100

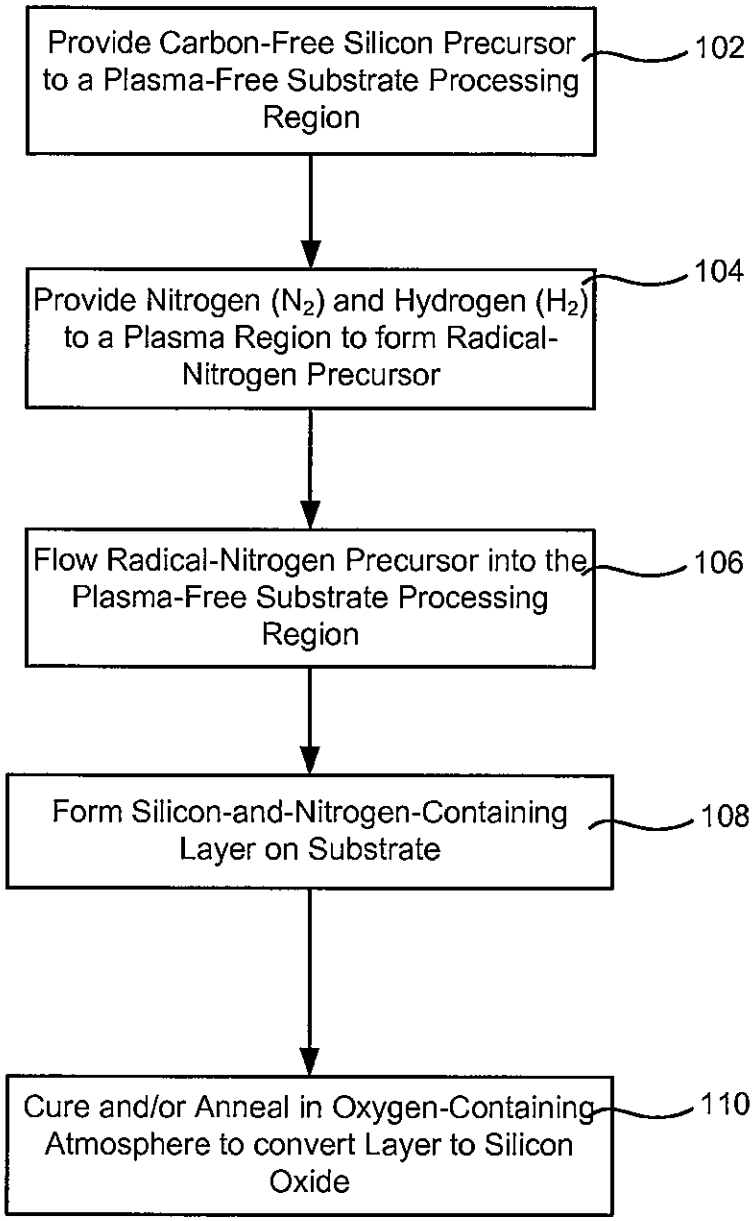

Provide Carbon-Free Silicon Precursor to a Plasma-Free Substrate Processing Region
102
Provide Nitrogen (N_2) and Hydrogen (H_2) to a Plasma Region to form Radical-Nitrogen Precursor
104
Flow Radical-Nitrogen Precursor into the Plasma-Free Substrate Processing Region
106
Form Silicon-and-Nitrogen-Containing Layer on Substrate
108
Cure and/or Anneal in Oxygen-Containing Atmosphere to convert Layer to Silicon Oxide
110

