Fig. 1

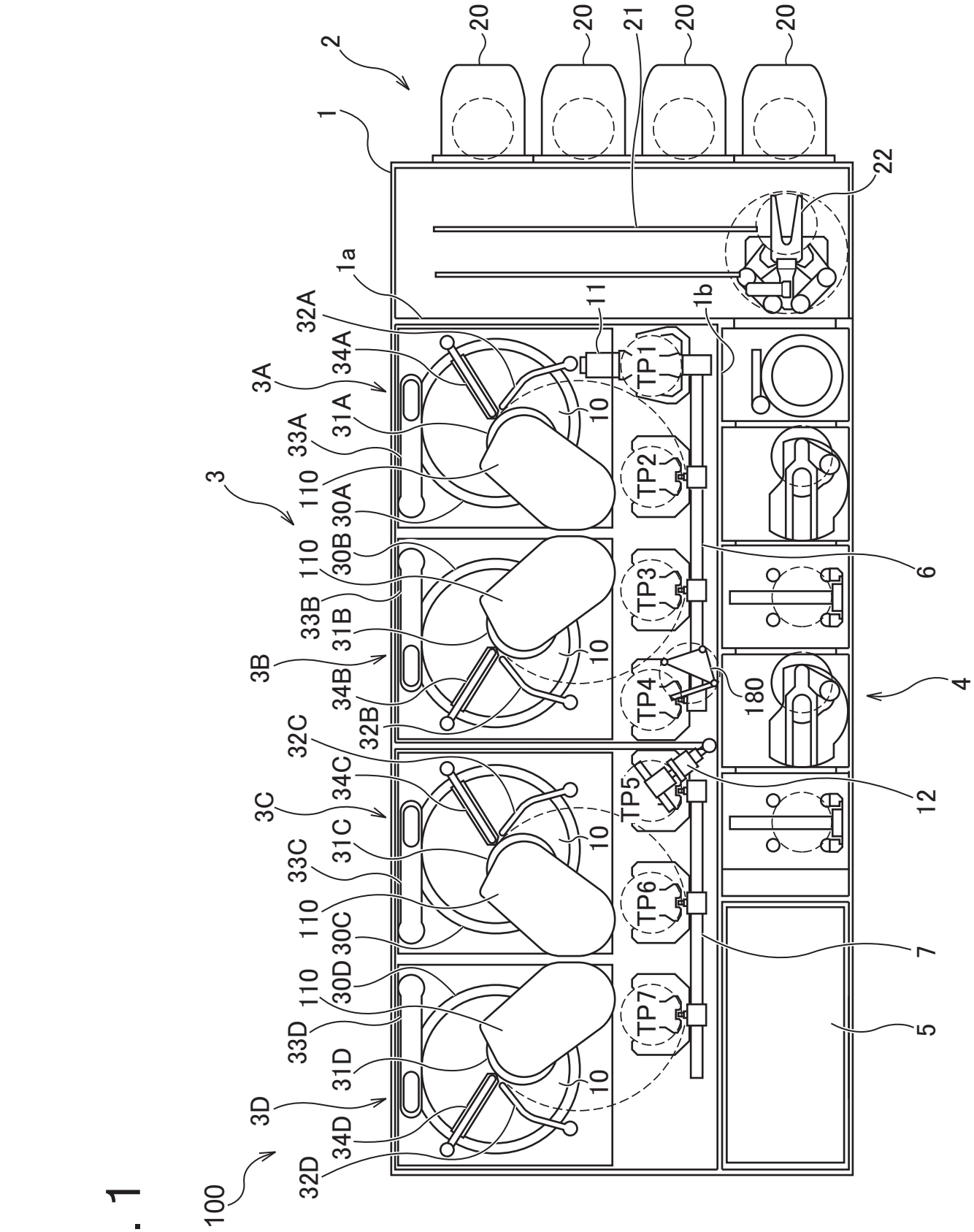

100
2
1
20
20
21
20
20
22
1a
11
1b
32A
34A
3A
31A
33A
110
30A
3
110
30B
33B
31B
3B
34B
32B
32C
34C
3C
31C
33C
110
30C
110
30D
33D
31D
3D
34D
32D
10
10
10
10
TP1
TP2
TP3
TP4
TP5
TP6
TP7
6
180
4
12
7
5

