FIG.1

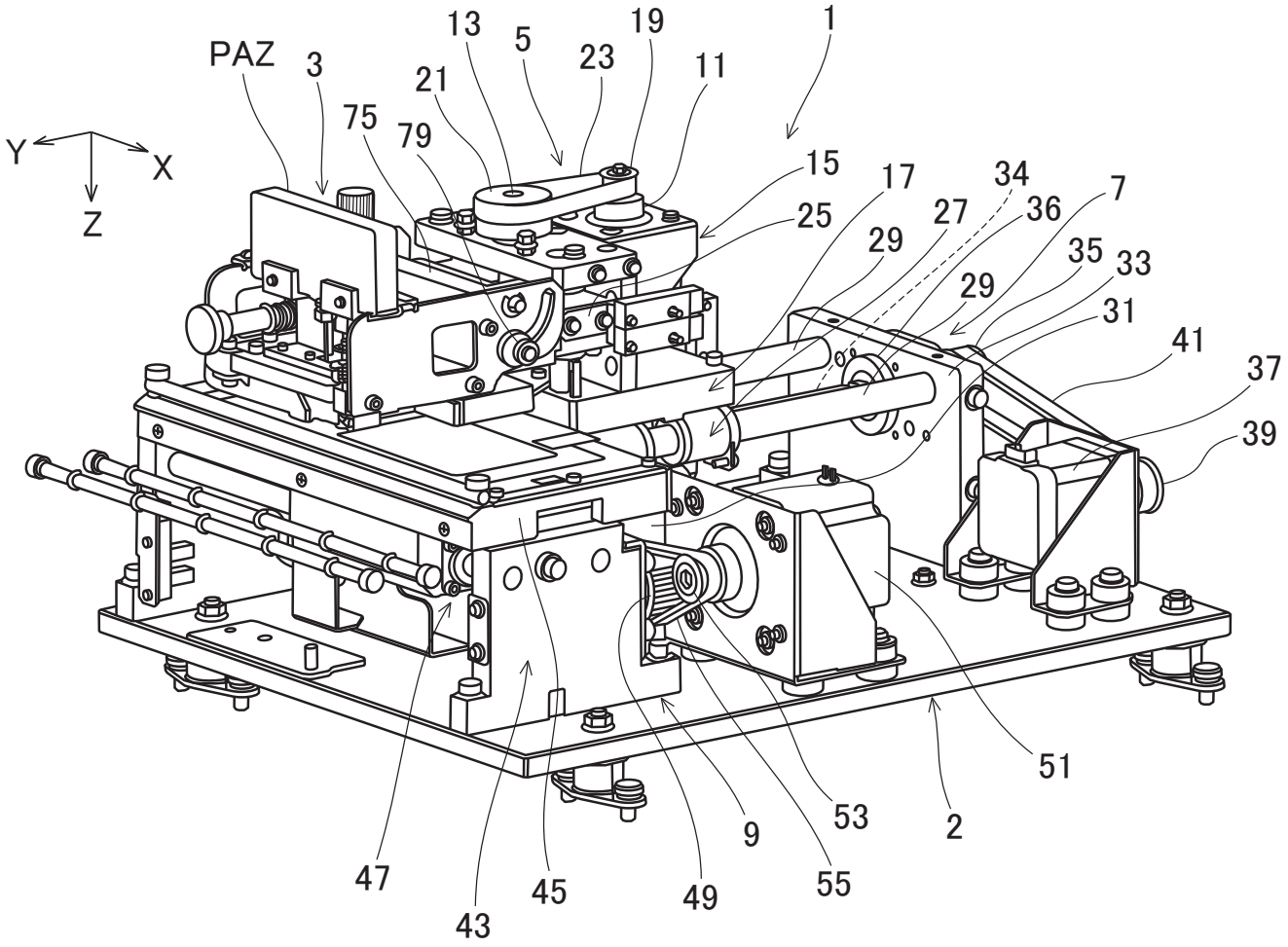

PAZ
3
13
5
19
1
21
23
11
75
79
15
17
34
7
25
27
36
29
35
33
29
31
41
37
39
Y
X
Z
47
43
45
49
9
55
53
2
51

FIG.2

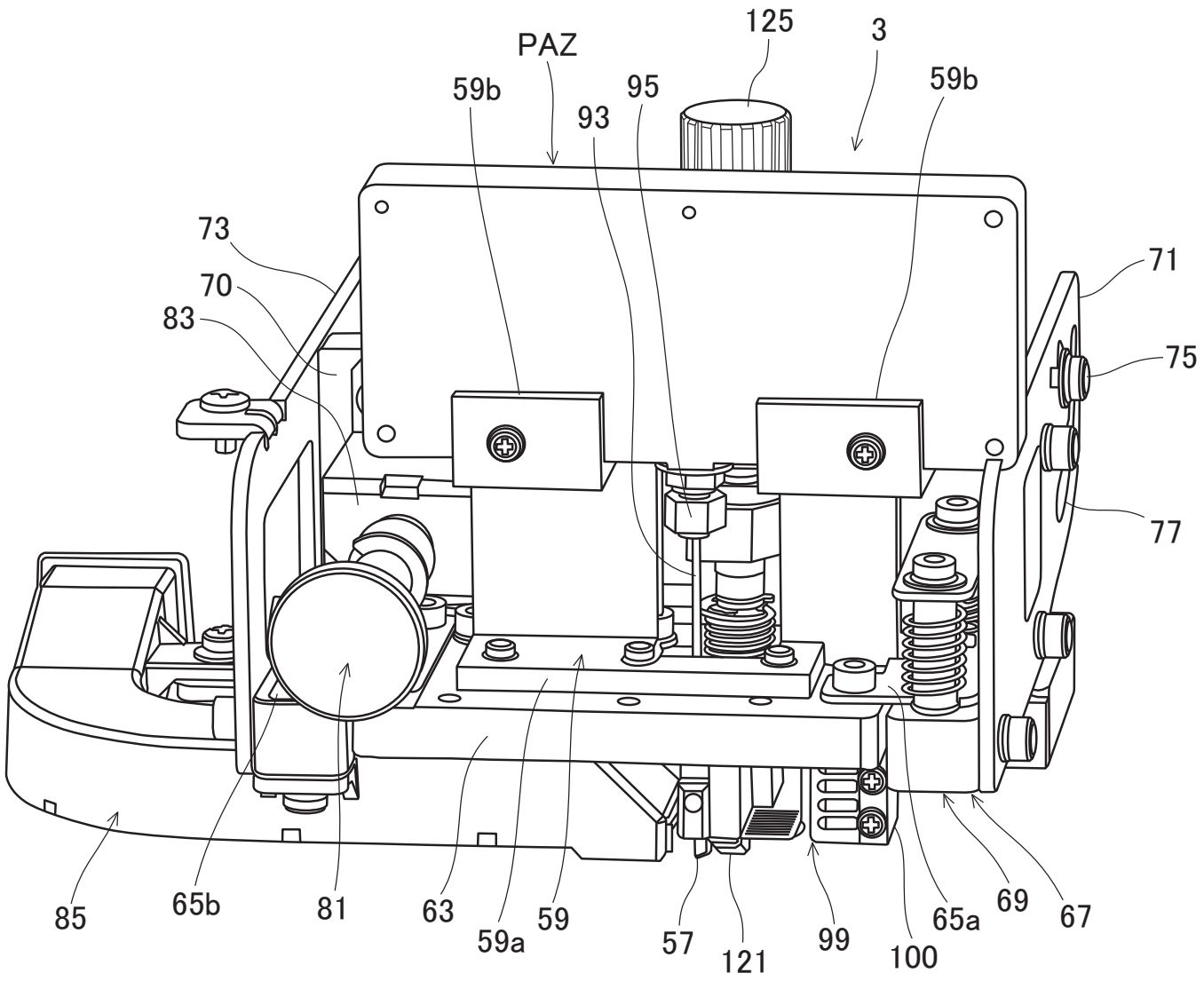

125
3
PAZ
59b
95
93
59b
73
71
70
83
75
77
85
65b
81
63
59a
59
57
121
99
100
65a
69
67

