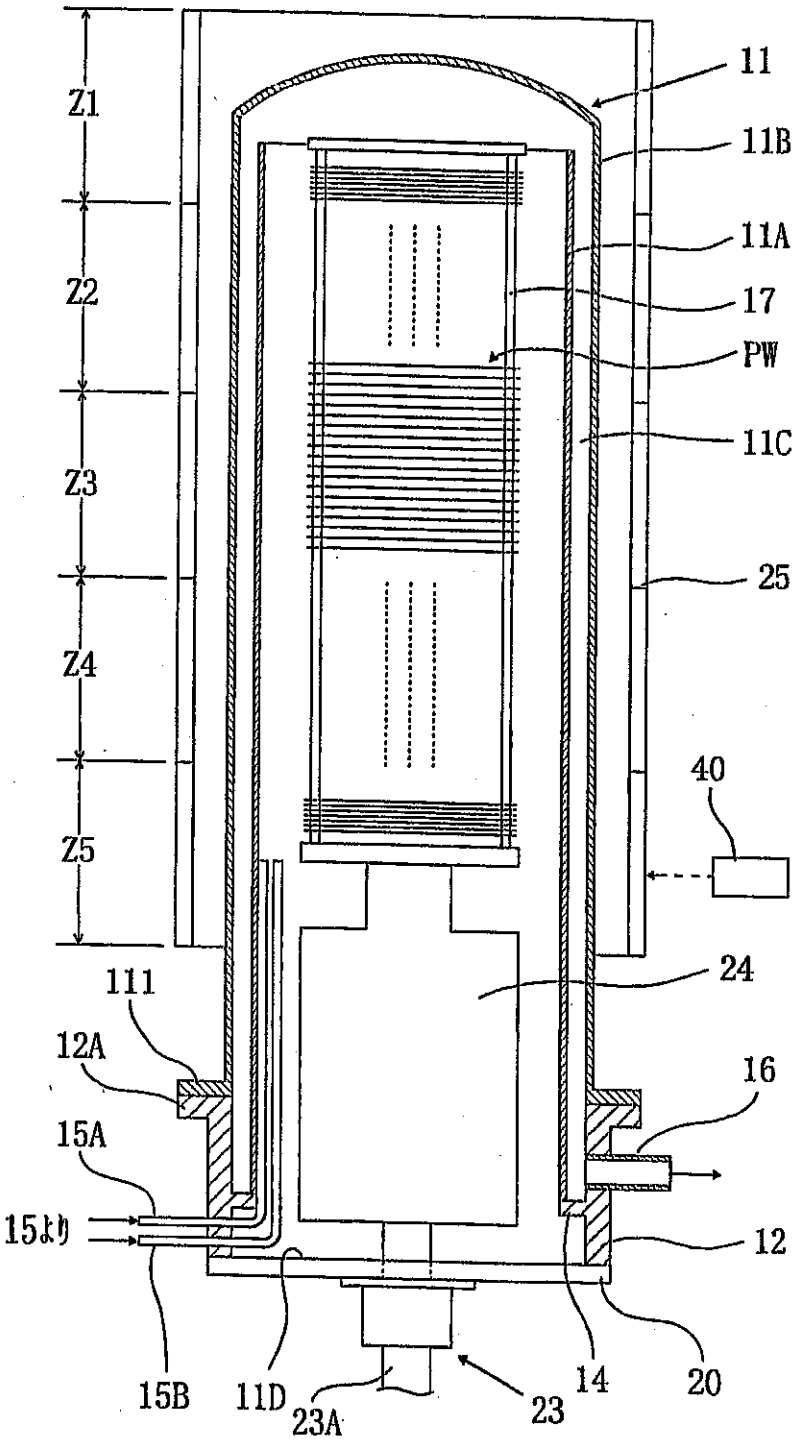

Z1
Z2
Z3
Z4
Z5
11
11B
11A
17
PW
11C
25
40
24
16
12
111
12A
15A
15b
15B
11D
23A
23
14
20

FIG. 1

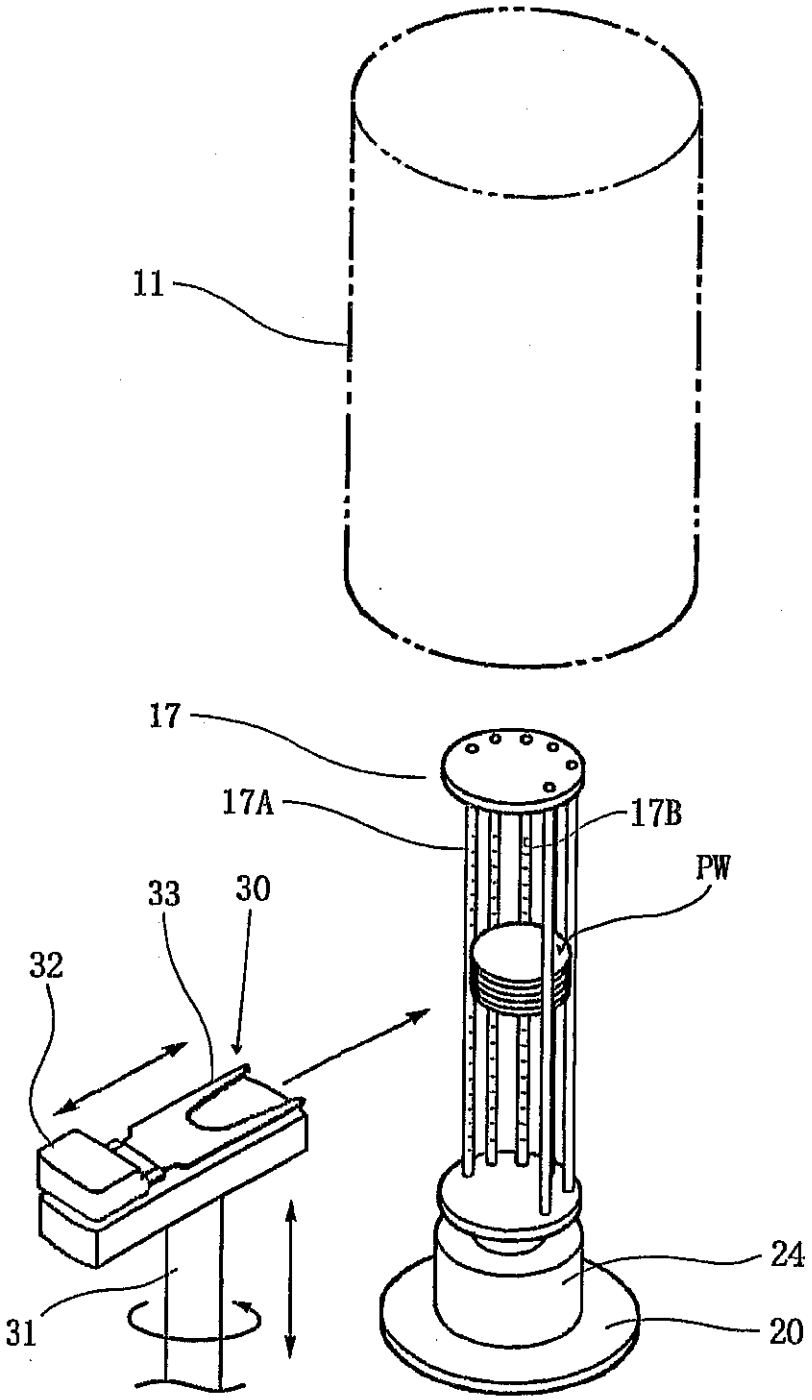


FIG. 2

