FIG. 1

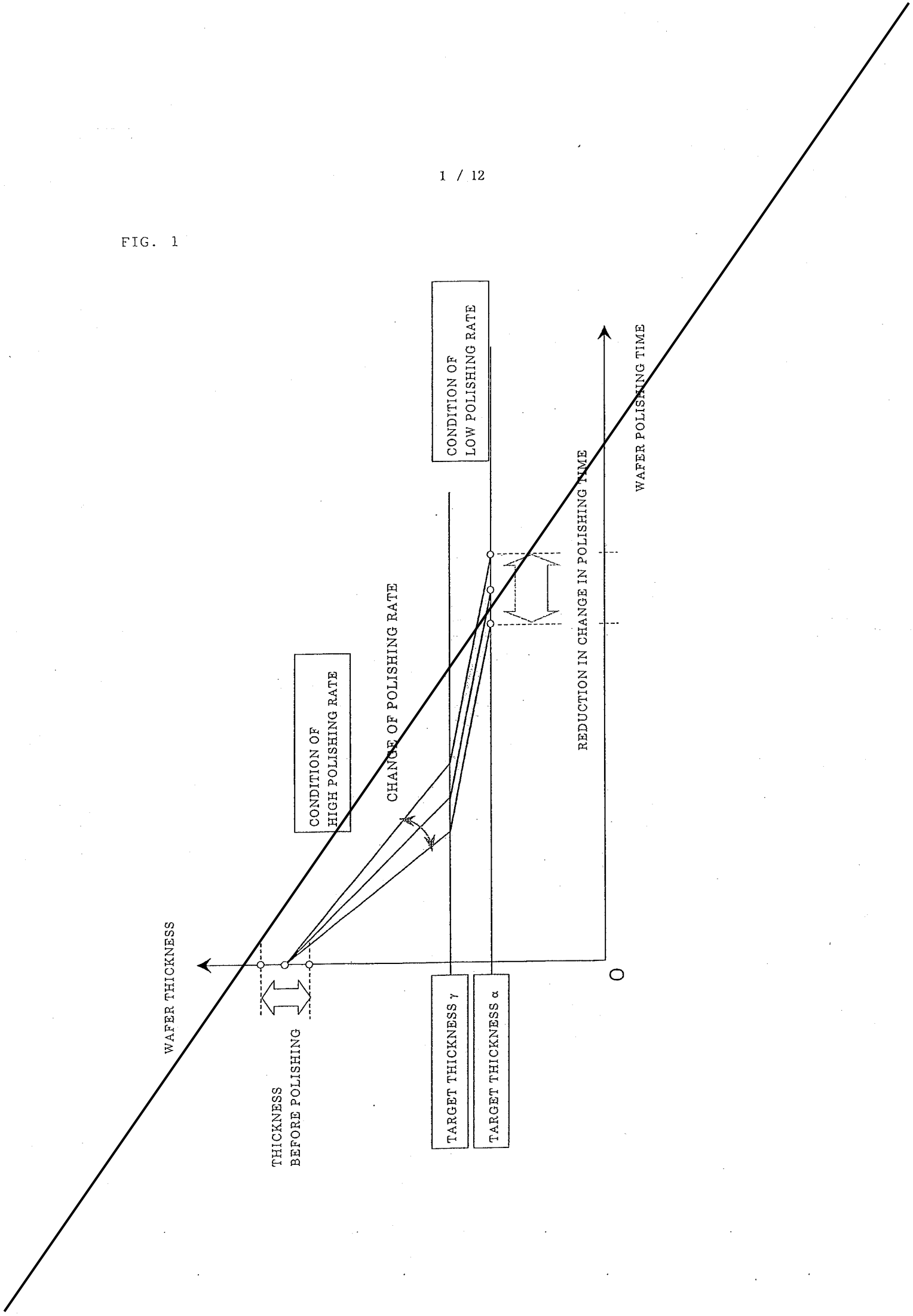

WAFER THICKNESS
THICKNESS BEFORE POLISHING
CONDITION OF HIGH POLISHING RATE
CHANGE OF POLISHING RATE
CONDITION OF LOW POLISHING RATE
TARGET THICKNESS γ
TARGET THICKNESS α
REDUCTION IN CHANGE IN POLISHING TIME
O
WAFER POLISHING TIME

FIG. 2

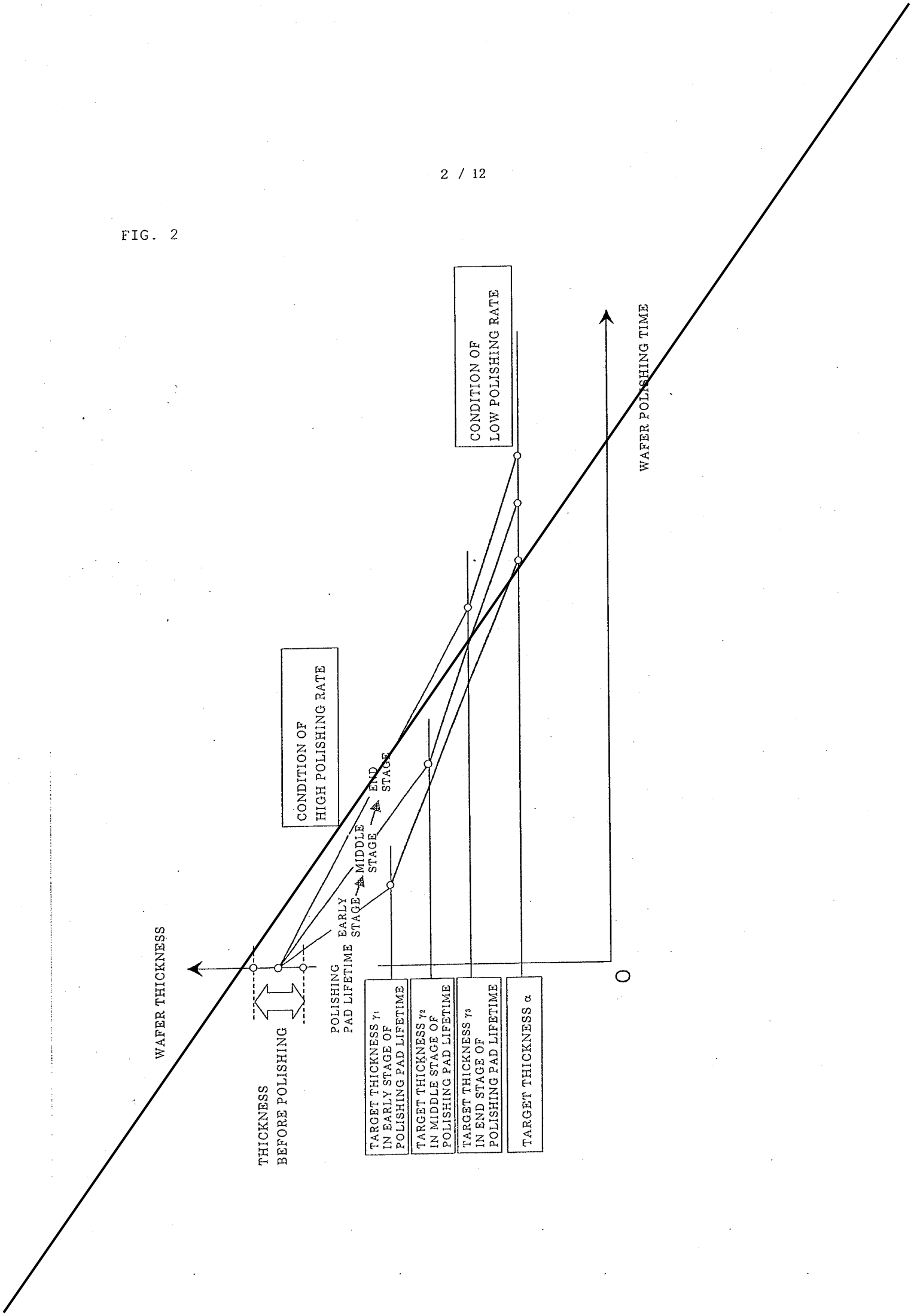

WAFER THICKNESS
THICKNESS BEFORE POLISHING
POLISHING PAD LIFETIME
EARLY STAGE
MIDDLE STAGE
END STAGE
CONDITION OF HIGH POLISHING RATE
CONDITION OF LOW POLISHING RATE
WAFER POLISHING TIME
O
TARGET THICKNESS γ1 IN EARLY STAGE OF POLISHING PAD LIFETIME
TARGET THICKNESS γ2 IN MIDDLE STAGE OF POLISHING PAD LIFETIME
TARGET THICKNESS γ3 IN END STAGE OF POLISHING PAD LIFETIME
TARGET THICKNESS α

