

(19)
(12)(KR)
(A)(51) 。 Int. Cl. ⁷
G02F 1/1343(11)
(43)2001 - 0078076
2001 08 20(21) 10 - 2001 - 0003719
(22) 2001 01 26(30) 2000 - 016680 2000 01 26 (JP)
2000 - 380526 2000 12 14 (JP)(71) 가 가
가
가 22 22

(72) 1141 - 9

2927 - 66

(74)

:

(54) ,

(100) (10) (12) (12) 2 가 (Mo)
1 1 (16) , 1 (16) (Al) 2 (14) .
(16) 60nm 2 (14) .
가 , 2 (14)

2

, , , , , , 1 , 2 , , ()

1	1	(100)	, (a)	, (b)	.
2	1	(100)	(100a)	, (a)	, (b)
3	(a)~(c)	1	(100)	(100a)	.
4	(a) (b)	1	(100)		.
5	1	Mo (16)			.
6	1	(100)	(22T)		.
7	(a)~(c)	1	(100)	(22T)	.
8	3	TFT (200a)			.
9	(a)~(g)	3	TFT(126)	(30s), Mo (16)	Al (14)
10	(a)~(f)	4	TFT(126)	(30s), Mo (16)	Al (14)
11		TFT(126)	(30s), Mo (16)	Al (14)	.
< >					
10, 50 :	()				
10A :					
10T :					
12 :					
14 :	Al				
16 :	Mo				
18 :					
18a, 40a :					
22 :	()	,			

22T :

24 : ()

26, 126 : TFT

30s, 30d, 30T : (ITO)

32 :

32a :

34 :

36s, 36d :

38s, 38d : ()

40 :

52 : ()

60 :

62 :

72 : $\lambda / 4$

74 :

80a, 80b :

82a, 82b :

84a, 84b :

100 :

100a :

130 : ITO

200a : TFT

가 가

(laptop computers), TV

가

가

가 가

가 가

(TFT

)

가

가

()

()

가

(TFT)

()

, ITO Al
alvanic corrosion:

)

ITO Al

, ITO

(g

가 , ITO

ITO

ITO

3 - 246524

, Al /ITO 2

ITO

ITO Al

(Mo)

(Mo - Ti)

, Al

Al

ITO

3 - 246524

ITO

ITO Al

Mo (

)

Al

Al

, Al

가

, ITO

Al

ITO

, Al

Mo (

Mo

)

Al

Al

, Al

가

()

가

, Al

, Al

, Al

Al

(

2~5 μ m

)가

Al

() ,

,

Al

Al

Al) . Al , Al 가 (Al 가 (.
Al , Al /Mo .

Al ITO ITO 가 Al , ITO
ITO ITO Al ITO , Al
ITO 가 .

Al Al , Al /ITO 2
TFT , EL , Al /ITO 2 가
가 Al Al ITO , Al
uctances) 가 가 . 가 (cond
가 가 ,
가 " " 가 .

Al , Mo Al ,

1 (Mo) , 1
2 (Al) , 1
60nm () , .

1 .

ITO .

1 , 1
2 , 1 2 , 1
60nm

1 .

1 , 가

1 , ITO 가 ,
1 .
2 가 20 /10000 μm^2 .
1 2 , ,
, 1 2 ,
. 1 2 .
1 2 .
1 2 .
. ITO , , , ,
ITO ITO ITO ,
60nm 1 2 ITO
, 1 2 .
, ,
. ,
, 가 TFT 1 2
, 가 .
ITO , ITO 1 2
1 2
. , ITO
, 1 1 60nm
2 , 1
. , ITO
, ITO ITO ITO 60nm
1 ITO , 1
2 , 1 2 .

ITO , ITO

ITO 1 2
1 2

.

< >

, 가 Mo () Al ("

") .

Mo , () . Mo
Al , Mo (粒界) . Mo
60nm , Al 20 /10000 μm^2 .
Mo 30nm , Al
Al 가 50nm
50nm Al .

" "

()가 (amorphous phase)() , () " "

" , 가 , Mo () 가 " Mo
) 가 .
. " Mo " " " " .

Mo Mo (: 가 , ,)
4nm Mo , Mo 가 Mo (splash)가
Mo Mo 가 Mo 4nm~60nm
Mo ,

Mo Mo Mo 가
Al Mo Mo 가
Mo Mo Mo

Mo Mo
Mo 가
60nm .

Mo , 40nm . Mo
60nm 60nm Mo Mo
60nm Mo Mo

, Mo Al (
), Al , Al 가 Al
 Mo ITO , Al ITO , ITO Al Mo
 Mo Mo Al
 가
 < 1 >
 1 (100) 1 (a) (b) 1 (a)
 (100) , 1 (b) (100) TFT
 (100) (100a) , (100b) , (100a) (100b)
 (60) (60) (62) (100a 100b)
 (100a) (10) (12) (12) Al (
)(14) Mo () (16) (
 12) Al /Mo 2 (12) , (12) ,
 TFT() (12) ,
 (" ") ()
 (18) , (18) Mo (16) Al (14)
 (12) (12) Mo (16)
 60nm , Al (14)
 (12)
 (100b) (50) ((60)) ITO()
 (52) (52) () (12)
 (52) (12) () , (60) () 90
 ° TN (100b) ((60))
 1/4 ($\lambda/4$) (72) (74) ()
 가 (100) (52) (12) 가 (60) (52)
 가 (12) (가)
 가
 (10A) (100) , (10A) ,
 TFT ()

(10T) . Al /Mo 2
 (12) , ITO (100) ITO Al
 Al 가 , ITO 가
 Al /Mo 2 (12) I
 TO .

2 (a) (b) (12) 2 (a)
 (100) (100a) , 2 (b) 2 (a) 2B - 2B'

(22) , (100a) 2 (a) (10) , ()
 (22) (22) () (24) , (22) (24)
 TFT(26) , TFT(26) (12) .

2 (b) (10) , ()
 (22) (32) ,
 (32) (34) , (36s) (36d), (38s) ,
 38d) TFT(26)가 TFT(26) , (40) (12)
 (40) (18) (18)

(36s) (38s) (36d) (38d) , ITO
 (18a) (30s 30d) (40) (40a) (30d) (18)
 (12)

(22), (24), (38s) (38d) (Ta) ,
 (, , Mo (16)
 (40a) (38d) .
 32) , (34) a - Si , (36s) (36d) n⁺ - Si ,
 (40) (SiN_x) , ,

3 (a)~(c) .

3 (a) , TFT (10) (18)
 . TFT(26) (40) (10) , ()
 () (東京應化工業(株)) : OFPR - 800 (1.5 μ m)가

(10) 100 30 (pre - bake) , 4 (b) (80b)
 400mJ () , 4 (a) (80a) 180mJ ()
) 2 . 2 .

4 (a) (b) (80a 80b) (82a 82b) (84a 84b) .
 4 (a) (b) . 4 (a) (80a)
 (82a) 20%~40% , (82a) (8
 5 μ m~ 50 μ m , 10 μ m~ 20 μ m (82a) (8
 2a) .
 4 (b) (80b)가 (82b) (18a 40a) .
 (80b) (100a) ()
 ()

((() TMA(
 (80b)
 가 , (80a) (84a)
 40%가 , (80a) (82a)
 80%가 .

90 1 가 , 200 60 (heat - treated) (he
 at sagging)

3 (b) (18) , (12) (30d)
 (18a) , (12) O₂
 (18) (80a)
 180mJ , ()
 (100a)
 6 - 75238 .

3 (c) , Mo (16) Al (14) 2
 (12) . 1 Mo (16) 30nm ()
 1) , 60nm (2) 90nm
 (1) Mo . Mo (16) Mo (16)
 Mo (16)
 1 . Mo (16)
 (LA) 5 . 5 Mo (16)
 2.3 μ m $\times$ 1.7 μ m

1	0.5Pa	15kW	50nm	30nm
2	0.5Pa	10kW	50nm	60nm
1	0.5Pa	15kW	150nm	90nm

Mo (16) Al (14) Al (14)
 0.2Pa, 10kW, 100nm 60nm Mo (16)
 , Al (14) Mo (16)
 . Al (14) Al (14)
 100 μ m $\times$ 100 μ m .

1 Mo (16) Al (14) , 2 Mo (16) Al (14)
 5~10 /10000 μ m² . 1 Mo (16) Al (14) 200~300 /1000
 0 μ m² .

Mo (16) Al (14) 2 (b) (12)
 . Mo (16) Al (14) .

