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(54) **Title**: METHODS OF FABRICATING SEMICONDUCTOR STRUCTURES AND DEVICES USING GLASS BONDING LAYERS, AND SEMICONDUCTOR STRUCTURES AND DEVICES FORMED BY SUCH METHODS

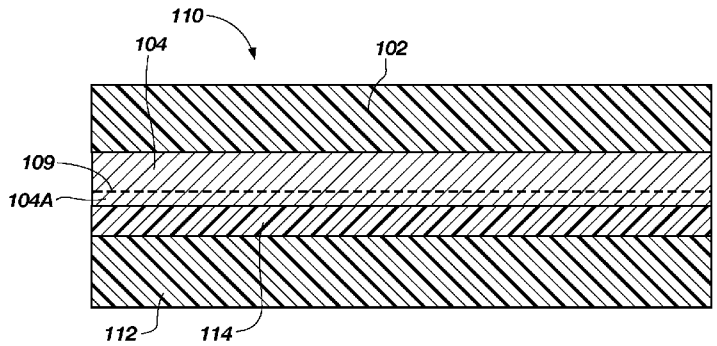


FIG. 2

(57) **Abstract**: Methods of fabricating semiconductor structures and devices include bonding a seed structure to a substrate using a glass. The seed structure may comprise a crystal of semiconductor material. Thermal treatment of the seed structure bonded to a substrate using a glass may be utilized to control the strain state within the seed structure. The seed structure may be placed in a state of compressive strain at room temperature. The seed structure bonded to the glass may be used for growth of semiconductor material, or, in additional methods, a seed structure may be bonded to a first substrate using a glass, thermally treated to control the strain state within the seed structure and a second substrate may be bonded to an opposite side of the seed structure using a non-glassy material.