FIG. 1

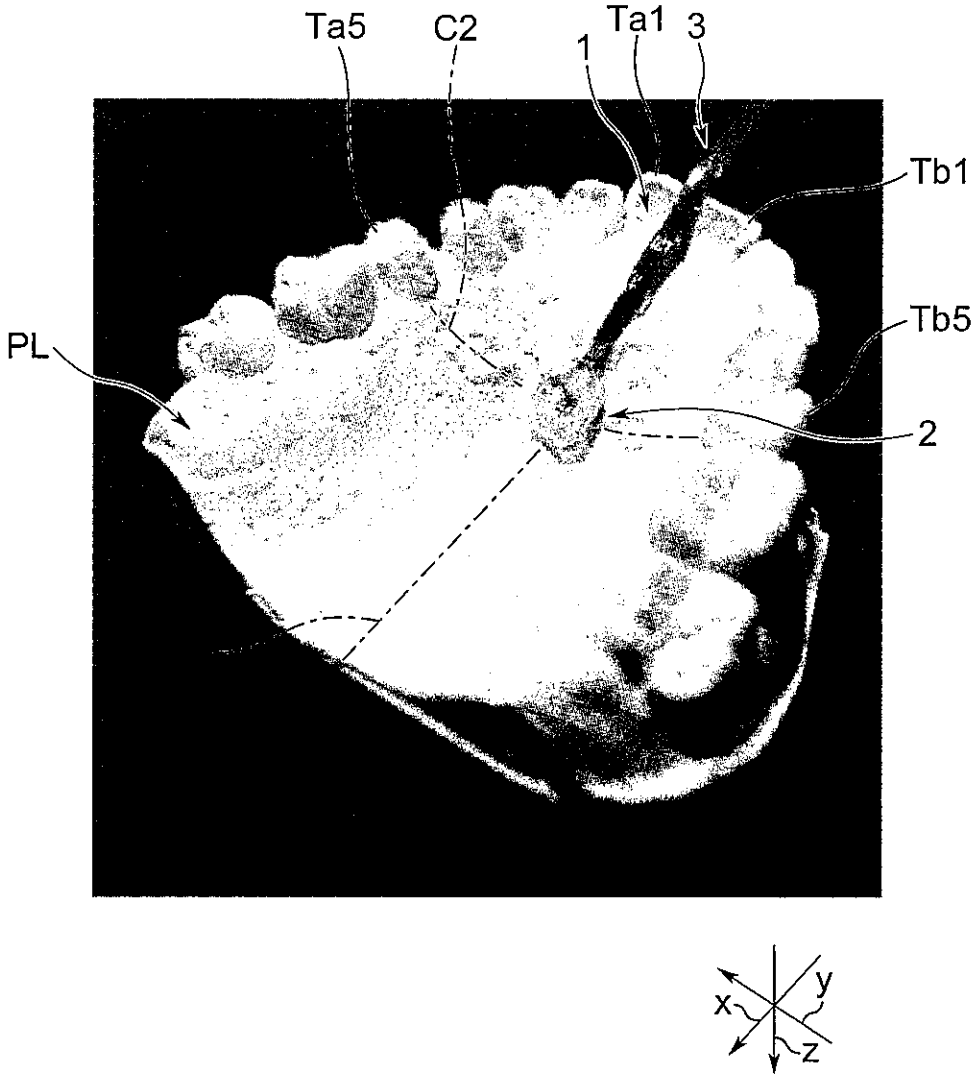


FIG. 2

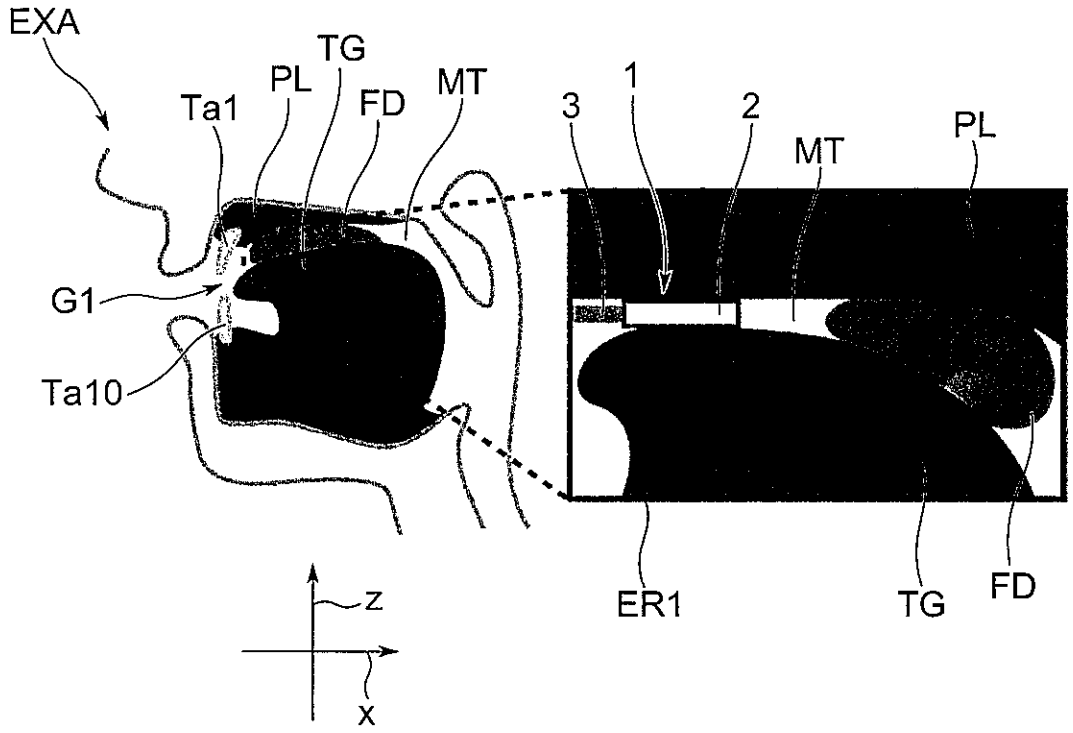


FIG. 3

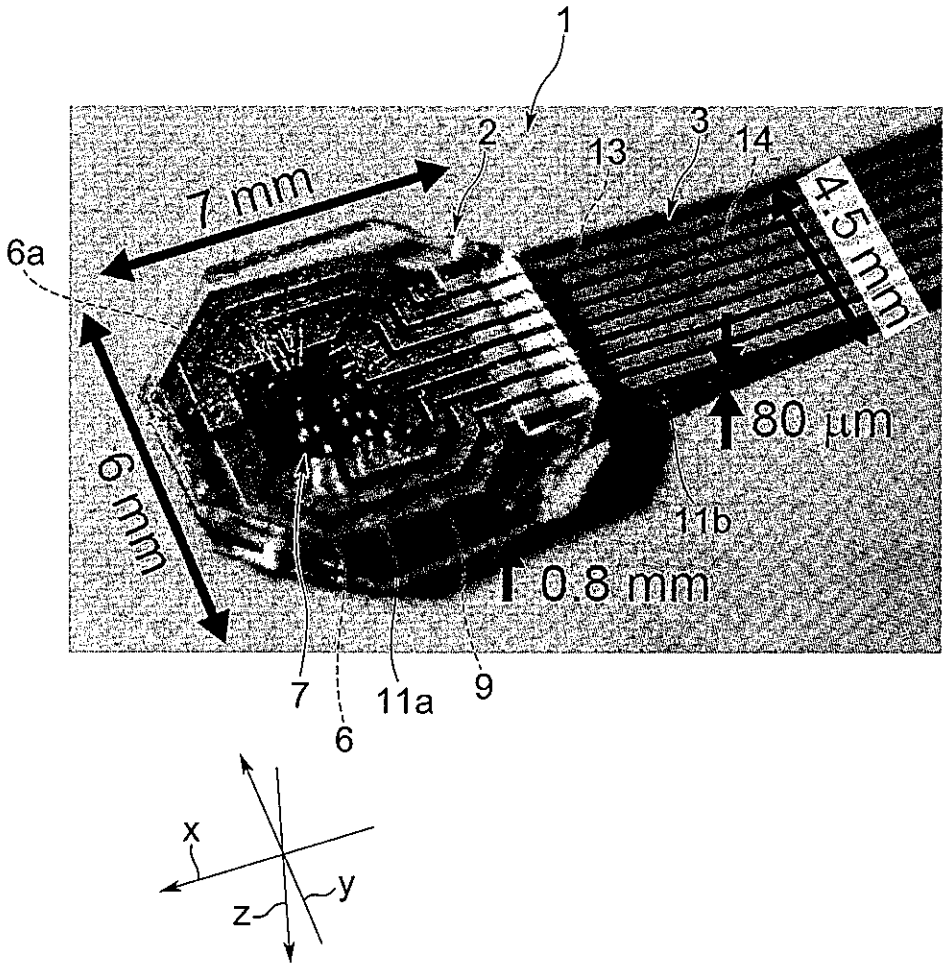


FIG. 4

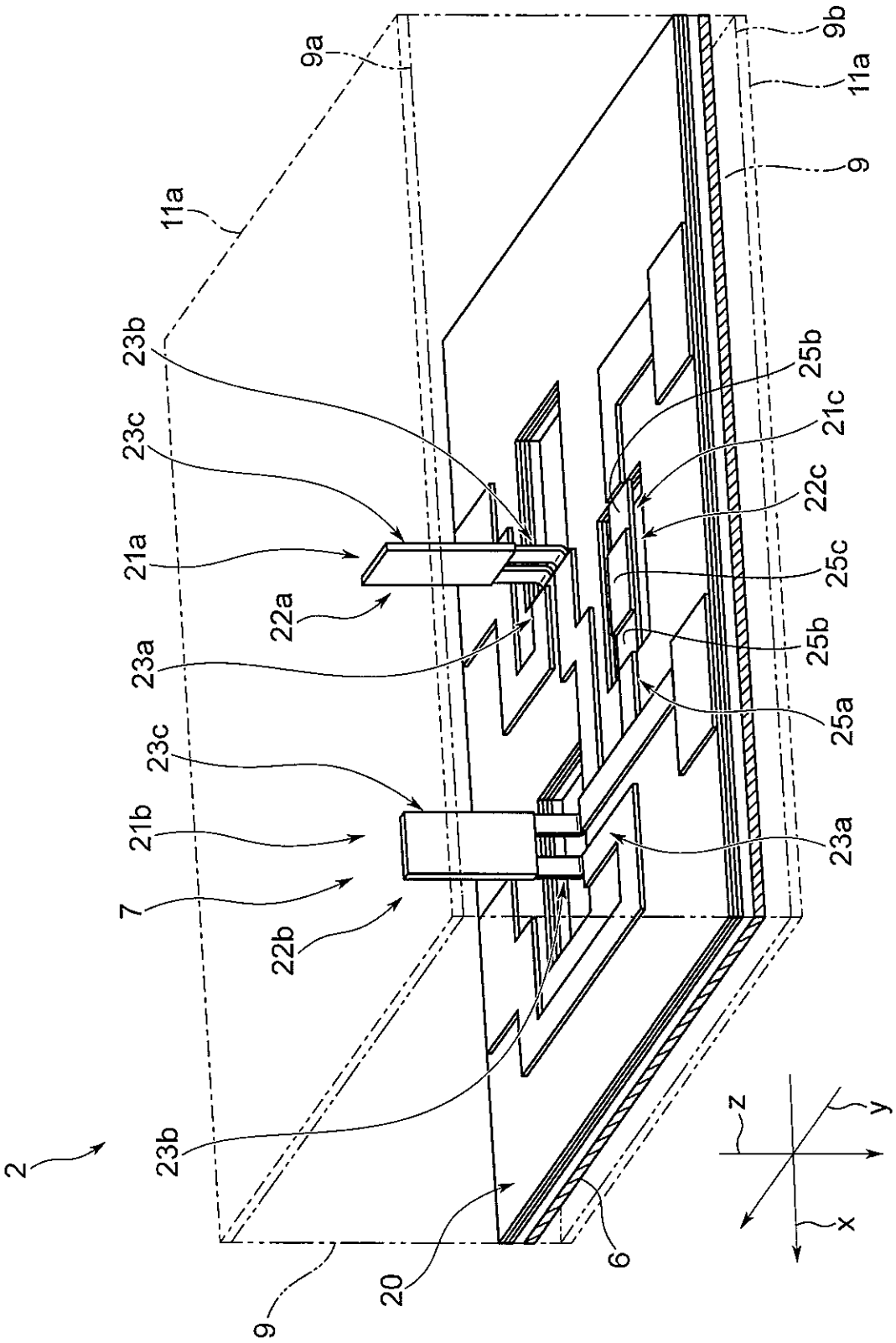

2
9
20
6
9a
11a
23b
23c
21a
22a
23a
23c
21b
7
22b
23b
11a
9b
9
25b
21c
22c
25c
25b
25a
23a
z
y
x