Mo (16) Al (14) Mo (16)
 16) Al (14) .

() 106()

1, 2 1 (12)

4) 가 2 () Al (1

[2]

1	30nm		
2	60nm	/	
1	90nm	/	10%

Mo (16) 1 (12)(Al (14)) ,
 2 (12) 가 1 Al 2~5 μ m
 8~13% (100a) 1
 (100) 가 , 1 1 2 (10
 0) 10% .

Mo (16) Al (14) 가 , Mo
 60nm 가 , 30nm

2 (b) (12) ITO (30d) (12)

Al (14)/Mo (16) 2 , (12)

(30d) ITO .

Al (14)/Mo (16) 2 , (100a)

ITO .

(100a) (1 10A) () (1 10T)

(22T) 6 .

가 6 (22T) (10)

(22) (22T) (32) (

32a)가 , (32a) (22T) ITO (30T) . I

TO (30T) (22T) . IT

O (30T) (30d) .

(100a) , ITO (30T) (12) (Mo

(16) Al (14)) . Al (14) ITO (30T) , Al (14)

ITO ITO (30T) 가 가 A

I (14)/Mo (16) 2 , ITO (30T)

7 (a)~(c) (22T) 7 (a), (b) (c)

3 (a), (b) (c) .

7 (a) ITO (30T) (18)

가 (3 (a)) .

7 (b) ITO (30T)

가 (3 (b)) .

(80b) .

7 (c) ITO (30T) (10) (12)

Mo (16) Al (14) 3 (c)

Mo (16) Al (14) 2 (12)

Mo (16) Al (14)

ITO (30T) Mo (16) Al (14) (12)

(Mo (16) Al (14)) , ITO (30T) Al (14) IT

O ITO (30T) .

(12) ITO (12) ITO Al

ITO ITO Al

Al ITO ITO (30T)

ITO

ITO 가 .

Mo (16) , Al (14) , () (18)
 가 . 가
 , 가
 가 ,
 2 가 .

Mo (16) 가
 , Mo (16) 60nm
 .

< 2 >

Mo (16) 가 ,
 Mo (16) Mo (16)
 , 1 가 .

Onm Mo Mo (16) , 10kW, 0.5Pa 가 5
 , 20sccm (N₂)가
 Mo (16) , 1 1
 Mo (16) (30nm)
 가 .

Mo (16) 1 가 Al (14) , Al (14)/Mo (16) ,
 Al (15)
 (12) (100) 1 1 가
 Mo (16)
 2 Mo (16) 가 20sccm , 가
 Mo (16)

1 2 가 ,
 () ,

< 3 >

3 TFT
 TFT (200a) 8 . TFT (200a)
 , ITO , Mo (16) Al (14)

4 , ITO
 ITO 30s ,
 30d (30d) Mo (16) Al (14)
 (30s) Mo (16) Al (14) 8

() .

8 TFT(126) , (34) 1 가 , 1
가 (22), (32), (34), (36s), (10)
(36d)

(34) (10) ITO 100nm
3, 4 2 , 1 가 , 30nm (3), 60nm (Mo
4), 90nm (2) Mo (16)
(16) Al (14) 3, 4 2 1 가
100nm Al (14)

TFT(126) (30s), Mo (16) Al (14) 9
(a)~(g) TFT(126) (30s), Mo (16) Al (14)
(30s) ITO 130
9 8 (10) (22) (34)

ITO (130) Mo (16) Al (14) (9 (a)) ,
Mo (16) Al (14) (Al /Mo
) (150) (9 (b)). Al /Mo (150)
(150) Mo (16) Al
(14) (9 (c)). (150) (9
(d)).

ITO (130)
(ITO)(151) . ITO (1
51) Mo (16) Al (14) 가 Mo (16) Al (14) (9
(e)). ITO (151) 2
(151) ITO (130) (9 (f)).
(151) (30s), Mo (16) Al (14)
(9 (g)).

(30s), Mo (16) Al (14)
(30d), Mo (16) Al (14)
(30d) Mo (16) Al (14)

Mo (16) Al (14) (30d) (30d) Al (1
4) , ITO
(30d)

ITO (151) Mo (16) Al (14) 가
 Mo (16) Al (14) ITO (130) Mo (16) Al (14)
 Mo (16) Al (14) (151)

8 TFT (200a) TN (40) 3, 4 2 3 TFT
 (100)
 1 (/) 3

[3]

3	30nm	2	0.03
4	60nm	3	0.04
2	90nm	24	1.5

2 2 , 19 Al 가
 Mo 90nm Mo Al 가
 Al Al Mo 가
 3 4 Mo (16) 30nm (3) 60nm (4) , Mo
 (16) Al (14) 가 , Al (14) Al (14)
 Mo (16) 가
 (150 151) 2 Al (14) Al
 가

Mo (16) 30nm (3) 60nm (4)
 , Mo (16) Mo , 1
 Mo Mo Mo
 가 Mo (16) Al (14) Al /Mo
 (150) (9 (d)), (150) ITO
 (151) ITO (130) (150 151)
 가

< 4 >

3 (30s, 30d) Mo (16) Al (14)
 3 ITO (130) (30s, 30d) Al /Mo 2

Al /Mo
O (130) 3 10 가 ITO (130) , IT

10 (a)~(f) TFT(126) (30s) Mo (16) Al (14)
(151) (10 (b)). (151) ITO
(151) (10 (c)). 2

Mo (16) Al (14) (10 (d)).
Al /Mo (150) (10 (e)). (150)
(150) Mo (16) Al (14) (30s) ITO
, (30s) 가 . Mo (16) Al (14)
(150) (10 (f)).

3 가 TFT TN
, 3 가 , 1

3 가 Mo (16) 60nm Mo (16) Al (1
4) 가 , Al (14) Al (14) Mo (16) 가 Al (1
2 Al (14) Al (150) 151)
가

3 4 ITO (130) Al (14)/Mo (16)
, ITO (130) Al (14)/Mo (16)
가 3 Al /Mo (150) ,
(150)
2

2 , ITO (130) (11 A
) , Al (14)/Mo (16) ITO (130) Al /Mo
I (14)/Mo (16) 가 가 .
,

3 4 ITO (151) Al (14) Mo (16)
ITO (130) Al (14)/Mo (16) , Al (14)/Mo (16) 2
. 3 4 - ,
. .

1 2 (11 - 101992) , 가
() TFT
MIM TN 가 가 (, STN
- , ECB ,) .

3 4 가 ITO , Mo
Al 1 가 Al /Mo / 3 가 , 3 4 TFT
. ,

EL
, EL
, ITO
. Al
Al EL ,
. .

Mo Al , Al Al
. Al
. .

Al /Mo / 3
. .

ITO ITO Al /Mo 2 ,
ITO ITO ITO ITO

(57)

1 , ITO 가 ,

1 .

8.

4 ,

2 가 $20 / 10000 \mu\text{m}^2$.

9.

4 ,

,

1 2 ,

,

,

1 2 ,

.

10.

4 ,

1 2

.

11.

4 ,

1 2

.

12.

,

,

ITO

,

ITO

ITO

,

60nm 1 ITO

,

1 2 ,

1 2 .

13.

12 ,

,

.

14.

12 ,

가 TFT 1 2 ,

.

15.

12 ,

ITO ITO

,

1 2 1

2 .

16.

ITO ,

1 1 , 1 60nm

, 2 , 1 .

17.

ITO ,

ITO ITO ,

60nm 1 ITO

,

1 2 ,

1 2 .

18.

