

1 6
7 12

STI(shallow trench isolation)

length) (isolation) (width) (channel I
(LOCOS) , (MODIFIED LOCOS) , TI(trench isolation)

(etch back) CMP(chemical mechanical polishing)
TI(trench isolation)

1 6 TI 가

1 (14) () (10) (12) SiN

2 () (14) (14) (12) (14)
(14) 가 (10) (14) (12) (t)

3 (t) (16) (t) 1 (16)
10) (t) SiN (t) (18)

USG 2 (18) (t) 가 (18)
(20)

4 (14) 2 (20) CMP
 (18)

5 (20) (18) (14) 2

6 (16),(20) STI (12) (18) 1
 (well) (Vth) (10) ()
 (12) STI 가 2 (20) 가
 가 STI 가

(14) STI (t) (18)
 (grooving) (g) 5 6 (g) 1 (16) 2 (20)
 가 (12)

(g) 가 (elec
 tric field)가
 가 Vth (hump)

, STI (oxidation rate)
 (' / ') , STI

; ; 가 1
 ; ;
 2 2 ; STI ;

(strip) NH₄OH / 가 ,

STI , (

) 1 , , STI ,

7 12 TI .

7 , (,) (100) (102)

(104a) , (104a)/ (104b)' (104)

2000 가 (104b) 300 ~ 700 가 (106) 1000 ~

SiN (106) SiN , (106) SiON 가

(102) (106) (104)

STI ,

8 , () ,

(106) (104) (102) (10)

(100) (100) (t) , (100)

(106) (104) (102) (t)

(106) (106)

9 , (t) (curing) 1

(108) (t) (104) 1 (108) (104a)

(104b) , (104a) (100)

(104a) (oxidation rate) SiN

(t) (,) (110) , (t) 가

(108) 2 (112) CVD 2 (112) , 1

(t) 가 (100) (dislocation)

10) (106) 2 (112) CMP T 4/5 ~6/5T
 (110)

11 (112) (104) (106) (104) 2
 (104) (110) , NH₄OH (106)
 1 (108) (104)
 (t) (110)
 11 g (110) (110)
 (110) (g) , 가 (t)

12 1 2 (108),(112) STI (102) (110)
 Vth (100) ()
 (102) 2 (112)
 가 , 2 (108) STI 가
 (t) 가 2 (112) 가
 (112) 가

106 STI 11 (104) ()
 (110) (g) (t)
 (t) , (g)
 (102) (g) 2 (112) 1 (108)
 (g) 가 (110) 1 2 (108),(112)
 가

STI

가

STI

1) STI

2)

(57)

1.

;

;

1

;

;

가

2

;

2

STI

;

2.

1

,

SiN

'SiN/SiON'

.

3.

1

,

SiN

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4.

1

,

'

/

'

.

5.

4

,

300 ~ 700

.

6.

4

,

300 ~ 700

.

7.

1

,

2

CMP

4/5 ~ 6/5T (

, T

)

8.

7 , T 1000 ~ 2000

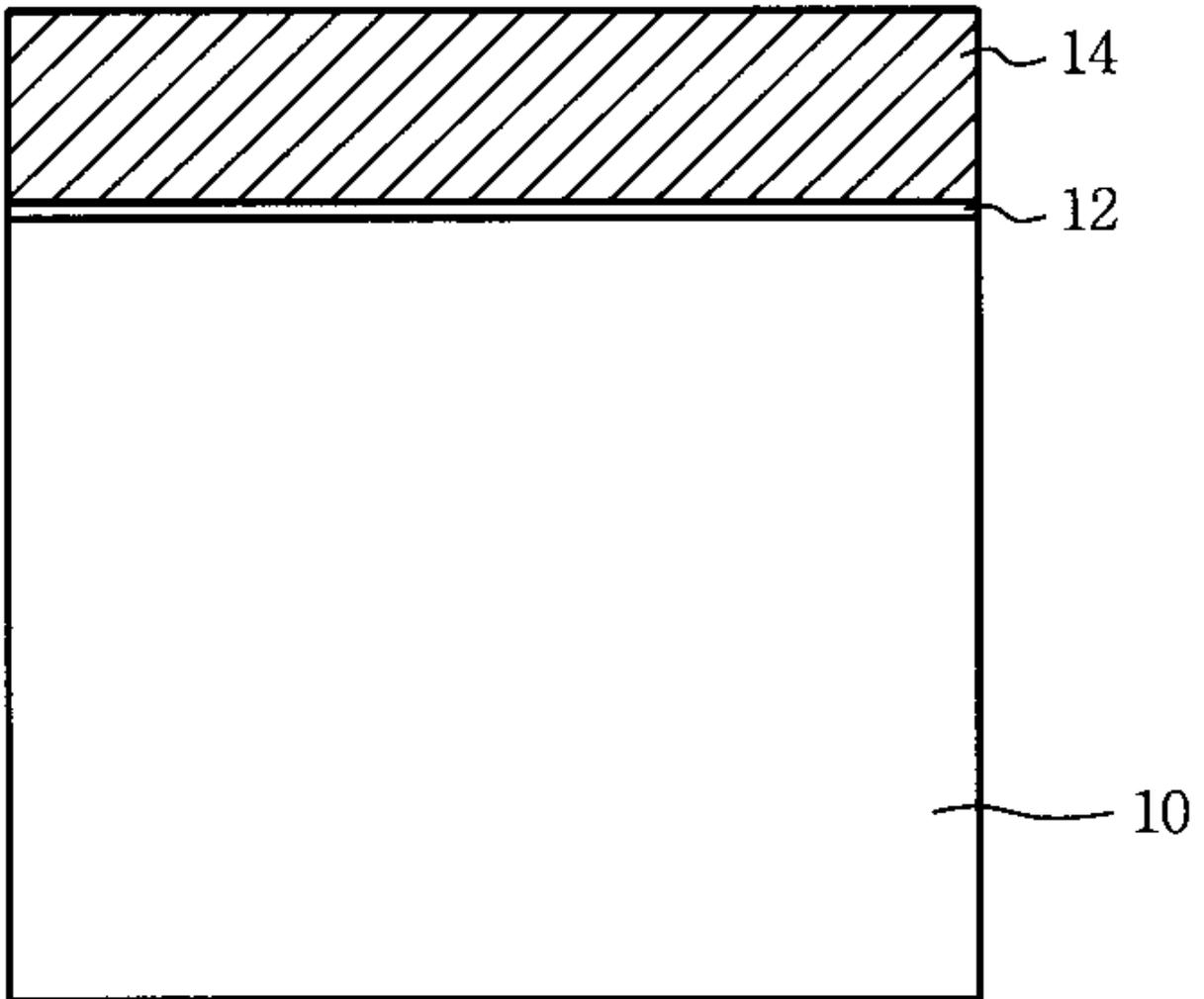
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1 ,

