FIG. 1

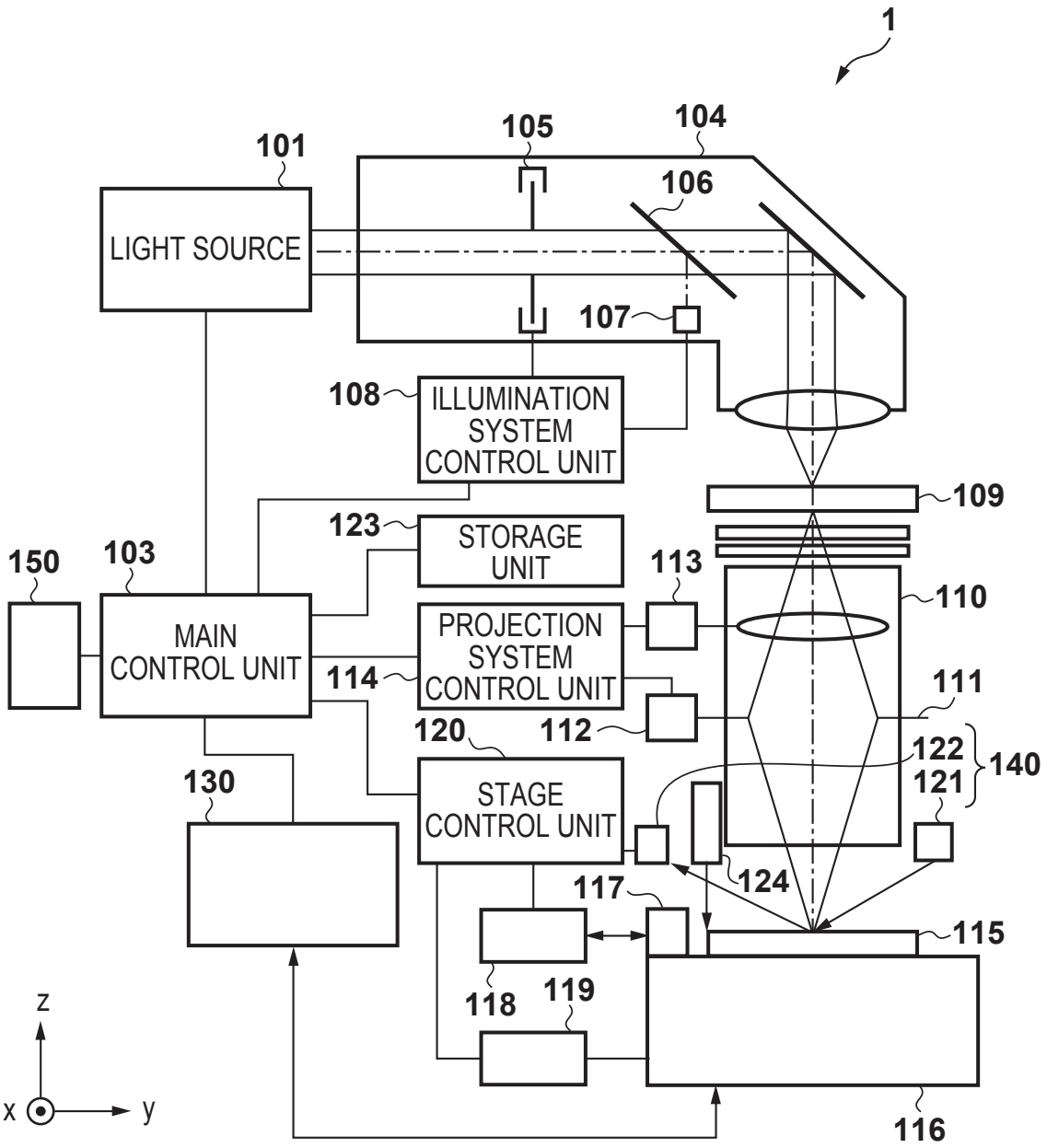
1
101
LIGHT SOURCE
105
104
106
107
108
ILLUMINATION SYSTEM CONTROL UNIT
109
123
STORAGE UNIT
150
103
MAIN CONTROL UNIT
113
110
PROJECTION SYSTEM CONTROL UNIT
114
111
120
112
122
140
121
130
STAGE CONTROL UNIT
124
117
115
118
119
116
z
x
y

