FIG. 1

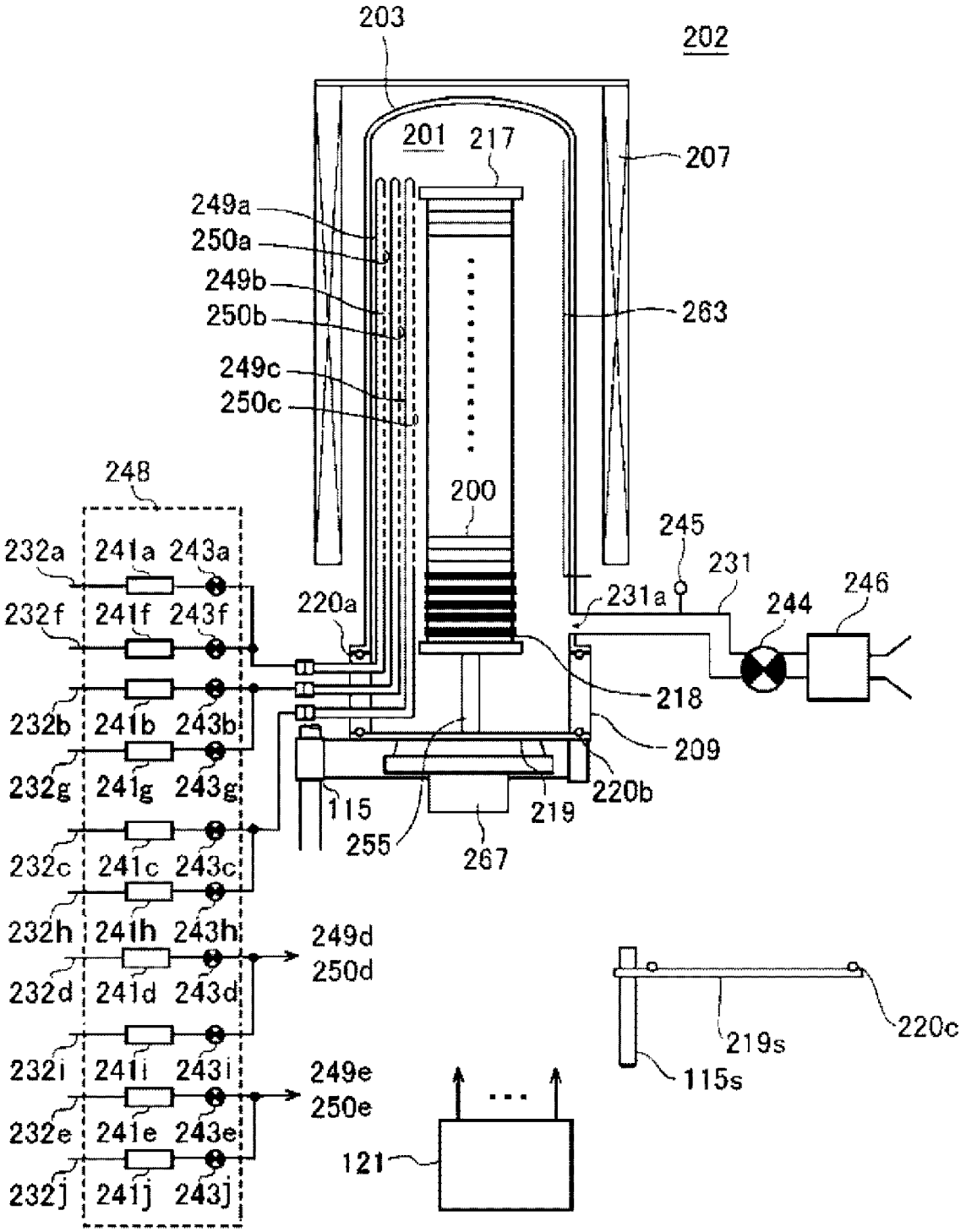

203
202
201
217
207
249a
250a
249b
250b
263
249c
250c
248
200
245
231
246
232a
241a
243a
220a
231a
244
232f
241f
243f
218
232b
241b
243b
209
232g
241g
243g
220b
115
219
255
267
232c
241c
243c
232h
241h
243h
249d
250d
232d
241d
243d
220c
219s
232i
241i
243i
249e
250e
115s
232e
241e
243e
121
232j
241j
243j