FIG. 3

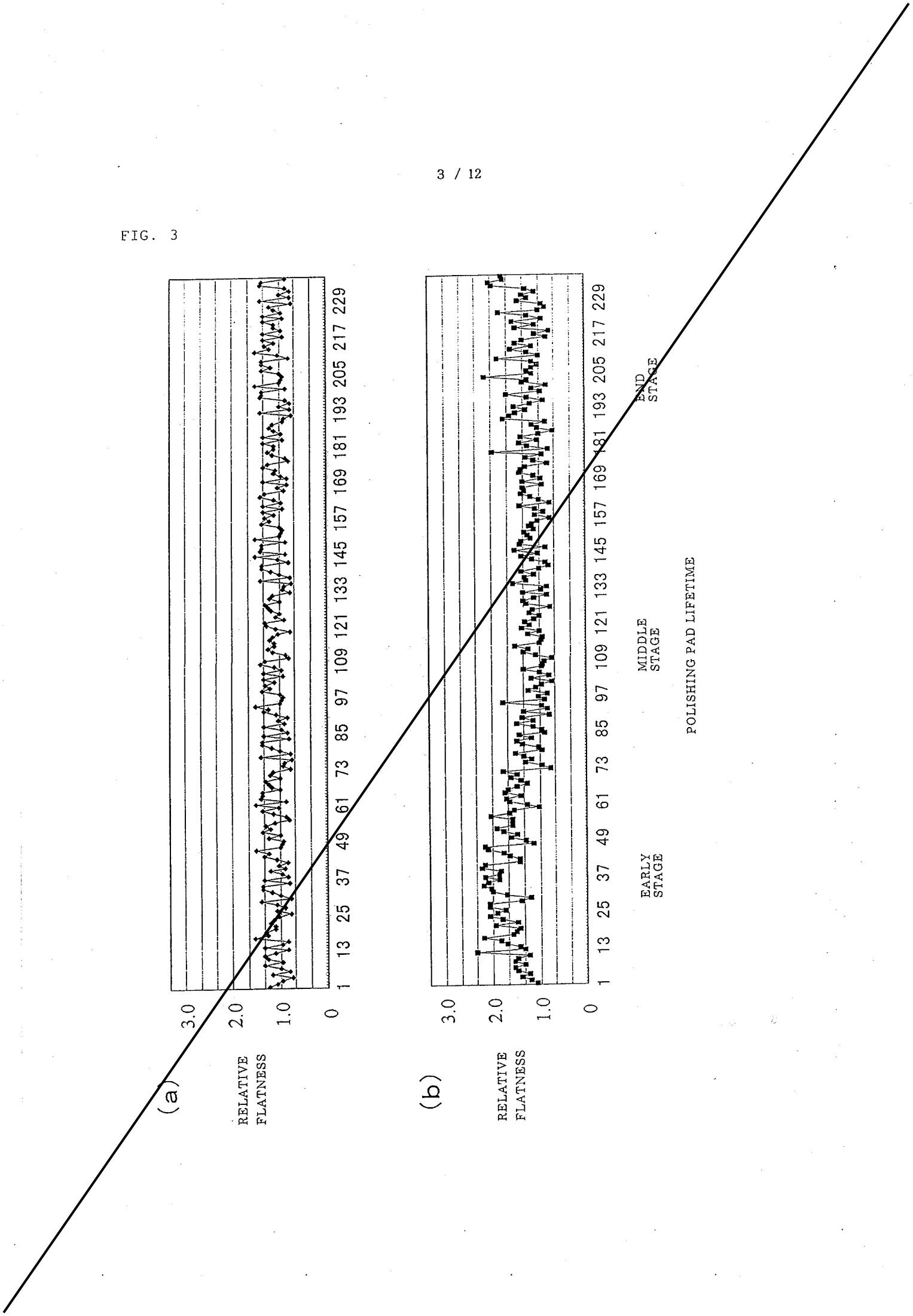

(a)
RELATIVE FLATNESS
3.0
2.0
1.0
0
1 13 25 37 49 61 73 85 97 109 121 133 145 157 169 181 193 205 217 229
(b)
RELATIVE FLATNESS
3.0
2.0
1.0
0
1 13 25 37 49 61 73 85 97 109 121 133 145 157 169 181 193 205 217 229
EARLY STAGE
MIDDLE STAGE
END STAGE
POLISHING PAD LIFETIME

