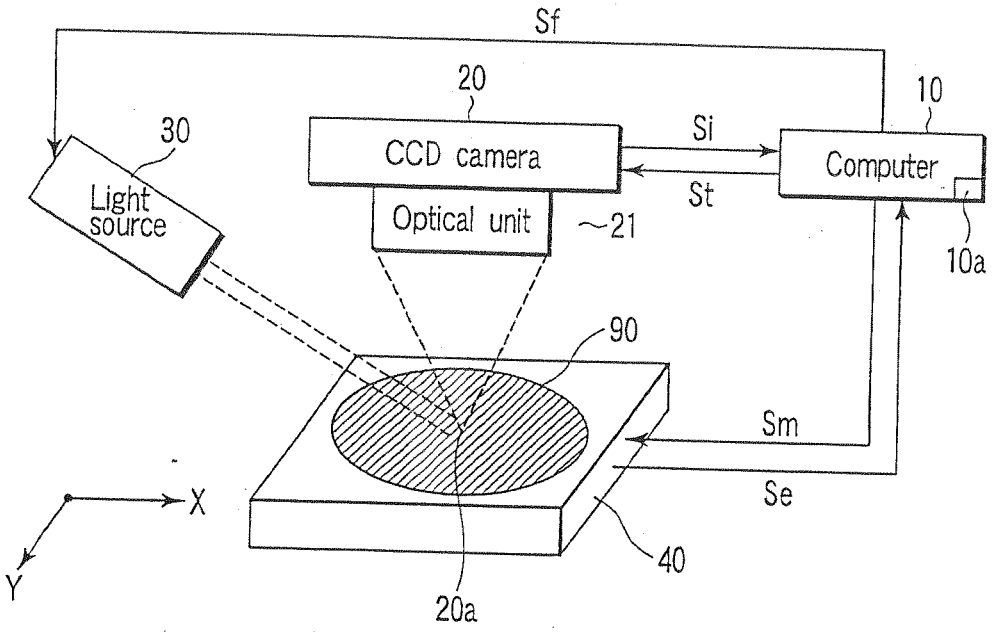

Sf
20
10
30
CCD camera
Si
Computer
Light source
St
Optical unit
21
10a
90
Sm
Se
X
Y
40
20a

