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(54) **METHOD AND APPARATUS FOR DETERMINING THE VISCOSITY OF A FLUID IN A CONTAINER**

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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(58) **Field of Search** 73/54.41, 64.42, 73/64.53, 61.79, 592

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(57) **ABSTRACT**

An apparatus for determining the viscosity of a fluid in a container (such as a pipe). The apparatus comprises a mechanism for transmitting a signal into a fluid in a container. The transmitting mechanism contacts the container and provides the signal to the fluid in the container. The apparatus comprises a mechanism for receiving the signal after the signal has passed through the fluid. The receiving mechanism contacts the container and receives the signal from the fluid in the container. The apparatus comprises a mechanism for determining the fluid in the container from the signal after the signal has passed through the fluid and determining the fluid viscosity from the amplitude and sound velocity. The determining mechanism is connected to the receiving mechanism. The method comprises the steps of transmitting a signal into fluid. Then there is the step of receiving the signal after it has passed through the fluid. Next there is the step of determining the attenuation of the signal as the signal has passed through the fluid. Then there is the step of finding the viscosity of the fluid in the container from the attenuation of the signal and transit time.

33 Claims, 6 Drawing Sheets