FIG. 4

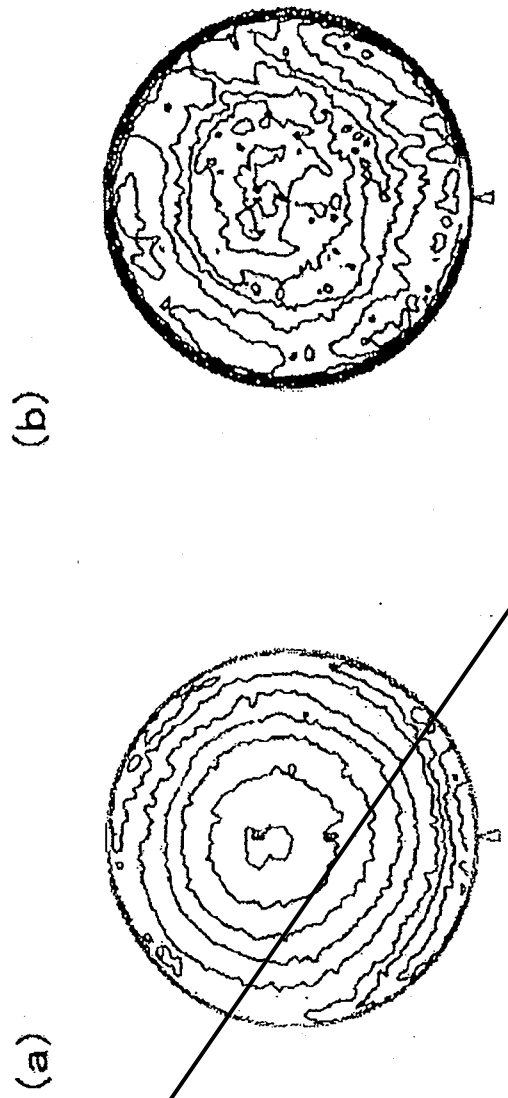


FIG. 5

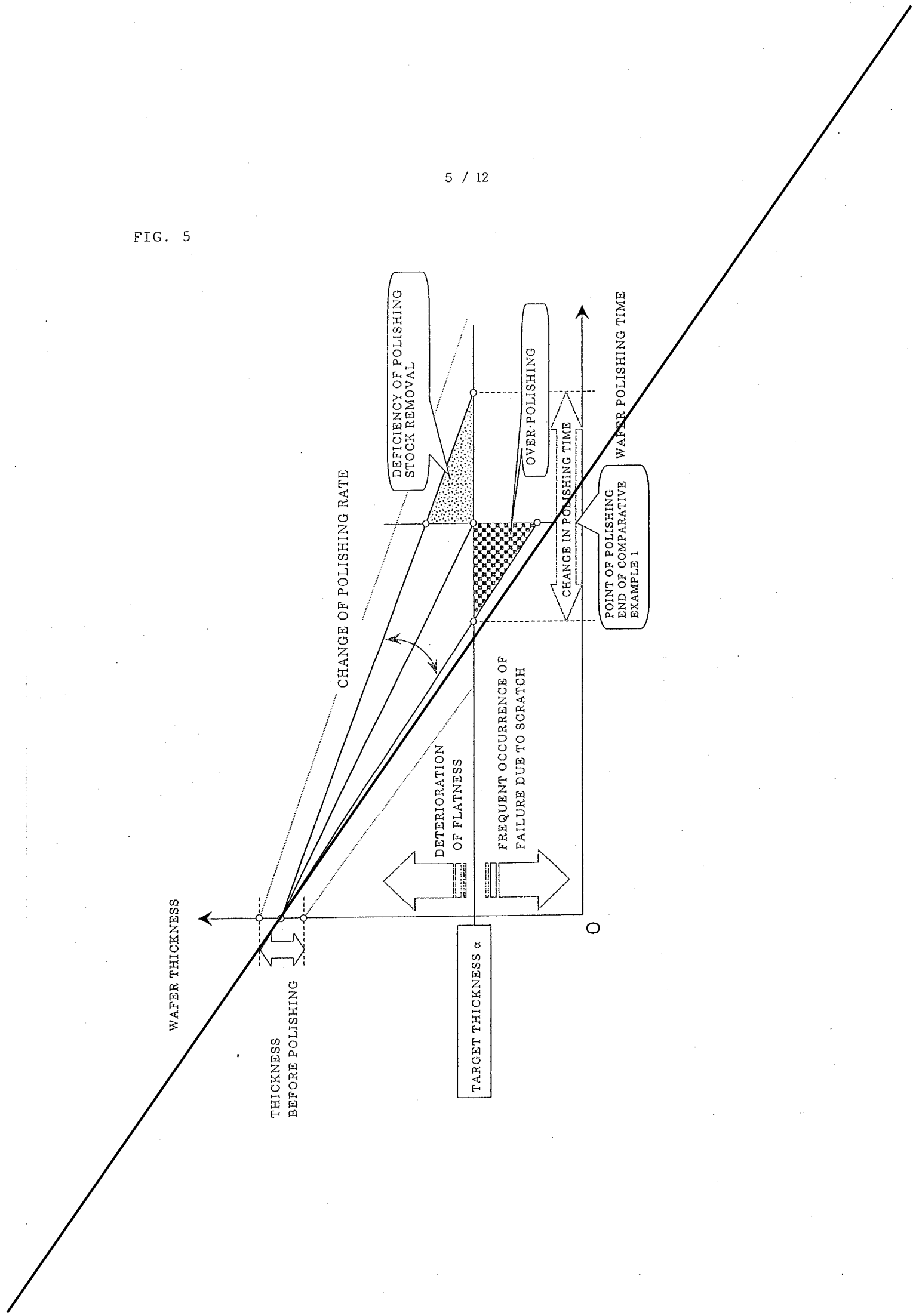

WAFER THICKNESS
THICKNESS BEFORE POLISHING
CHANGE OF POLISHING RATE
DEFICIENCY OF POLISHING STOCK REMOVAL
OVER-POLISHING
CHANGE IN POLISHING TIME
POINT OF POLISHING END OF COMPARATIVE EXAMPLE 1
WAFER POLISHING TIME
DETERIORATION OF FLATNESS
FREQUENT OCCURRENCE OF FAILURE DUE TO SCRATCH
TARGET THICKNESS α
O

FIG. 6

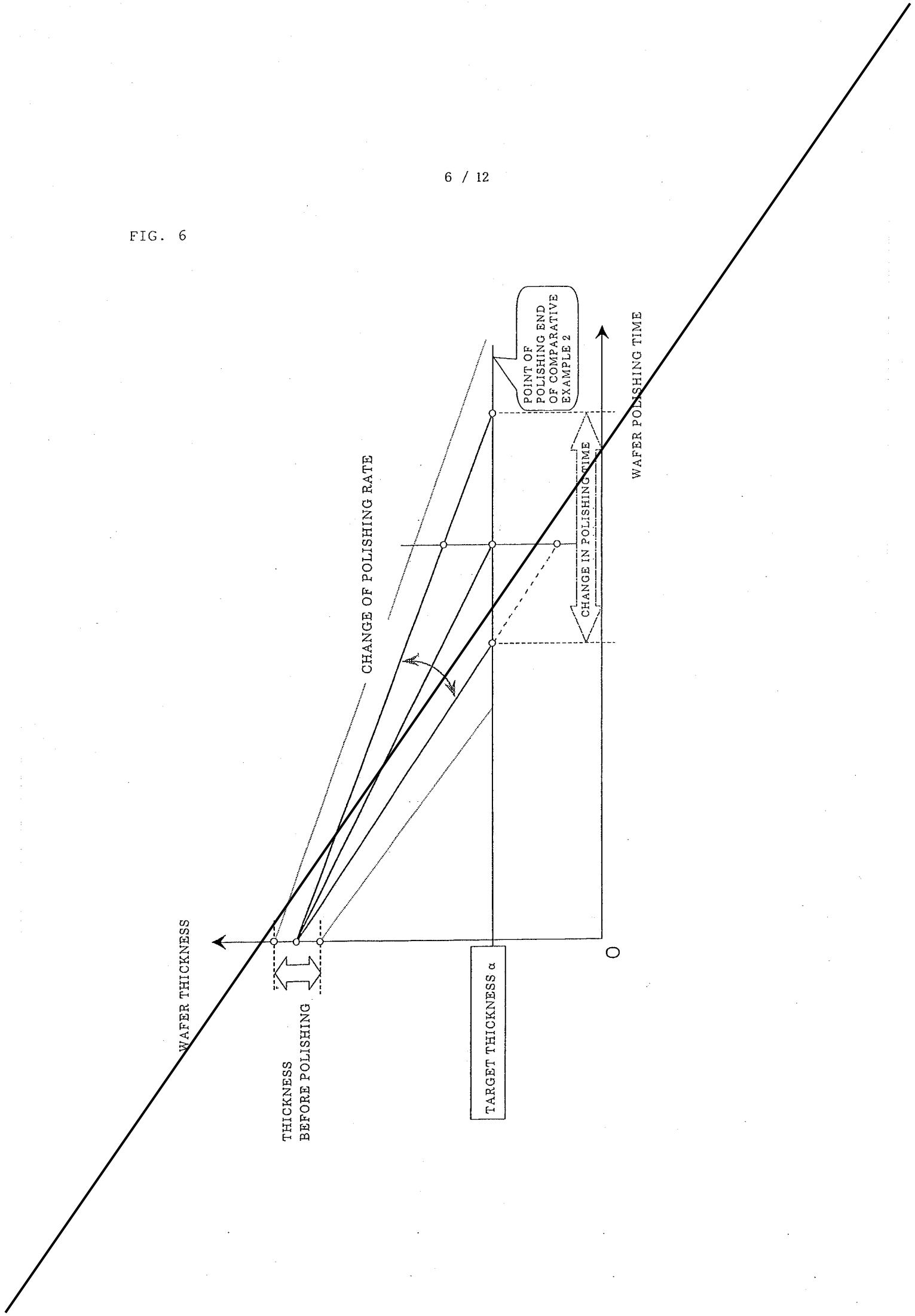

WAFER THICKNESS
THICKNESS BEFORE POLISHING
TARGET THICKNESS α
O
WAFER POLISHING TIME
CHANGE OF POLISHING RATE
CHANGE IN POLISHING TIME
POINT OF POLISHING END OF COMPARATIVE EXAMPLE 2