FIG. 1

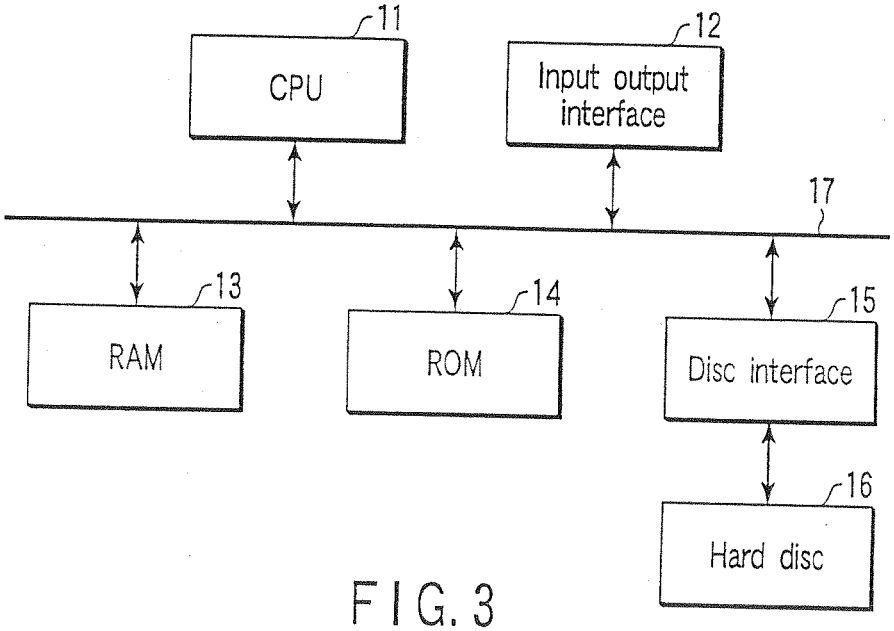

11
CPU
12
Input output interface
17
13
RAM
14
ROM
15
Disc interface
16
Hard disc

FIG. 3

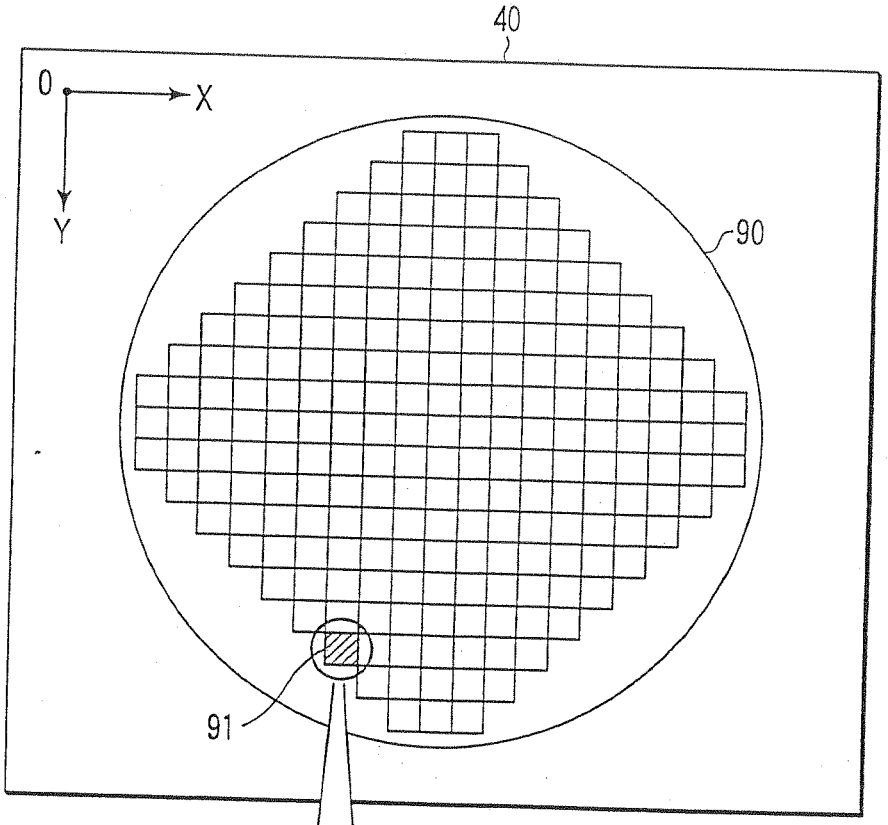


FIG. 2A

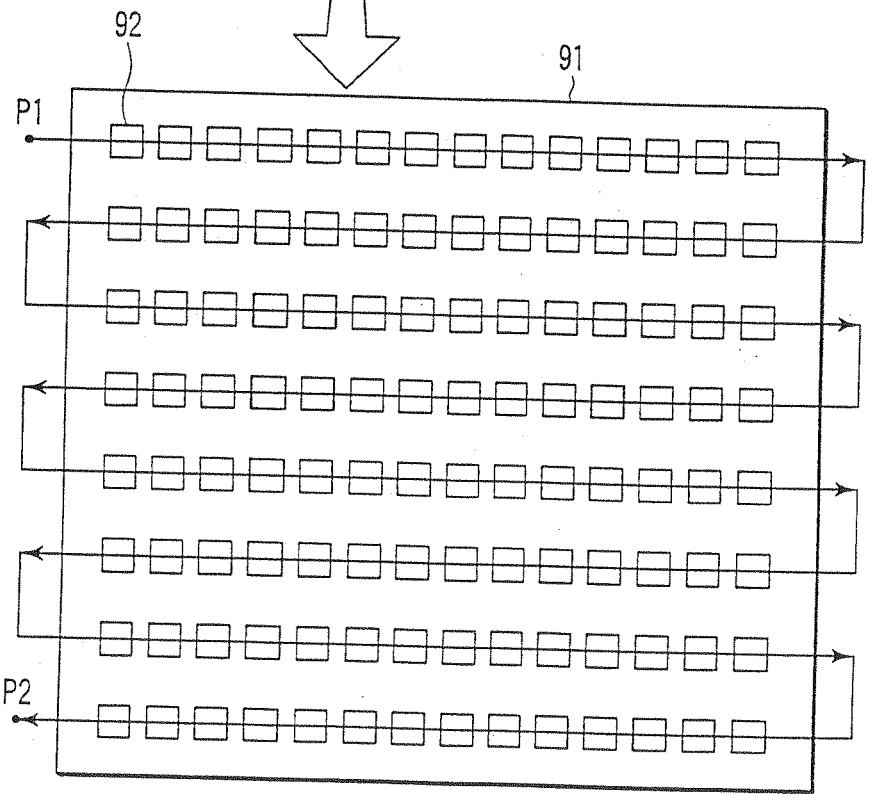


FIG. 2B

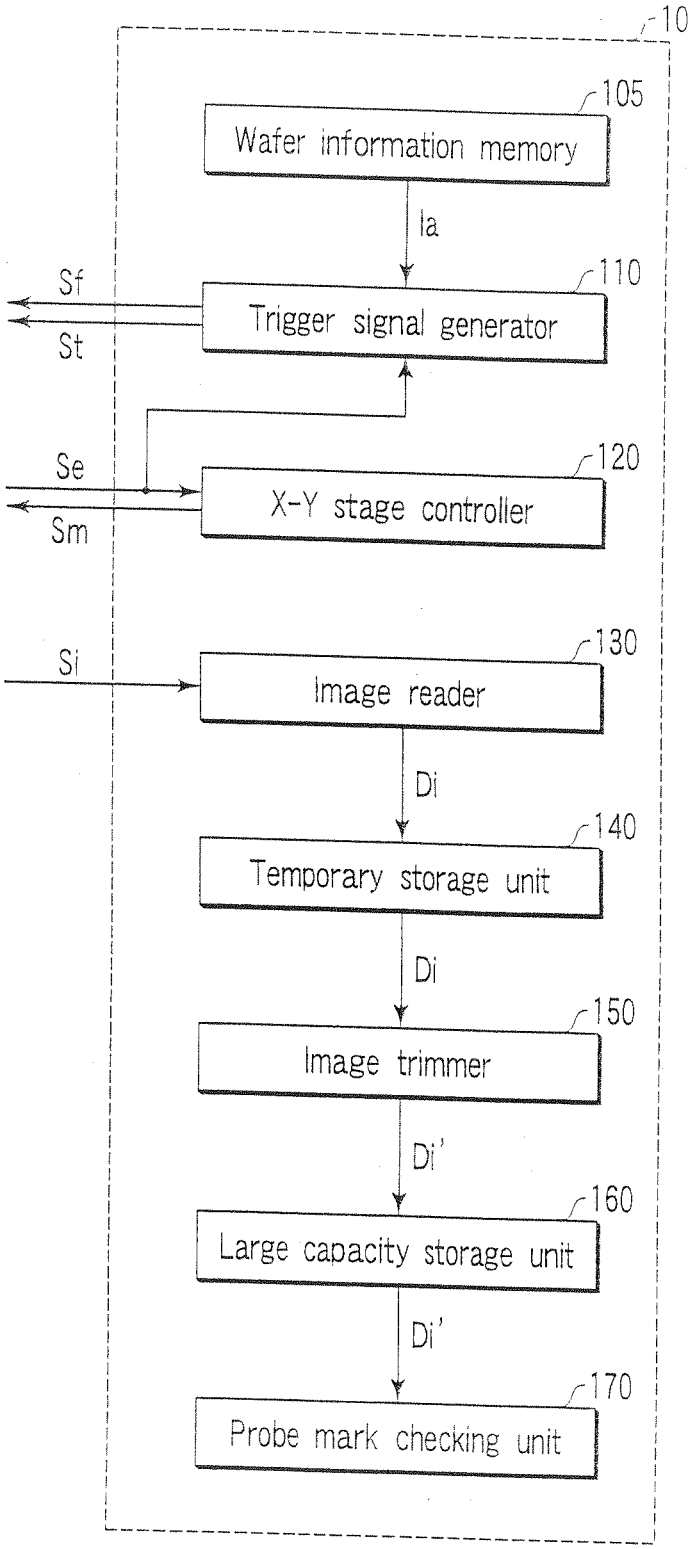

10
105
Wafer information memory
Ia
110
Sf
St
Trigger signal generator
120
Se
Sm
X-Y stage controller
130
Si
Image reader
Di
140
Temporary storage unit
Di
150
Image trimmer
Di'
160
Large capacity storage unit
Di'
170
Probe mark checking unit