FIG. 2

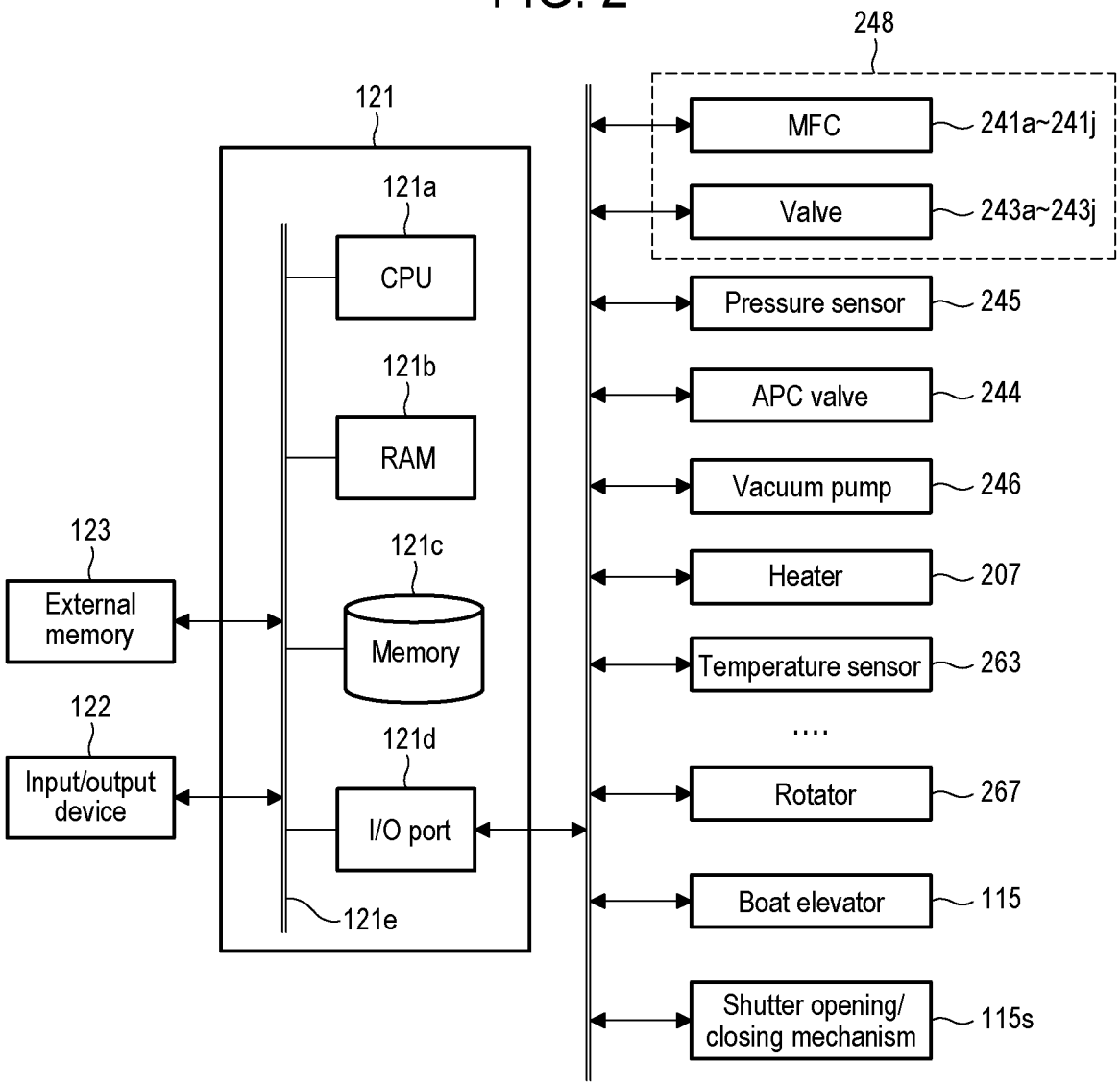

248
121
121a
CPU
121b
RAM
121c
Memory
121d
I/O port
121e
123
External memory
122
Input/output device
MFC
241a~241j
Valve
243a~243j
Pressure sensor
245
APC valve
244
Vacuum pump
246
Heater
207
Temperature sensor
263
....
Rotator
267
Boat elevator
115
Shutter opening/ closing mechanism
115s