FIG. 5

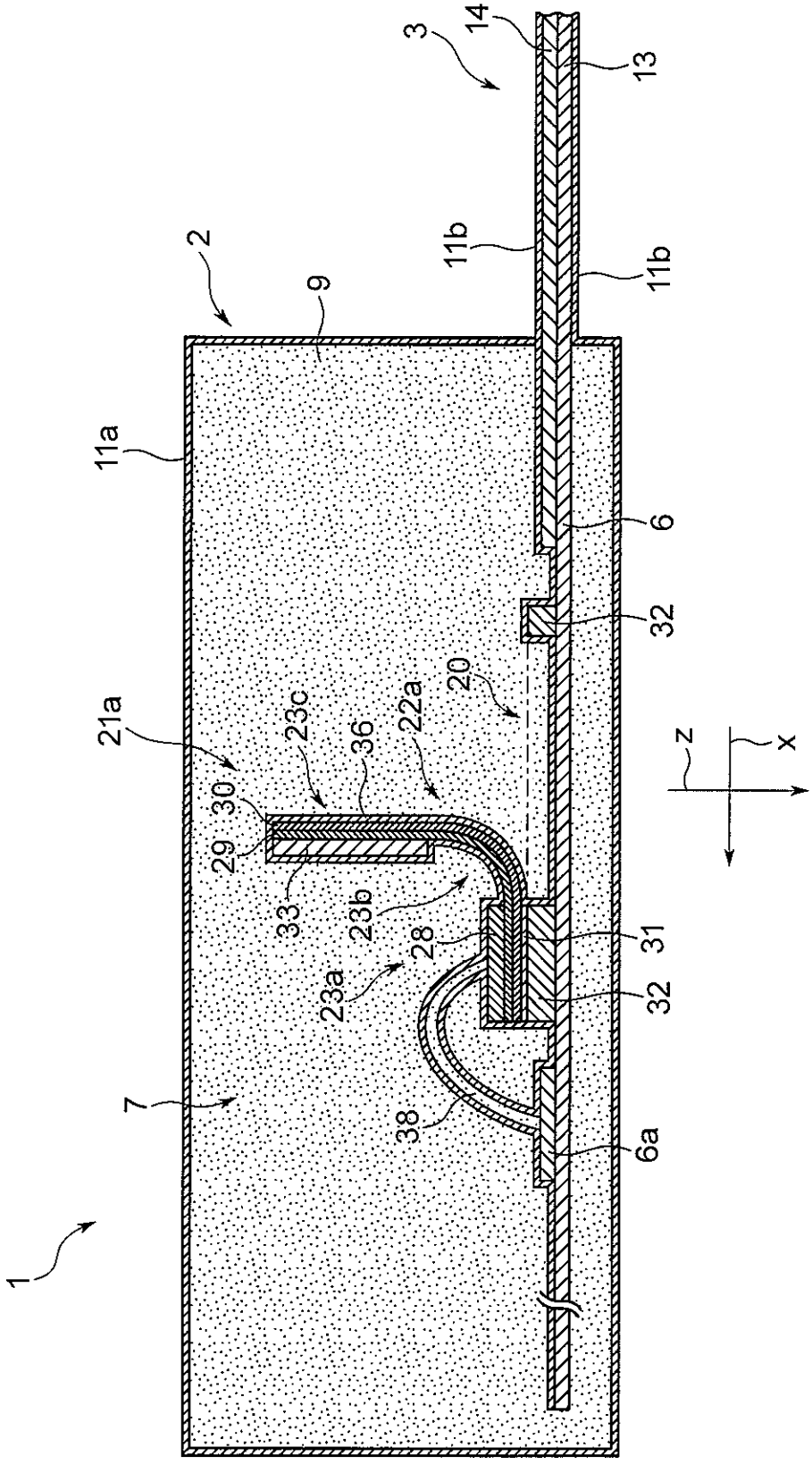

1
2
3
6
6a
7
9
11a
11b
11b
13
14
20
21a
22a
23a
23b
23c
28
29
30
31
32
32
33
36
38
z
x