17 ,

ITO

ITO

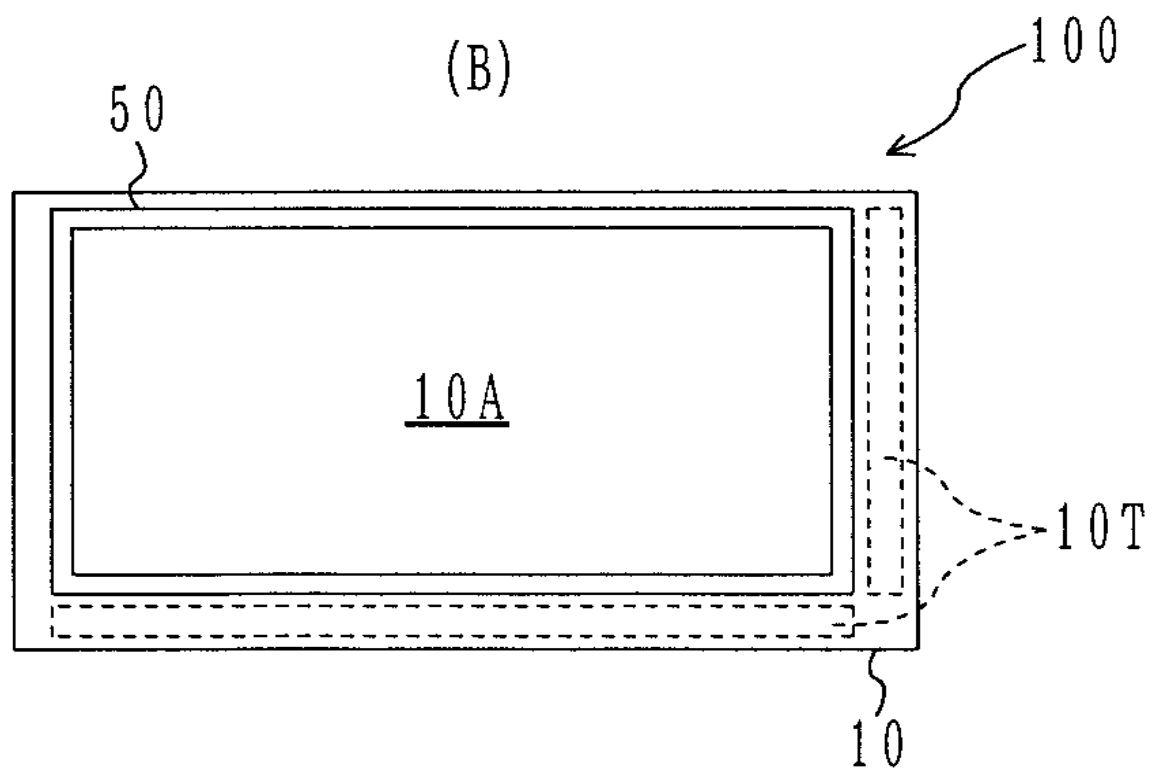
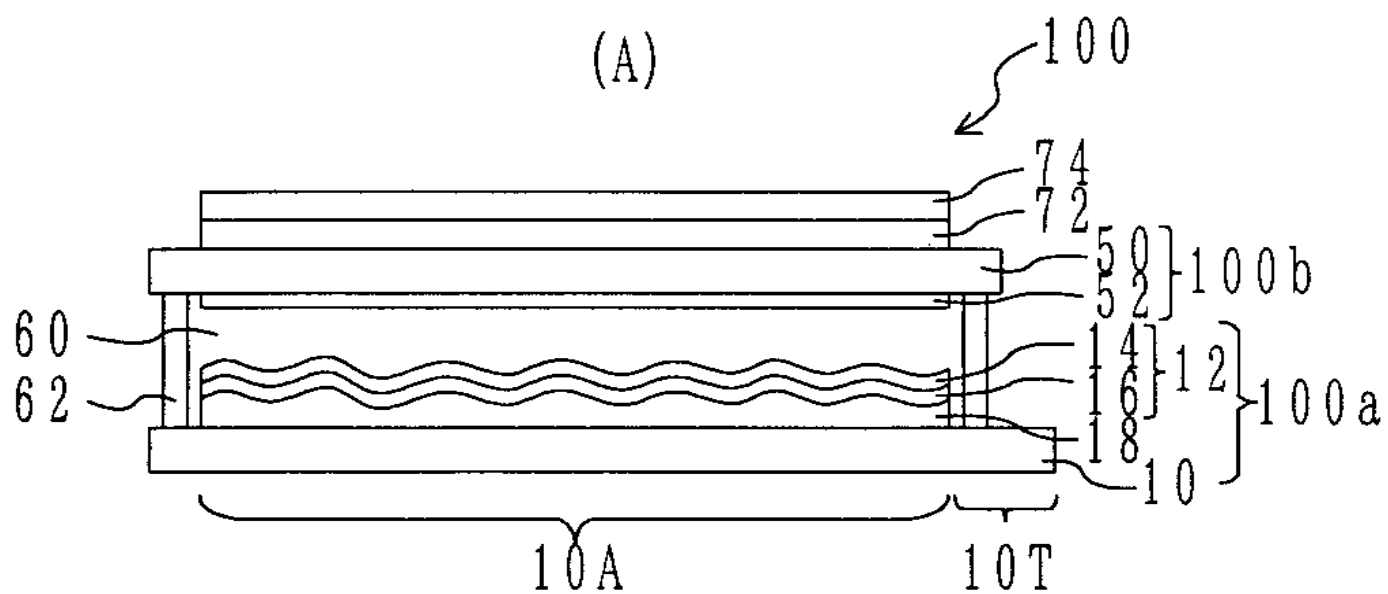
,

1 2

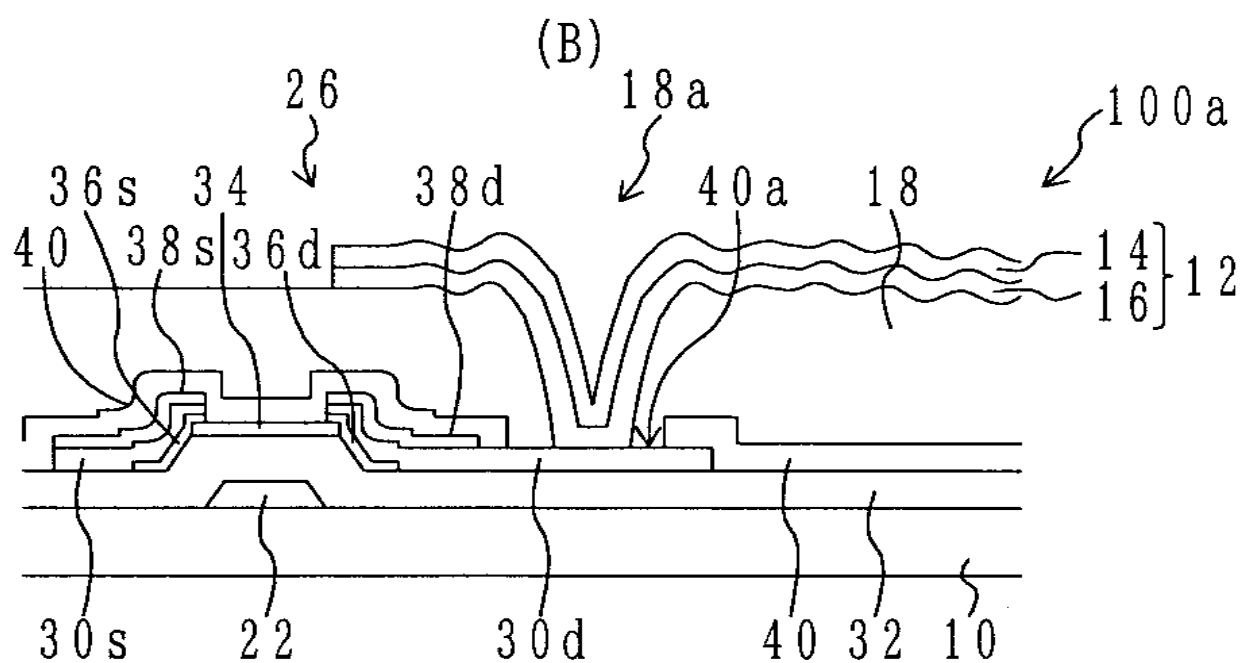
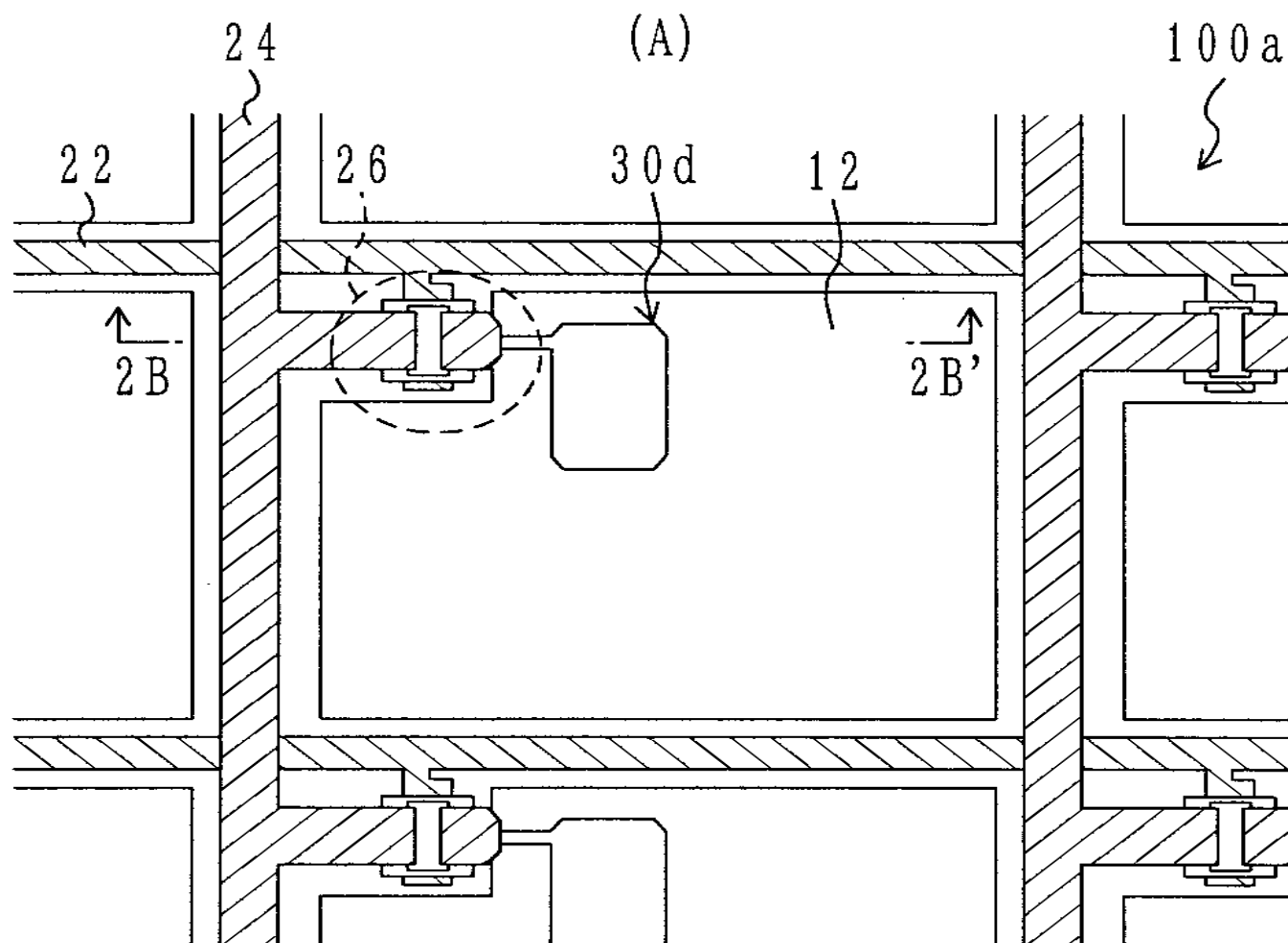
1 2