FIG. 3

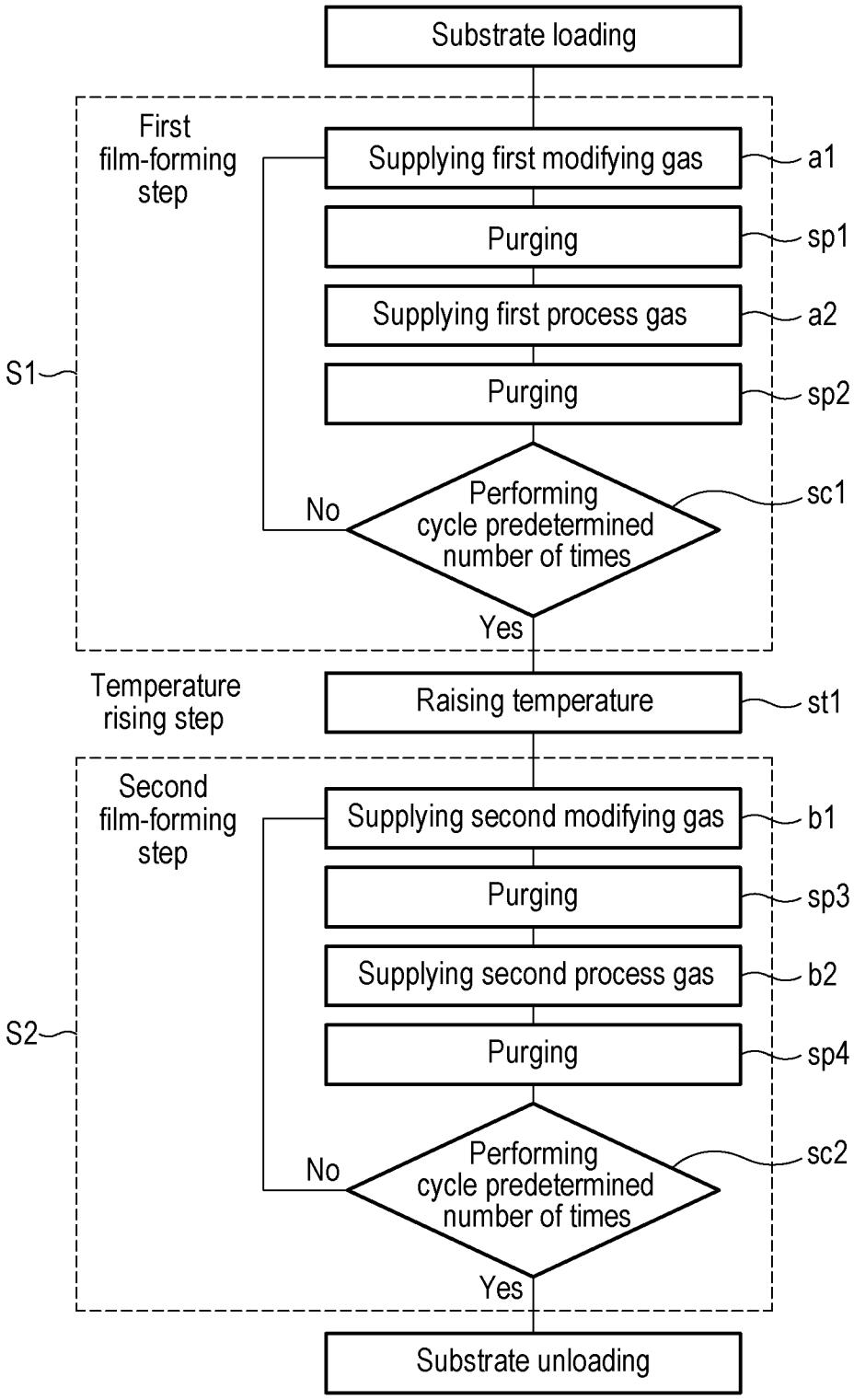

Substrate loading
First film-forming step
Supplying first modifying gas
a1
Purging
sp1
Supplying first process gas
a2
Purging
sp2
S1
Performing cycle predetermined number of times
sc1
No
Yes
Temperature rising step
Raising temperature
st1
Second film-forming step
Supplying second modifying gas
b1
Purging
sp3
Supplying second process gas
b2
Purging
sp4
S2
Performing cycle predetermined number of times
sc2
No
Yes
Substrate unloading

