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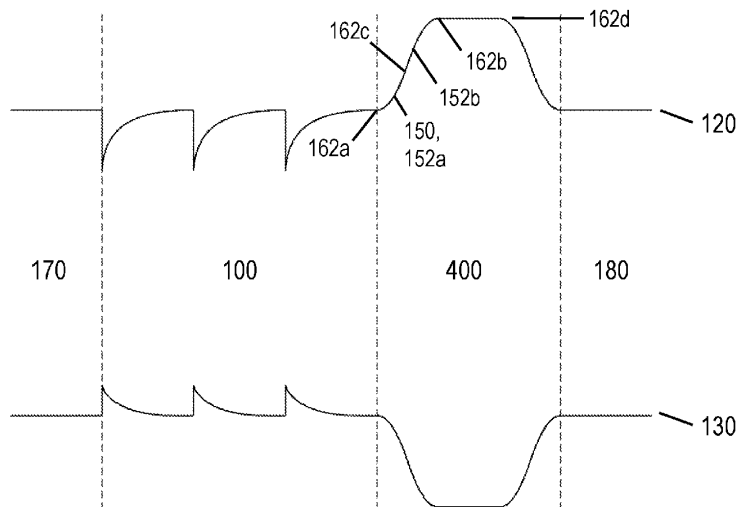


FIG. 17A

(57) Abstract: An apparatus and method for reducing the quantum confined Stark effect and electron leakage in polarized compound semiconductors optical gain regions is disclosed. The apparatus comprises a continuously graded multi-quantum well (MQW) band structure wherein the quantum wells (QWs) are concatenated with no quantum barriers (QBs) in between and no more than one heterojunction interface per well. An alternative, equivalent MQW band structure comprises continuously graded QWs separated by continuously graded QBs with no more than one heterojunction interface per well. In both embodiments the band structures are devoid of constant bandgap layers. Non-uniform period and non-uniform bandgap range MQW structures are contemplated. Non-uniform QW/QB thickness ratio MQW structures are also considered. Smoothly graded electron barrier layers (EBLs) with tangent energy bands on the MQW side and no more than one heterojunction interface on the p-injection side may be used to improve electron confinement

[Continued on next page]

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and hole injection.