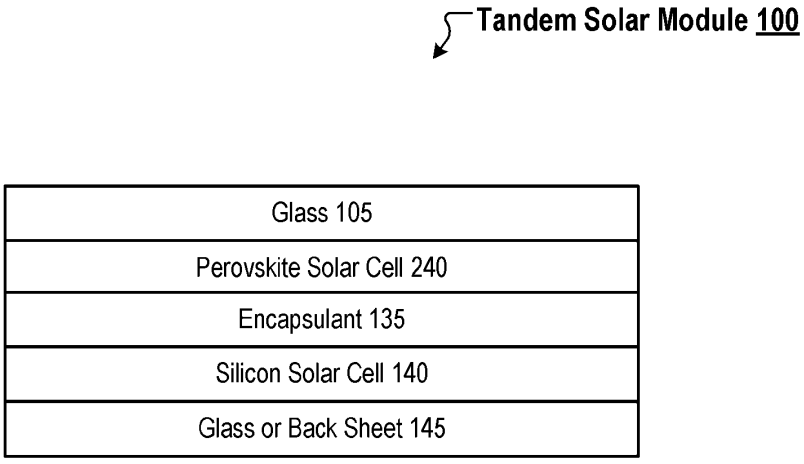
Tandem Solar Module 100
Glass 105
Perovskite Solar Cell 240
Encapsulant 135
Silicon Solar Cell 140
Glass or Back Sheet 145

FIG. 1A

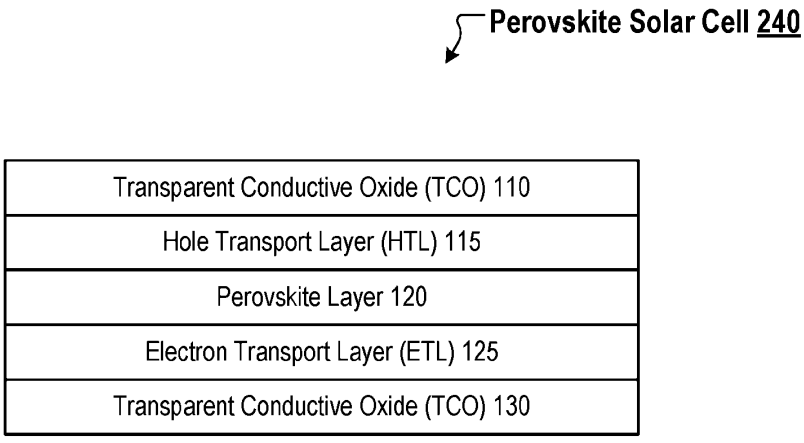
Perovskite Solar Cell 240
Transparent Conductive Oxide (TCO) 110
Hole Transport Layer (HTL) 115
Perovskite Layer 120
Electron Transport Layer (ETL) 125
Transparent Conductive Oxide (TCO) 130

