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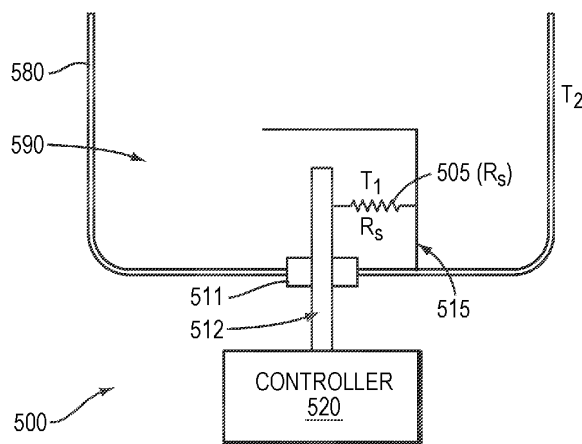


FIG. 5A

(57) Abstract: A thermal conductivity gauge implements a model of power dissipation to accurately measure gas pressure. An envelope surrounds a gas volume, and a sensor wire is positioned within the gas volume. The controller provides a model of power dissipation from the thermal conductivity gauge, including power loss due to conductive heat loss from sensor wire end contacts, radiative loss from the sensor wire toward the gas envelope, and pressure dependent conductive heat loss from the sensor wire through surrounding gas. The controller then applies a power input to the sensor wire to heat the sensor wire, and measures total power dissipation W_T , sensor wire temperature T_s , and envelope temperature T_e during the application of the power input. Gas pressure within the envelope is determined based on the measured W_T , T_s and T_e and the model of power dissipation.

[Continued on next page]



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