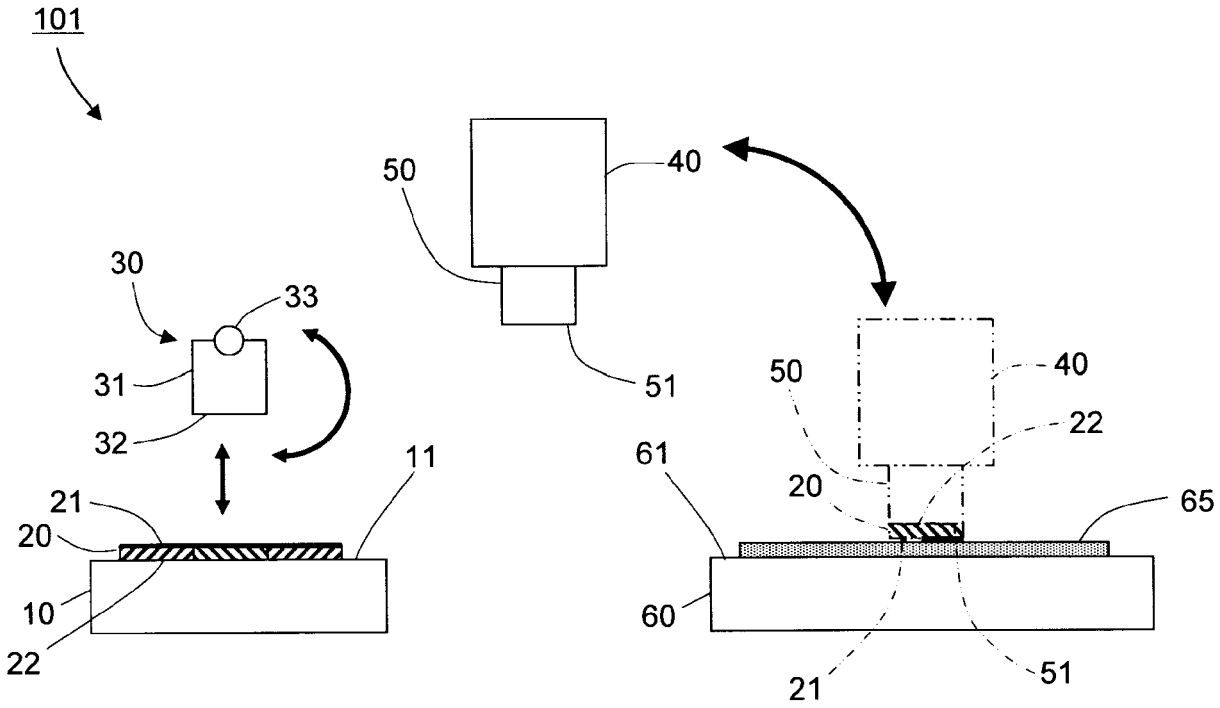
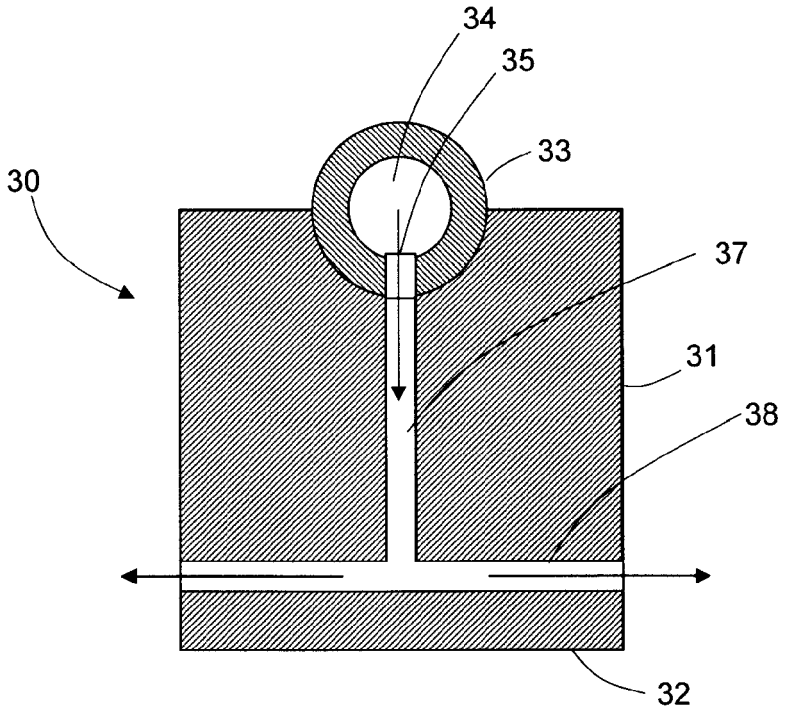
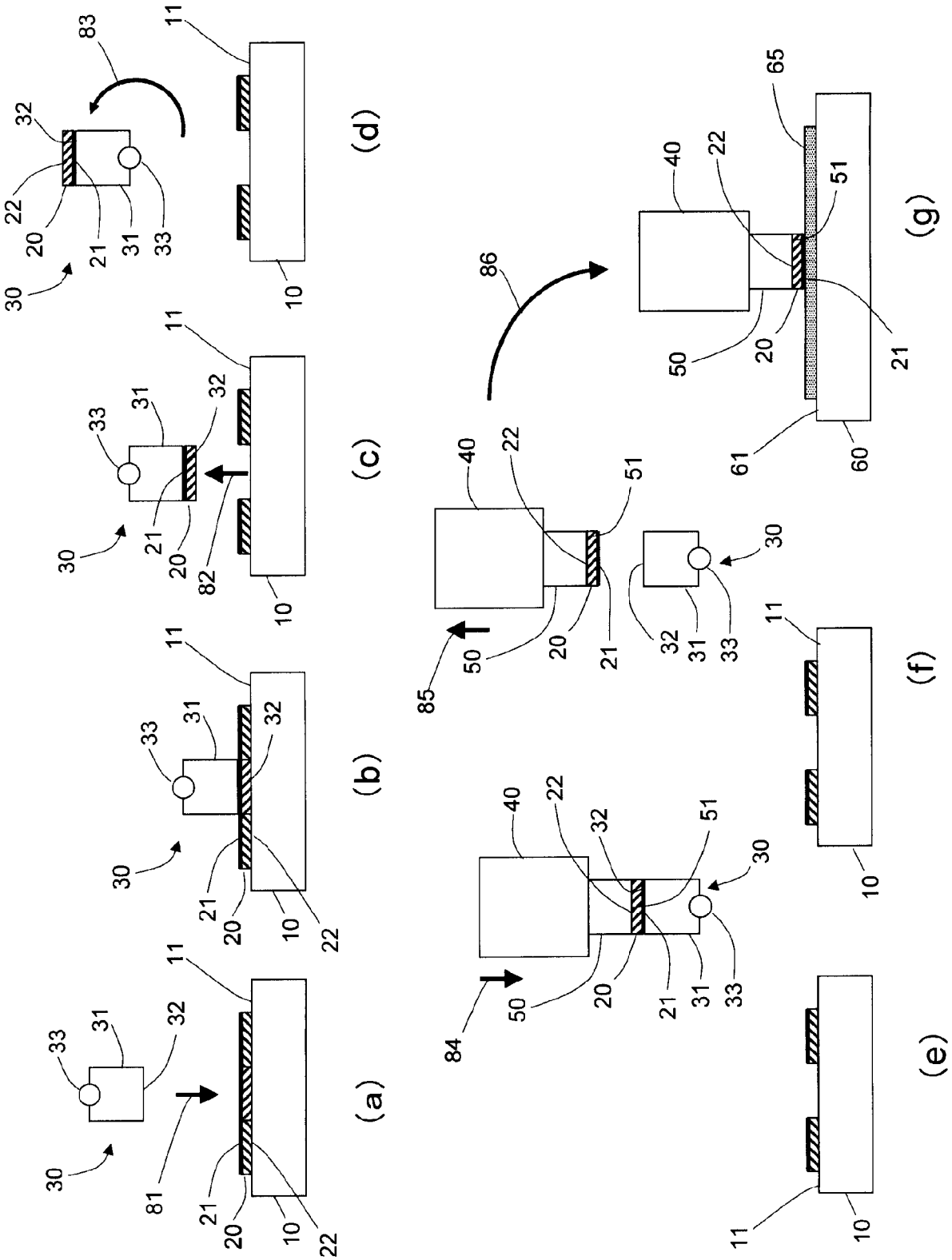
[図1]



