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# United States Patent [19]

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[54] **ULTRASONIC FLUID DENSITOMETRY AND DENSITOMETER**

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[51] Int. Cl.<sup>6</sup> ..... **G01N 9/00**

[52] U.S. Cl. .... **73/32 A**

[58] Field of Search ..... **73/32 A, 54.41, 73/861.25, 861.27, 861.28, 597, 644, 628, 290 V; 364/558, 509**

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[57] **ABSTRACT**

The present invention is an ultrasonic fluid densitometer that uses a material wedge having an acoustic impedance that is near the acoustic impedance of the fluid, specifically less than a factor of 11 greater than the acoustic impedance of the fluid. The invention also includes a wedge having at least two transducers for transmitting and receiving ultrasonic signals internally reflected within the material wedge. Density of a fluid is determined by immersing the wedge into the fluid and measuring reflection of ultrasound at the wedge-fluid interface.

**15 Claims, 3 Drawing Sheets**