Fig. 2

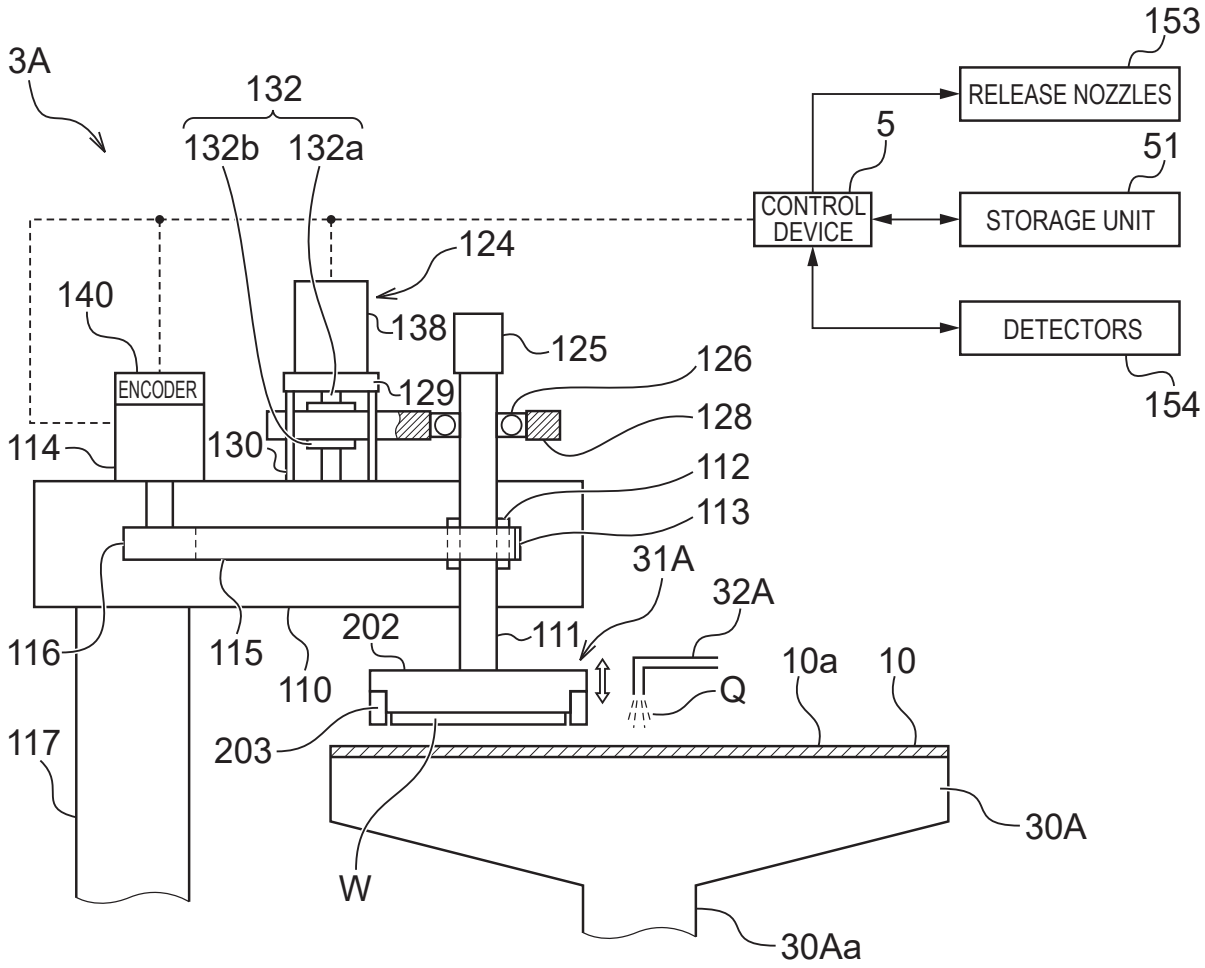

3A
132
132b
132a
153
RELEASE NOZZLES
5
51
CONTROL DEVICE
STORAGE UNIT
DETECTORS
154
124
140
138
125
126
ENCODER
129
128
114
130
112
113
31A
32A
116
115
202
111
10a
10
110
Q
117
203
30A
W
30Aa