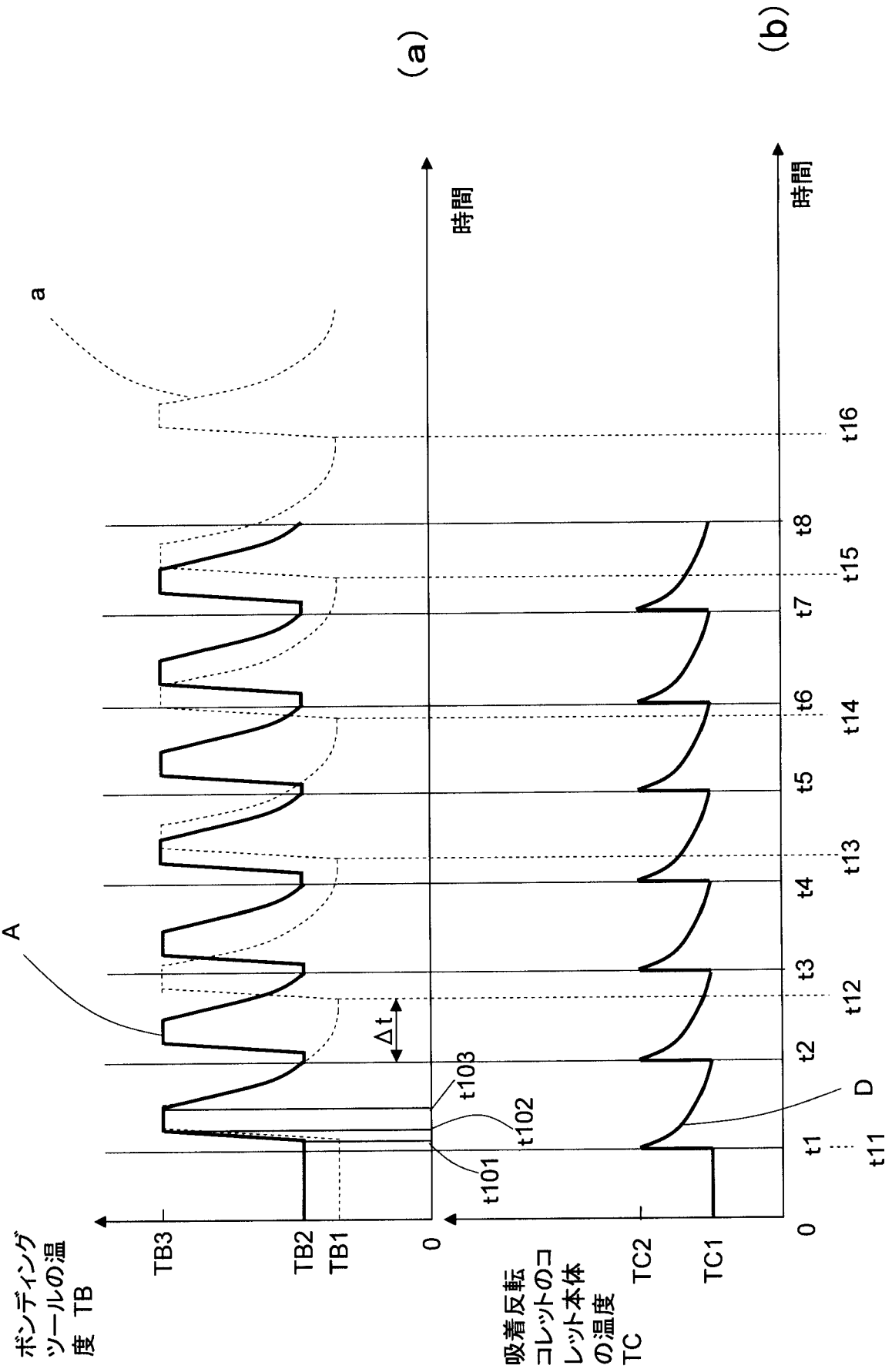
[図2]



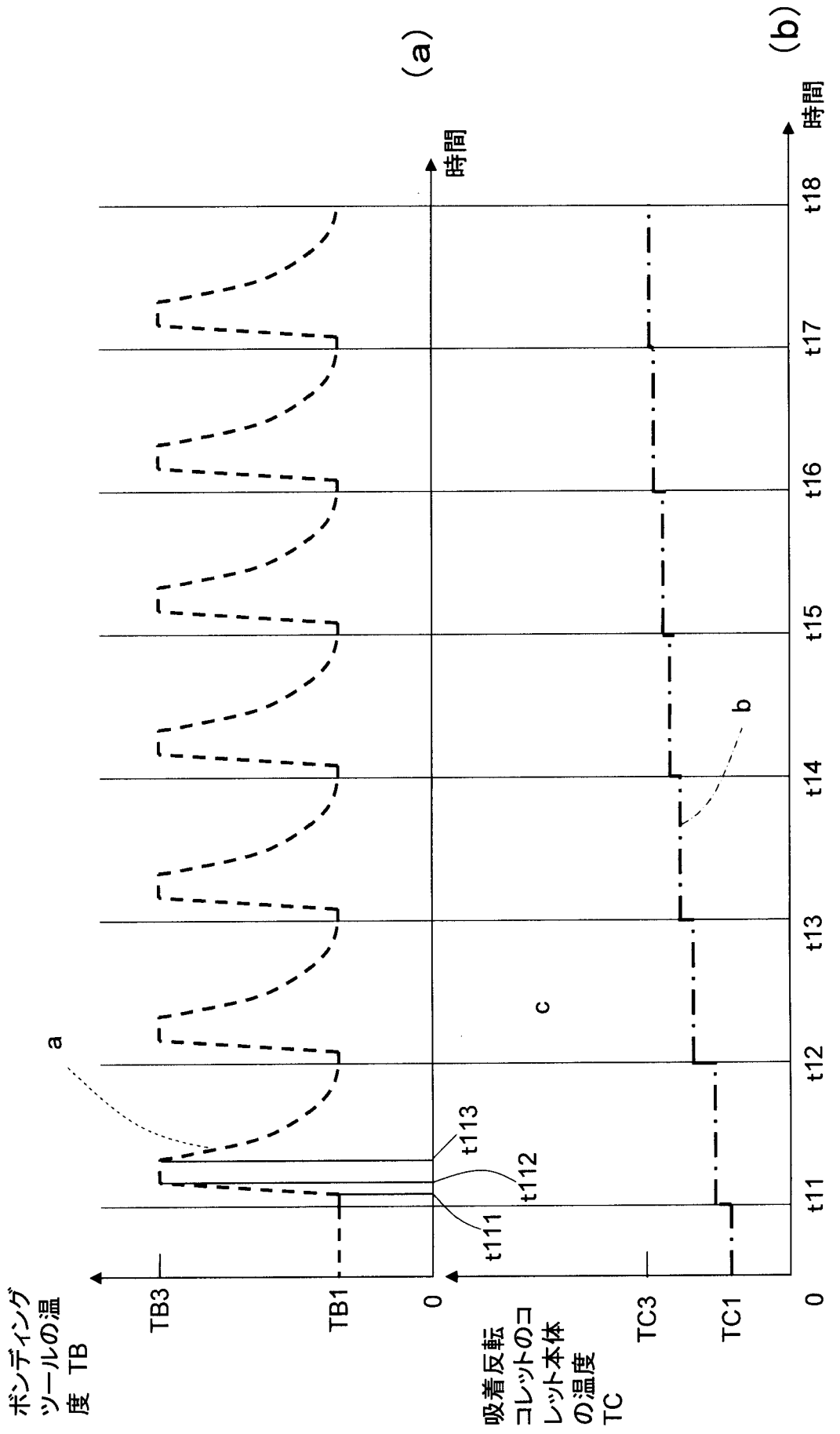
[図3]



