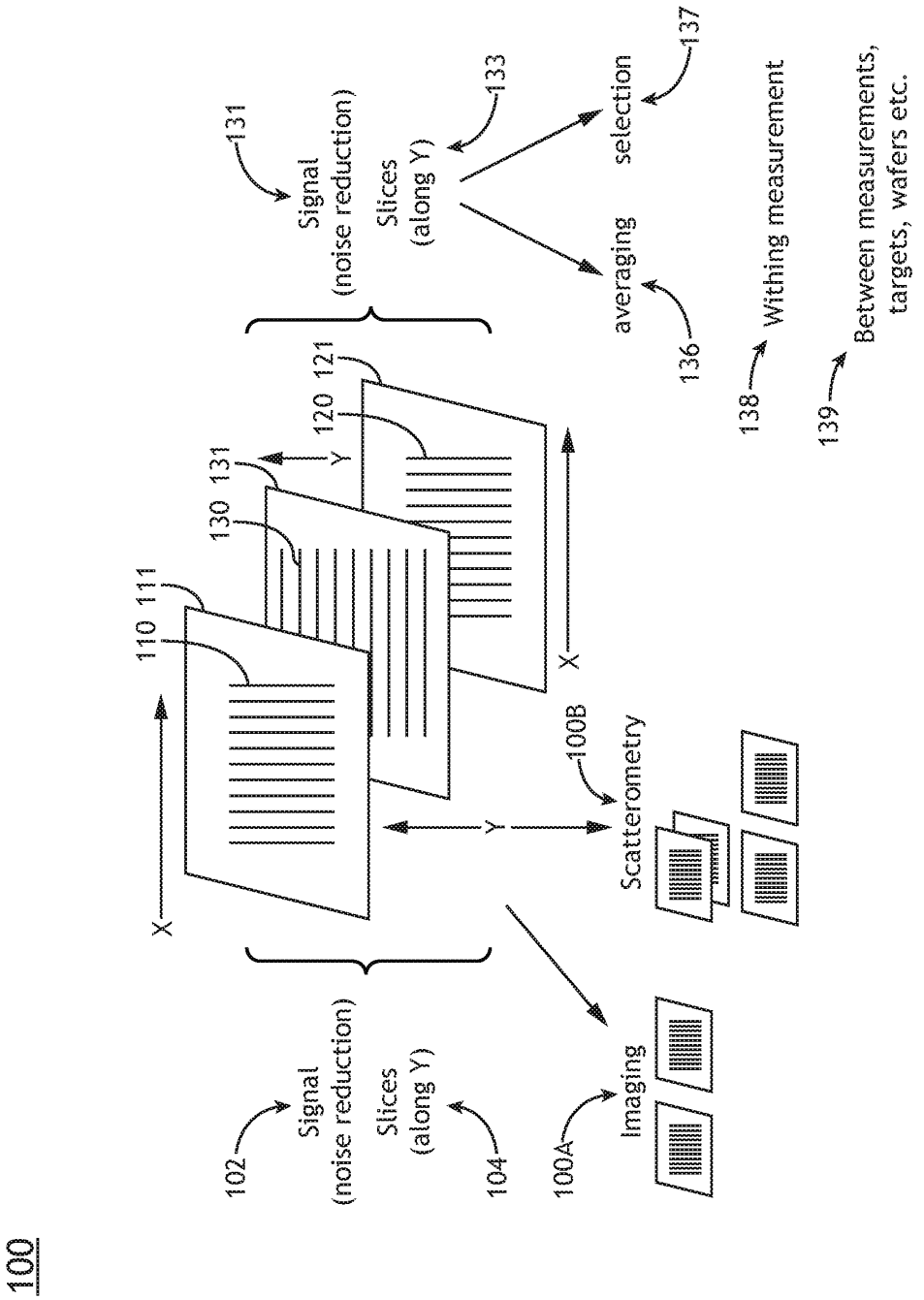
100
102
Signal
(noise reduction)
104
Slices
(along Y)
100A
Imaging
100B
Scatterometry
110 111
130 131
120 121
131
Signal
(noise reduction)
133
Slices
(along Y)
136
averaging
137
selection
138
Withing measurement
139
Between measurements,
targets, wafers etc.
X
Y