FIG. 4

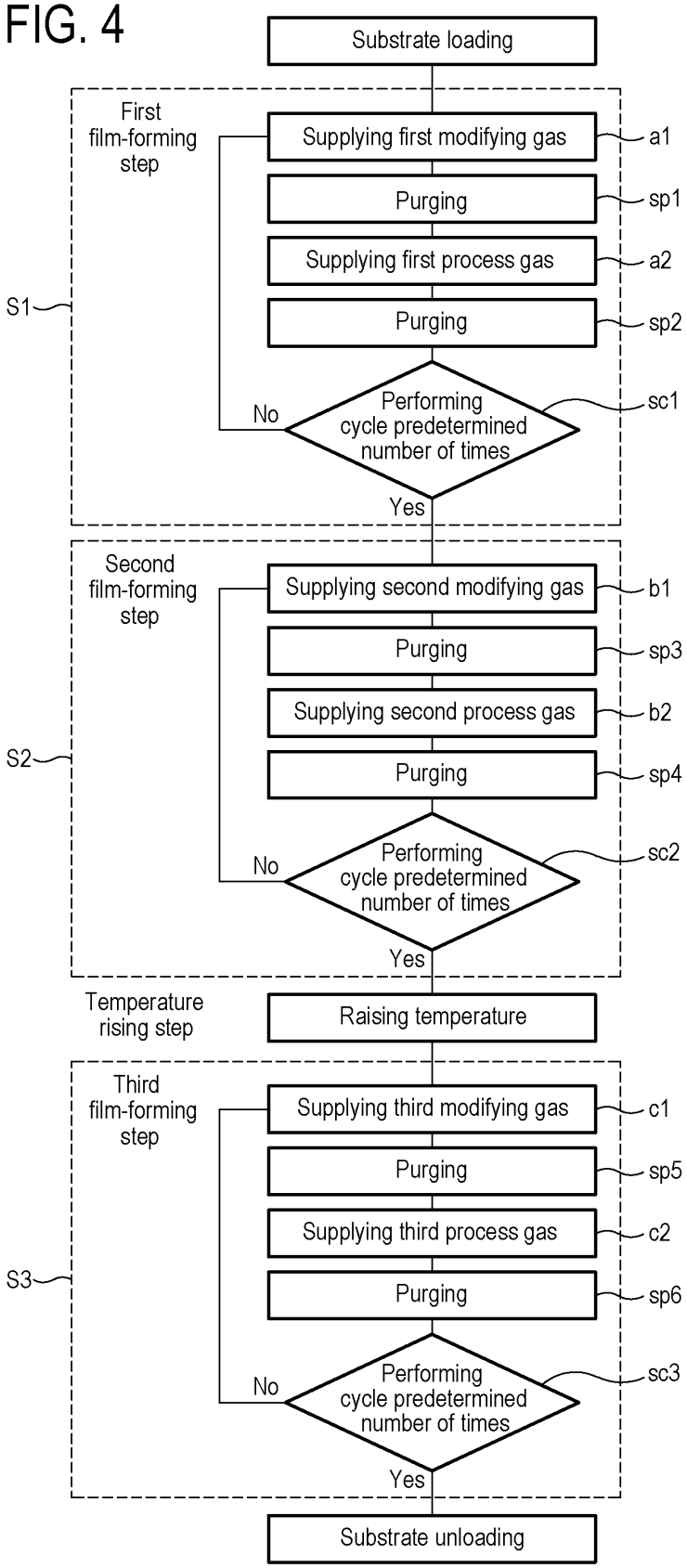

Substrate loading
First film-forming step
Supplying first modifying gas
a1
Purging
sp1
Supplying first process gas
a2
Purging
sp2
S1
Performing cycle predetermined number of times
sc1
No
Yes
Second film-forming step
Supplying second modifying gas
b1
Purging
sp3
Supplying second process gas
b2
Purging
sp4
S2
Performing cycle predetermined number of times
sc2
No
Yes
Temperature rising step
Raising temperature
