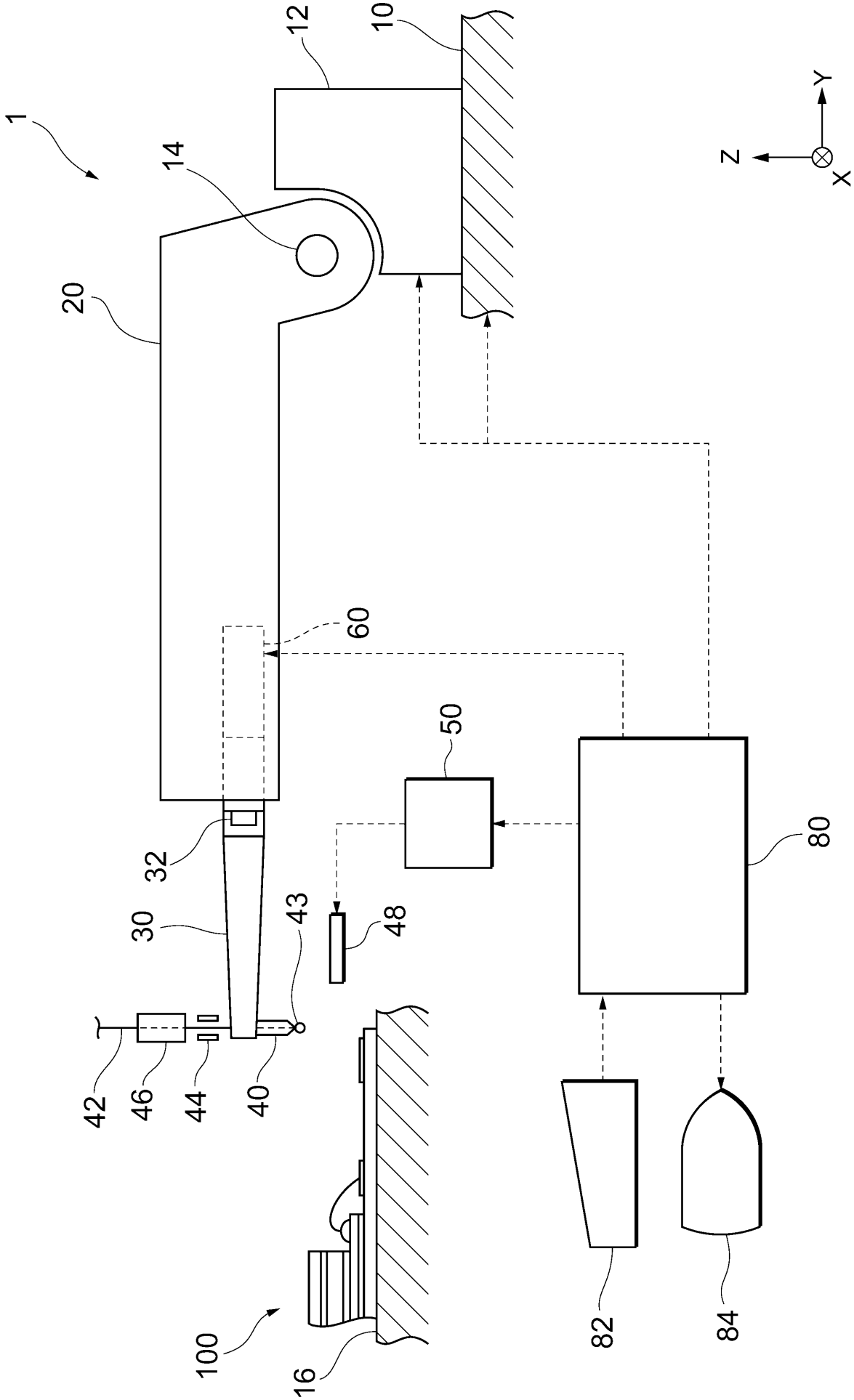



FIG. 1

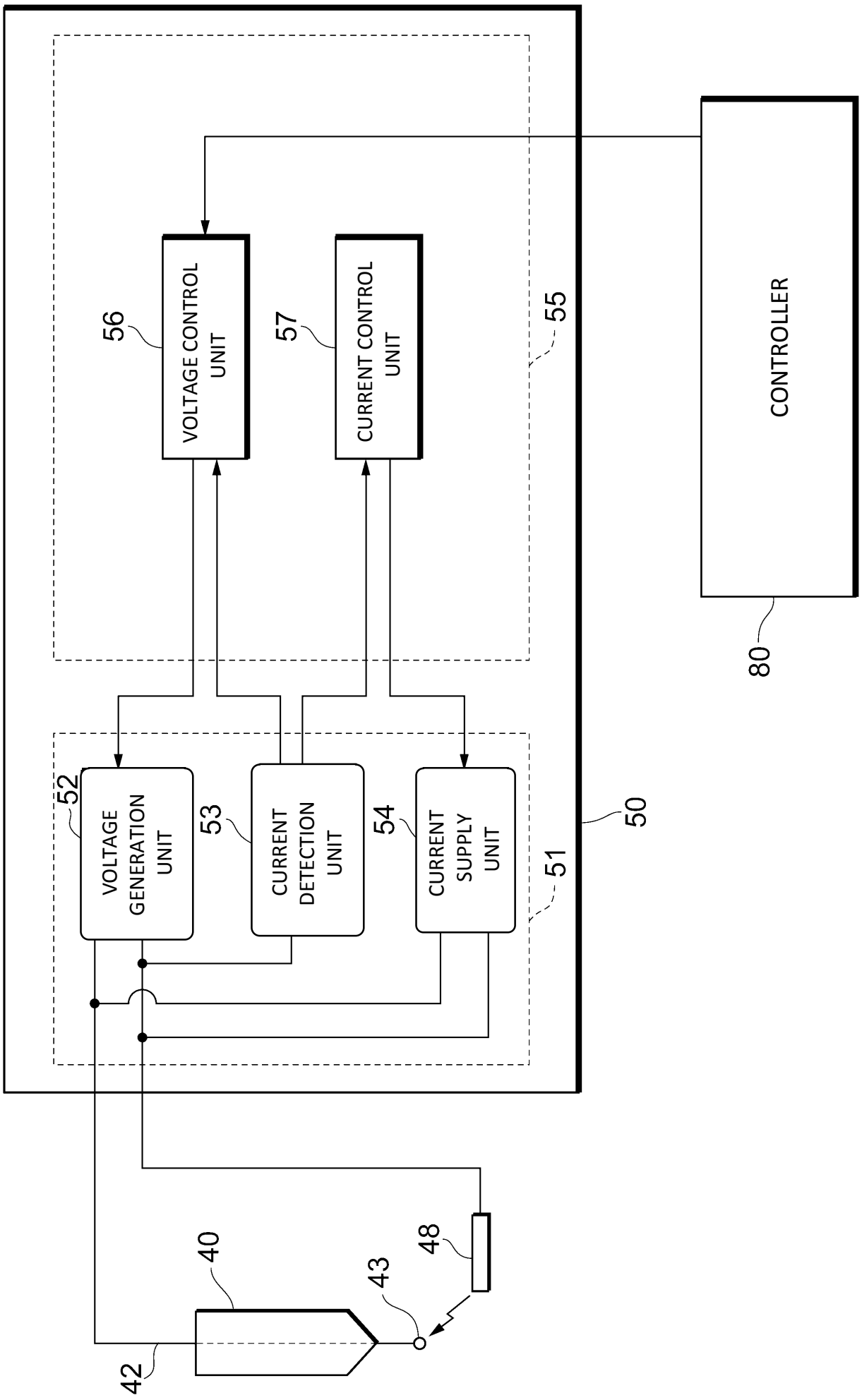

CONTROLLER
80
55
56
VOLTAGE CONTROL UNIT
57
CURRENT CONTROL UNIT
50
51
52
VOLTAGE GENERATION UNIT
53
CURRENT DETECTION UNIT
54
CURRENT SUPPLY UNIT
40
42
43
48