FIG. 1B

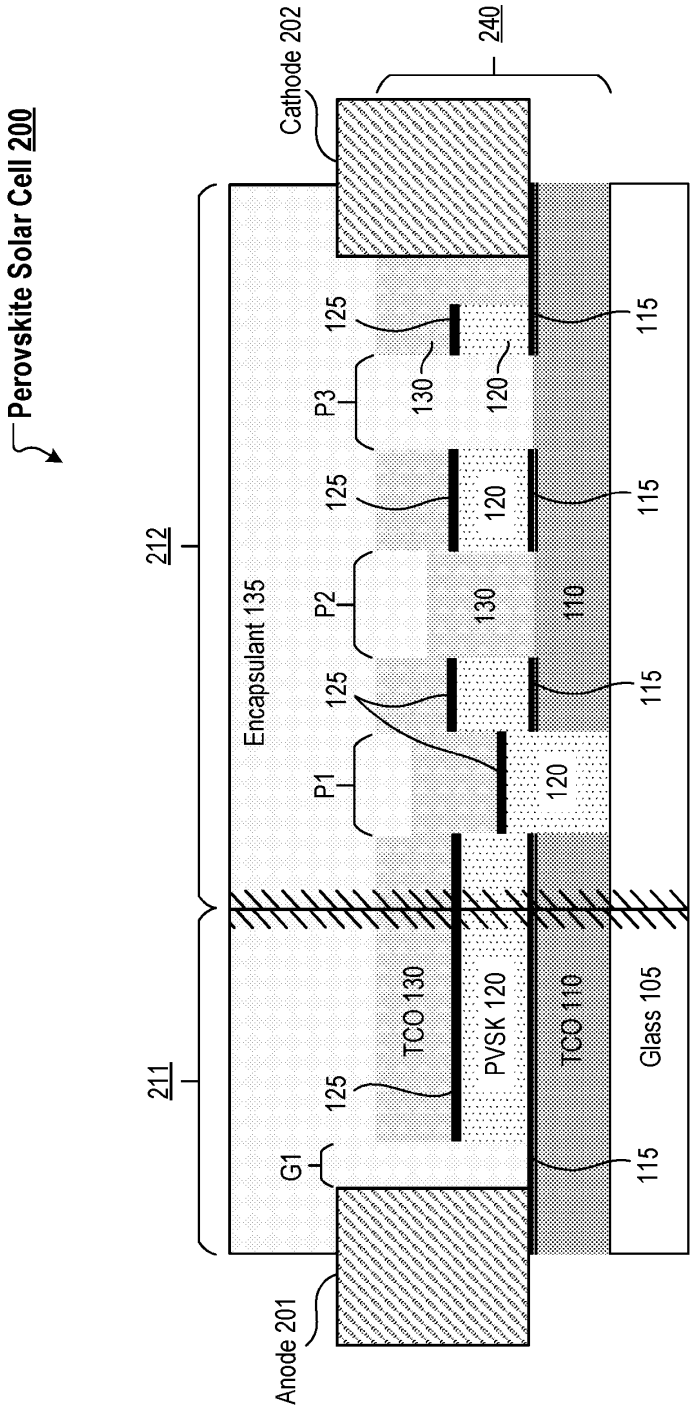
Perovskite Solar Cell 200
Cathode 202
240
212
211
Encapsulant 135
Anode 201
G1
P1
P2
P3
125
130
120
115
110
TCO 130
PVSK 120
TCO 110
Glass 105

