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(54) **Title:** SENSING SYSTEM AND METHOD

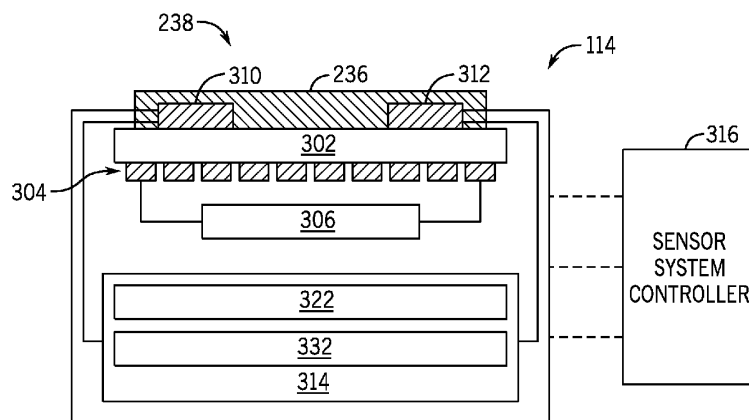


FIG. 4

(57) **Abstract:** A detector system includes a sensing element including a substrate, sensing electrodes supported by the substrate, sensing material over the sensing electrodes, and a multi-energy-delivering element. The multi-energy-delivering element is coupled to the sensing material and delivers different types of energy to the gas sensing material. The detector system includes excitation and detection circuitry coupled to the sensing electrodes and the multi-energy-delivering element, and a controller coupled to the excitation and detection circuitry. The controller causes the excitation and detection circuitry to achieve multi-gas differentiation with one-, two-, or higher-dimensional detection by applying an alternating current through the sensing electrodes at one or more operational frequencies for excitation of the sensing material, and applying at least one type of operational energy to the gas sensing material via the multi-energy-delivering element, wherein at least one type of operational energy has at least two levels.

[Continued on next page]

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