FIG.1

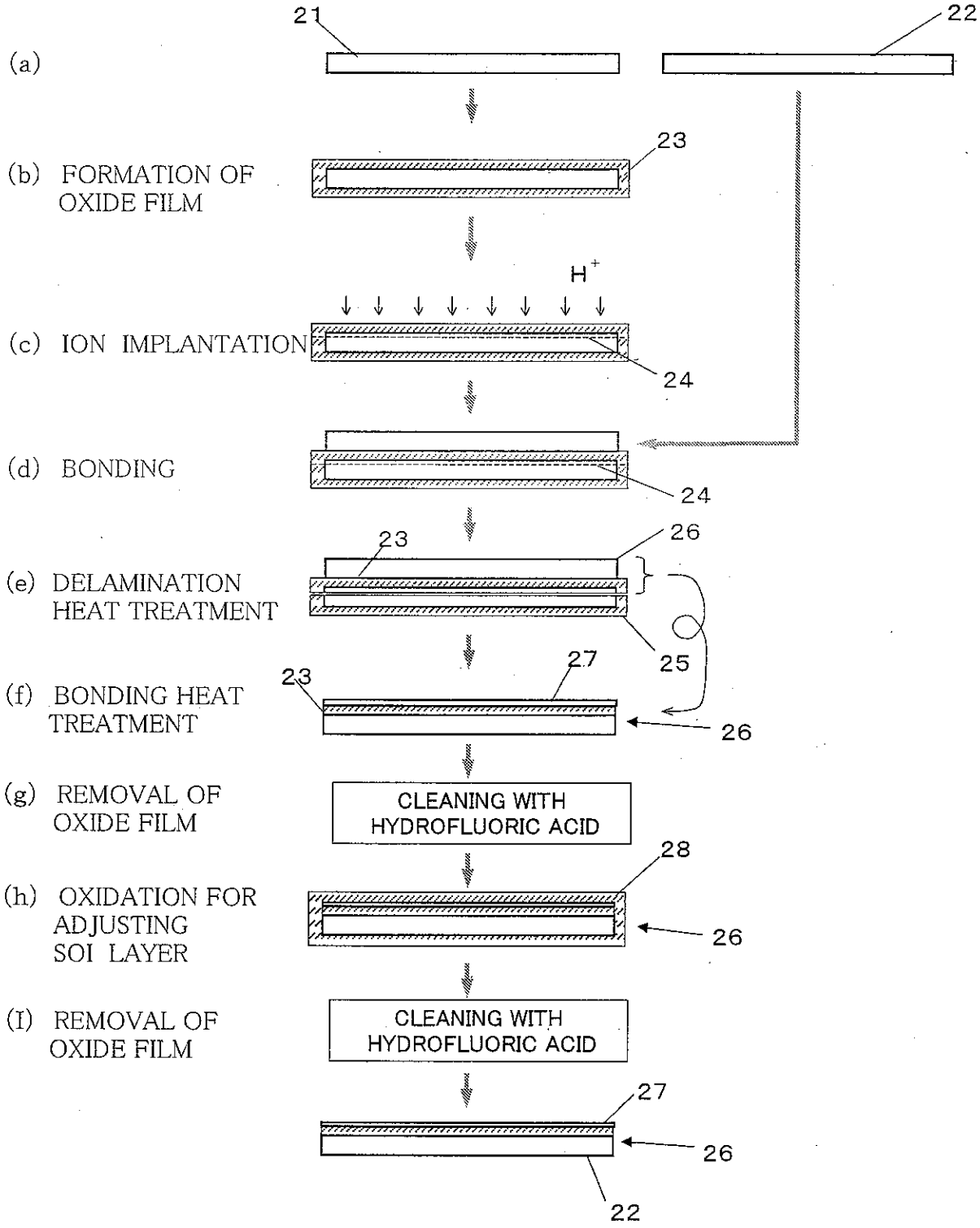
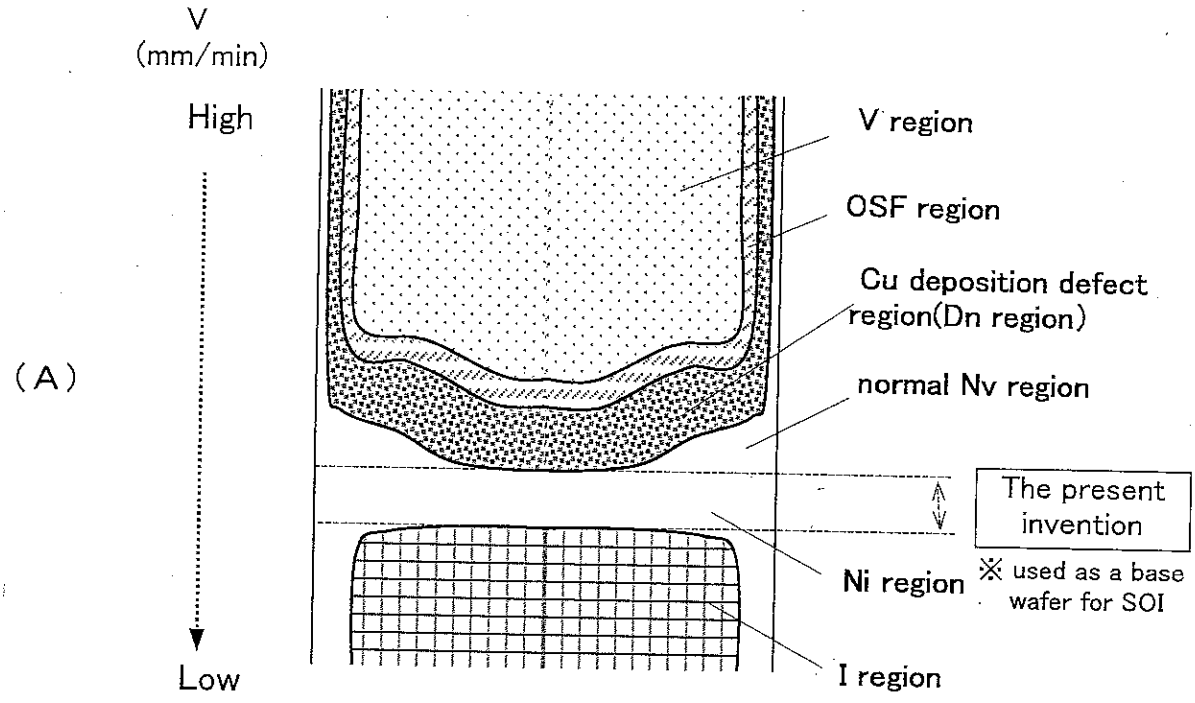

