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# United States Patent [19]

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Cherek et al.

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[54] **METHOD OF DETECTING CHARACTERISTICS OF LIQUIDS IN PIPES AND PUMP CONTROLLING**

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[75] Inventors: **Bogdan Cherek; John Joseph Lee,**  
both of Peterborough, Canada

[73] Assignee: **Milltronics Ltd.,** Peterborough, Canada

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[52] U.S. Cl. .... **710/1; 73/54.02; 73/54.41; 73/592; 73/596; 340/603**

[58] Field of Search ..... **710/1; 340/603; 73/54.41, 592, 596, 861.04, 54.02**

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*Primary Examiner*—Thomas C. Lee  
*Assistant Examiner*—Tammara Peyton  
*Attorney, Agent, or Firm*—Ridout & Maybee

### [57] ABSTRACT

In order to determine the nature of fluid passing through a pipe, for example whether material being pumped through a pipe is sludge or liquid phase, high frequency ultrasonic pulses from a generator are caused to propagate around a peripheral wall of the pipe to produce ringing in the pipe, and the characteristics of the ringing are measured and compared in a controller with stored data to determine the nature of the fluid content of the pipe. A sludge pump may be controlled according to whether the data obtained shows that the material passing through the pipe is sludge or liquid tunnelling through the sludge.

**6 Claims, 4 Drawing Sheets**