FIG. 2

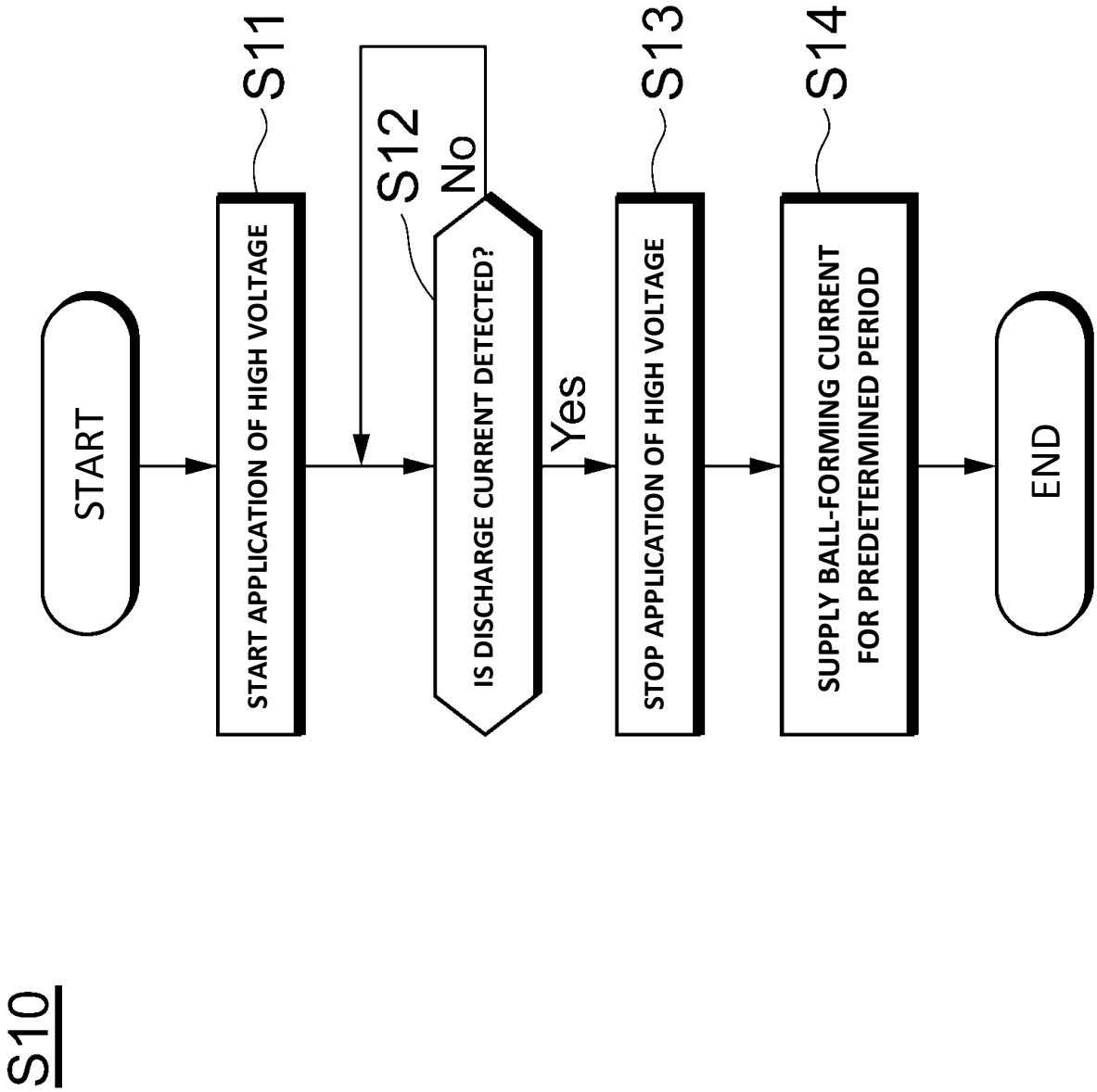

S10
START
S11
START APPLICATION OF HIGH VOLTAGE
S12
IS DISCHARGE CURRENT DETECTED?
No
Yes
S13
STOP APPLICATION OF HIGH VOLTAGE
S14
SUPPLY BALL-FORMING CURRENT FOR PREDETERMINED PERIOD
END