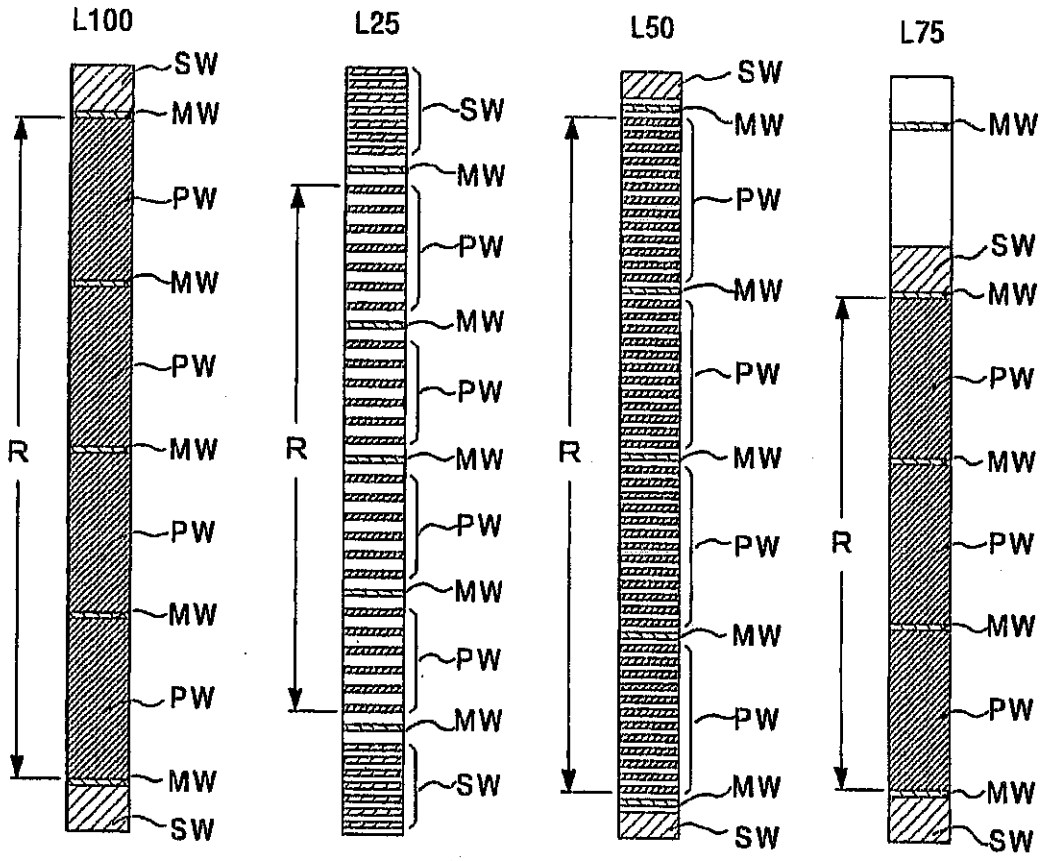

L100
SW
MW
PW
MW
PW
MW
PW
MW
PW
MW
SW
R
L25
SW
MW
PW
PW
MW
PW
PW
MW
PW
MW
SW
R
L50
SW
MW
PW
MW
PW
MW
PW
MW
PW
MW
SW
R
L75
MW
SW
MW
PW
MW
PW
MW
PW
MW
SW
R