FIG. 4

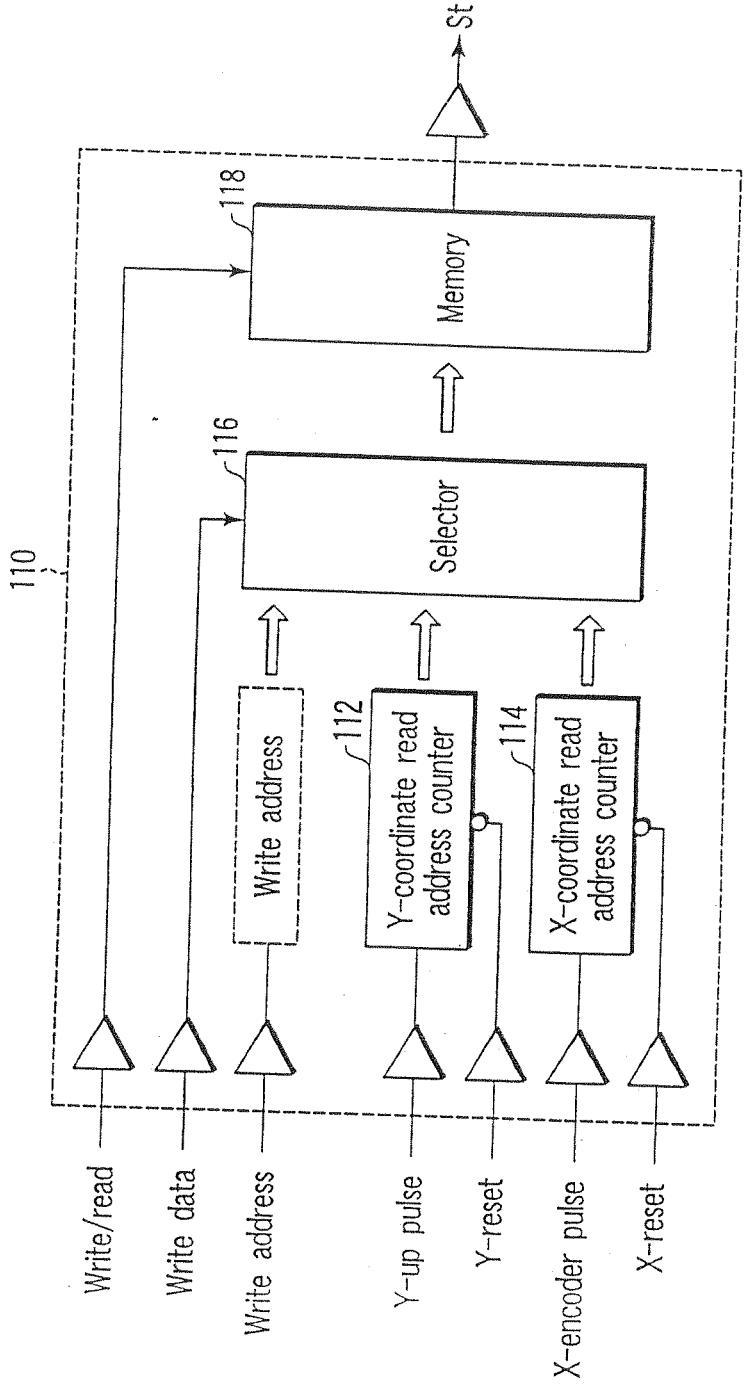

St
118
Memory
116
Selector
110
Write address
112
Y-coordinate read address counter
114
X-coordinate read address counter
Write/read
Write data
Write address
Y-up pulse
Y-reset
X-encoder pulse
X-reset

