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Bonavides et al.

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(54) **ACTUATING DOWNHOLE DEVICES IN A WELLBORE**

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(51) **Int. Cl.**
G01V 3/00 (2006.01)

(52) **U.S. Cl.**
USPC **340/855.7; 340/853.3; 340/855.4;**
166/250.01

(58) **Field of Classification Search**
USPC 340/853.3, 855.4, 855.7; 166/250.01
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,884,506	A *	12/1989	Guerreri	102/200
5,166,677	A *	11/1992	Schoenberg	340/853.3
6,478,090	B2 *	11/2002	Deaton	166/363

6,604,584	B2	8/2003	Lerche et al.	
7,980,309	B2 *	7/2011	Crawford	166/297
8,074,737	B2 *	12/2011	Hill et al.	175/4.55
2001/0043509	A1 *	11/2001	Green et al.	367/81
2003/0000706	A1 *	1/2003	Carstensen	166/373
2003/0015319	A1 *	1/2003	Green et al.	166/250.01
2005/0022987	A1 *	2/2005	Green et al.	166/250.17
2005/0045331	A1 *	3/2005	Lerche et al.	166/297
2005/0046592	A1	3/2005	Cooper et al.	
2006/0039238	A1	2/2006	Mandal et al.	
2007/0019506	A1	1/2007	Mandal et al.	
2007/0096941	A1 *	5/2007	Morys	340/853.1
2007/0152054	A1	7/2007	Bonavides et al.	
2009/0272529	A1	11/2009	Crawford	
2010/0005992	A1	1/2010	Crawford	

* cited by examiner

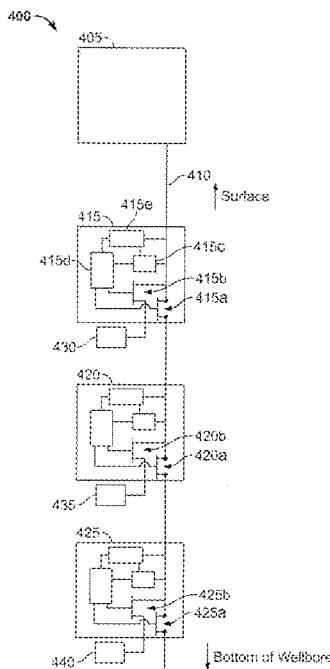
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(57) **ABSTRACT**

A downhole tool system includes a first downhole tool and a second downhole tool. The first downhole tool includes a first controller operable to receive an actuation signal including a tone. The first controller actuates the first downhole tool if the tone is a first specified frequency and changes the first downhole tool to communicate the actuation signal to the second downhole tool if first downhole tool is not actuated in response to the actuation signal. A second downhole tool includes a second controller operable to receive the actuation signal. The second controller actuates the second downhole tool if the tone is a second specified frequency. The second frequency is different from the first frequency.