FIG. 6A

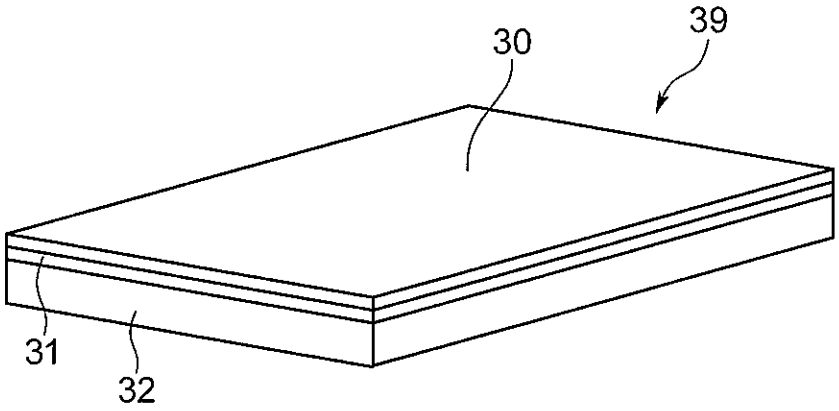


FIG. 6B

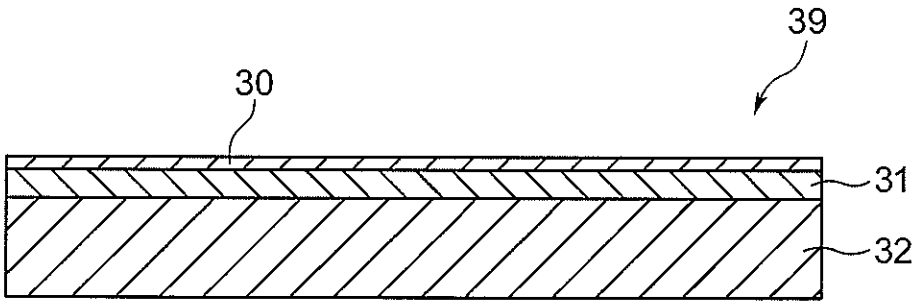


FIG. 7A

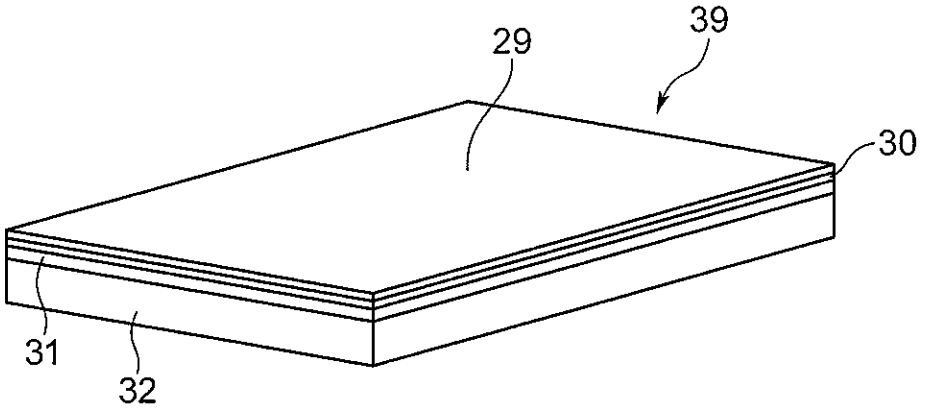


FIG. 7B

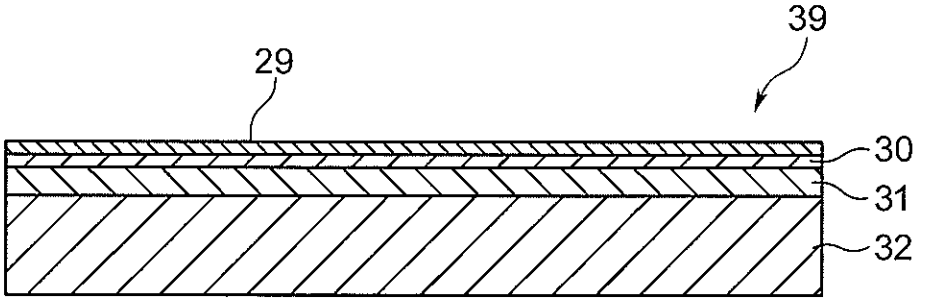


FIG. 8A

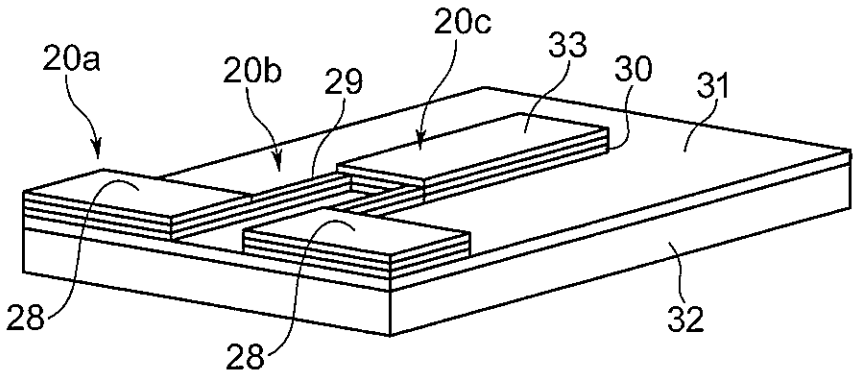


FIG. 8B

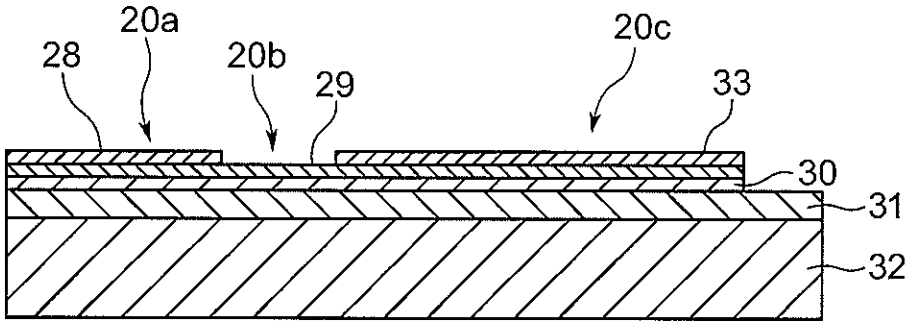


FIG. 9A

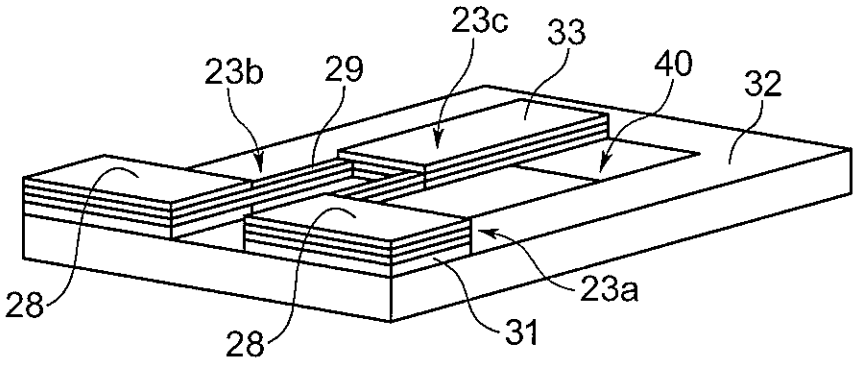


FIG. 9B

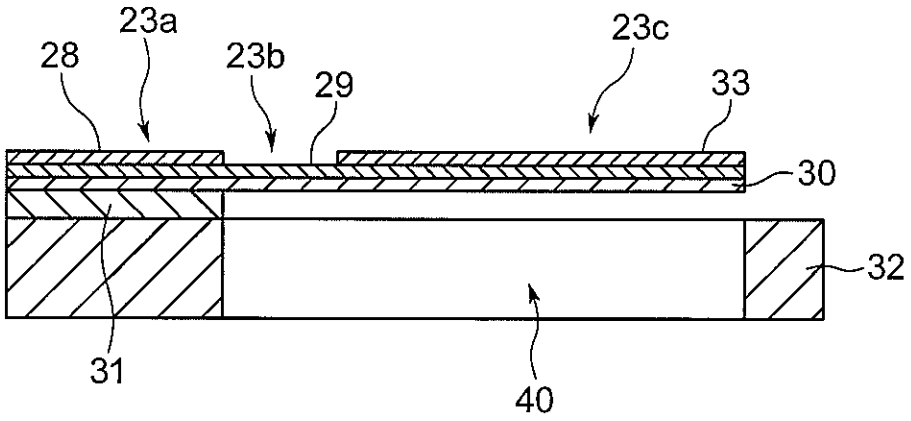


FIG. 10

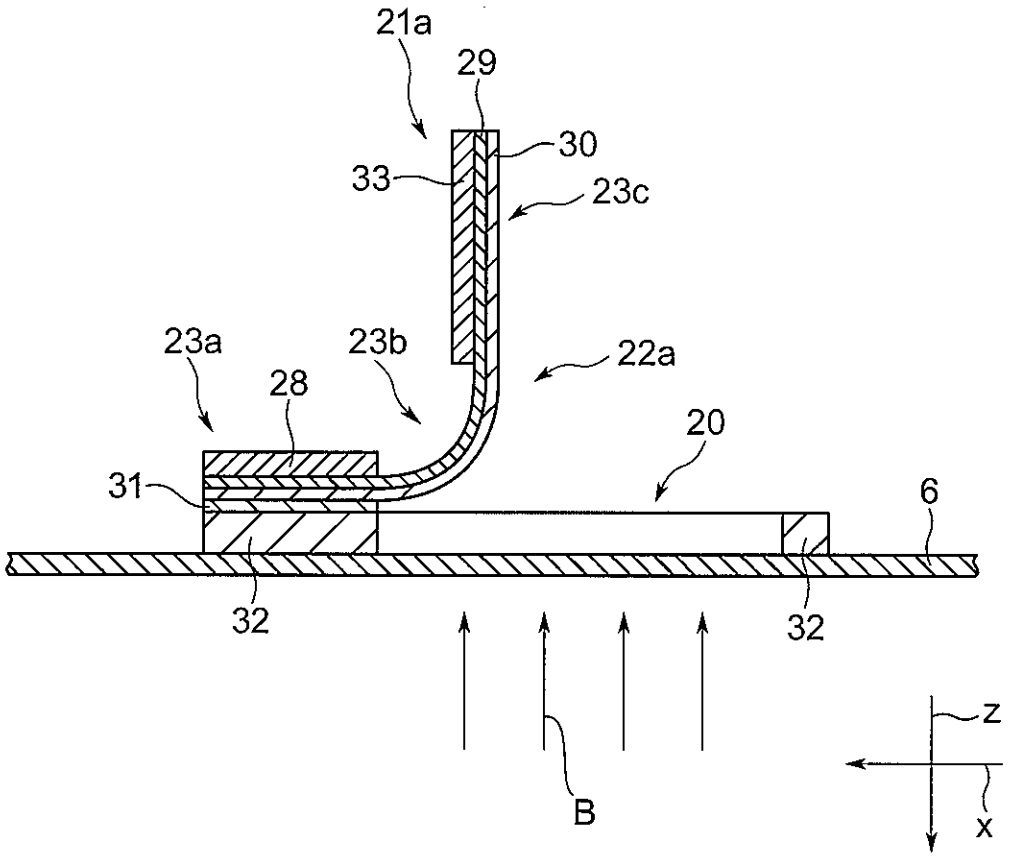


FIG. 11

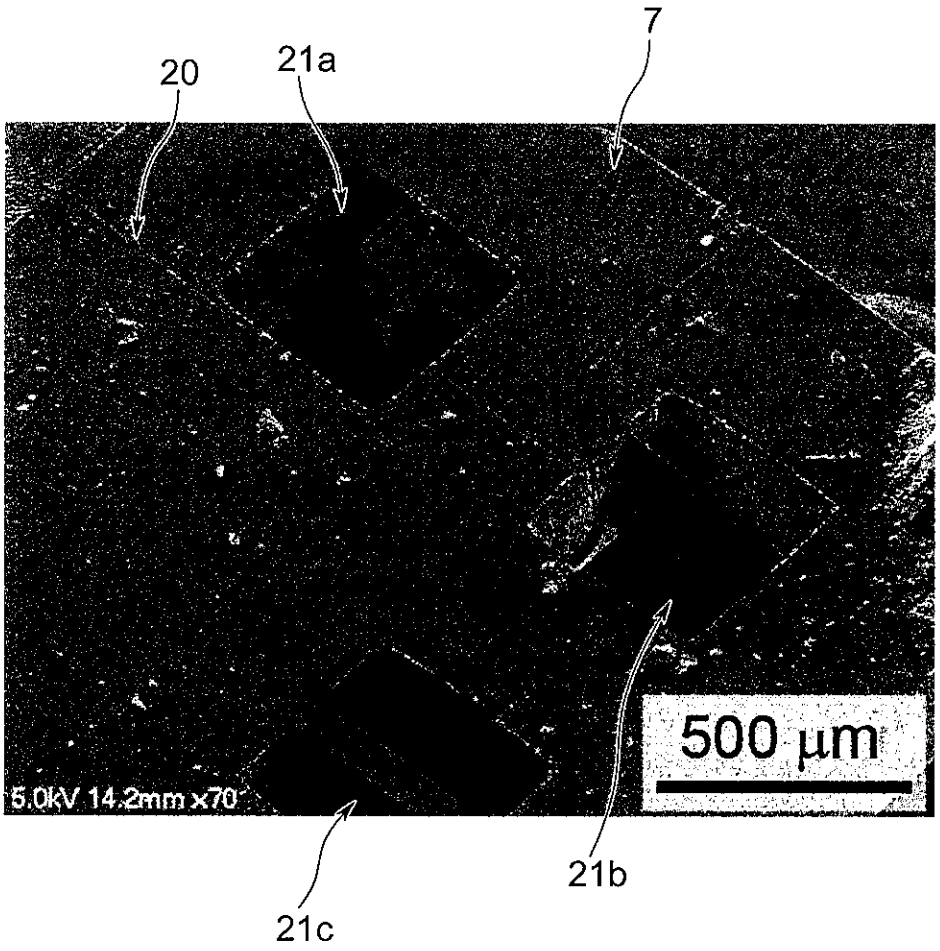


FIG. 12

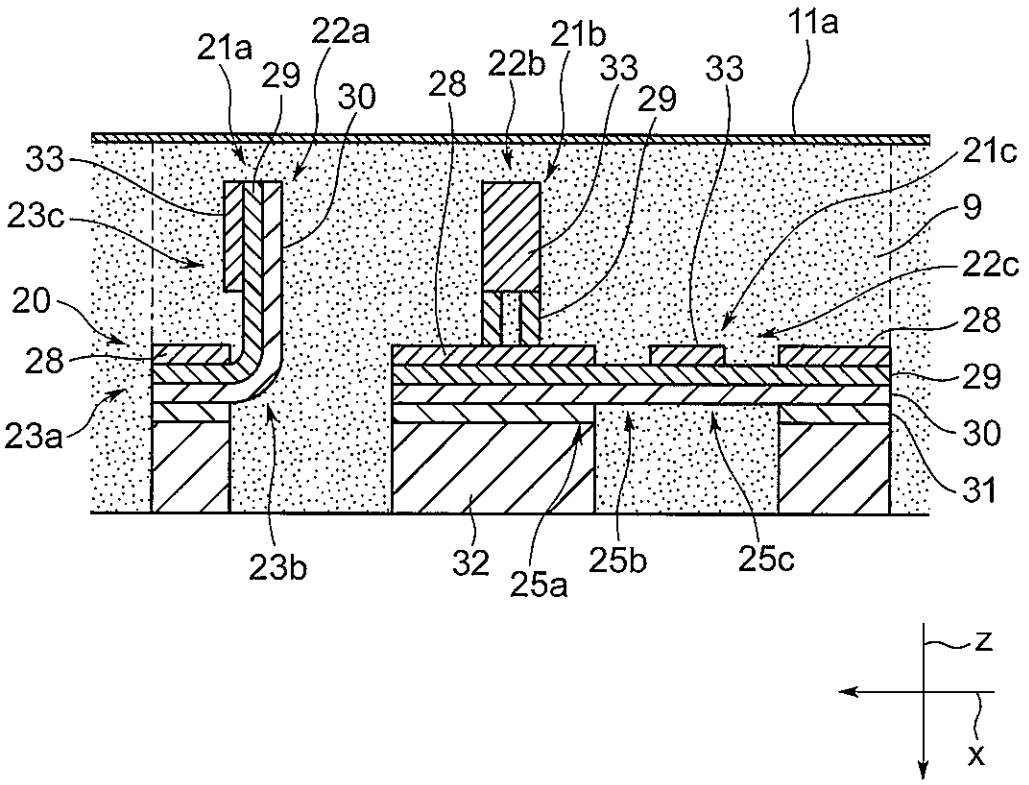

21a
22a
29
30
28
22b
21b
33
29
33
11a
33
21c
23c
9
22c
20
28
28
29
23a
30
31
23b
32
25a
25b
25c
z
x

FIG. 13

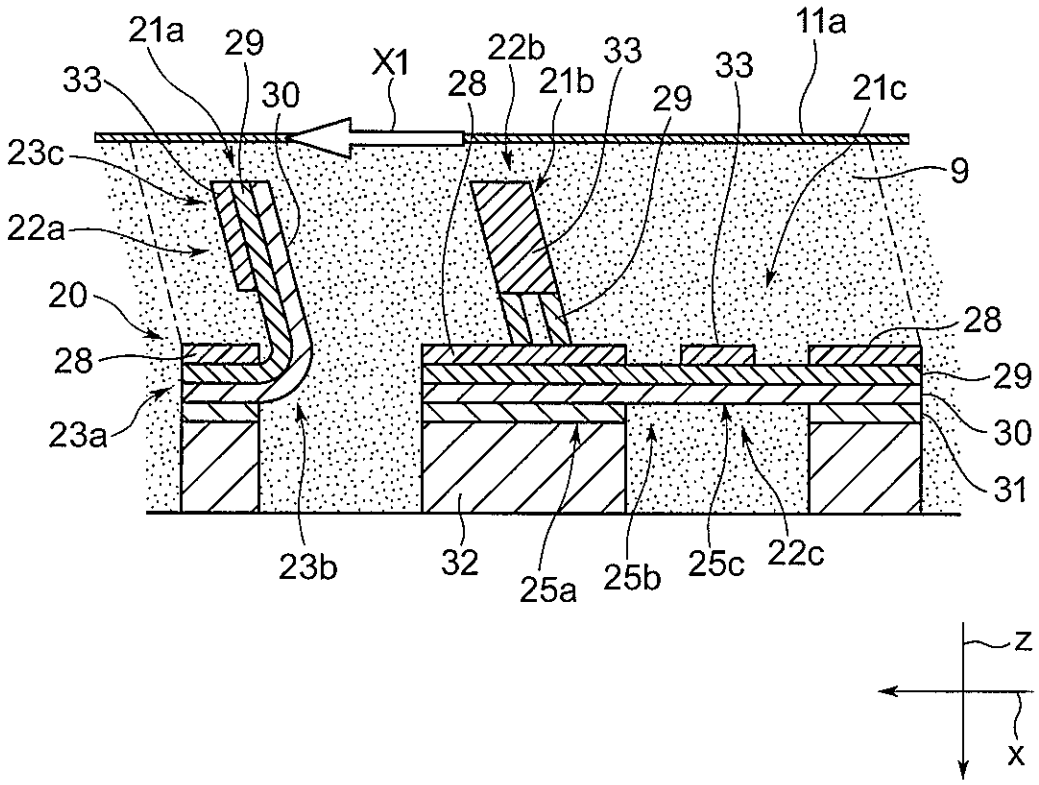

21a
29
33
30
X1
28
22b
21b
33
29
33
11a
21c
23c
9
22a
20
28
28
29
23a
30
31
23b
32
25a
25b
25c
22c
z
x