FIG. 7

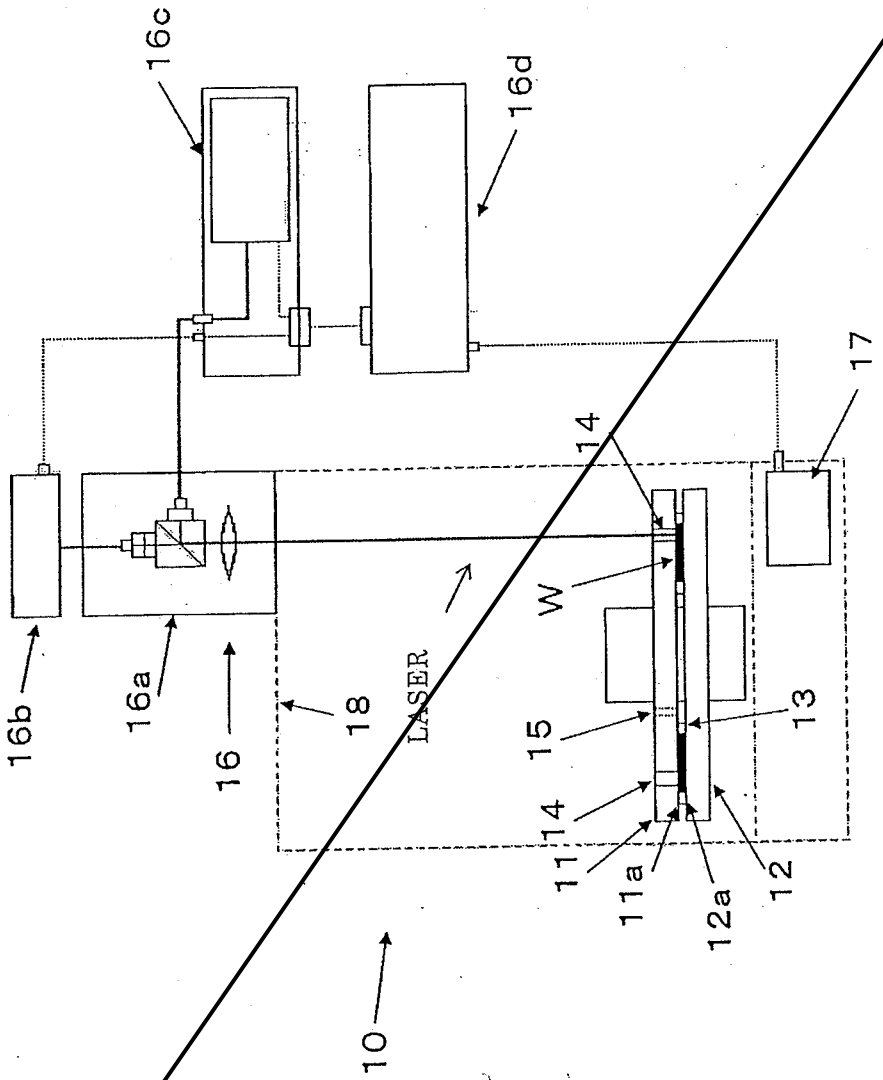


FIG. 8

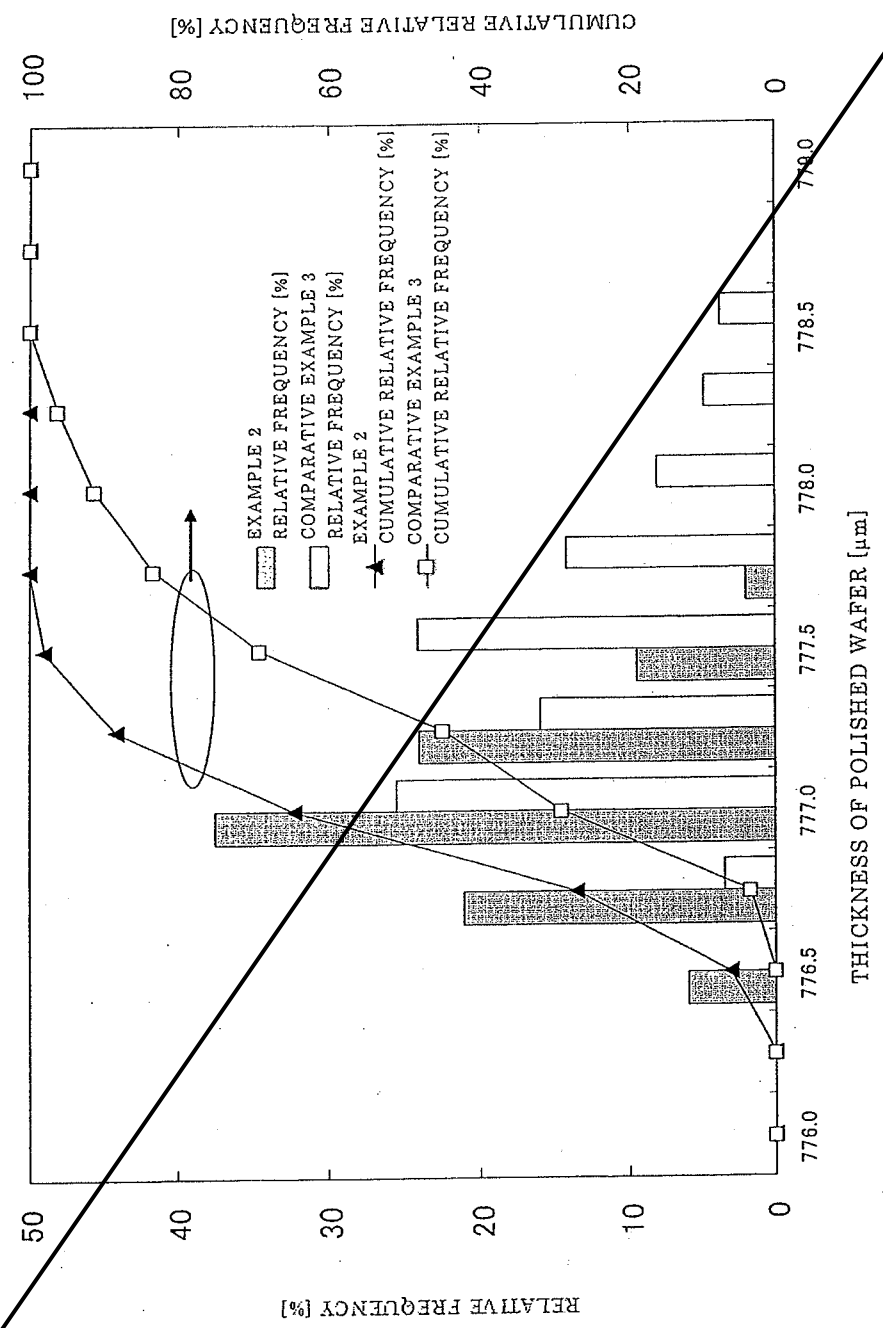

CUMULATIVE RELATIVE FREQUENCY [%]
100
80
60
40
20
0
EXAMPLE 2
RELATIVE FREQUENCY [%]
COMPARATIVE EXAMPLE 3
RELATIVE FREQUENCY [%]
EXAMPLE 2
CUMULATIVE RELATIVE FREQUENCY [%]
COMPARATIVE EXAMPLE 3
CUMULATIVE RELATIVE FREQUENCY [%]
50
40
30
20
10
0
RELATIVE FREQUENCY [%]
776.0
776.5
777.0
777.5
778.0
778.5
THICKNESS OF POLISHED WAFER [μm]

FIG. 9

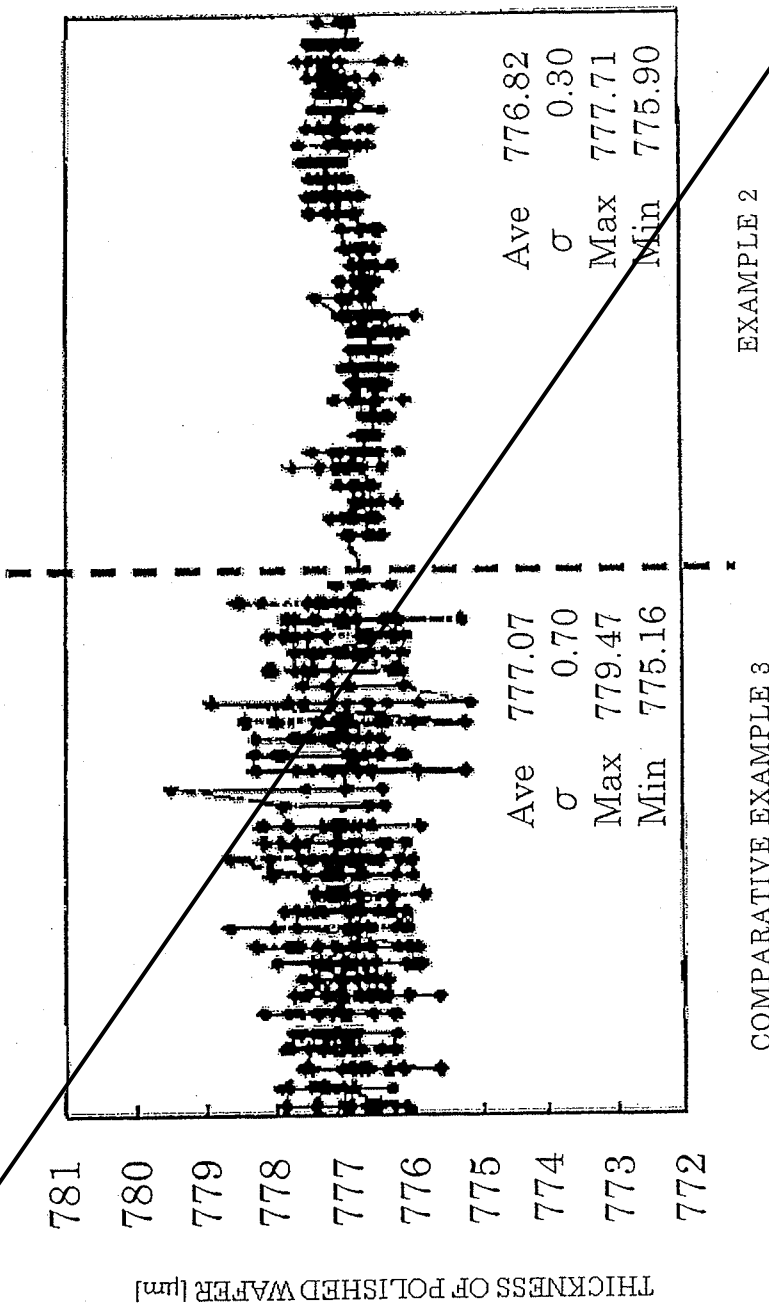

THICKNESS OF POLISHED WAFER [μm]
781
780
779
778
777
776
775
774
773
772
Ave 777.07
σ 0.70
Max 779.47
Min 775.16
COMPARATIVE EXAMPLE 3
Ave 776.82
σ 0.30
Max 777.71
Min 775.90
EXAMPLE 2

