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(12) **United States Patent**  
**Zhao et al.**

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(54) **DATA ACQUISITION QUALITY AND DATA FUSION FOR PERSONAL PORTABLE WIRELESS VITAL SIGNS SCANNER**

*A61B 5/7221* (2013.01); *A61B 5/742* (2013.01); *A61B 5/7405* (2013.01)

(58) **Field of Classification Search**

CPC ..... *A61B 19/2203*; *A61B 19/5212*; *A61B 2019/2223*; *A61B 5/72*; *A61B 6/5258*; *A61B 5/11*; *A61B 5/1107*; *A61B 5/1118*; *A61B 5/113*; *A61B 5/1135*  
USPC ..... 600/534, 536, 595  
See application file for complete search history.

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(56) **References Cited**

U.S. PATENT DOCUMENTS

9,451,886 B2\* 9/2016 Teixeira ..... *A61B 5/0205*  
9,504,391 B2\* 11/2016 Zhang ..... *A61B 5/02125*  
(Continued)

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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 168 days.

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Andy Pho

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(57) **ABSTRACT**

In one embodiment of the invention, an interactive vital signs scanning method is disclosed including concurrently scanning for a plurality of vital signs with a portable vital signs scanner; detecting movement of the portable vital signs scanner during the scanning for the plurality of vital signs; and determining a measure of quality of the scanning for the plurality of vital signs with the portable vital signs scanner. In another embodiment, a method of improving the quality of vital signs data is disclosed including concurrently sensing data from a plurality of vital signs sensors over a period of time with a portable vital signs scanner; determining a plurality of vital sign values for a respective plurality of vital signs in response to the sensed data from the plurality of vital signs sensors over the period of time; and fusing at least two vital sign values of the plurality of vital sign values for the respective plurality of vital signs.

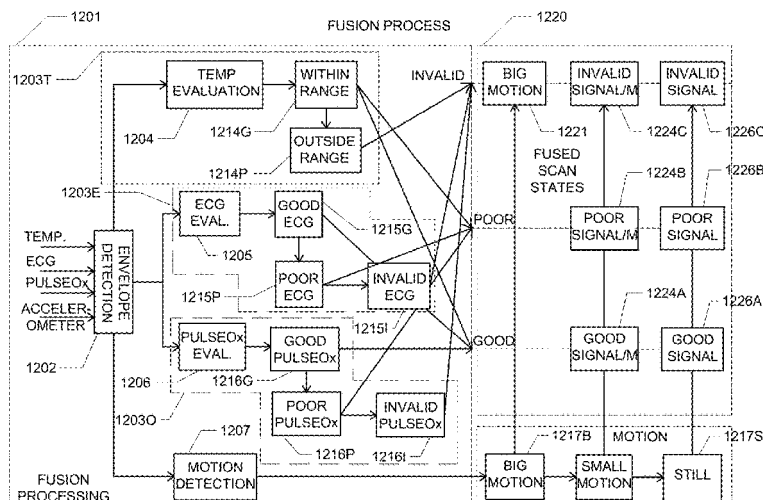
**Related U.S. Application Data**

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(51) **Int. Cl.**  
*A61B 5/11* (2006.01)  
*A61B 5/00* (2006.01)  
*A61B 5/0205* (2006.01)  
*A61B 5/0295* (2006.01)  
*A61B 5/0402* (2006.01)  
*A61B 5/1455* (2006.01)

(52) **U.S. Cl.**  
CPC ..... *A61B 5/7282* (2013.01); *A61B 5/02055* (2013.01); *A61B 5/0295* (2013.01); *A61B 5/0402* (2013.01); *A61B 5/14551* (2013.01);

**21 Claims, 27 Drawing Sheets**



(56)

**References Cited**

U.S. PATENT DOCUMENTS

2004/0138716	A1*	7/2004	Kon .....	A61N 1/36557 607/17
2005/0209516	A1*	9/2005	Fraden .....	A61B 5/02055 600/323
2012/0179011	A1*	7/2012	Moon .....	A61B 5/7207 600/324
2013/0116520	A1*	5/2013	Roham .....	A61B 5/6833 600/324