FIG. 14

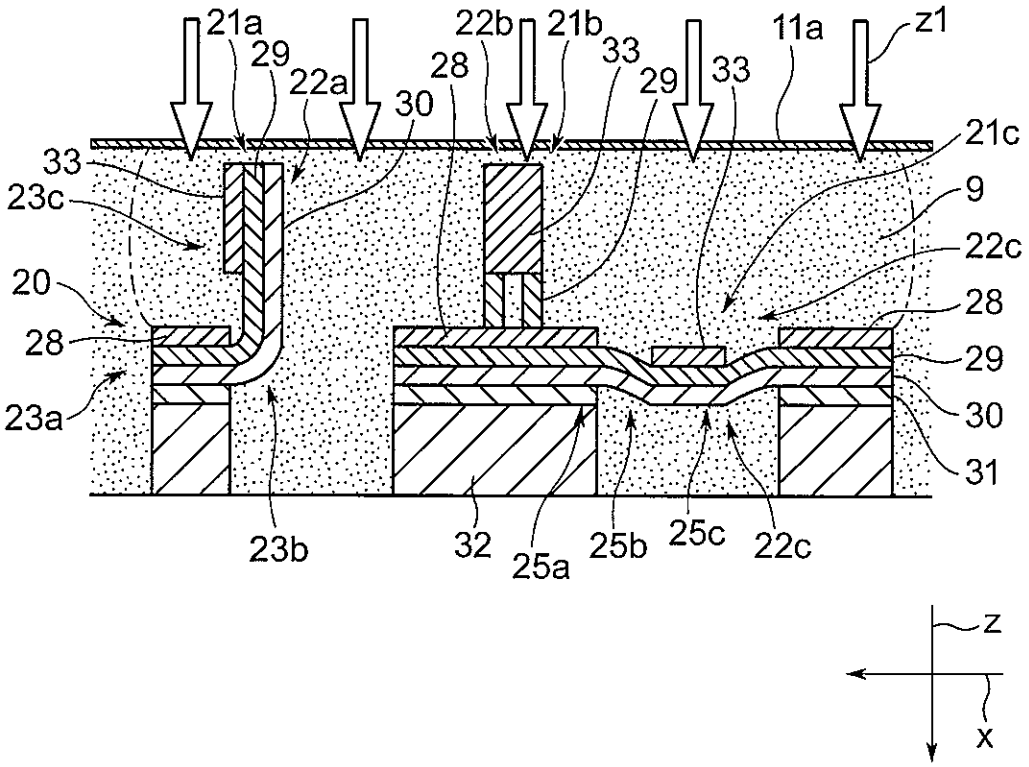

21a
29
22a
30
28
22b
21b
33
29
33
11a
z1
21c
33
23c
9
22c
20
28
28
29
23a
30
31
23b
32
25a
25b
25c
22c
z
x

FIG. 15B

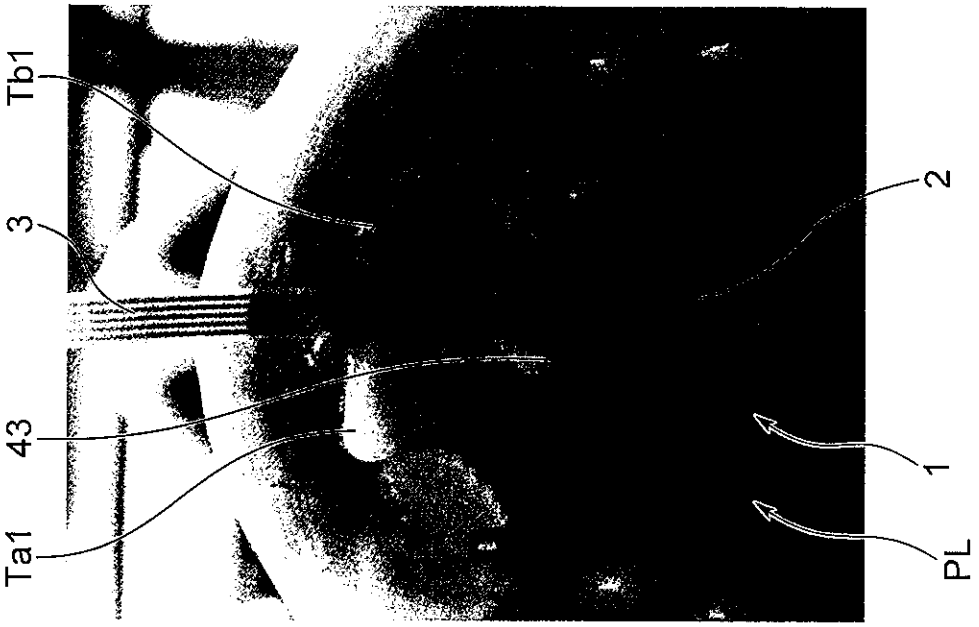


FIG. 15A

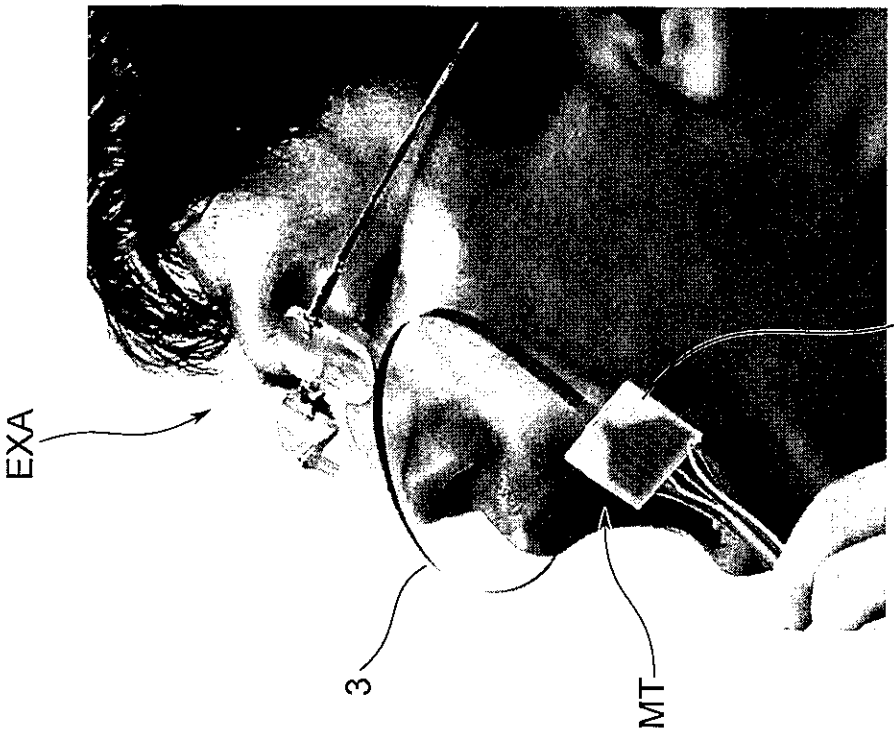


FIG. 16

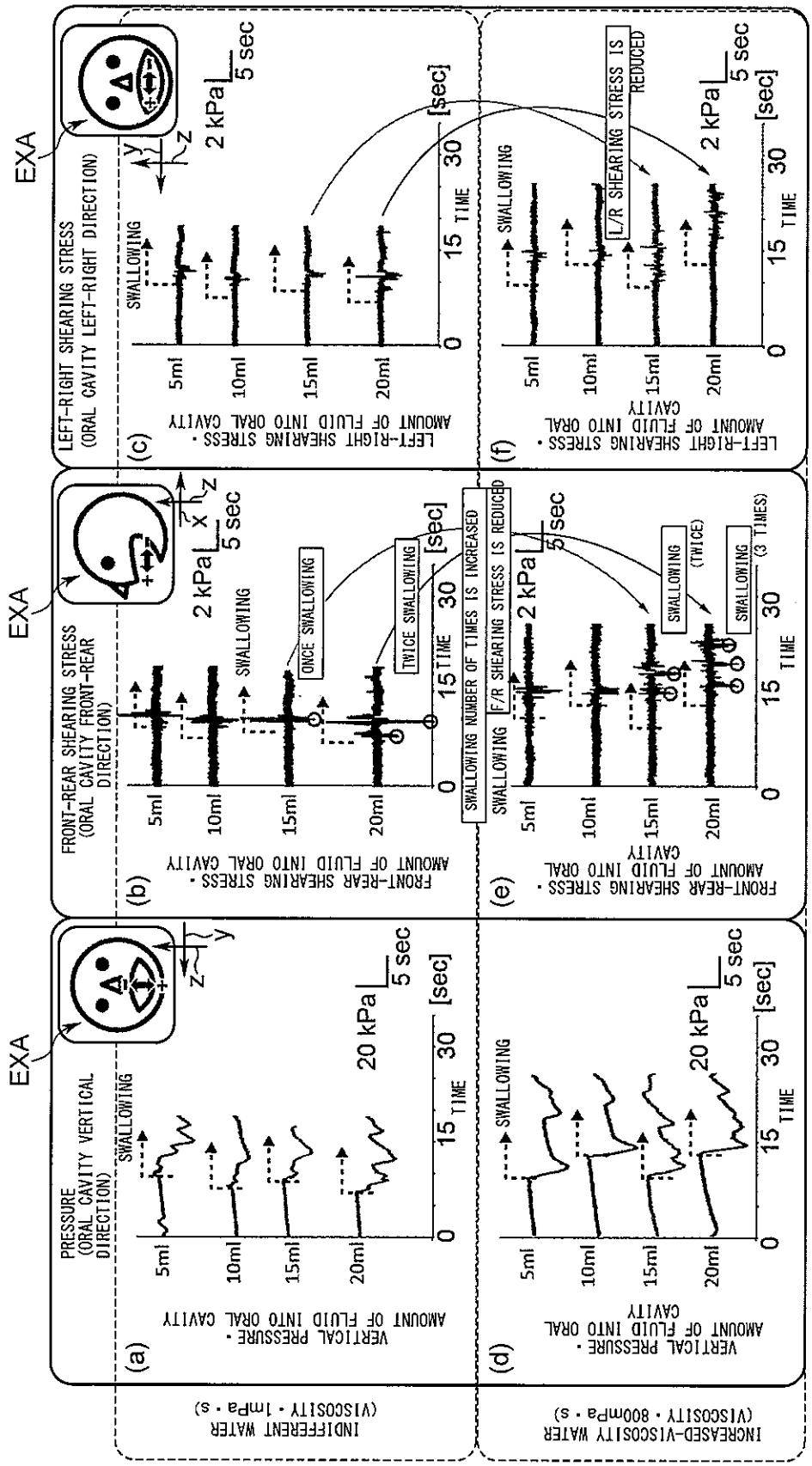

EXA
PRESSURE (ORAL CAVITY VERTICAL DIRECTION)
SWALLOWING
20 kPa
5 sec
TIME
[sec]
VERTICAL PRESSURE · AMOUNT OF FLUID INTO ORAL CAVITY
(a)
5ml
10ml
15ml
20ml
INDIFFERENT WATER (VISCOSITY · 1mPa · s)
FRONT-REAR SHEARING STRESS (ORAL CAVITY FRONT-REAR DIRECTION)
2 kPa
ONCE SWALLOWING
TWICE SWALLOWING
SWALLOWING NUMBER OF TIMES IS INCREASED
FRONT-REAR SHEARING STRESS · AMOUNT OF FLUID INTO ORAL CAVITY
(b)
LEFT-RIGHT SHEARING STRESS (ORAL CAVITY LEFT-RIGHT DIRECTION)
LEFT-RIGHT SHEARING STRESS · AMOUNT OF FLUID INTO ORAL CAVITY
(c)
INCREASED-VISCOSITY WATER (VISCOSITY · 800mPa · s)
VERTICAL PRESSURE · AMOUNT OF FLUID INTO ORAL CAVITY
(d)
F/R SHEARING STRESS IS REDUCED
FRONT-REAR SHEARING STRESS · AMOUNT OF FLUID INTO ORAL CAVITY
(e)
(TWICE)
(3 TIMES)
L/R SHEARING STRESS IS REDUCED
LEFT-RIGHT SHEARING STRESS · AMOUNT OF FLUID INTO ORAL CAVITY
(f)