FIG.3

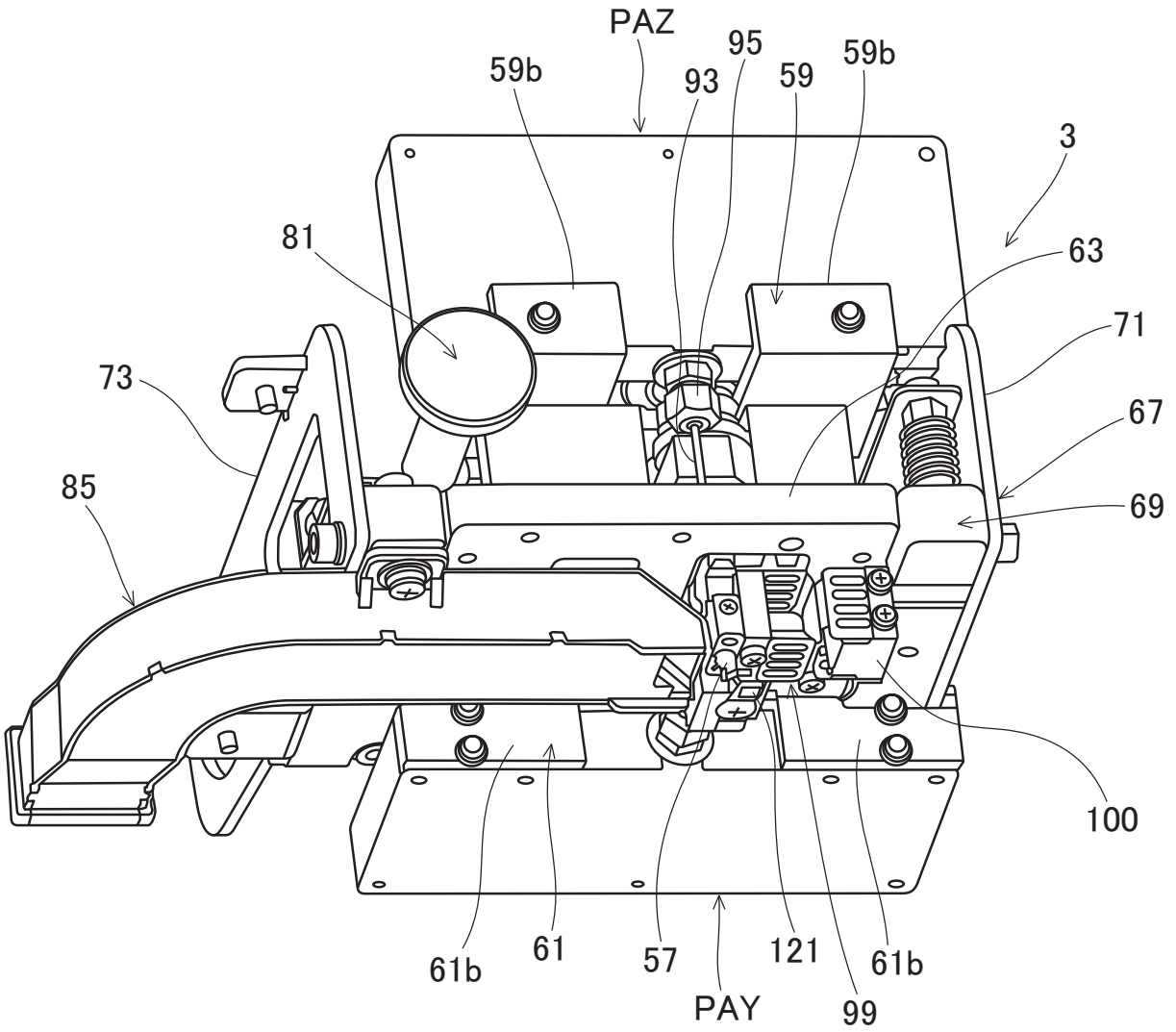

PAZ
59b
93
95
59
59b
3
81
63
71
73
67
85
69
100
61b
61
57
121
61b
PAY
99

FIG.4

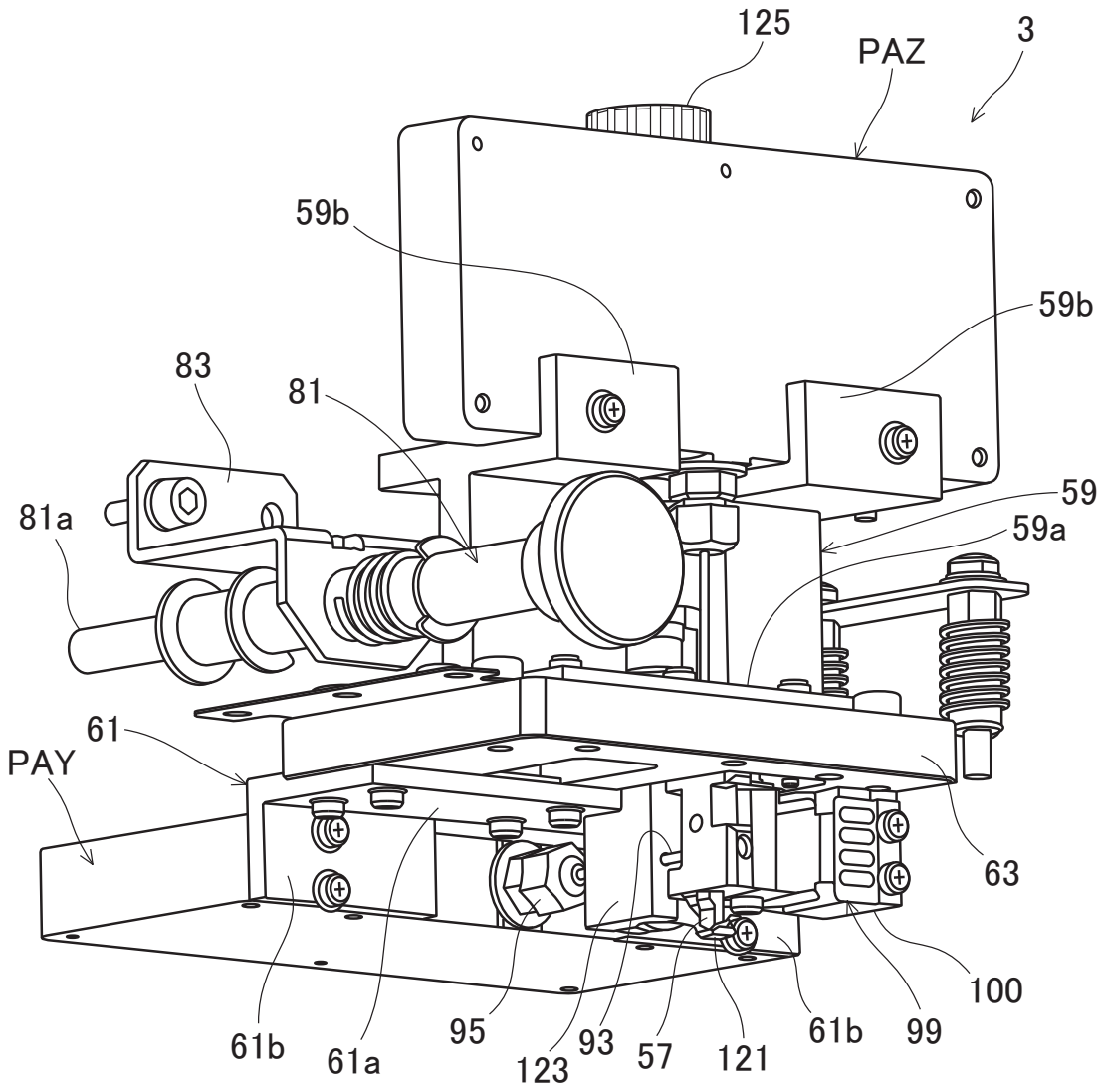

125
PAZ
3
59b
59b
83
81
59
81a
59a
61
PAY
63
100