(a)
21
22
(b) FORMATION OF OXIDE FILM
23
(c) ION IMPLANTATION
H+
24
(d) BONDING
24
(e) DELAMINATION HEAT TREATMENT
23
26
25
(f) BONDING HEAT TREATMENT
23
27
26
(g) REMOVAL OF OXIDE FILM
CLEANING WITH HYDROFLUORIC ACID
(h) OXIDATION FOR ADJUSTING SOI LAYER
28
26
(I) REMOVAL OF OXIDE FILM
CLEANING WITH HYDROFLUORIC ACID
27
26
22

FIG. 2


V
(mm/min)
High
Low
(A)
V region
OSF region
Cu deposition defect region(Dn region)
normal Nv region
Ni region
I region
The present invention
※ used as a base wafer for SOI

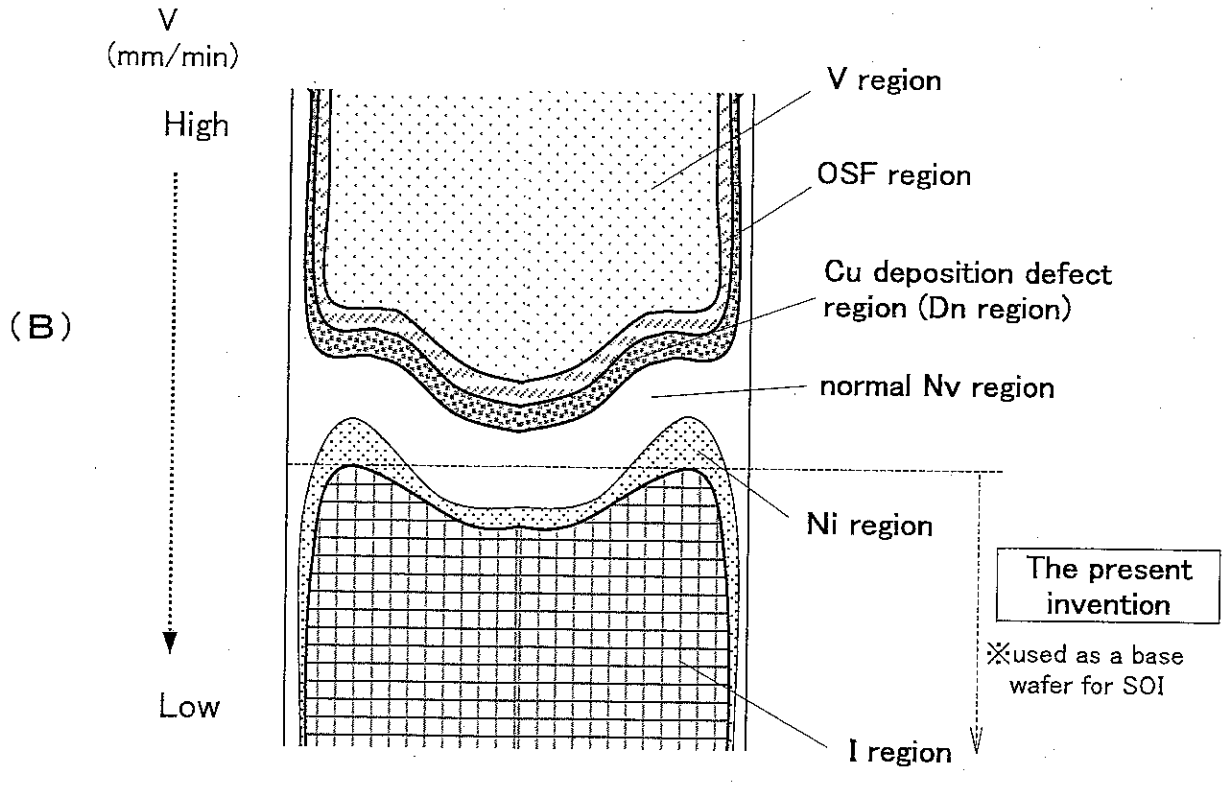

V
(mm/min)
High
Low
(B)
V region
OSF region
Cu deposition defect region (Dn region)
normal Nv region
Ni region
I region
The present invention
※used as a base wafer for SOI