FIG. 2

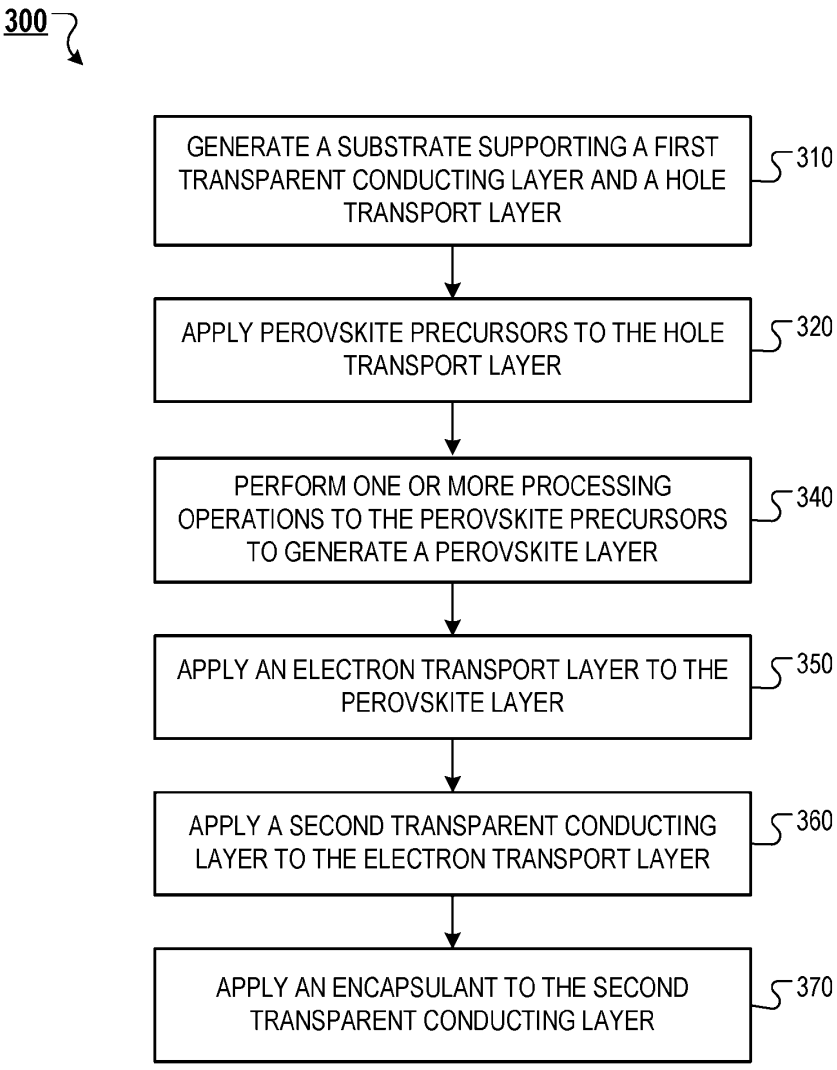
300
GENERATE A SUBSTRATE SUPPORTING A FIRST TRANSPARENT CONDUCTING LAYER AND A HOLE TRANSPORT LAYER
310
APPLY PEROVSKITE PRECURSORS TO THE HOLE TRANSPORT LAYER
320
PERFORM ONE OR MORE PROCESSING OPERATIONS TO THE PEROVSKITE PRECURSORS TO GENERATE A PEROVSKITE LAYER
340
APPLY AN ELECTRON TRANSPORT LAYER TO THE PEROVSKITE LAYER
350
APPLY A SECOND TRANSPARENT CONDUCTING LAYER TO THE ELECTRON TRANSPORT LAYER
360
APPLY AN ENCAPSULANT TO THE SECOND TRANSPARENT CONDUCTING LAYER
370