33 Claims, 6 Drawing Sheets



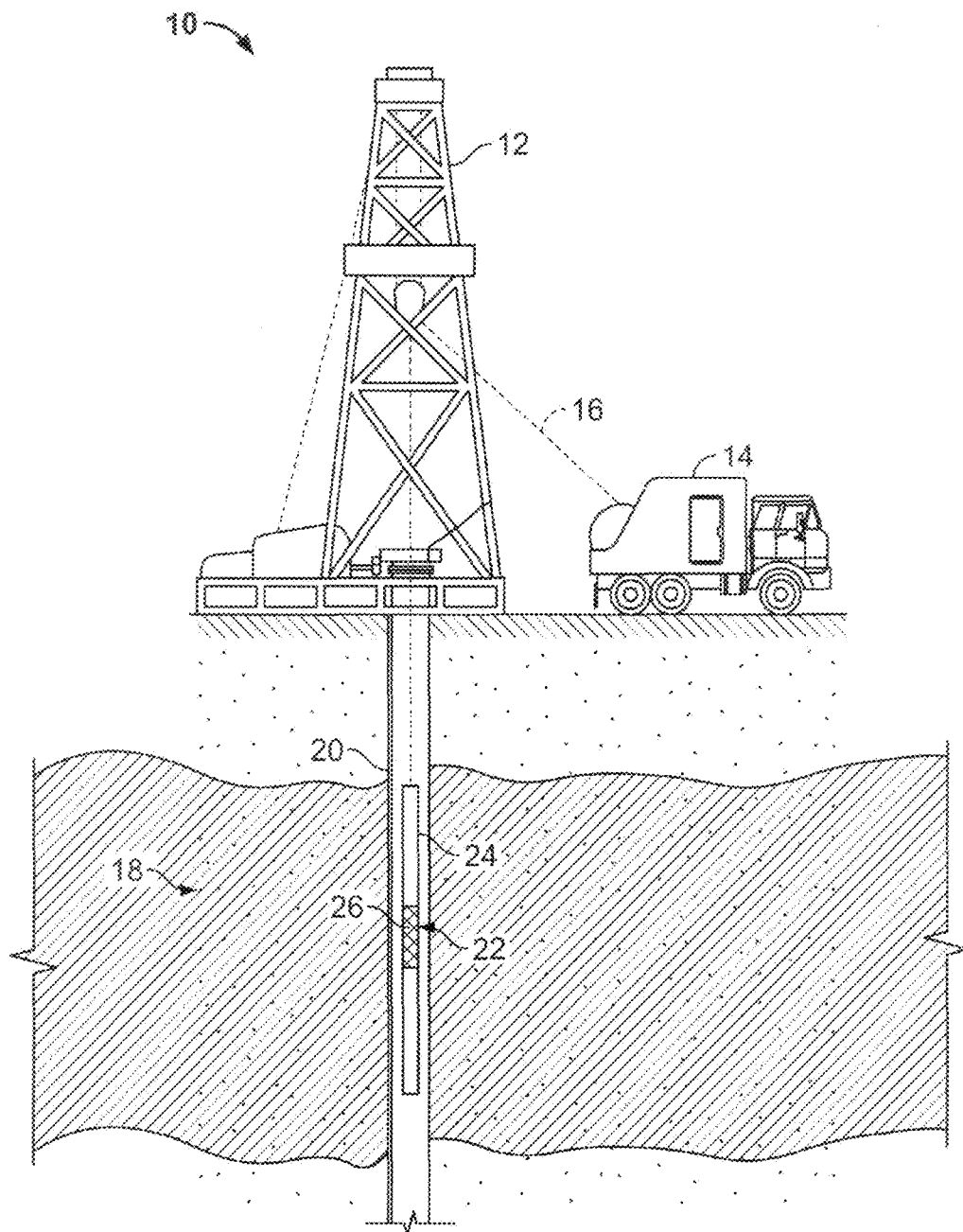


FIG. 1

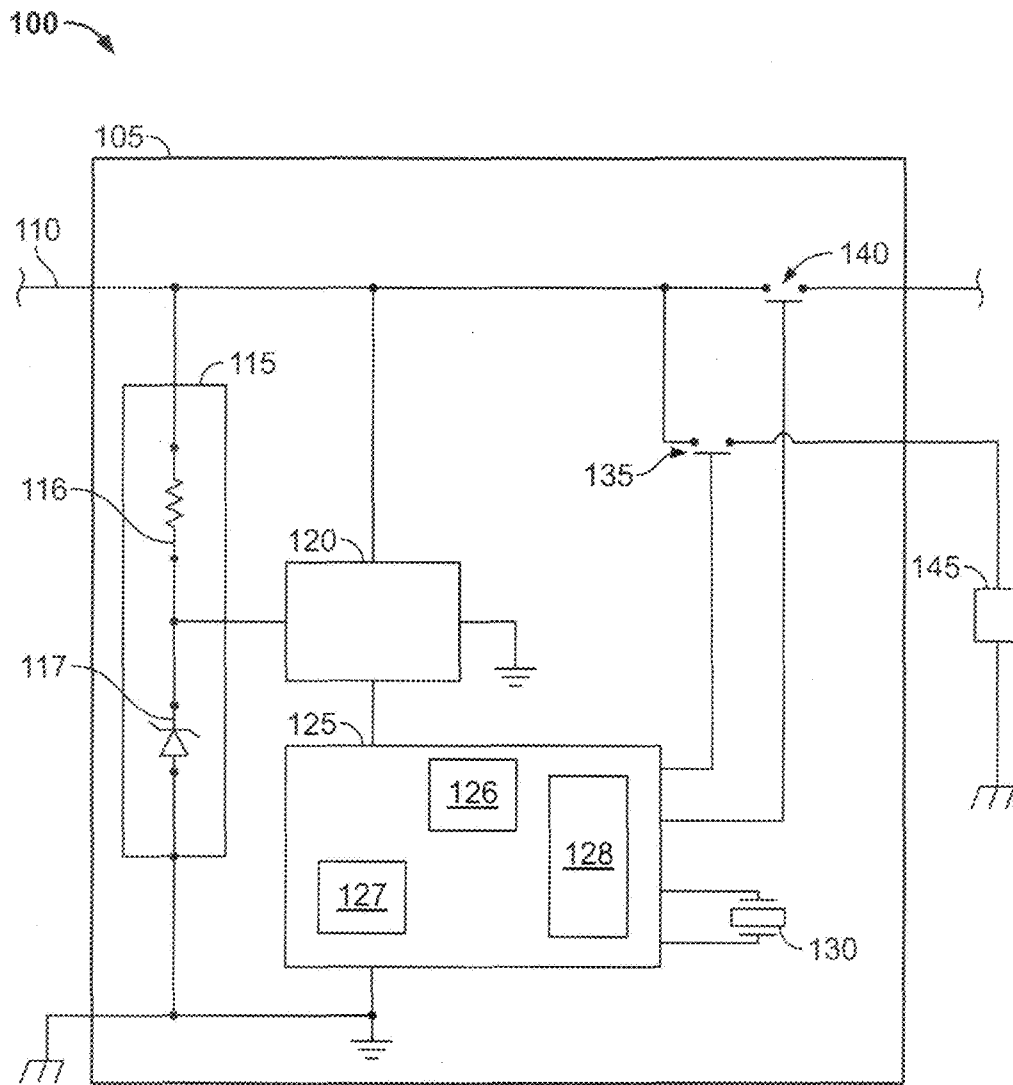