FIG.1

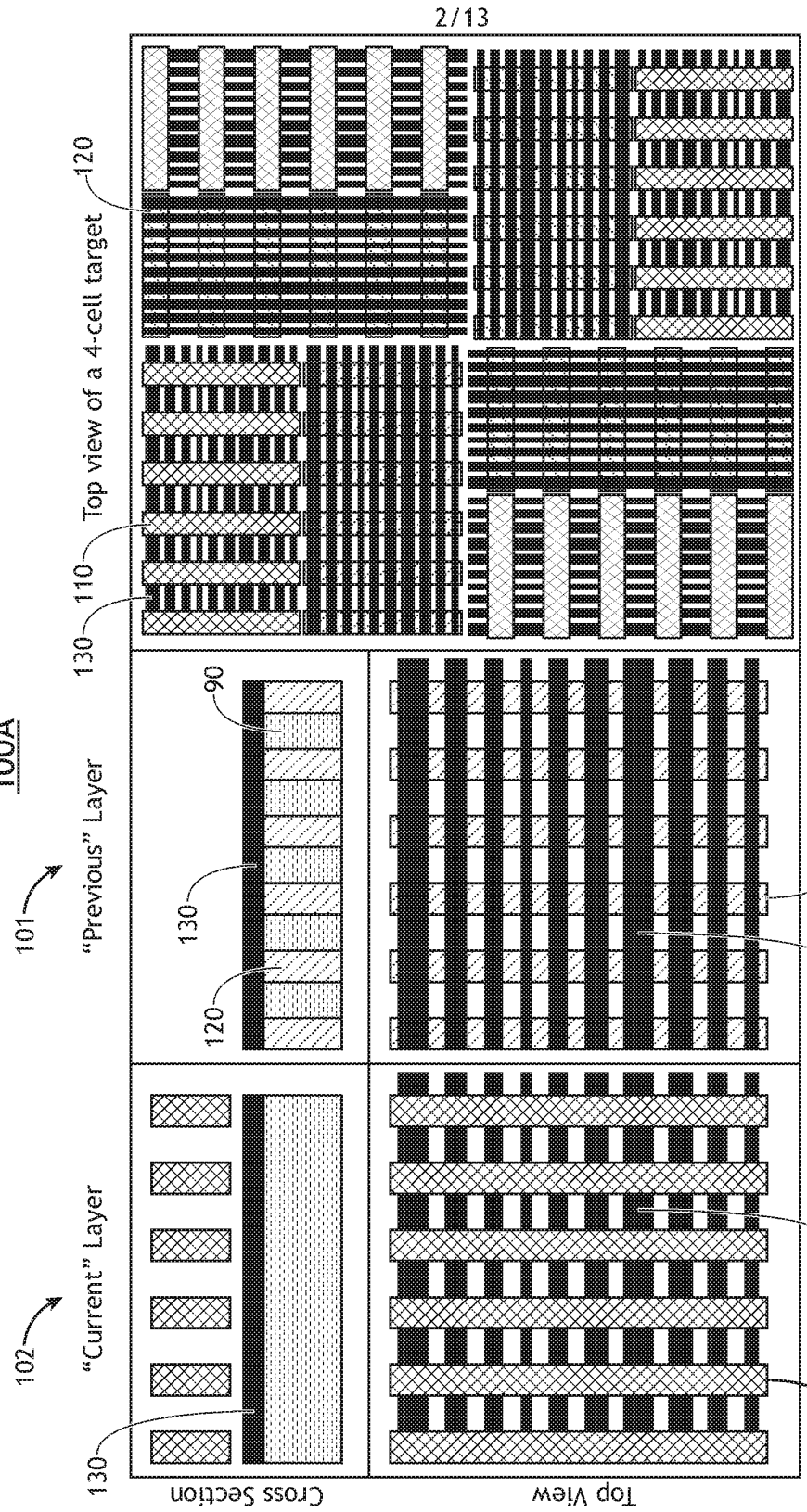
100A
101
"Previous" Layer
102
"Current" Layer
Top view of a 4-cell target
120
110
130
90
Cross Section
Top View