FIG. 2

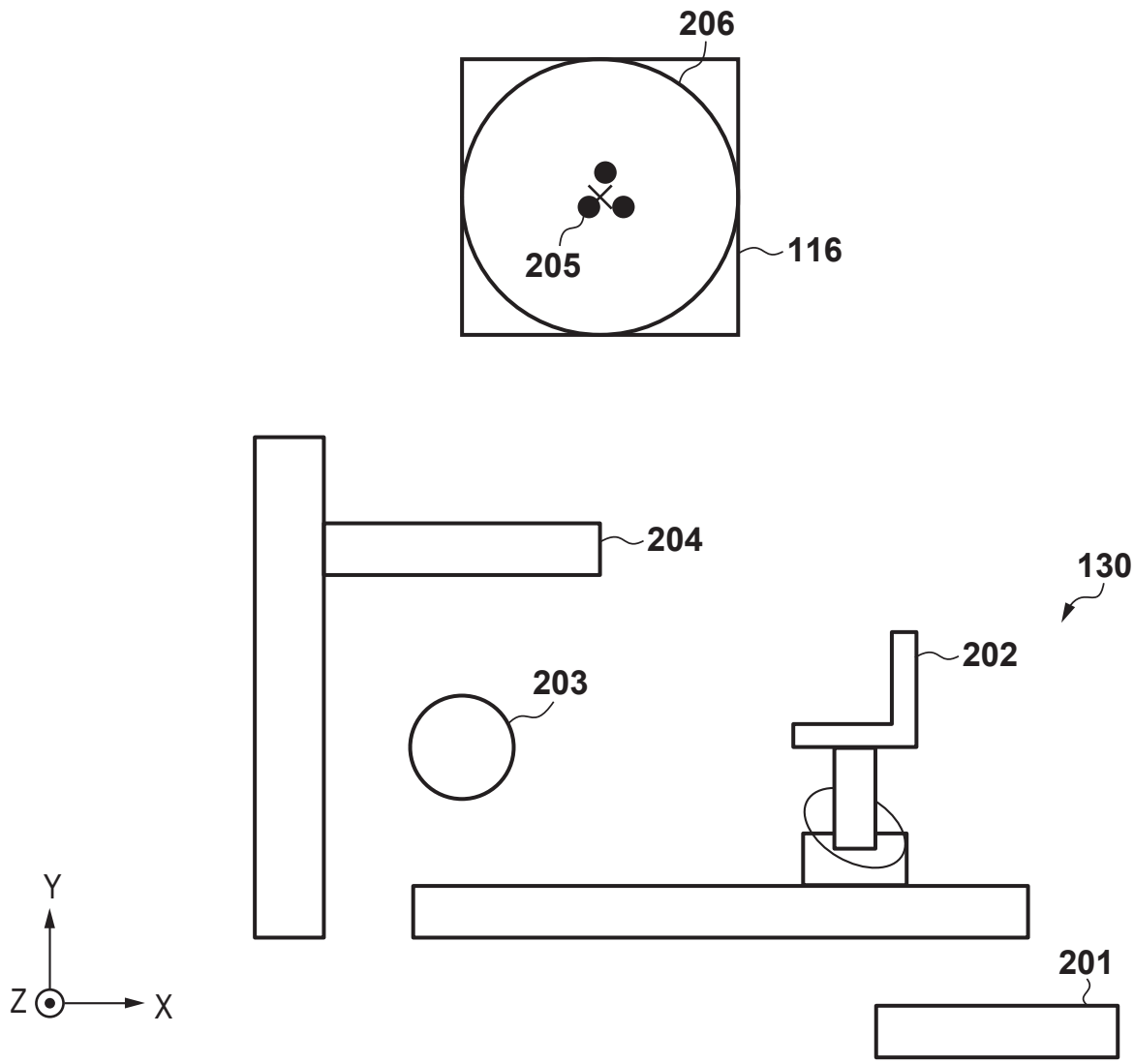

FIG. 3

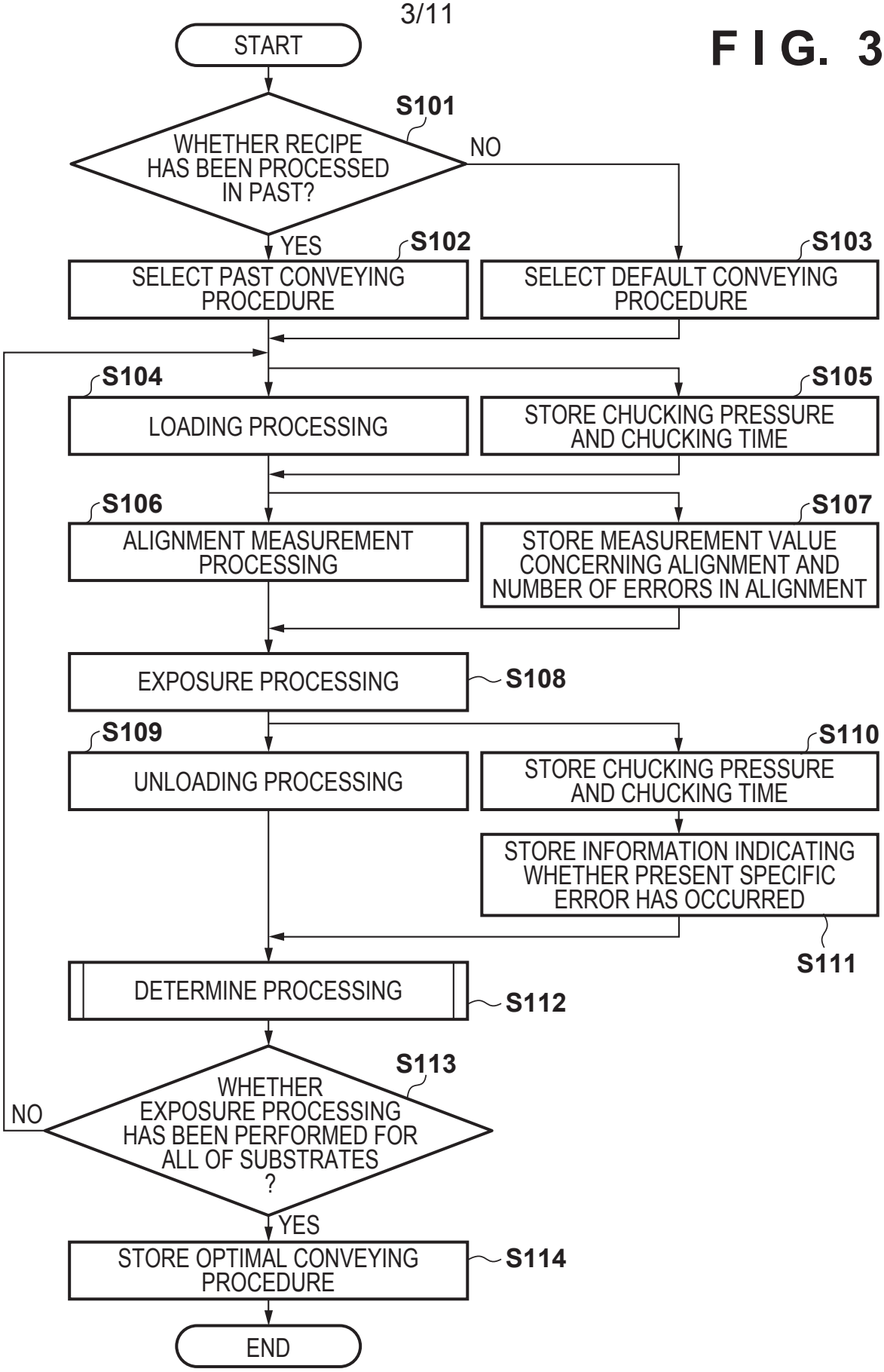
START
S101
WHETHER RECIPE HAS BEEN PROCESSED IN PAST?
NO
YES
S102
SELECT PAST CONVEYING PROCEDURE
S103
SELECT DEFAULT CONVEYING PROCEDURE
S104
LOADING PROCESSING
S105
STORE CHUCKING PRESSURE AND CHUCKING TIME
S106
ALIGNMENT MEASUREMENT PROCESSING
S107
STORE MEASUREMENT VALUE CONCERNING ALIGNMENT AND NUMBER OF ERRORS IN ALIGNMENT
EXPOSURE PROCESSING
S108
S109
UNLOADING PROCESSING
S110
STORE CHUCKING PRESSURE AND CHUCKING TIME
STORE INFORMATION INDICATING WHETHER PRESENT SPECIFIC ERROR HAS OCCURRED
S111
DETERMINE PROCESSING
S112
S113
WHETHER EXPOSURE PROCESSING HAS BEEN PERFORMED FOR ALL OF SUBSTRATES ?
NO
YES
STORE OPTIMAL CONVEYING PROCEDURE
S114
END