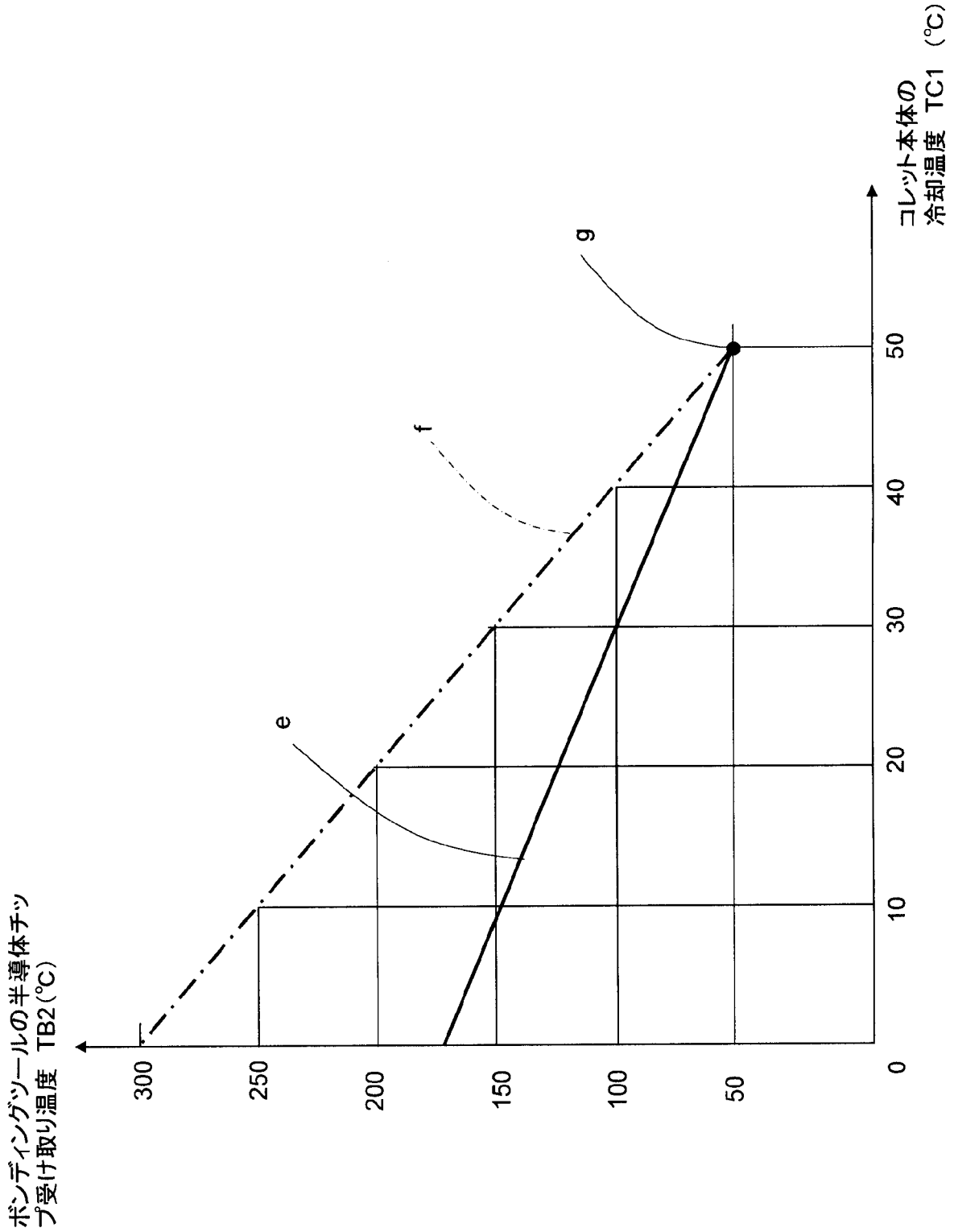
[図4]


(a)
(b)
時間
時間
a
A
D
Δt
t101
t102
t103
t1
t2
t3
t4
t5
t6
t7
t8
t11
t12
t13
t14
t15
t16
TB3
TB2
TB1
0
TC2
TC1
0
ボンディングツールの温度 TB
吸着反転コレットのコレット本体の温度 TC

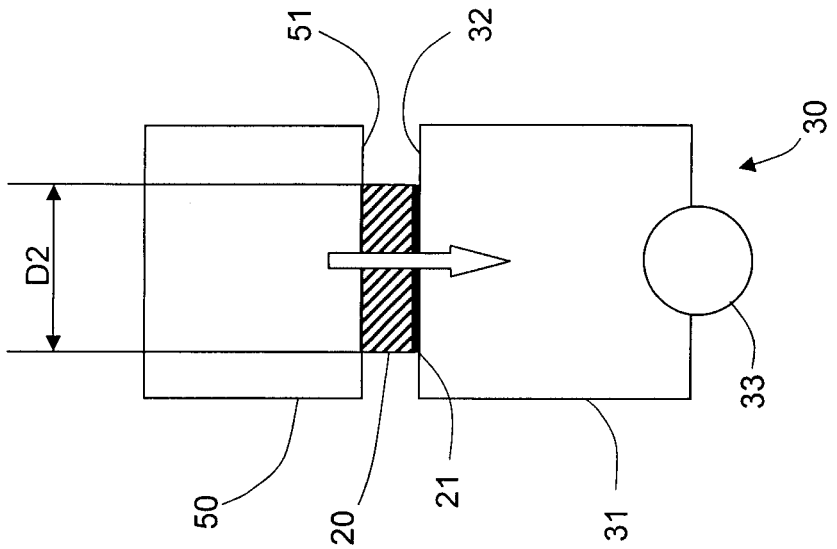
[図5]


(a)
(b)
時間
時間
ボンディングツールの温度 TB
吸着反転コレットのコレット本体の温度 TC
TB3
TB1
0
TC3
TC1
0
t11
t12
t13
t14
t15
t16
t17
t18
t111
t112
t113
a
b
c

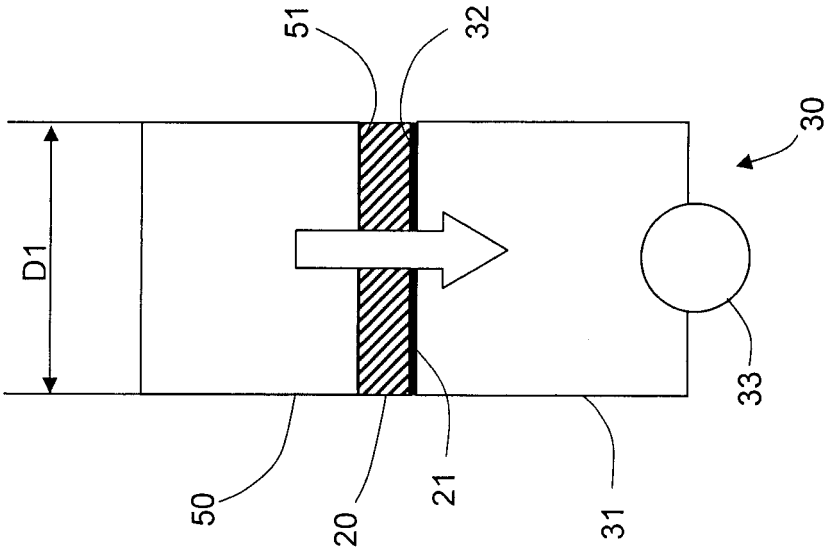
[図6]


ボンディングツールの半導体チップ受け取り温度 TB2(℃)
300
250
200
150
100
50
0
10
20
30
40
50
コレット本体の冷却温度 TC1 (℃)
e
f
g

[図7]

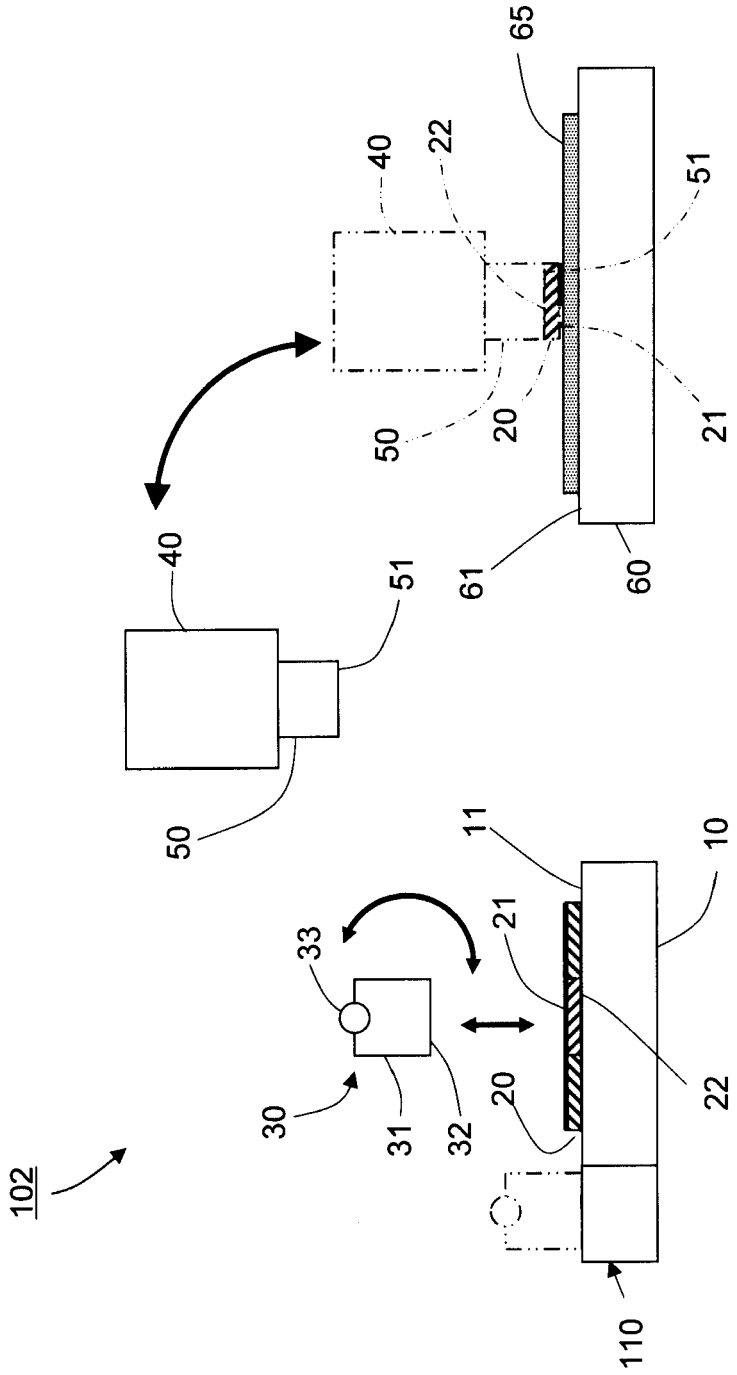


(b)