FIG. 5

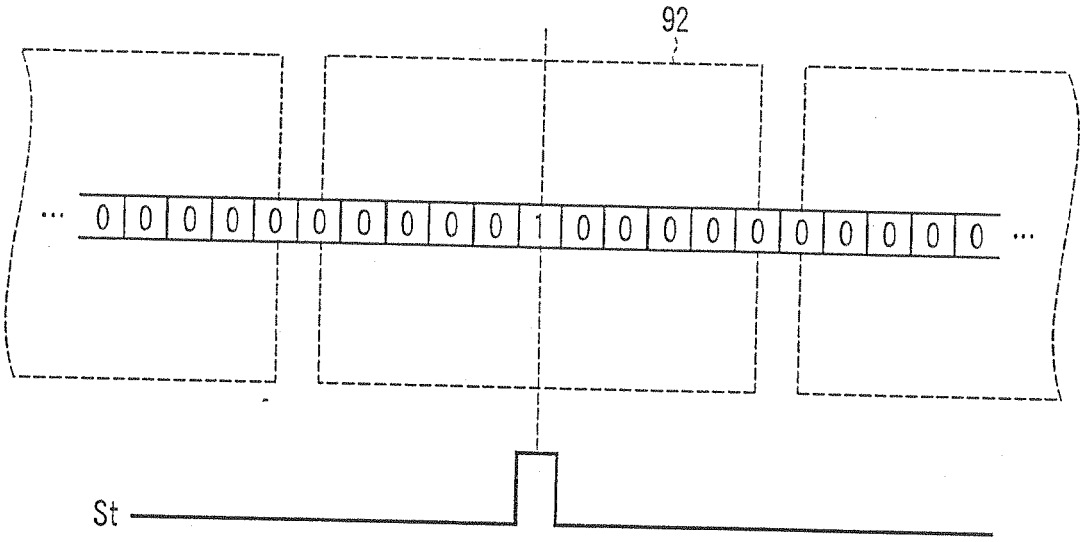


FIG. 6

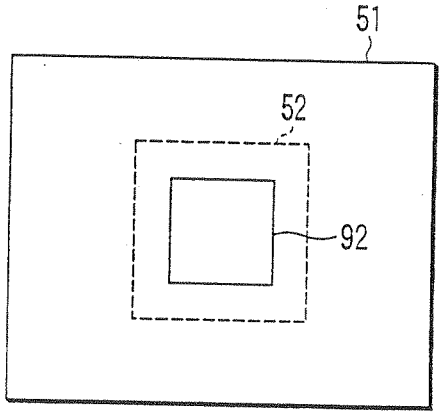


FIG. 7

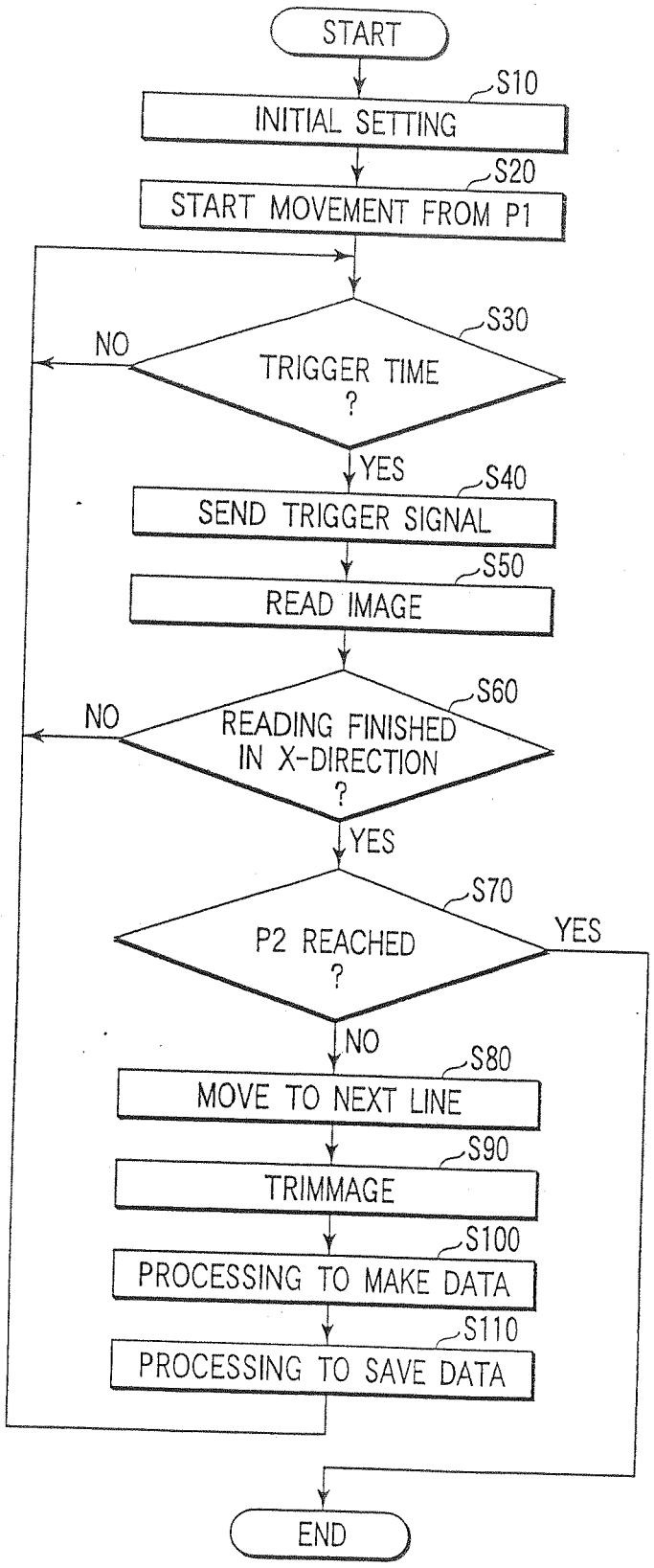

START
S10
INITIAL SETTING
S20
START MOVEMENT FROM P1
S30
NO
TRIGGER TIME ?
YES
S40
SEND TRIGGER SIGNAL
S50
READ IMAGE
S60
NO
READING FINISHED IN X-DIRECTION ?
YES
S70
P2 REACHED ?
YES
NO
S80
MOVE TO NEXT LINE
S90
TRIMMAGE
S100
PROCESSING TO MAKE DATA
S110
PROCESSING TO SAVE DATA
END

FIG. 8

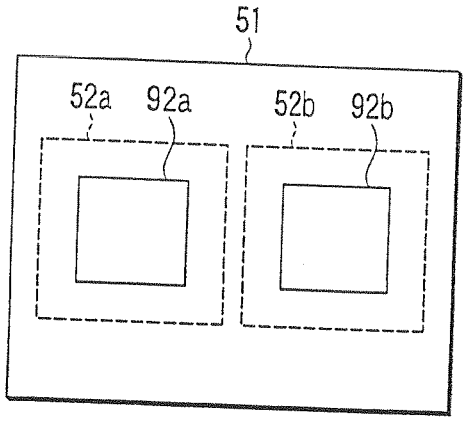


FIG. 9

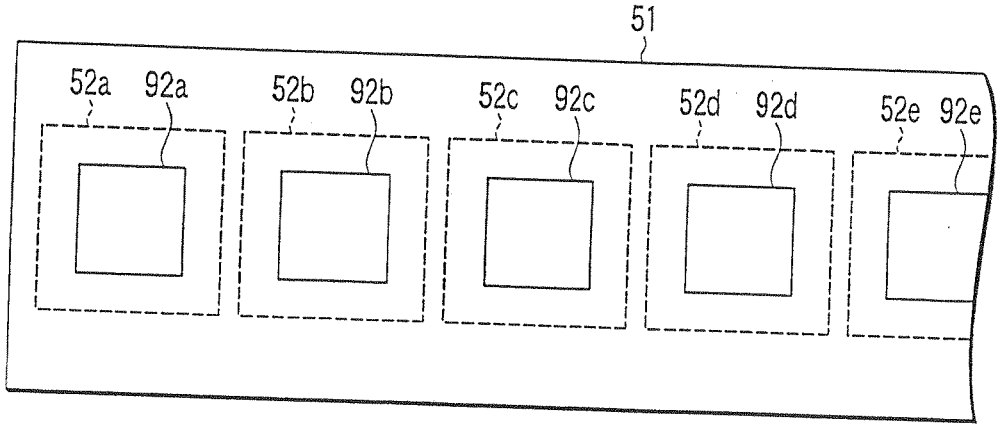


FIG. 10

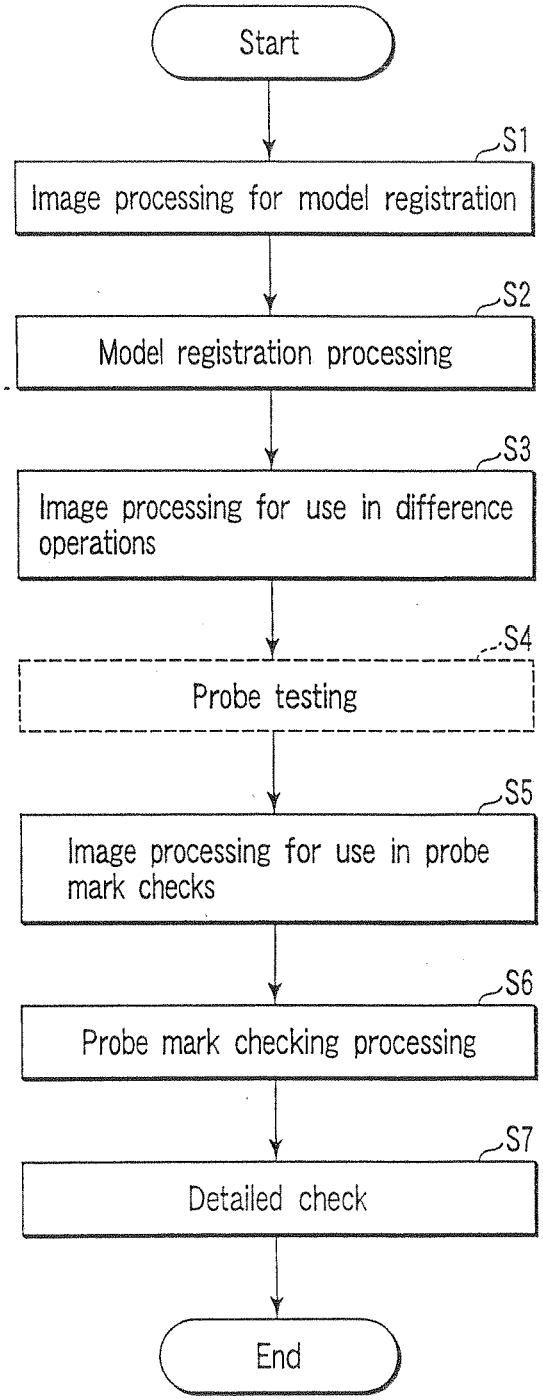

Start
S1
Image processing for model registration
S2
Model registration processing
S3
Image processing for use in difference operations
S4
Probe testing
S5
Image processing for use in probe mark checks
S6
Probe mark checking processing
S7
Detailed check
End

