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(54) **DETECTING, LOCATING AND TRACING OF BURIED ASSETS USING DISTRIBUTED PROCESSING OVER COMMUNICATIONS NETWORKS**

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This patent is subject to a terminal disclaimer.

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(52) **U.S. Cl.**
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  　　　　　　　　　　　　　　　　　　　455/419
  See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,144,848	A	*	11/2000	Walsh et al.	.... 455/419
6,850,161	B1	*	2/2005	Elliott et al.	.... 340/572.1
7,400,976	B2		7/2008	Young	
7,834,806	B2		11/2010	Tucker	
7,889,124	B2		2/2011	Islam	
8,081,112	B2		12/2011	Tucker	

8,144,058	B2	3/2012	Sawyer	
2006/0077095	A1	4/2006	Tucker	
2006/0085133	A1	4/2006	Young	
2008/0125942	A1	5/2008	Tucker	
2009/0254407	A1	10/2009	Fagan	
2010/0131903	A1	5/2010	Thomson	
2010/0189312	A1	7/2010	Nielsen	
2010/0207816	A1	8/2010	Islam	
2011/0191058	A1 *	8/2011	Nielsen et al.	.... 702/130
2011/0241936	A1	10/2011	Sawyer	

OTHER PUBLICATIONS

Shaner, Jeff, Mapping Underground Assets using ArcGIS for Windows Mobile, ArcGIS Resource Center, downloaded from http://blogs.esri.com/, on Sep. 5, 2012.

* cited by examiner

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(57)　　　　　　　**ABSTRACT**

A method on a mobile computing device for detecting, locating and tracing buried assets, is provided. The method includes reading, from one or more sensors communicatively coupled with the mobile computing device, a plurality of analog radio frequency signals from a buried asset, and amplifying the plurality of analog signals. The method further includes converting the analog signals to a plurality of digital signals, encoding the digital signals for transmission, so as to produce a plurality of encoded digital signals, and transmitting the plurality of encoded digital signals to a server via a communications network. The method further includes receiving, from the server, buried asset data including depth measurement data and electrical current measurement data for one or more buried assets, wherein the buried asset data corresponds to the analog radio frequency signals, and displaying the buried asset data in a graphical user interface of the mobile computing device.

17 Claims, 12 Drawing Sheets