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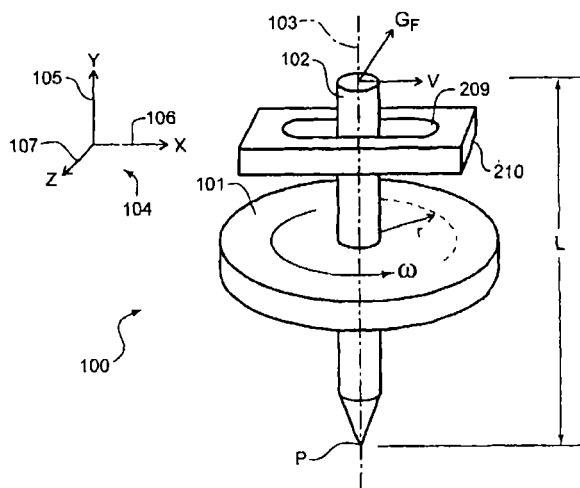
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(54) Title: GYROSCOPIC MASS FLOWMETER



ACTION

WO 02/044660 A3

(57) Abstract: A mass flowmeter having a first embodiment (1500) that uses gyroscopic forces rather than Coriolis forces to determine material flow information, such as mass flow rates, for a material flow. The interior of the flow tube (400) defines a helix element (300) that imparts a spin to the material flow within the flow tube. The flow tube is vibrated transversely by a driver (D). The transverse vibrations and the spin imparted to the material flow together generate gyroscopic forces within the flow tube. The magnitude of the flow tube deflection that results from the gyroscopic forces is related to the magnitude of the material flow within the flowmeter and is measured to determine material flow information. A second embodiment (1600) of the flowmeter further functions to detect the Coriolis forces on the vibrating flow tube and generates material flow information from the detected Coriolis forces. The Coriolis based material flow information and the gyroscopic based material flow information are both applied to associated meter electronics which uses the two sets of information for comparison and error checking and other purposes such as compensation.