FIG. 4A

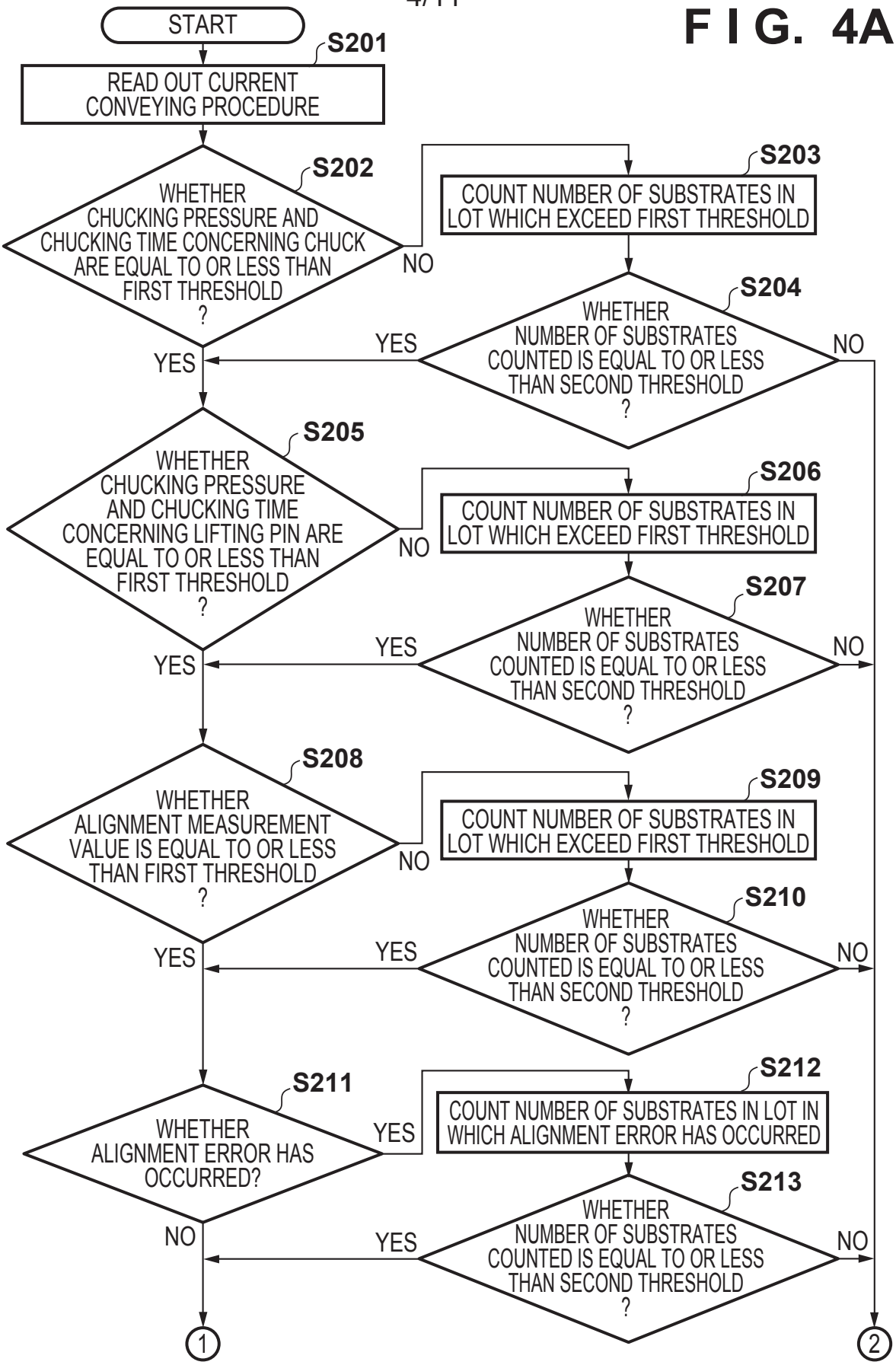
START
S201
READ OUT CURRENT CONVEYING PROCEDURE
S202
WHETHER CHUCKING PRESSURE AND CHUCKING TIME CONCERNING CHUCK ARE EQUAL TO OR LESS THAN FIRST THRESHOLD ?
NO
S203
COUNT NUMBER OF SUBSTRATES IN LOT WHICH EXCEED FIRST THRESHOLD
S204
WHETHER NUMBER OF SUBSTRATES COUNTED IS EQUAL TO OR LESS THAN SECOND THRESHOLD ?
YES
NO
YES
S205
WHETHER CHUCKING PRESSURE AND CHUCKING TIME CONCERNING LIFTING PIN ARE EQUAL TO OR LESS THAN FIRST THRESHOLD ?
NO
S206
COUNT NUMBER OF SUBSTRATES IN LOT WHICH EXCEED FIRST THRESHOLD
S207
WHETHER NUMBER OF SUBSTRATES COUNTED IS EQUAL TO OR LESS THAN SECOND THRESHOLD ?
YES
NO
YES
S208
WHETHER ALIGNMENT MEASUREMENT VALUE IS EQUAL TO OR LESS THAN FIRST THRESHOLD ?
NO
S209
COUNT NUMBER OF SUBSTRATES IN LOT WHICH EXCEED FIRST THRESHOLD
S210
WHETHER NUMBER OF SUBSTRATES COUNTED IS EQUAL TO OR LESS THAN SECOND THRESHOLD ?
YES
NO
YES
S211
WHETHER ALIGNMENT ERROR HAS OCCURRED?
YES
S212
COUNT NUMBER OF SUBSTRATES IN LOT IN WHICH ALIGNMENT ERROR HAS OCCURRED
S213
WHETHER NUMBER OF SUBSTRATES COUNTED IS EQUAL TO OR LESS THAN SECOND THRESHOLD ?
NO
YES
NO
1
2

