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(54) Title: PROCESS INTEGRATION FLOW FOR STAIRCASE GRATINGS

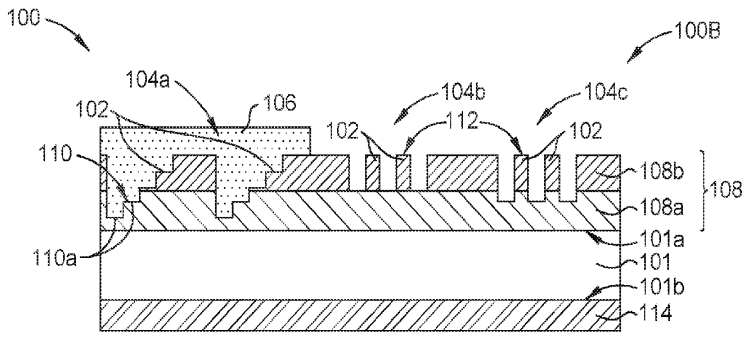


FIG. 1B

(57) Abstract: Embodiments of the present disclosure generally relate to methods of forming waveguide combiners for augmented, virtual, and mixed reality. More specifically, embodiments described herein provide methods for forming waveguide combiners with staircase structures and binary structures. The method includes depositing a device layer comprising a plurality of device sublayers over a substrate, depositing a hardmask layer stack comprising a plurality of hardmask stack sublayers over the device layer, depositing a photoresist layer stack including a plurality of photoresist sublayers over the hardmask layer stack, etching the hardmask layer stack to produce a plurality of hardmask segments, depositing the photoresist layer stack comprising a second plurality of photoresist segments over the hardmask layer stack, the photoresist layer stack comprising the plurality of photoresist sublayers, and etching the device layer to produce a staircase structure.

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