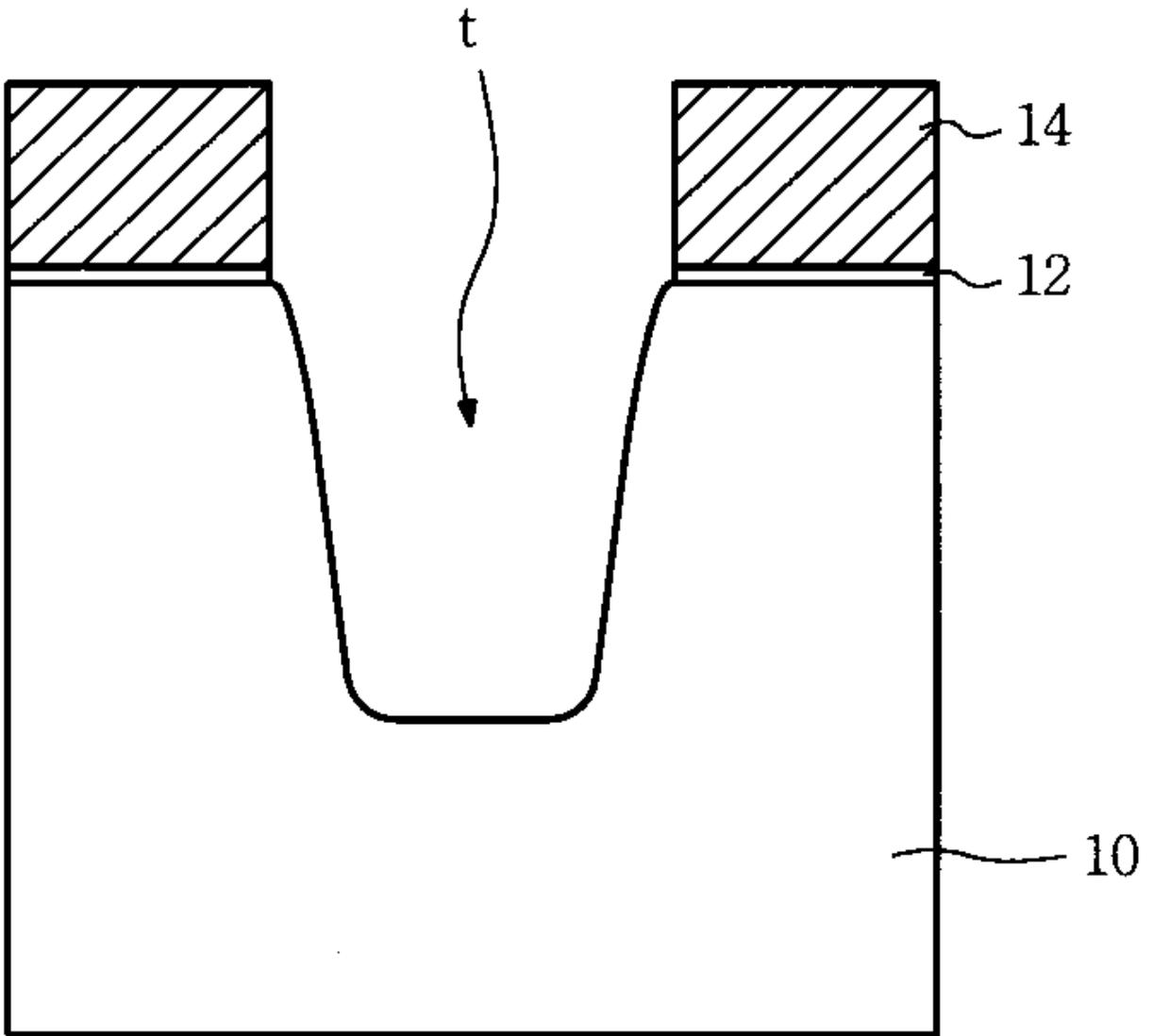
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1 , NH₄OH