Fig. 3

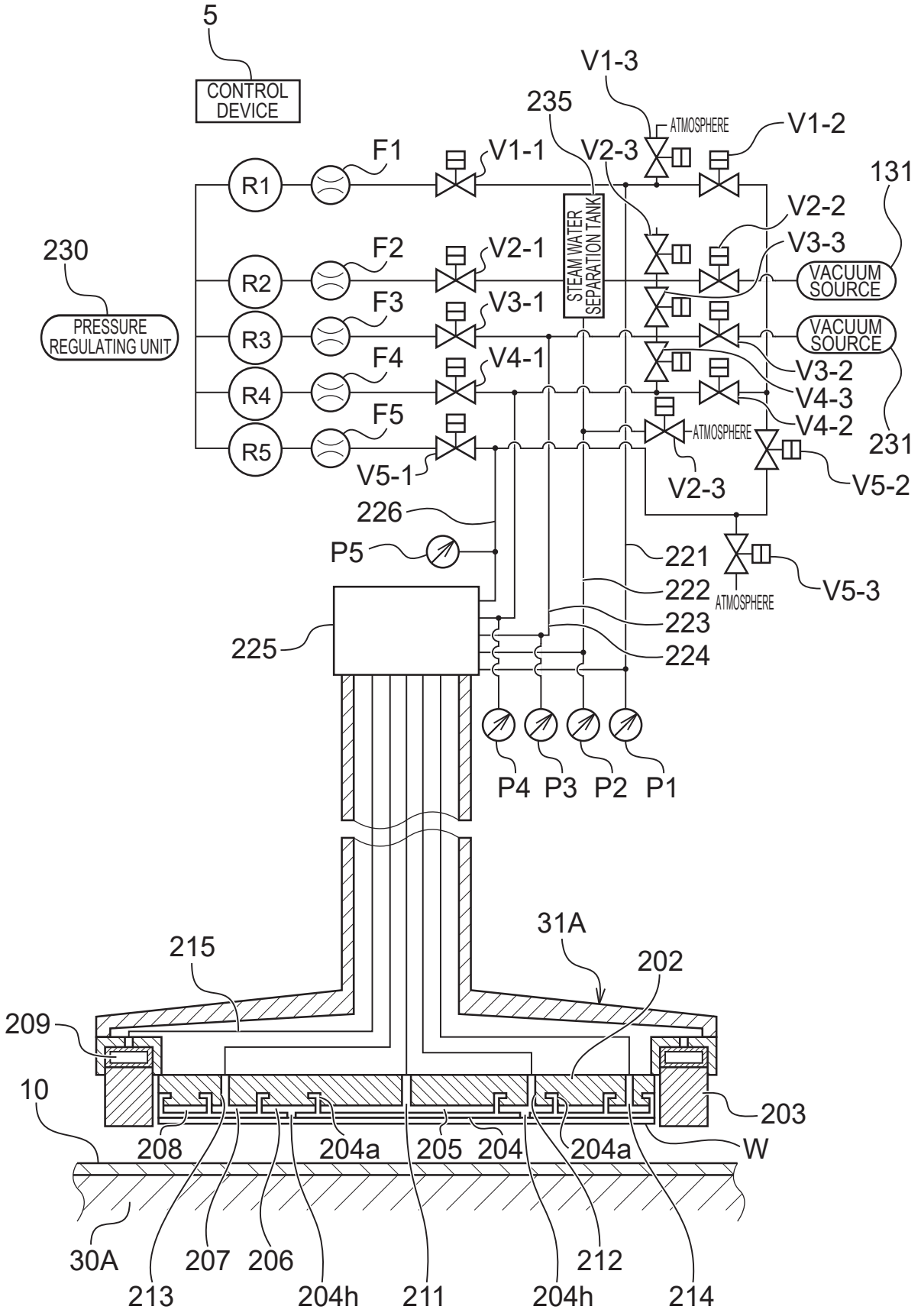

5
CONTROL DEVICE
V1-3
235
ATMOSPHERE
V1-2
F1
V1-1
V2-3
131
R1
STEAM WATER SEPARATION TANK
V2-2
230
F2
V2-1
V3-3
R2
VACUUM SOURCE
F3
V3-1
PRESSURE REGULATING UNIT
R3
VACUUM SOURCE
F4
V4-1
V3-2
R4
V4-3
F5
V4-2
ATMOSPHERE
231
R5
V5-1
V2-3
V5-2
226
P5
221
V5-3
222
ATMOSPHERE
223
225
224
P4
P3
P2
P1
31A
215
202
209
10
203
208
204a
205
204
204a
W
30A
207
206
212
213
204h
211
204h
214