FIG. 17

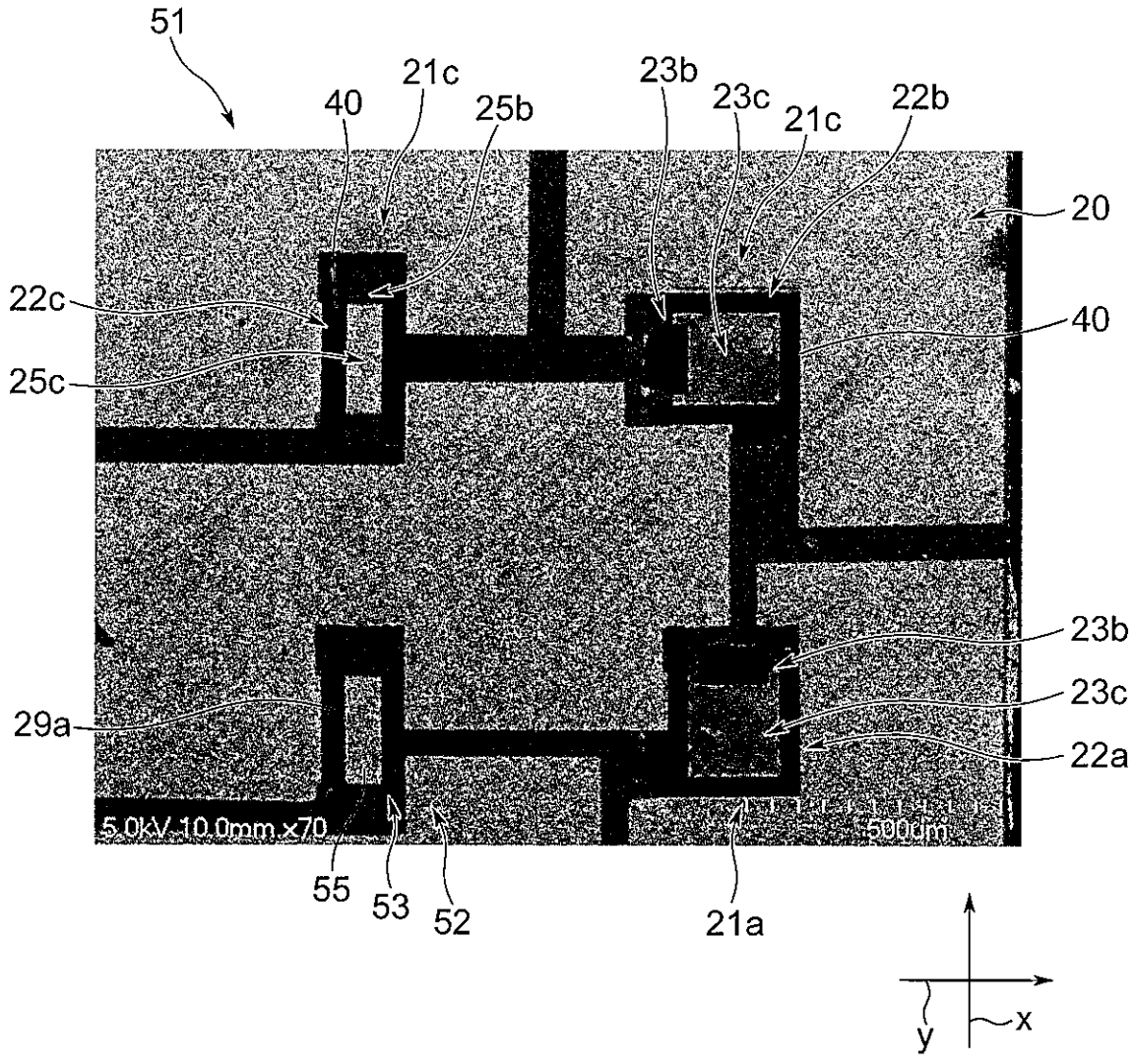

51
40
21c
25b
23b
23c
21c
22b
20
22c
25c
40
23b
23c
22a
29a
5.0kV 10.0mm x70
500um
55
53
52
21a
y
x