61b
61a
95
123
93
57
121
61b
99

FIG.5

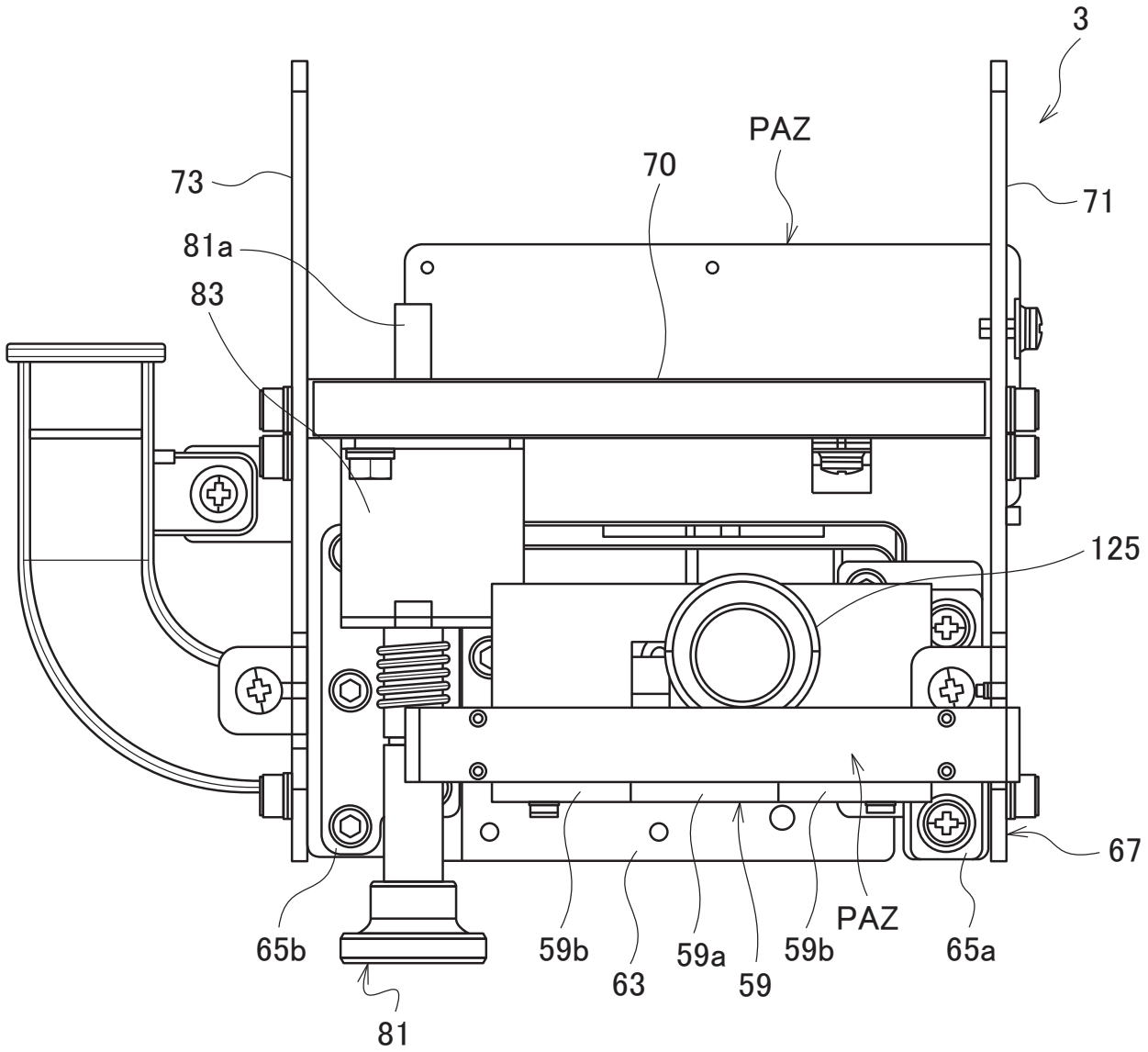


FIG.6

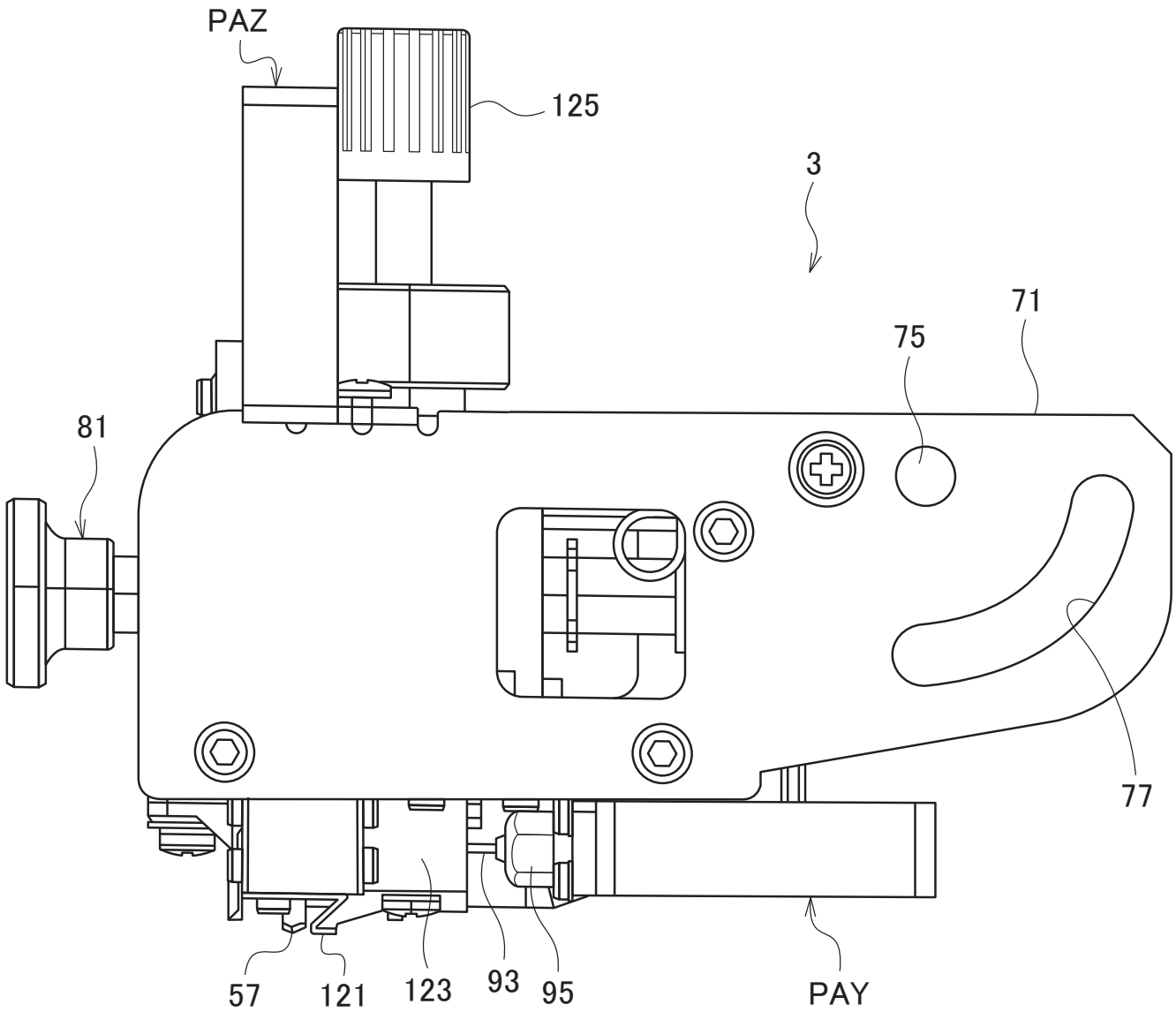


FIG.7

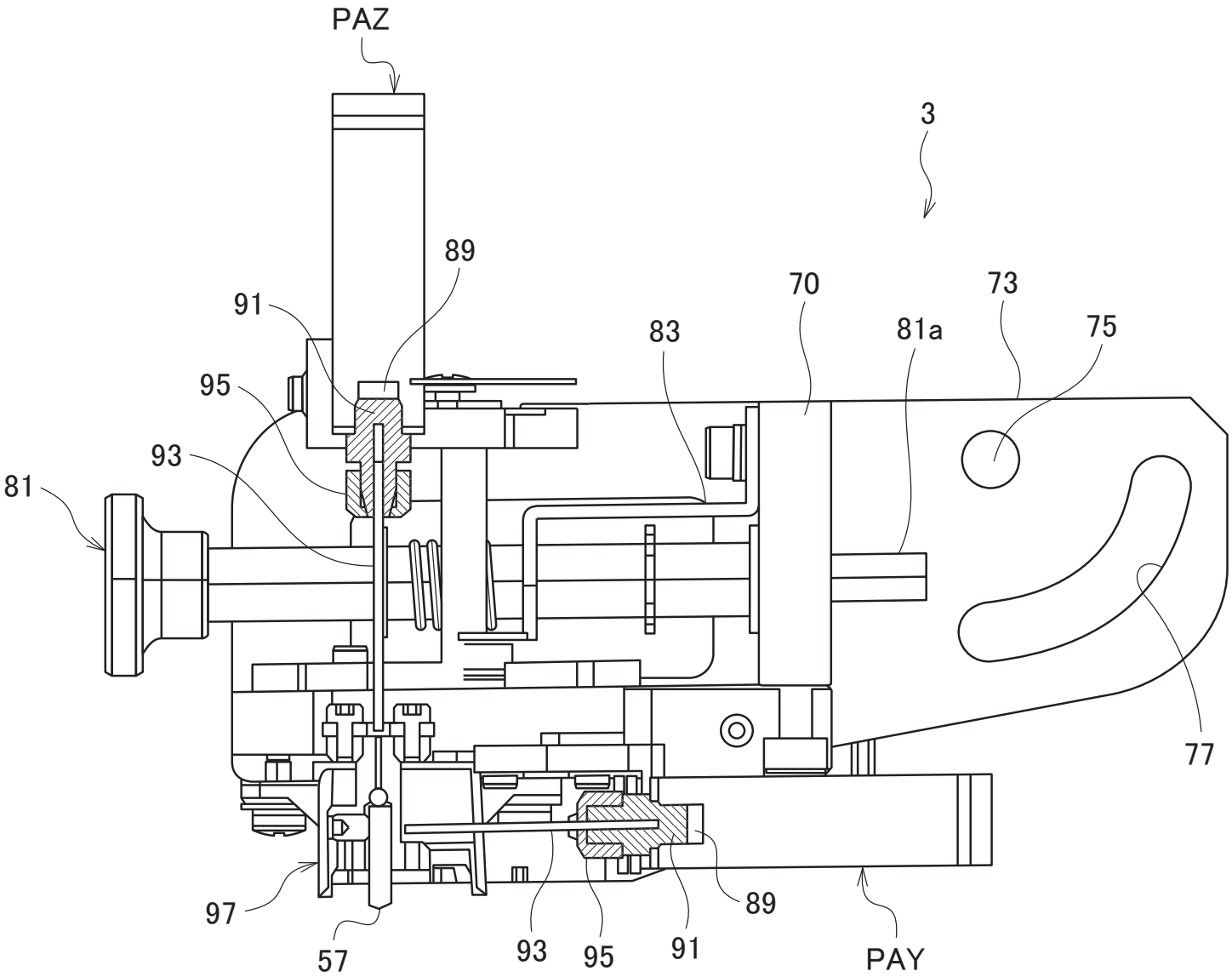


FIG.8

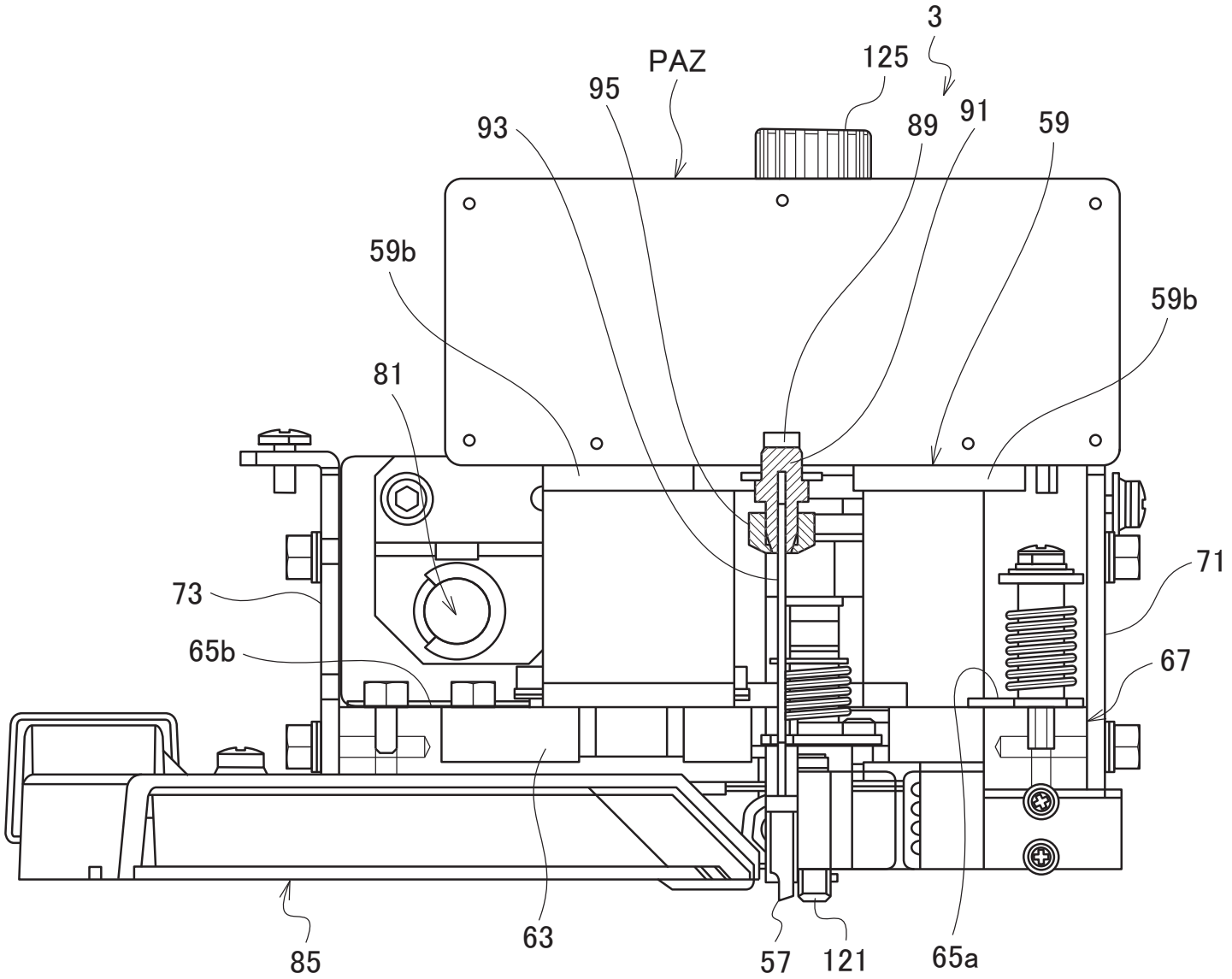