FIG. 3

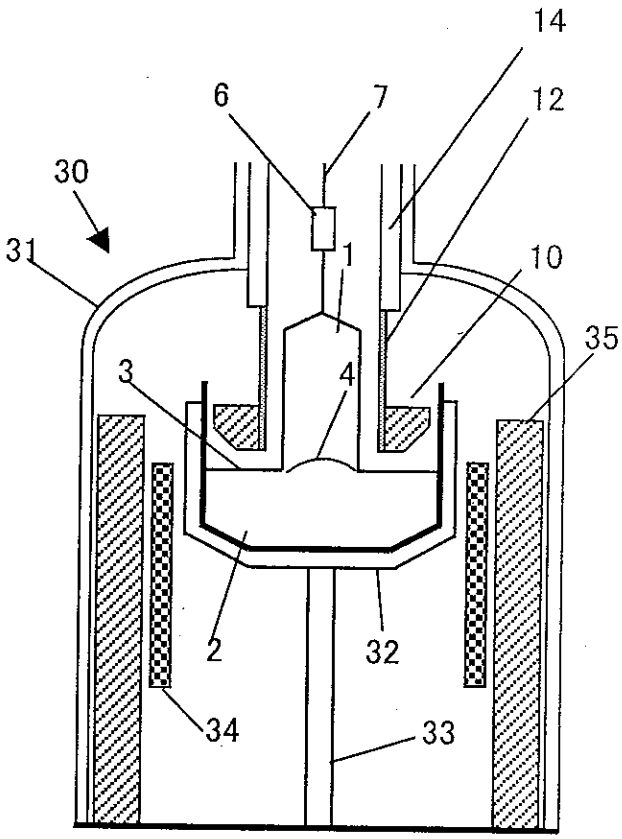


FIG. 4

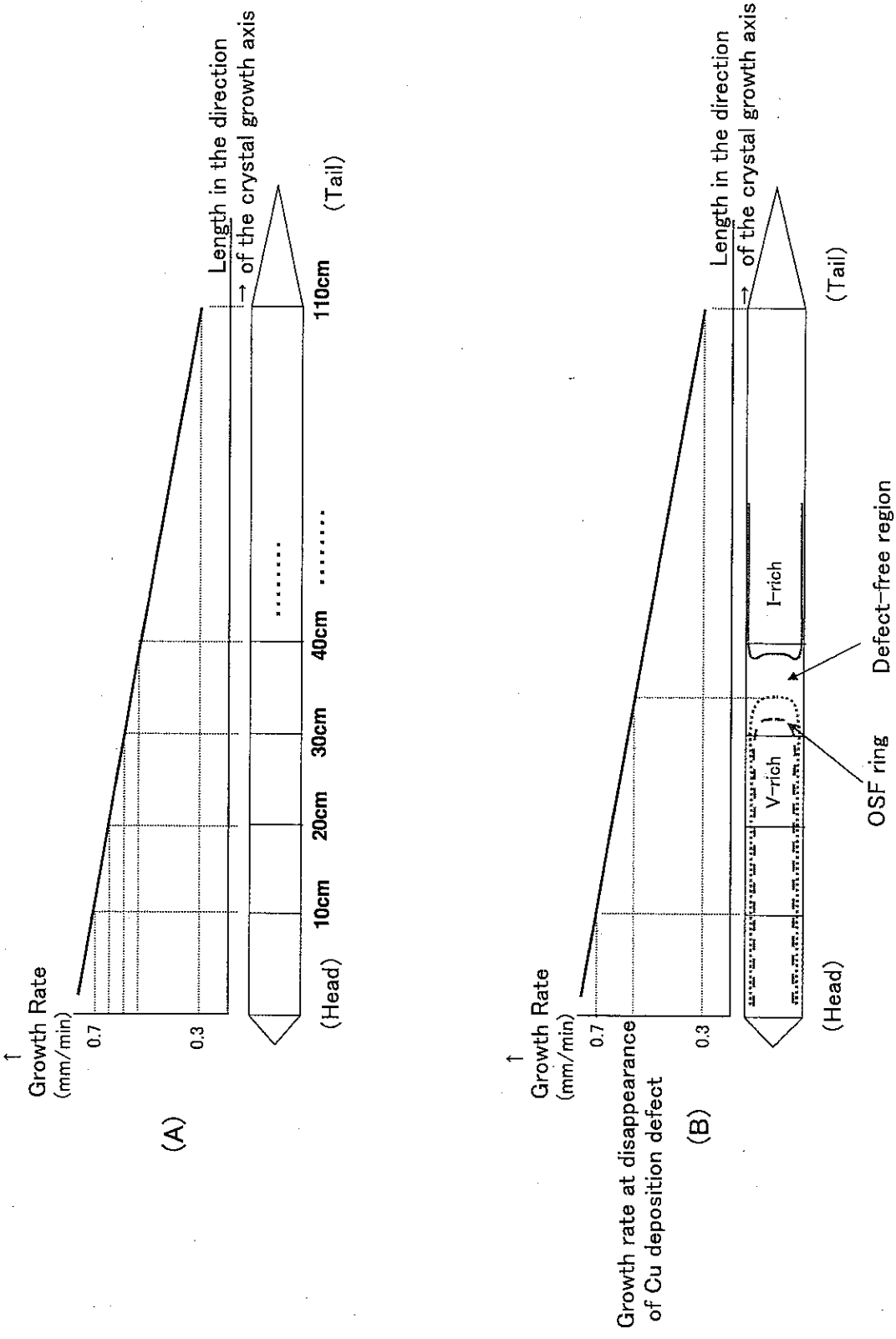

Growth Rate
(mm/min)
0.7
0.3
Length in the direction
of the crystal growth axis
(Head)
10cm
20cm
30cm
40cm
110cm
(Tail)
(A)
Growth rate at disappearance
of Cu deposition defect
(B)
V-rich
I-rich
OSF ring
Defect-free region