.

1

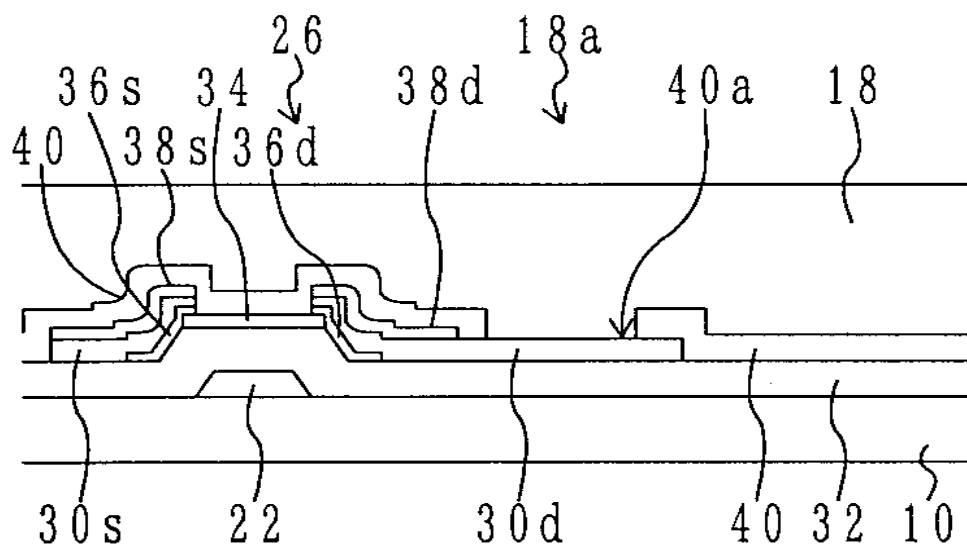


2

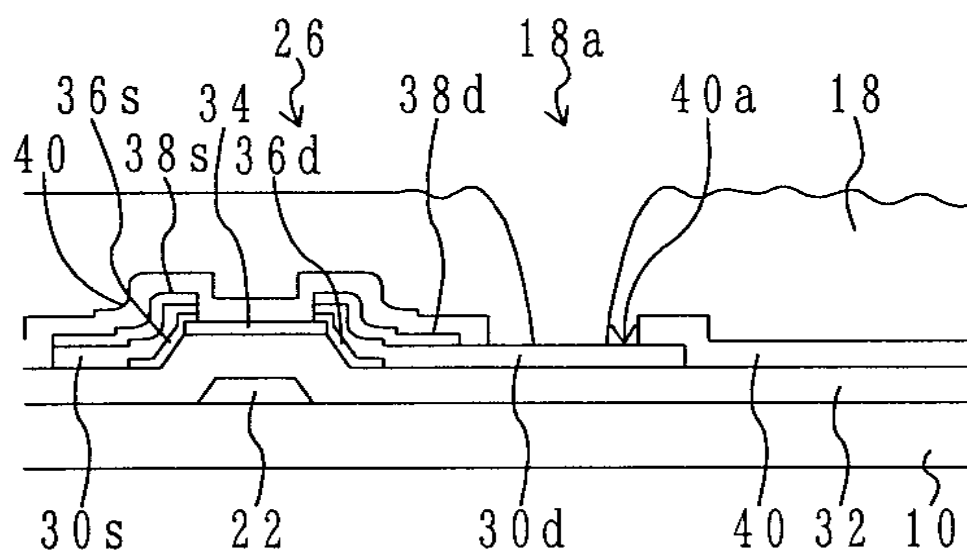


3

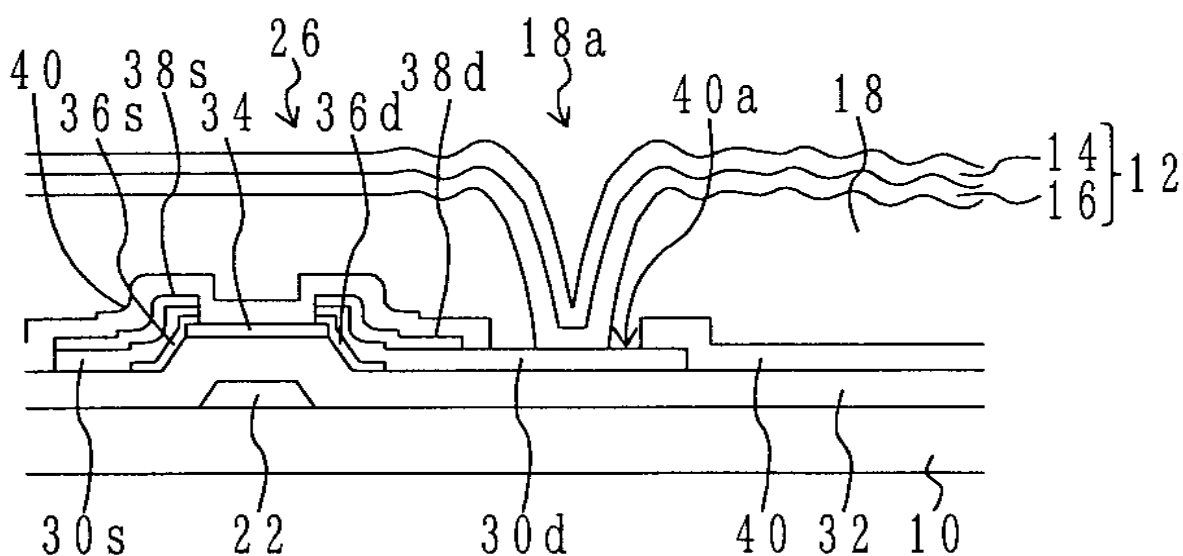
(A)



