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(54) **Title:** METHODS OF PREPARING SILICON-ON-INSULATOR STRUCTURES USING EPITAXIAL WAFERS

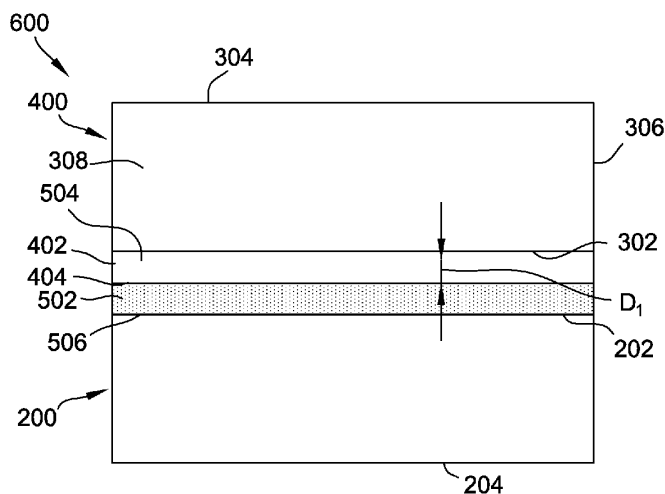


FIG. 7

(57) **Abstract:** A method of preparing a silicon-on-insulator structure includes forming an epitaxial silicon layer on a front surface of a single crystal silicon donor substrate, forming a dielectric layer on the epitaxial silicon layer to thereby form an epitaxial donor structure including the single crystal silicon donor substrate, the epitaxial silicon layer, and the dielectric layer, bonding the dielectric layer of the epitaxial donor structure to a front surface of a handle structure, the handle structure including a single crystal semiconductor handle substrate, to thereby form a bonded structure including the handle structure, the dielectric layer, the epitaxial silicon layer, and the single crystal silicon donor substrate, and removing the single crystal silicon donor substrate and a portion of the epitaxial silicon layer from the bonded structure to thereby form the silicon-on-insulator structure including the handle structure, the dielectric layer, and a silicon device layer.

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