FIG. 5

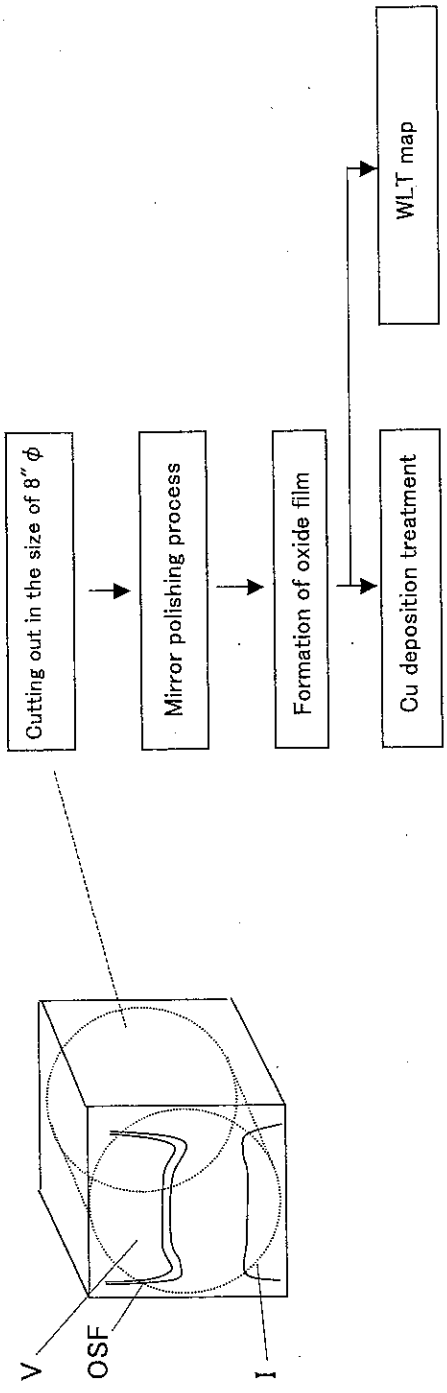

Cutting out in the size of 8″ φ
Mirror polishing process
Formation of oxide film
Cu deposition treatment
WLT map
V
OSF
I