\* cited by examiner

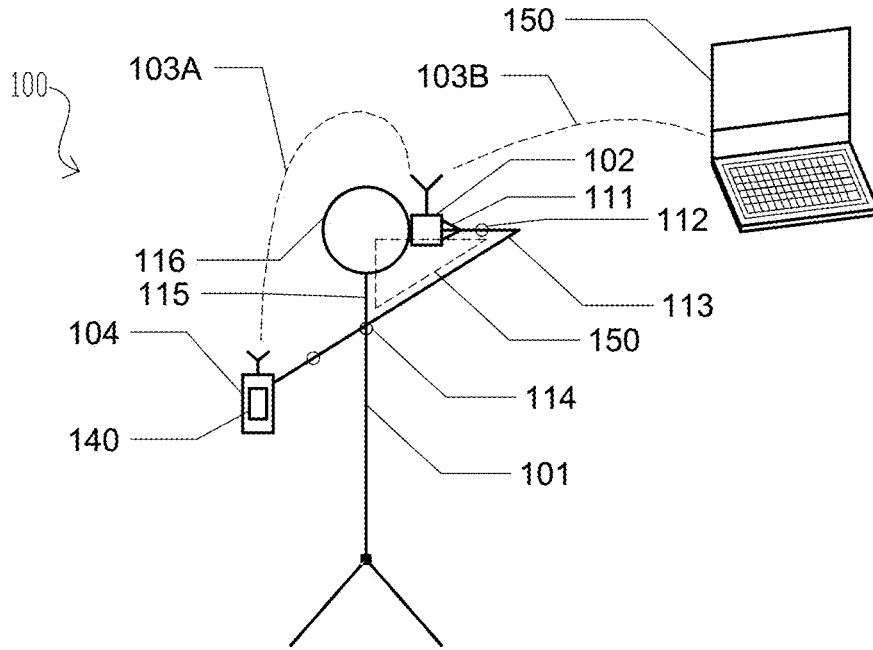


FIG. 1A

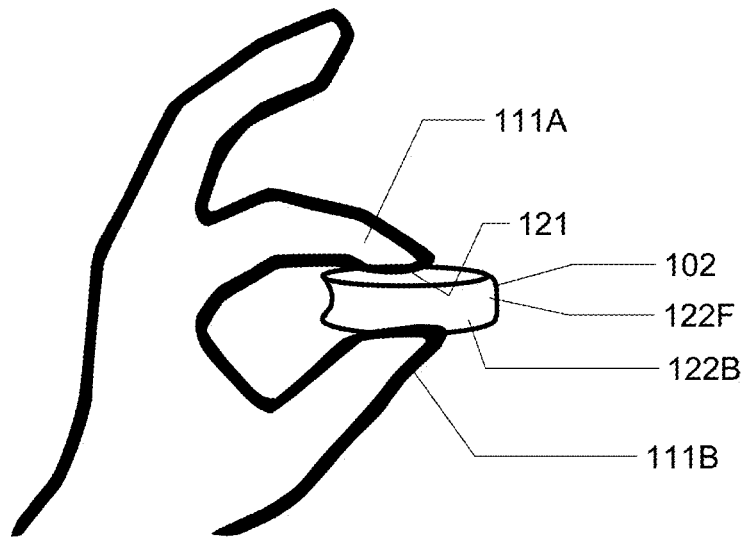


FIG. 1B

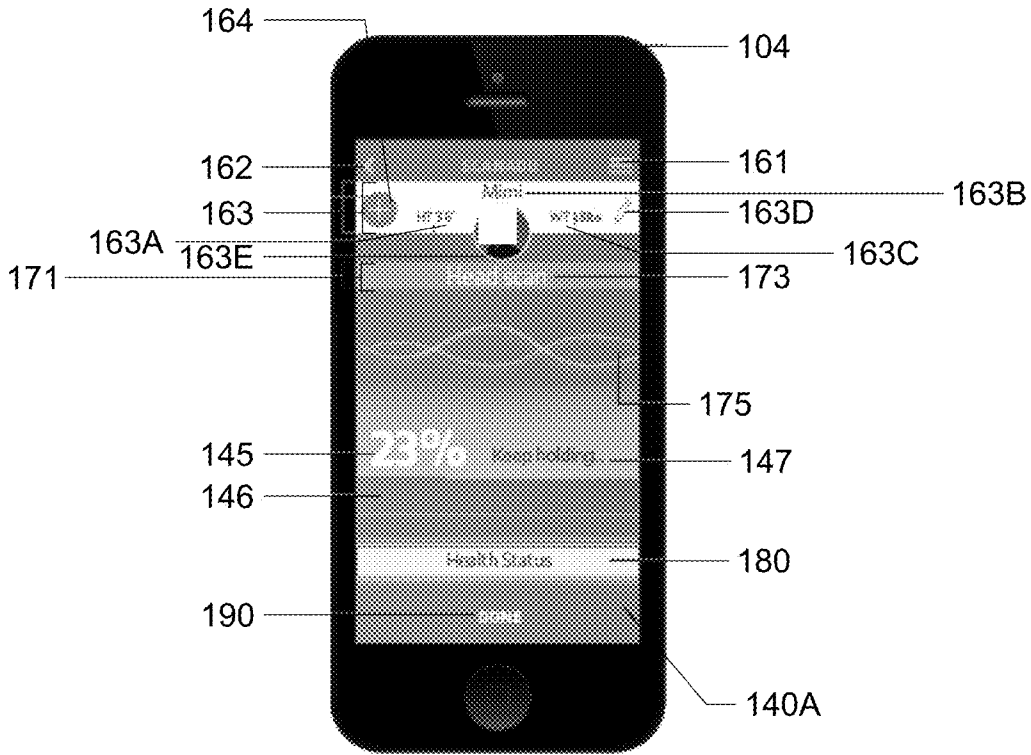


FIG. 1C

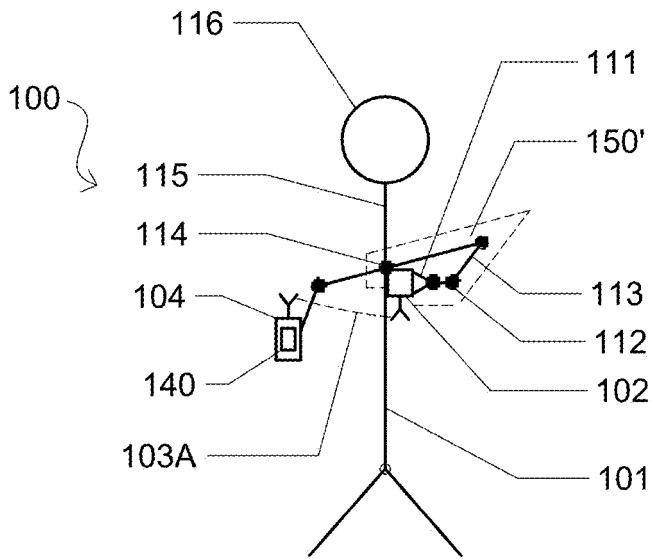