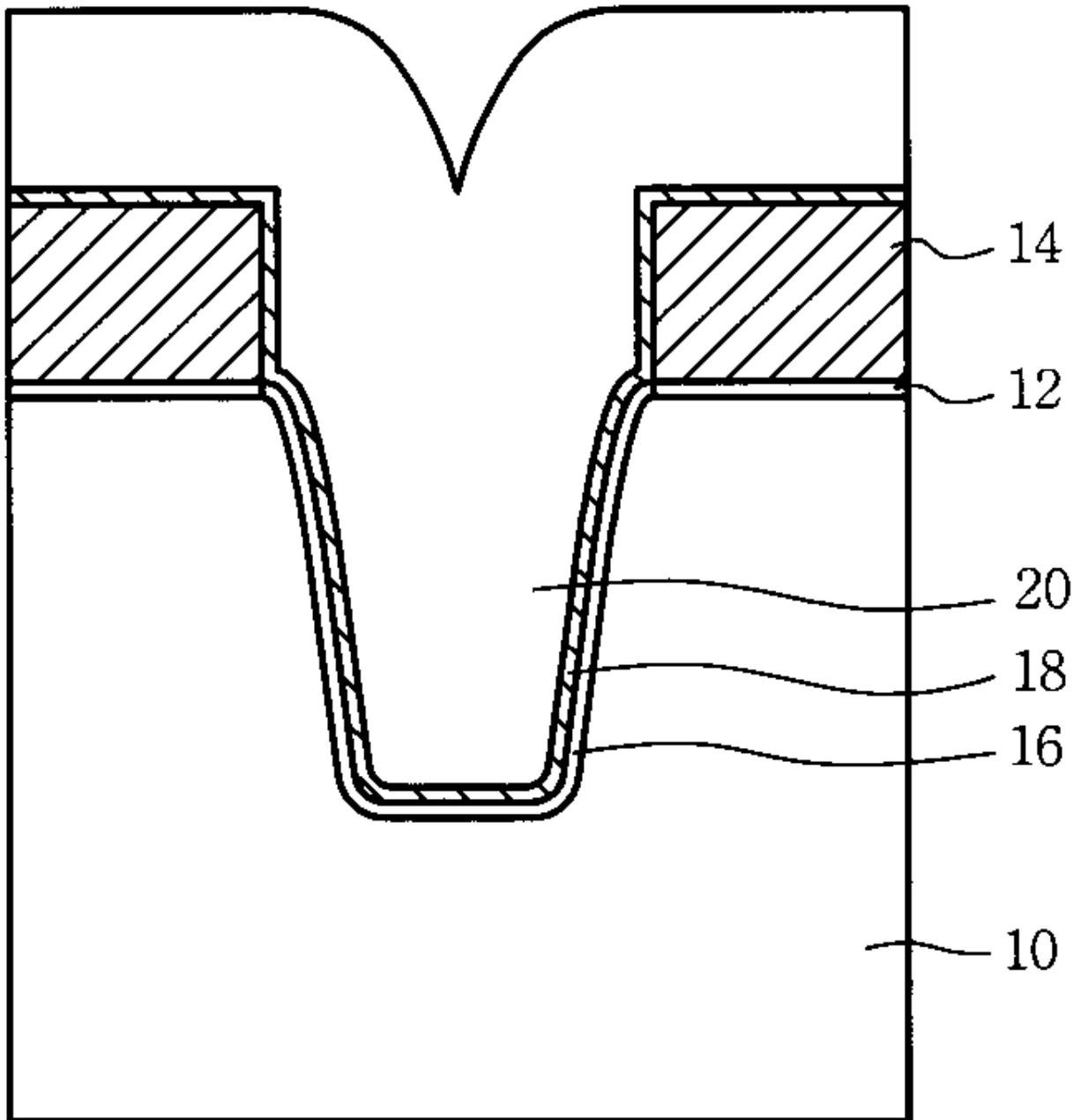
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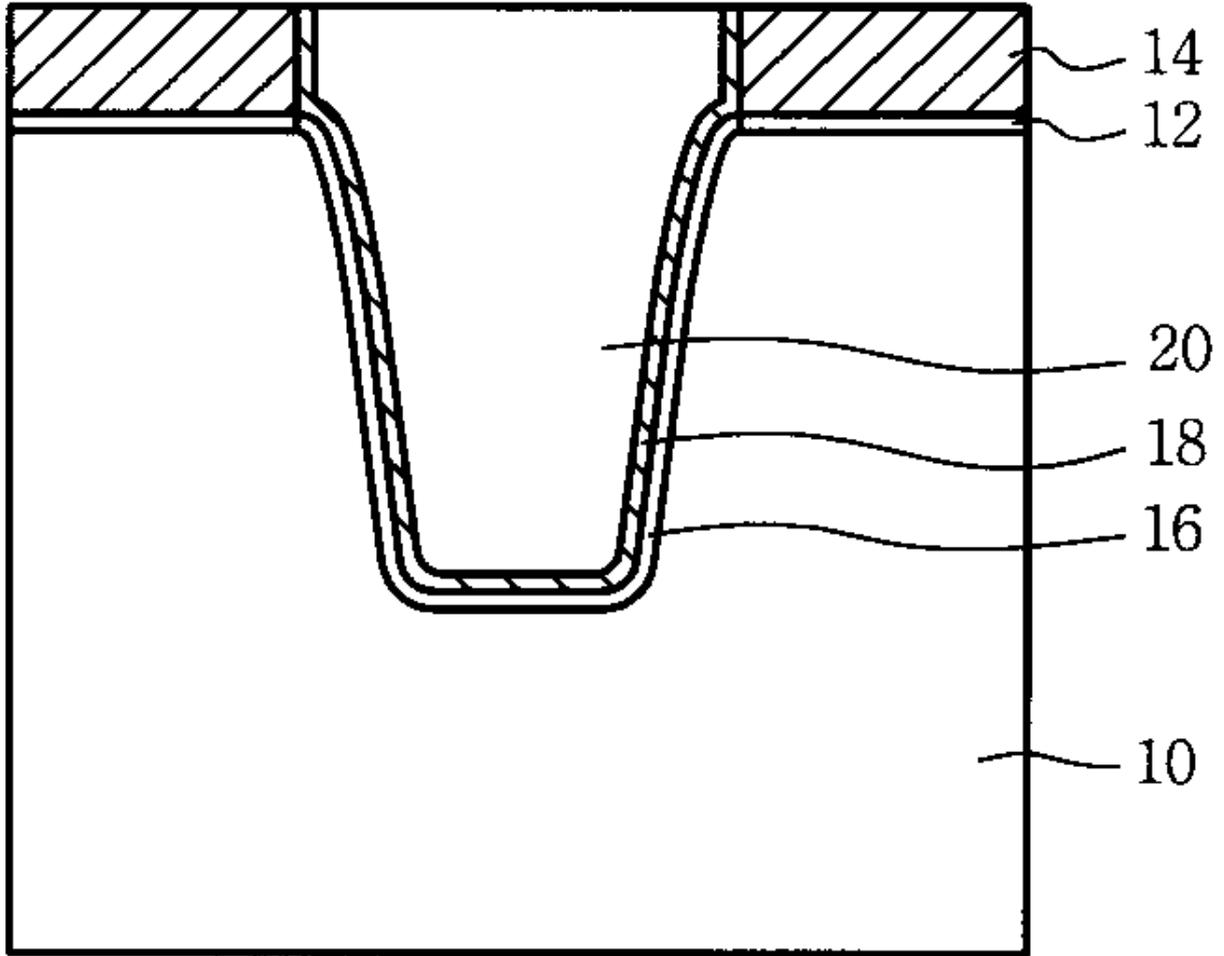