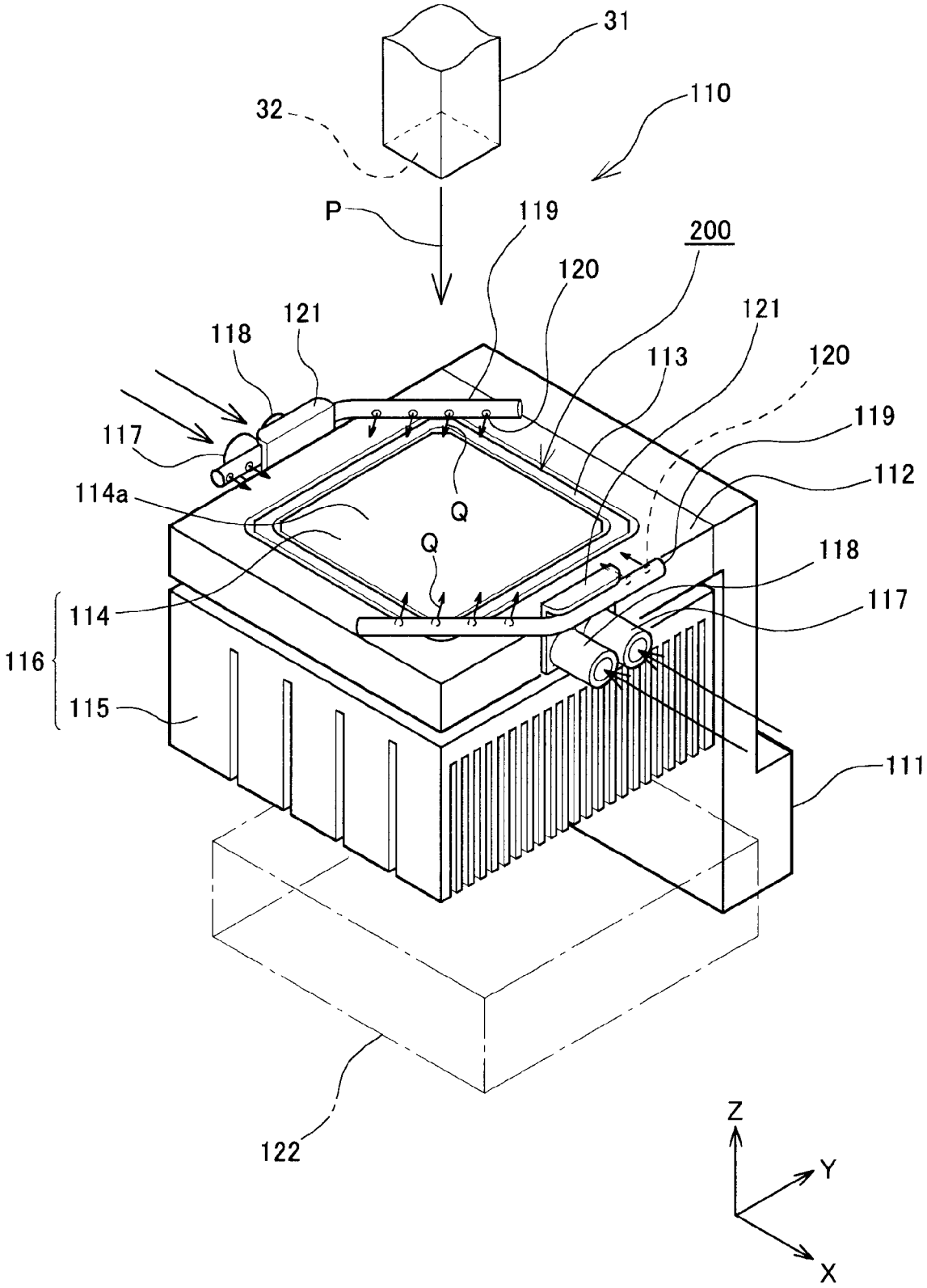


(a)

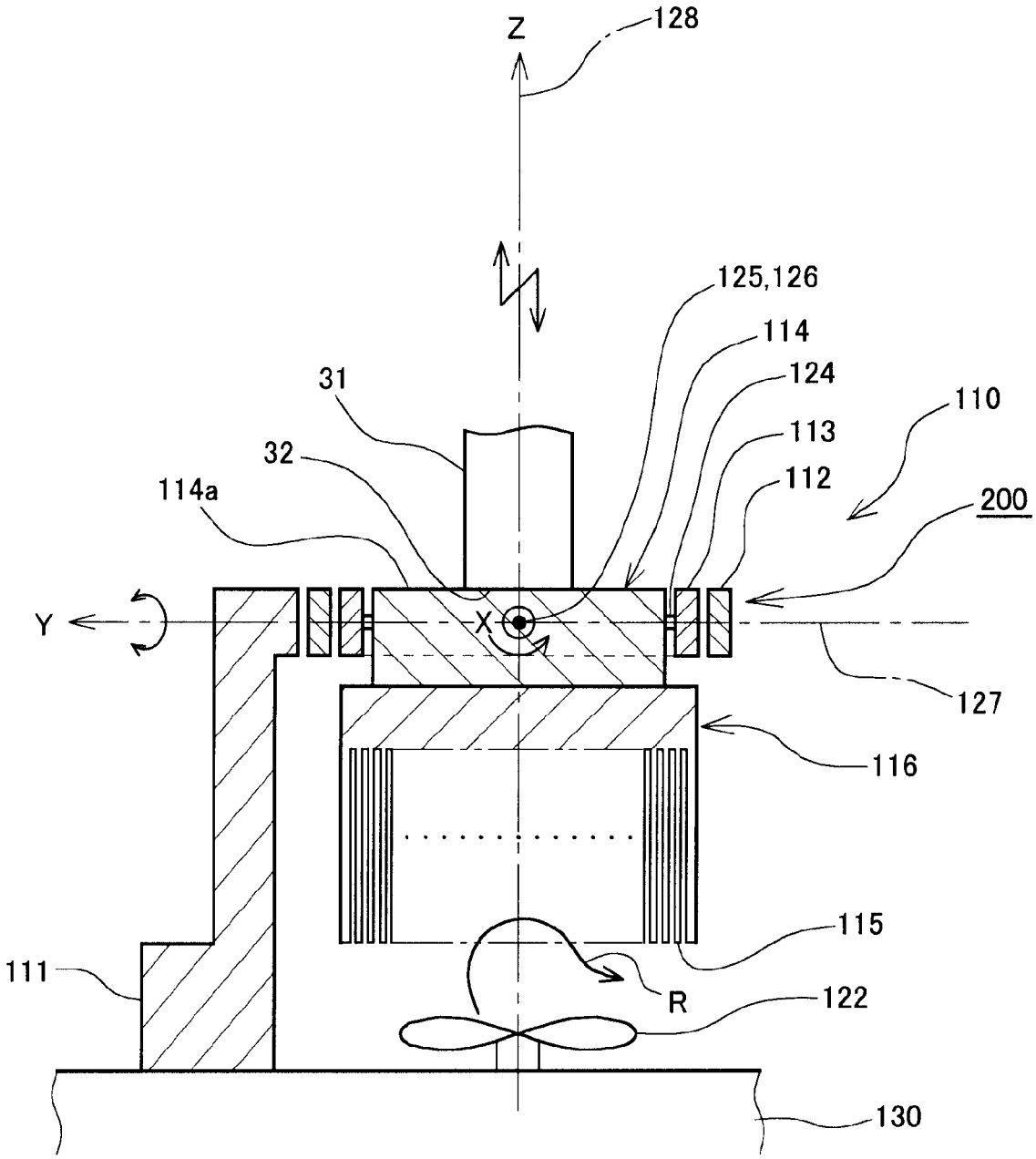
[図8]