FIG. 10

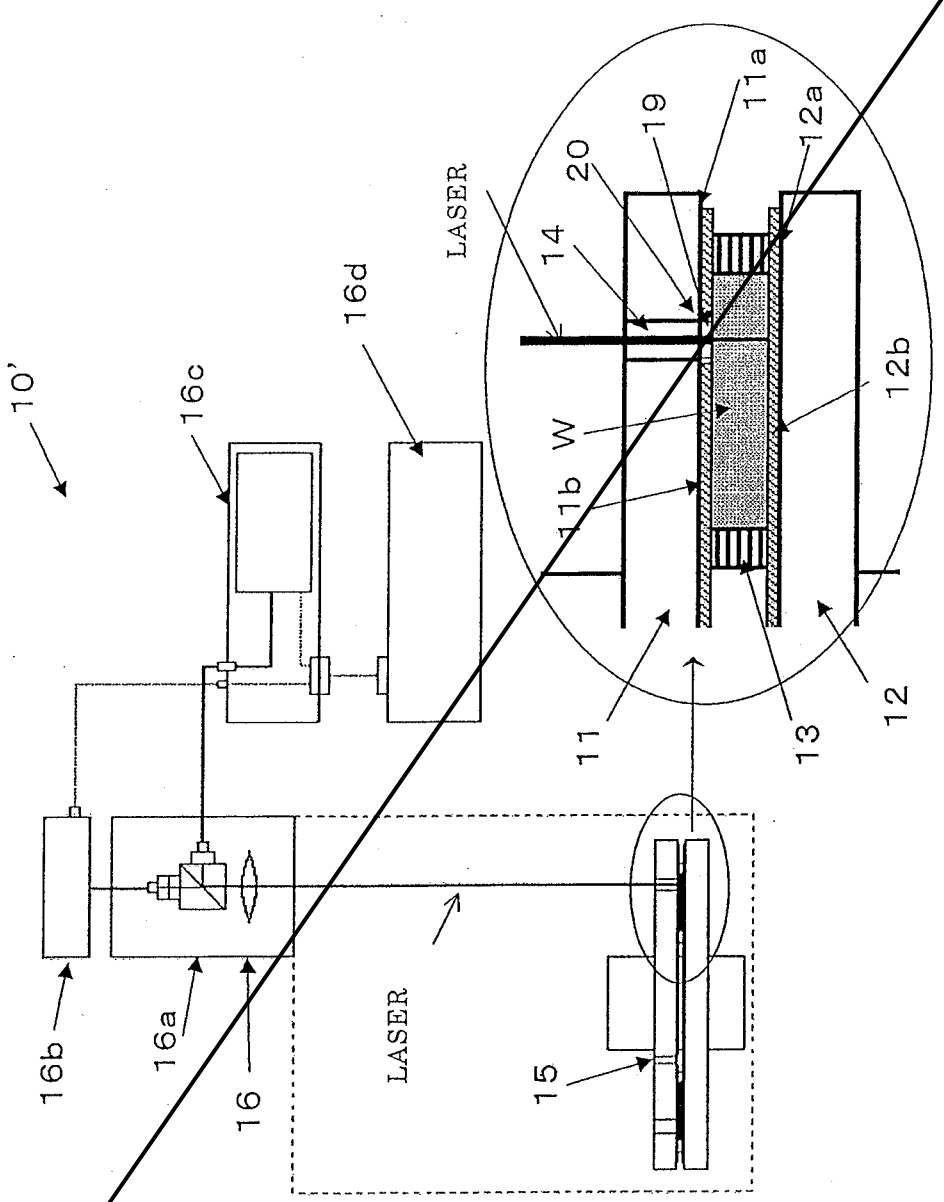
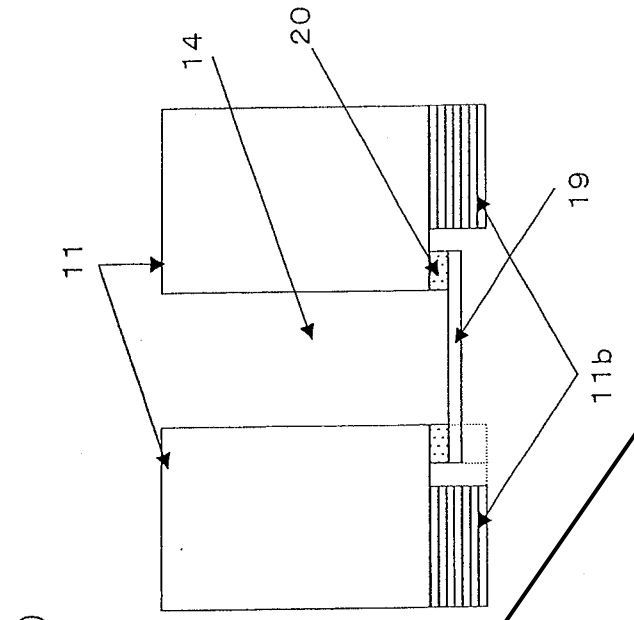
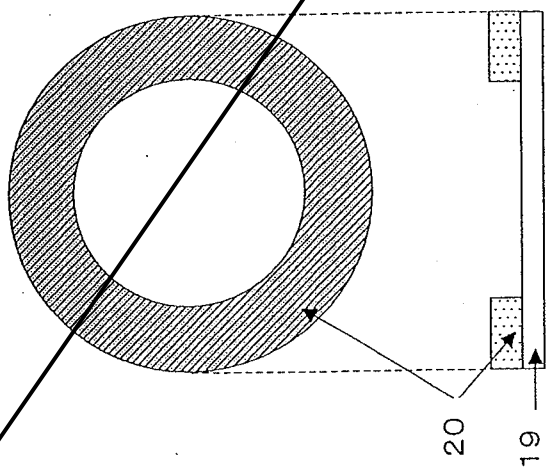

10'
16c
16d
LASER
14
20
19
11a
12a
12b
W
11b
11
13
12
16b
16a
16
LASER
15

FIG. 11

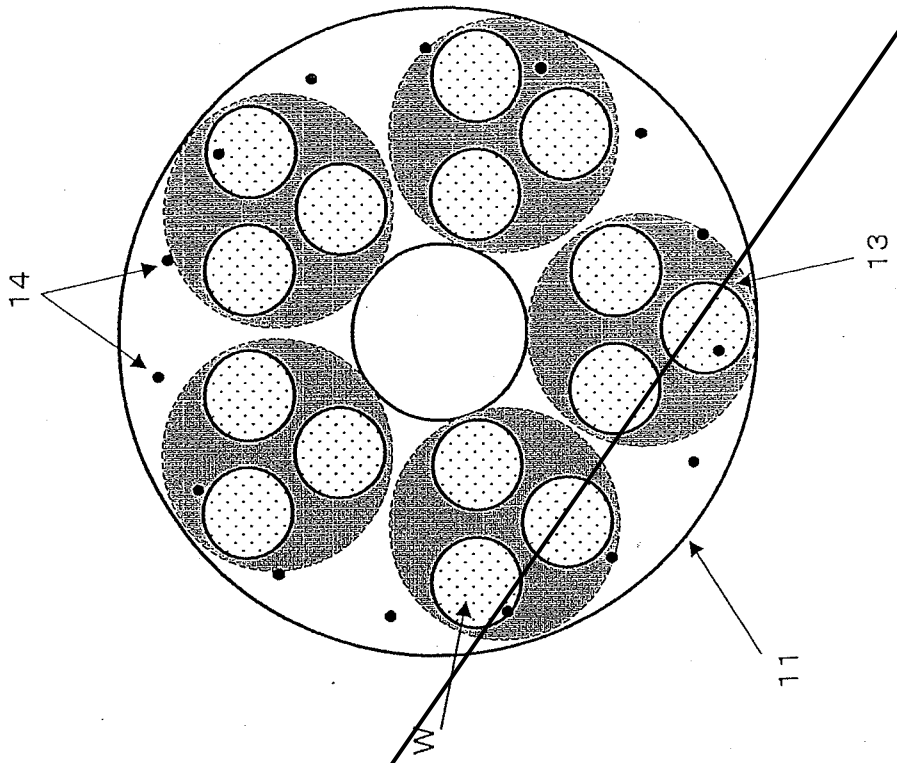


(b)