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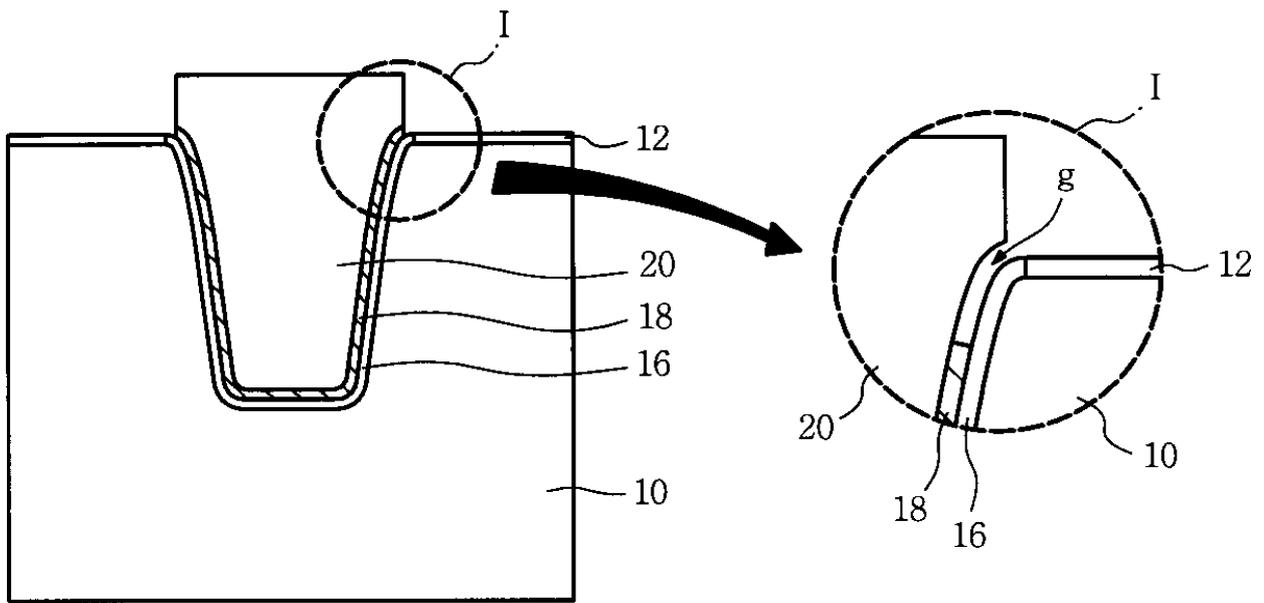
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