FIG. 1

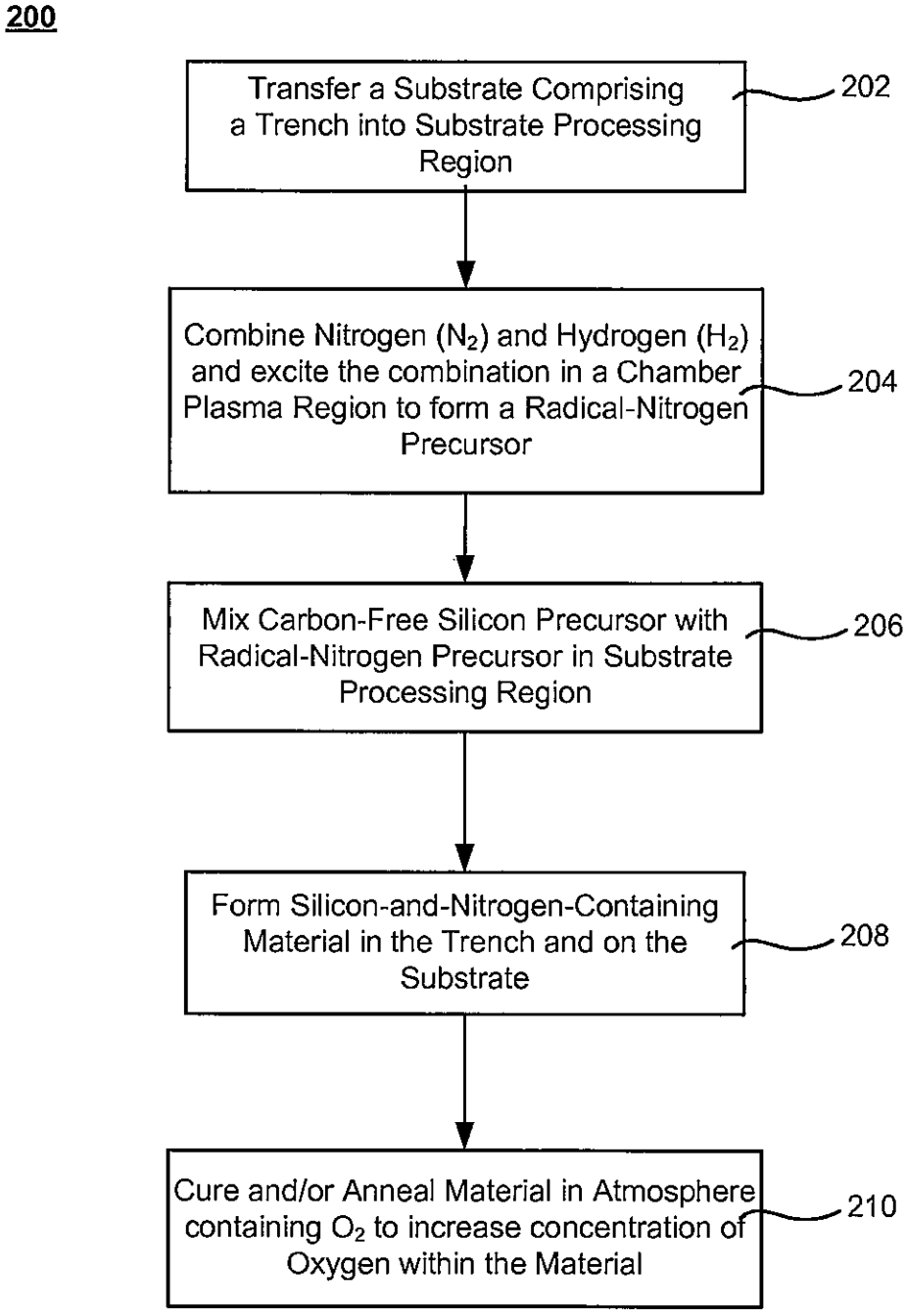

200
Transfer a Substrate Comprising a Trench into Substrate Processing Region
202
Combine Nitrogen (N_2) and Hydrogen (H_2) and excite the combination in a Chamber Plasma Region to form a Radical-Nitrogen Precursor
204
Mix Carbon-Free Silicon Precursor with Radical-Nitrogen Precursor in Substrate Processing Region
206
Form Silicon-and-Nitrogen-Containing Material in the Trench and on the Substrate
208
Cure and/or Anneal Material in Atmosphere containing O_2 to increase concentration of Oxygen within the Material
210

