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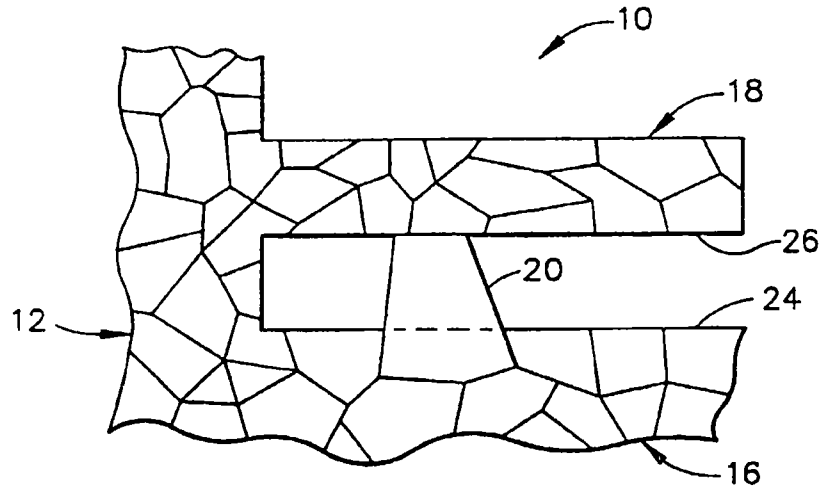
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(54) Title: FORMING MICROSCALE STRUCTURES FROM POLYCRYSTALLINE MATERIALS



(57) Abstract: A method is disclosed for forming microscale features with conventional multilayer structures. The method generally entails forming a multilayer structure (10) that includes a polycrystalline layer (12) and at least one constraining layer (14). The multilayer structure is patterned to form first (16) and second structures (18), each of which includes the polycrystalline and constraining layers. At least the first structure (16) is then locally heated, during which time the constraining layer restricts the thermal expansion of the polycrystalline layer of the first structure. As a result, stresses are induced in the polycrystalline layer of the first structure, causing substantially two-dimensional grain growth from the edge of the first structure. Sufficient grain growth occurs to produce a third structure (20) which, based on the grain size of the polycrystalline layer, will be a nano-scale structure. When appropriately configured, nano-scale structures can be formed as operative components of electrical, mechanical, optical and fluid-handling devices.

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