FIG. 3

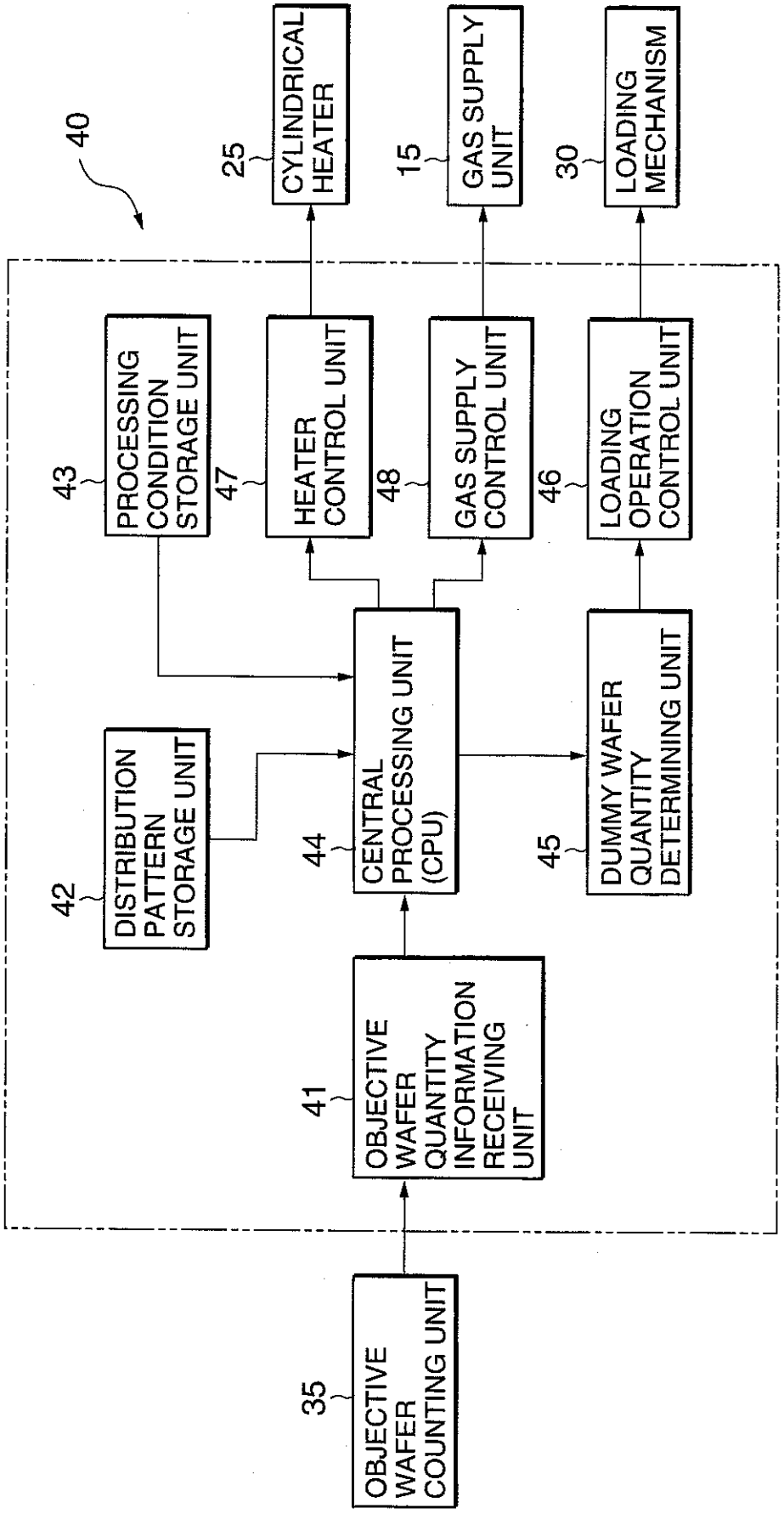

40
25
CYLINDRICAL HEATER
15
GAS SUPPLY UNIT
30
LOADING MECHANISM
43
PROCESSING CONDITION STORAGE UNIT
47
HEATER CONTROL UNIT
48
GAS SUPPLY CONTROL UNIT
46
LOADING OPERATION CONTROL UNIT
42
DISTRIBUTION PATTERN STORAGE UNIT
44
CENTRAL PROCESSING UNIT (CPU)
45
DUMMY WAFER QUANTITY DETERMINING UNIT
41
OBJECTIVE WAFER QUANTITY INFORMATION RECEIVING UNIT
35
OBJECTIVE WAFER COUNTING UNIT