FIG. 2

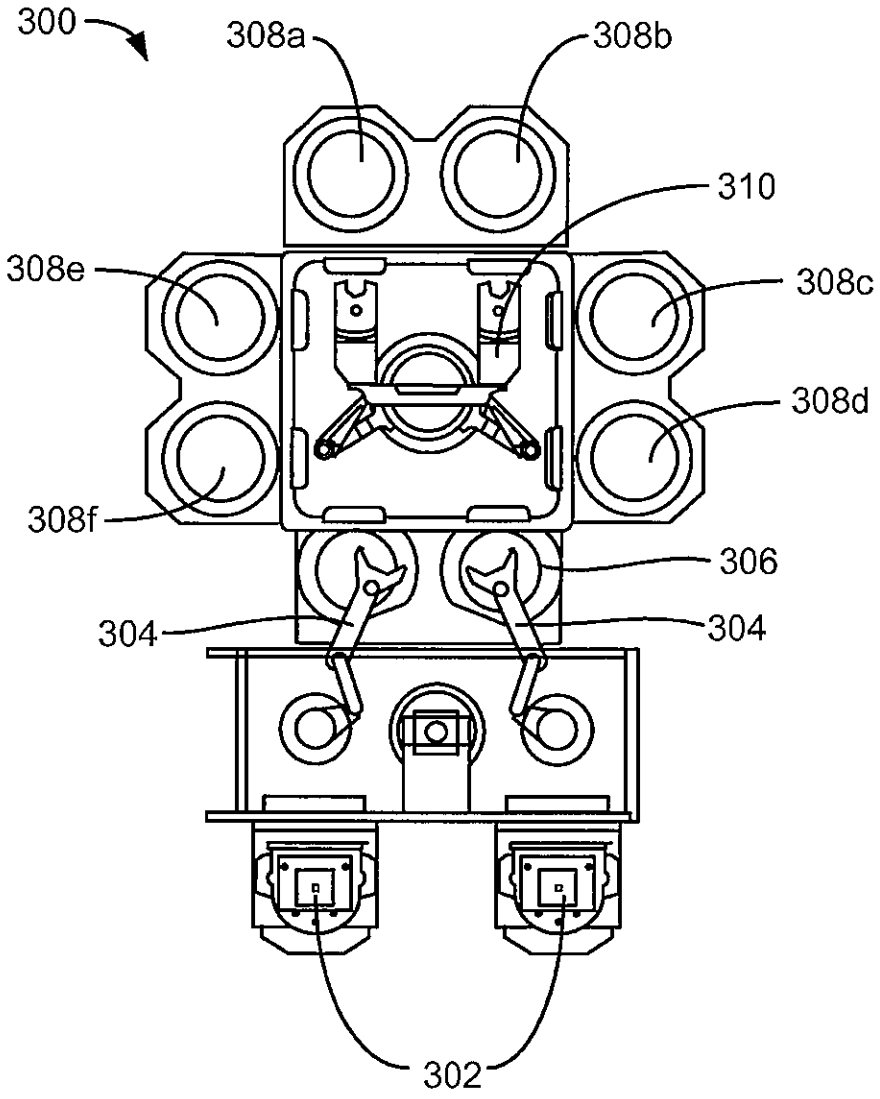


FIG. 3

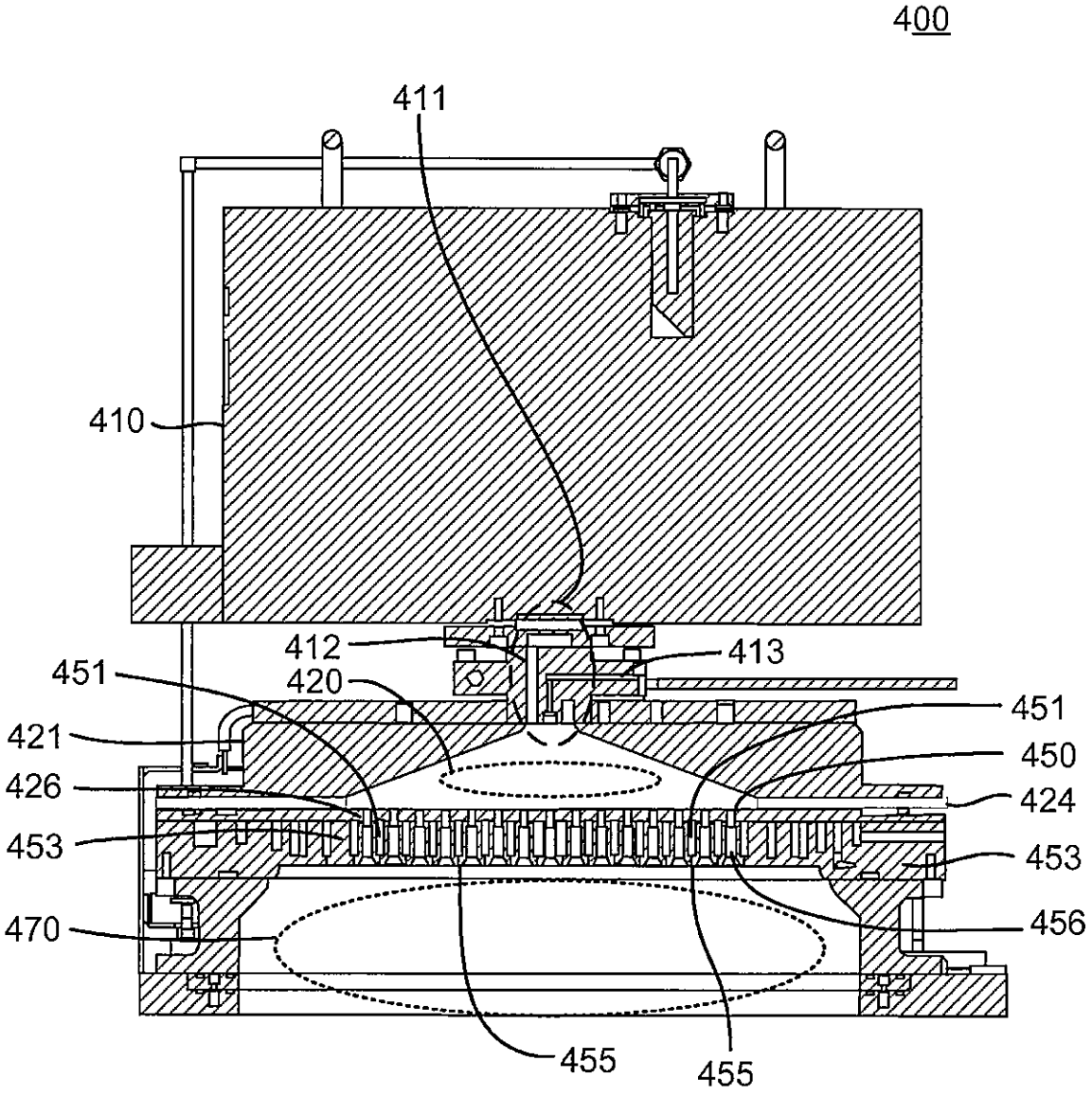

400
411
410
412