Third film-forming step
Supplying third modifying gas
c1
Purging
sp5
Supplying third process gas
c2
Purging
sp6
S3
Performing cycle predetermined number of times
sc3
No
Yes
Substrate unloading

FIG. 5

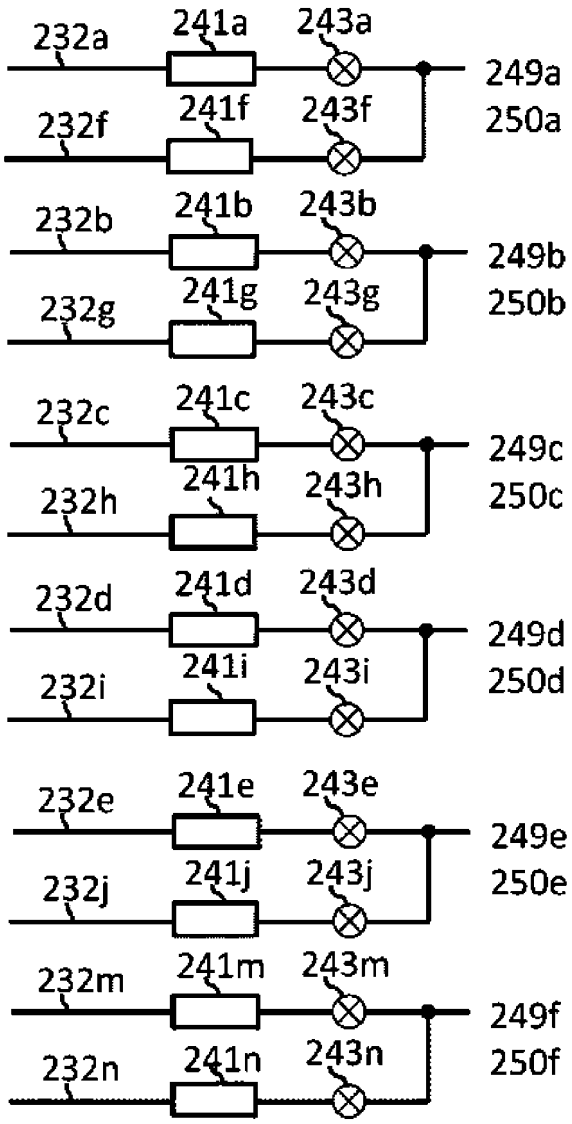

232a
241a
243a
249a
232f
241f
243f
250a
232b
241b
243b
249b
232g
241g
243g
250b
232c
241c
243c
249c
232h
241h
243h
250c
232d
241d
243d
249d
232i
241i
243i
250d
232e
241e
243e
249e
232j
241j
243j
250e
232m
241m
243m
249f
232n
241n
243n
250f