FIG. 6

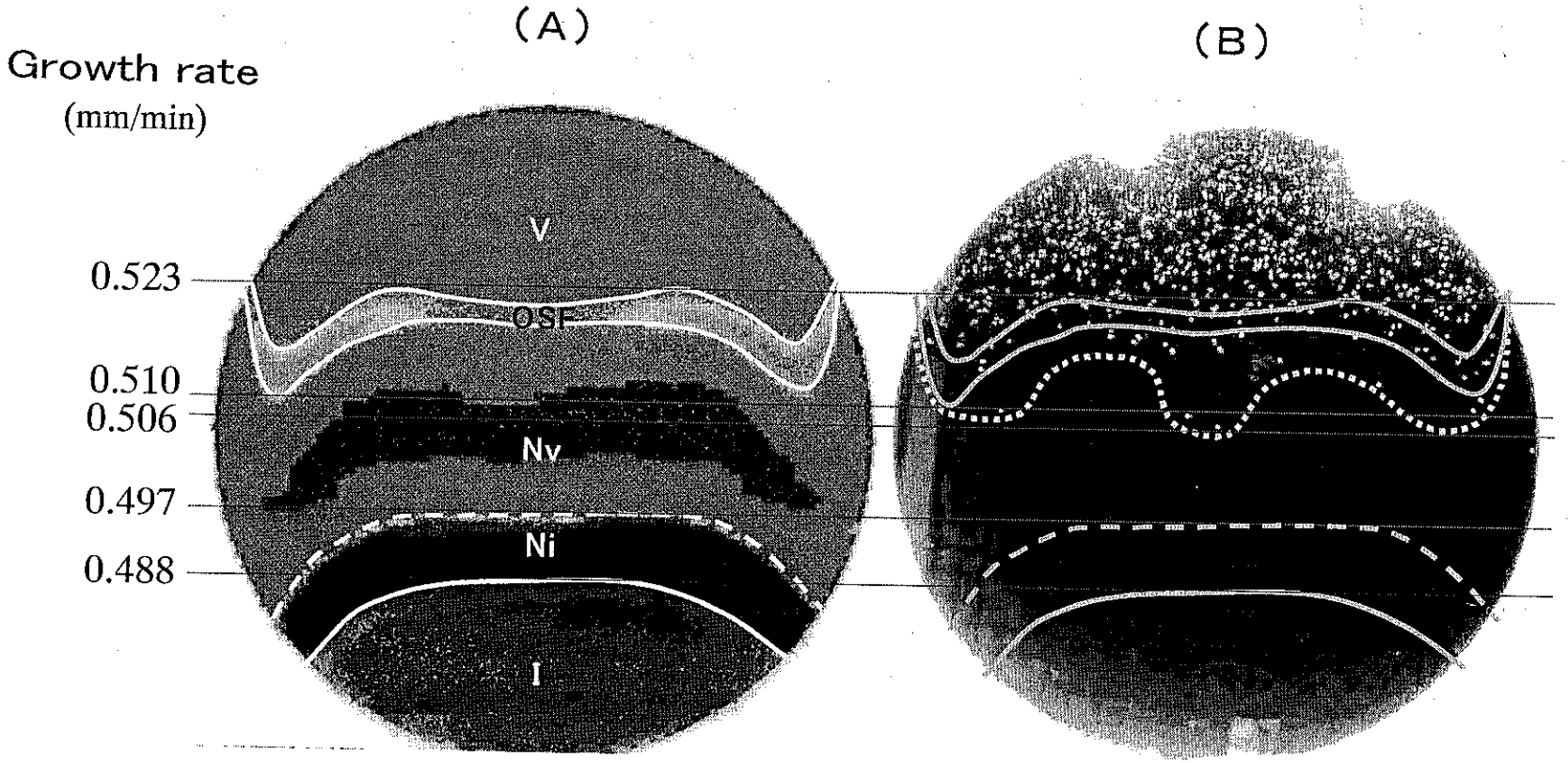


FIG. 7

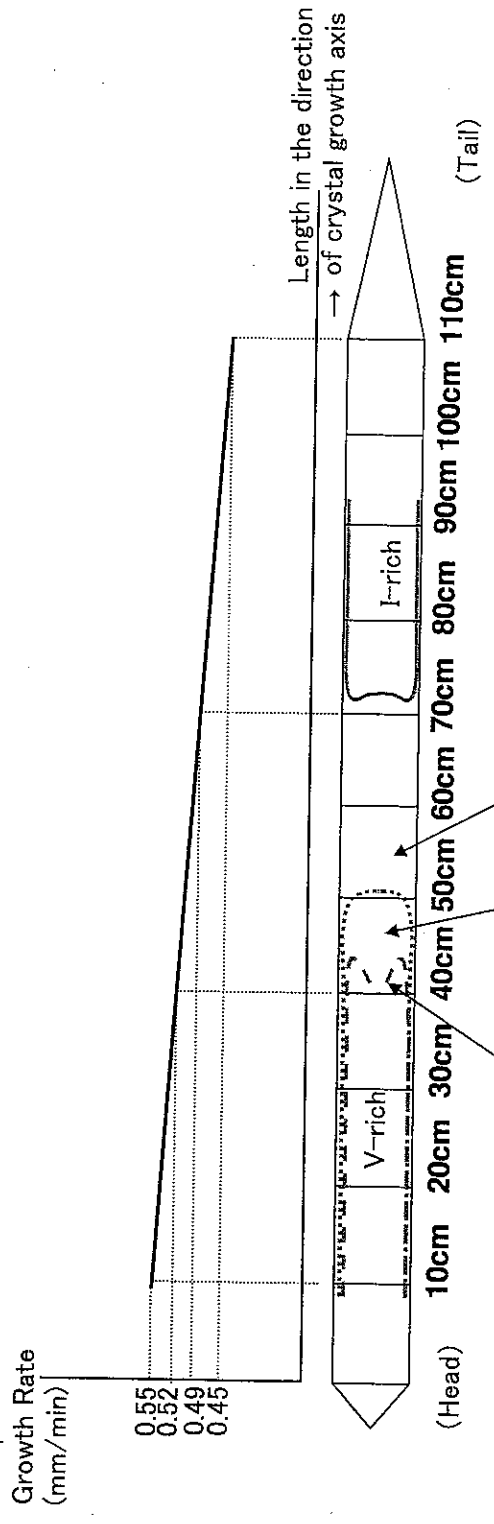

Growth Rate
(mm/min)
0.55
0.52
0.49
0.45
Length in the direction
→ of crystal growth axis
(Head)
10cm
20cm
30cm
40cm
50cm
60cm
70cm
80cm
90cm
100cm
110cm
(Tail)
V-rich
I-rich
OSF ring
N region free of Cu deposition defect
N region including Cu deposition defect

