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- (54) **QUADRUPOLE ACOUSTIC SHEAR WAVE LOGGING WHILE DRILLING**
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(58) **Field of Search** ..... **702/6; 367/8; 340/8**

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(57) **ABSTRACT**

A tool generates signals indicative of shear wave slowness of the formation surrounding a borehole. The tool comprises a collar portion adapted for mounting in a drill string, a quadrupole sonic transmitter mounted to the collar portion, and a quadrupole sonic receiver array mounted to the collar spaced apart from the transmitter.

A method determines shear wave slowness of the formation. The method includes propagating quadrupole wave energy into the formation and detecting quadrupole dispersive waveforms received at a second location. Formation shear wave slowness is calculated using dispersive slowness time coherence processing

**39 Claims, 8 Drawing Sheets**