FIG. 4

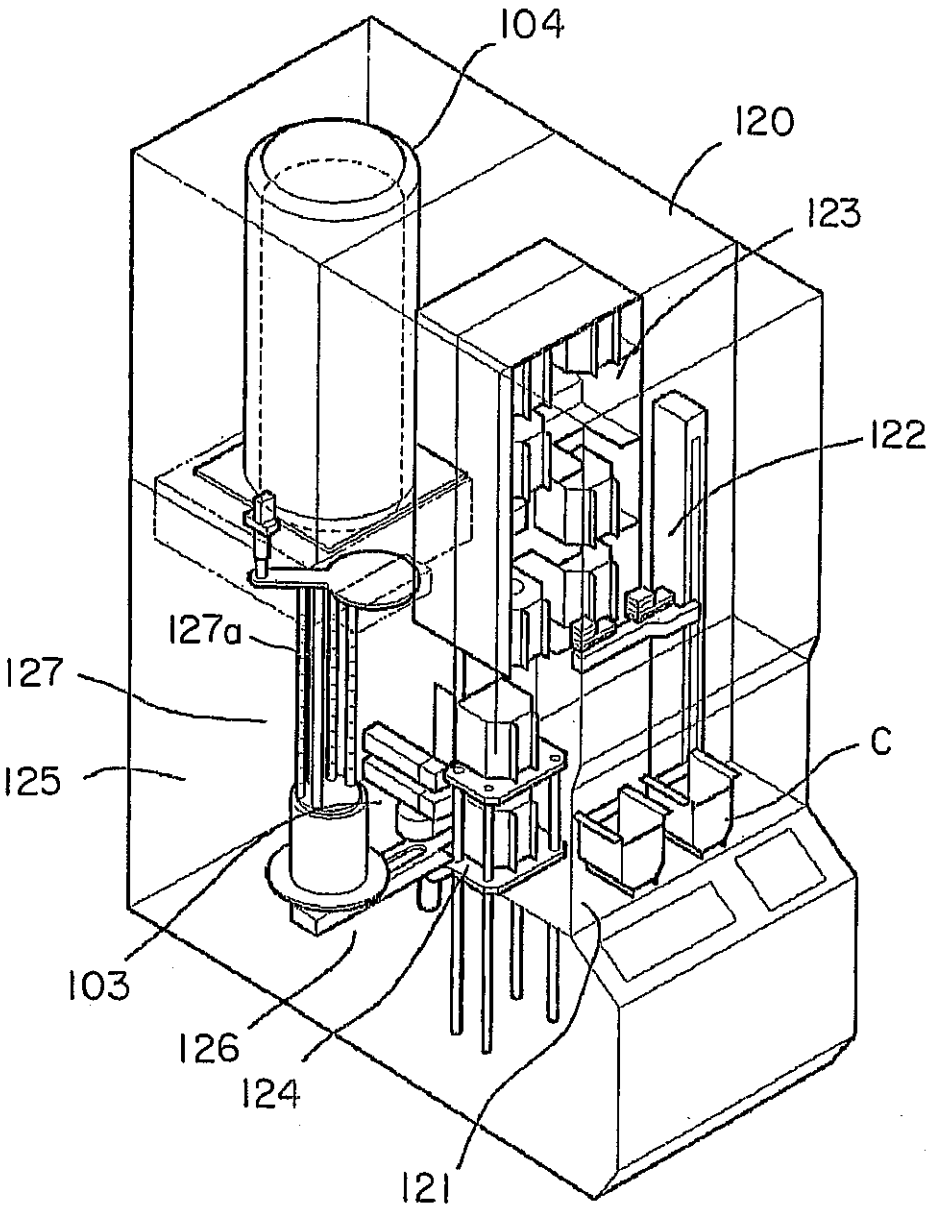


FIG. 5

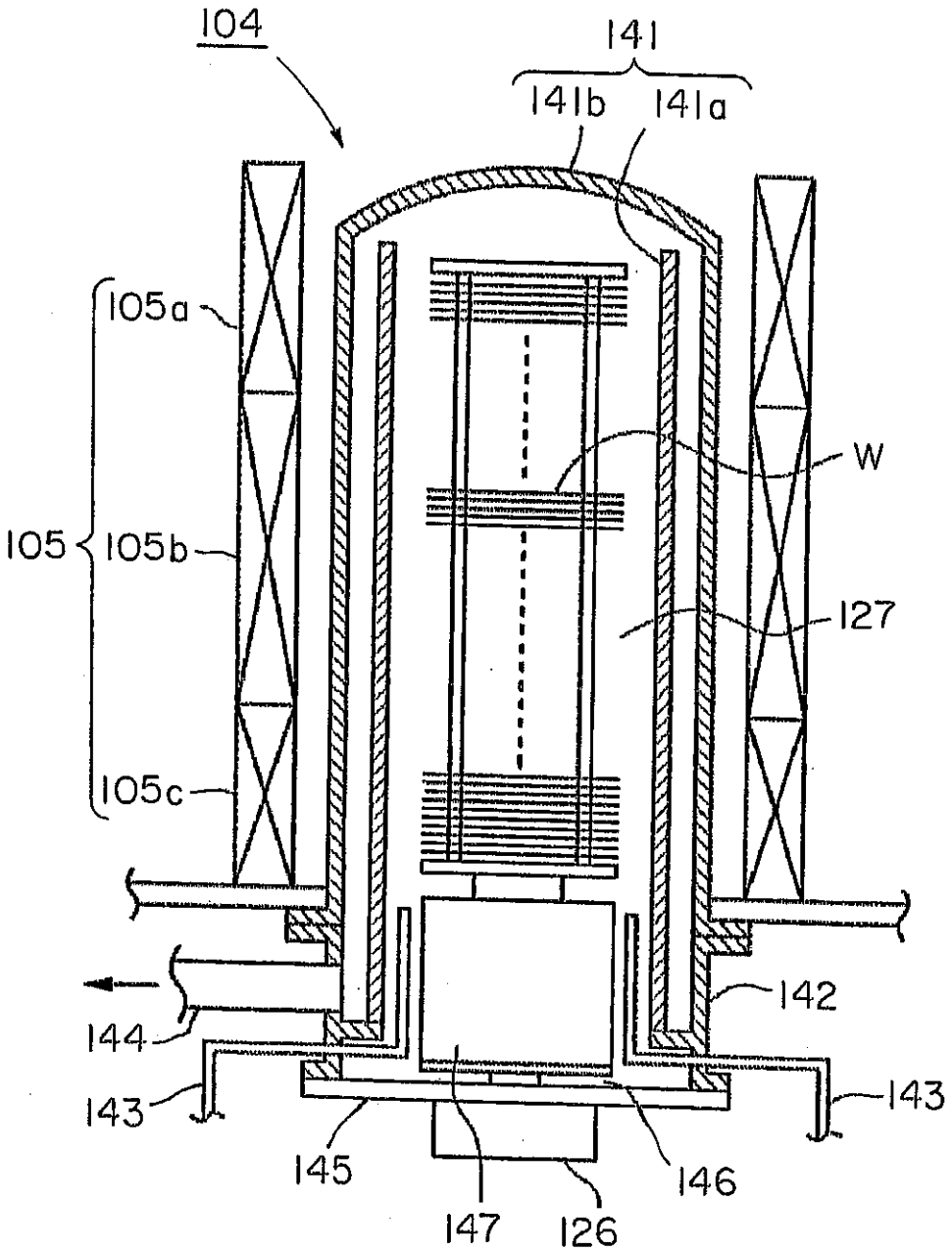

104
141
141b
141a
105a
105
105b
105c
W
127
142
144
143