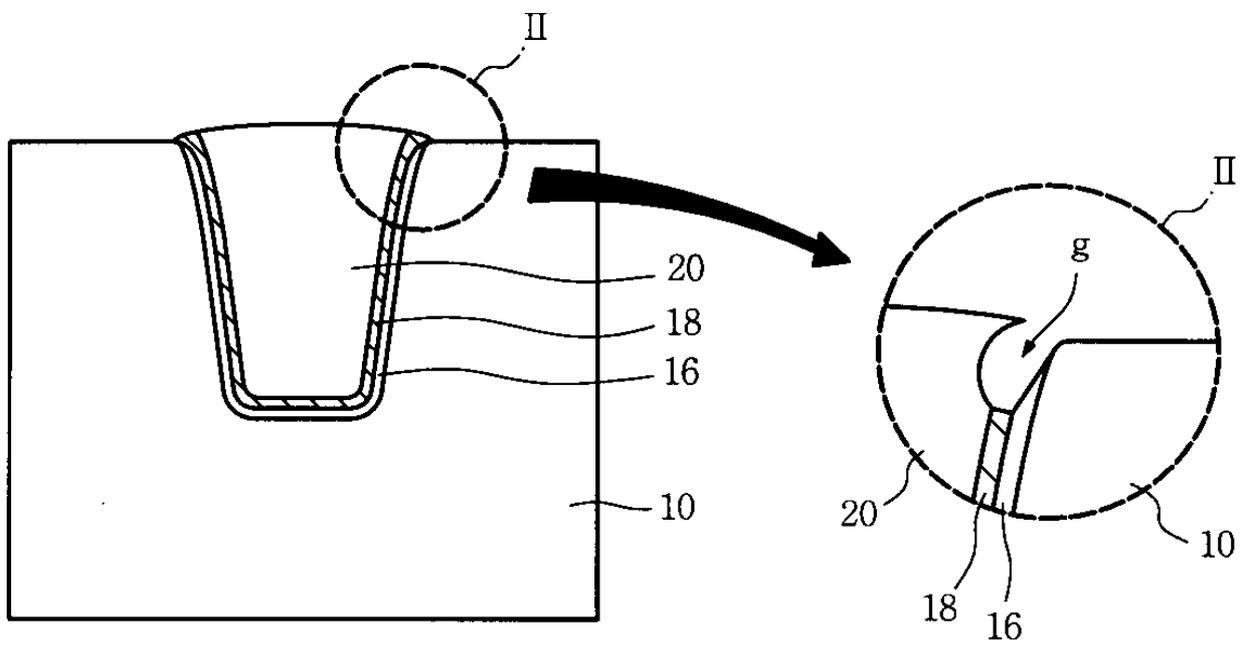
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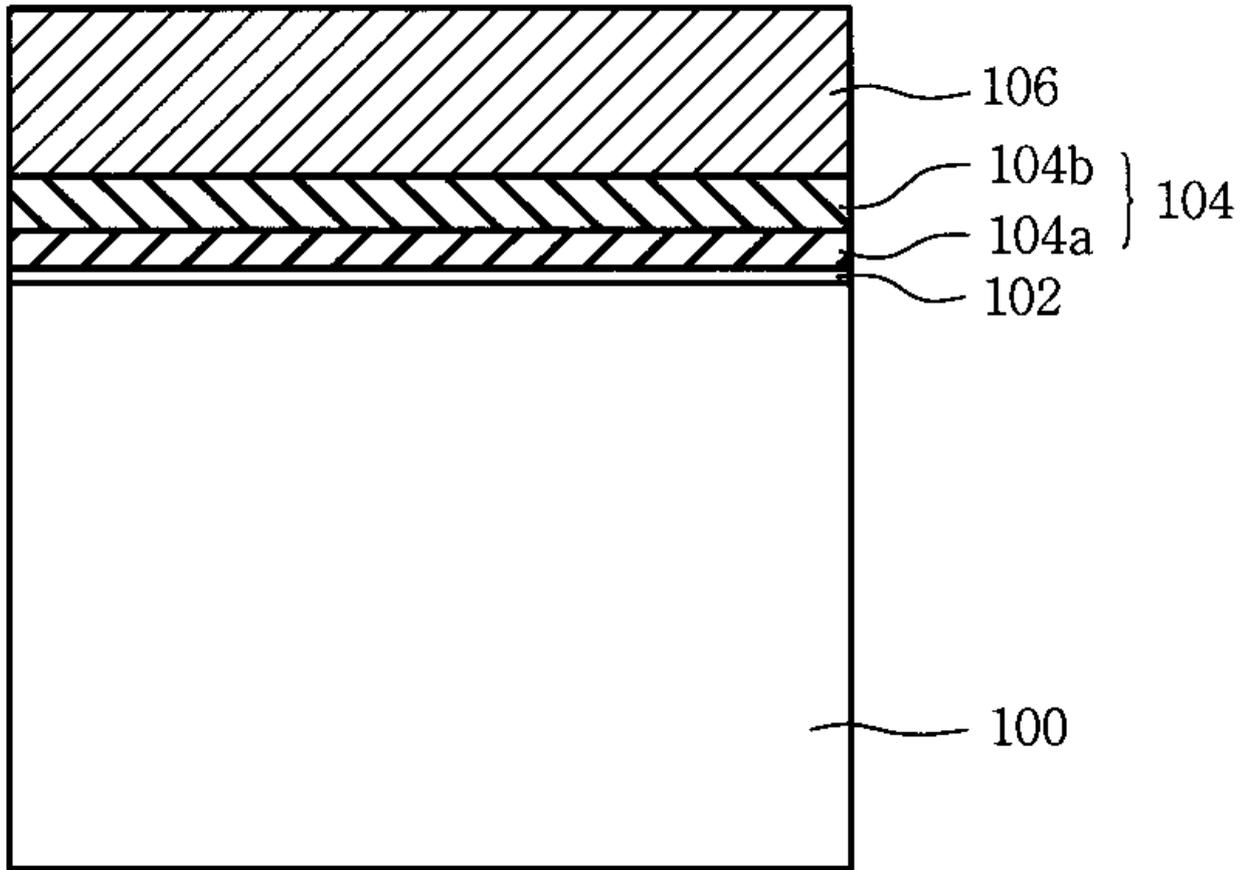
