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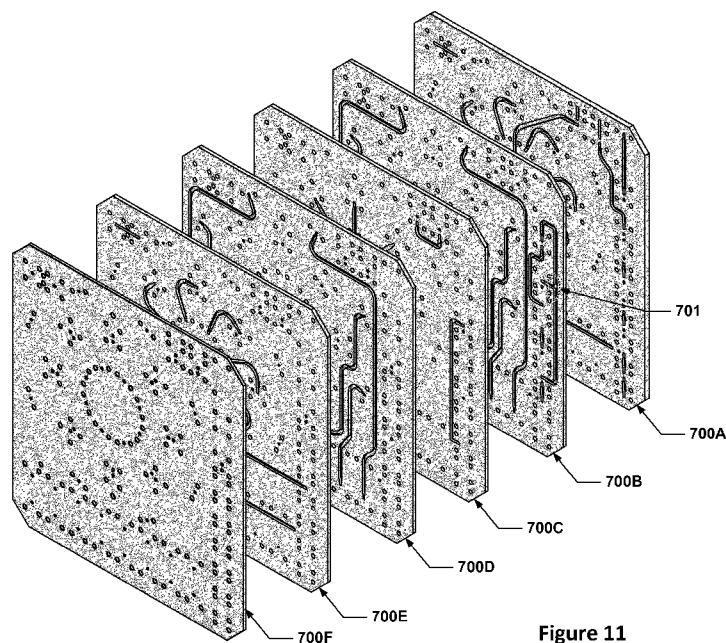
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(54) **Title:** MONOLITHIC GAS DISTRIBUTION MANIFOLD AND VARIOUS CONSTRUCTION TECHNIQUES AND USE CASES THEREFOR

**Figure 11**

(57) **Abstract:** A gas delivery substrate for mounting gas supply components of a gas delivery system for a semiconductor processing apparatus is provided. The substrate may include a plurality of layers having major surfaces thereof bonded together forming a laminate with openings for receiving and mounting first, second, third and fourth gas supply components on an outer major surface. The substrate may include a first gas channel extending across an interior major surface that at least partially overlaps a second gas channel extending across a different interior major surface. The substrate may include a first gas conduit including the first gas channel connecting the first gas supply component to the second gas supply component, and a second gas conduit including the second channel connecting the third gas supply component to the fourth gas supply component. Also disclosed are various techniques for manufacturing gas delivery substrates.