143
145
146
147
126

FIG. 6

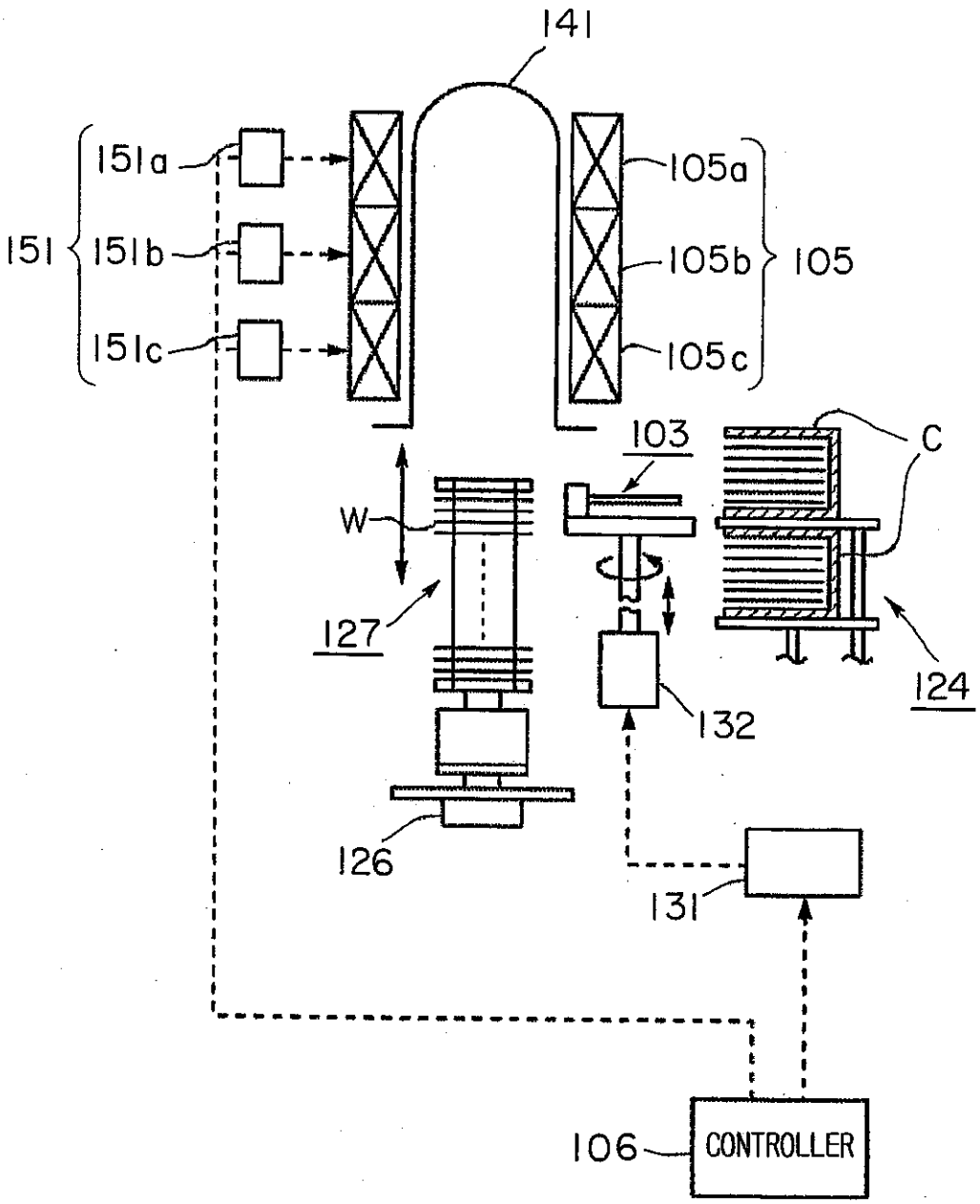

141
151a
151b
151c
151
105a
105b
105c
105
103
C
W
127
132
124
126
131
106
CONTROLLER