FIG.2

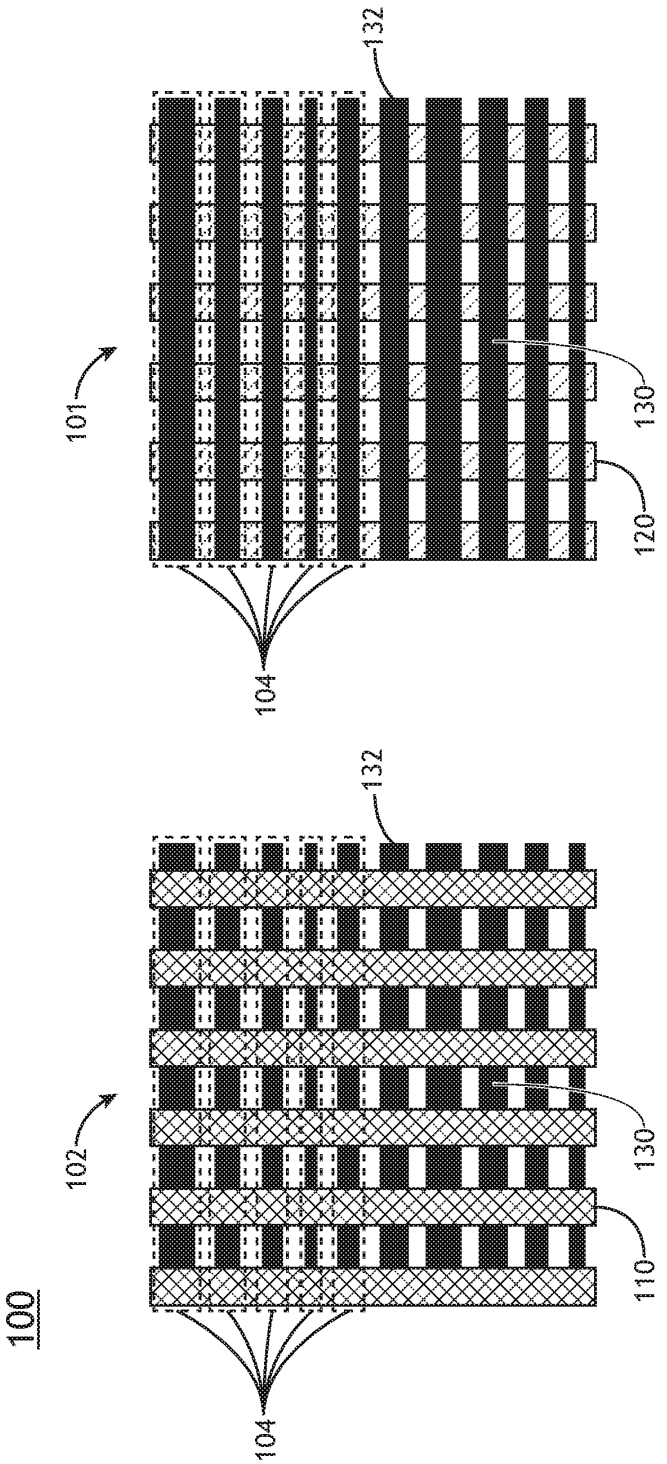

FIG. 3A

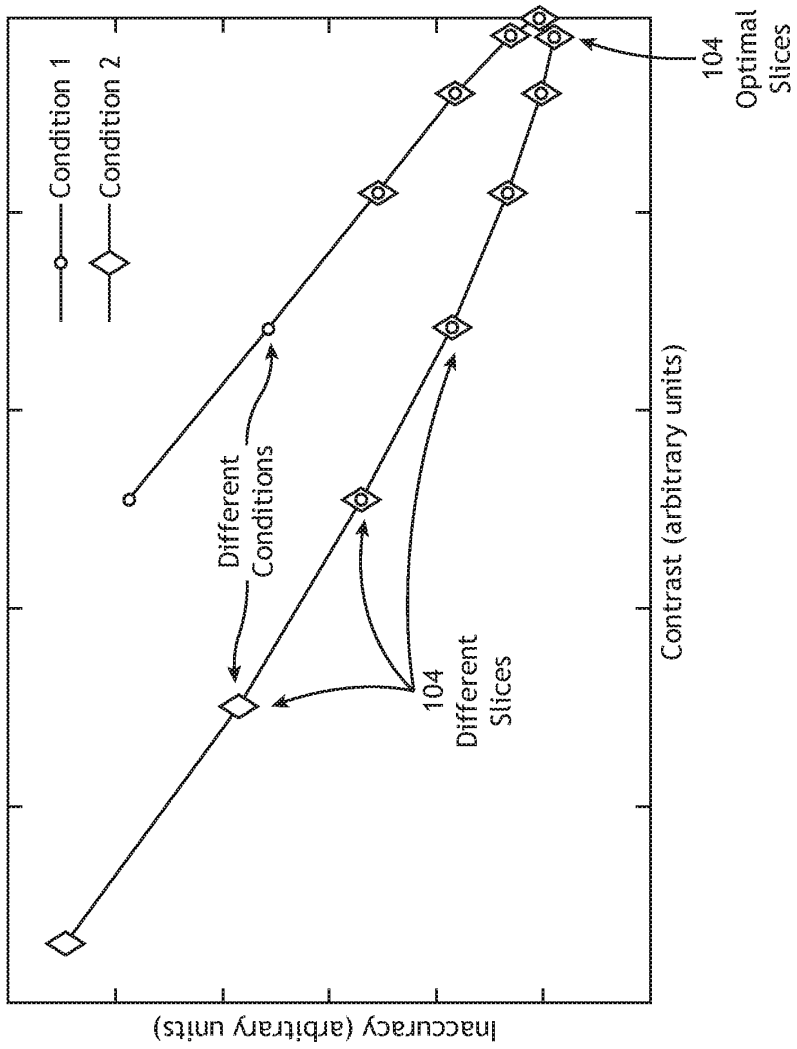
Condition 1
Condition 2
Different Conditions
104 Different Slices
104 Optimal Slices
Contrast (arbitrary units)
Inaccuracy (arbitrary units)

FIG. 3B

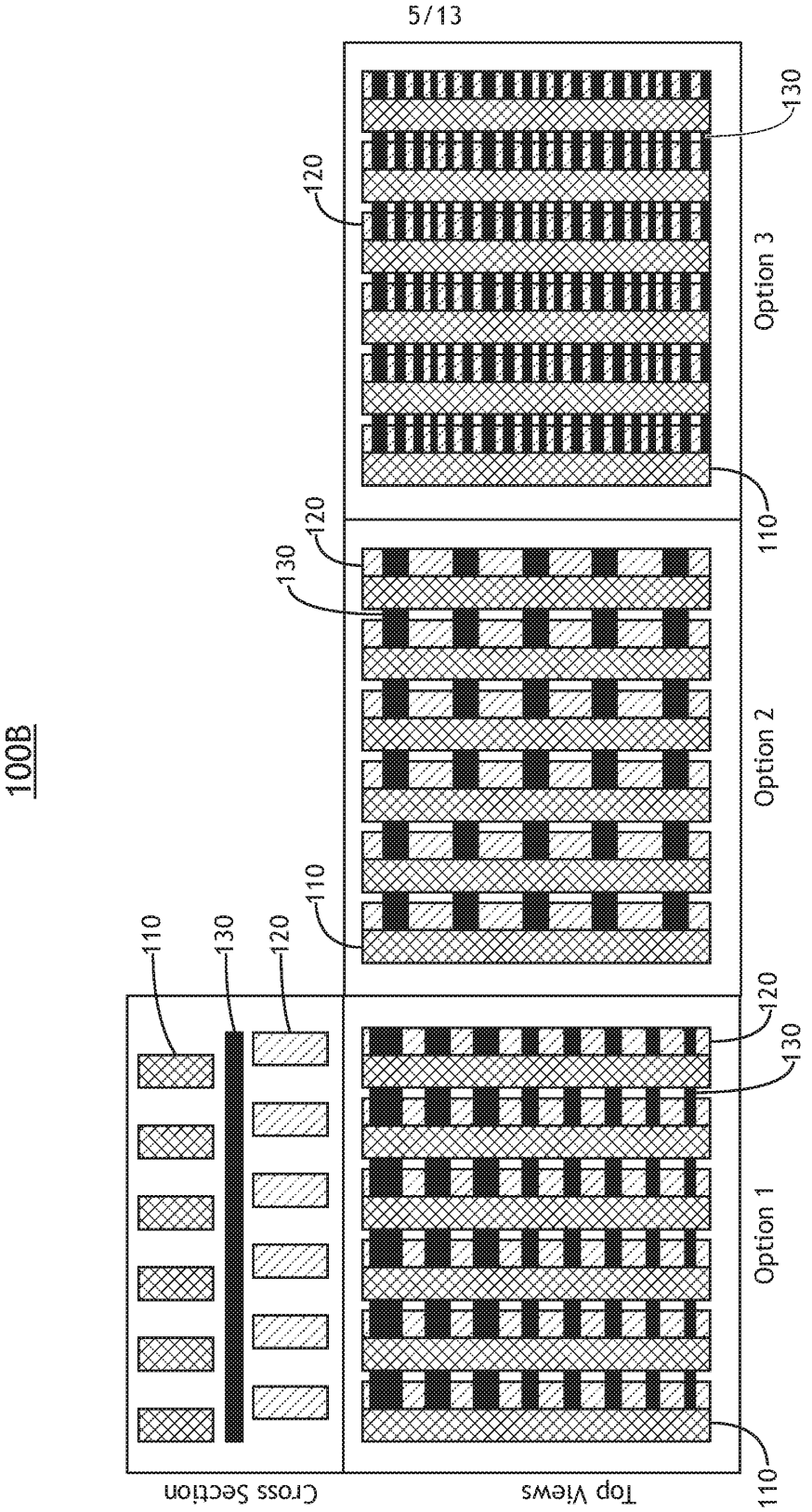
100B
Cross Section
Top Views
110
130
120
Option 1
Option 2
Option 3