(B)

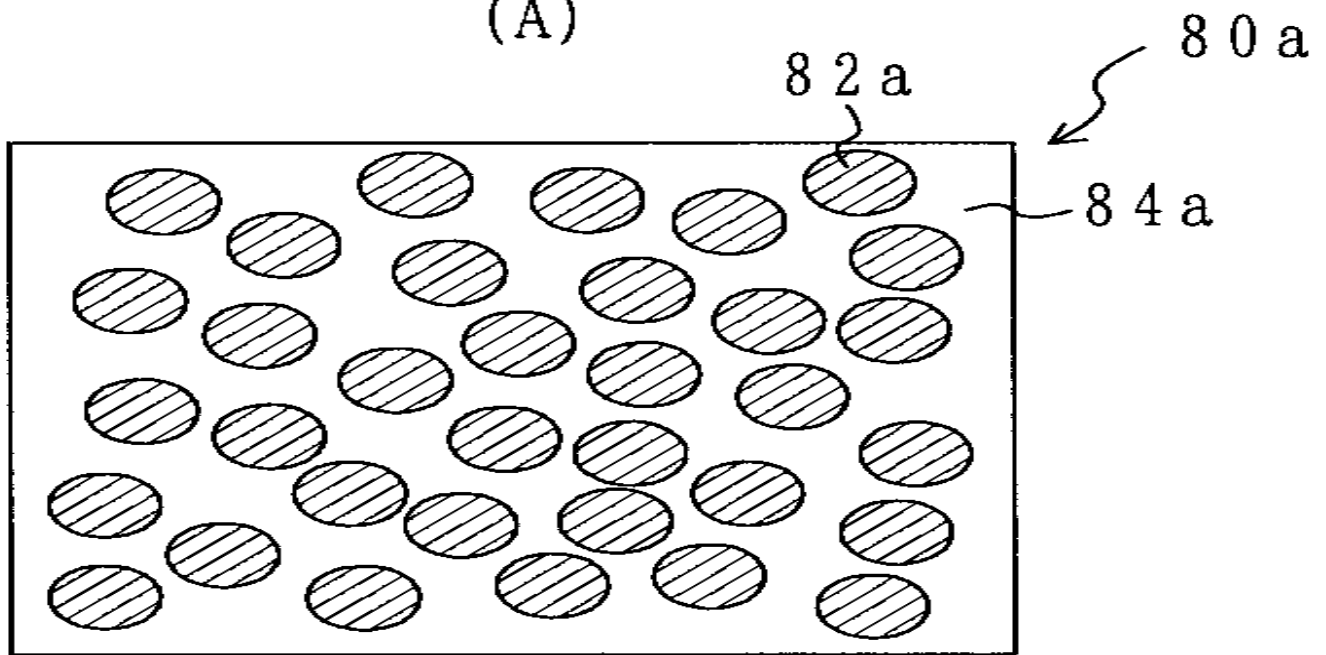


(C)



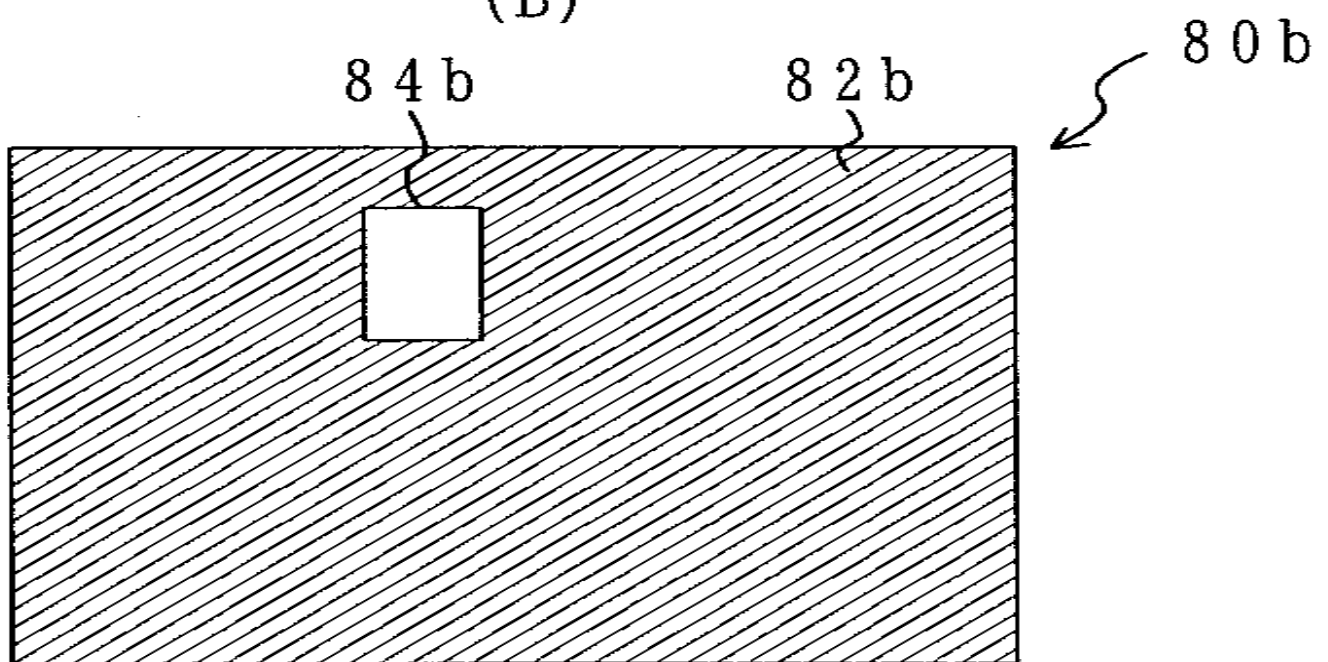
4

(A)



