already performed on the audio-endpoint, and where each audio-endpoint's output can be labeled, integrated with the output of other audio-endpoints, and transmitted over one or more telephony channels of a telephone network. The noise and echo suppression can also be done on the audio-endpoint. The labeling of each user's output can be used by the outside caller's phone to spatially locate each user in space, increasing intelligibility.

(51) **Int. Cl.**

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H04R 3/00 (2006.01)
H04R 1/40 (2006.01)

16 Claims, 33 Drawing Sheets



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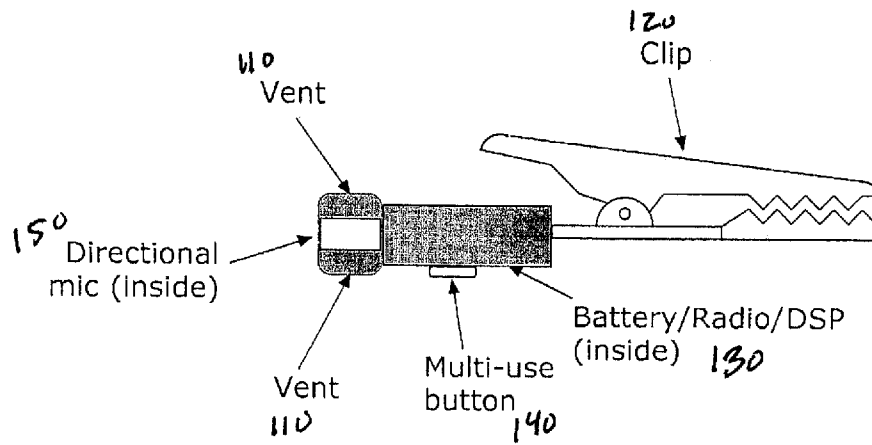