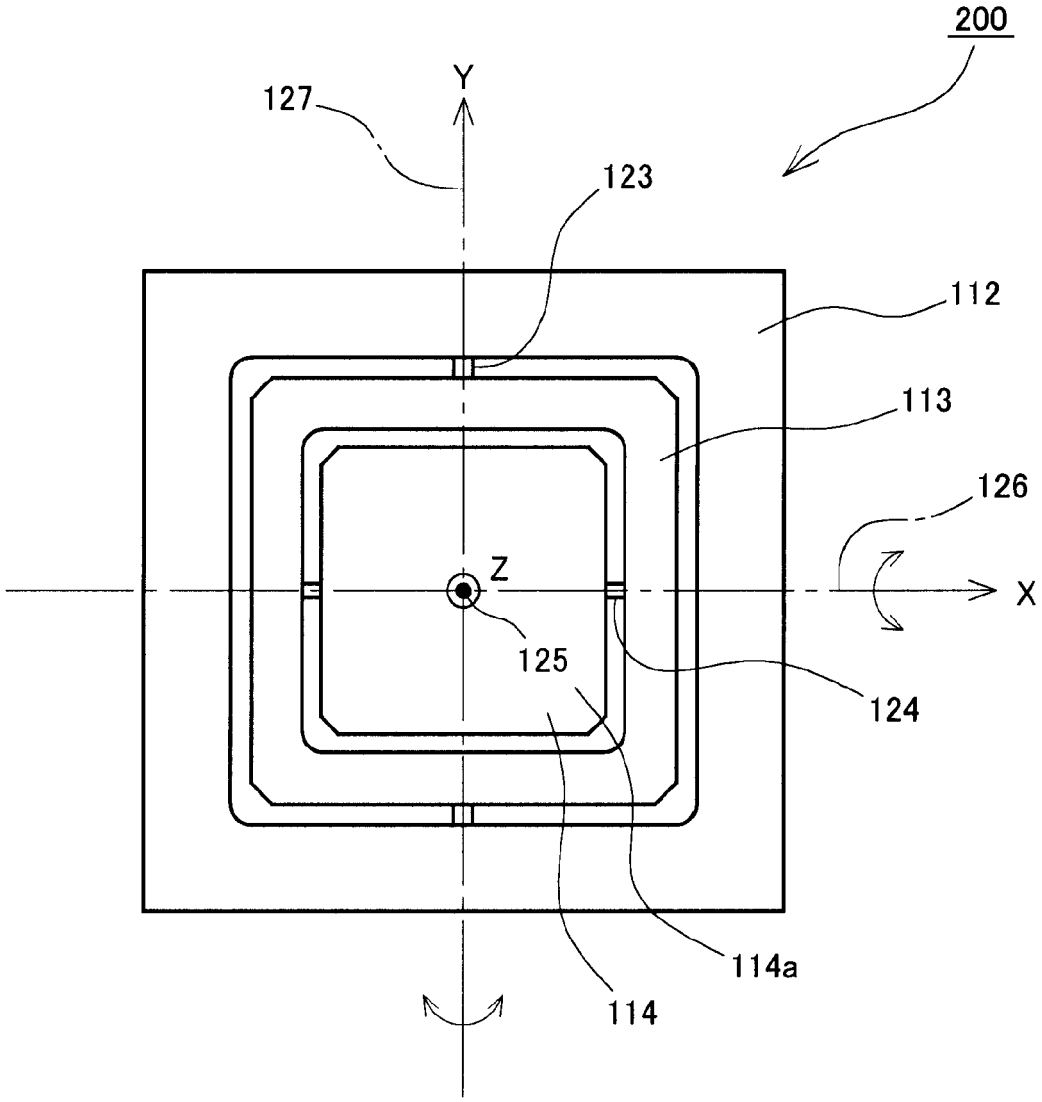
[図9]


31
32
110
P
119
200
120
121
118
121
113
120
119
117
112
114a
Q
Q
118
114
117
116
115
111
122
Z
Y
X

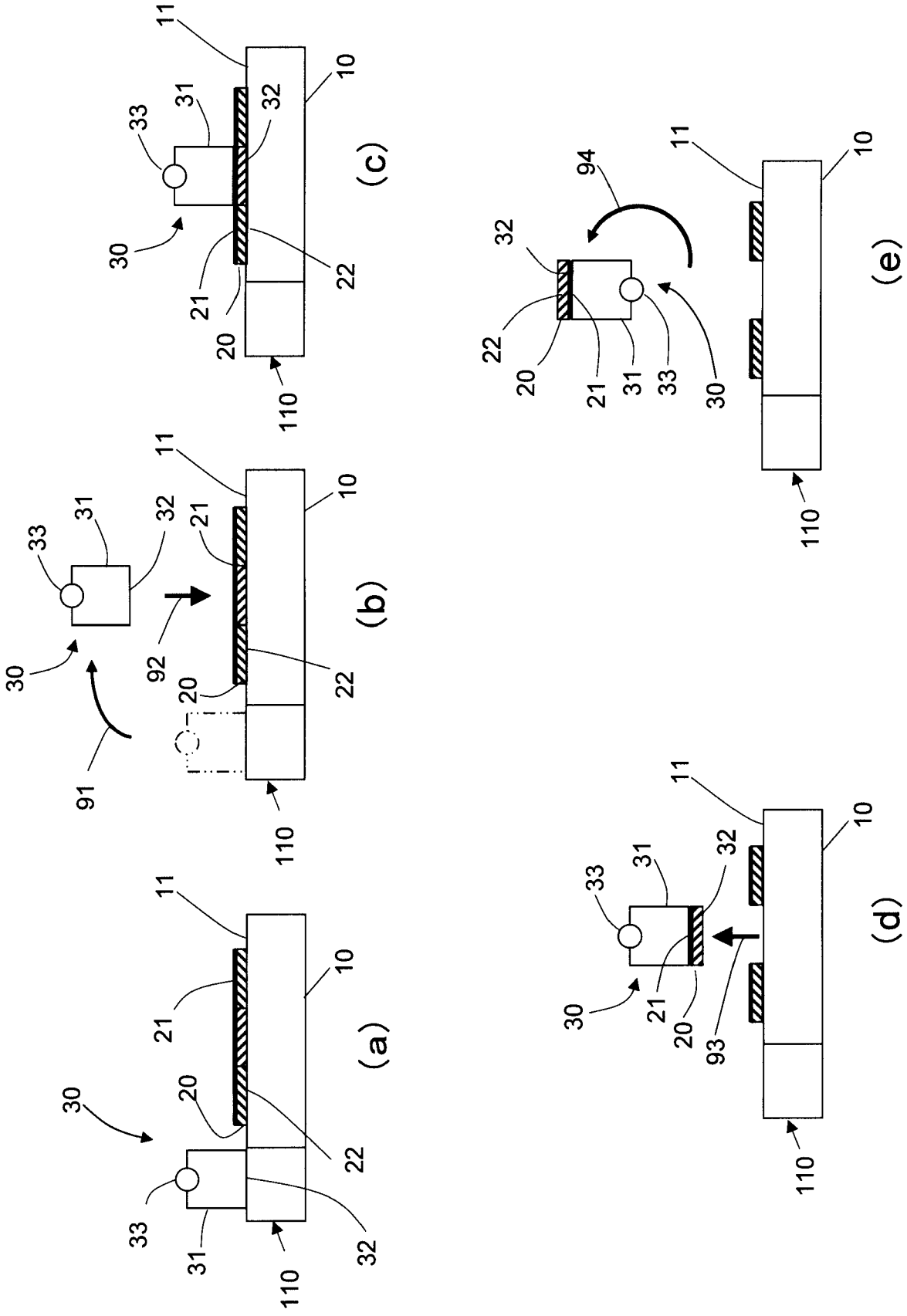
[図10]


