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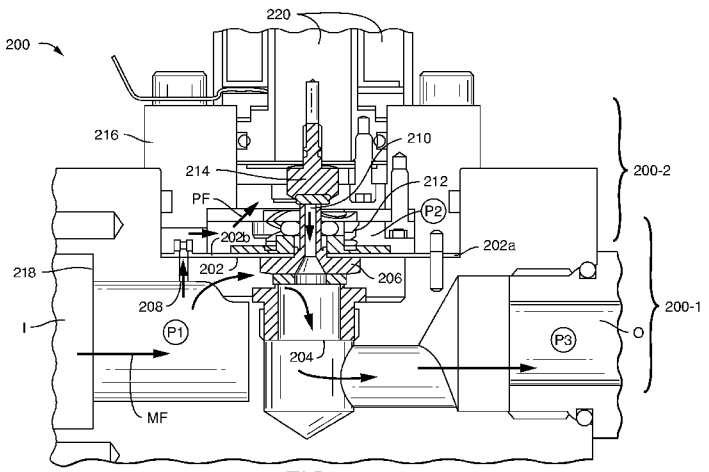


FIG. 2

(57) Abstract: Pilot valve structures are described as including a main valve having a main flow body and having an inlet and outlet, and a diaphragm, with a perimeter, a moveable portion, and first and second sides. A main flow orifice is located in the flow body between the inlet and outlet. A main valve plug is attached to and/or disposed in the moveable portion of the diaphragm and opens and closes the flow orifice when the moveable portion of the diaphragm is in first and second positions. The pilot valve also includes a pilot valve inlet that is connected to the flow path of the main flow body. A pilot valve outlet/orifice is disposed within and co-located with the main valve plug. The pilot valve includes a pilot valve plug, which is moveable to open and close the pilot valve orifice. Related mass flow controllers with such pilot valve structures are further described.

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