Fig. 4

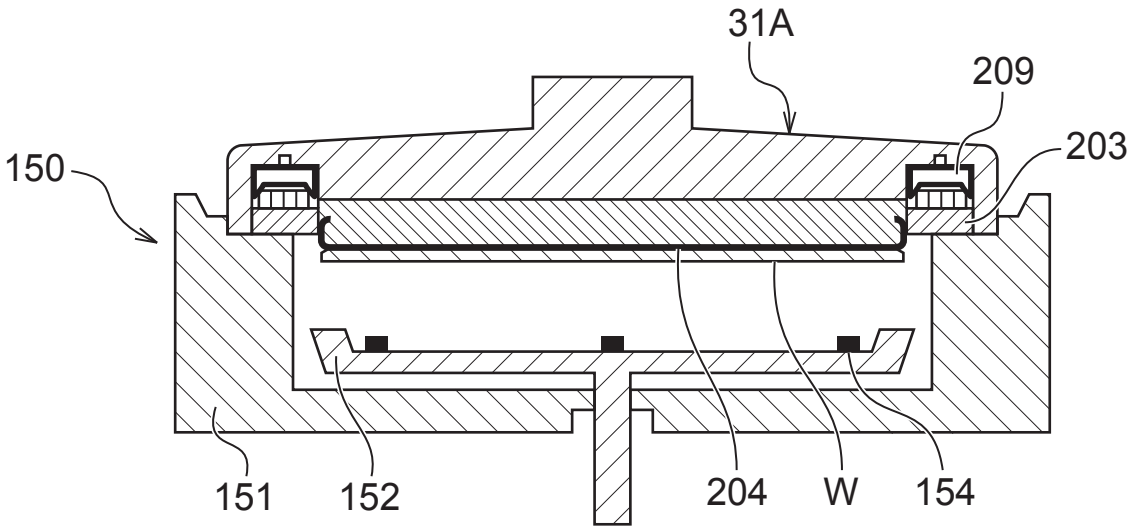



Fig. 5

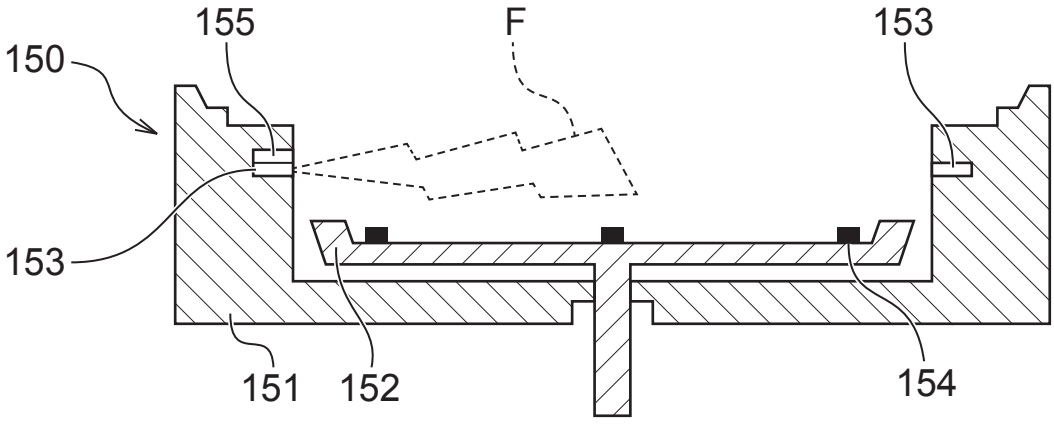


Fig. 6

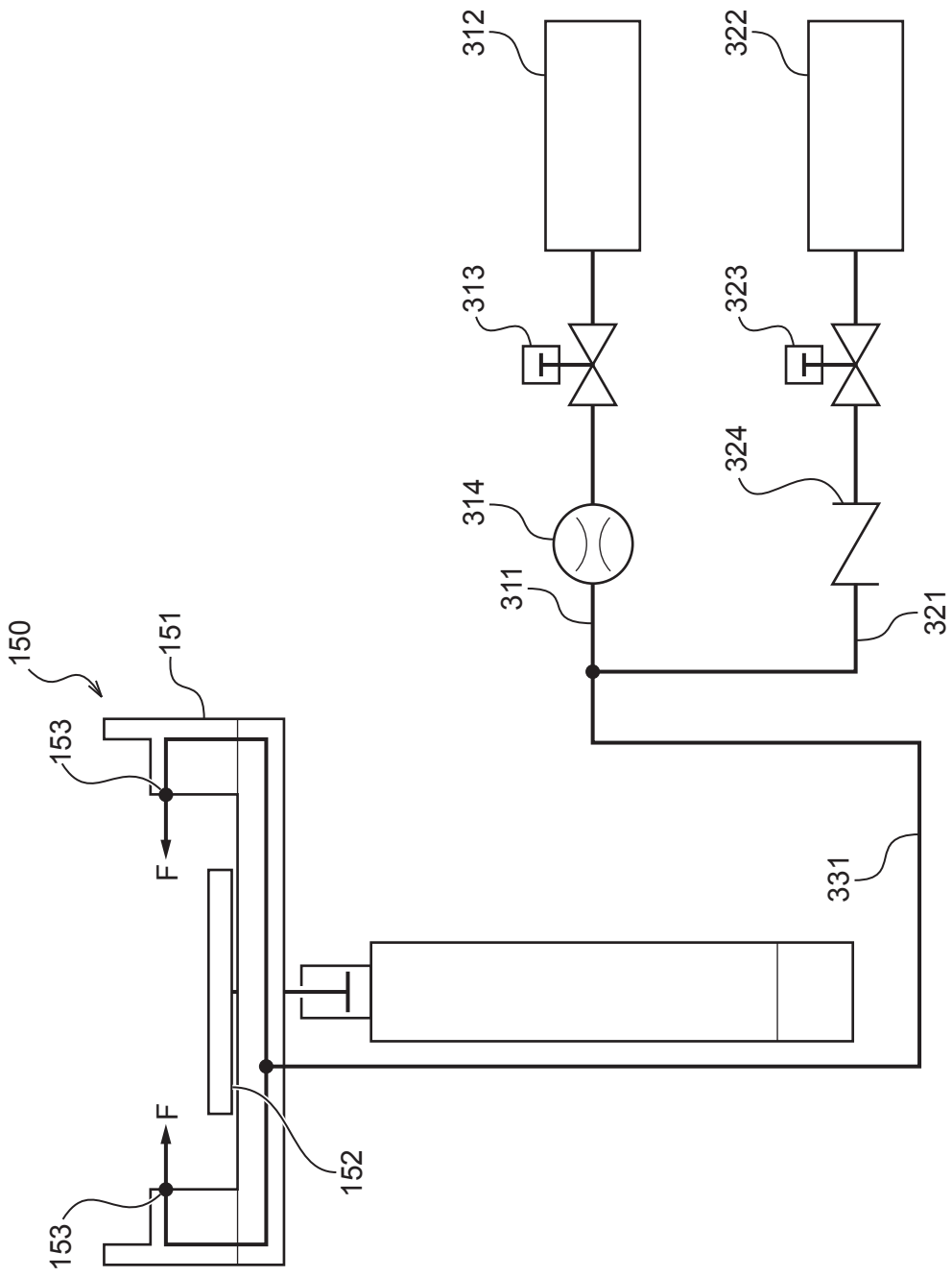


Fig. 7

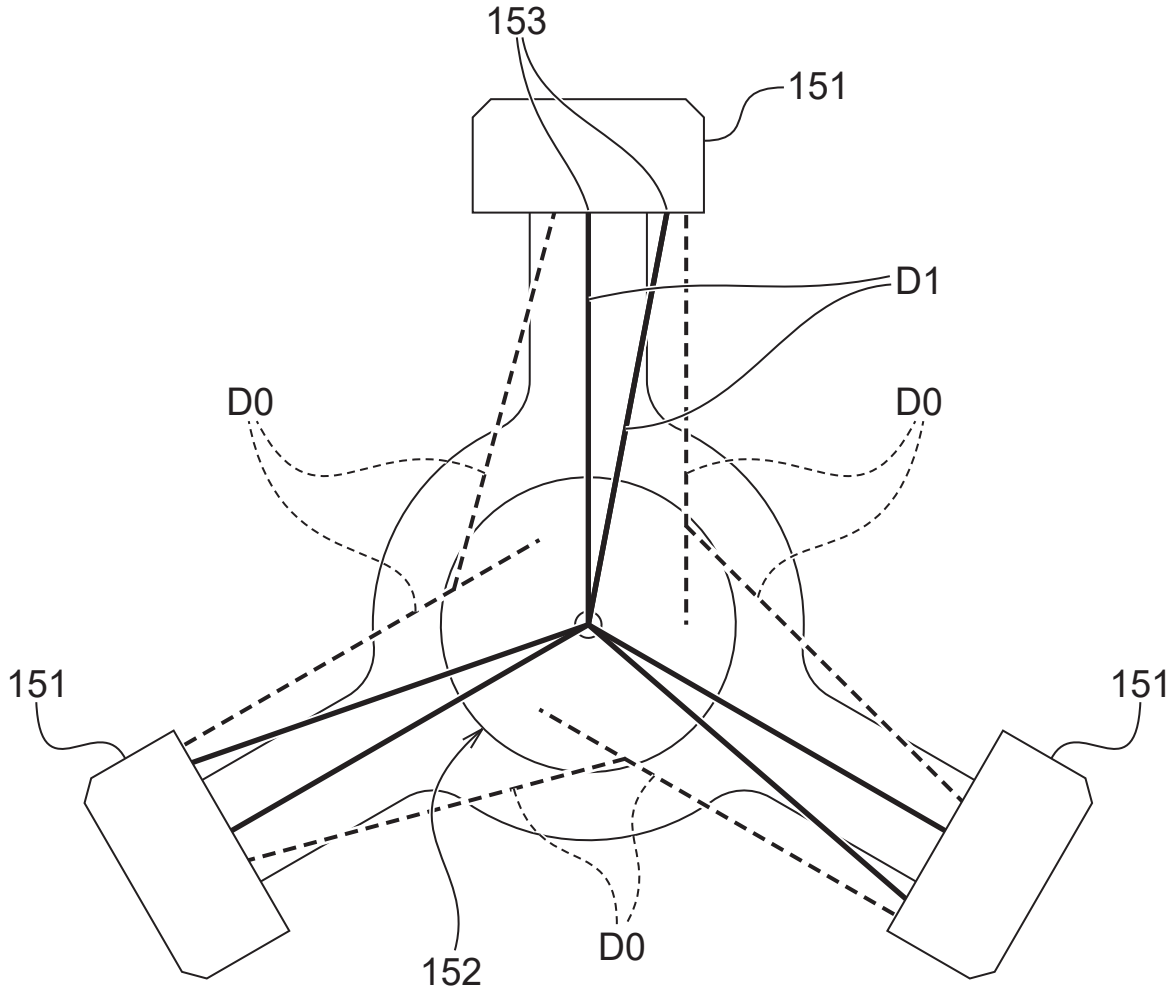


Fig. 8A