FIG. 3

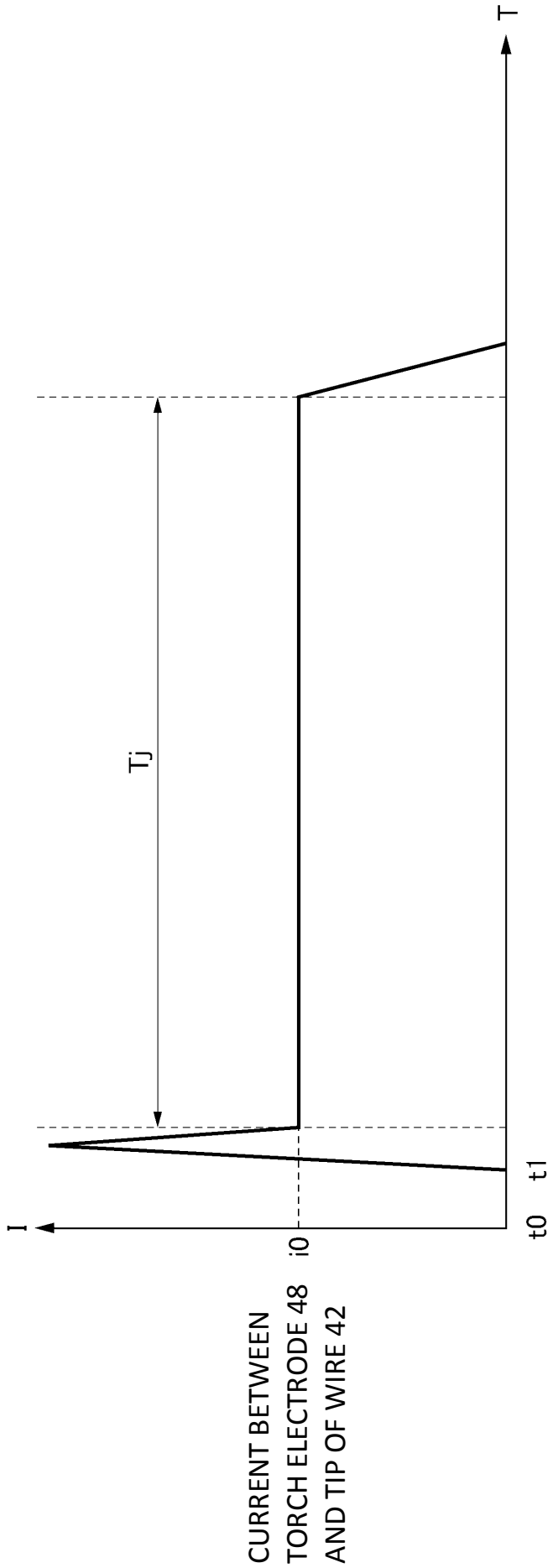

T
Tj
I
i0
t0
t1
CURRENT BETWEEN
TORCH ELECTRODE 48
AND TIP OF WIRE 42

FIG. 4

FIG. 5 (A)

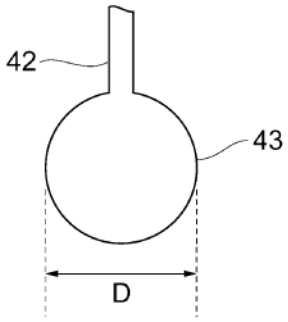



FIG. 5 (B)

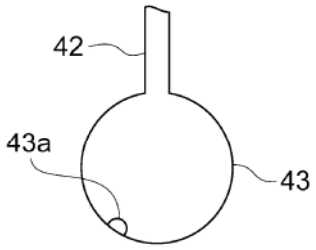



FIG. 5 (C)

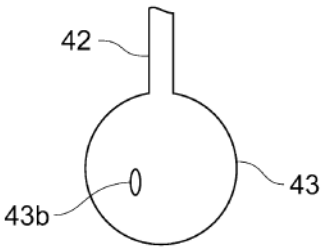
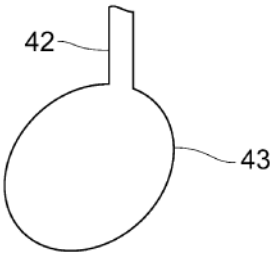



FIG. 5 (D)