FIG. 2

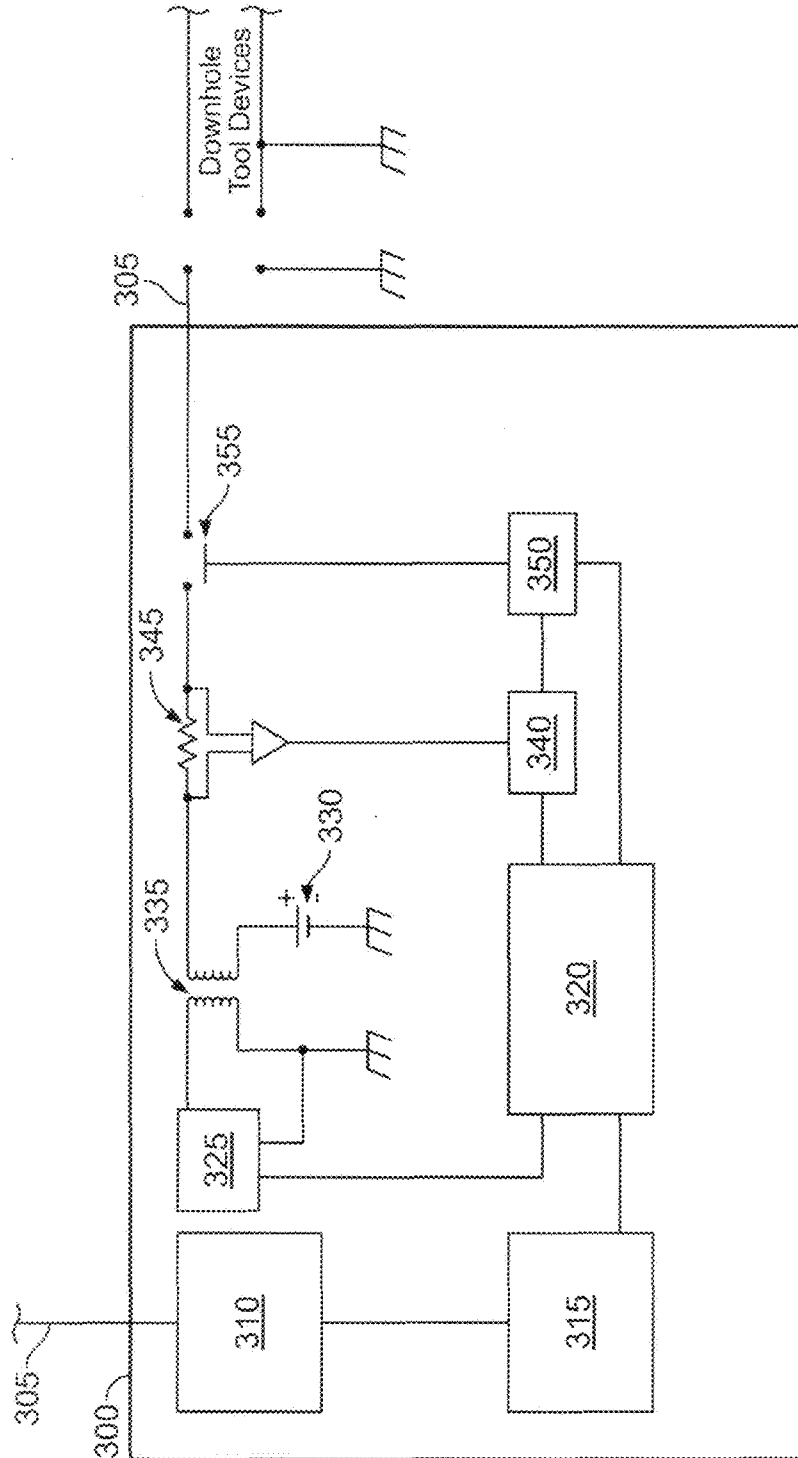


FIG. 4

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