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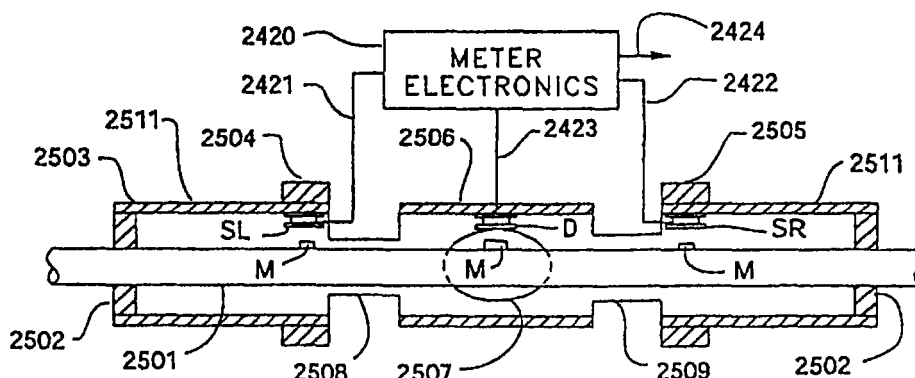


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(54) Title: METHOD AND APPARATUS FOR A CORIOLIS FLOWMETER HAVING ITS FLOW CALIBRATION FACTOR INDEPENDENT OF MATERIAL DENSITY



(57) Abstract

A single tube Coriolis flowmeter of enhanced flow sensitivity in which material flow induces Coriolis deflections in a flow tube and Coriolis-like deflections in a balance bar vibrationally coupled to the flow tube. Both the Coriolis deflections and the Coriolis-like deflections have a phase shift determined by material flow and are used co-adjuvantly to derive material flow information. The flowmeter achieves a constant flow sensitivity over a range of changes in material density by 1) varying the flow sensitivity in a first direction under control of the ratio between the drive mode vibration amplitude of the flow tube and the balance bar and 2) varying the flow sensitivity in an opposite direction under control of the ratio between the Coriolis deflection amplitude of the flow tube and the Coriolis-like deflection of the balance bar. The drive mode vibration amplitude ratio varies with changes in drive mode frequency caused by changes in material density. The amplitude ratio of the Coriolis deflection and the Coriolis-like deflection changes with changes in the magnitude of the separation of the drive mode frequency and the second bending mode frequency to the balance bar density which, in turn, is caused by changes in material density.

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