FIG. 8

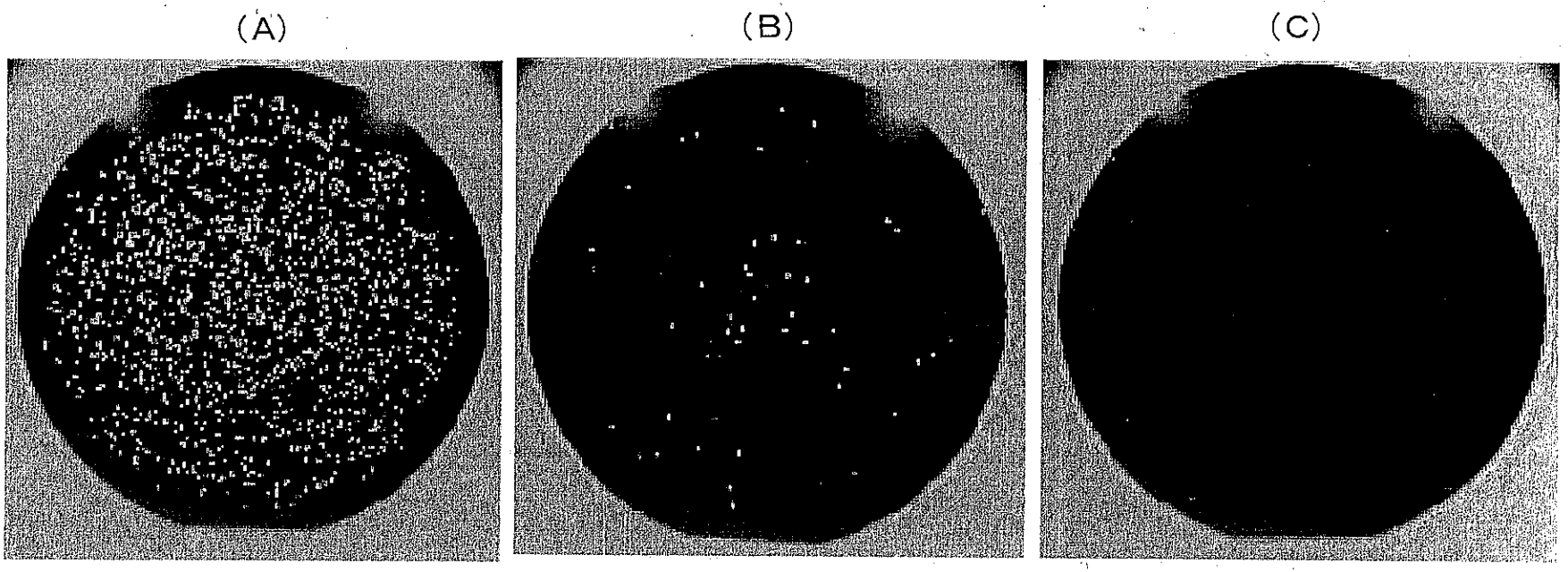

(A)
(B)
(C)
V region
N region
(generation of Cu deposition defect)
N region (no Cu deposition defect)
Complely destroyed insulator oxide film
Partially destroyed insulator oxide film
Defect-free insulator oxide film

FIG. 9

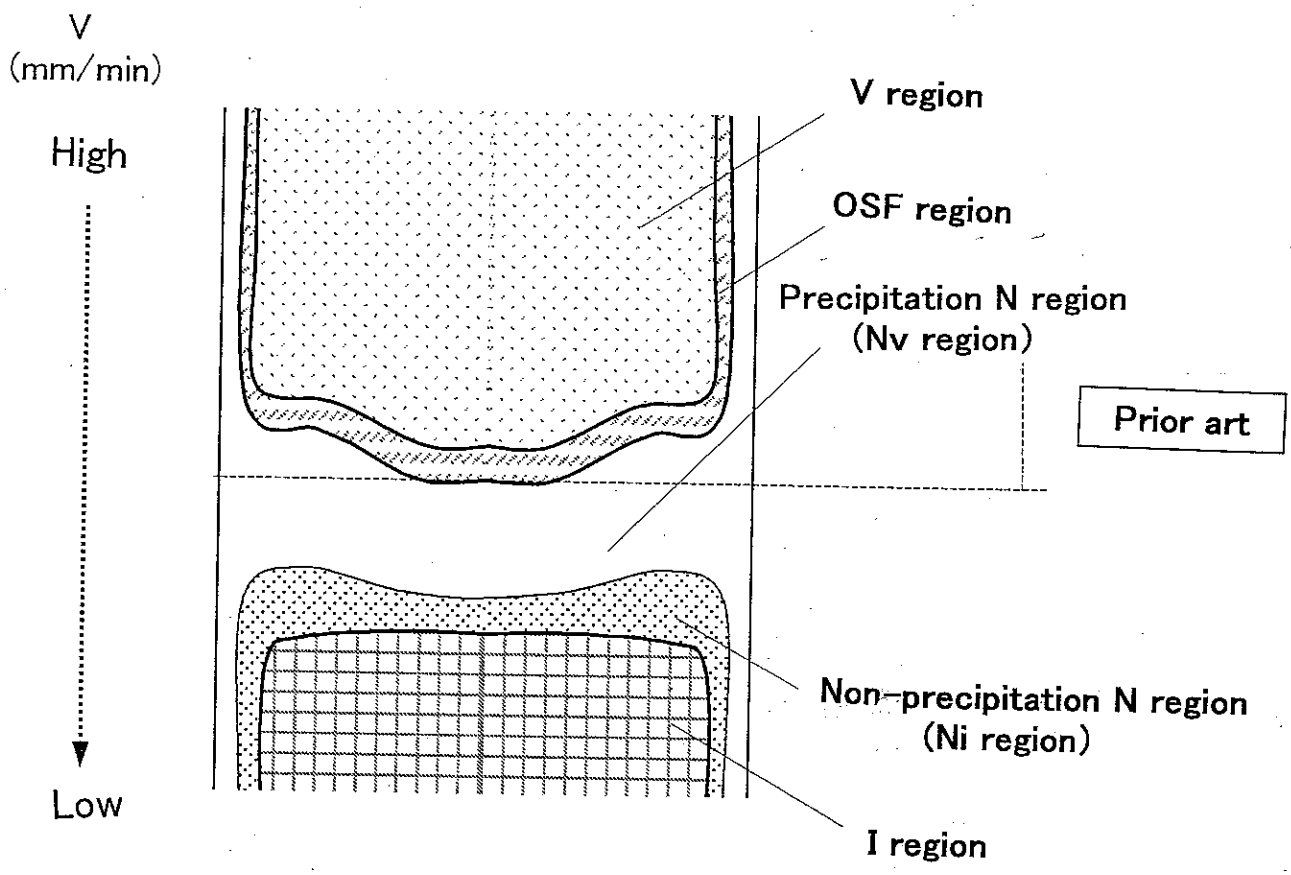

V
(mm/min)
High
Low
V region
OSF region
Precipitation N region
(Nv region)
Prior art
Non-precipitation N region
(Ni region)
I region