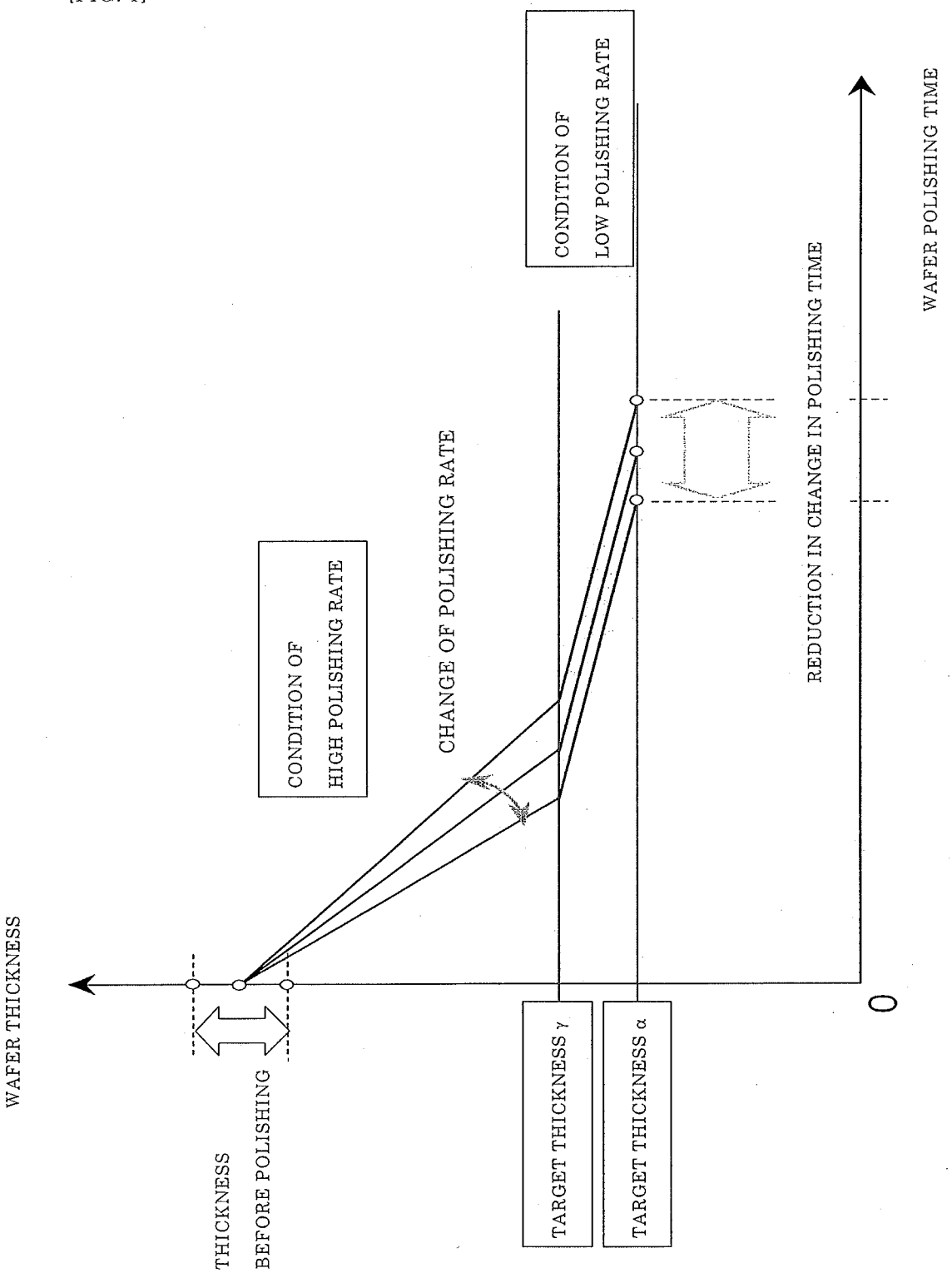


(a)

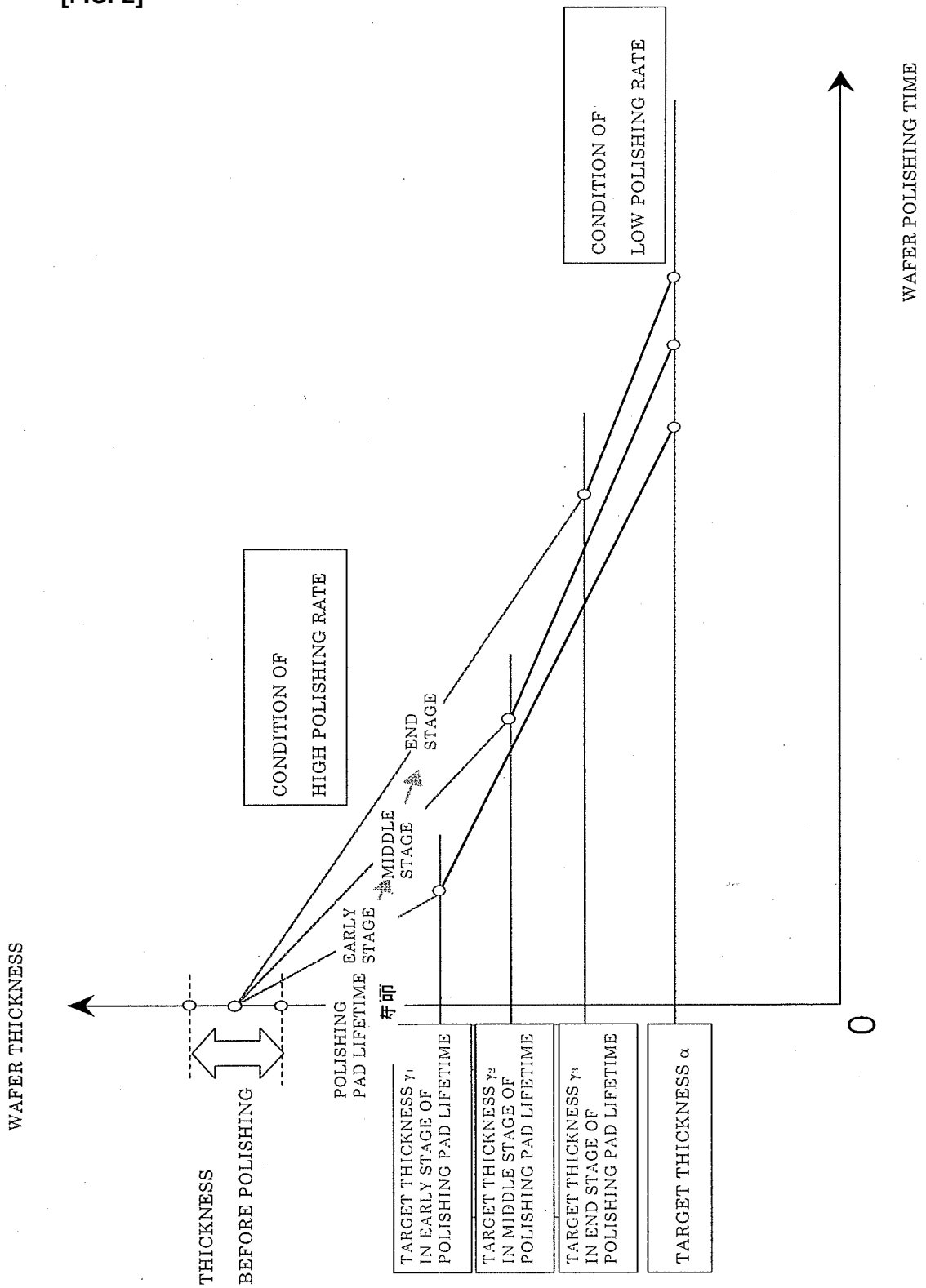
FIG. 12



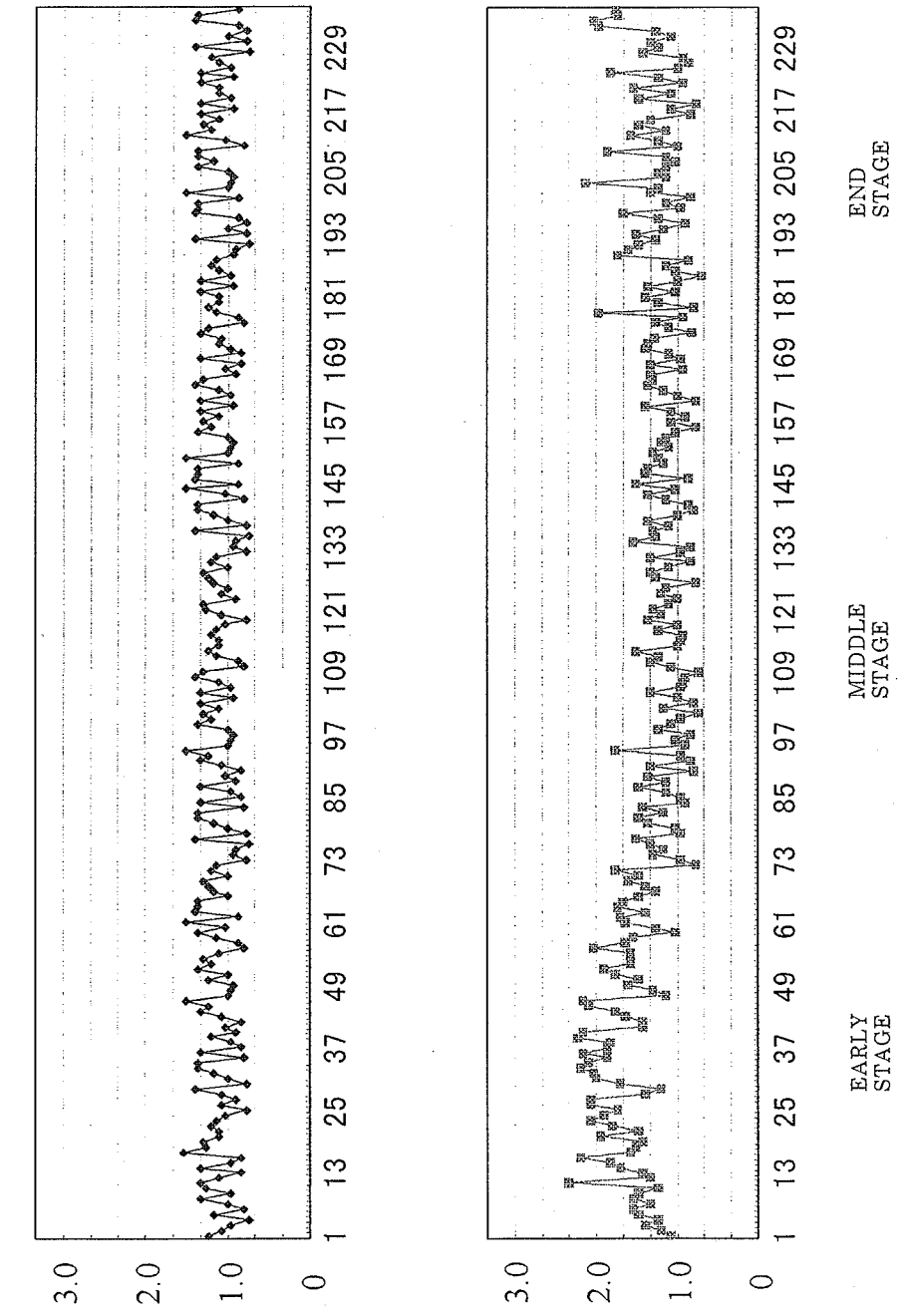
[FIG. 1]