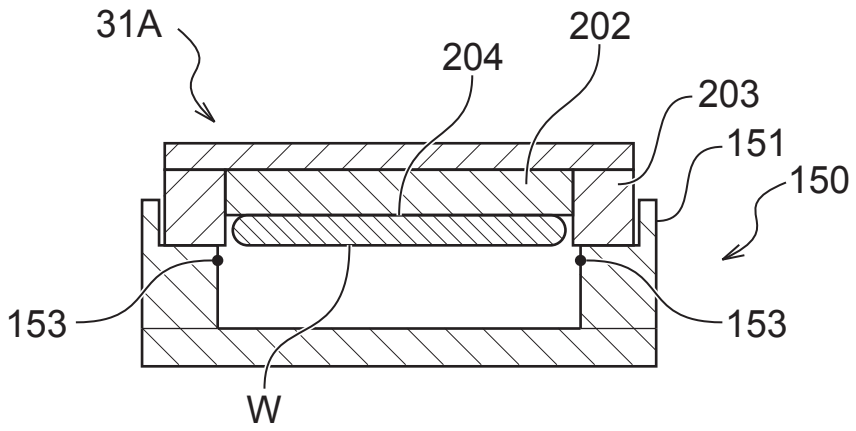



Fig. 8B

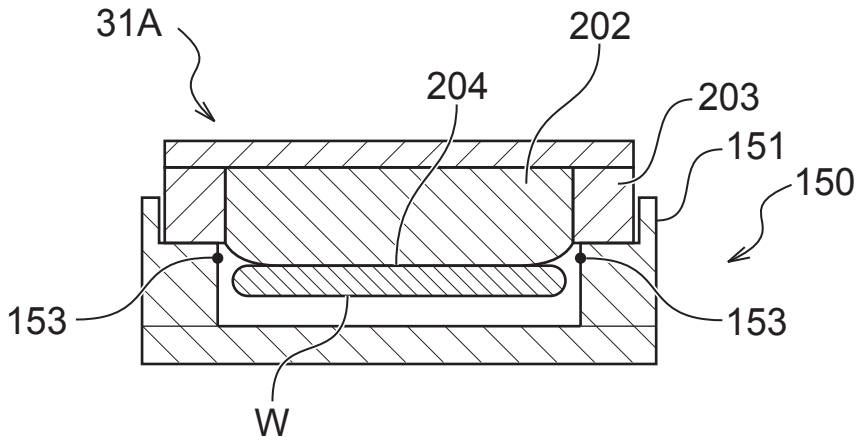



Fig. 8C

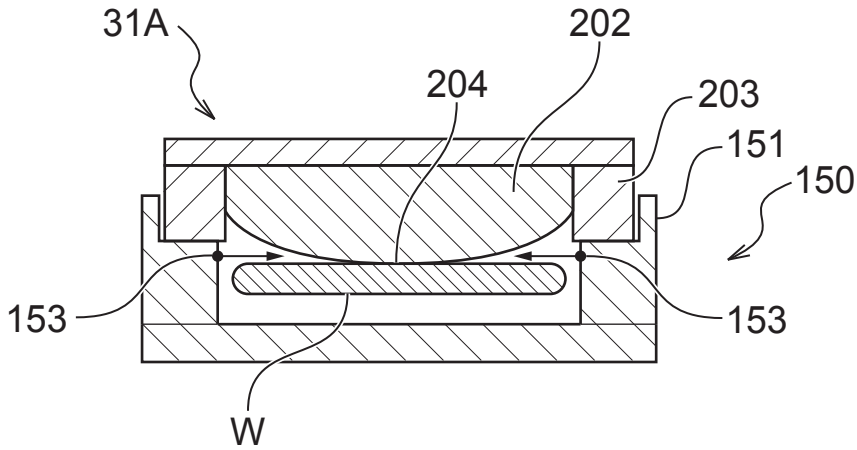



Fig. 8D

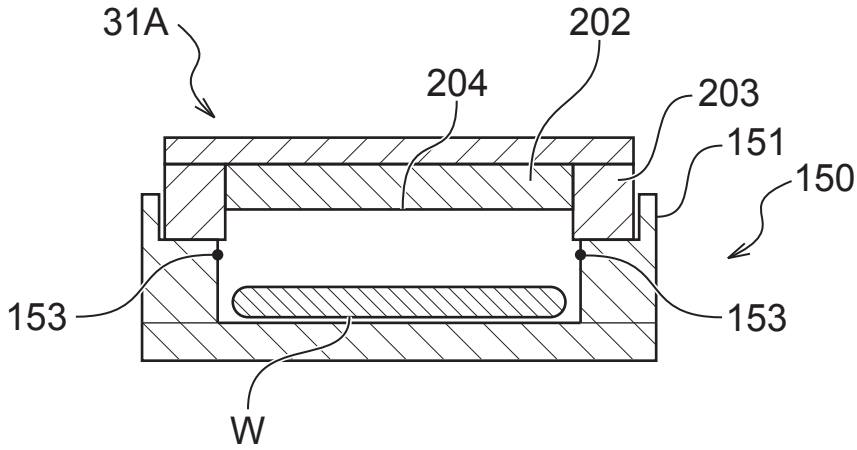


Fig. 9A