FIG.4

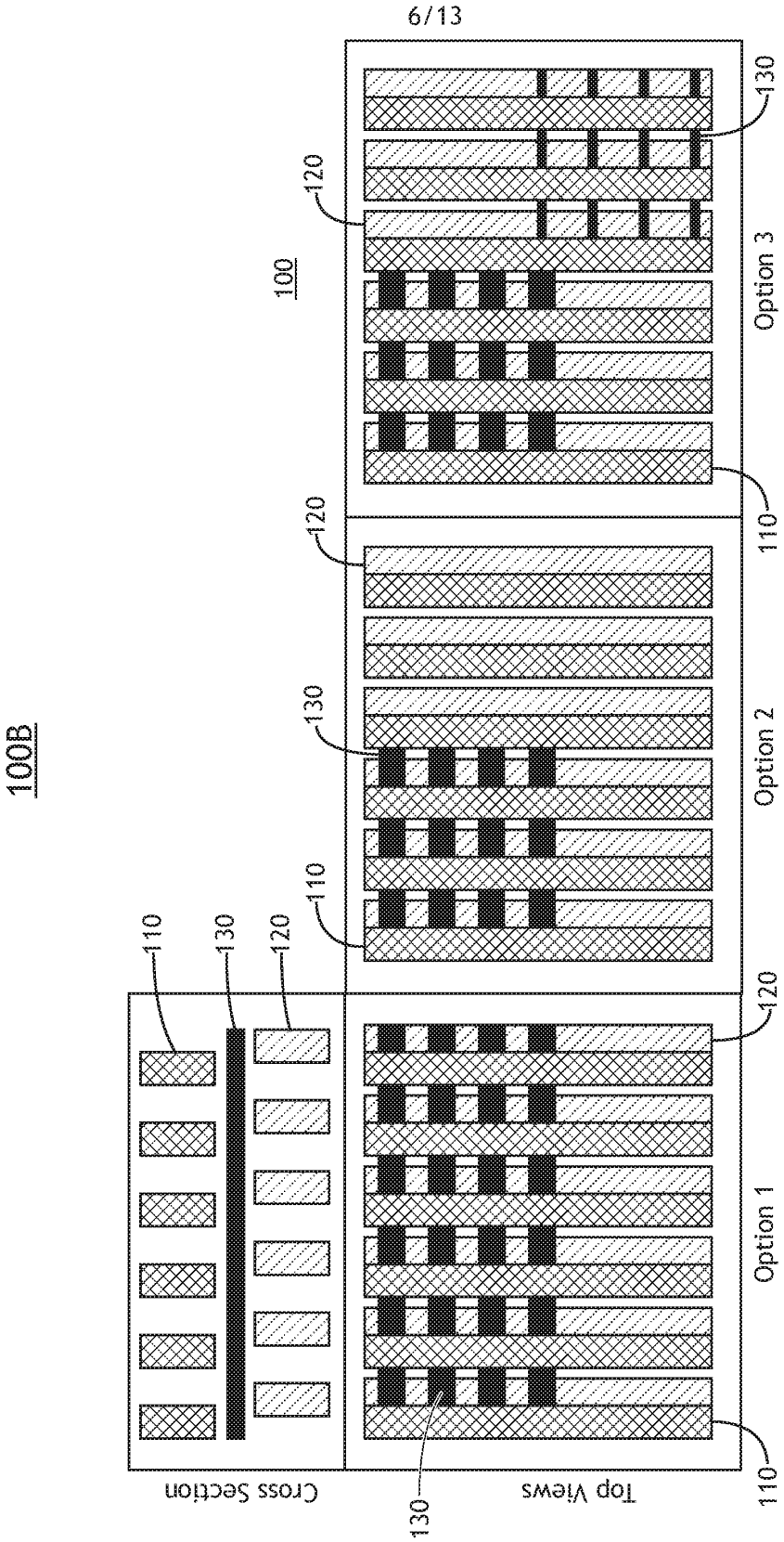

FIG.4 (continued)

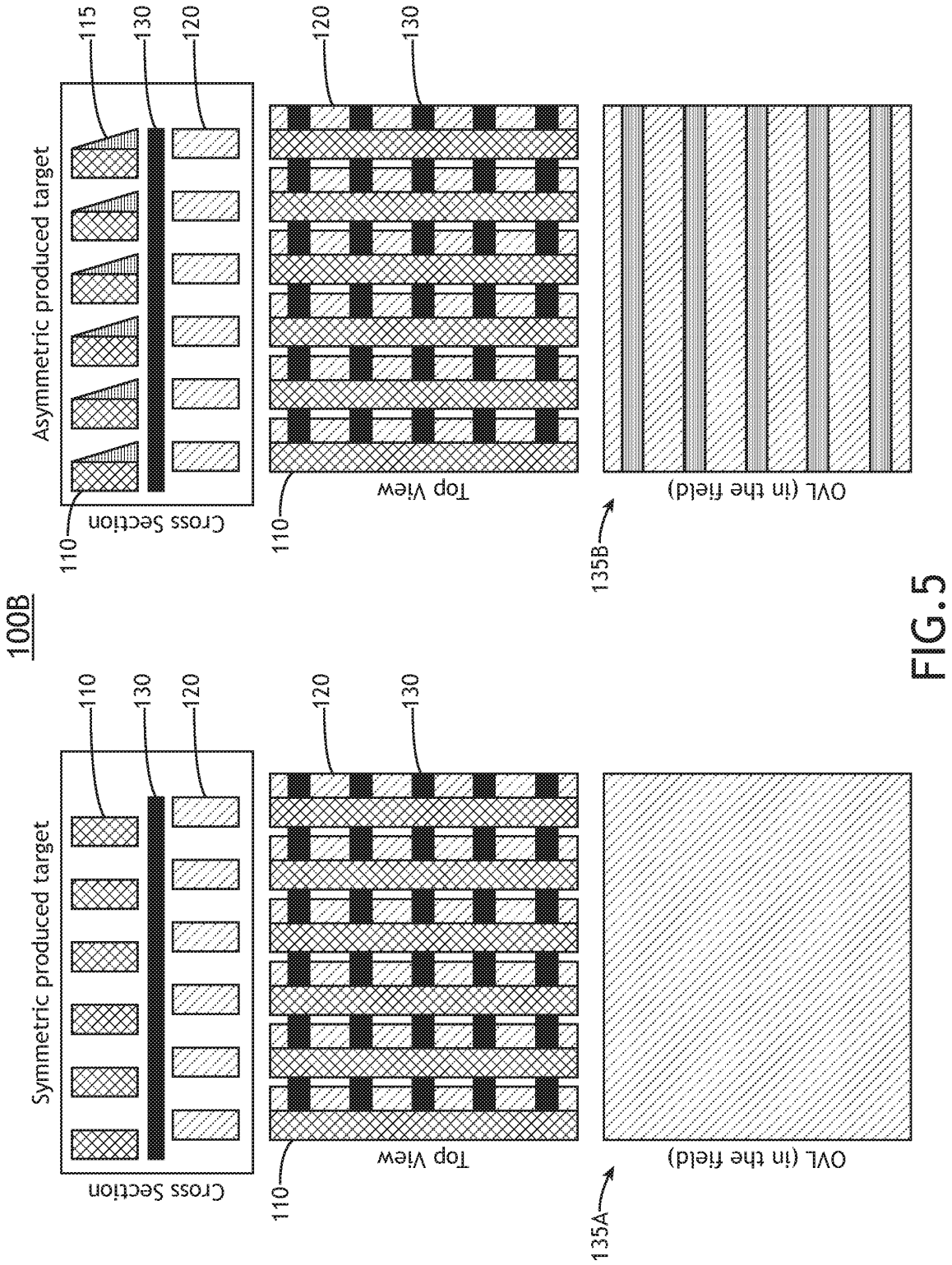
100B
Asymmetric produced target
Cross Section
Top View
OVL (in the field)
Symmetric produced target
Cross Section
Top View
OVL (in the field)
110
115
120
130
135A
135B