Figure 1

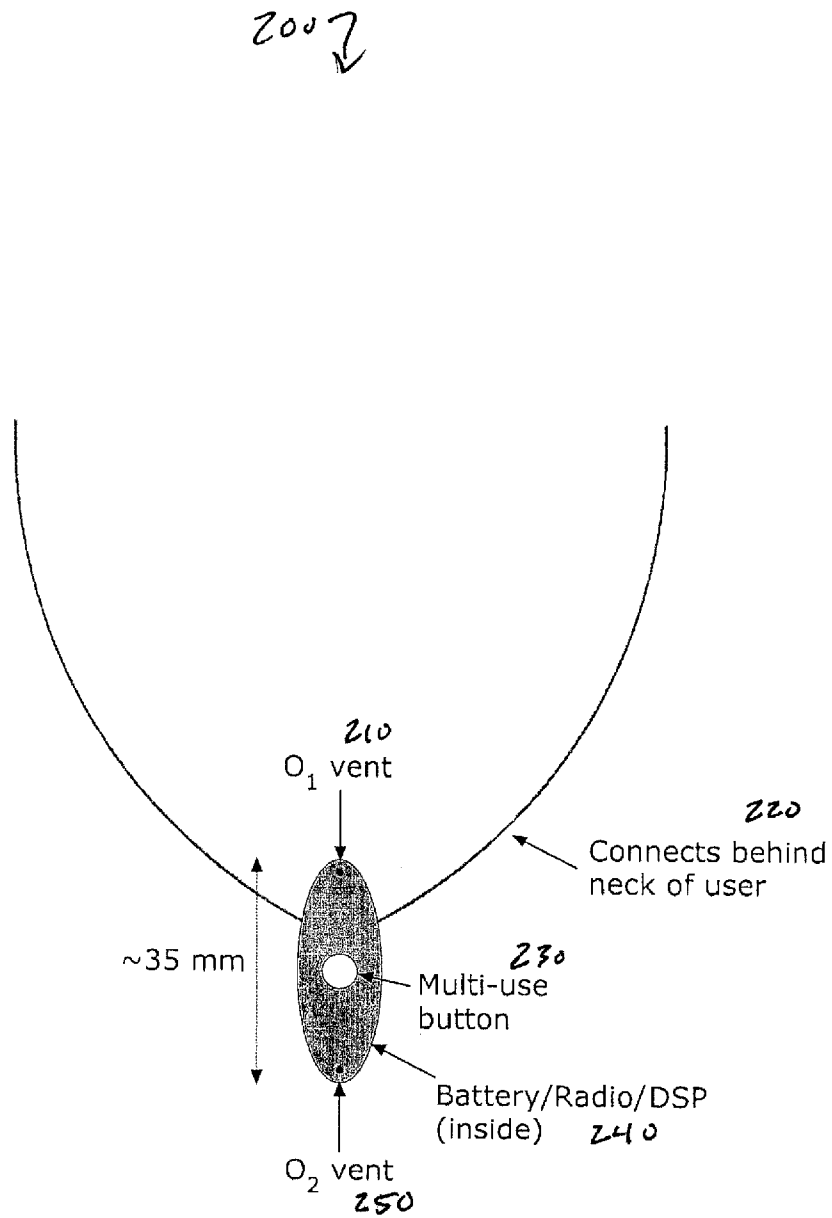


Figure 2

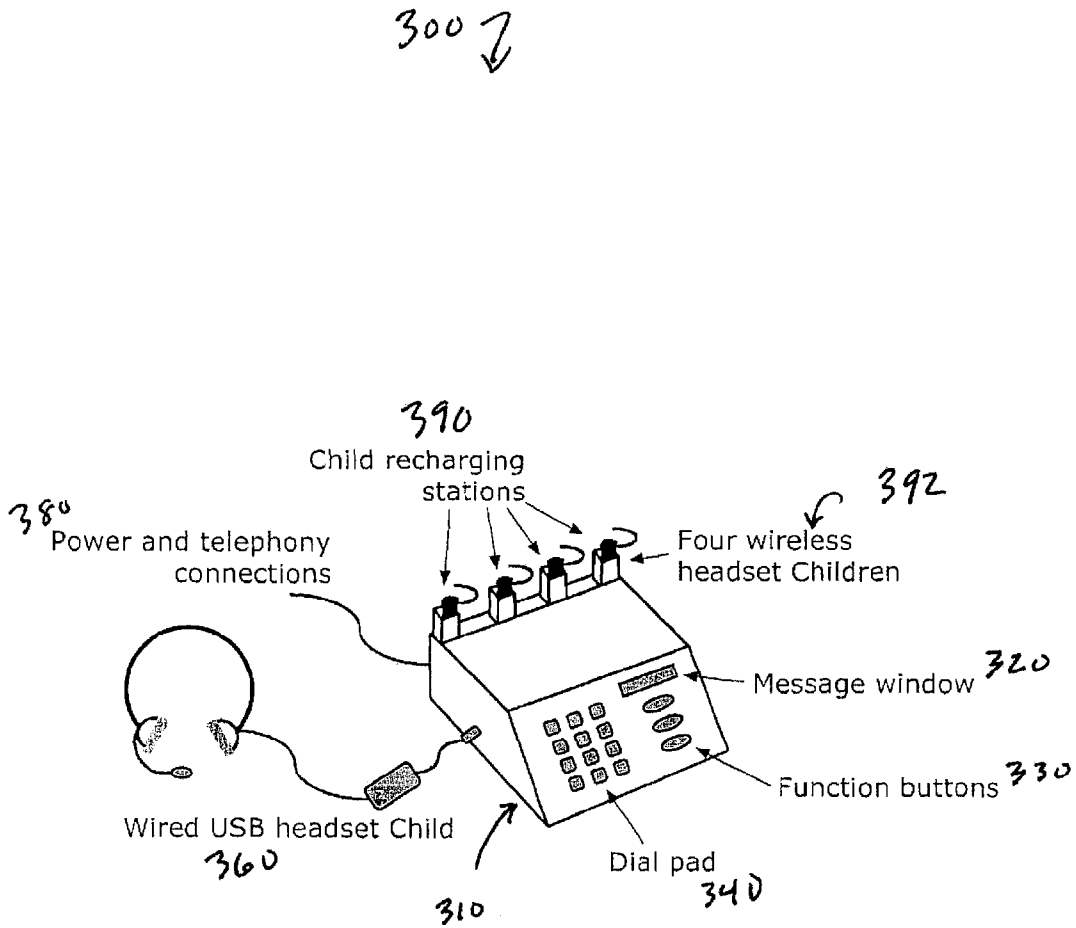


Figure 3

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