FIG. 6A FIG. 6B FIG. 6C

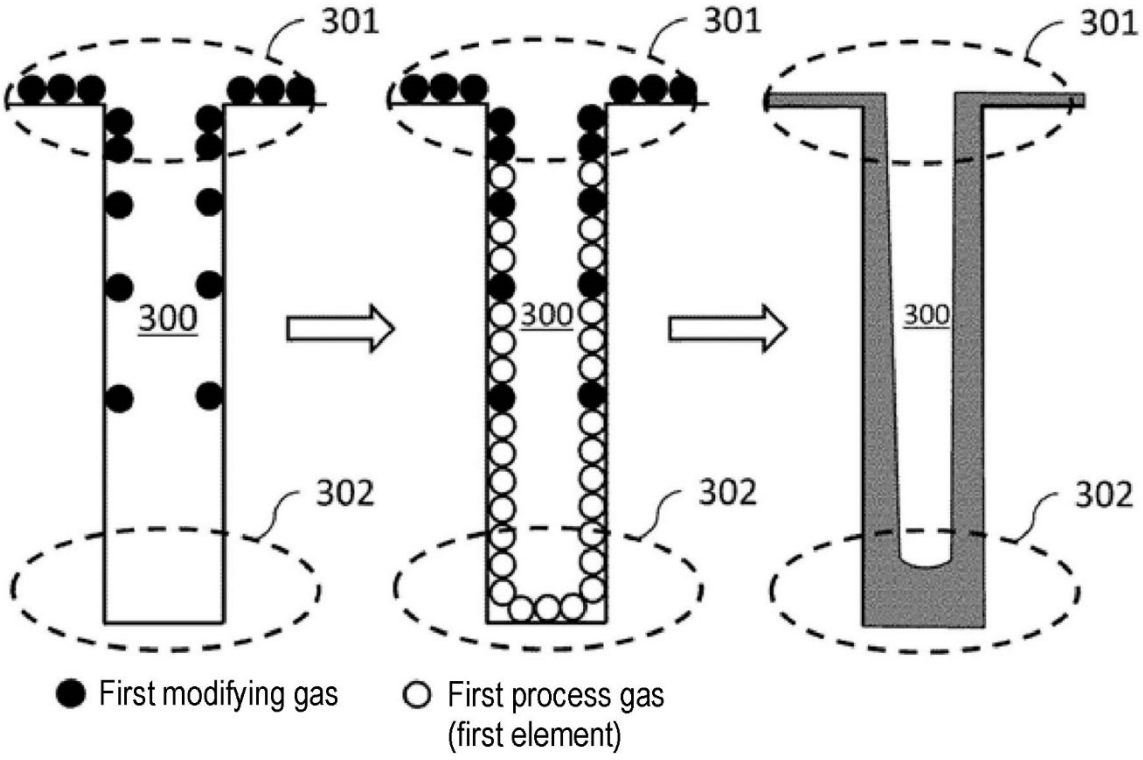


FIG. 7A

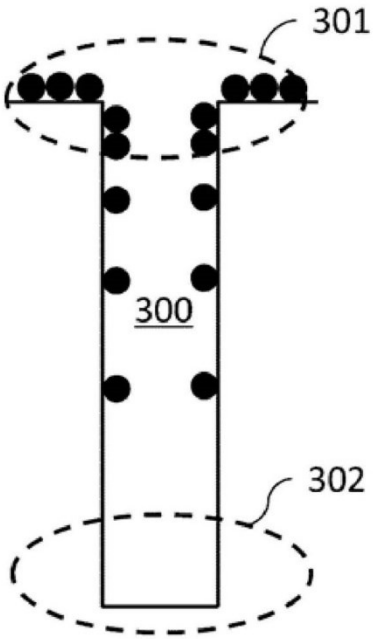
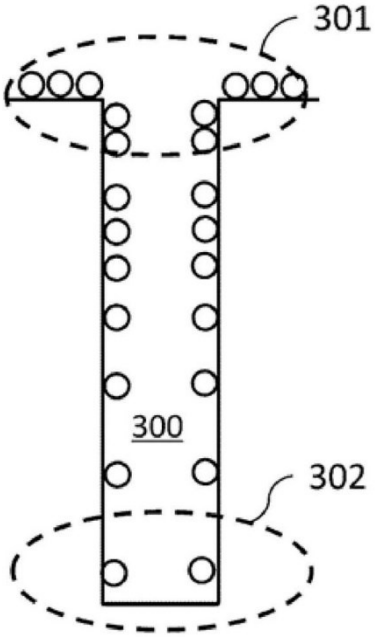