FIG. 5

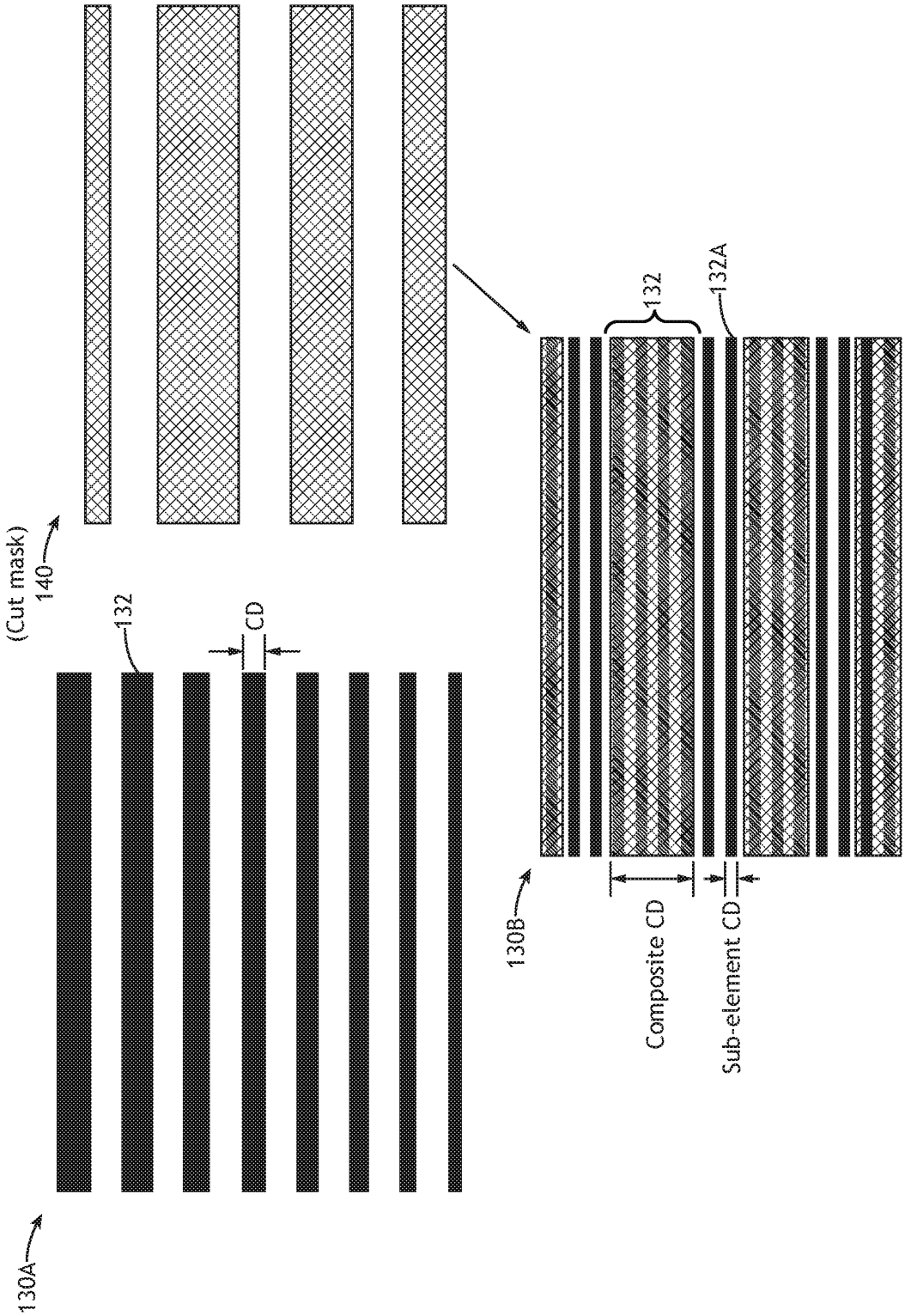
(Cut mask)
140
132
CD
130A
132
132A
130B
Composite CD
Sub-element CD