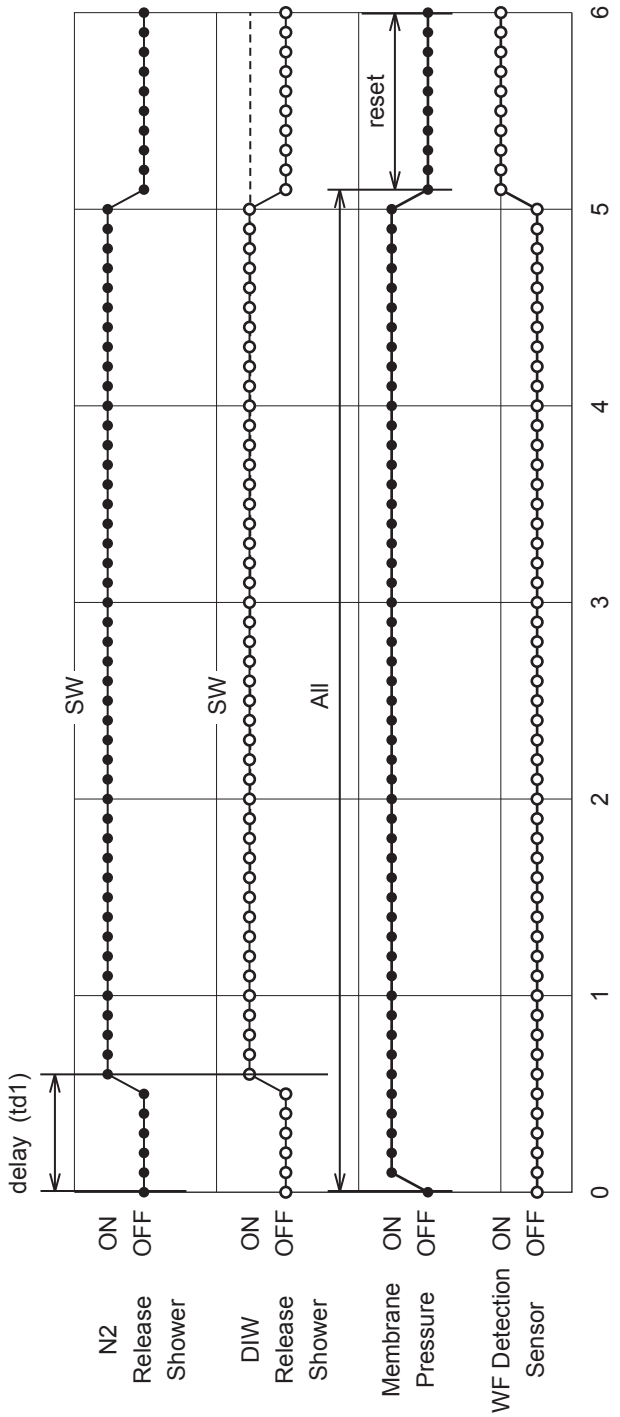

1cycle of Release Sequence Image
delay (td1)
SW
SW
All
reset
N2 Release Shower
DIW Release Shower
Membrane Pressure
WF Detection Sensor
ON
OFF
0
1
2
3
4
5
6
Time t

Fig. 9B