Z
128
125,126
114
124
110
31
113
32
112
114a
200
Y
X
127
116
115
111
R
122
130

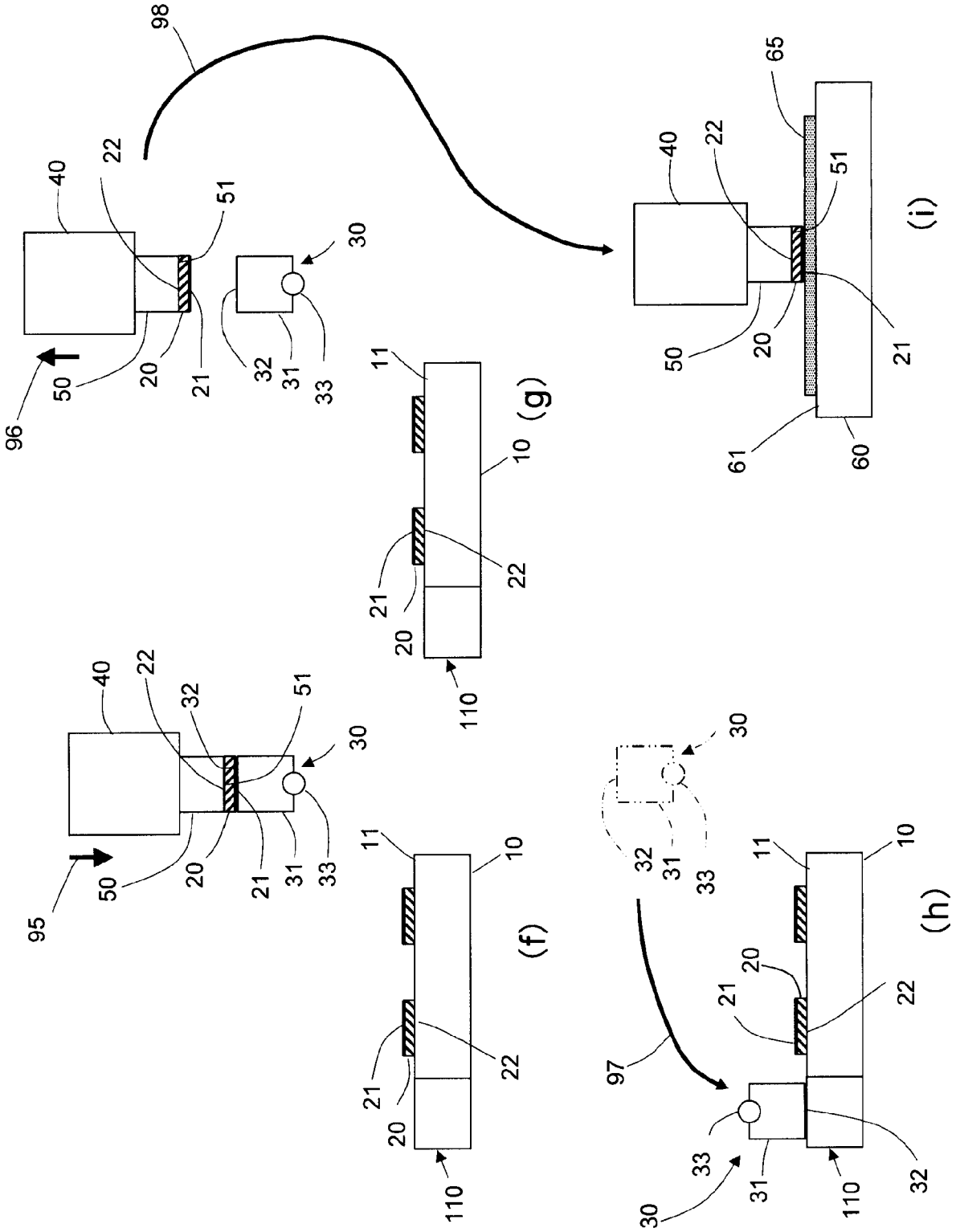
[図11]



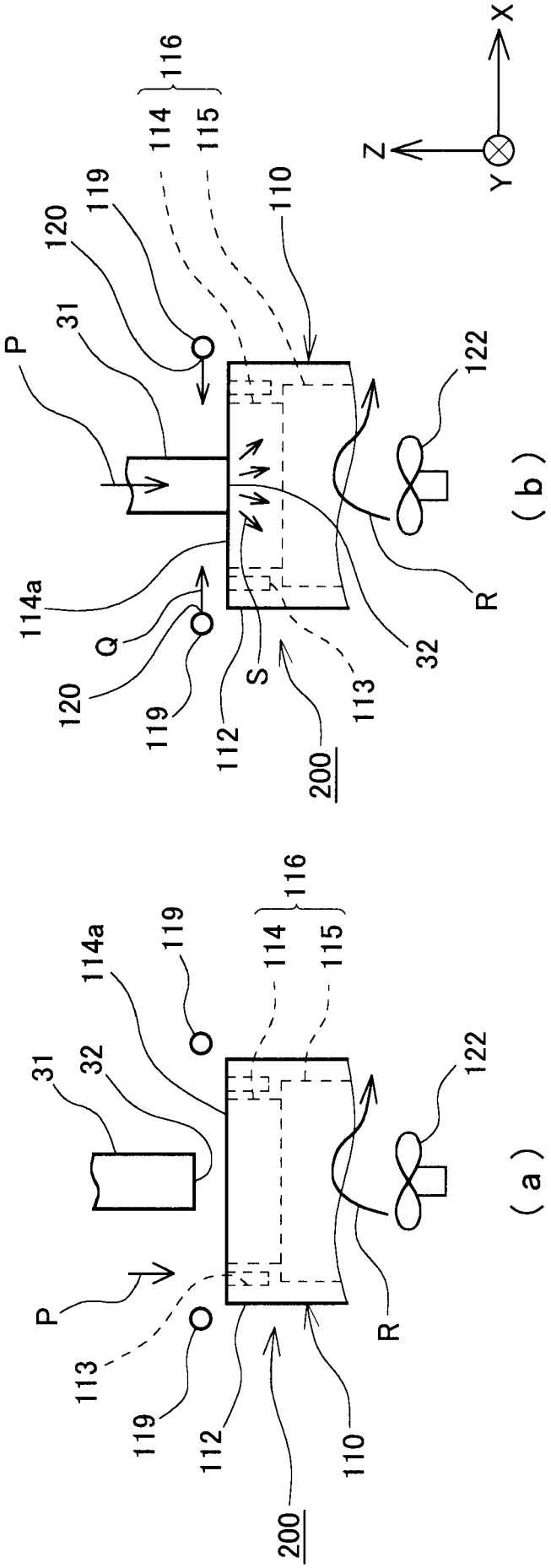
[図12]



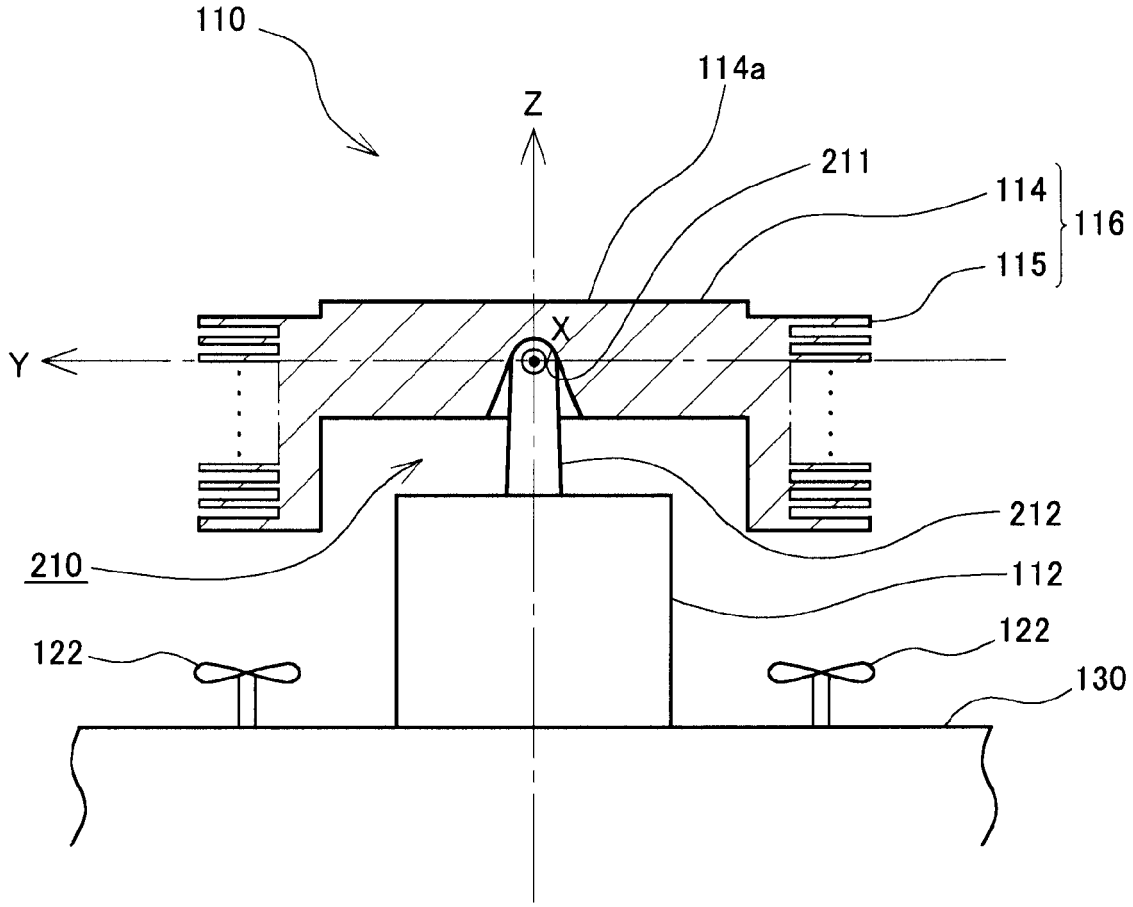
[図13]


