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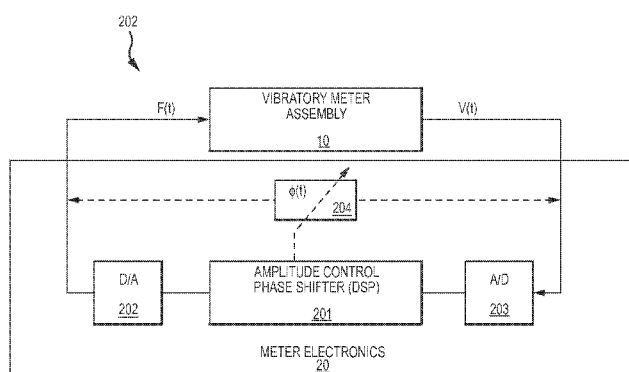


FIG. 2

(57) **Abstract:** A vibratory meter (5) is provided, including one or more flow conduits (103), one or more pickoff sensors (105, 105'), and a driver (104). Meter electronics (20) is configured to vibrate the one or more flow conduits (103) using a drive signal including an initial vibration frequency and to receive a pickoff sensor signal from the one or more pickoff sensors (105, 105') in response, iteratively offset a phase difference between the drive signal and the pickoff sensor signal by a predetermined phase increment and measure a resulting vibrational frequency and amplitude, with the offsetting operatively sweeping the vibration frequency over a predetermined vibration frequency range and therefore generating a plurality of vibration amplitudes and a corresponding plurality of vibration frequencies, and determine a substantially maximum amplitude response in the plurality of vibration amplitudes and designate the corresponding vibration frequency as comprising the resonant frequency.