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(54) Title: INKJET GRADIENT INDEX MATERIAL TO MODULATE GRATING DIFFRACTION EFFICIENCY

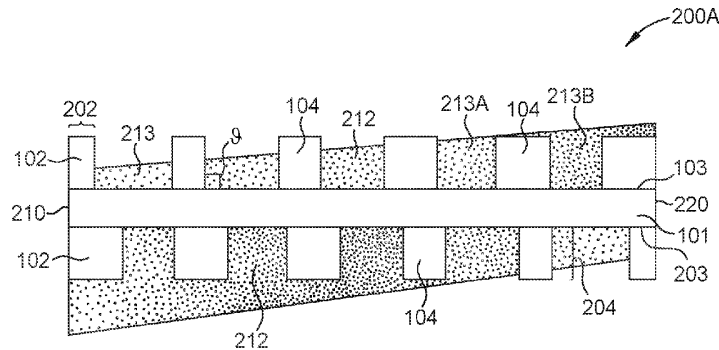


FIG. 2A

(57) Abstract: An apparatus for waveguides and a method of fabricating a waveguide combiner having at least one grating with trenches gap-filled with variable refractive index materials. At least two trenches of at least one grating includes a first gap-fill material having a first volume and a first refractive index, and a second gap-fill material having a second volume and a second refractive index different than the first refractive index. Control of the deposition of first volume and the deposition of second volume in an inkjet deposition process provide for the formation of the grating with two trenches that have different refractive indices and different gap-fill depths. The first gap-fill material and the second gap-fill material merge to form the gap-filler. Therefore, by controlling the varied refractive indices and different gap-fill depths the waveguide combiner is optimized by efficiency or a color uniformity.

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