FIG.9

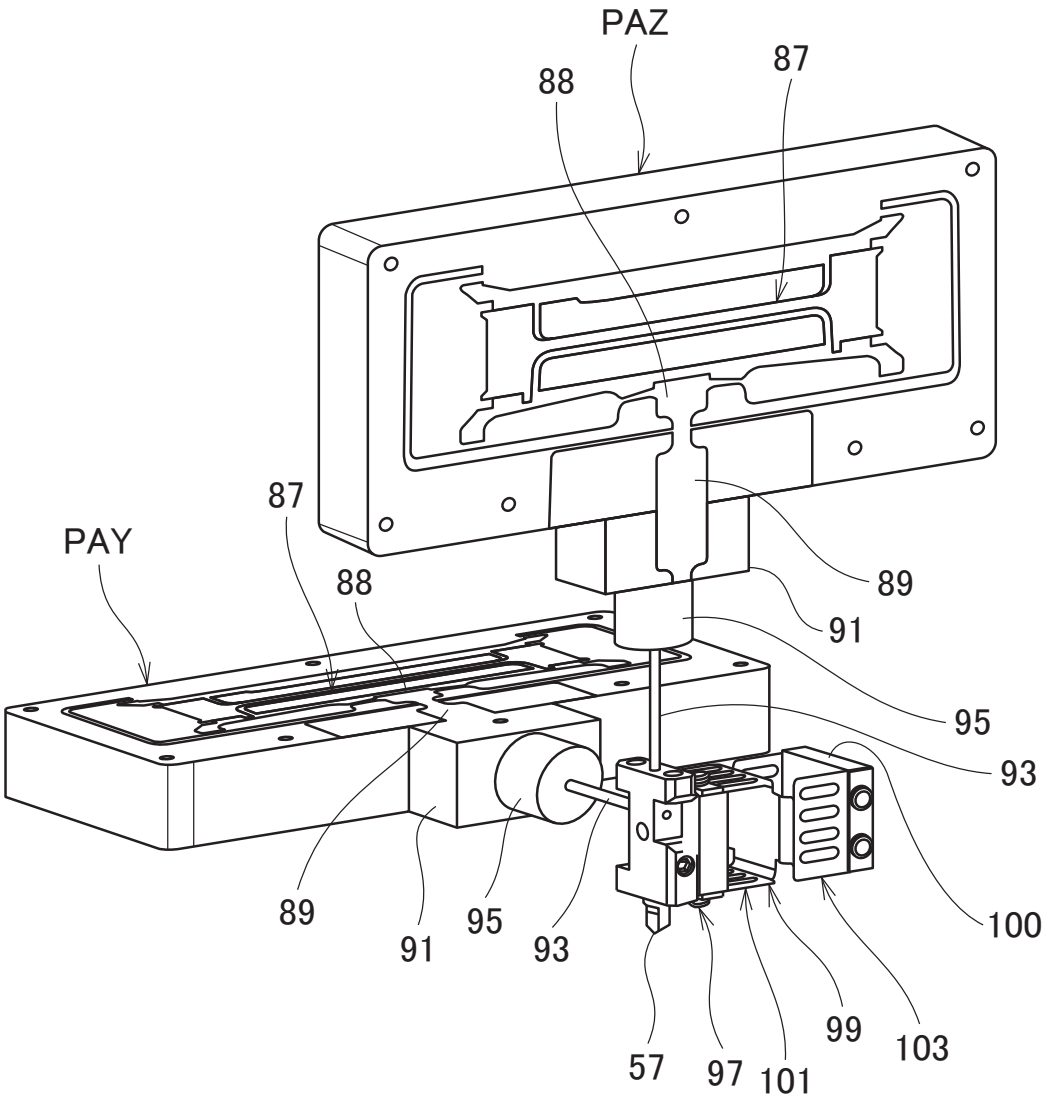


FIG.10

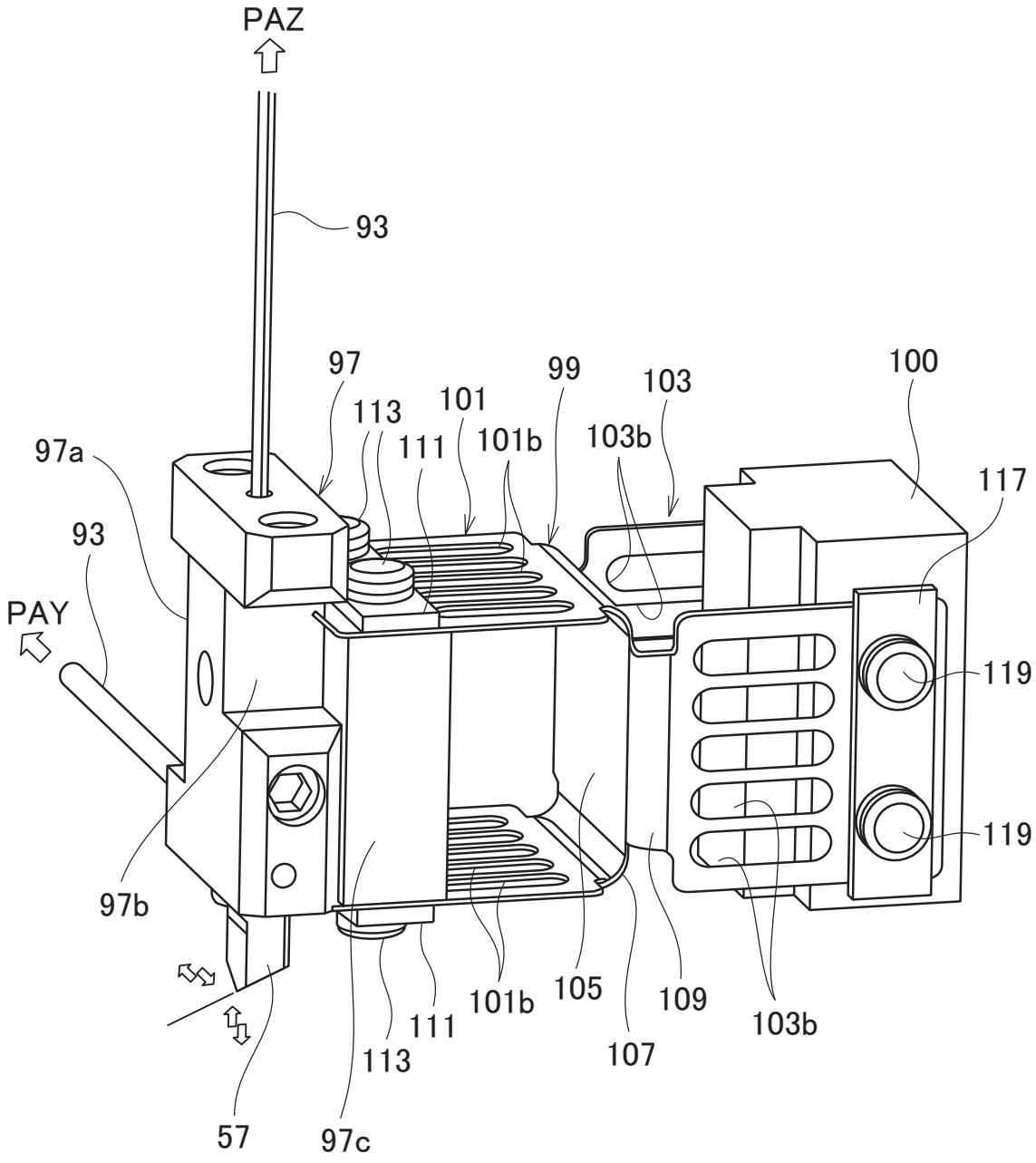

PAZ
93
97
113
101
99
103
100
97a
111
101b
103b
117
93
PAY
119
119
97b
105
109
101b
111
103b
113
107
57
97c