FIG. 18

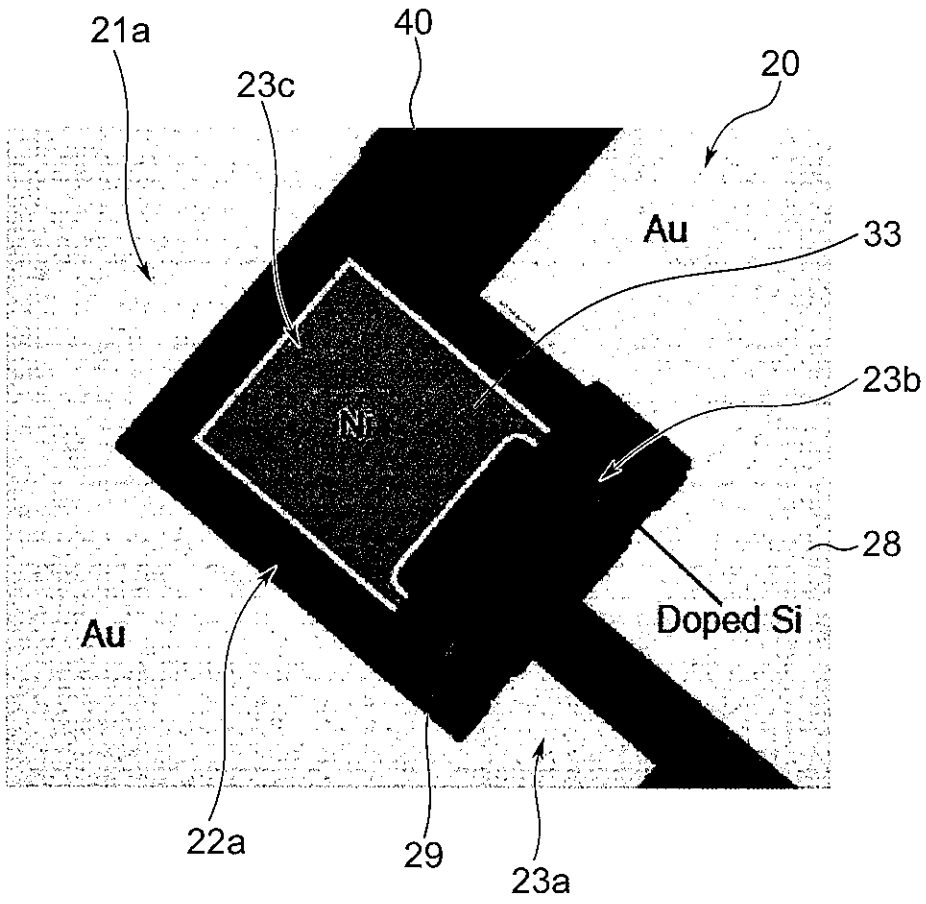


FIG. 19

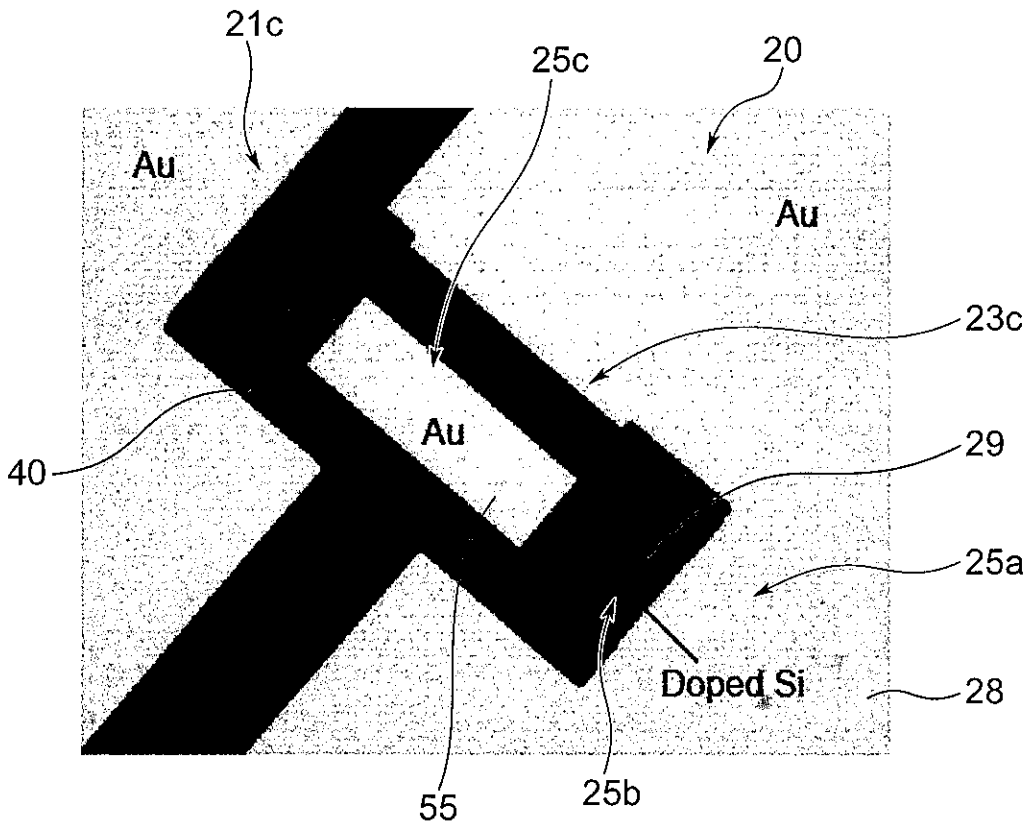


FIG. 20

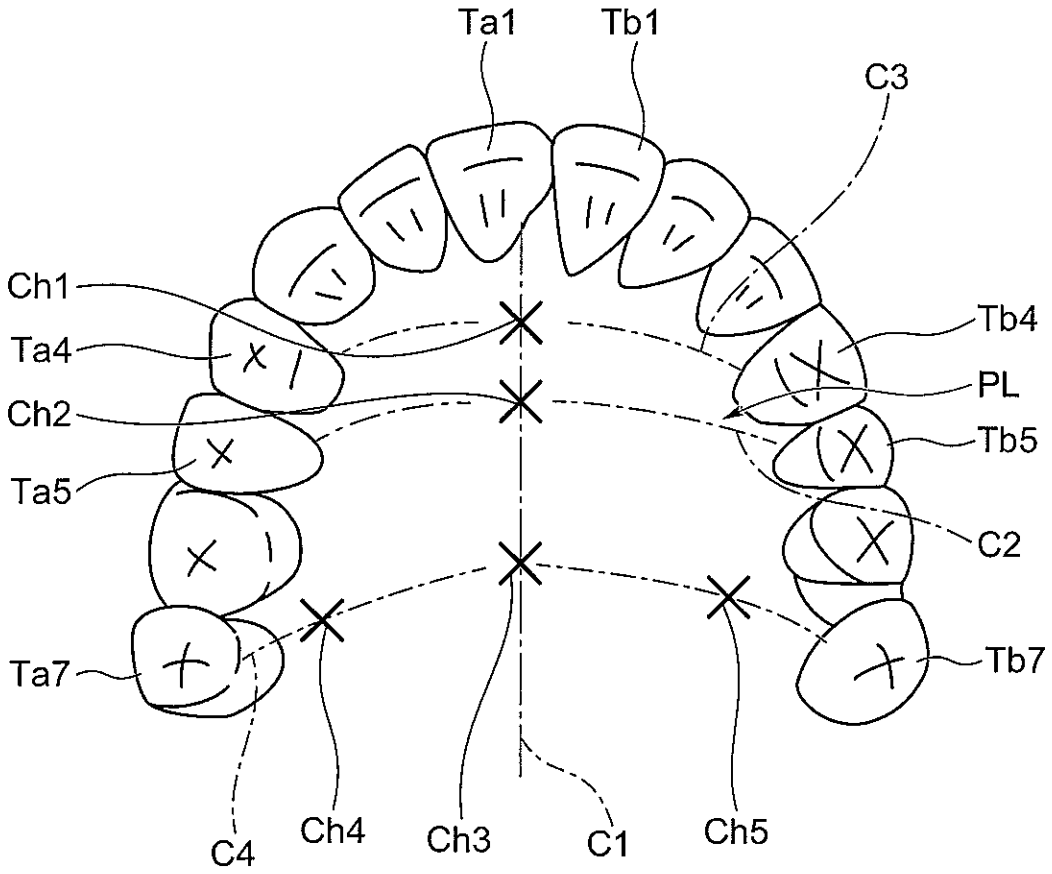


FIG. 21C

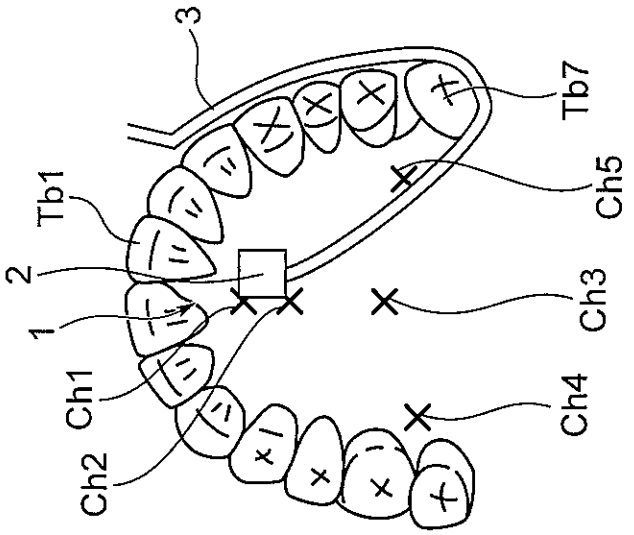


FIG. 21B

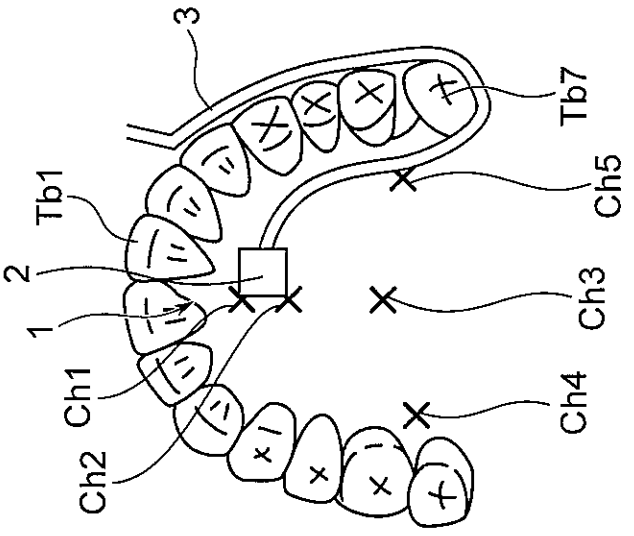


FIG. 21A

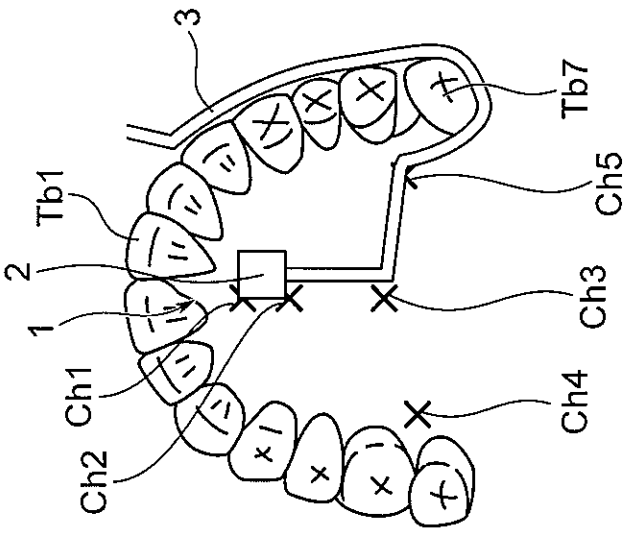


FIG. 22

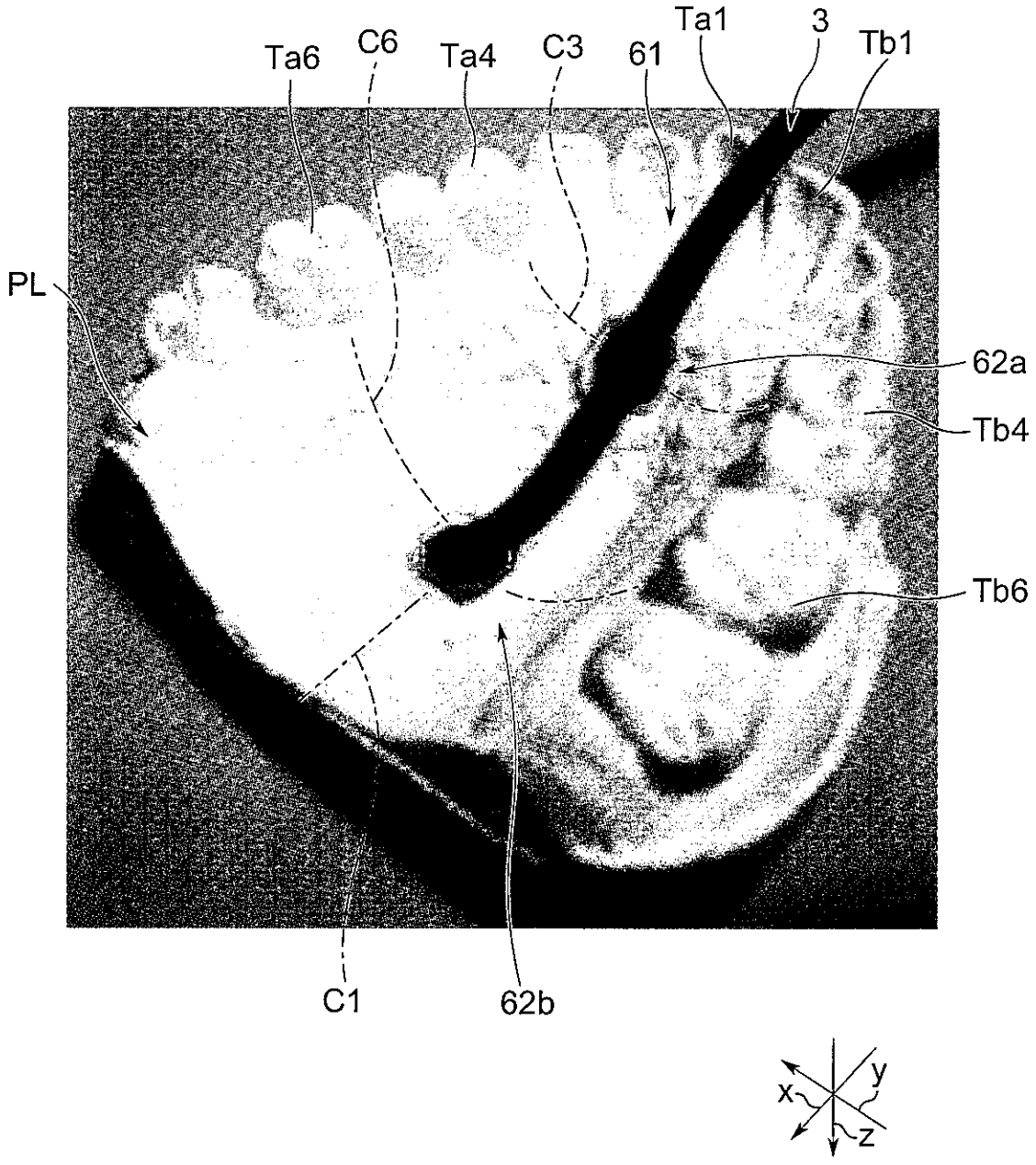


FIG. 23

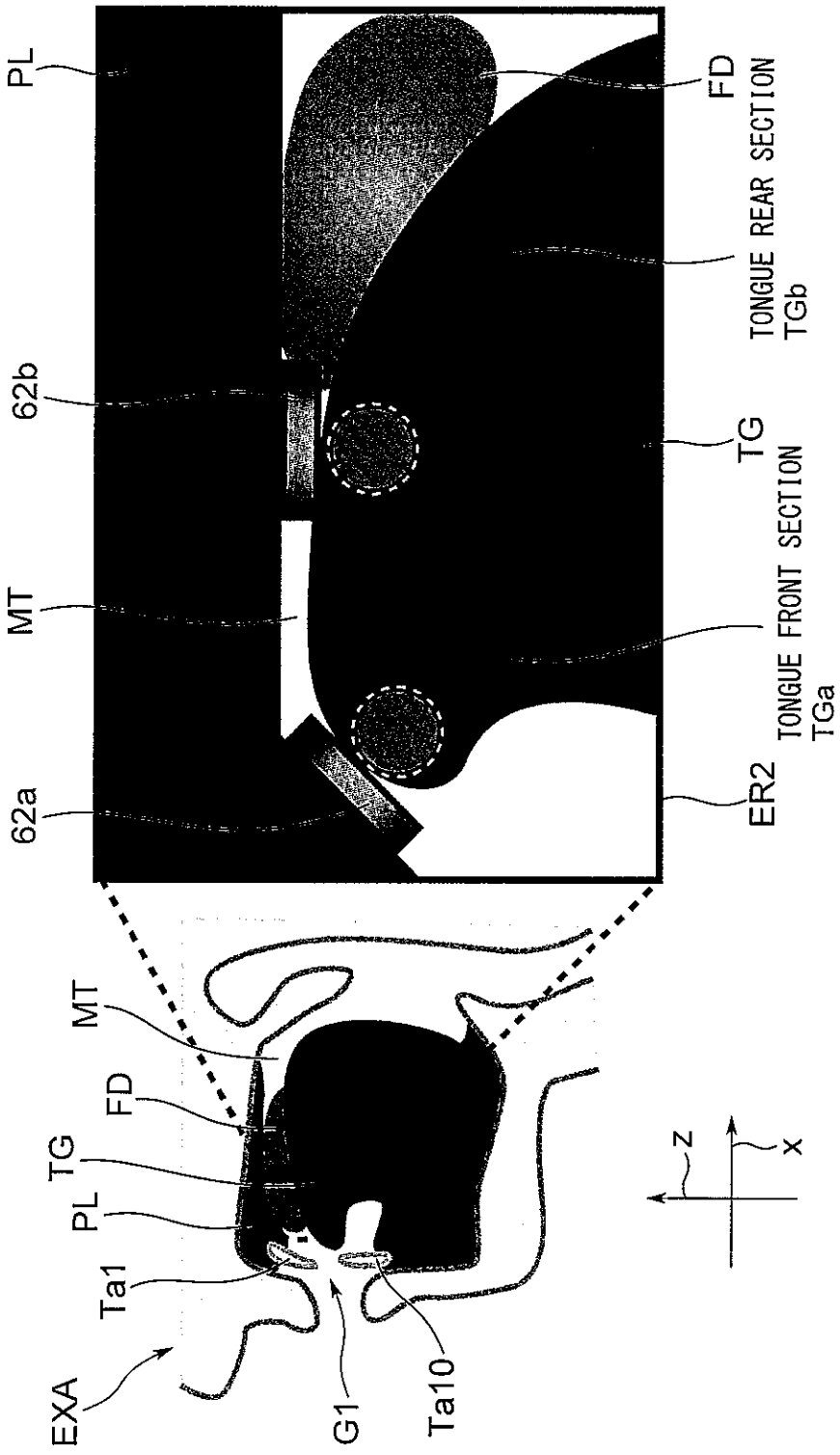

PL
62b
MT
62a
FD
TONGUE REAR SECTION
TGb
TG
TONGUE FRONT SECTION
TGa
ER2
MT
FD
TG
PL
Ta1
EXA
G1
Ta10
z
x

FIG. 24

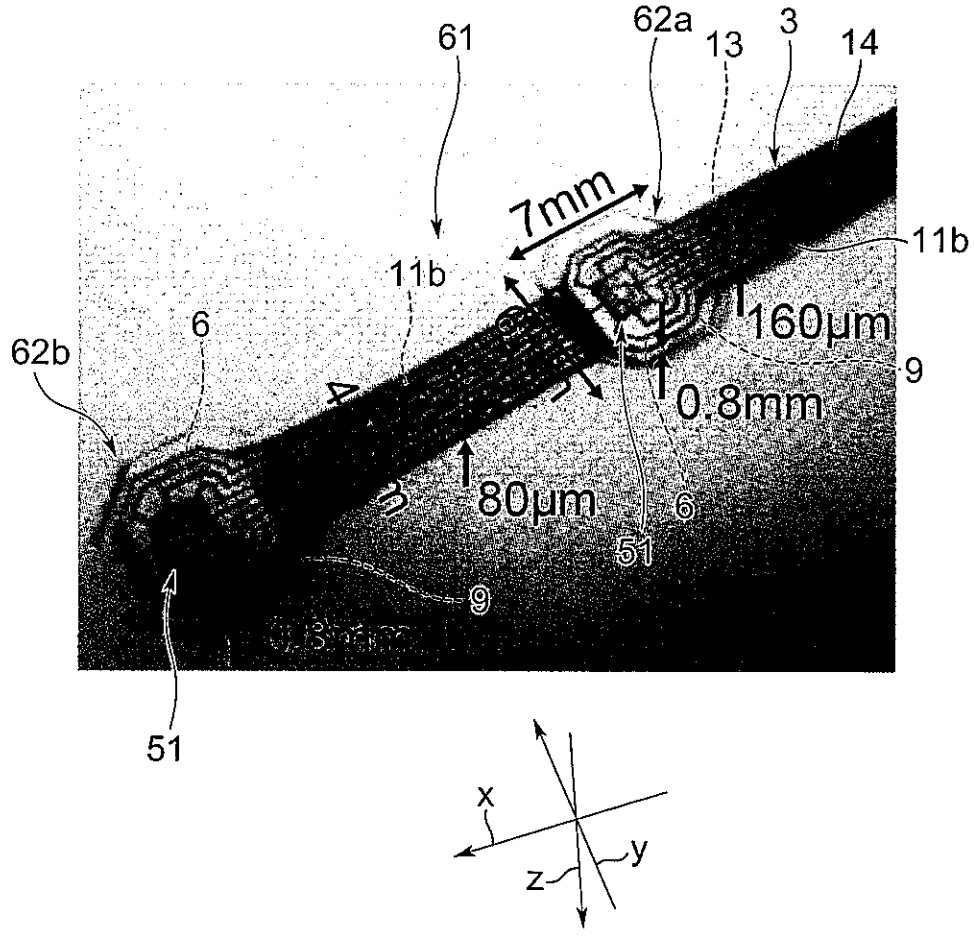