FIG. 11

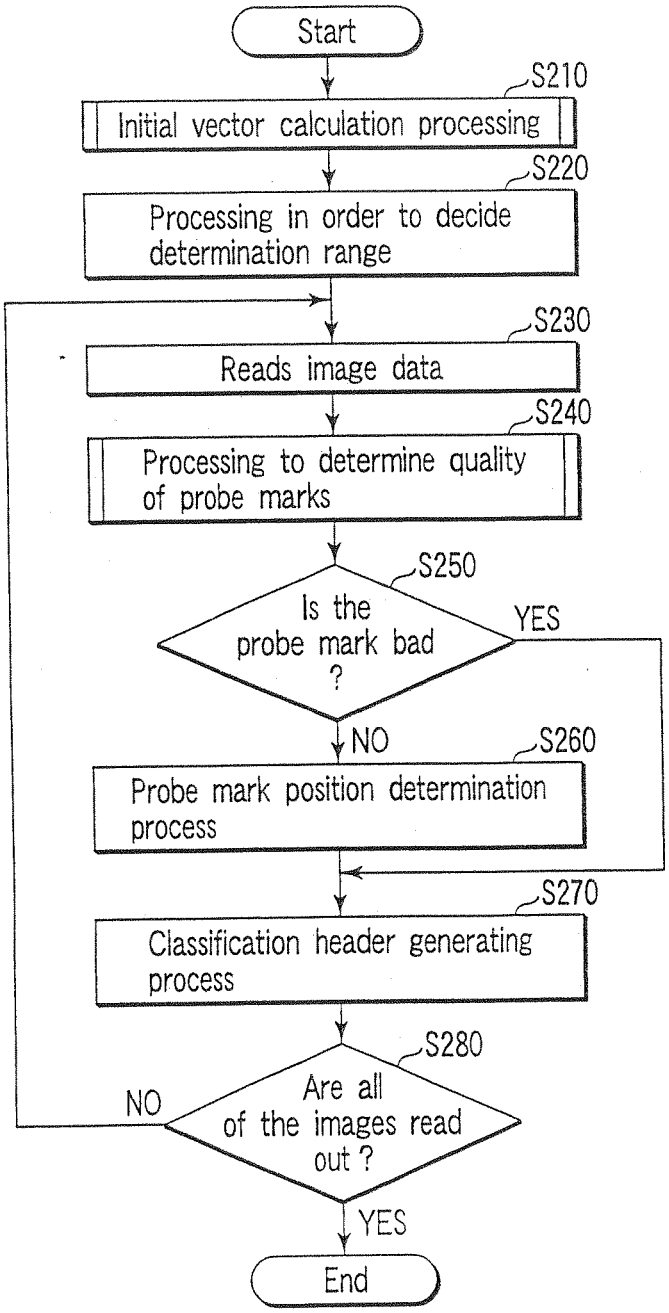

Start
S210
Initial vector calculation processing
S220
Processing in order to decide determination range
S230
Reads image data
S240
Processing to determine quality of probe marks
S250
Is the probe mark bad ?
YES
NO
S260
Probe mark position determination process
S270
Classification header generating process
S280
Are all of the images read out ?
NO
YES
End

FIG. 12

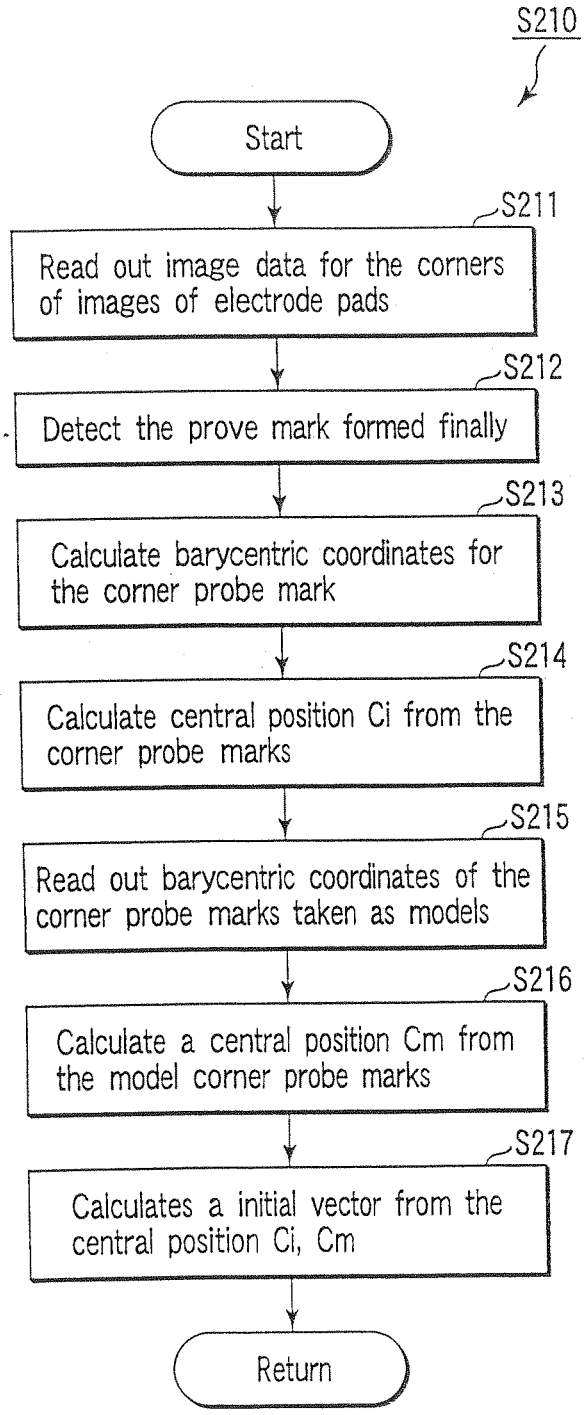

S210
Start
S211
Read out image data for the corners of images of electrode pads
S212
Detect the prove mark formed finally
S213
Calculate barycentric coordinates for the corner probe mark
S214
Calculate central position Ci from the corner probe marks
S215
Read out barycentric coordinates of the corner probe marks taken as models
S216
Calculate a central position Cm from the model corner probe marks
S217
Calculates a initial vector from the central position Ci, Cm
Return

