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(71) Applicant *(for all designated States except US)*: **S.O.I.TEC SILICON ON INSULATOR TECHNOLOGIES** [FR/FR]; Chemin Des Franques, Parc Technologique Des Fontaines, F-38190 Bernin (FR).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **ARENA, Chantal** [US/US]; 3847 East Ivyglen Circle, Mesa, AZ 82505 (US).

(74) Agents: **JOHANSON, Kevin, K.** et al.; Traskbritt, 230 South 500 East, Suite 300, P. O. Box 2550, Salt Lake City, UT 84110-2550 (US).

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(54) **Title**: METHODS OF FABRICATING SEMICONDUCTOR STRUCTURES OR DEVICES USING LAYERS OF SEMICONDUCTOR MATERIAL HAVING SELECTED OR CONTROLLED LATTICE PARAMETERS

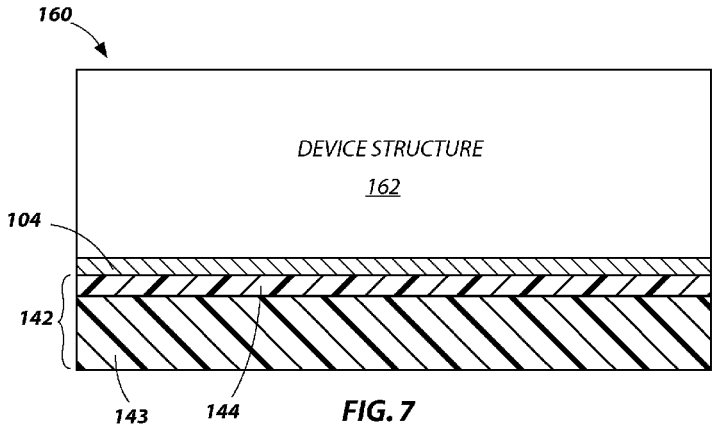


FIG. 7

(57) **Abstract**: Methods of fabricating semiconductor devices or structures include bonding a layer of semiconductor material to another material at a temperature, and subsequently changing the temperature of the layer of semiconductor material. The another material may be selected to exhibit a coefficient of thermal expansion such that, as the temperature of the layer of semiconductor material is changed, a controlled and/or selected lattice parameter is imparted to or retained in the layer of semiconductor material. In some embodiments, the layer of semiconductor material may comprise a III-V type semiconductor material, such as, for example, indium gallium nitride. Novel intermediate structures are formed during such methods. Engineered substrates include a layer of semiconductor material having an average lattice parameter at room temperature proximate an average lattice parameter of the layer of semiconductor material previously attained at an elevated temperature.

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