FIG. 7

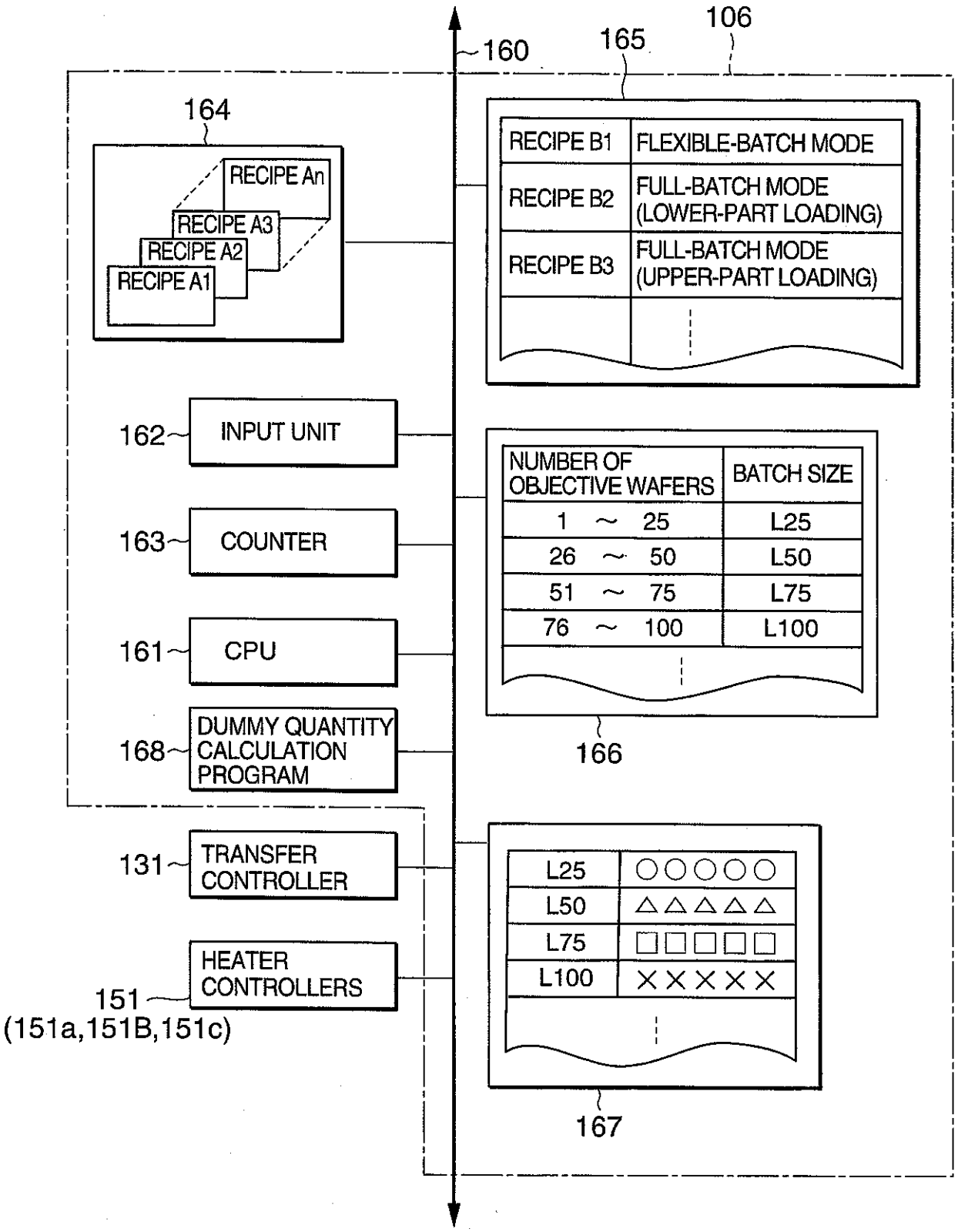
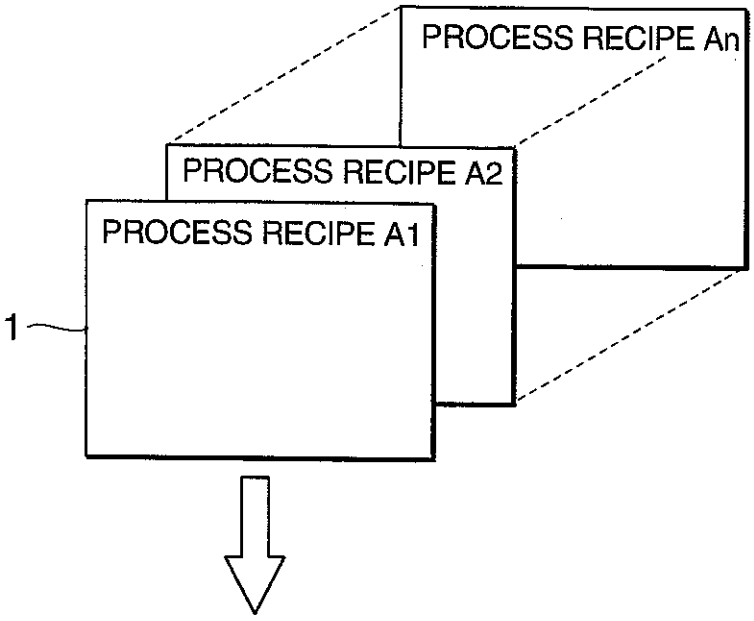