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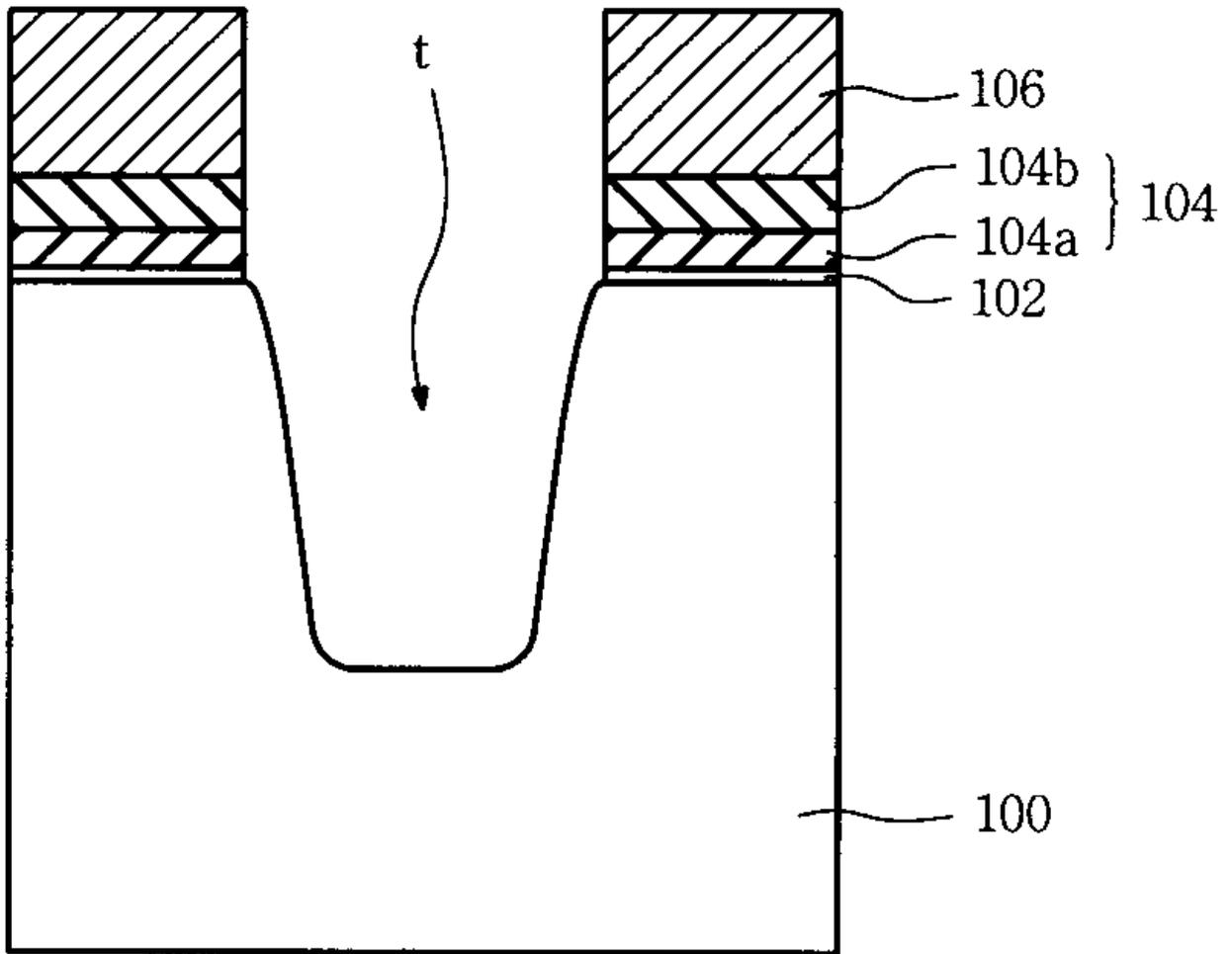
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