98
40
22
51
30
96
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21
32
31
33
(g)
11
10
21
22
20
110
(i)
65
40
22
51
50
20
21
61
60
95
50
40
22
32
51
30
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31
33
(f)
11
10
21
22
20
110
(h)
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33
97
11
10
20
21
22
33
30
31
110
32

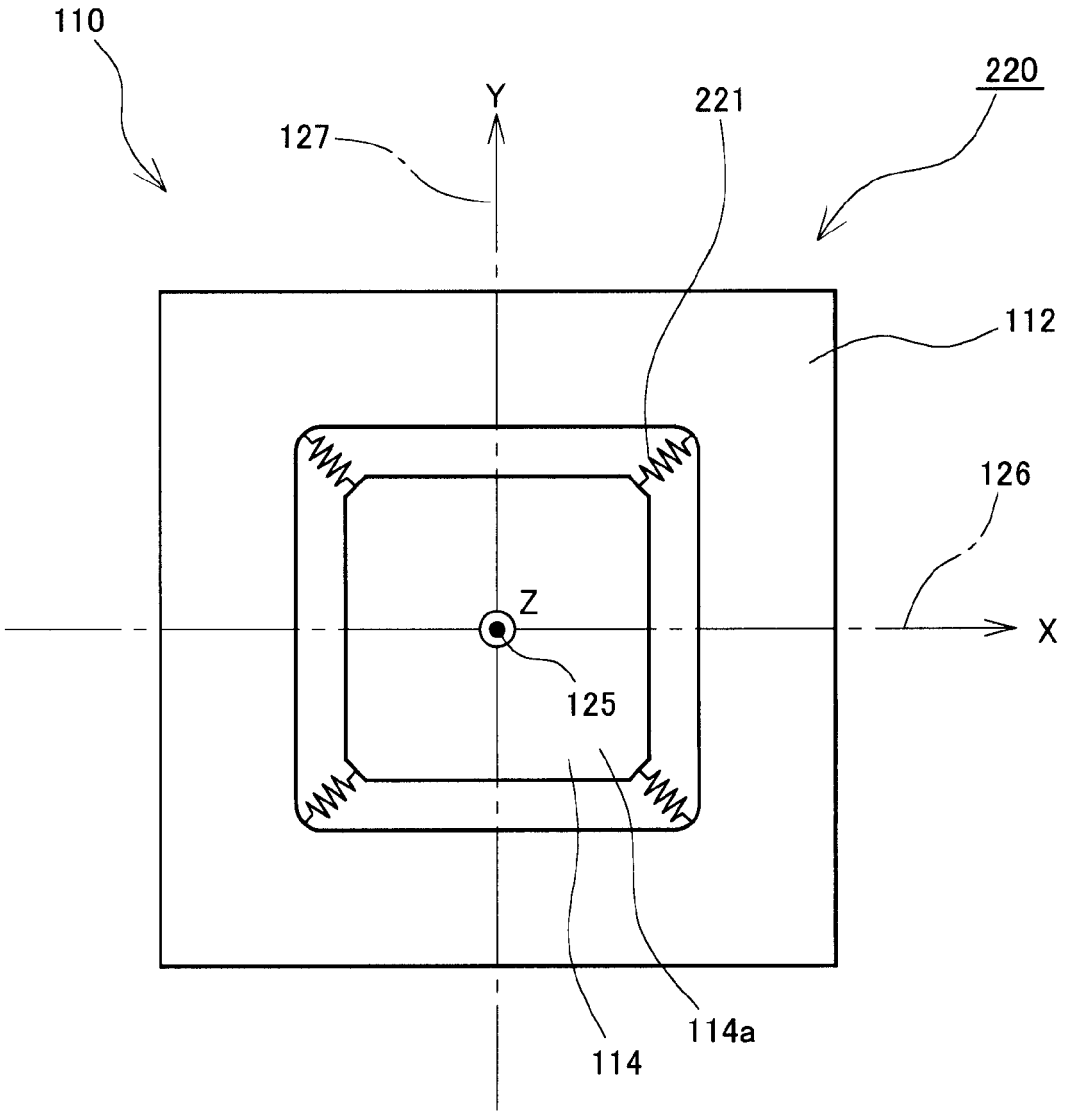
[図14]


X
Z
Y
116
114
115
119
120
110
31
P
122
114a
Q
120
119
112
S
200
113
32
R
(b)
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114
115
119
114a
31
32
122
P
113
119
112
200
110
R
(a)

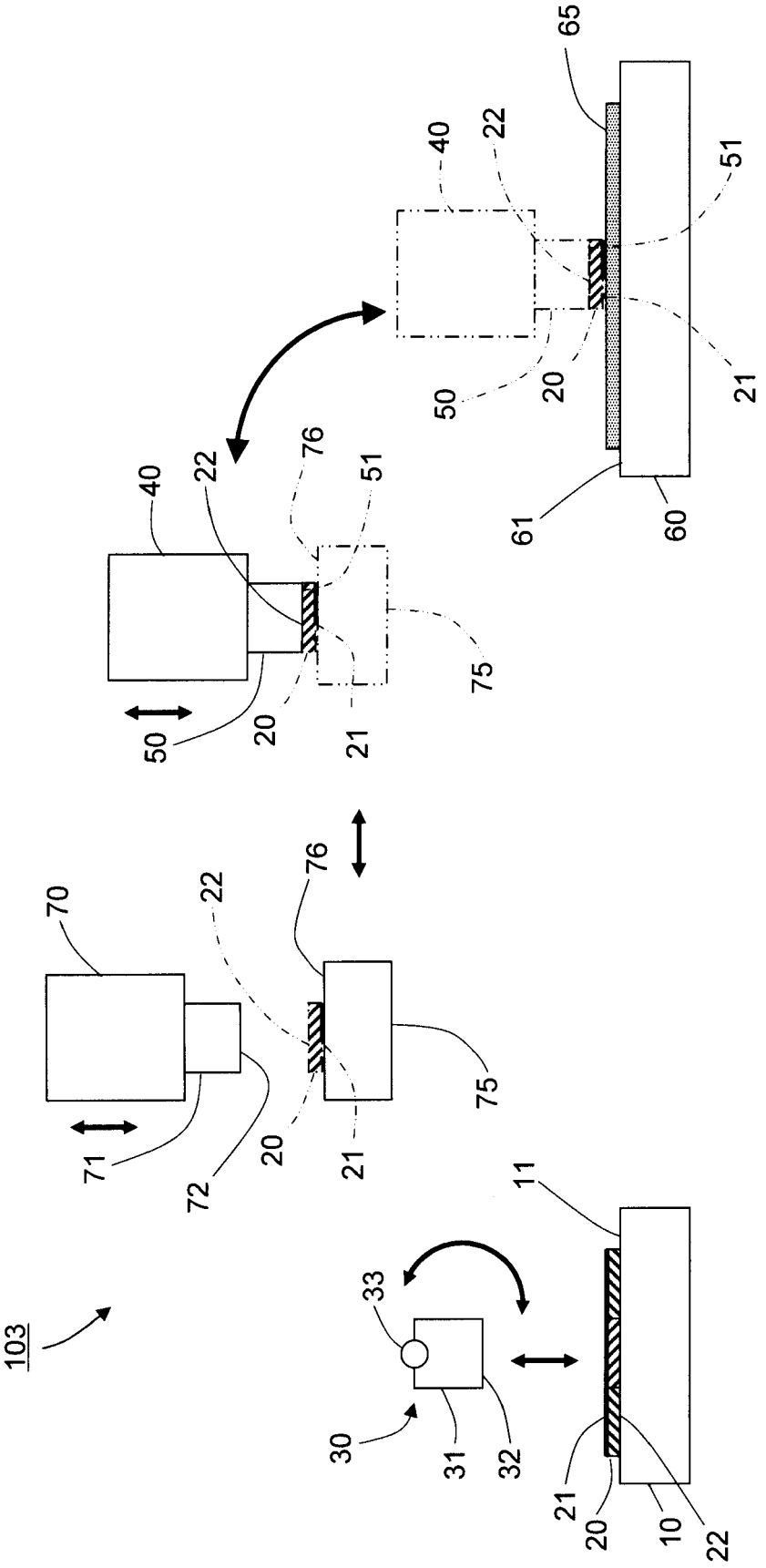
[図15]