FIG. 4B

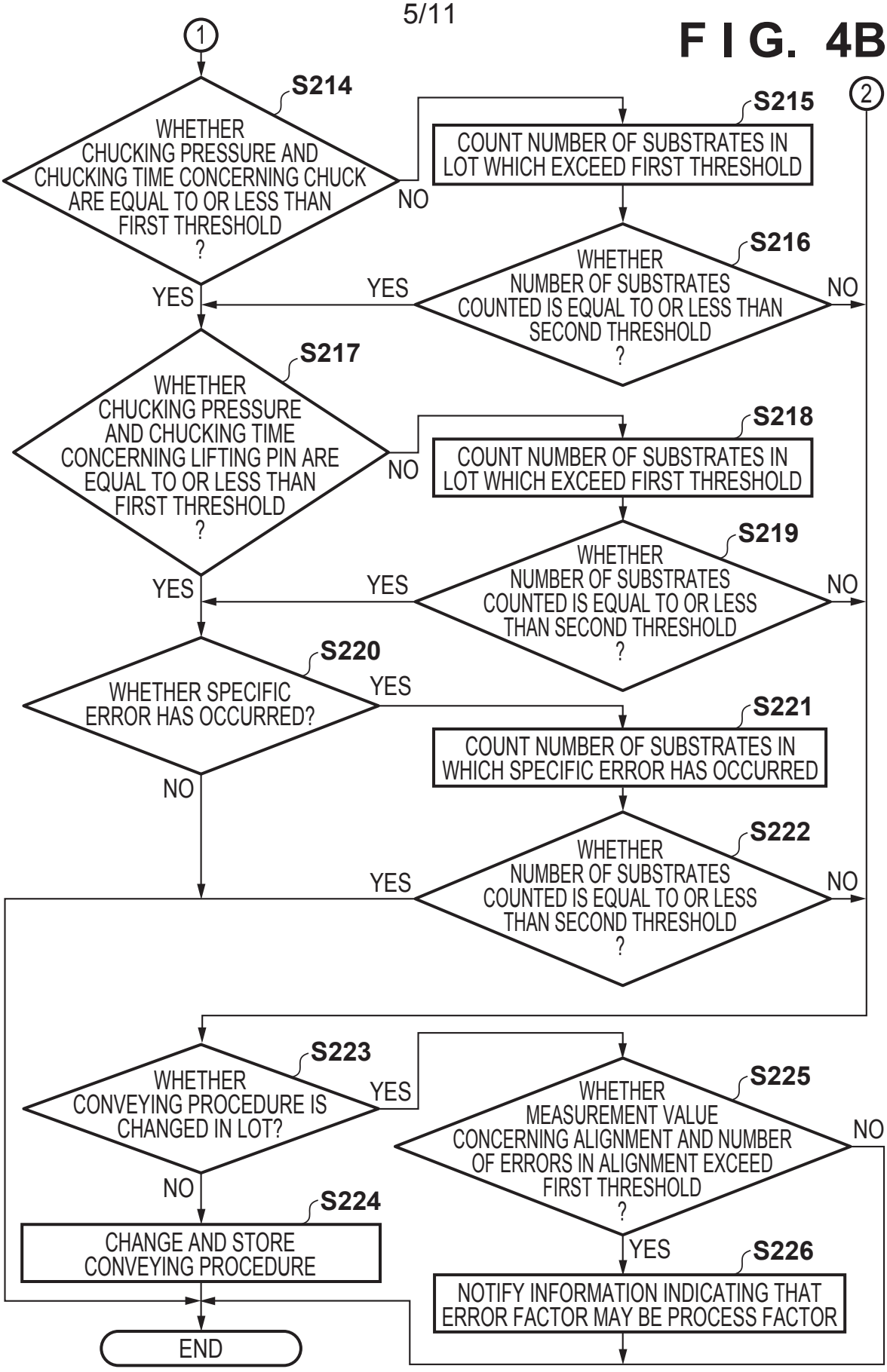
1
S214
WHETHER CHUCKING PRESSURE AND CHUCKING TIME CONCERNING CHUCK ARE EQUAL TO OR LESS THAN FIRST THRESHOLD ?
NO
S215
COUNT NUMBER OF SUBSTRATES IN LOT WHICH EXCEED FIRST THRESHOLD
S216
WHETHER NUMBER OF SUBSTRATES COUNTED IS EQUAL TO OR LESS THAN SECOND THRESHOLD ?
YES
NO
YES
S217
WHETHER CHUCKING PRESSURE AND CHUCKING TIME CONCERNING LIFTING PIN ARE EQUAL TO OR LESS THAN FIRST THRESHOLD ?
NO
S218
COUNT NUMBER OF SUBSTRATES IN LOT WHICH EXCEED FIRST THRESHOLD
S219
WHETHER NUMBER OF SUBSTRATES COUNTED IS EQUAL TO OR LESS THAN SECOND THRESHOLD ?
YES
NO
YES
S220
WHETHER SPECIFIC ERROR HAS OCCURRED?
YES
NO
S221
COUNT NUMBER OF SUBSTRATES IN WHICH SPECIFIC ERROR HAS OCCURRED
S222
WHETHER NUMBER OF SUBSTRATES COUNTED IS EQUAL TO OR LESS THAN SECOND THRESHOLD ?
YES
NO
2
S223
WHETHER CONVEYING PROCEDURE IS CHANGED IN LOT?
YES
NO
S224
CHANGE AND STORE CONVEYING PROCEDURE
S225
WHETHER MEASUREMENT VALUE CONCERNING ALIGNMENT AND NUMBER OF ERRORS IN ALIGNMENT EXCEED FIRST THRESHOLD ?
NO
YES
S226
NOTIFY INFORMATION INDICATING THAT ERROR FACTOR MAY BE PROCESS FACTOR
END