WAFER THICKNESS
THICKNESS BEFORE POLISHING
CONDITION OF HIGH POLISHING RATE
CHANGE OF POLISHING RATE
CONDITION OF LOW POLISHING RATE
REDUCTION IN CHANGE IN POLISHING TIME
WAFER POLISHING TIME
TARGET THICKNESS γ
TARGET THICKNESS α
O

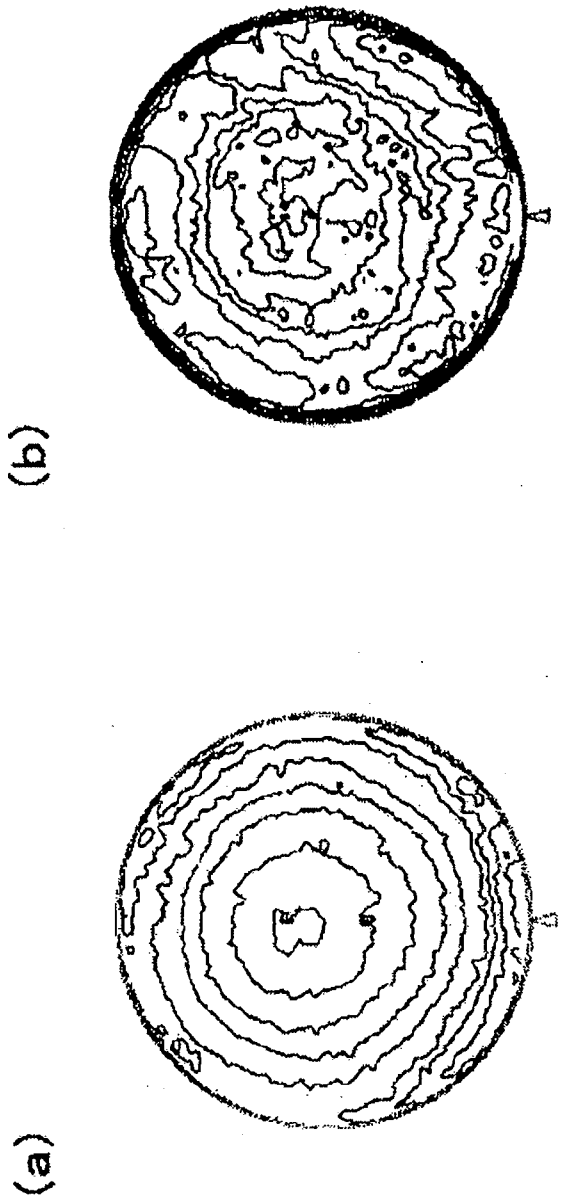
[FIG. 2]


WAFER THICKNESS
THICKNESS
BEFORE POLISHING
CONDITION OF
HIGH POLISHING RATE
CONDITION OF
LOW POLISHING RATE
EARLY
STAGE
MIDDLE
STAGE
END
STAGE
POLISHING
PAD LIFETIME
0
TARGET THICKNESS γ1
IN EARLY STAGE OF
POLISHING PAD LIFETIME
TARGET THICKNESS γ2
IN MIDDLE STAGE OF
POLISHING PAD LIFETIME
TARGET THICKNESS γ3
IN END STAGE OF
POLISHING PAD LIFETIME
TARGET THICKNESS α
WAFER POLISHING TIME

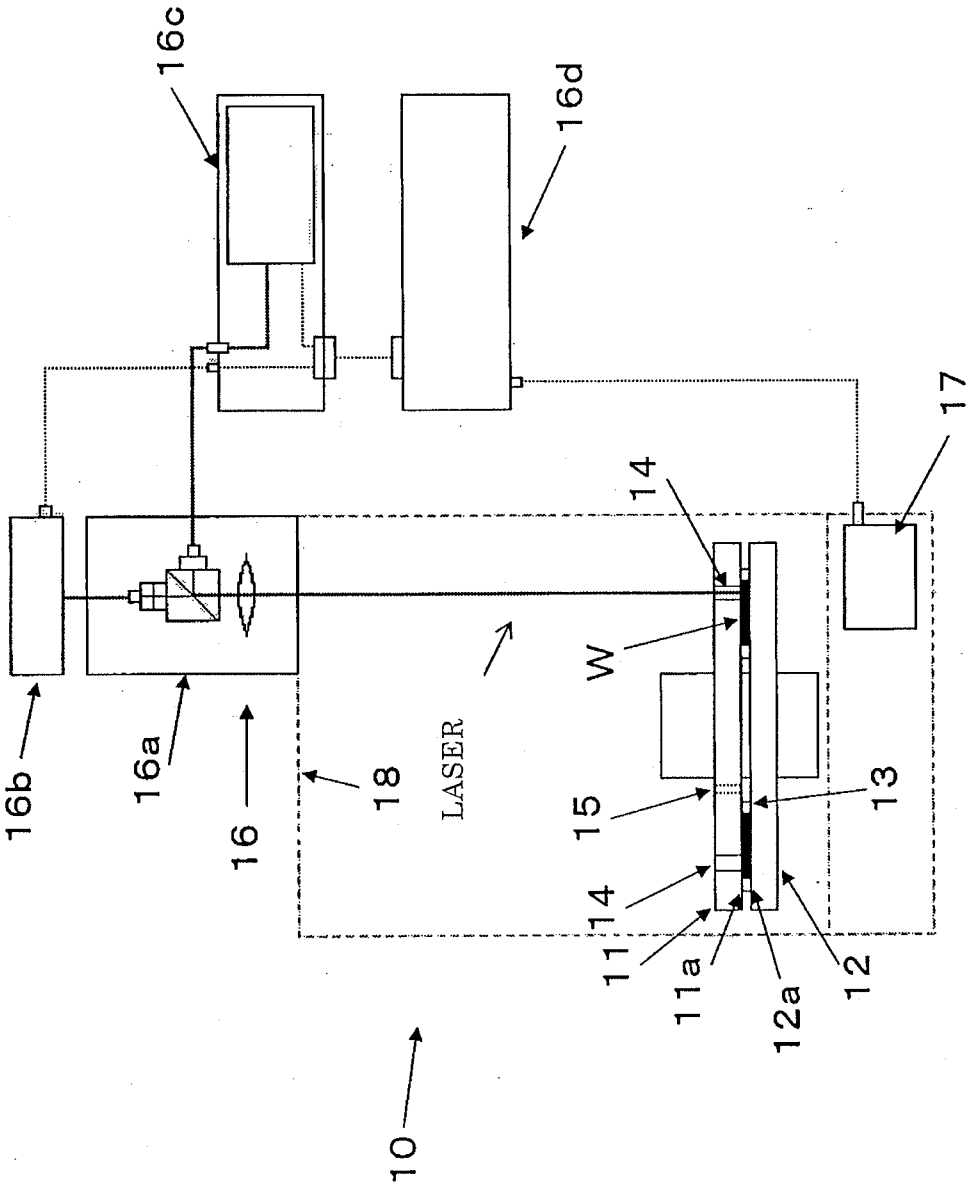
[FIG. 3]