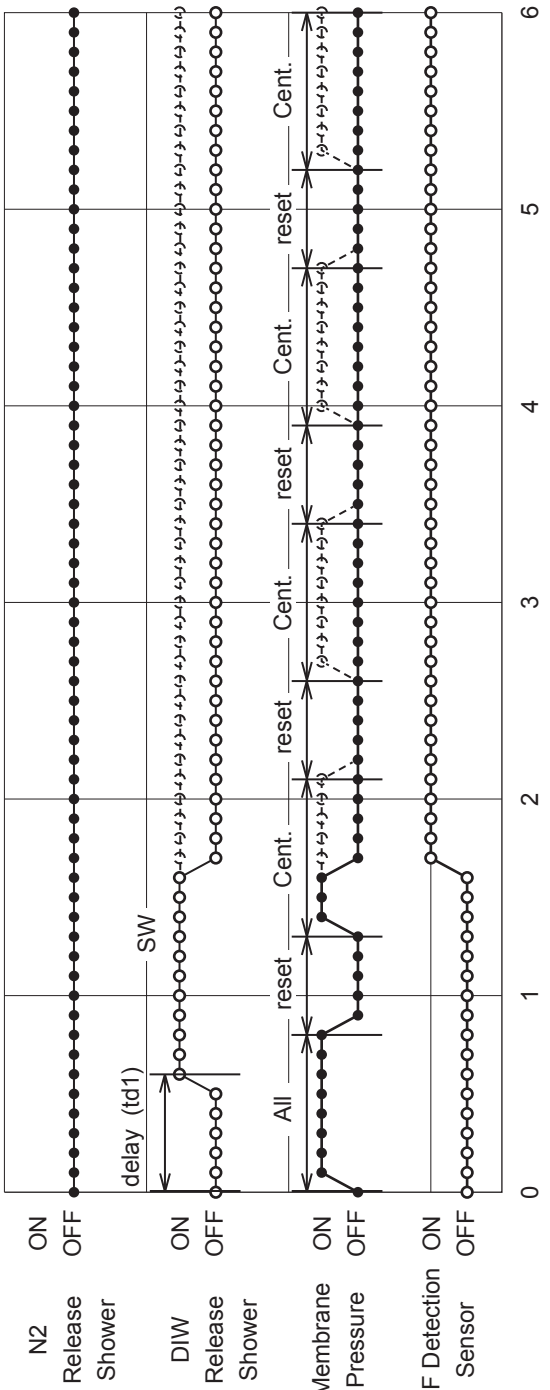

1cycle of Release Sequence Image
N2 Release Shower
DIW Release Shower
Membrane Pressure
WF Detection Sensor
ON
OFF
delay (td1)
SW
All
reset
Cent.
Time t
0
1
2
3
4
5
6