FIG. 5

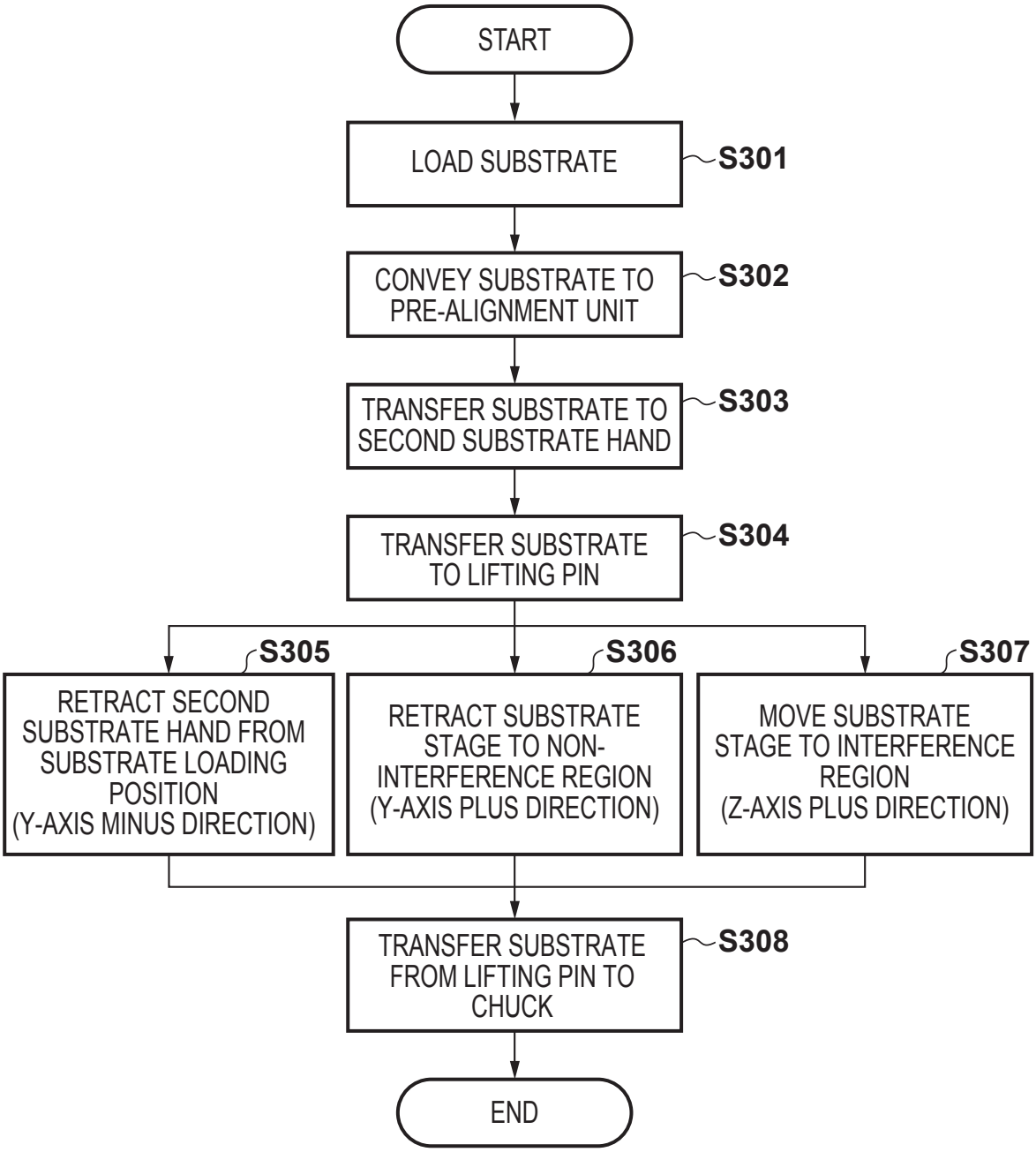
START
LOAD SUBSTRATE
S301
CONVEY SUBSTRATE TO PRE-ALIGNMENT UNIT
S302
TRANSFER SUBSTRATE TO SECOND SUBSTRATE HAND
S303
TRANSFER SUBSTRATE TO LIFTING PIN
S304
S305
RETRACT SECOND SUBSTRATE HAND FROM SUBSTRATE LOADING POSITION (Y-AXIS MINUS DIRECTION)
S306
RETRACT SUBSTRATE STAGE TO NON-INTERFERENCE REGION (Y-AXIS PLUS DIRECTION)
S307
MOVE SUBSTRATE STAGE TO INTERFERENCE REGION (Z-AXIS PLUS DIRECTION)
TRANSFER SUBSTRATE FROM LIFTING PIN TO CHUCK
S308
END