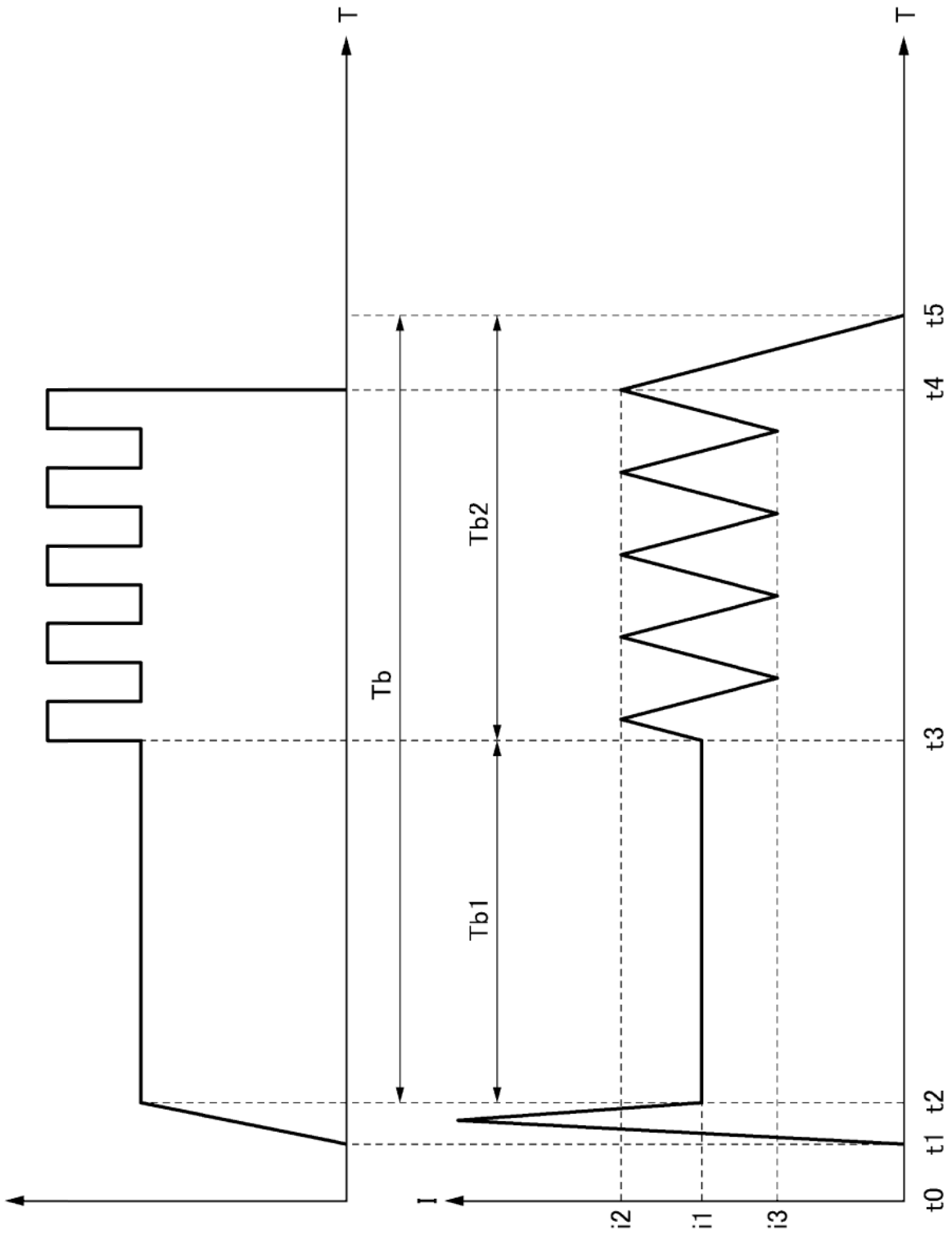

T
Tb
Tb2
Tb1
t0
t1
t2
t3
t4
t5
I
i2
i1
i3
T
CONTROL SIGNAL OF
CURRENT CONTROL UNIT 57
CURRENT BETWEEN
TORCH ELECTRODE 48
AND TIP OF WIRE 42