FIG. 3

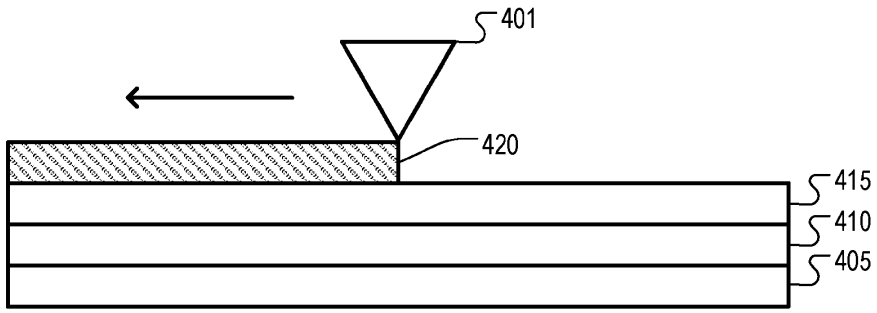

FIG. 4A

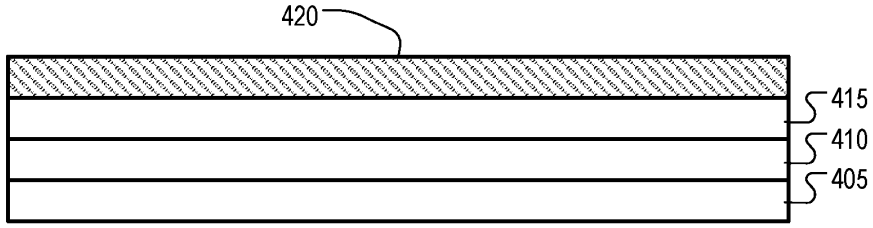

FIG. 4B

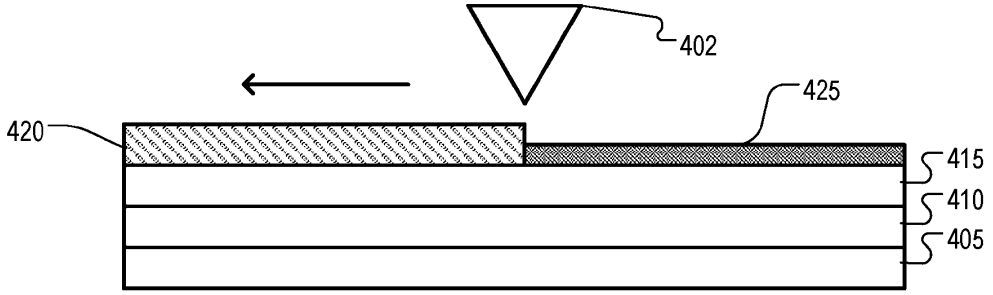

FIG. 4C

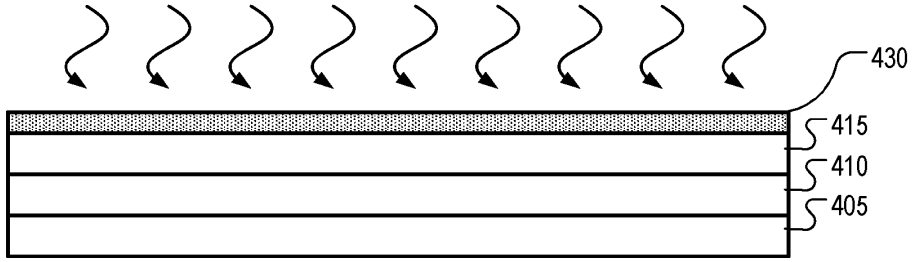

FIG. 4D

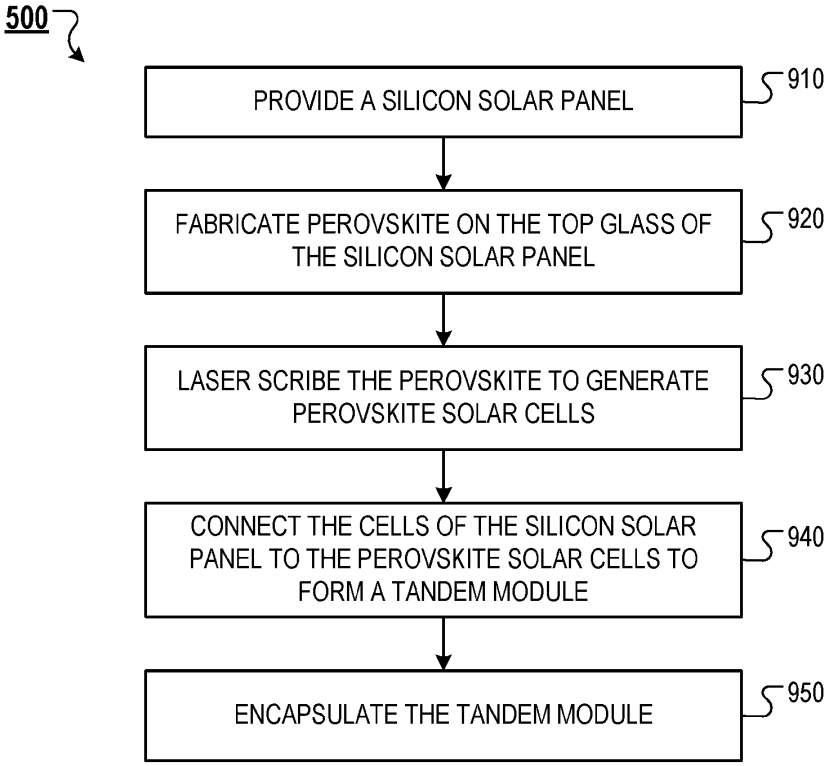
500
PROVIDE A SILICON SOLAR PANEL
910
FABRICATE PEROVSKITE ON THE TOP GLASS OF THE SILICON SOLAR PANEL
920
LASER SCRIBE THE PEROVSKITE TO GENERATE PEROVSKITE SOLAR CELLS
930
CONNECT THE CELLS OF THE SILICON SOLAR PANEL TO THE PEROVSKITE SOLAR CELLS TO FORM A TANDEM MODULE
940
ENCAPSULATE THE TANDEM MODULE
950

FIG. 5