FIG. 6

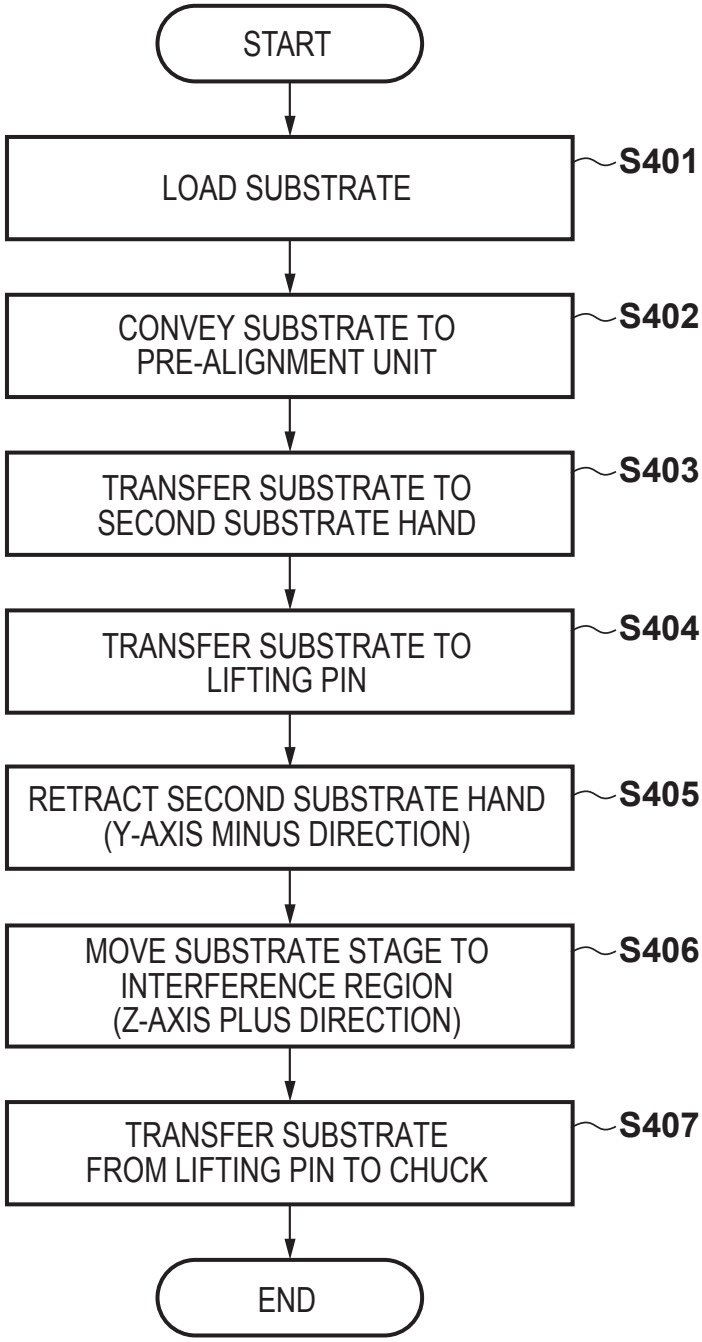
START
LOAD SUBSTRATE
S401
CONVEY SUBSTRATE TO PRE-ALIGNMENT UNIT
S402
TRANSFER SUBSTRATE TO SECOND SUBSTRATE HAND
S403
TRANSFER SUBSTRATE TO LIFTING PIN
S404
RETRACT SECOND SUBSTRATE HAND (Y-AXIS MINUS DIRECTION)
S405
MOVE SUBSTRATE STAGE TO INTERFERENCE REGION (Z-AXIS PLUS DIRECTION)
S406
TRANSFER SUBSTRATE FROM LIFTING PIN TO CHUCK
S407
END

FIG. 7

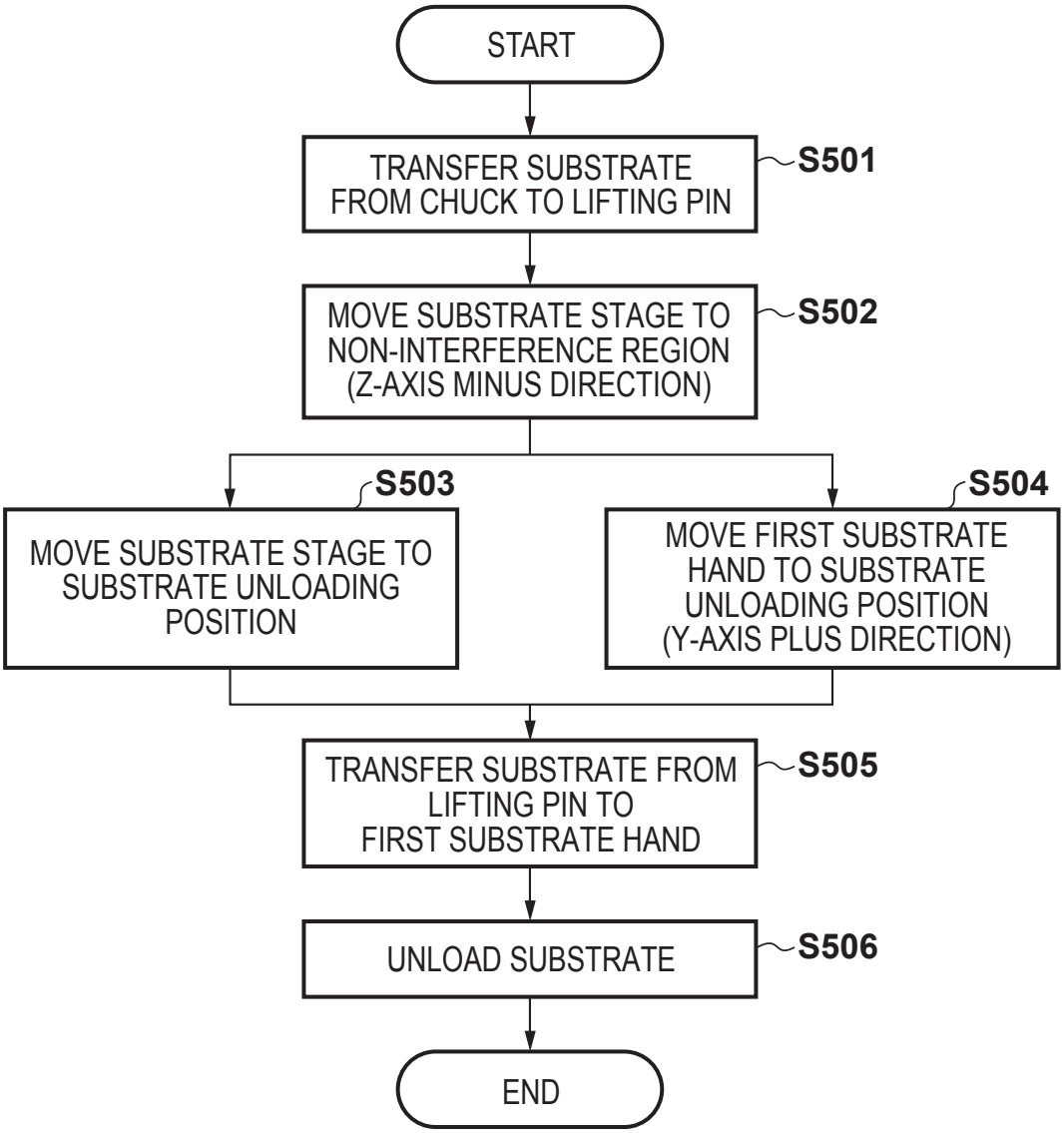
START
TRANSFER SUBSTRATE FROM CHUCK TO LIFTING PIN
S501
MOVE SUBSTRATE STAGE TO NON-INTERFERENCE REGION (Z-AXIS MINUS DIRECTION)
S502
S503
MOVE SUBSTRATE STAGE TO SUBSTRATE UNLOADING POSITION
S504
MOVE FIRST SUBSTRATE HAND TO SUBSTRATE UNLOADING POSITION (Y-AXIS PLUS DIRECTION)
TRANSFER SUBSTRATE FROM LIFTING PIN TO FIRST SUBSTRATE HAND
S505
UNLOAD SUBSTRATE
S506
END