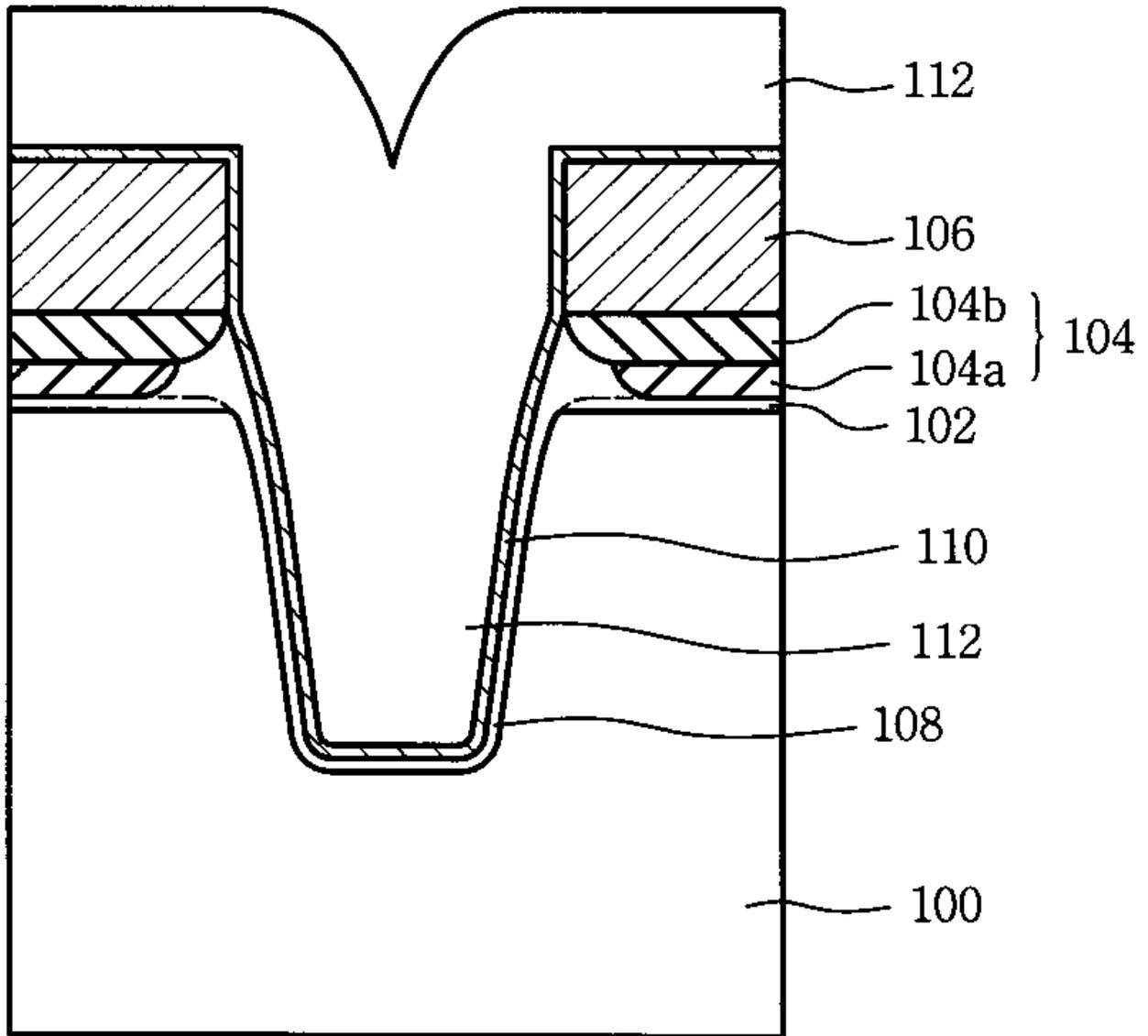
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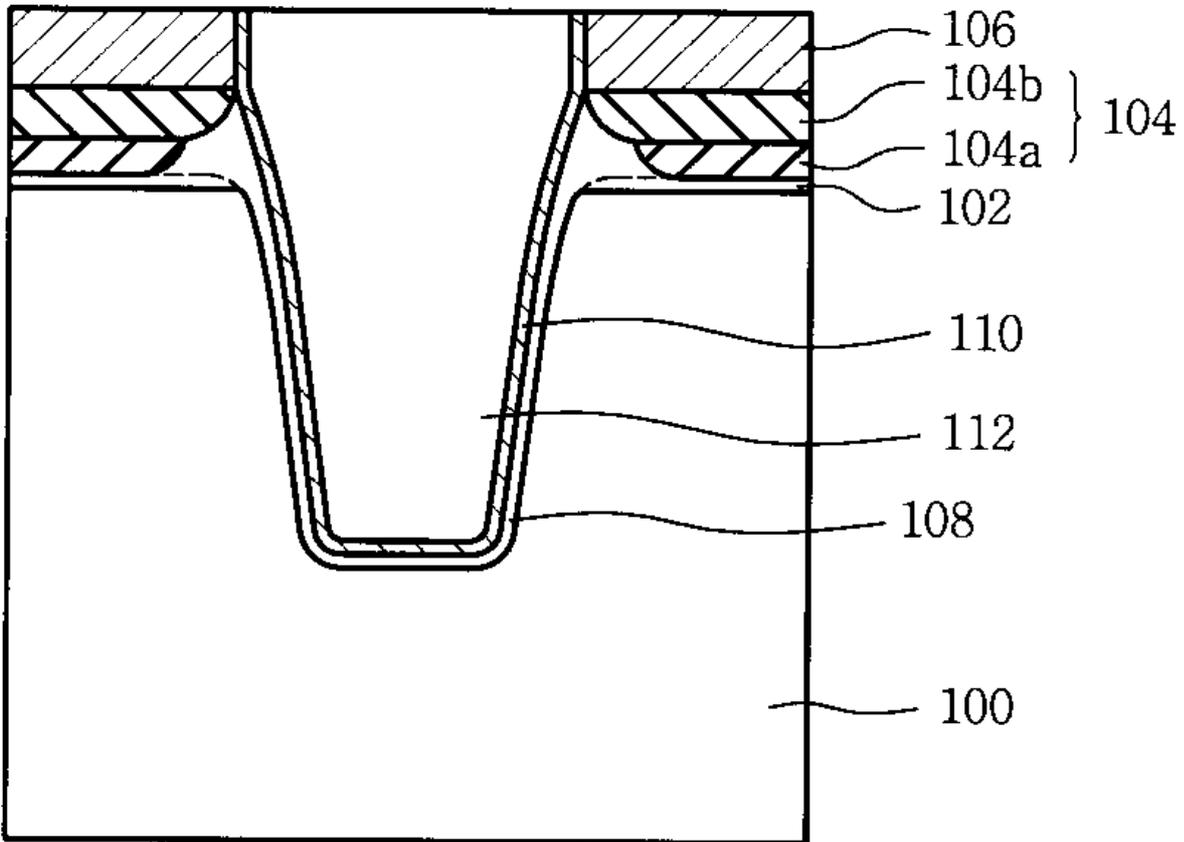
