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Cox et al.

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(54) **METHOD AND APPARATUS FOR ACTUATION OF DOWNHOLE SLEEVES AND OTHER DEVICES**

USPC 166/66.6, 66.7, 332.1, 332.8, 334.1, 166/334.4, 318, 373
See application file for complete search history.

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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 386 days.

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(57) **ABSTRACT**

Related U.S. Application Data

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A downhole equalization assembly permits selective and remote opening of at least one downhole port or pathway to allow communication of pressure and/or fluid flow from inside a pressure containing system (such as, for example, a tubular pipe or other pressure containment system) to the outside of the containment system, or vice versa. A control device generating a magnetic field is inserted into a well and conveyed to a downhole equalization assembly. When the control device passes through an equalization assembly, an electrical current is generated that triggers an electronic counter. When a predetermined counter number is reached, a sliding sleeve is shifted, thereby exposing ports and/or pathways extending between the inside and outside of the equalization assembly. No physical contact or mechanical interference is required between the control device and any other components in order to actuate the equalization assembly.

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E21B 34/00 (2006.01)

(52) **U.S. Cl.**
CPC **E21B 34/14** (2013.01); **E21B 34/066** (2013.01); **E21B 2034/005** (2013.01)

(58) **Field of Classification Search**
CPC E21B 34/066; E21B 34/10; E21B 34/102; E21B 34/12; E21B 34/14; E21B 34/108

16 Claims, 6 Drawing Sheets