FIG. 13

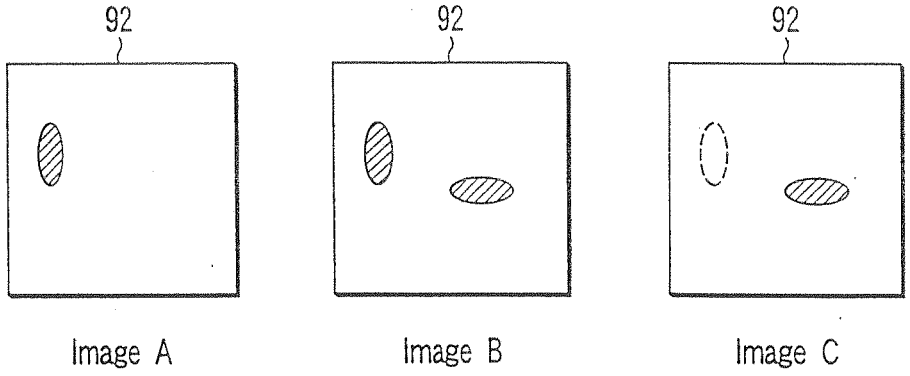

92
92
92
Image A
Image B
Image C

FIG. 14

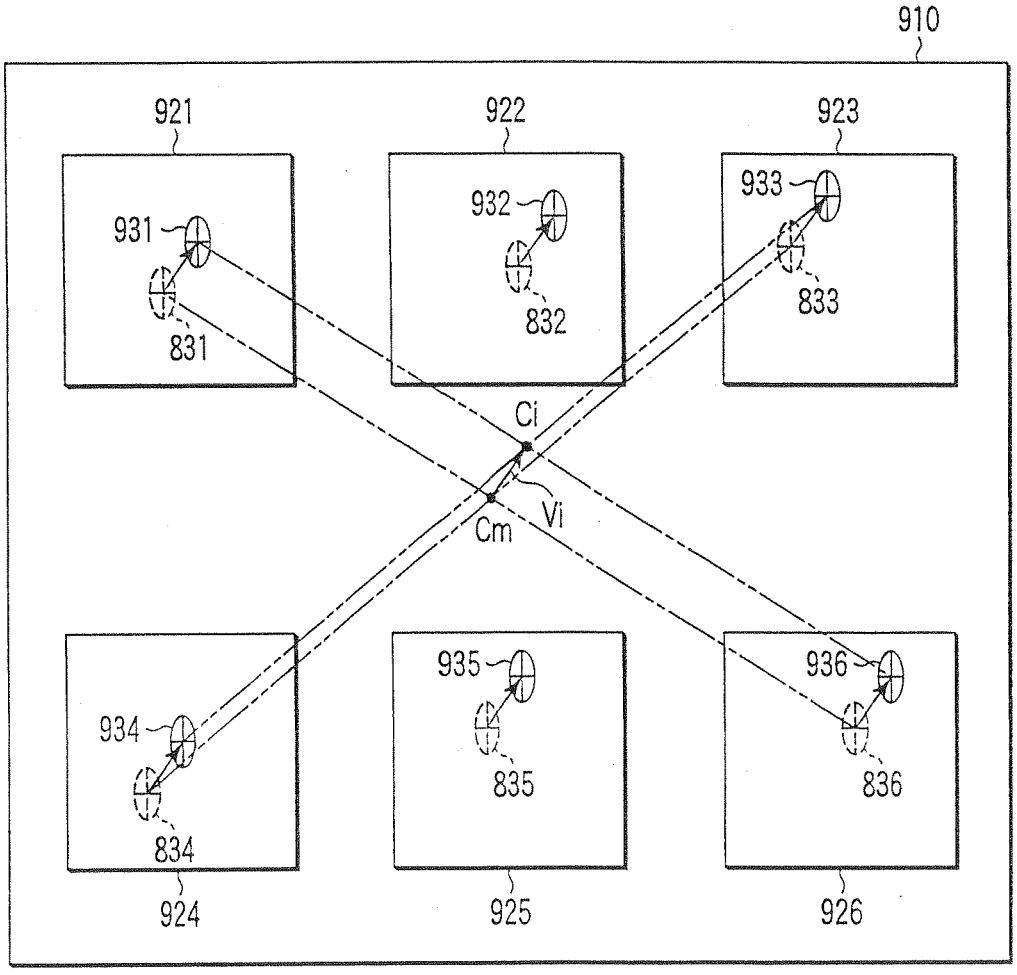

910
921
922
923
931
831
932
832
933
833
Ci
Vi
Cm
934
834
935
835
936
836
924
925
926