FIG.6

200

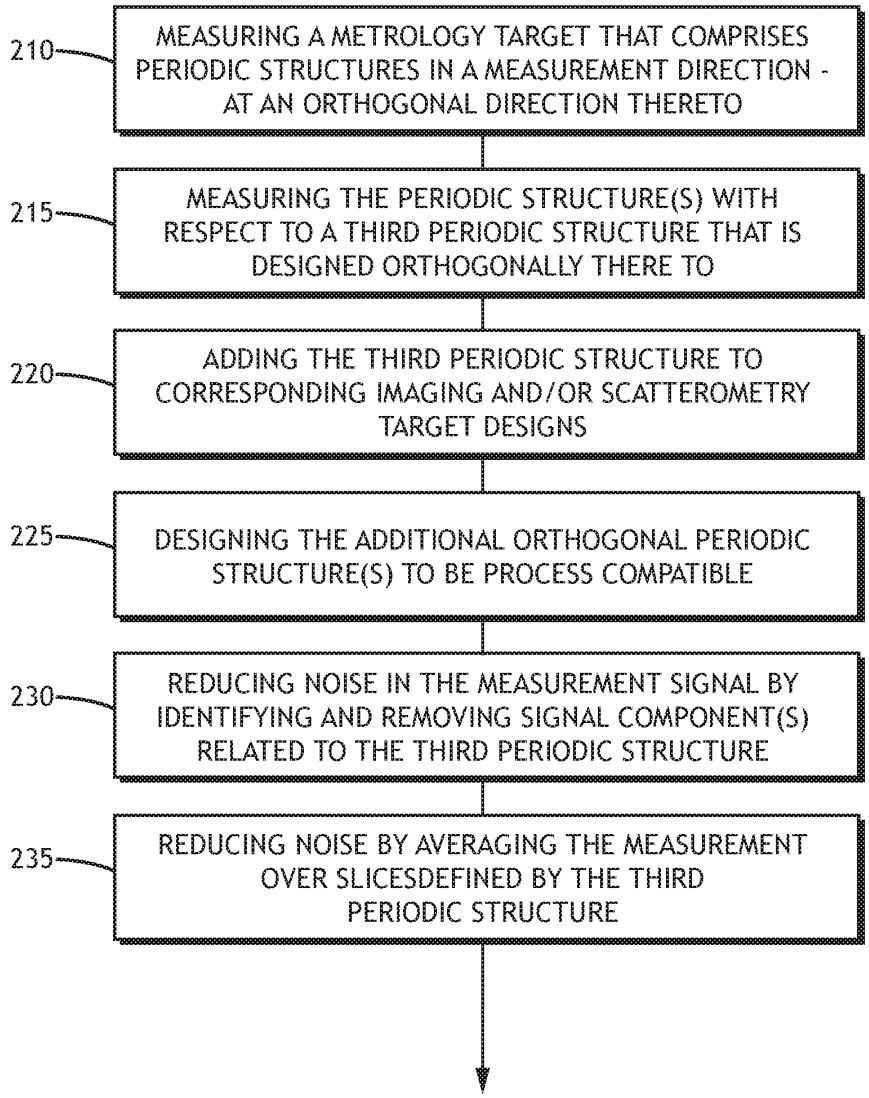
210
MEASURING A METROLOGY TARGET THAT COMPRISES PERIODIC STRUCTURES IN A MEASUREMENT DIRECTION - AT AN ORTHOGONAL DIRECTION THERETO
215
MEASURING THE PERIODIC STRUCTURE(S) WITH RESPECT TO A THIRD PERIODIC STRUCTURE THAT IS DESIGNED ORTHOGONALLY THERE TO
220
ADDING THE THIRD PERIODIC STRUCTURE TO CORRESPONDING IMAGING AND/OR SCATTEROMETRY TARGET DESIGNS
225
DESIGNING THE ADDITIONAL ORTHOGONAL PERIODIC STRUCTURE(S) TO BE PROCESS COMPATIBLE
230
REDUCING NOISE IN THE MEASUREMENT SIGNAL BY IDENTIFYING AND REMOVING SIGNAL COMPONENT(S) RELATED TO THE THIRD PERIODIC STRUCTURE
235
REDUCING NOISE BY AVERAGING THE MEASUREMENT OVER SLICESDEFINED BY THE THIRD PERIODIC STRUCTURE

