United States Patent [19]

Kline

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[54] **SYSTEM AND METHOD FOR ULTRASONIC DETERMINATION OF DENSITY**

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[58] **Field of Search** ..... 250/301; 364/558; 73/23, 24, 30, 32 R, 32 A, 584, 602, 596, 627, 628, 629, 579

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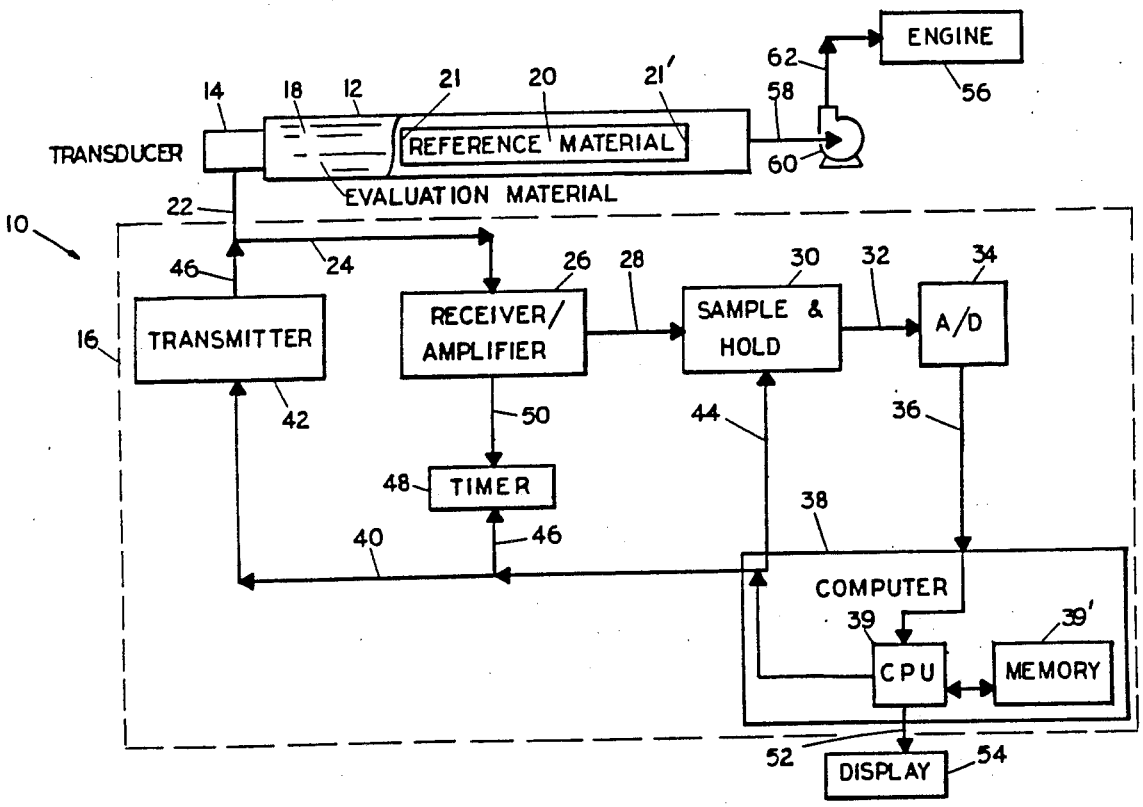
[57] **ABSTRACT**

A method and system determines the density of a liquid, such as aircraft fuel, by measuring the amplitude of the reflections of ultrasonic pulses from the faces of the walls of a reference material. A transducer is used to transmit an ultrasonic interrogation pulse through a liquid to the reference material. The density of the reference material is known, and its boundaries are well defined. The interrogation pulse is reflected from the faces of the reference material boundaries to provide first, second and third return pulses that can be used to determine the density of the liquid. The density determination is accomplished by determining characteristic impedances, reflection coefficients and transmission coefficients as a function of the returned pulse amplitudes.

18 Claims, 2 Drawing Sheets