FIG.11

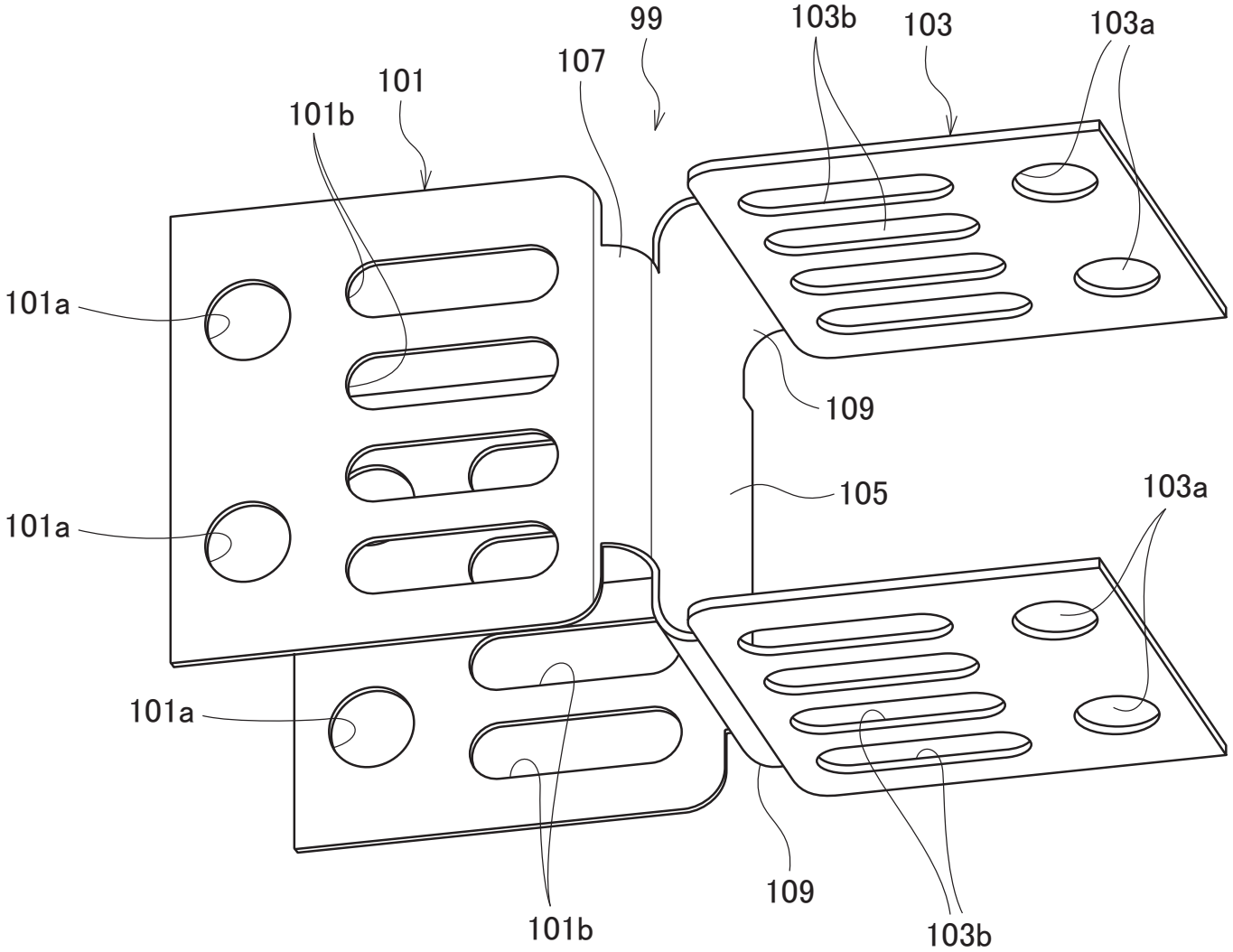

99
103b
103
103a
107
101
101b
101a
109
105
101a
103a
101a
109
101b
103b

FIG.12

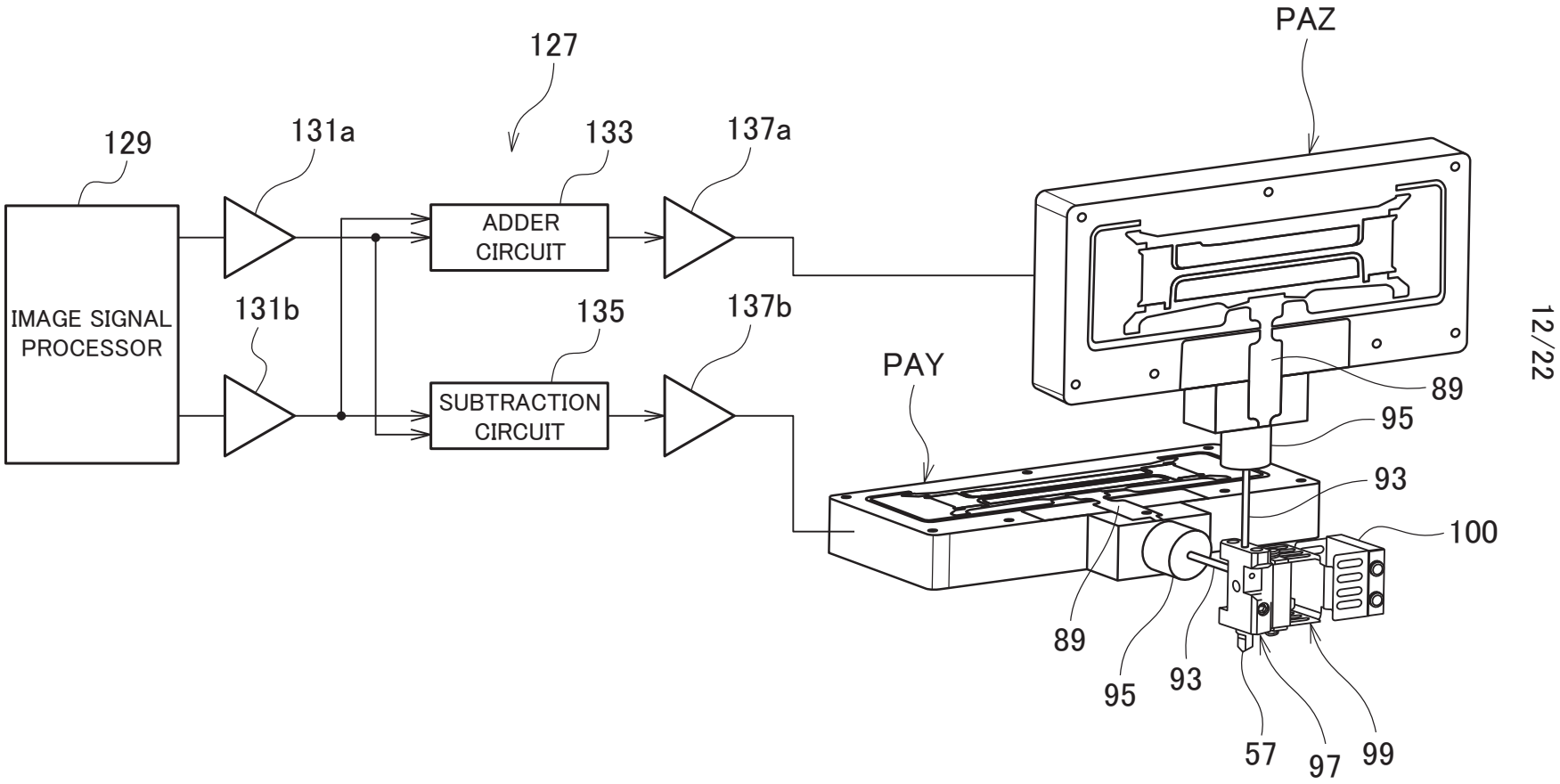
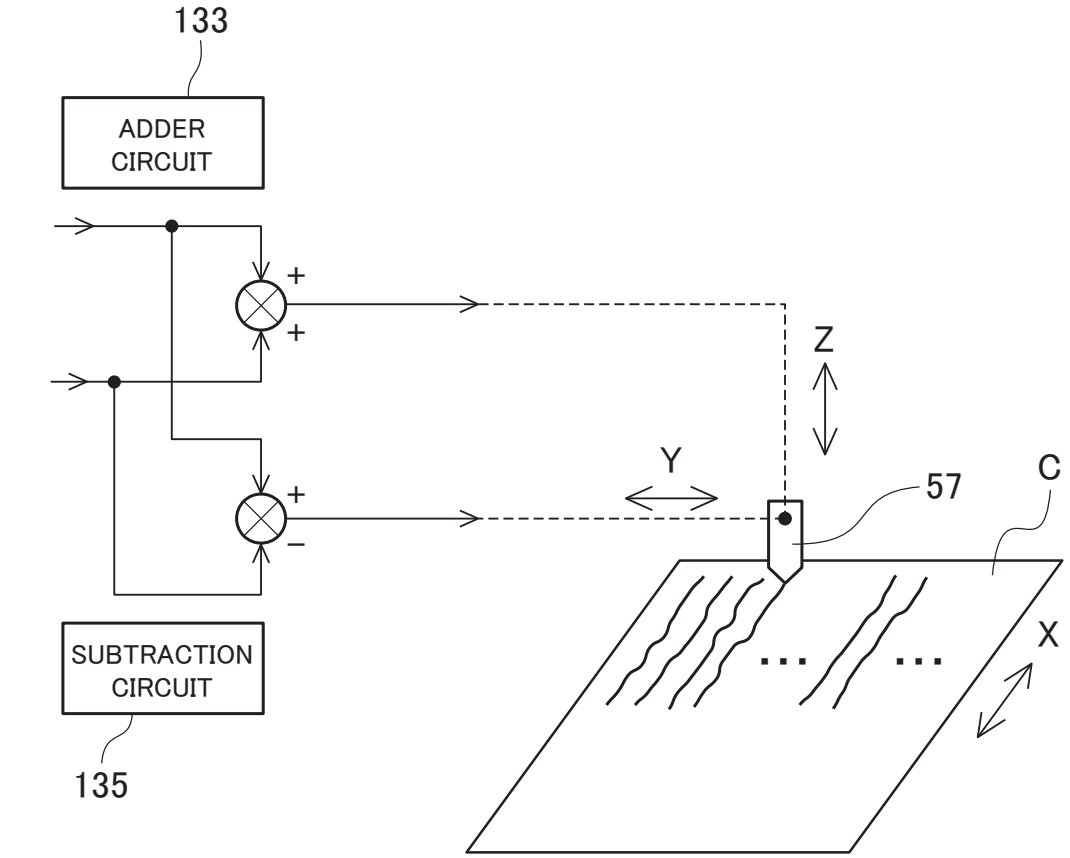

127
PAZ
129
131a
133
137a
IMAGE SIGNAL PROCESSOR
ADDER CIRCUIT
131b
135
137b
SUBTRACTION CIRCUIT
PAY
89
95
93
100
89
95
93
57
97
99