FIG.7

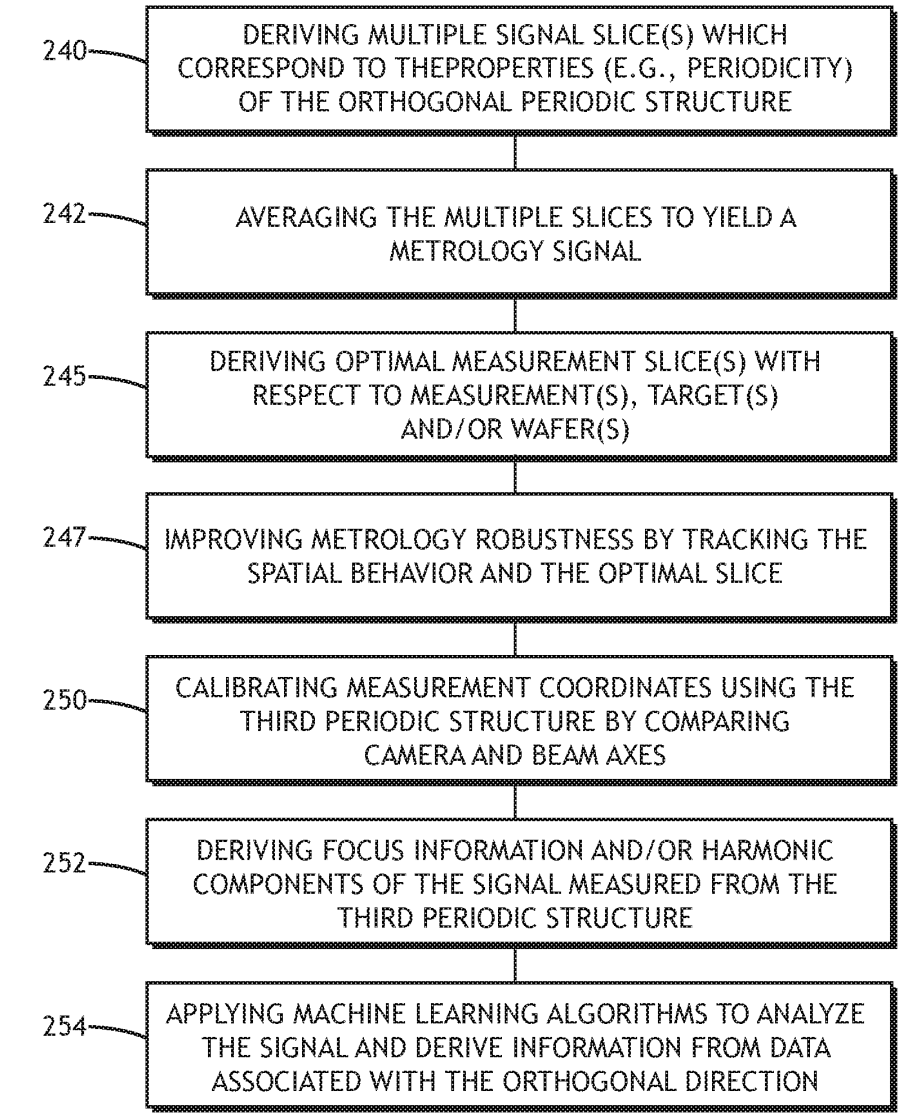

FIG.7 (continued)

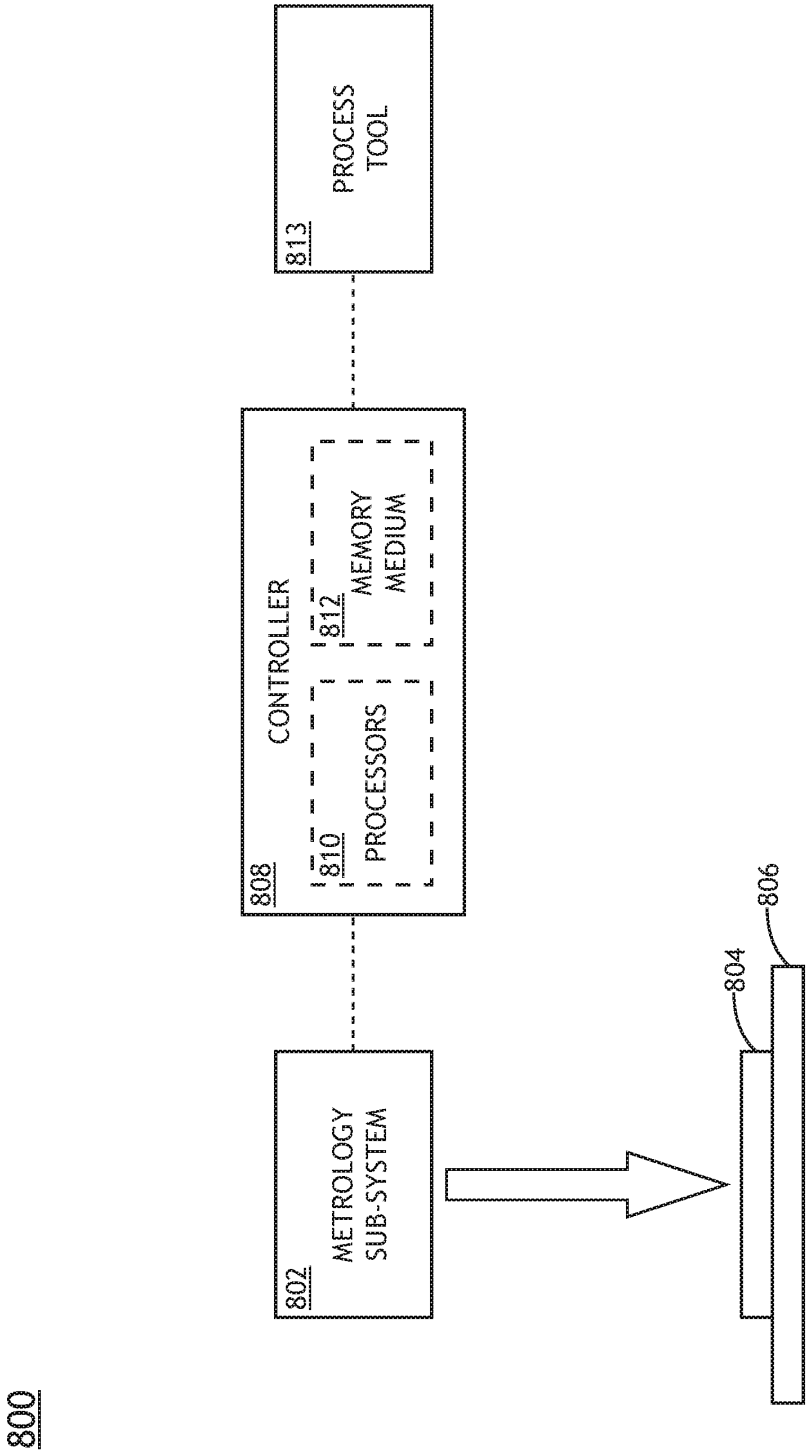
800
802
METROLOGY SUB-SYSTEM
808
CONTROLLER
810
PROCESSORS
812
MEMORY MEDIUM
813
PROCESS TOOL
804
806