FIG. 15

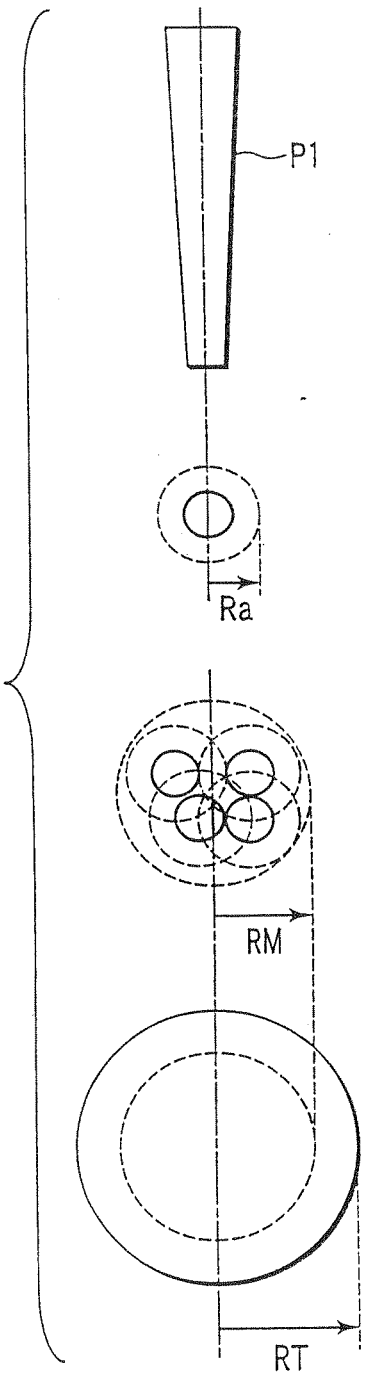


FIG. 16

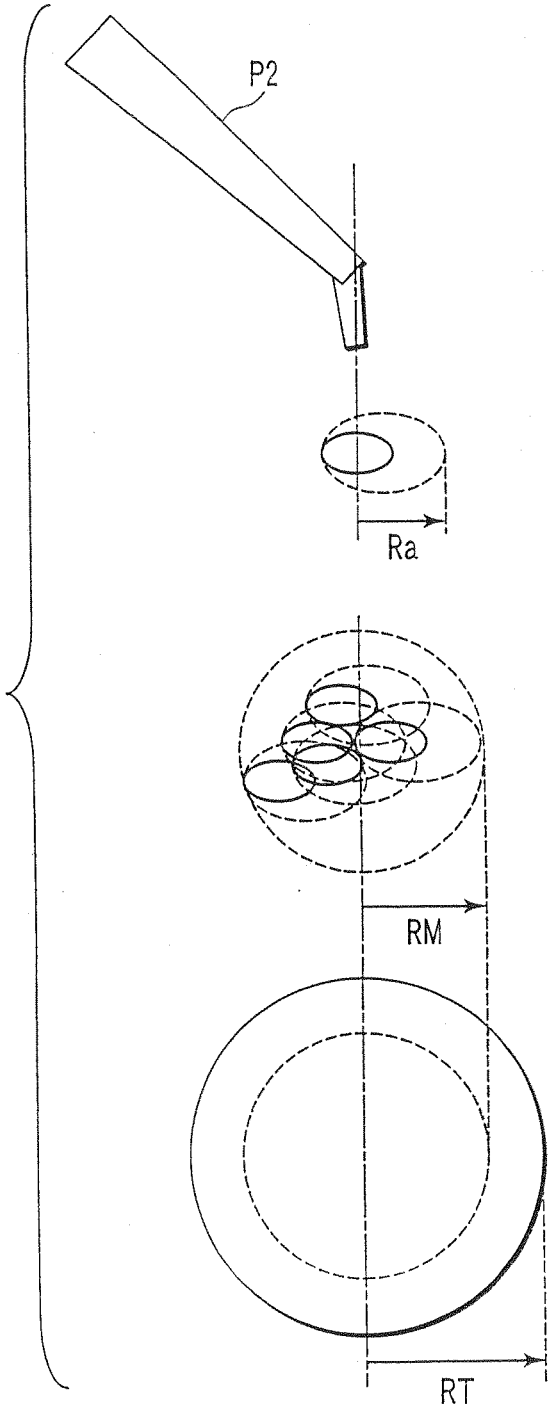


FIG. 17

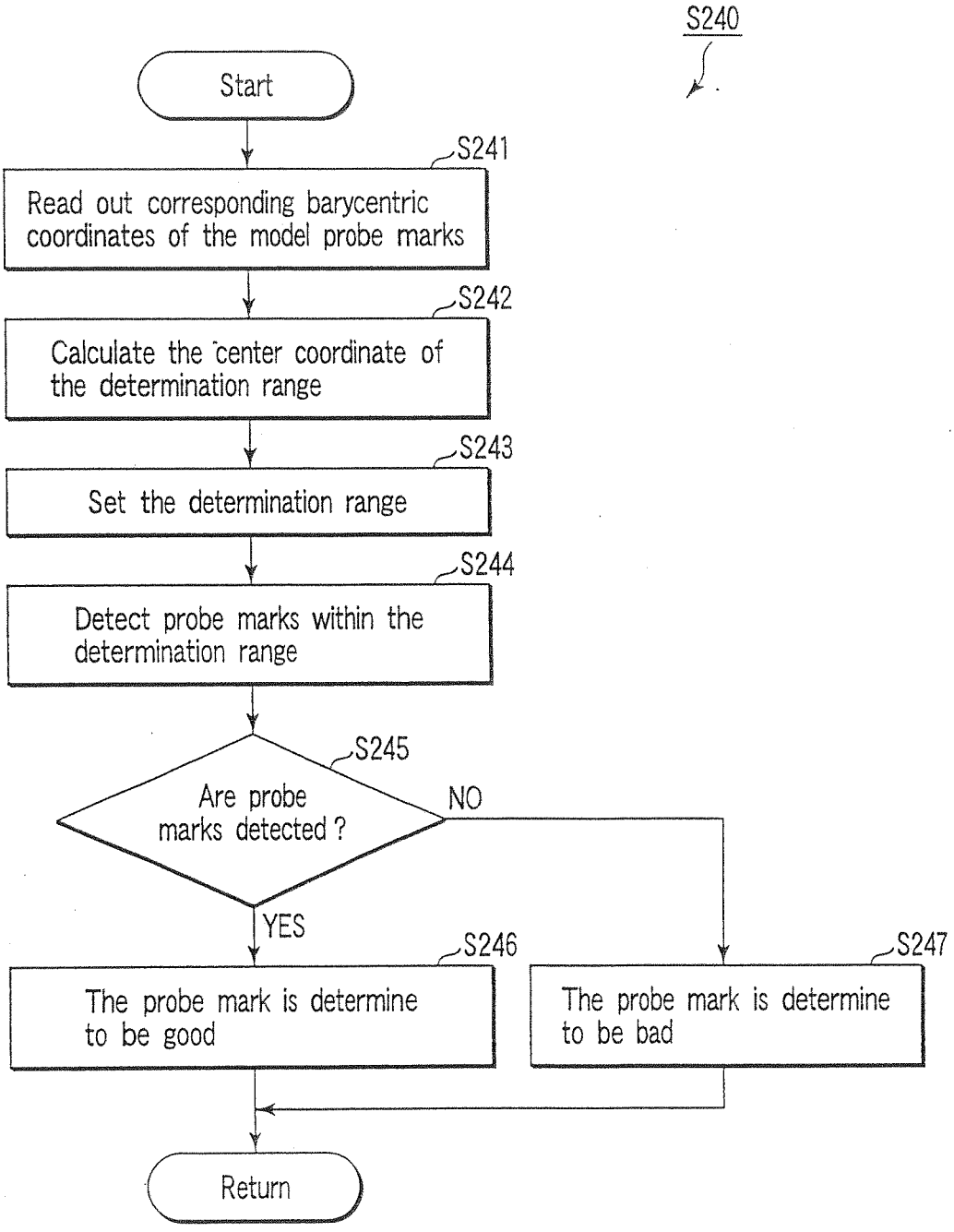

S240
Start
S241
Read out corresponding barycentric coordinates of the model probe marks
S242
Calculate the center coordinate of the determination range
S243
Set the determination range
S244
Detect probe marks within the determination range
S245
Are probe marks detected ?
NO
YES
S246
The probe mark is determine to be good
S247
The probe mark is determine to be bad
Return

