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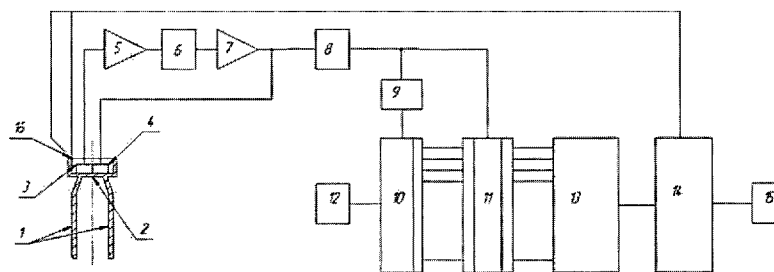


Figure 2

(57) **Abstract:** A device for determining a density of a fluid is described. The device comprises a mechanical resonator, a driver/receiver unit arranged to provide an actuation to the mechanical resonator, sense a response of the mechanical resonator to the actuation, and provide an output signal representing the response; and an evaluation unit. The evaluation unit of the device is arranged to i. determine an oscillation distribution from the output signal, ii. determine a resonance frequency estimate from the oscillation distribution, and iii. determine the density of the fluid based upon the resonance frequency estimate. The device according to the invention enables a more accurate determination of the fluid density for fluids comprising immiscible components (thus forming a heterogeneous mixture), like a water-oil emulsion, or a fluid with occluded gas.