FIG.13


133
ADDER CIRCUIT
+
+
+
−
SUBTRACTION CIRCUIT
135
Z
Y
57
C
X

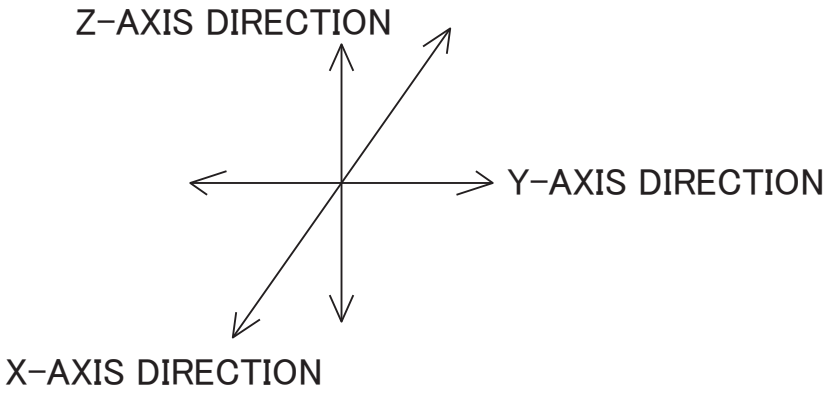

Z-AXIS DIRECTION
Y-AXIS DIRECTION
X-AXIS DIRECTION

FIG.14

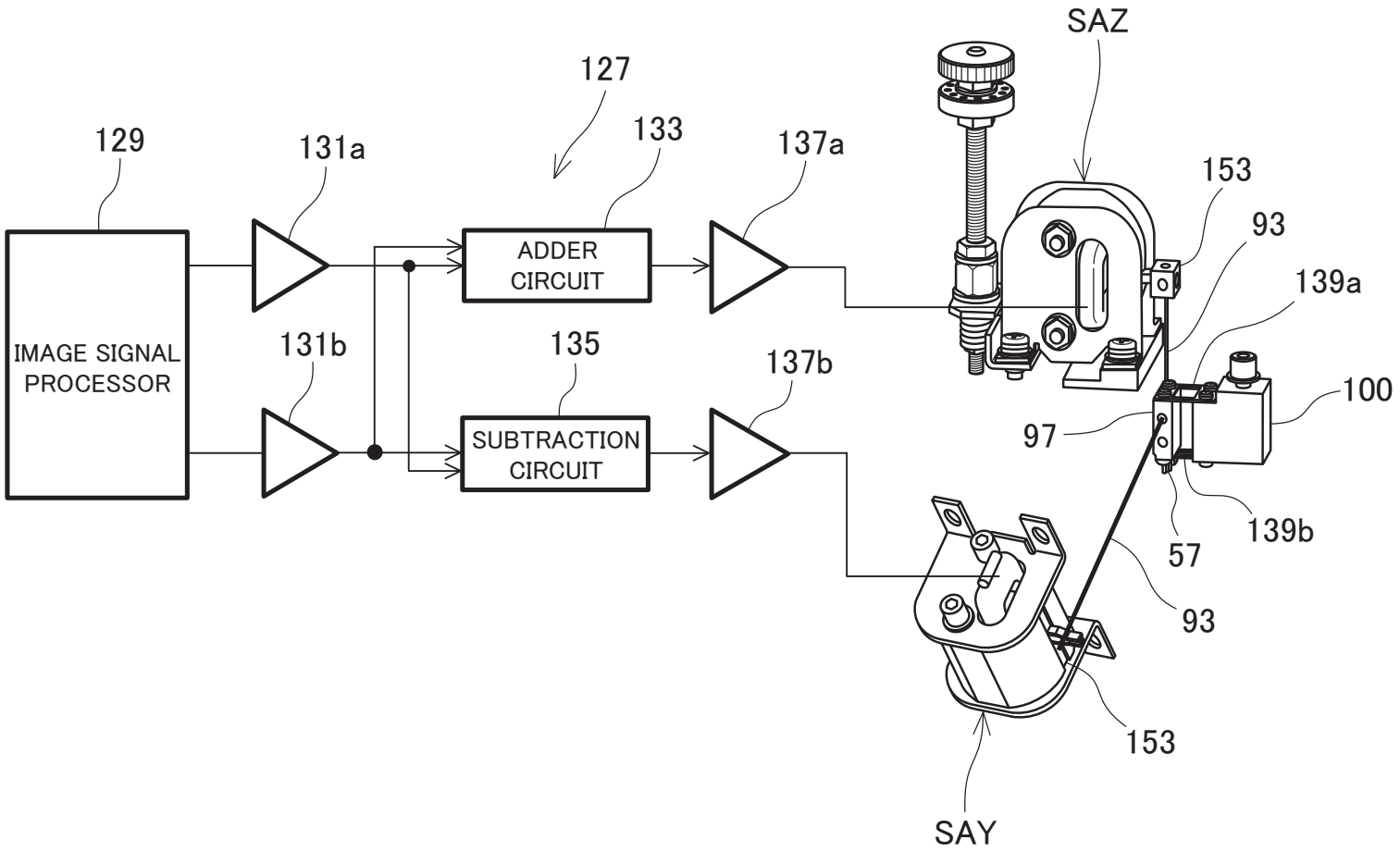

129
131a
127
133
137a
SAZ
153
93
139a
IMAGE SIGNAL PROCESSOR
ADDER CIRCUIT
131b
135
137b
100
97
SUBTRACTION CIRCUIT
139b
57
93
153
SAY