FIG. 8

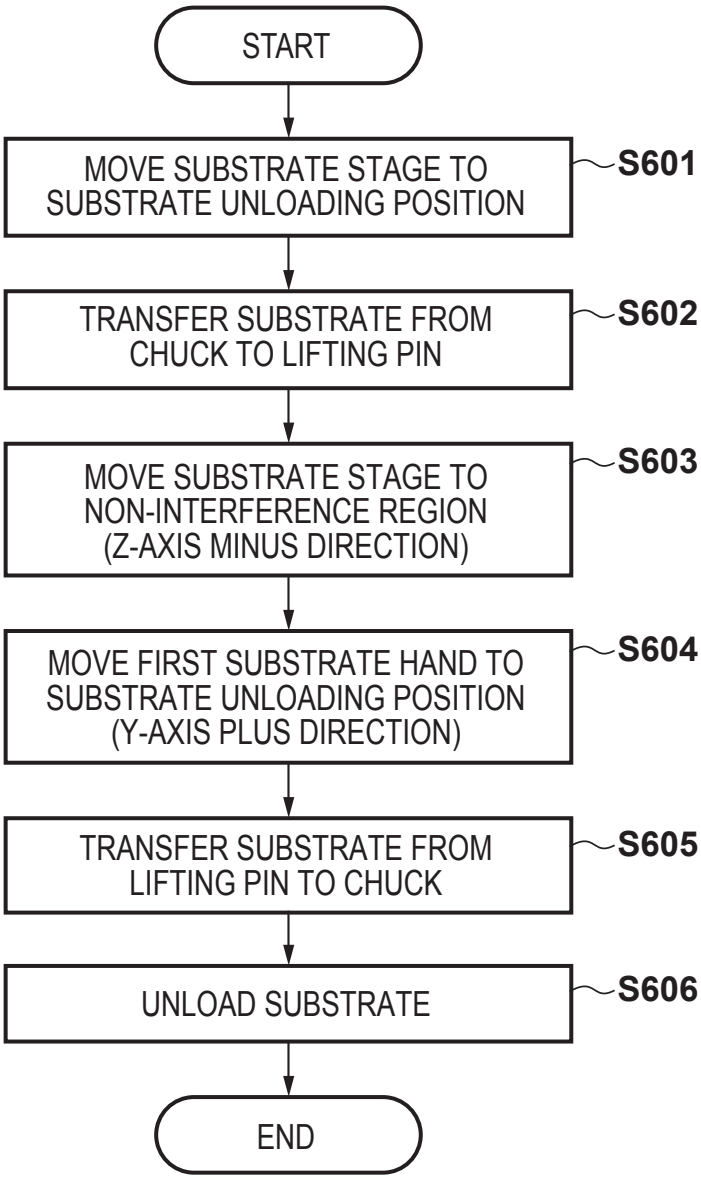
START
MOVE SUBSTRATE STAGE TO SUBSTRATE UNLOADING POSITION
S601
TRANSFER SUBSTRATE FROM CHUCK TO LIFTING PIN
S602
MOVE SUBSTRATE STAGE TO NON-INTERFERENCE REGION (Z-AXIS MINUS DIRECTION)
S603
MOVE FIRST SUBSTRATE HAND TO SUBSTRATE UNLOADING POSITION (Y-AXIS PLUS DIRECTION)
S604
TRANSFER SUBSTRATE FROM LIFTING PIN TO CHUCK
S605
UNLOAD SUBSTRATE
S606
END