Fig. 10

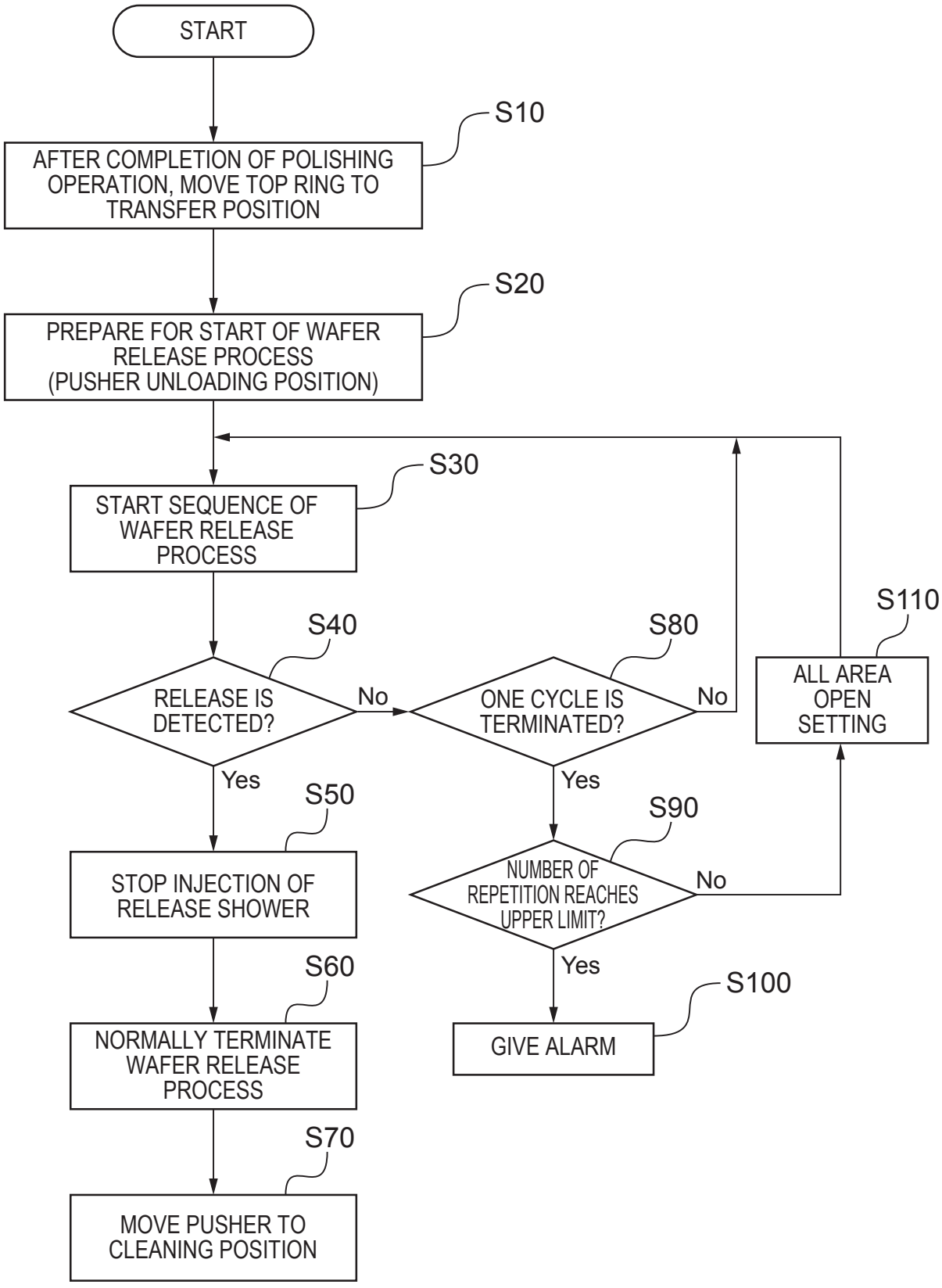

START
S10
AFTER COMPLETION OF POLISHING OPERATION, MOVE TOP RING TO TRANSFER POSITION
S20
PREPARE FOR START OF WAFER RELEASE PROCESS (PUSHER UNLOADING POSITION)
S30
START SEQUENCE OF WAFER RELEASE PROCESS
S40
RELEASE IS DETECTED?
No
Yes
S80
ONE CYCLE IS TERMINATED?
No
Yes
S110
ALL AREA OPEN SETTING
S50
STOP INJECTION OF RELEASE SHOWER
S90
NUMBER OF REPETITION REACHES UPPER LIMIT?
No
Yes
S60
NORMALLY TERMINATE WAFER RELEASE PROCESS
S100
GIVE ALARM
S70
MOVE PUSHER TO CLEANING POSITION

Fig. 11

N=10

| Release Shower injection timing[s] | 0.0 | 0.2 | 0.5 |
|---|---|---|---|
| MAX | 2.513 | 2.519 | 2.501 |
| MIN | 1.056 | 2.257 | 2.335 |
| RANGE | 1.457 | 0.262 | 0.166 |
| AVERAGE | **1.758** | **2.411** | **2.414** |

Fig. 12

N=10

| | Nozzle D1 | Nozzle D0 |
|---|---|---|
| MAX | 1.855 | 2.601 |
| MIN | 1.615 | 1.949 |
| RANGE | 0.240 | 0.652 |
| AVERAGE | **1.736** | **2.340** |