FIG. 7B



● First modifying gas

○ Second modifying gas

FIG. 8A

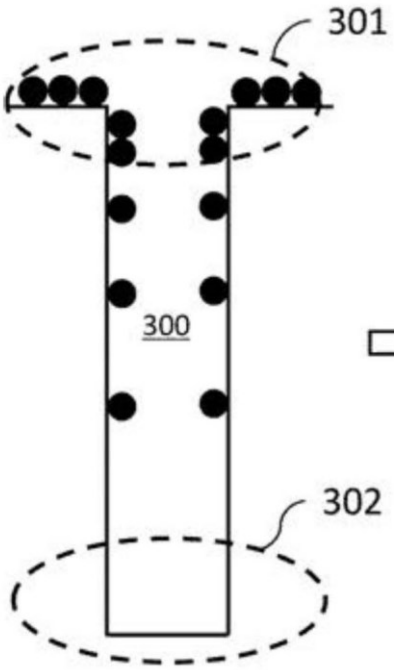
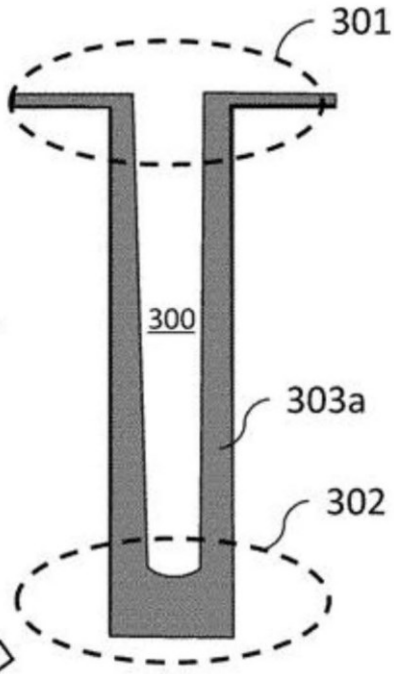


FIG. 8B



● First modifying gas

FIG. 8C

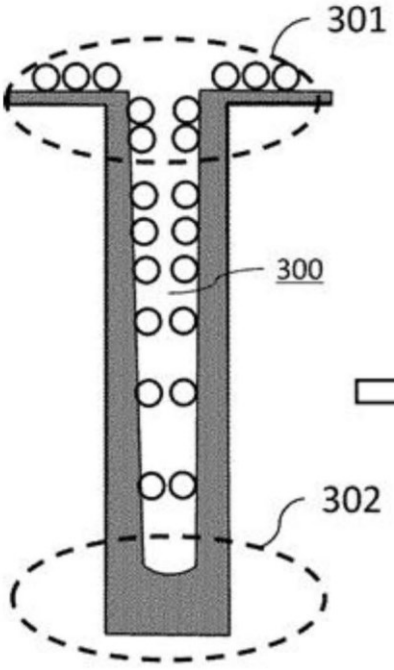
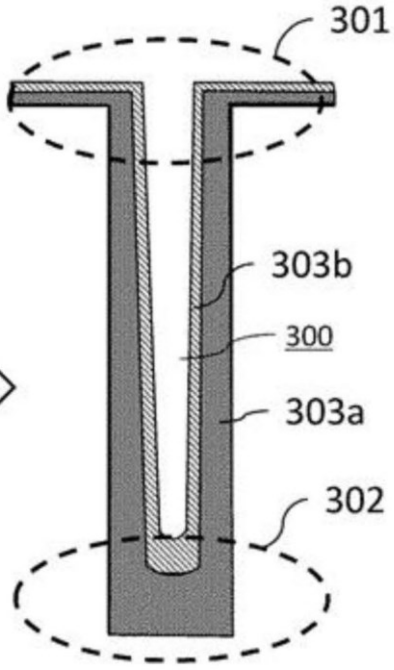


FIG. 8D



○ Second modifying gas