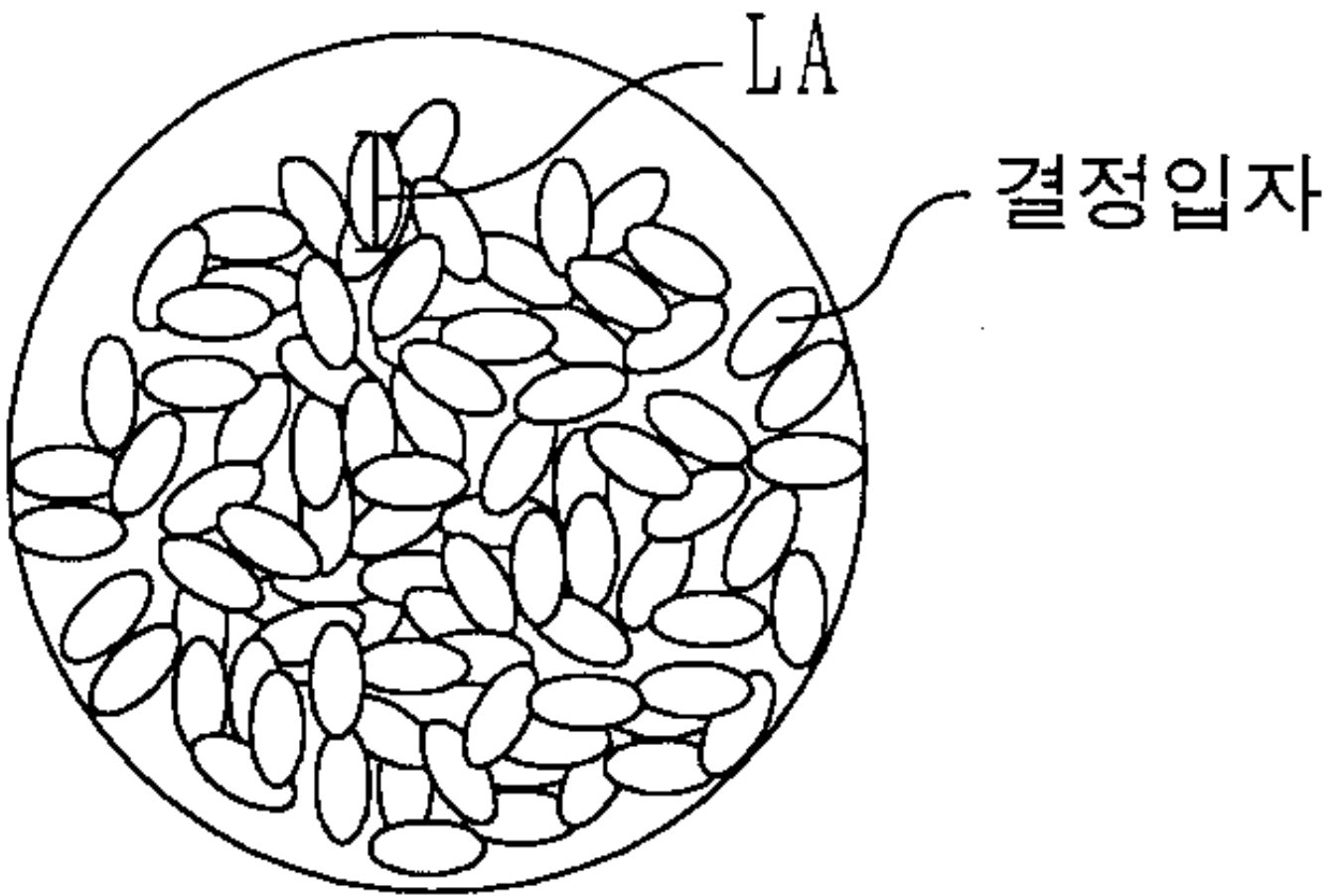
마스크 A

(B)