FIG.15

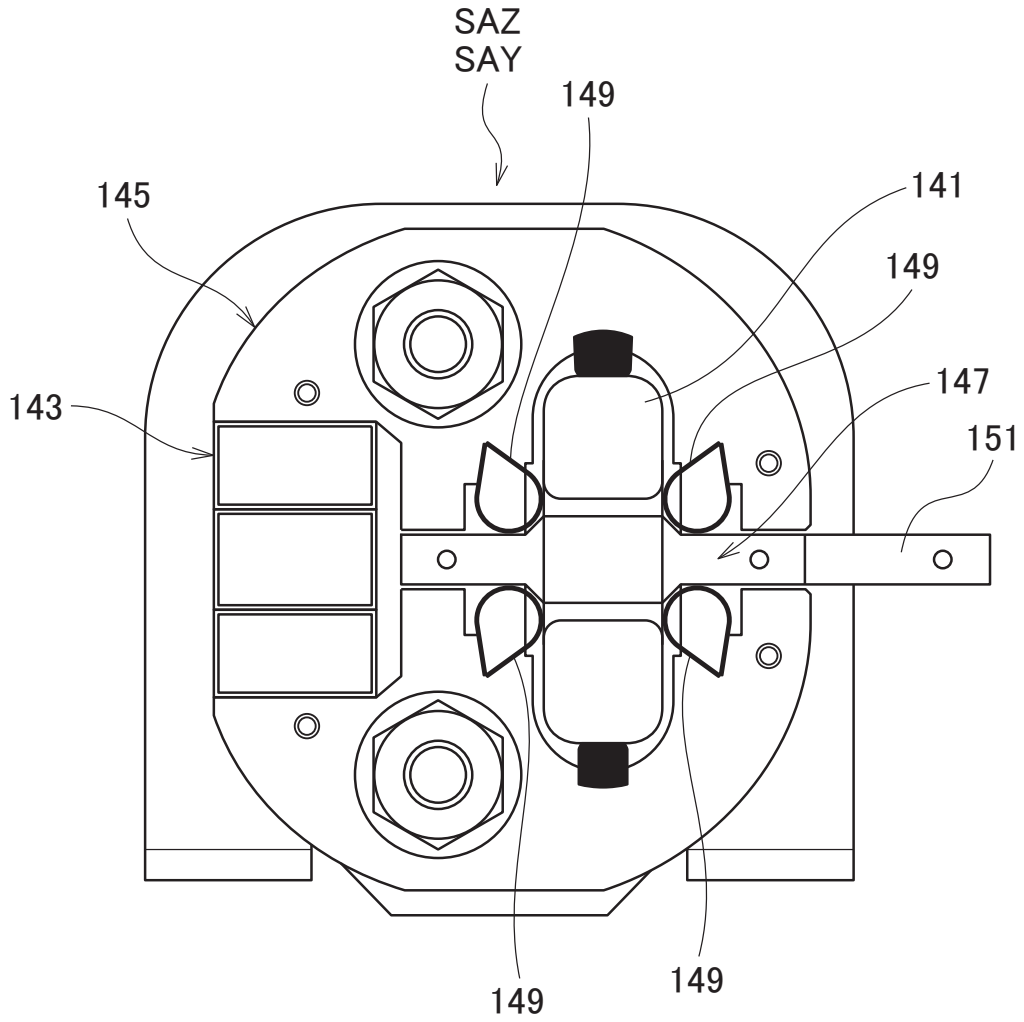


FIG.16A

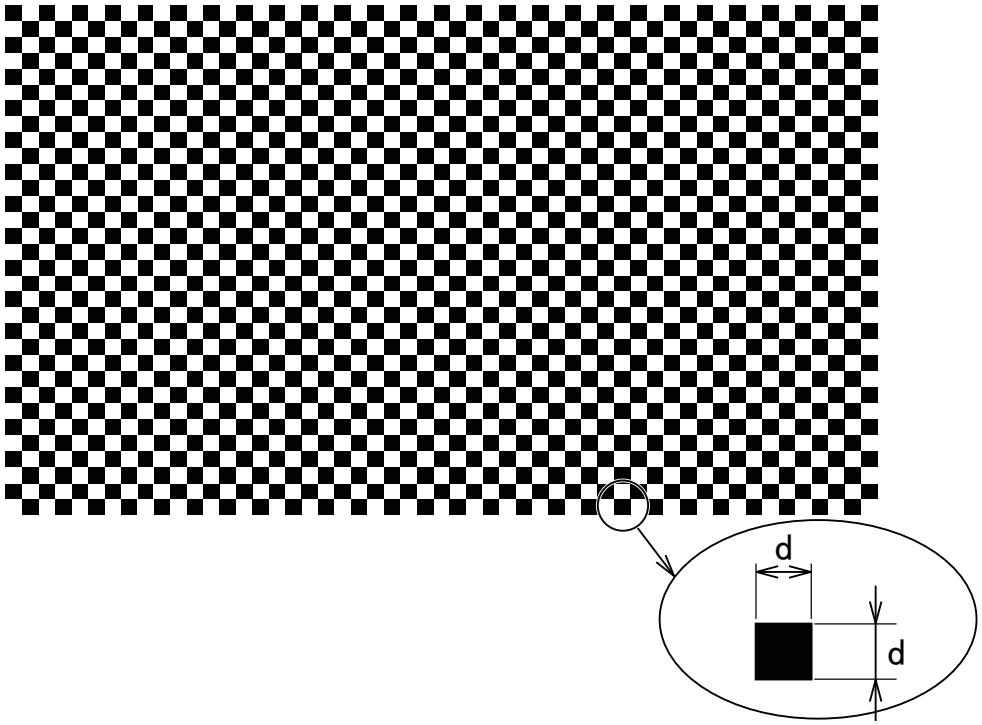


FIG.16B

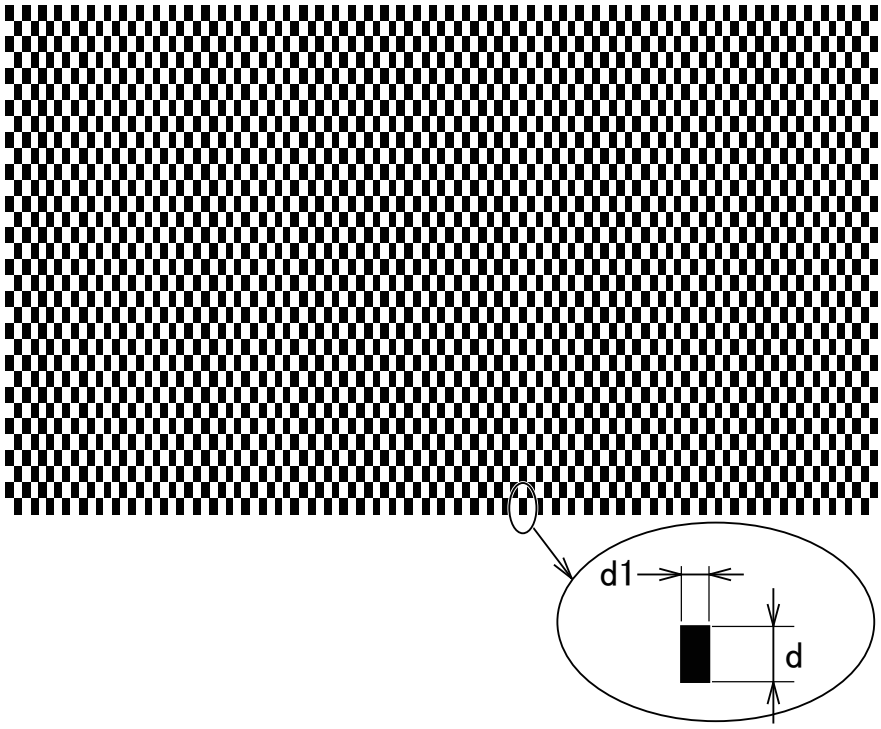


FIG.17A

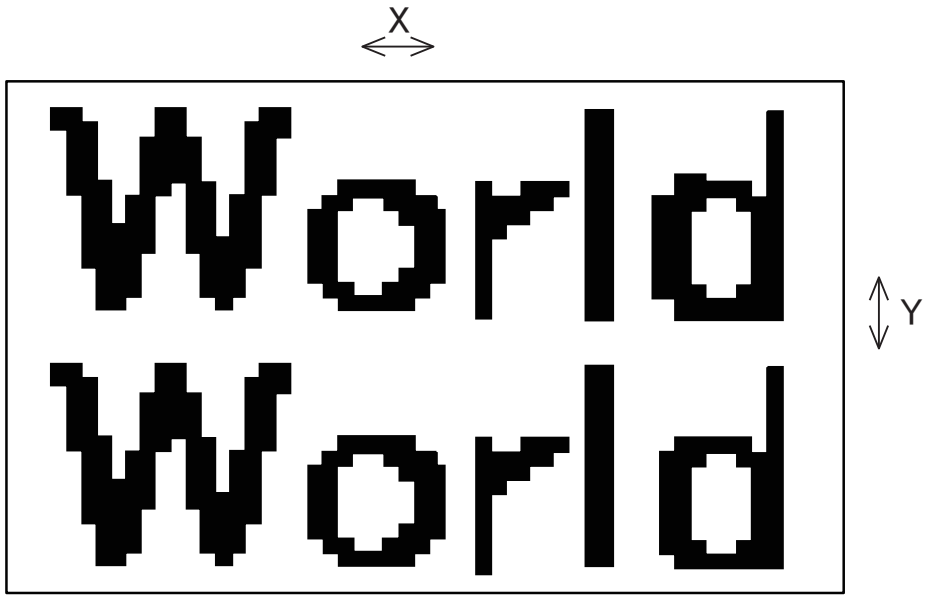


FIG.17B

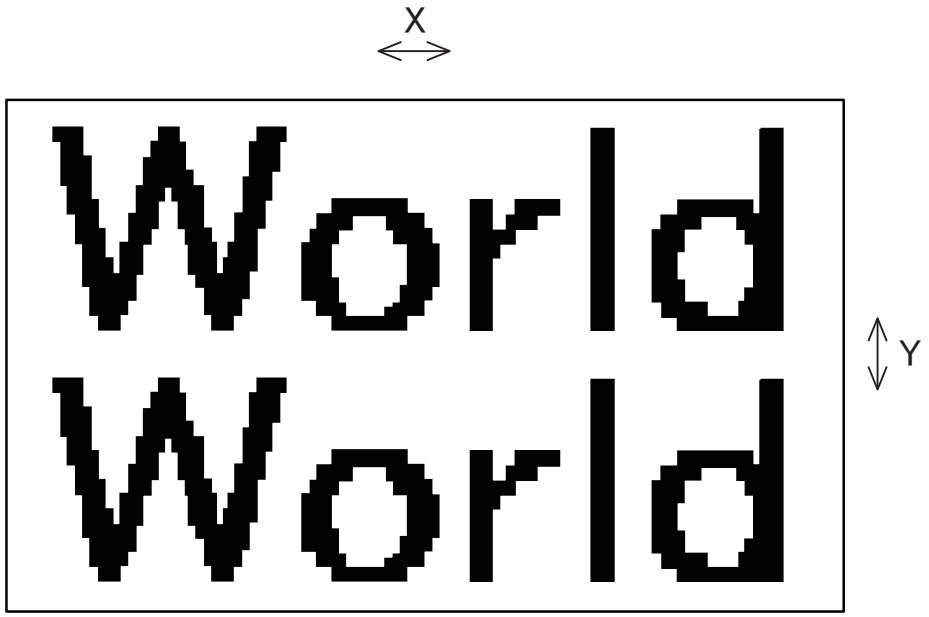


FIG.18

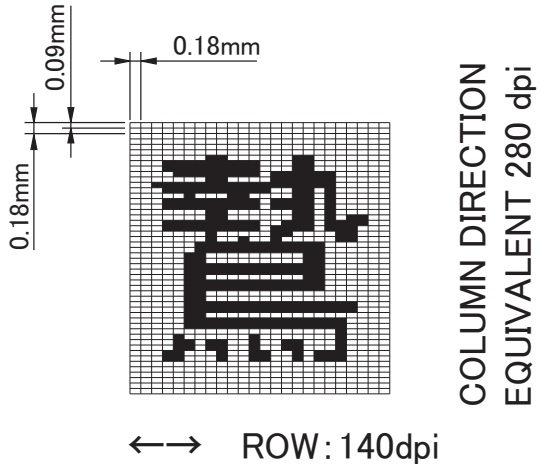
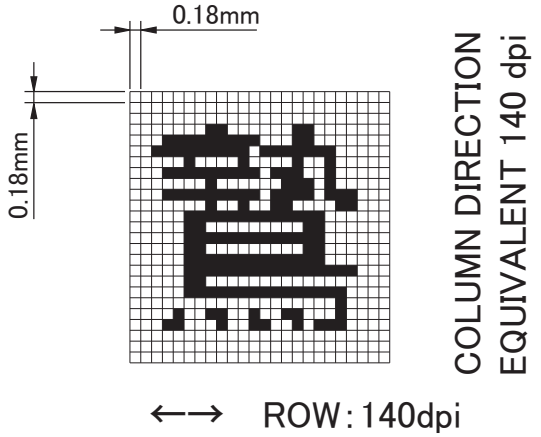
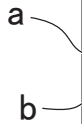
	DOUBLE ACTUATOR SYSTEM	SINGLE ACTUATOR SYSTEM
DOT IMAGE		
ENGRAVED IMAGE		

FIG.19



SIGNAL	a	b	a+b	a−b	ENGRAVING
	0	0	0	0	
	1	0	1	1	
	0	1	1	−1	
	1	1	2	0	
	0.5	0	0.5	0.5	
	0.5	1	1.5	−0.5	
	0.5	0.5	1	0	