160
165
106
164
RECIPE An
RECIPE A3
RECIPE A2
RECIPE A1
RECIPE B1
FLEXIBLE-BATCH MODE
RECIPE B2
FULL-BATCH MODE (LOWER-PART LOADING)
RECIPE B3
FULL-BATCH MODE (UPPER-PART LOADING)
162
INPUT UNIT
163
COUNTER
161
CPU
168
DUMMY QUANTITY CALCULATION PROGRAM
NUMBER OF OBJECTIVE WAFERS
BATCH SIZE
1 ~ 25
L25
26 ~ 50
L50
51 ~ 75
L75
76 ~ 100
L100
166
131
TRANSFER CONTROLLER
HEATER CONTROLLERS
151
(151a,151B,151c)
L25
L50
L75
L100
167

FIG. 8



PROCESS RECIPE A1

WAITING MODE:DESIRED TEMPERATURE→TA DESIRED PRESSURE→PA DESIRED FLOW RATE→FA
LOADING MODE:DESIRED TEMPERATURE→TB DESIRED PRESSURE→PB DESIRED FLOW RATE→FB
HEATING MODE:HEATING RATE→TD/min
TEMPERATURE-
STABILIZED MODE:DESIRED TEMPERATURE→TC DESIRED PRESSURE→PC DESIRED FLOW RATE→FC
PROCESSING MODE:DESIRED TEMPERATURE→TOP T1 DESIRED PRESSURE→P1
MIDDLE T2 DESIRED FLOW RATE FIRST GAS F1
BOTTOM T3 DESIRED FLOW RATE SECOND GAS F2