FIG. 10

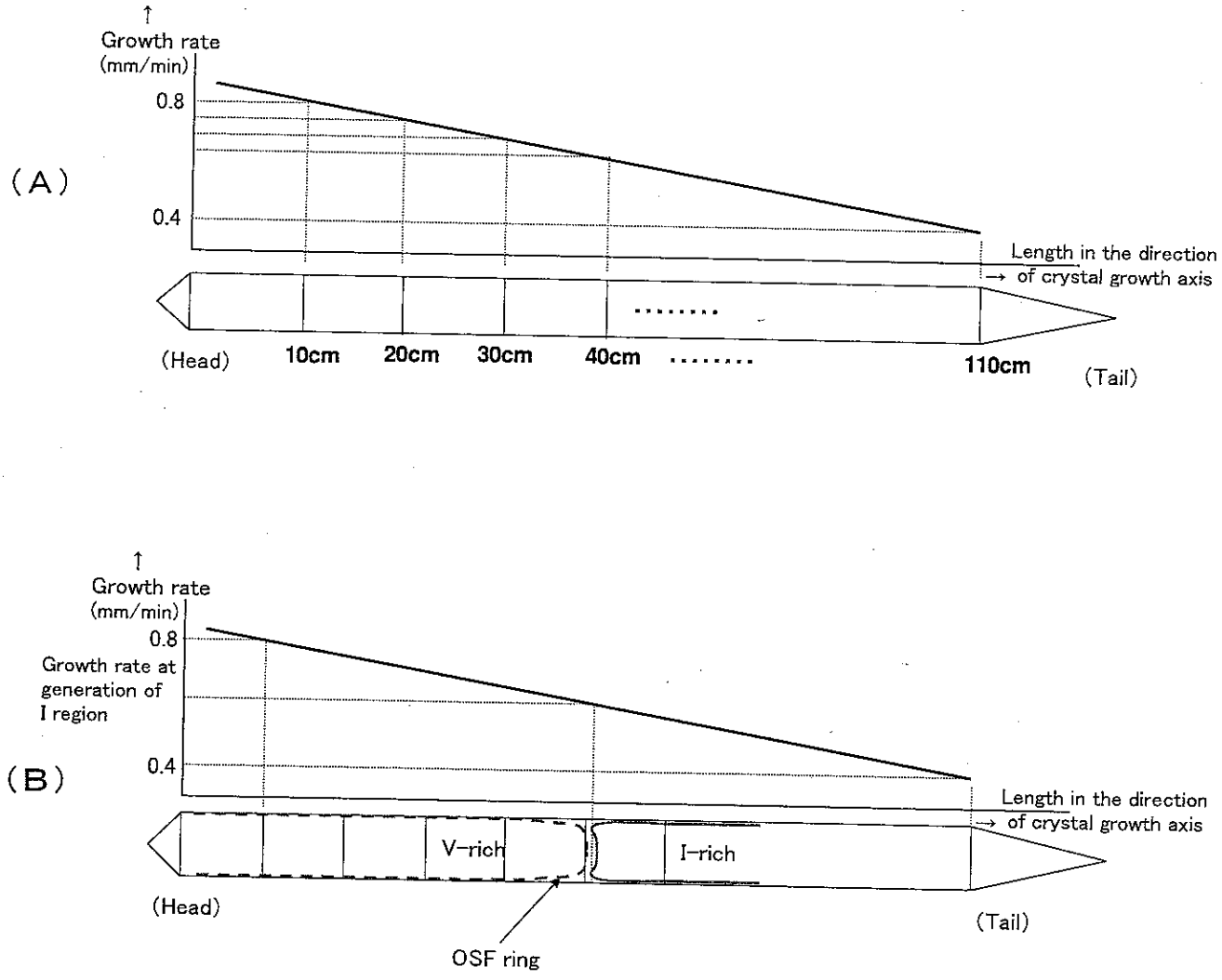

(A)
Growth rate
(mm/min)
0.8
0.4
Length in the direction
of crystal growth axis
(Head)
10cm
20cm
30cm
40cm
110cm
(Tail)
(B)
Growth rate
(mm/min)
0.8
Growth rate at
generation of
I region
0.4
Length in the direction
of crystal growth axis
V-rich
I-rich
(Head)
(Tail)
OSF ring