(a)
RELATIVE FLATNESS
3.0
2.0
1.0
0
1 13 25 37 49 61 73 85 97 109 121 133 145 157 169 181 193 205 217 229
(b)
RELATIVE FLATNESS
3.0
2.0
1.0
0
1 13 25 37 49 61 73 85 97 109 121 133 145 157 169 181 193 205 217 229
EARLY STAGE
MIDDLE STAGE
END STAGE
POLISHING PAD LIFETIME

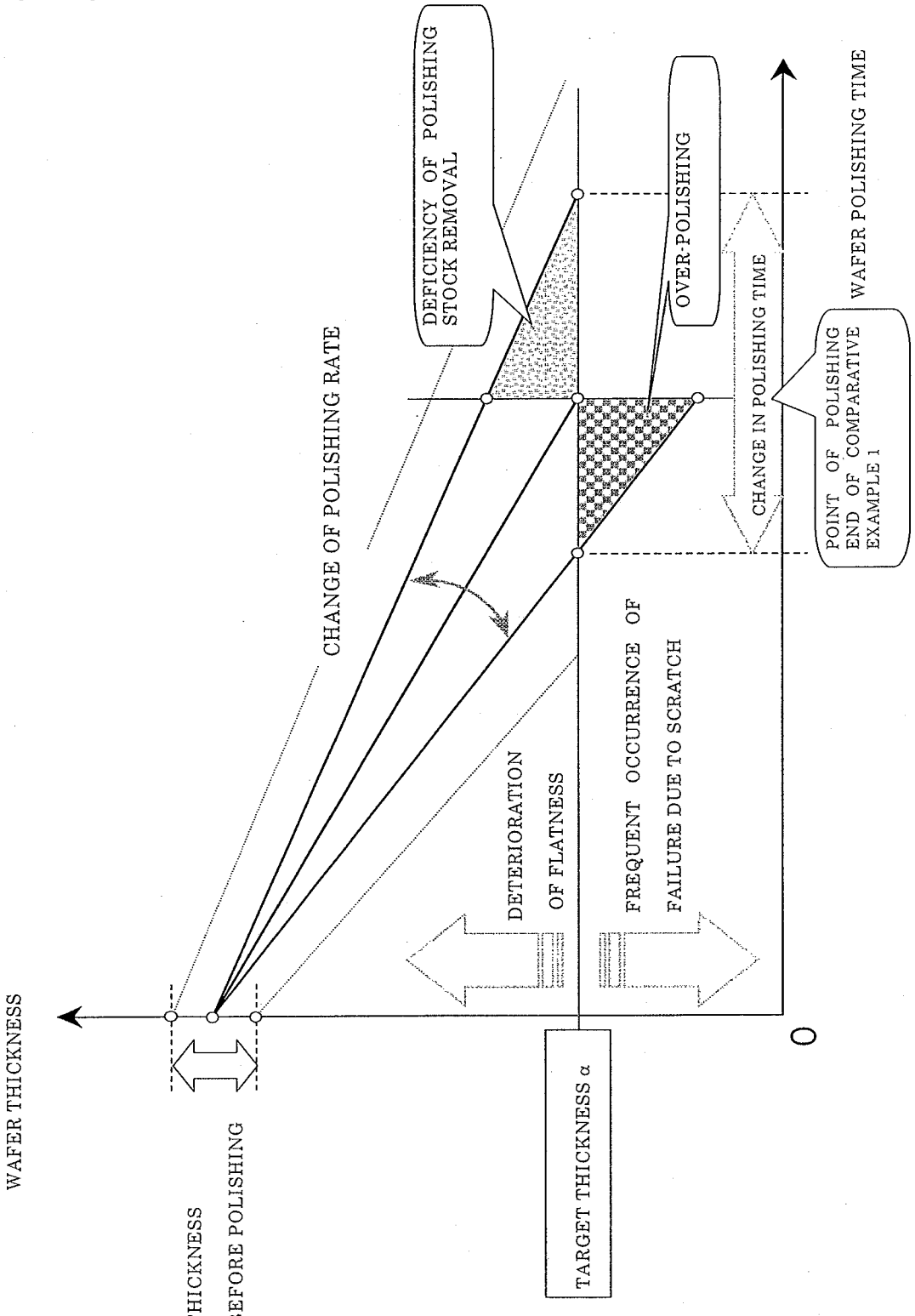
[FIG. 4]



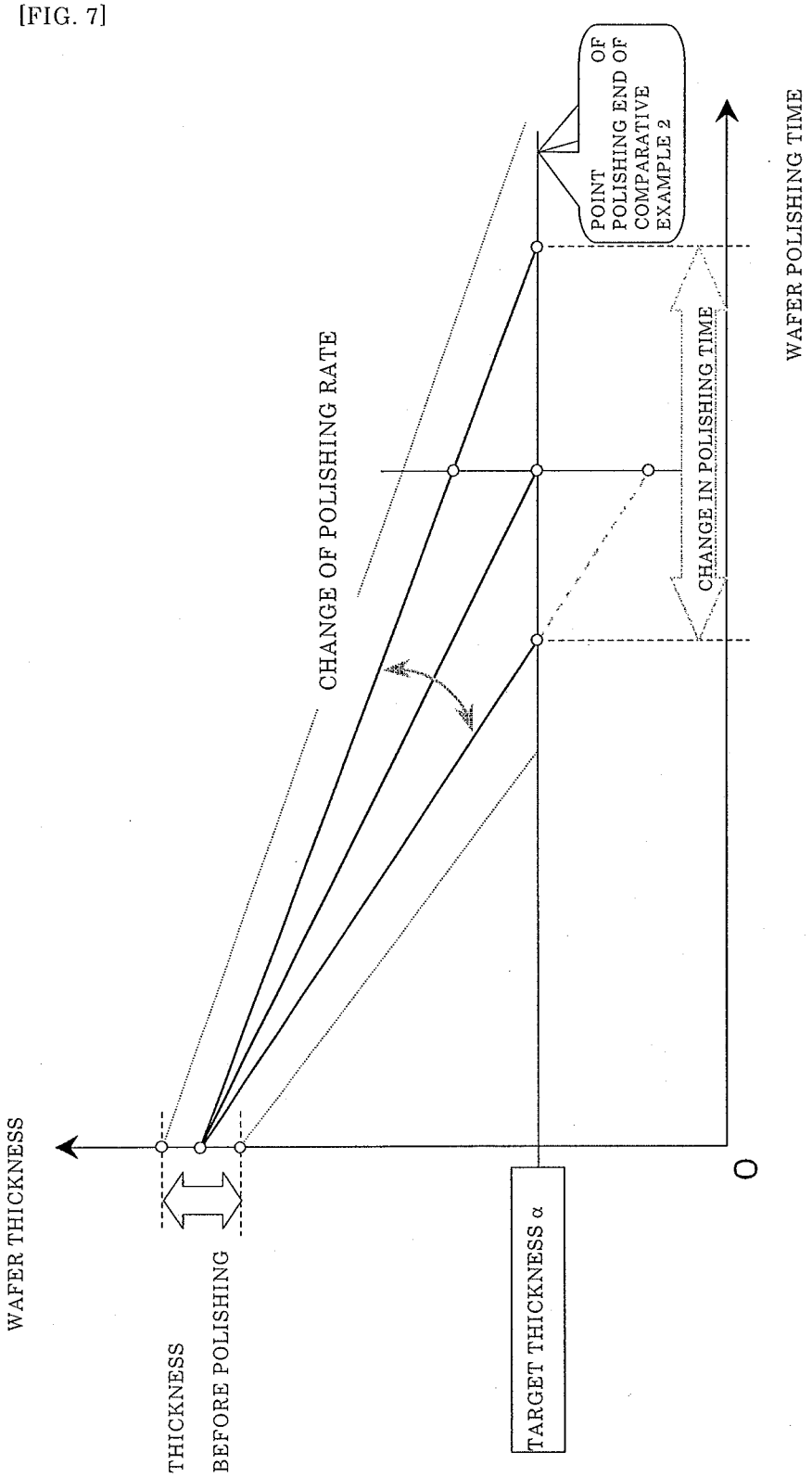
[FIG. 5]



[FIG. 6]


WAFER THICKNESS
THICKNESS BEFORE POLISHING
CHANGE OF POLISHING RATE
DEFICIENCY OF POLISHING STOCK REMOVAL
OVER-POLISHING
CHANGE IN POLISHING TIME
POINT OF POLISHING END OF COMPARATIVE EXAMPLE 1
WAFER POLISHING TIME
DETERIORATION OF FLATNESS
FREQUENT OCCURRENCE OF FAILURE DUE TO SCRATCH
TARGET THICKNESS α
0

[FIG. 7]


WAFER THICKNESS
THICKNESS BEFORE POLISHING
TARGET THICKNESS α
CHANGE OF POLISHING RATE
POINT OF POLISHING END OF COMPARATIVE EXAMPLE 2
CHANGE IN POLISHING TIME
WAFER POLISHING TIME
O