FIG.20A

EXPLANATION OF SIGNAL DIAGRAMS

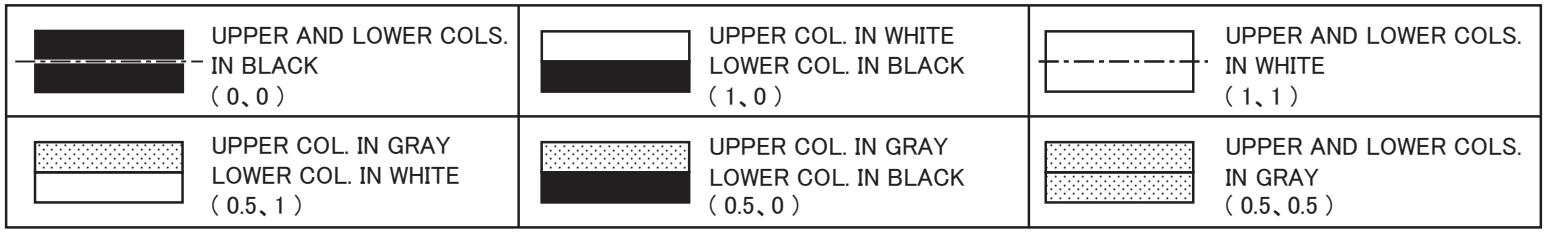


FIG.20B

EXPLANATION OF ENGRAVED DIAGRAMS

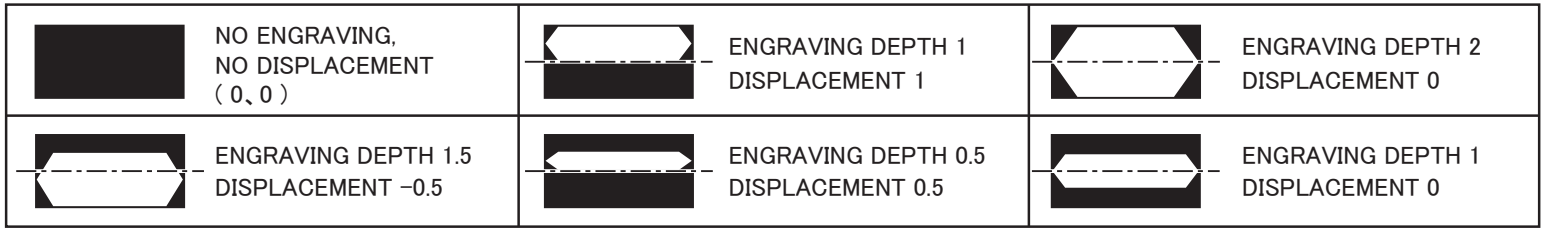


FIG.21

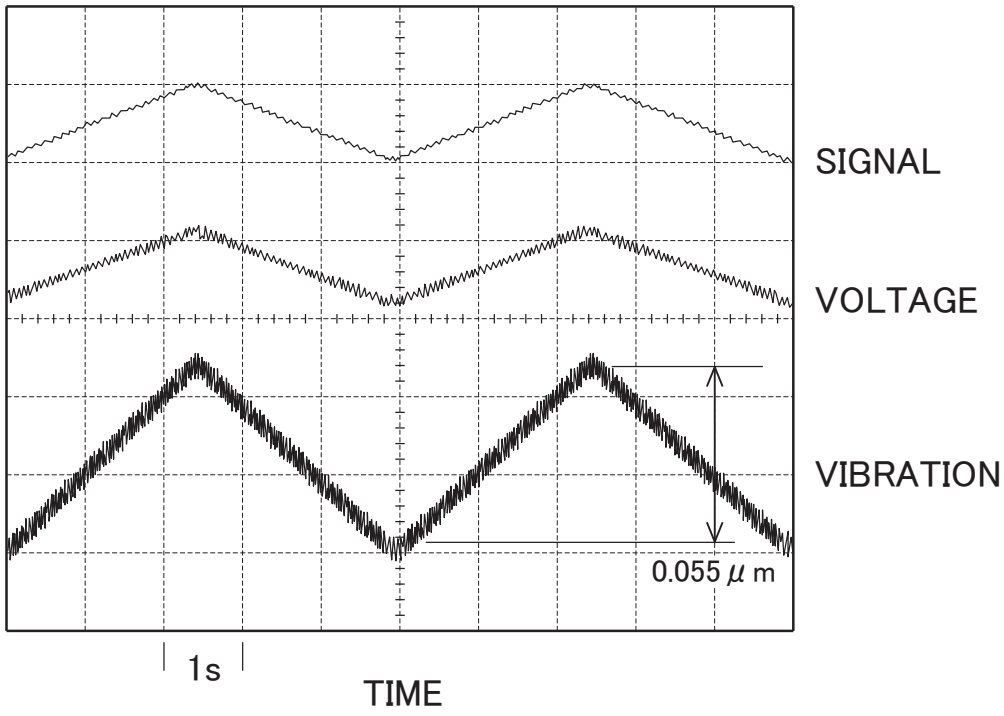

SIGNAL
VOLTAGE
VIBRATION
0.055 μ m
1s
TIME

FIG.22

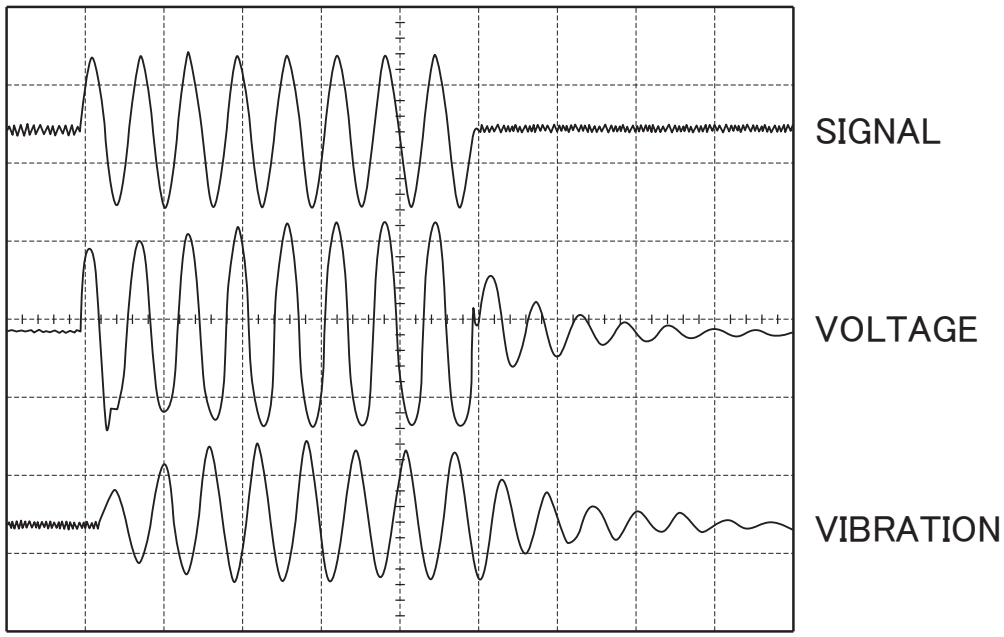

SIGNAL
VOLTAGE
VIBRATION

FIG.23

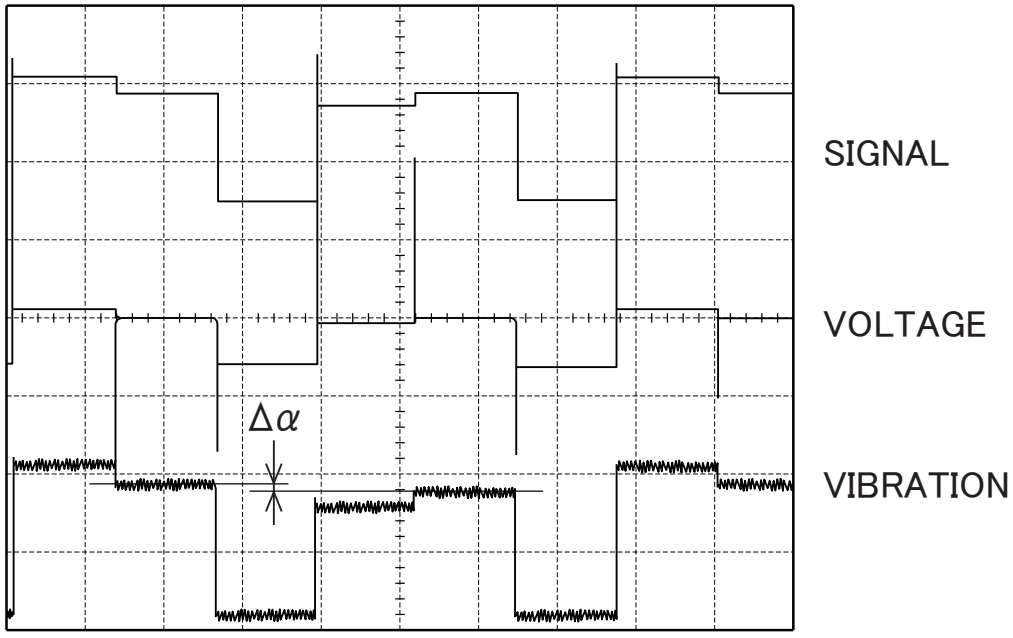
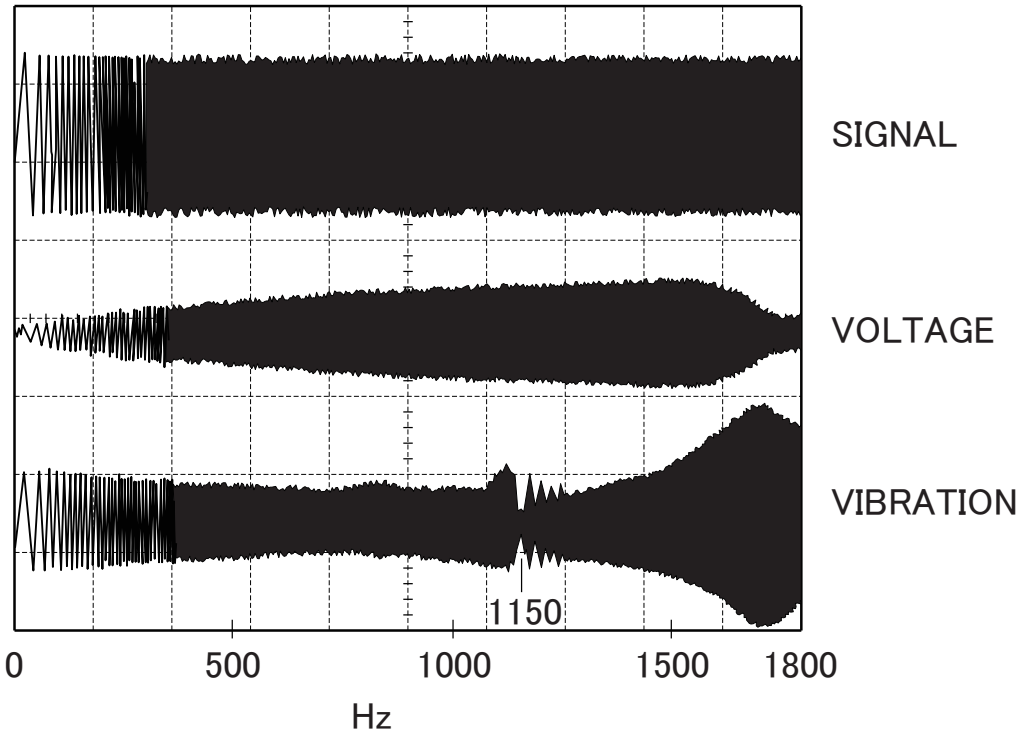

SIGNAL
VOLTAGE
Δα
VIBRATION

FIG.24


SIGNAL
VOLTAGE
VIBRATION
1150
0
500
1000
1500
1800
Hz