413
451
420
421
426
453
470
451
450
424
453
456
455
455

FIG. 4A

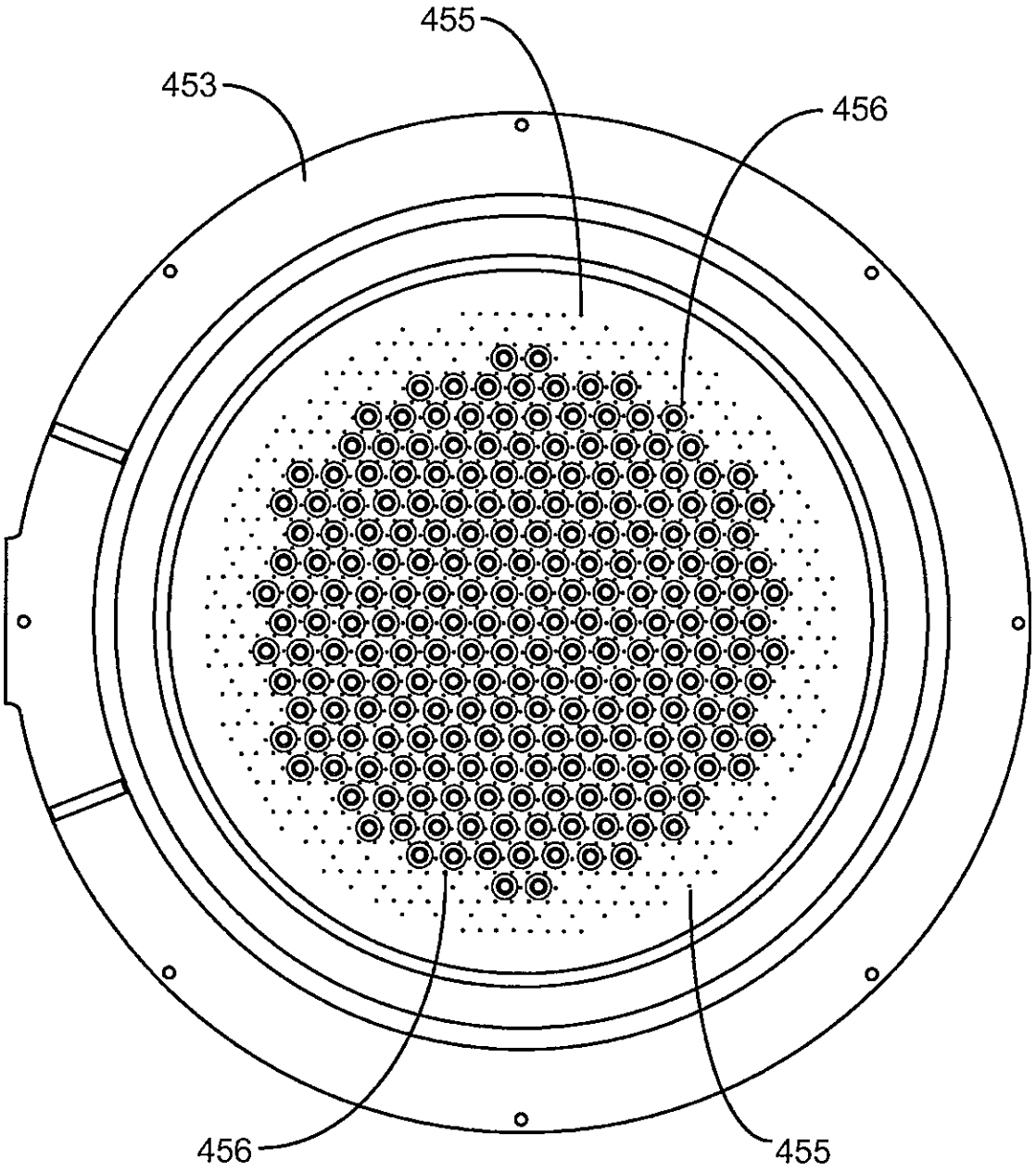


FIG. 4B