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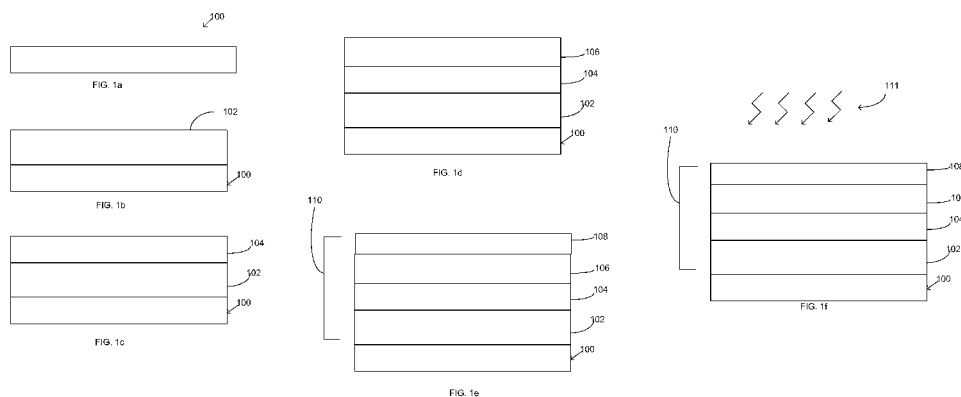
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(54) **Title:** METHODS OF FORMING BUFFER LAYER ARCHITECTURE ON SILICON AND STRUCTURES FORMED THEREBY



(57) **Abstract:** Methods and associated structures of forming a microelectronic device are described. Those methods may include forming a GaSb nucleation layer on a substrate, forming a Ga(Al)AsSb buffer layer on the GaSb nucleation layer, forming an In_{0.52}Al_{0.48}As bottom barrier layer on the Ga(Al)AsSb buffer layer, and forming a graded In_xAl_{1-x}As layer on the In_{0.52}Al_{0.48}As bottom barrier layer thus enabling the fabrication of low defect, device grade InGaAs based quantum well structures.

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