FIG. 9

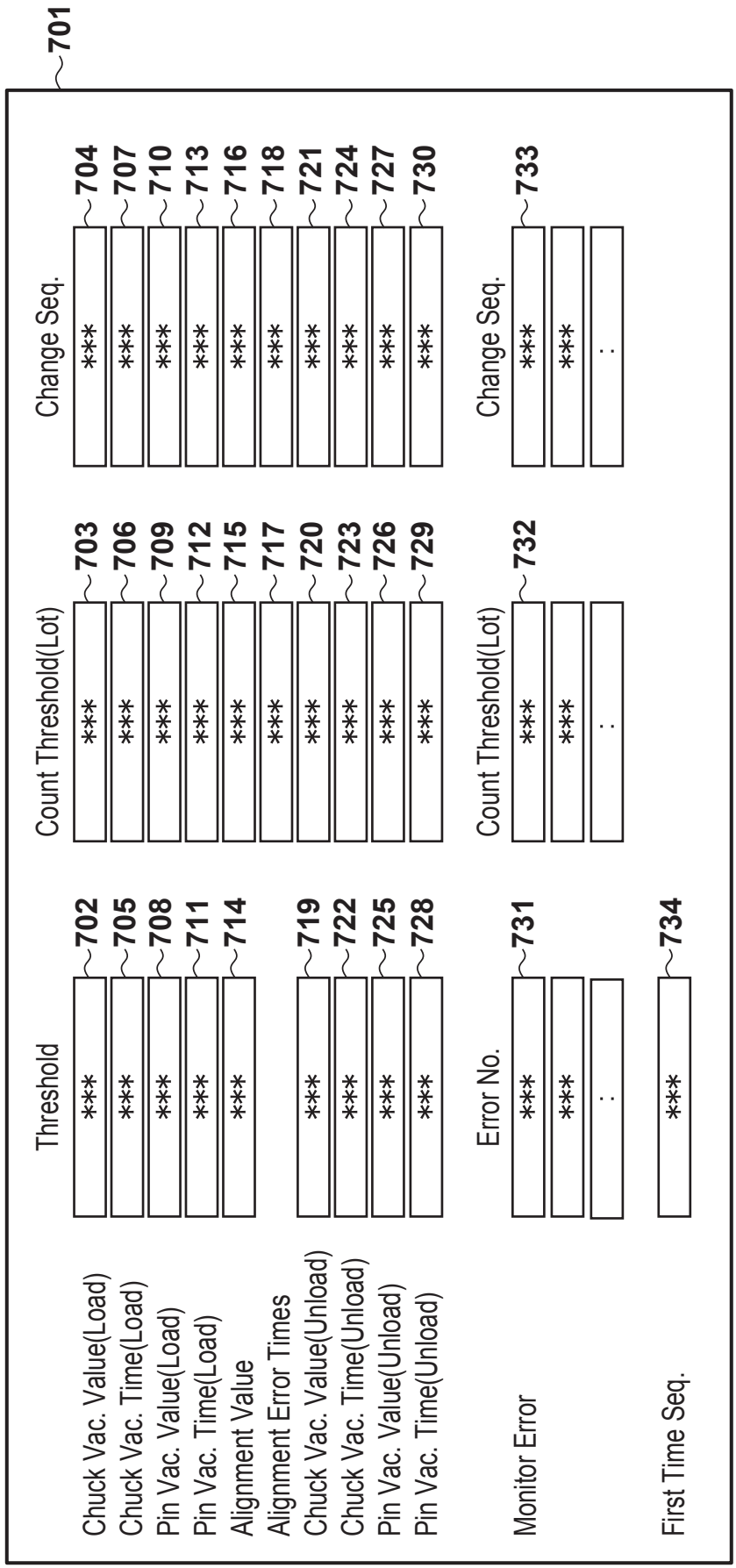
701
Threshold
Count Threshold(Lot)
Change Seq.
Chuck Vac. Value(Load)
Chuck Vac. Time(Load)
Pin Vac. Value(Load)
Pin Vac. Time(Load)
Alignment Value
Alignment Error Times
Chuck Vac. Value(Unload)
Chuck Vac. Time(Unload)
Pin Vac. Value(Unload)
Pin Vac. Time(Unload)
Monitor Error
First Time Seq.
Error No.
Count Threshold(Lot)
Change Seq.
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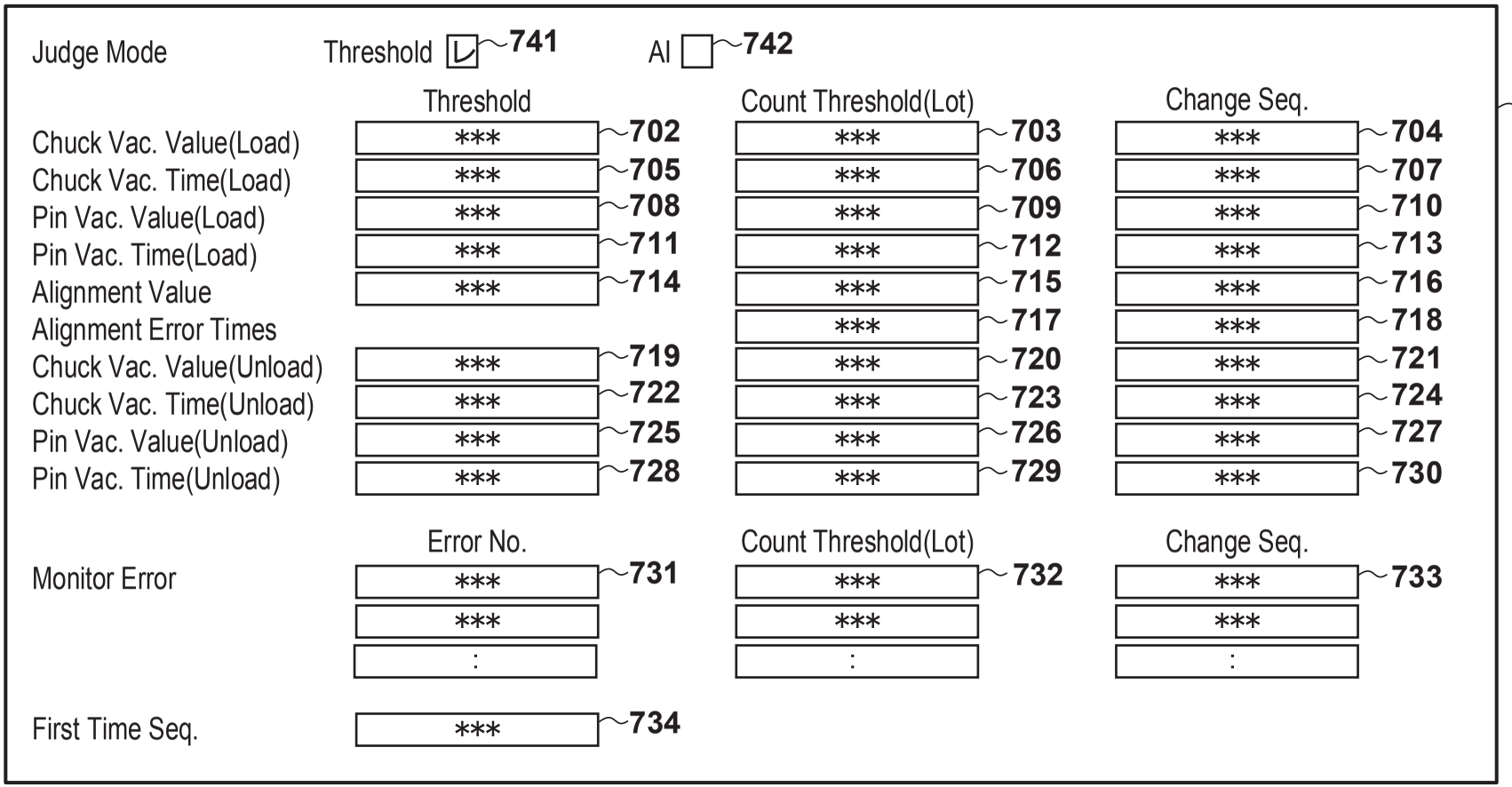
FIG. 10


Judge Mode
Threshold
741
AI
742
Threshold
Count Threshold(Lot)
Change Seq.
701
Chuck Vac. Value(Load)
Chuck Vac. Time(Load)
Pin Vac. Value(Load)
Pin Vac. Time(Load)
Alignment Value
Alignment Error Times
Chuck Vac. Value(Unload)
Chuck Vac. Time(Unload)
Pin Vac. Value(Unload)
Pin Vac. Time(Unload)
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711
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724
725
726
727
728
729
730
Error No.
Count Threshold(Lot)
Change Seq.
Monitor Error
731
732
733
First Time Seq.
734