FIG. 25

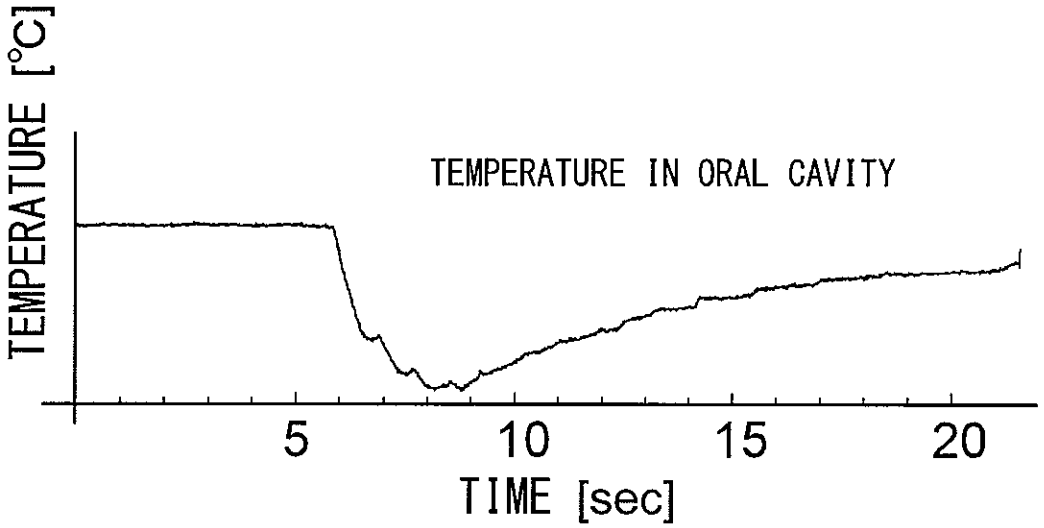


FIG. 26

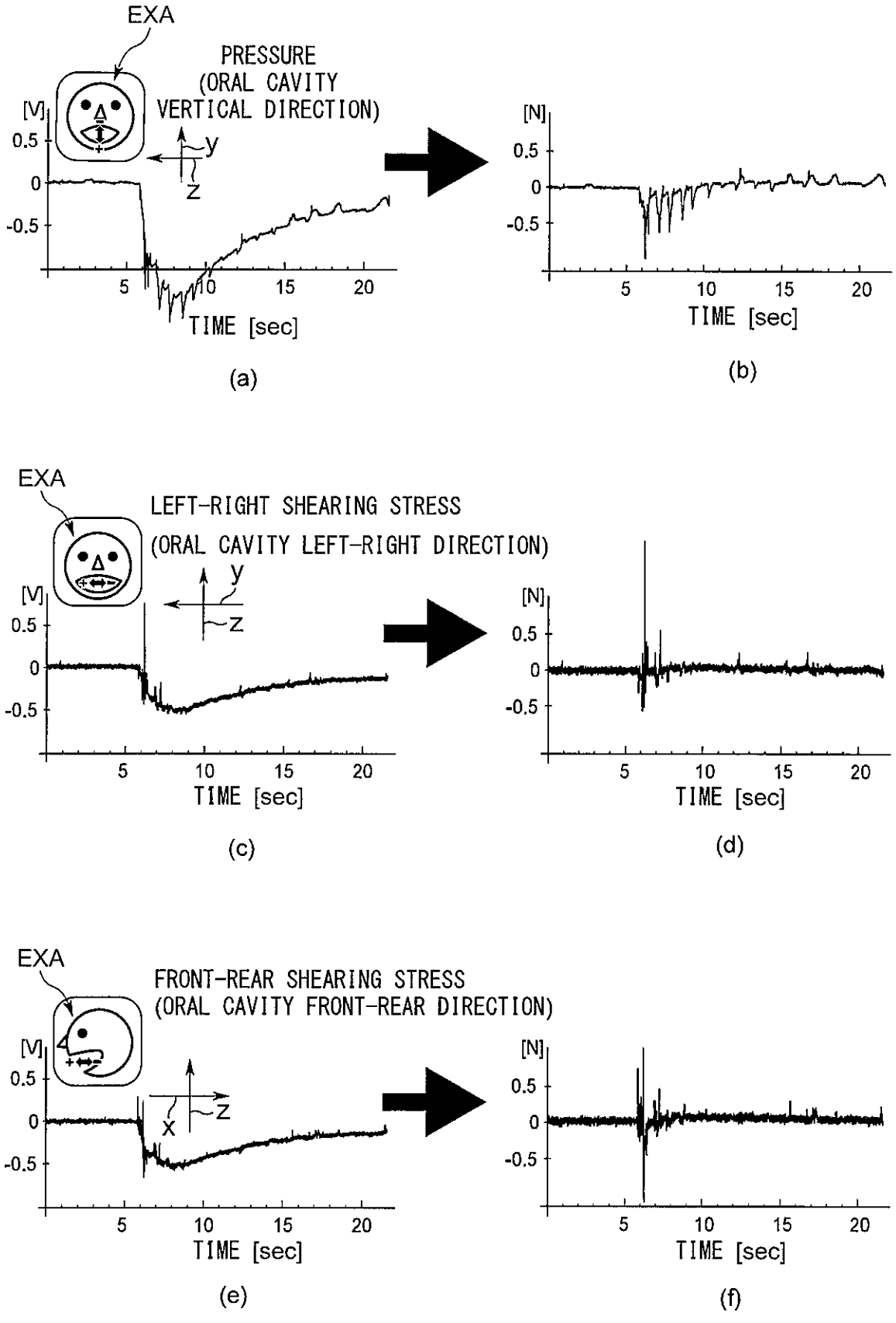

EXA
PRESSURE
(ORAL CAVITY
VERTICAL DIRECTION)
[V]
0.5
0
-0.5
y
z
5
10
15
20
TIME [sec]
(a)
[N]
0.5
0
-0.5
5
10
15
20
TIME [sec]
(b)
EXA
LEFT-RIGHT SHEARING STRESS
(ORAL CAVITY LEFT-RIGHT DIRECTION)
[V]
0.5
0
-0.5
y
z
5
10
15
20
TIME [sec]
(c)
[N]
0.5
0
-0.5
5
10
15
20
TIME [sec]
(d)
EXA
FRONT-REAR SHEARING STRESS
(ORAL CAVITY FRONT-REAR DIRECTION)
[V]
0.5
0
-0.5
x
z
5
10
15
20
TIME [sec]
(e)
[N]
0.5
0
-0.5
5
10
15
20
TIME [sec]
(f)