FIG. 6

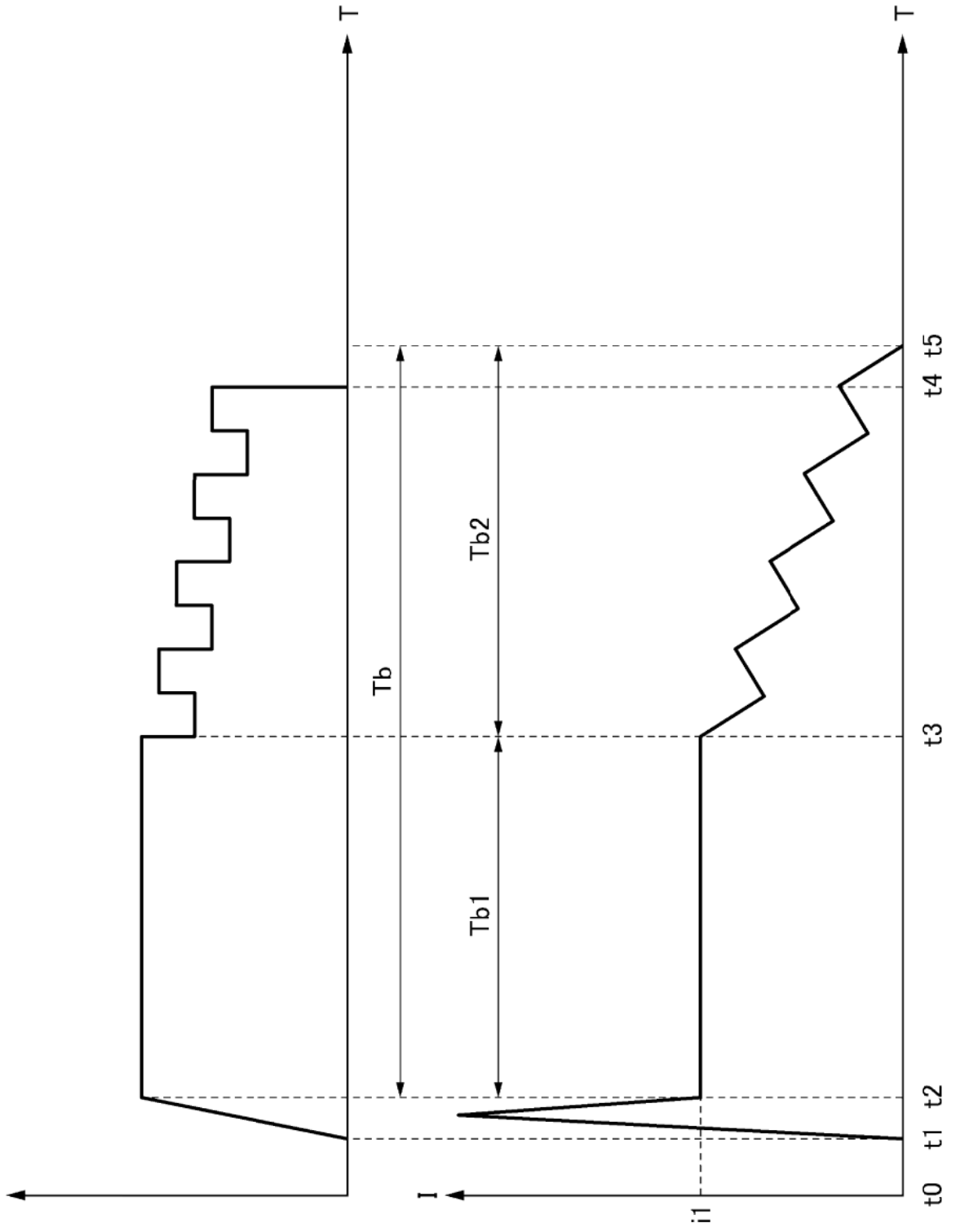

CONTROL SIGNAL OF
CURRENT CONTROL UNIT 57
T
Tb
Tb2
Tb1
CURRENT BETWEEN
TORCH ELECTRODE 48
AND TIP OF WIRE 42
I
i1
T
t0
t1
t2
t3
t4
t5

FIG. 7