FIG. 18

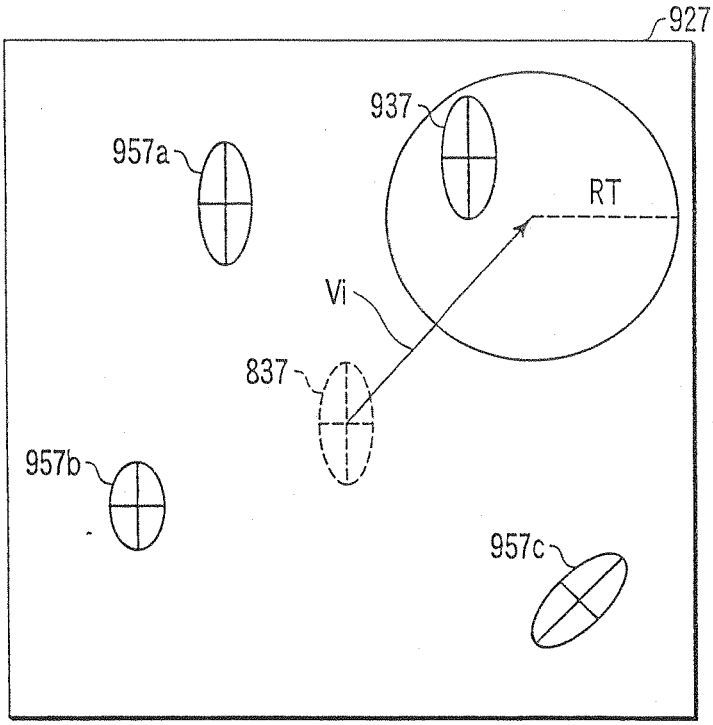

927
937
957a
RT
Vi
837
957b
957c

FIG. 19

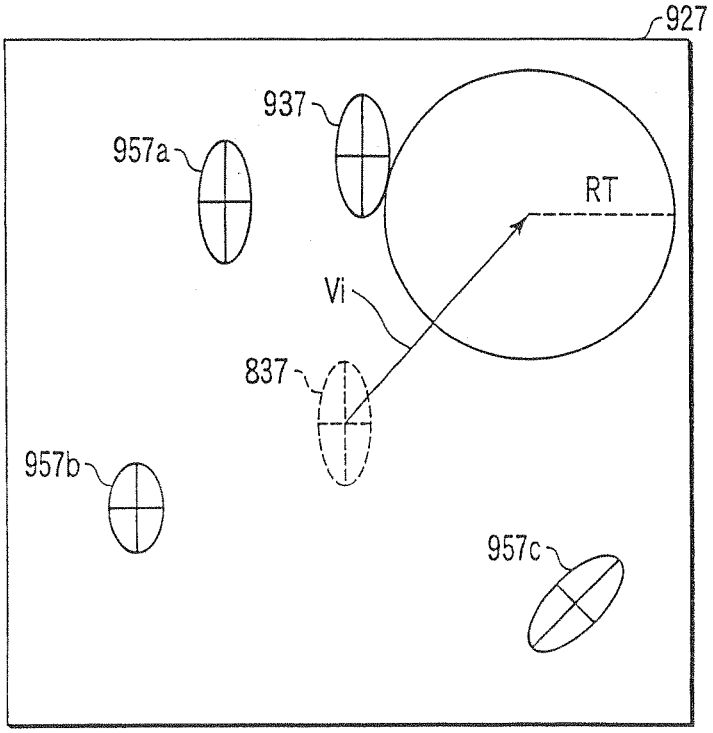

927
937
957a
RT
Vi
837
957b
957c

FIG. 20

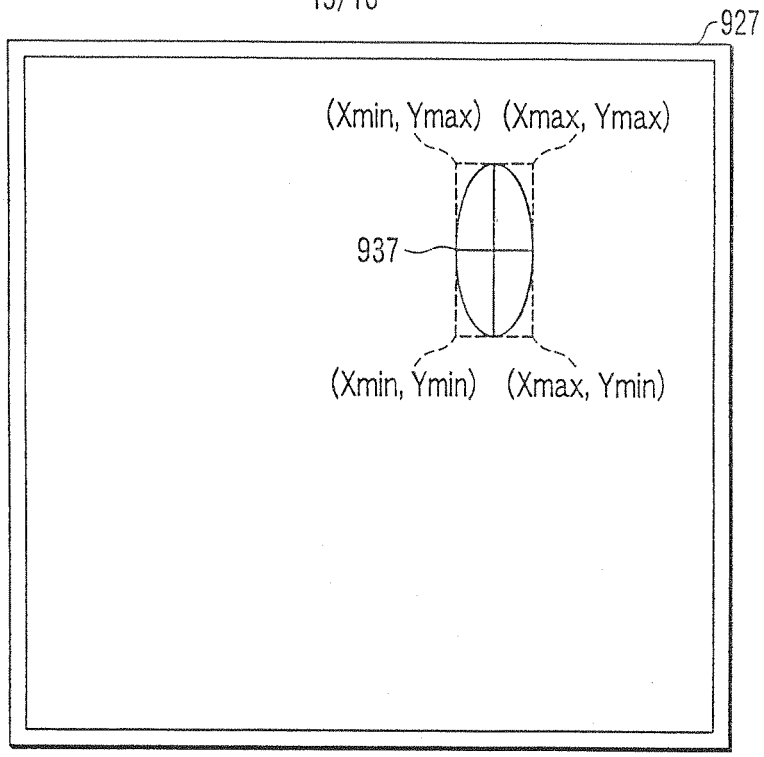
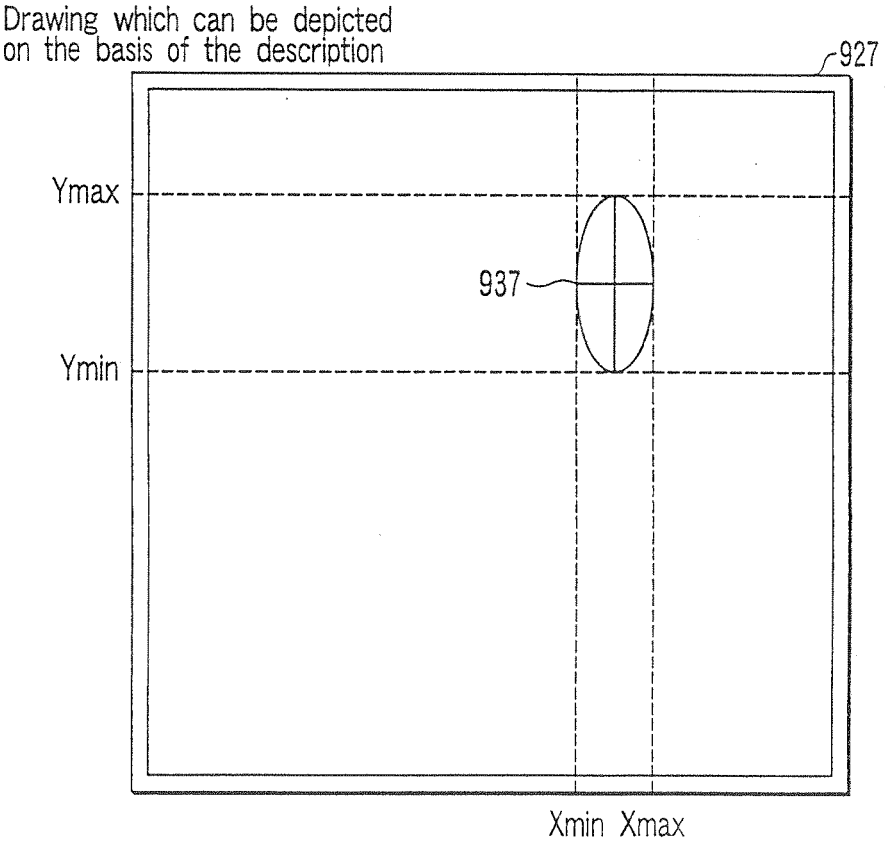

927
(Xmin, Ymax)
(Xmax, Ymax)
937
(Xmin, Ymin)
(Xmax, Ymin)

FIG. 21


Drawing which can be depicted on the basis of the description
927
Ymax
937
Ymin
Xmin
Xmax

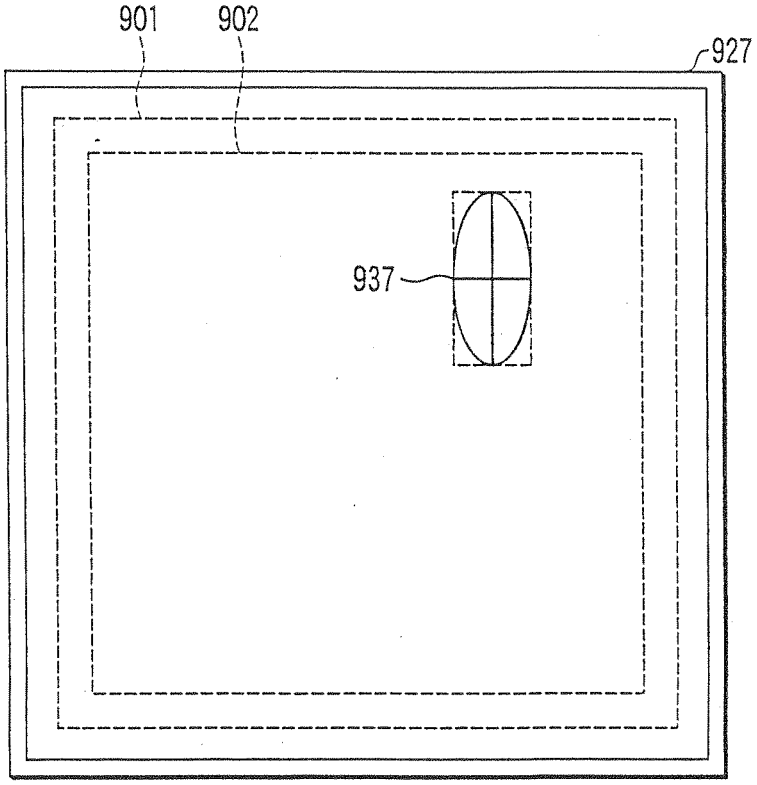


FIG. 22