FIG. 1D

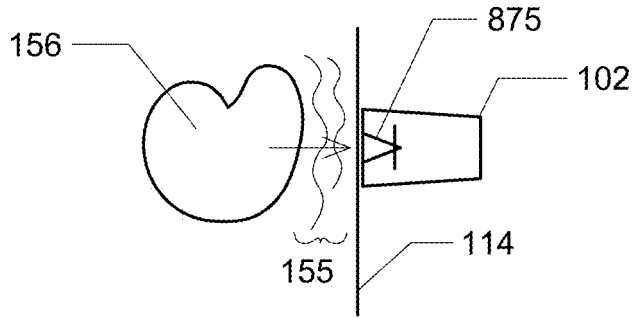


FIG. 1E

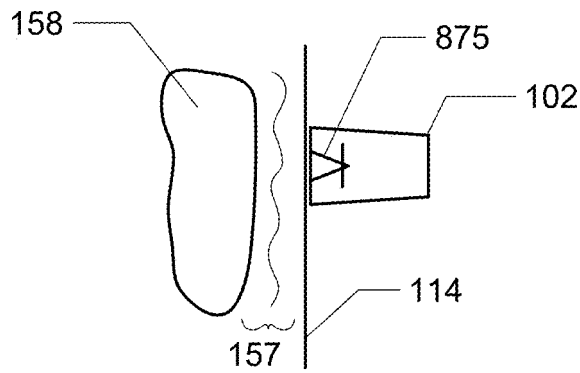


FIG. 1F

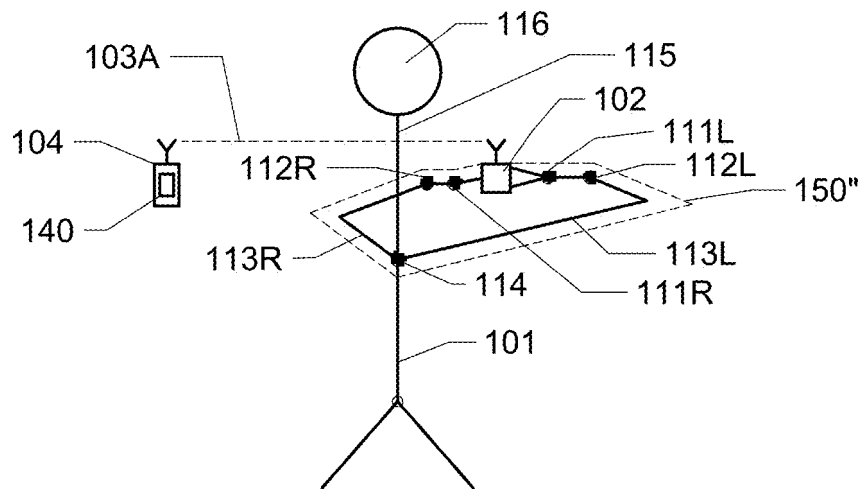


FIG. 1G

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