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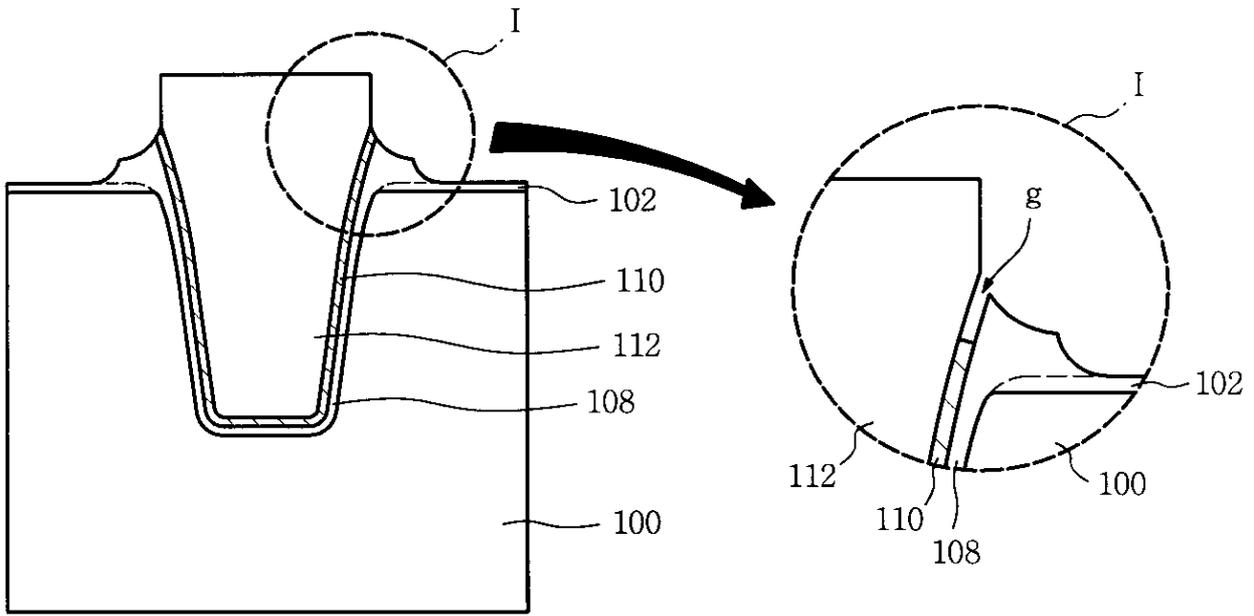
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10



11



12