FIG. 27

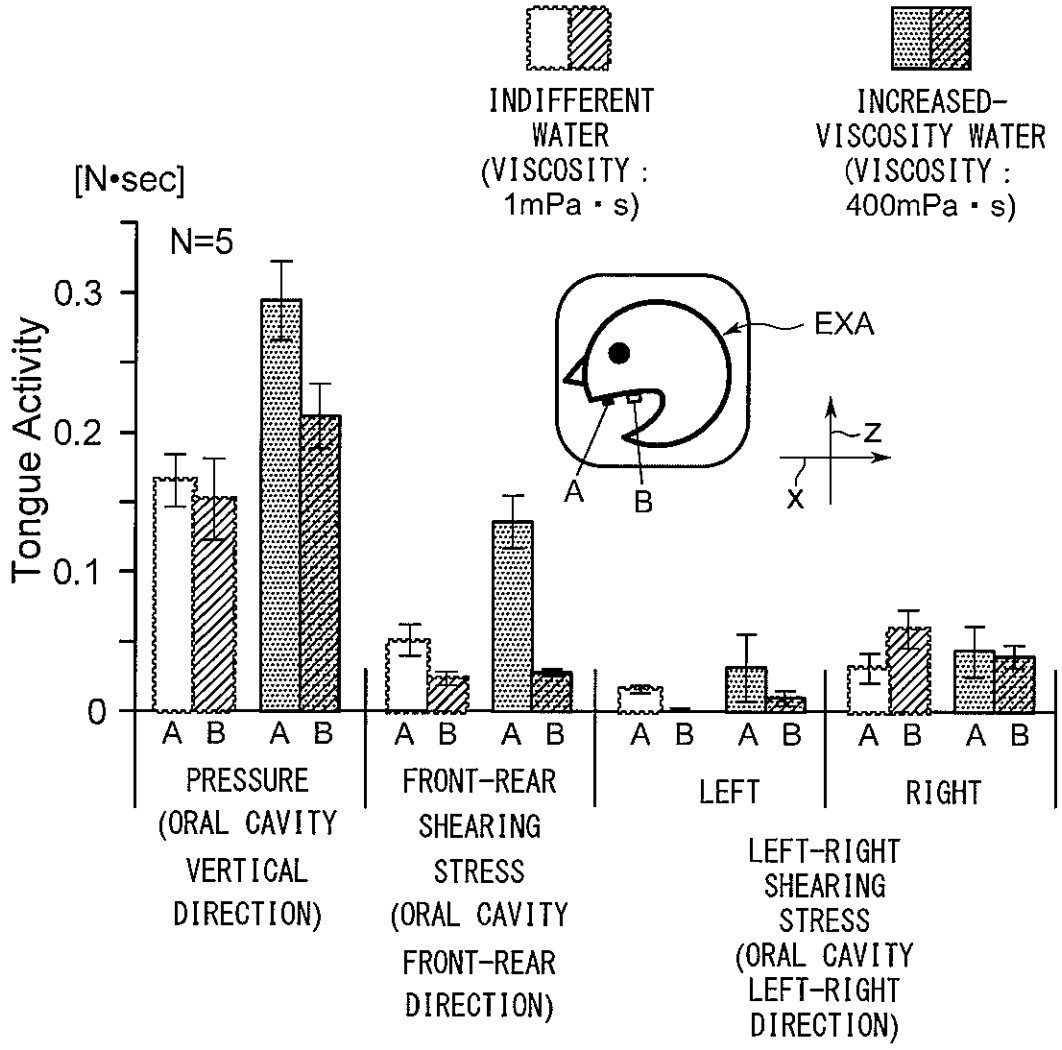

INDIFFERENT WATER (VISCOSITY : 1mPa・s)
INCREASED-VISCOSITY WATER (VISCOSITY : 400mPa・s)
[N•sec]
N=5
Tongue Activity
0.3
0.2
0.1
0
EXA
A
B
Z
X
A B A B
PRESSURE (ORAL CAVITY VERTICAL DIRECTION)
A B A B
FRONT-REAR SHEARING STRESS (ORAL CAVITY FRONT-REAR DIRECTION)
A B A B
LEFT
A B A B
RIGHT
LEFT-RIGHT SHEARING STRESS (ORAL CAVITY LEFT-RIGHT DIRECTION)

FIG. 28

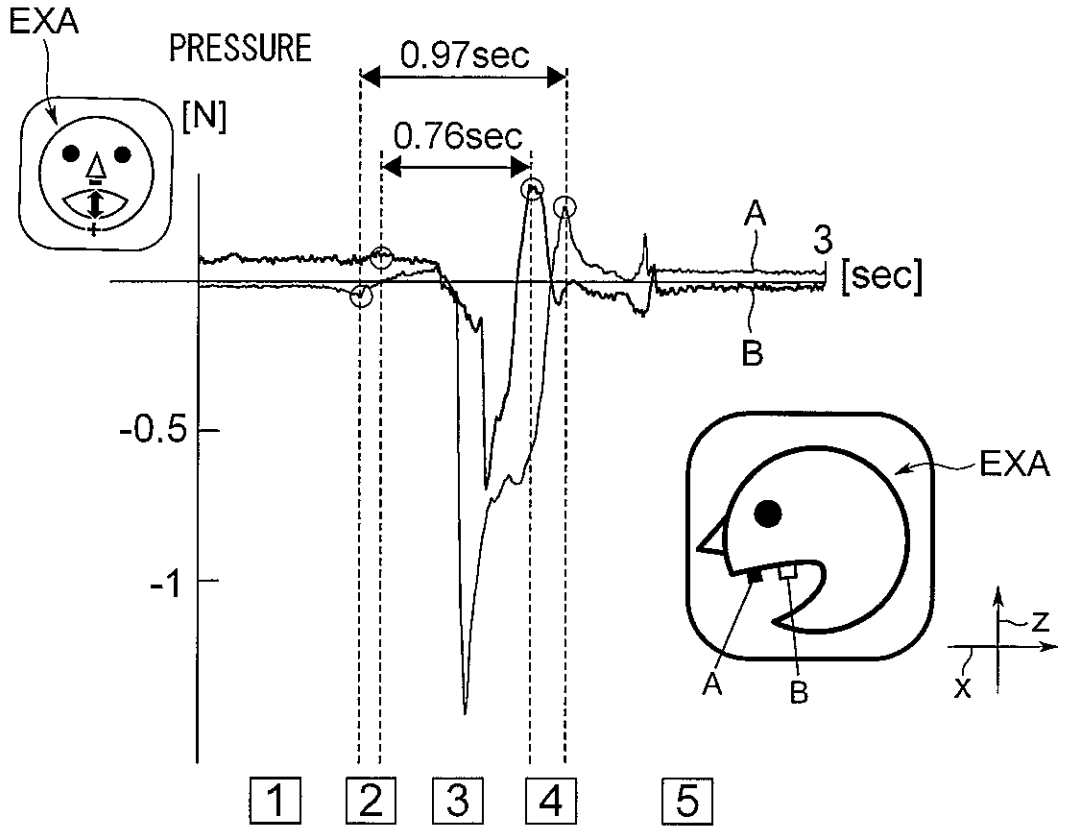


FIG. 29A

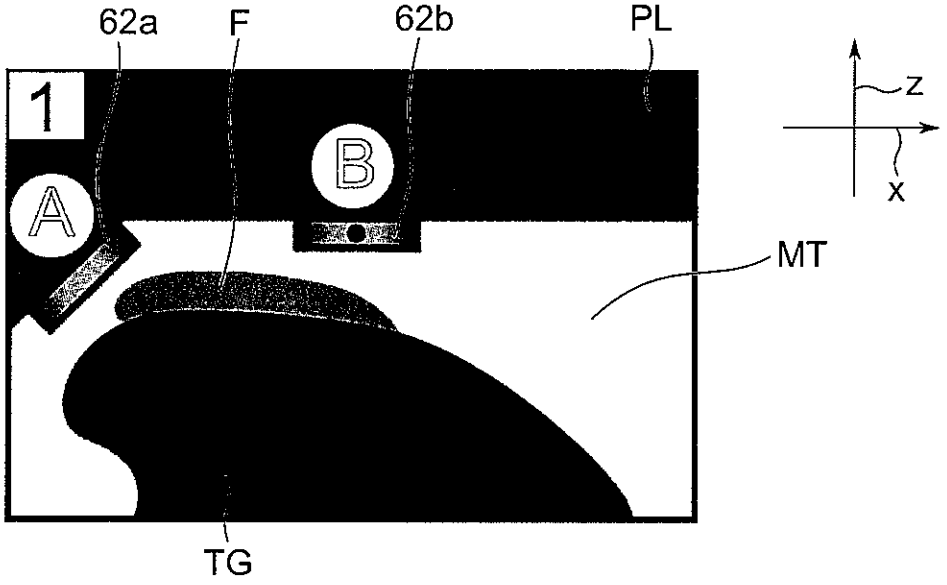


FIG. 29B

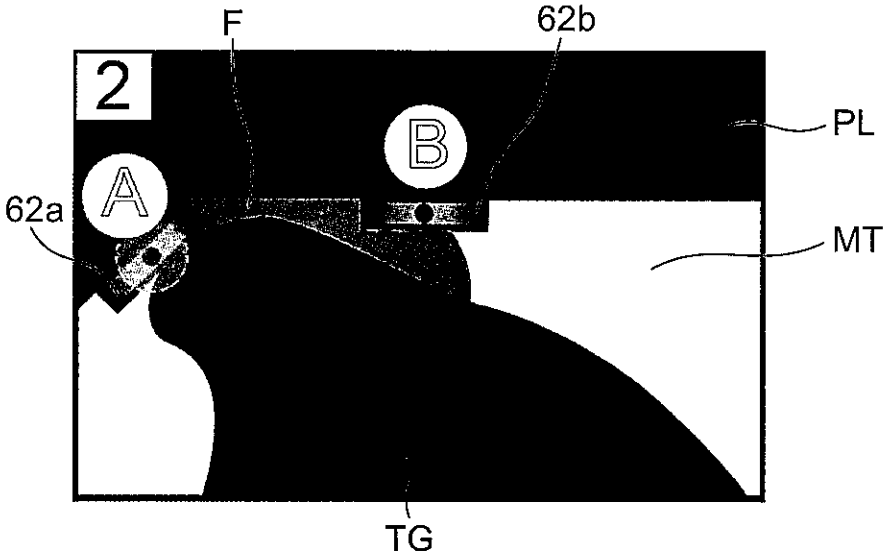


FIG. 29C

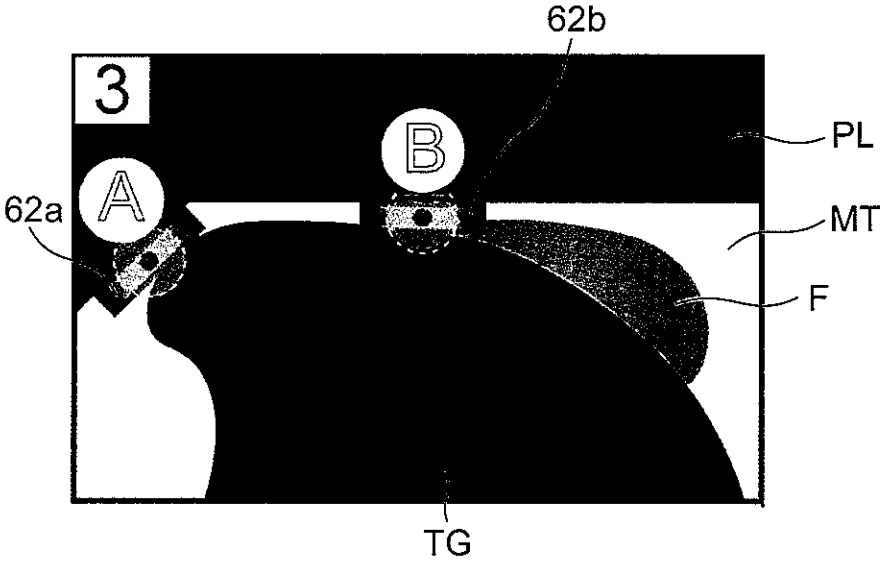


FIG. 30A

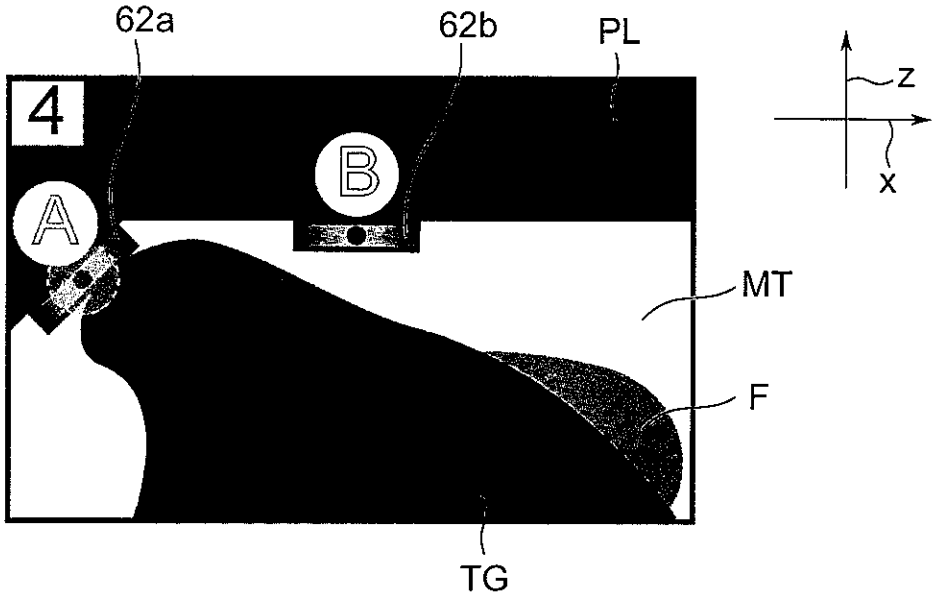


FIG. 30B

