



(54) **APPARATUS AND METHOD FOR UTILIZING ELECTROMAGNETIC ACOUSTIC TRANSDUCERS TO NON-DESTRUCTIVELY ANALYZE IN-SERVICE CONDUCTIVE MATERIALS**

(75) Inventors: **Rahmat A. Shoureshi**, Golden; **Michael T. Chenowith**, Westminster; **George A. Alers**, Boulder, all of CO (US)

(73) Assignees: **The United States of America as represented by the Secretary of Commerce; The 14th and Constitution National Institute of Standards and Technology**, both of Washington, DC (US); **Colorado School of Mines**, Golden, CO (US)

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(58) **Field of Search** **73/643, 596, 599, 73/600, 602, 627, 628, 618, 620, 622, 624, 632, 633, 634, 637, 638; 702/35, 34, 36, 39; 340/635, 652**

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Primary Examiner—Richard A. Moller

(74) *Attorney, Agent, or Firm*—Pennie & Edmonds LLP

(57) **ABSTRACT**

The method of the invention identifies damage to an in-service conductor associated with the delivery (transmission and distribution) of electric power. Electro-magnetic acoustic energy is generated in an in-service conductor associated with the delivery of electric power. Corresponding return electro-magnetic acoustic energy is then measured. Features are then extracted from the return electro-magnetic acoustic energy to characterize damage to the in-service conductor. The features may be extracted through a variety of signal processing techniques, such as wavelet signal processing. The extracted features may be classified using a neural network, fuzzy logic, or a combination of both.

26 Claims, 6 Drawing Sheets