L25:TEMPERATURE CORRECTION ΔTa, FLOW RATE CORRECTION ΔFa
L50:TEMPERATURE CORRECTION ΔTb, FLOW RATE CORRECTION ΔFb

L150:TEMPERATURE CORRECTION ΔTe, FLOW RATE CORRECTION ΔFe
COOLING MODE:COOLING RATE:TE/min

FIG. 9

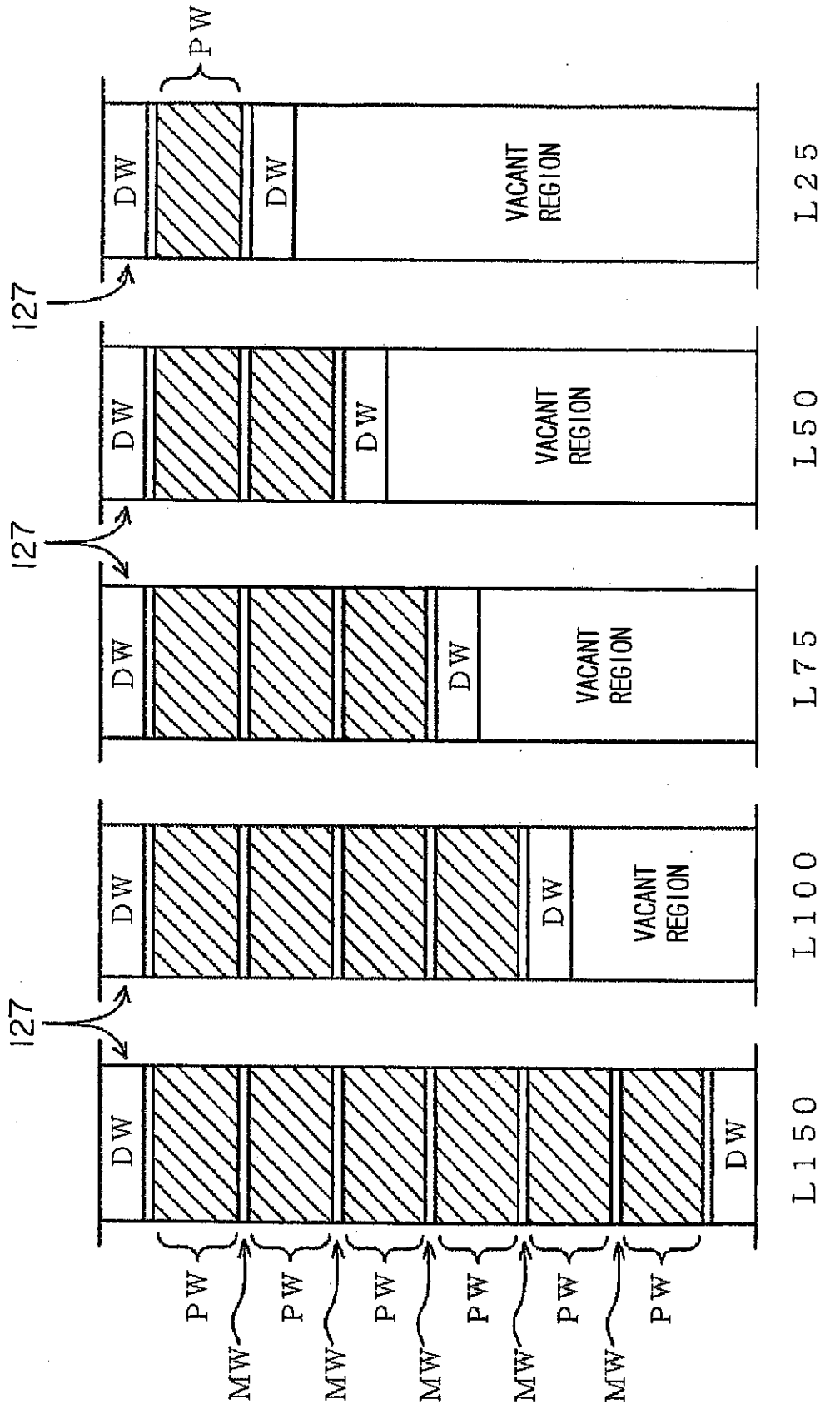


FIG. 10

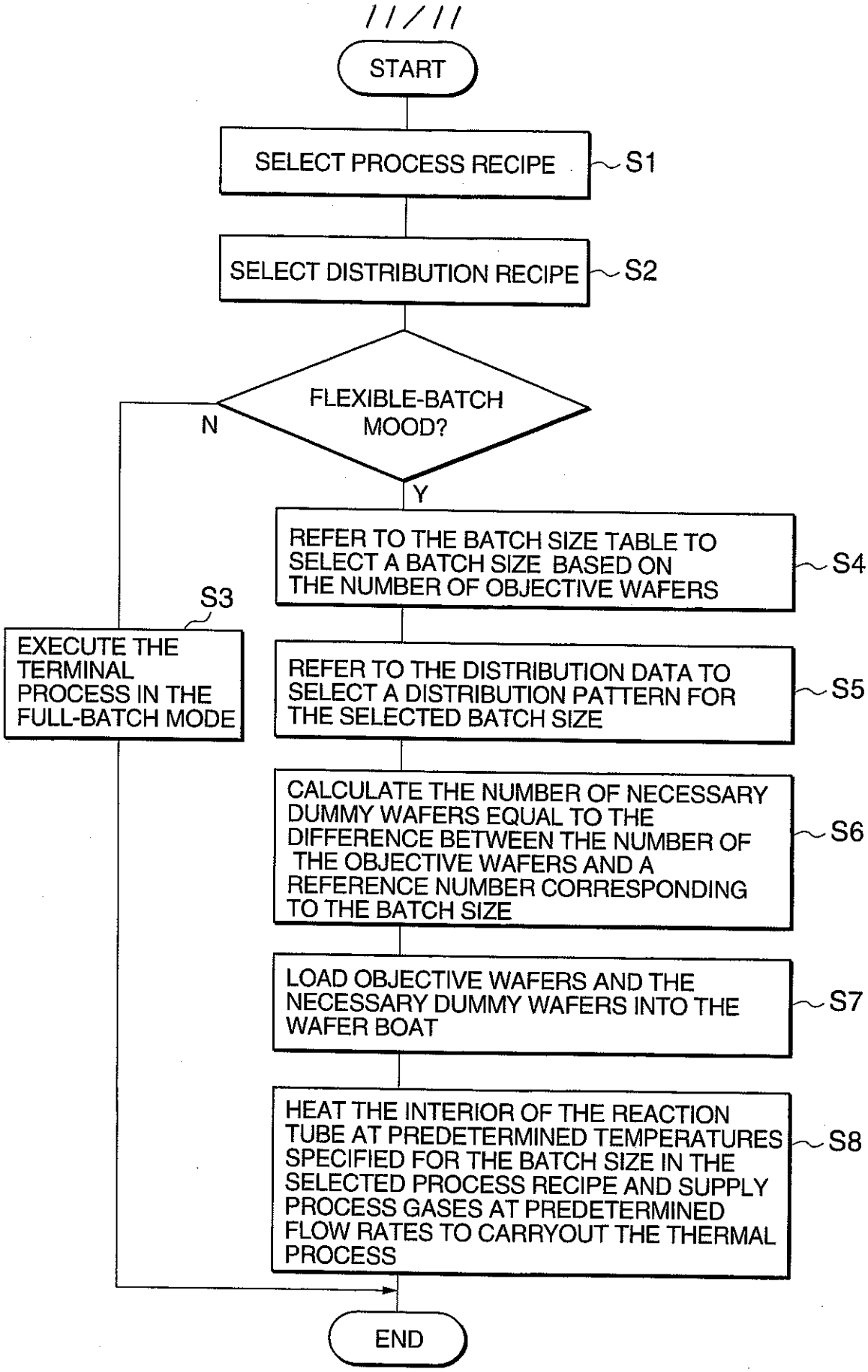

START
SELECT PROCESS RECIPE
S1
SELECT DISTRIBUTION RECIPE
S2
FLEXIBLE-BATCH MOOD?
N
Y
S3
EXECUTE THE TERMINAL PROCESS IN THE FULL-BATCH MODE
REFER TO THE BATCH SIZE TABLE TO SELECT A BATCH SIZE BASED ON THE NUMBER OF OBJECTIVE WAFERS
S4
REFER TO THE DISTRIBUTION DATA TO SELECT A DISTRIBUTION PATTERN FOR THE SELECTED BATCH SIZE
S5
CALCULATE THE NUMBER OF NECESSARY DUMMY WAFERS EQUAL TO THE DIFFERENCE BETWEEN THE NUMBER OF THE OBJECTIVE WAFERS AND A REFERENCE NUMBER CORRESPONDING TO THE BATCH SIZE
S6
LOAD OBJECTIVE WAFERS AND THE NECESSARY DUMMY WAFERS INTO THE WAFER BOAT
S7
HEAT THE INTERIOR OF THE REACTION TUBE AT PREDETERMINED TEMPERATURES SPECIFIED FOR THE BATCH SIZE IN THE SELECTED PROCESS RECIPE AND SUPPLY PROCESS GASES AT PREDETERMINED FLOW RATES TO CARRYOUT THE THERMAL PROCESS
S8
END

FIG. 11