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- (54) **ACOUSTIC TRANSDUCER WITH SPIRAL-SHAPED PIEZOELECTRIC SHELL**
- (75) Inventors: **Chung Chang**, Wilton, CT (US);
Hiroshi Hori, Sagamihara (JP)
- (73) Assignee: **Schlumberger Technology Corporation**, Ridgefield, CT (US)
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Primary Examiner—Curtis Kuntz

Assistant Examiner—Brian Ensey

(74) *Attorney, Agent, or Firm*—John L. Lee; Jody Lynn DeStefanis; William B. Batzer

(57) **ABSTRACT**

An acoustic transducer includes a polarized piezoelectric shell having a spiral-shaped surface. The acoustic transducer serves as a receiver or a transmitter.

In one embodiment, the acoustic transducer includes a solid spiral shell having outer and inner spiral-shaped surfaces, and the shell is polarized, wired and packaged to operate in hydrophone-mode.

In another embodiment, the acoustic transducer includes a shell defining an exterior spiral-shaped surface and a spiral slot; and the slot defines a closed cavity with an interior spiral-shaped surface. In a preferred bender-type receiver embodiment, the shell is polarized, wired, and packaged to operate in bender mode for maximum sensitivity and best low-frequency performance.

6 Claims, 8 Drawing Sheets