FIG.8A

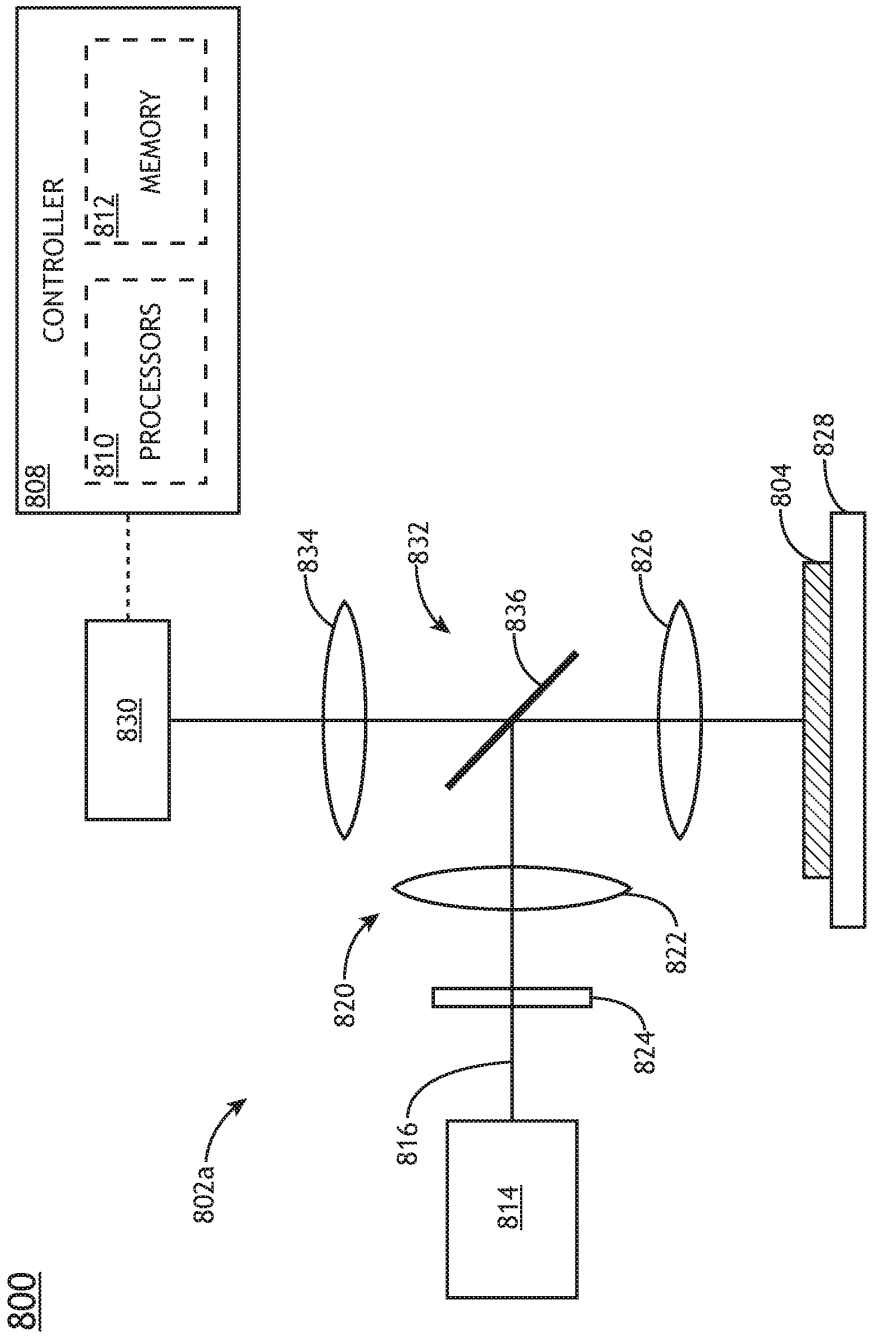
800
802a
808
CONTROLLER
810
PROCESSORS
812
MEMORY
830
834
832
836
826
804
828
820
822
824
816
814

FIG.8B

800

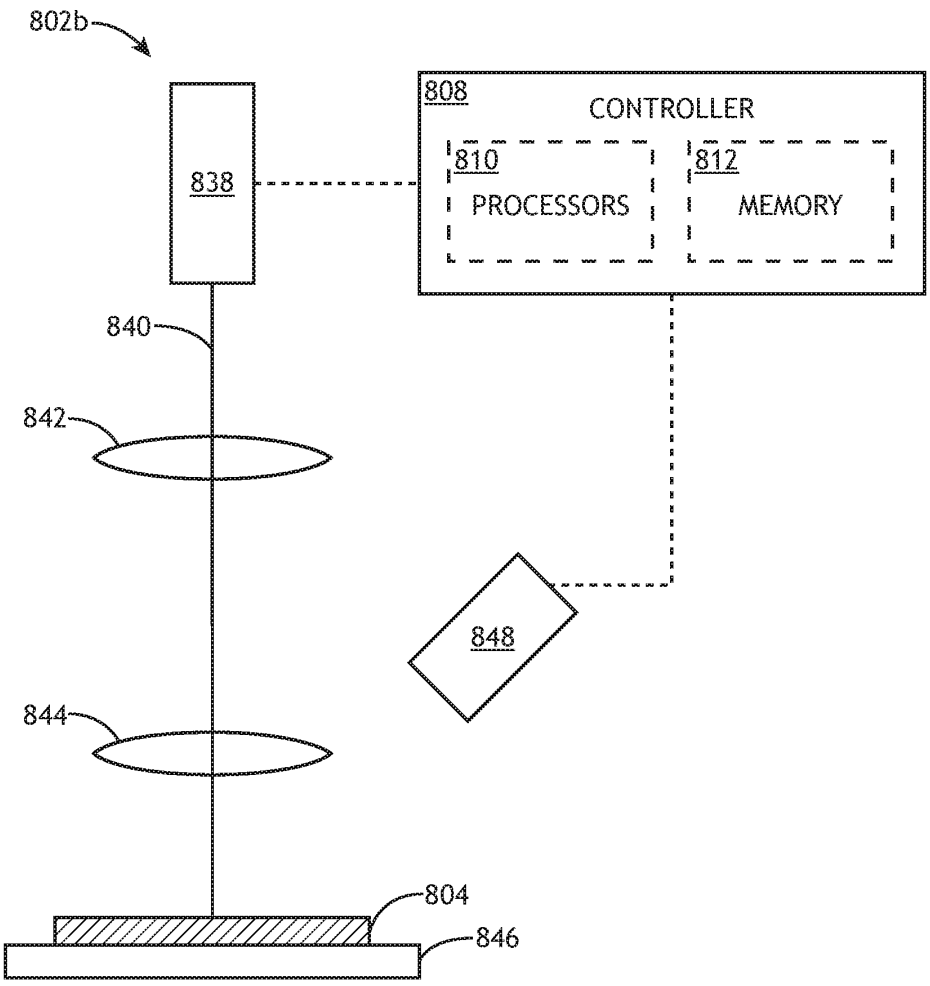
802b
808
CONTROLLER
838
810
PROCESSORS
812
MEMORY
840
842
848
844
804
846

FIG.8C