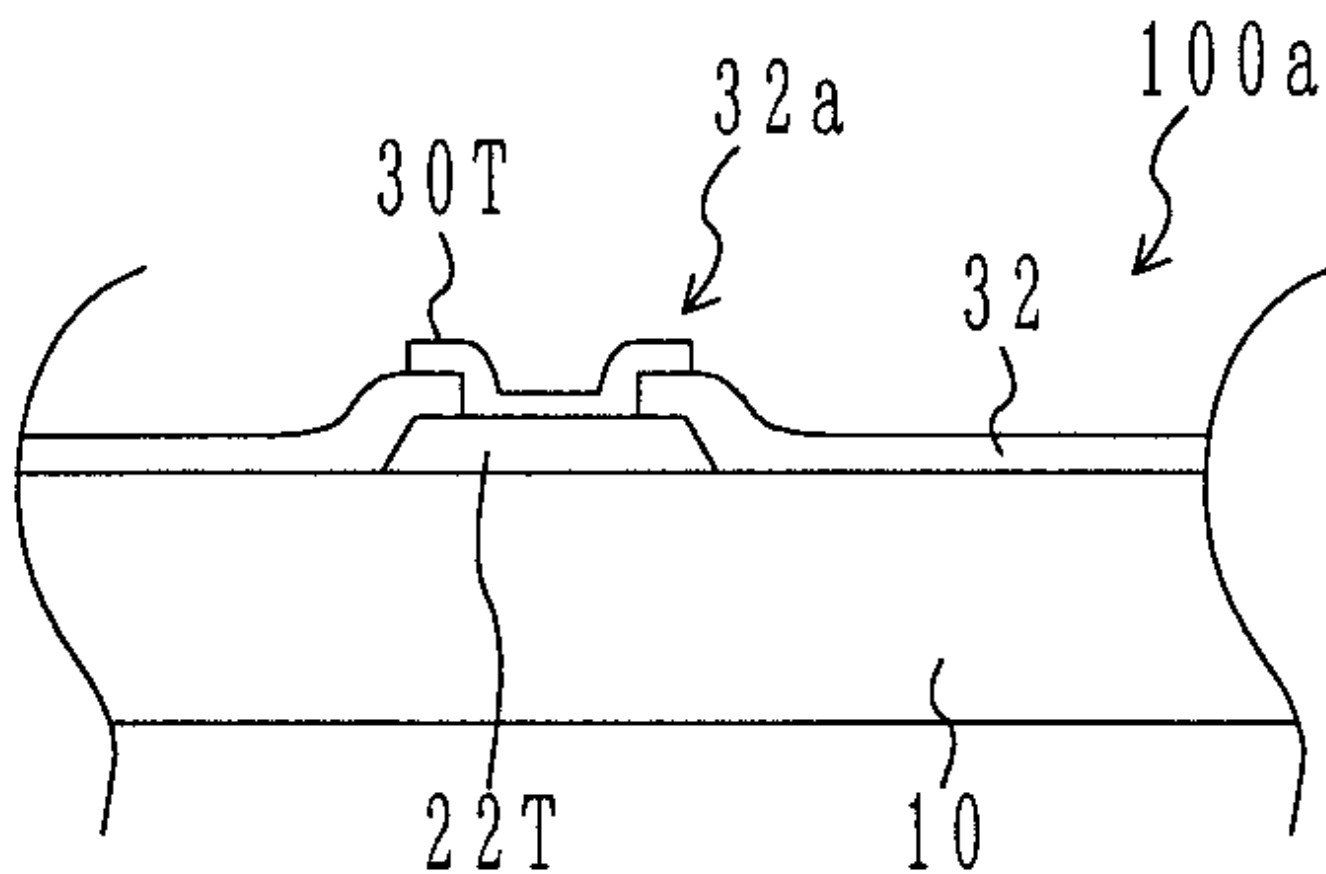


마스크 B

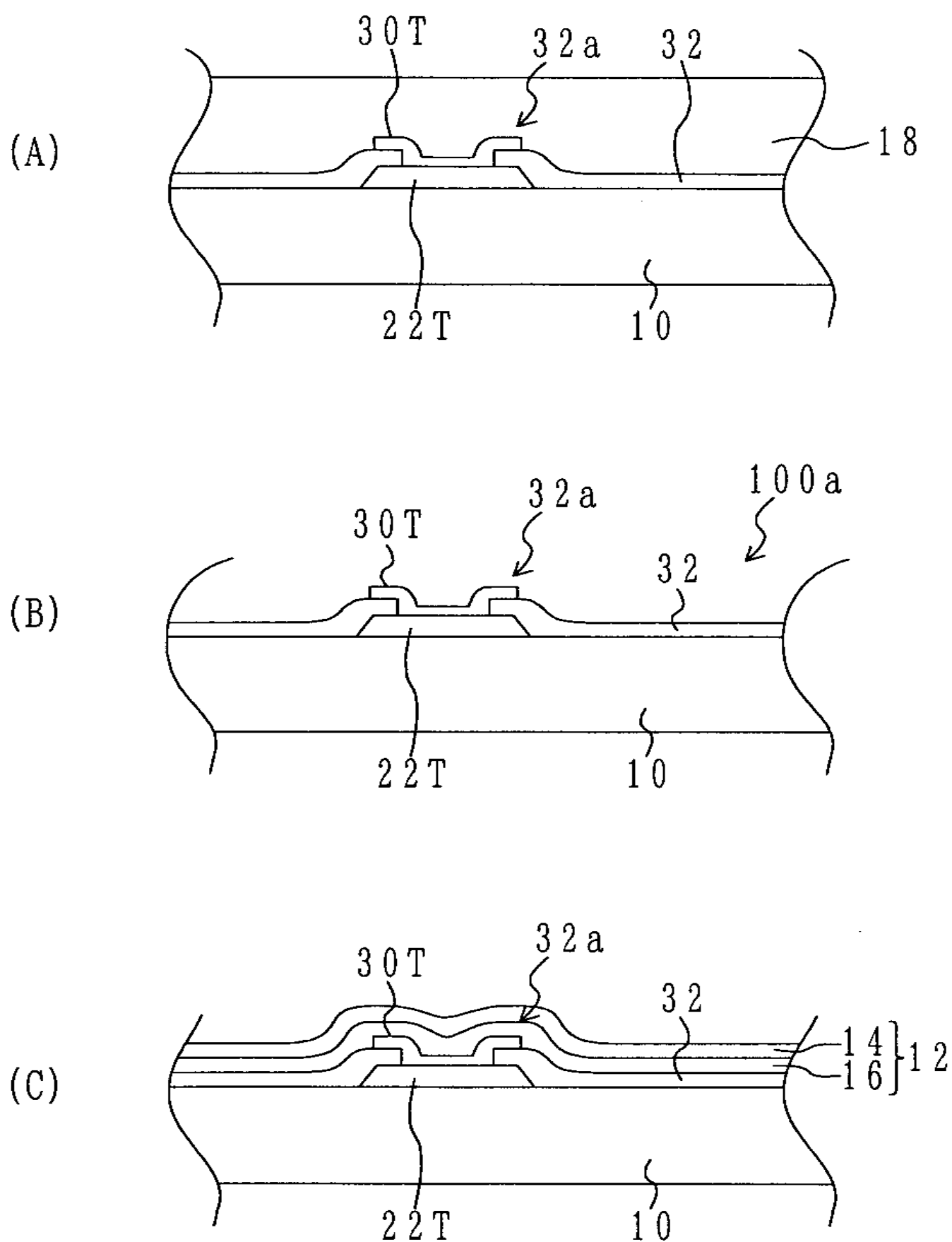
5

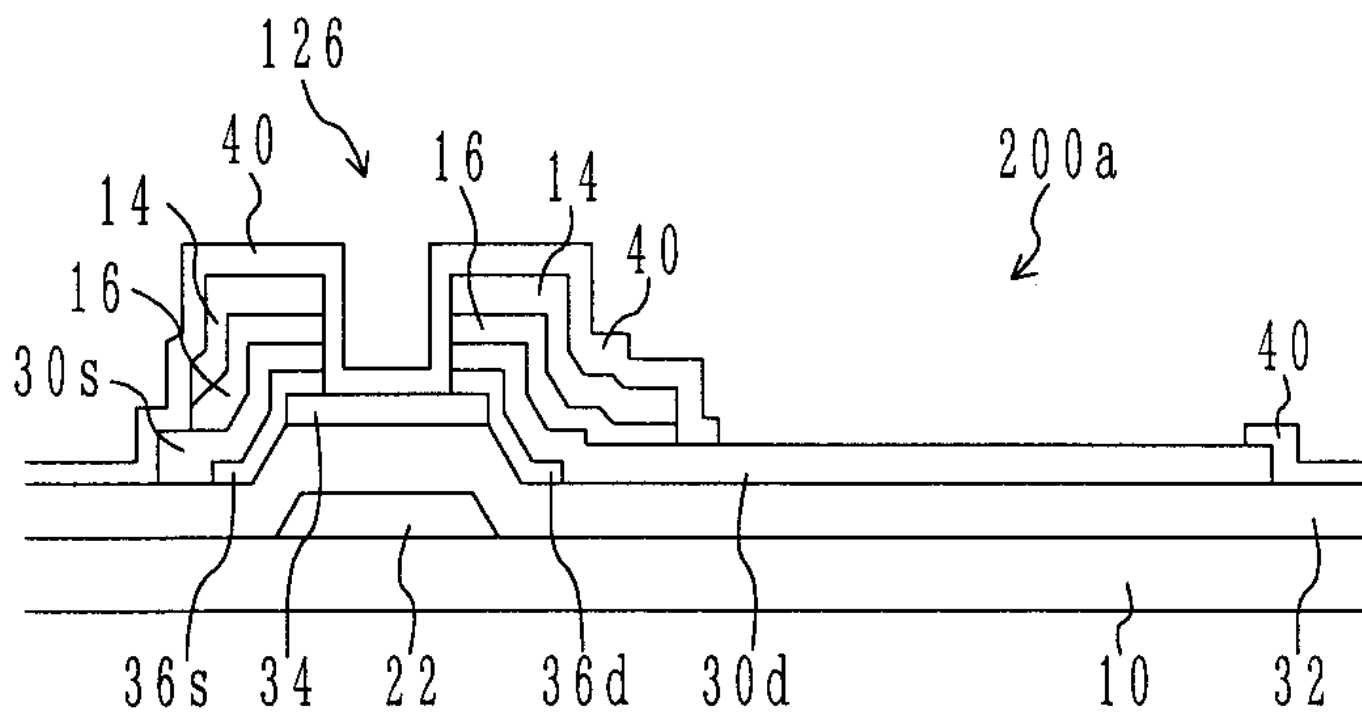


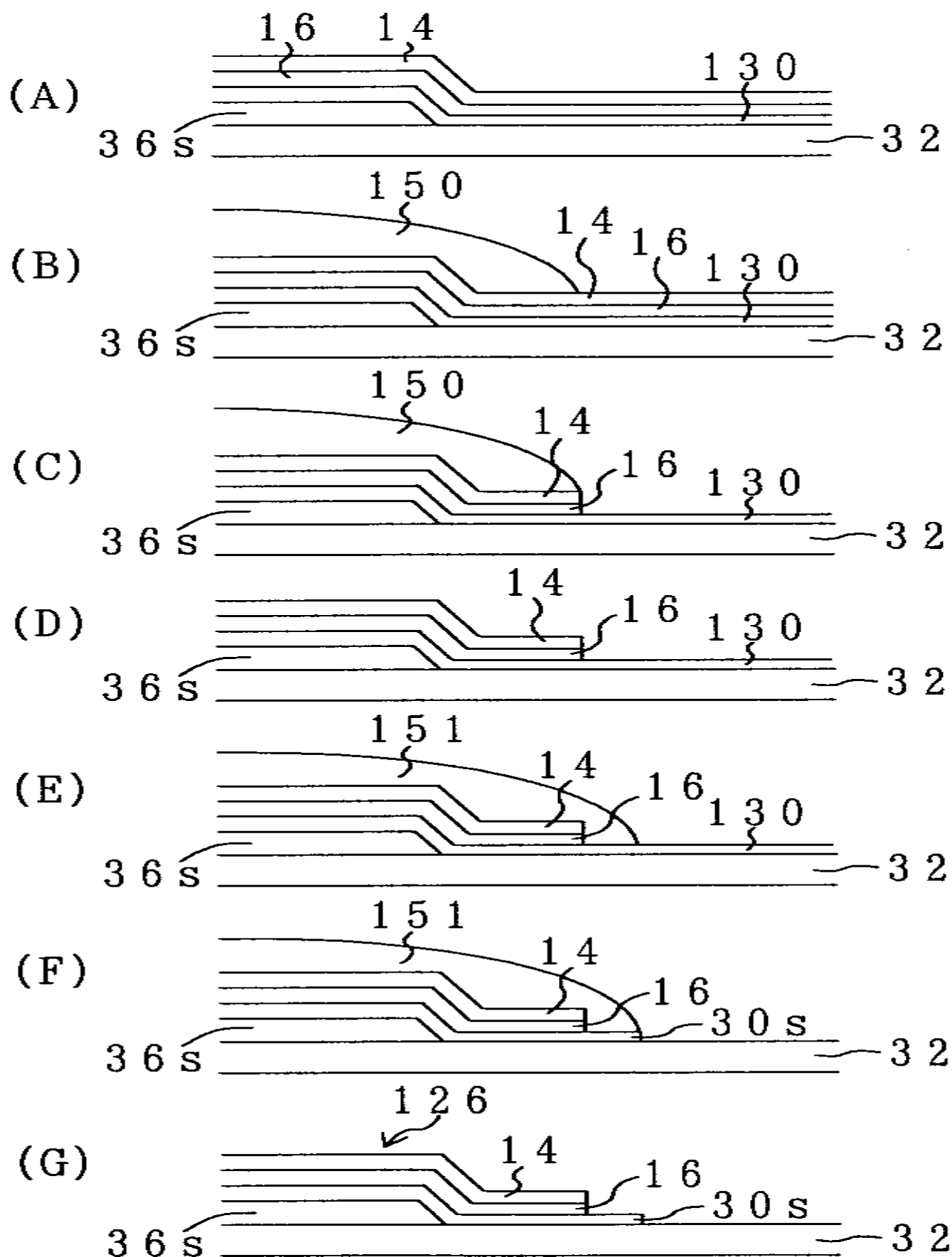
6



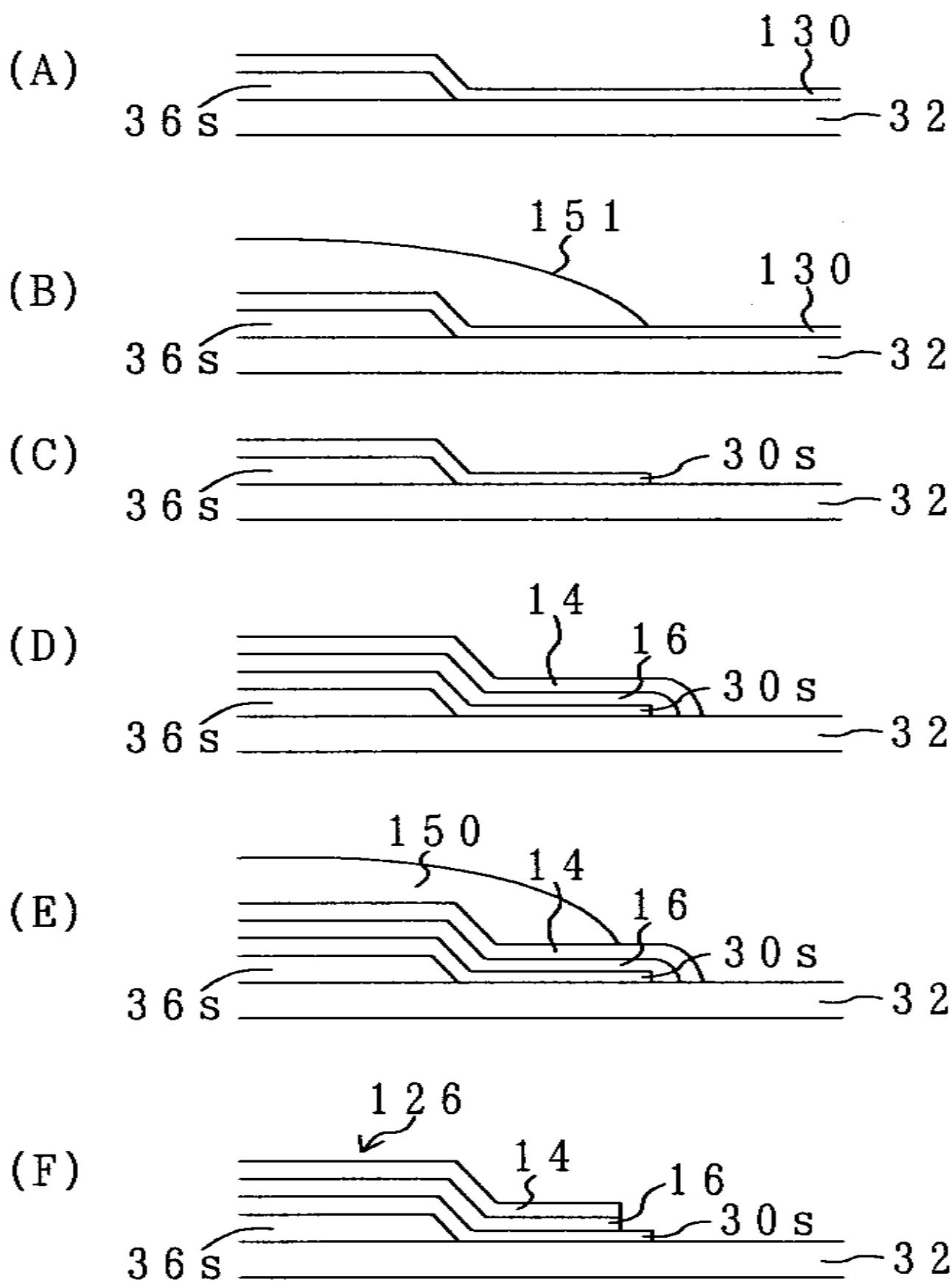
7



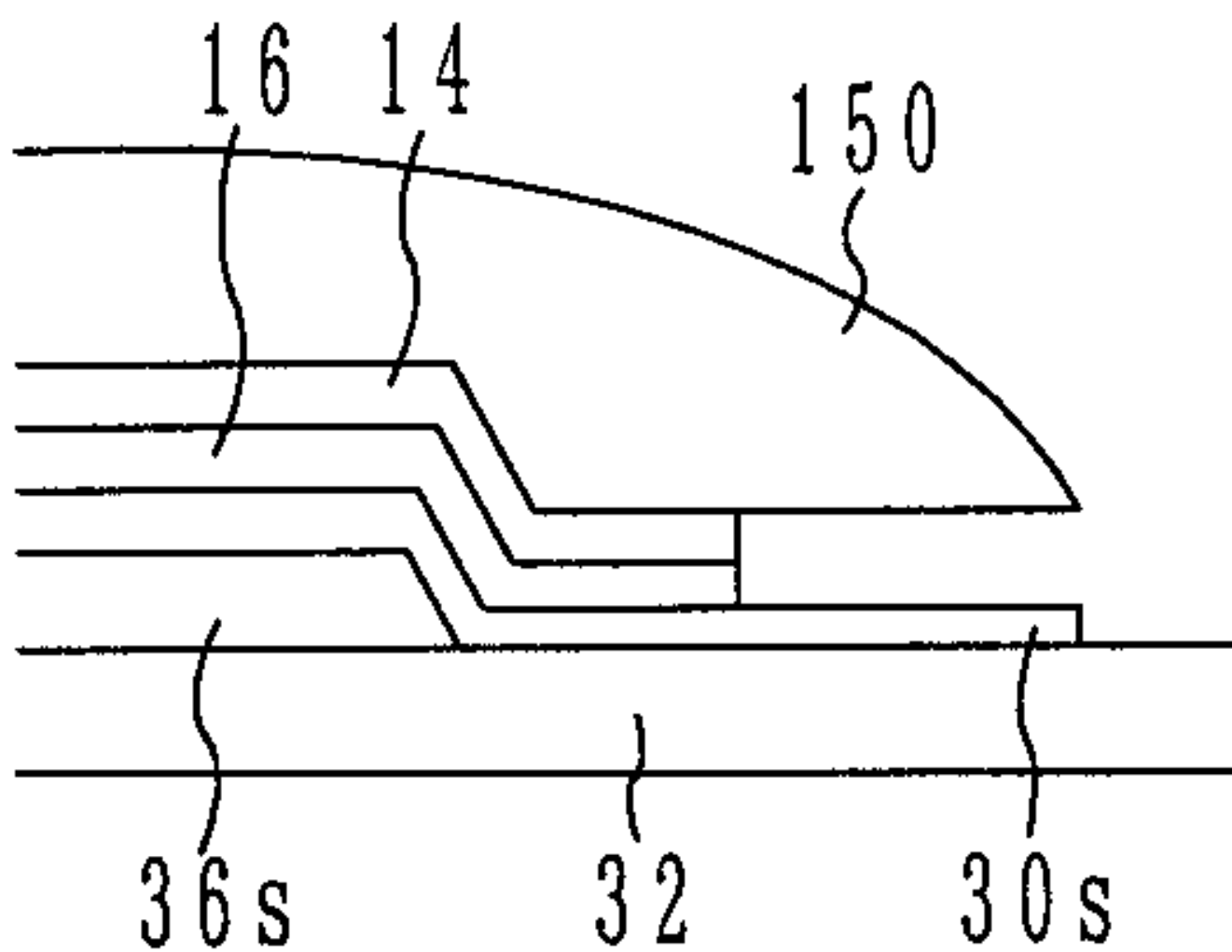




10



11



专利名称(译)	液晶显示装置，布线板及其制造方法		
公开(公告)号	KR1020010078076A	公开(公告)日	2001-08-20
申请号	KR1020010003719	申请日	2001-01-26
[标]申请(专利权)人(译)	夏普株式会社		
申请(专利权)人(译)	夏普株式会社		
当前申请(专利权)人(译)	夏普株式会社		
[标]发明人	TANAKA NAOYUKI 다나까나오유키 TAKAYAMA MASAYA 다까야마마사야		
发明人	다나까나오유키 다까야마마사야		
IPC分类号	G02F1/1368 H01L21/308 G09F G09F9/30 G02F1/1335 H01L21/3205 H01L23/52 G02F1/1343 G02F G02F1/136 G02F1/13 H01L		
CPC分类号	G02F1/133553 G02F2201/123 G02F1/13452		
代理人(译)	CHANG, SOO KIL		
优先权	2000016680 2000-01-26 JP 2000380526 2000-12-14 JP		
其他公开文献	KR100476611B1		
外部链接	Espacenet		

摘要(译)

液晶显示器 (100) 在基板 (10) 上具有反射电极 (12)。反射电极12具有第一金属层16和第二金属层14，第一金属层16具有双层结构并且包含钼 (Mo)，第二金属层14形成在第一金属层16上并且包含铝 (Al) 有。当第一金属层16的表面上的钼的最大粒径为60nm或更小时，抑制了第二金属层14中的针孔产生。因此，在用碱性去除溶液剥离抗蚀剂图案的步骤中，可以防止第二金属层14的一部分在针孔周围丢失。 2 指数方面 第一金属层，第二金属层，晶体层，非晶 (非晶) 层，液晶层，液晶层，