FIG. 11

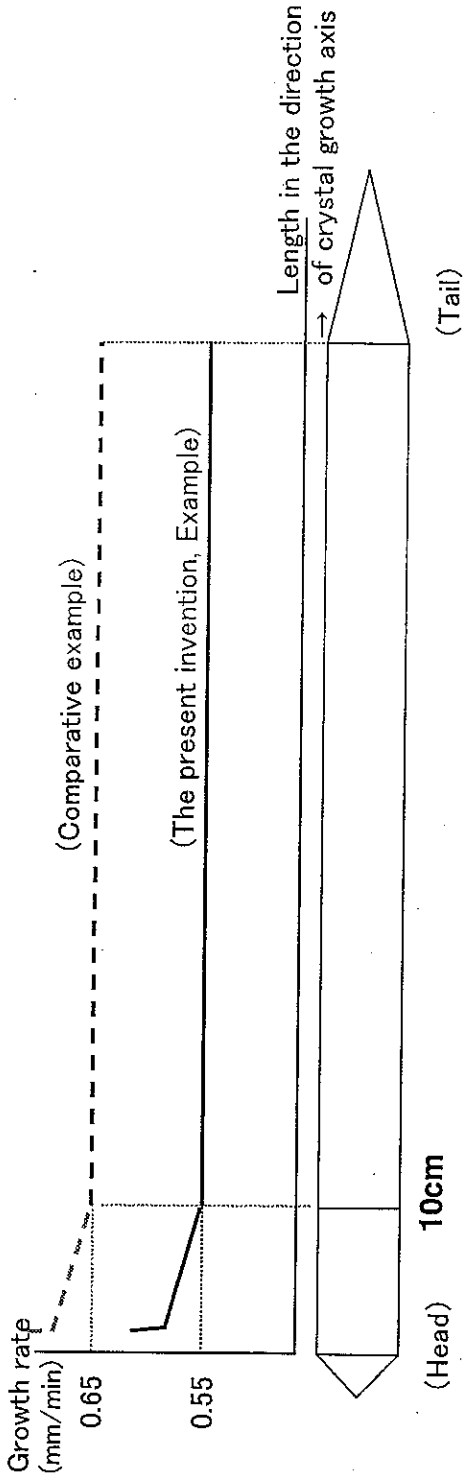
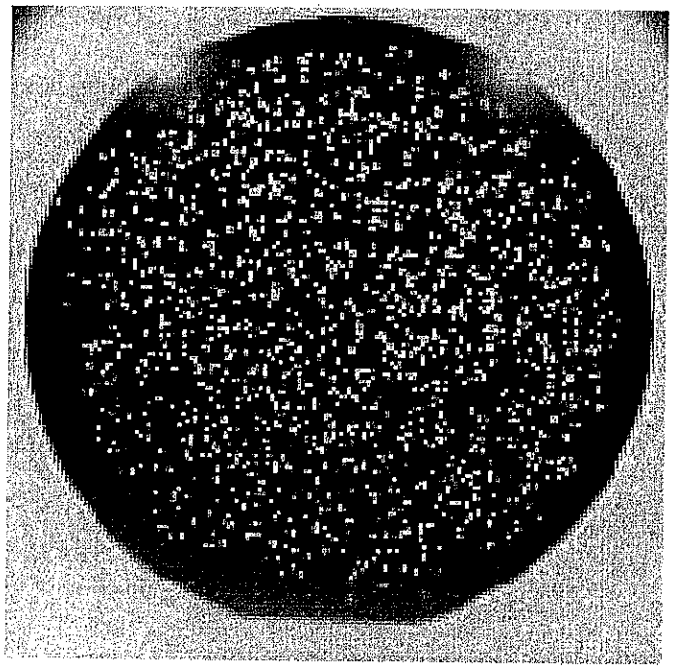

Growth rate
(mm/min)
0.65
0.55
(Comparative example)
(The present invention, Example)
Length in the direction
of crystal growth axis
(Head)
10cm
(Tail)

FIG. 12

(A)

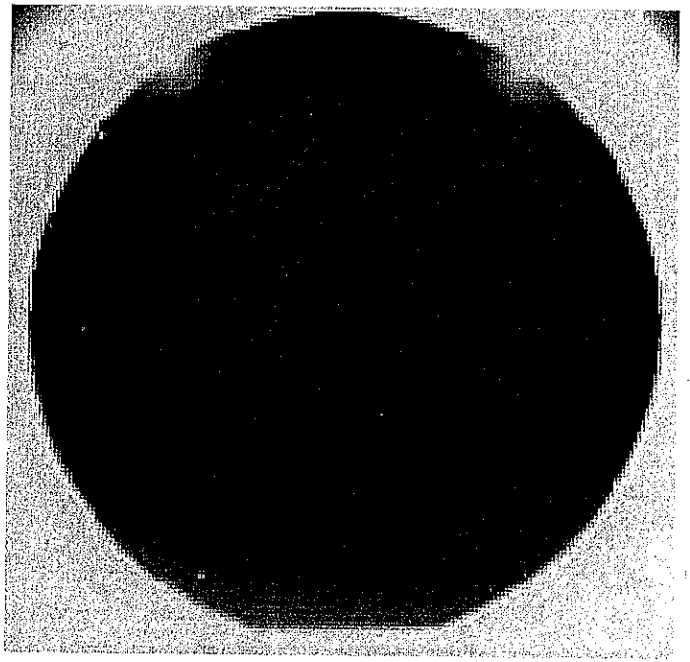


V region

⇩

Completely destroyed insulator oxide film

(B)



I region (no Cu deposition defect)

⇩

Defect-free insulator oxide film