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(54) Title: HIGH LIFETIME CONSUMABLE SILICON NITRIDE-SILICON DIOXIDE PLASMA PROCESSING COMPONENTS

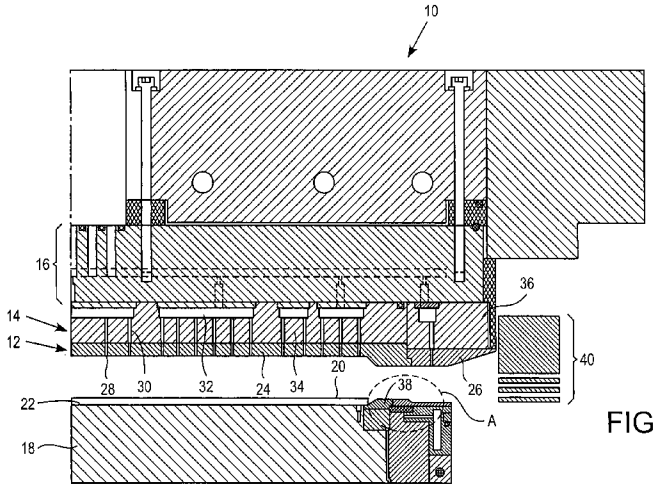


FIG. 1

(57) Abstract: A method of increasing mean time between cleans of a plasma etch chamber and chamber parts lifetimes is provided. Semiconductor substrates are plasma etched in the chamber while using at least one sintered silicon nitride component exposed to ion bombardment and/or ionized halogen gas. The sintered silicon nitride component includes high purity silicon nitride and a sintering aid consisting of silicon dioxide. A plasma processing chamber is provided including the sintered silicon nitride component. A method of reducing metallic contamination on the surface of a silicon substrate during plasma processing is provided with a plasma processing apparatus including one or more sintered silicon nitride components. A method of manufacturing a component exposed to ion bombardment and/or plasma erosion in a plasma etch chamber, comprising shaping a powder composition consisting of high purity silicon nitride and silicon dioxide and densifying the shaped component.

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