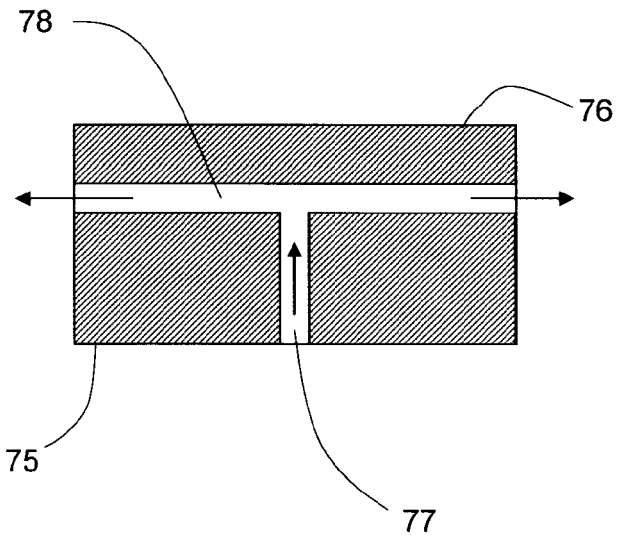
[図16]



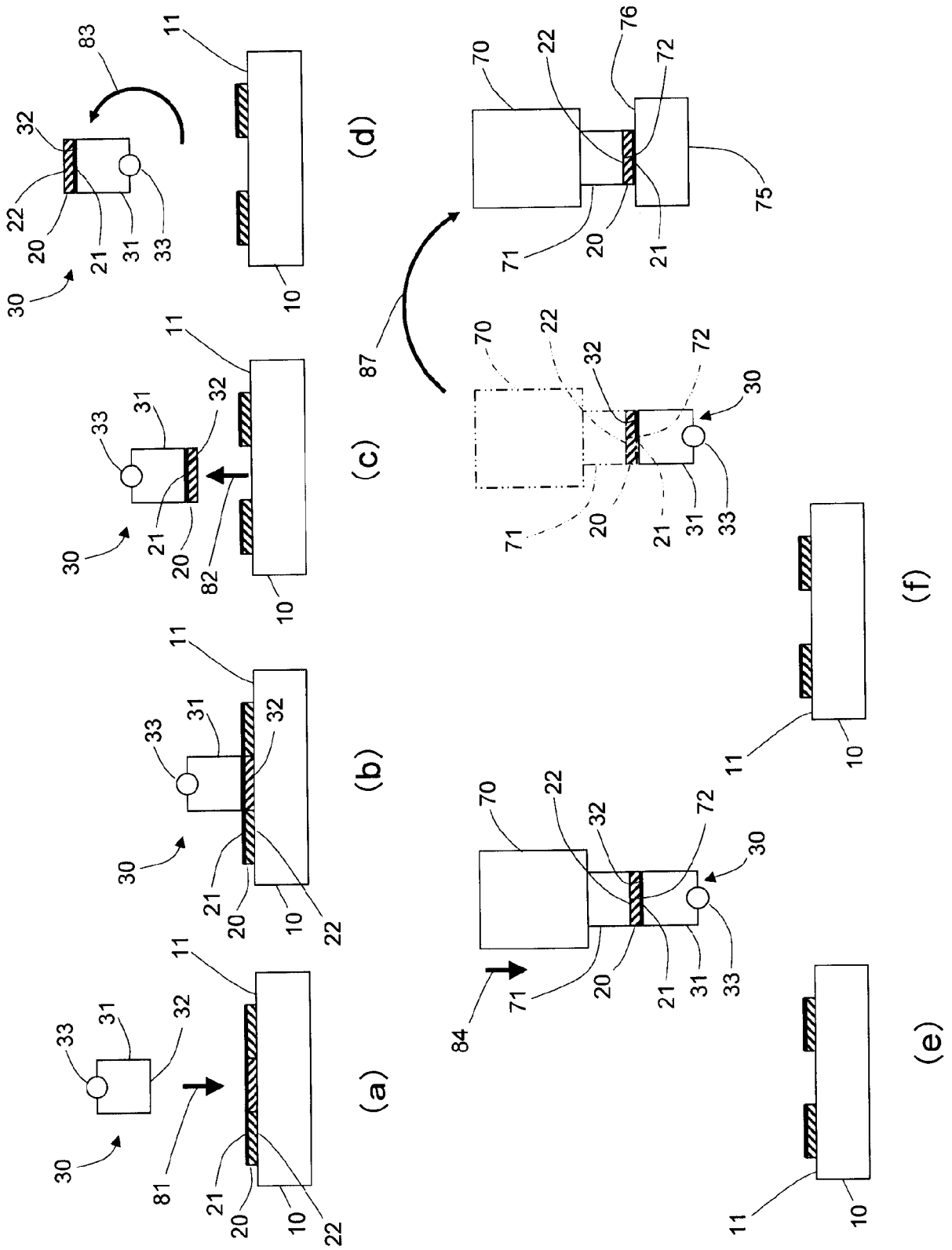
[図17]


65
40
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22
103

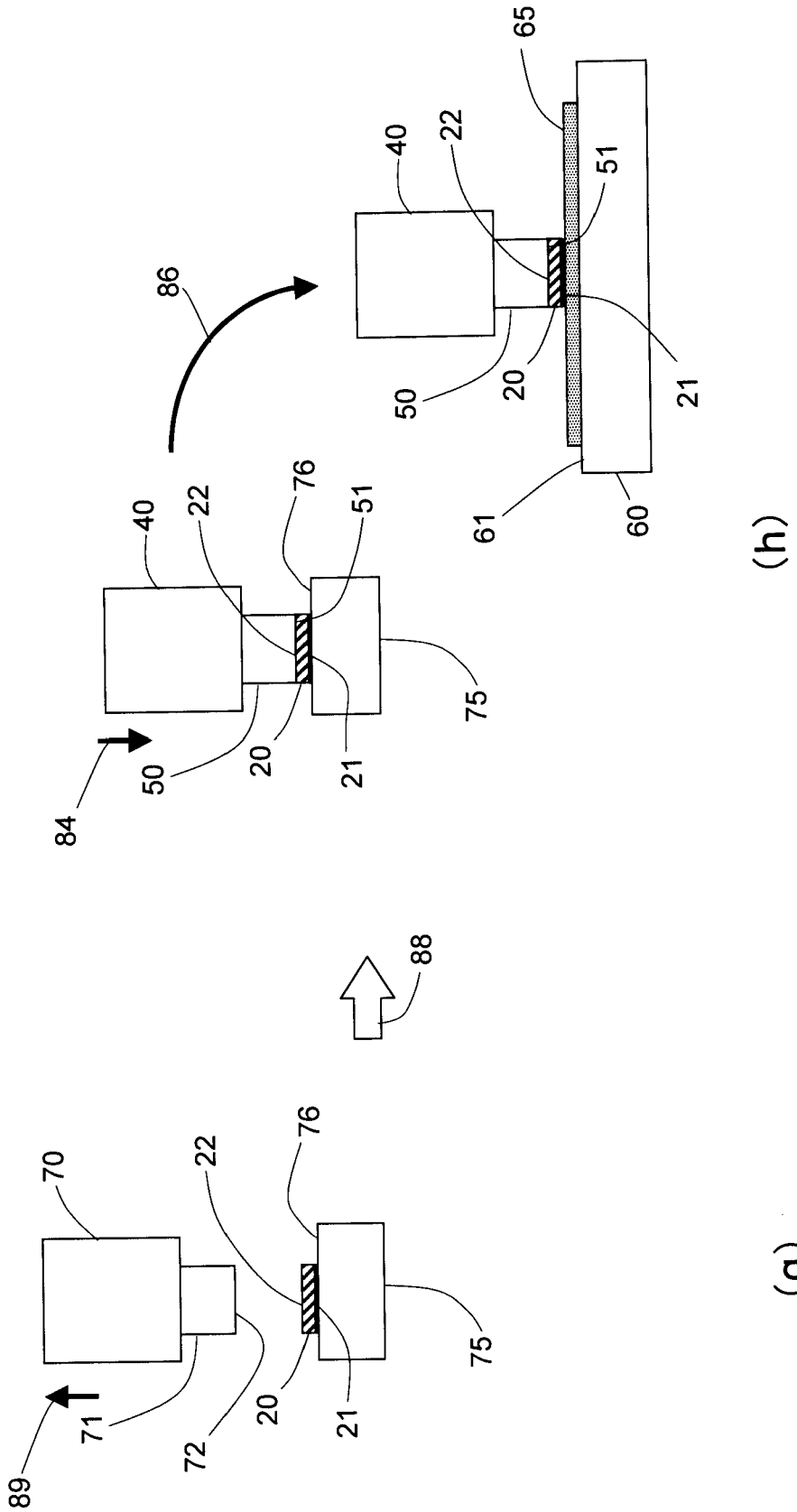
[図18]



[図19]



[図20]



(h)

(g)

[図21]

