

(19)
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(A)(51) 。 Int. Cl. ⁷
G02F 1/1337(11)
(43)2002 - 0020868
2002 03 16(21) 10 - 2001 - 0055783
(22) 2001 09 11

(30) JP - P - 2000 - 00275708 2000 09 11 (JP)

(71) 가 가
가

5 7 1

(72) 5 7 1 가 가

(74)

:

(54)

가 . TFT TFT (, TFT) TFT LCD (TFT)

2

1 1 LCD .

2 1 A - A LCD .

3		1	LCD	.
4	3	B - B	.	
5a	5h	1	LCD	.
6		2	LCD	.
7	6	C - C	LCD	.
8		3	LCD	.
9	8	D - D	LCD	.
10		4	LCD	.
11	10	E - E	LCD	.
12		5	LCD	.
13	12	F - F	LCD	.
14		6	LCD	.
15	14	G - G	LCD	.
16		7	LCD	.
17	16	H - H	LCD	.
18		8	LCD	.
19	18	I - I	LCD	.
20		9	LCD	.
21	20	J - J	LCD	.
22		10	LCD	.
23	22	K - K	LCD	.
24		11	LCD	.
25	24	L - L	LCD	.
26		12	LCD	.
27	26	M - M	LCD	.

28 LCD .

29 28 N - N LCD .

30 29 LCD .

31 30 O - O LCD .

32 .

33 (), (), () .

* *

1 : TFT 2 :

3 : 4, 16 :

5, 18 : 6 :

7 : 8 :

9A, 9B : 10 :

11 : 12 :

13 : 14, 22 :

17 : 19 :

20 : 21 :

23 : 24 :

25 : 26 :

34 :

(, LCD) LCD , TFT TFT (.
(alignment layer) LCD LCD

, , 2000 9 11 2000 - 275708 (JP - P - 2000 - 00275708) .

LCD TFT (facing substrate) LCD TFT
가 TFT TN (Twisted Nematic) - LCD IPS (In - Plane Switching) - LCD LCD

TN - LCD (pixel electrode) TFT 가 TFT 가 , IPS - LCD
D , 가 TFT 가 TFT , 가 ,
IPS - LCD TFT 가 , TN - LCD
가 , ISP - LCD

28 LCD 29 N - N , 28 LCD 30
29 LCD 31
O - O , 30 LCD , TFT (51)
28 31 , LCD , TFT (51) (52) (53)
(56), 1 (55), 1 (54) 1 (54)
(56), (56) Al, Cr, Mo
(57), (57) SiO₂ () SiN ()
(58), (58) n⁺ a - Si ()
Ohmic layers; 59A 59B), (59B) Cr, Mo (61), (59
A) Cr, Mo (62), (61), (62), (58)
SiN (passivation film; 63), (63)
1 (64)

28 30 , TFT (51) , (73) (56)
(, TFT (51)) (61) , (74)
(62) (74) (62)
(75) (74) (75)
(56) (rubbing processing) TFT
(51) 1 (64) (76) . TFT (51) (52)
(53) , (76)

LCD (52) , 2 (66), 2 (66)
(67) 2 (58), 2 (66) Ti, Cr,
(69), (69) (70), (70)
(planarized film; 71) 2 (72)

32 (80) (rubbing bristle; 79) 가
(rubbing cloth; 78) (80) . TFT 1 (64)
(80) (80) TFT (51)
(64) (79) , (rubbing trench) 가 ,
(64) (shaving; 81) (81) (74)
(53)

(64) (81) , TFT (51) (rubbing washing) , (64) (81) (74) , TFT (81) , 31 (64) (81) TFT (82) (83) .

IPS - LCD , (70) (display irregularity) , 가 TFT (82) (84) (53) (image retention) . (53) TFT (82) 가 가 (53) , (53) TFT (82) 가 가 , (84) (63) .

, (63) , 가 (63) 가 . TFT (82) , TFT (82) (84) (83) (64) (81) (84) (53) .

33 (rubbing pushing depth()), (alignment layer peeling level()) () . (80) (64) (cutting depth) m/s , 1000 RPM () (81) , , 30 m (rayon) .

33 (trad e - off) , 가 , , 가 , 가 0.8 mm , 4 가 , (64) (81) (84) TFT (82) (83) 0.5 , 가 .

, LCD 가 , (64) (81) T FT (51) TFT (82) (83) , 가 . , 30 31 , LCD , (64) (81) TFT (51) (84) (81) (64) (81) (64) (81) TFT (82) (83) , (64) (81) (53) TFT (82) (84) .

LCD , LCD , TFT TFT

1 , TFT , TFT TFT LCD 가 .

가 .

(aperture) 가

(全面)

1 3

" ㄱ "

" L "

TFT

2 , TFT TFT TFT TFT TFT LCD 가 .

3 TFT LCD , TFT , TFT TFT TFT

TFT , TFT TFT

가 .

가 , TFT TFT 가 , TFT

TFT TFT (全面) TFT , TFT 가 TFT

가 TFT TFT

1
1 LCD 1 3 1 LCD 2 A - A 1
LCD 4 B - B 3 LCD 5a 5h 1
1 4 , 1 LCD (3) TFT (1) (2)

TFT (1) , 1 (4), 1 (4) 1 (5),
1 (4) Al, Cr, Mo (6), (6)
SiO₂ (7),
(8), (8) n⁺ a - Si (9A), (8)
n⁺ a - Si (9B), (9B) Cr, Mo
(11), (9A) (12), SiN
(11), (12) (34) (13), (1
3) TFT (32) (34) TFT (32) (33)
TFT (32) (26) (10) (13)
()

, 1 3 , TFT (23) (6) (
, TFT (1)) (11) (24) (
12) (24) (12)
(25) (24) (25)
(6) (26) , TFT (1)
(2) (3) TFT (, (23)
)

(10) , 가 1 (14) , TFT (1) (34) TFT (3
2) (33) TFT (32) 1 (14) (31) .
(10) , 1 (14) (31) TFT (32) (2
6) (10) TFT (1) (2)
(cell gap) , (10) (W) (lithography) 가
5 μ m

2 (17), (17) 2 (16), 2 (16) T
i, Cr, (20) (19), (19) (20),
(21), (21) 2

1 LCD (10) TFT (1) (34) TFT
(32) (33) TFT (32) (26)
, 4 , 1 (14) (31) TFT (1) (34)
TFT (32) (33) TFT (32) . ,
, 1 (14) (31) , 1 (14)
가 (31) (3) TFT (32) (43) 가 , 1 (14)
. , 1 (14) (31) (24)
,

5a 5h , LCD . , 5a ,
Al, Cr, Mo 1 (4)
(6)

5b , CVD () (7) SiO₂ (7)
A) SiN (7B) (4) (6) , a-Si n⁺ a-Si
(9) (8) (7) . , 5c ,
(8) n⁺ a-Si (9)

5d , (8), n⁺ a-Si (9) SiN (7B)
Cr , , 가 , n⁺ a-Si
Si (9) (11) (12) .

5e , n⁺ a-Si (9) 가 (11) (12)
(34)

5f , SiO₂ (13) CVD . ,
(13) (27) 가 (17)
() (24) .

5g , (28) 5h , TFT
(28) 가 (34) TFT (32) (33) TFT
(33) (10) , (2) TFT (1)
(3) , 1 2 (5, 18) (2) TFT (1)
1 4 LCD .

1 LCD (28) (10) TFT (1)
(34) TFT (32) (33) TFT (32)
, 가 1 (14) , 1 (14) (31) TF
T (1) (34) TFT (33) TFT (32) .

, 1 LCD , TFT (32) 가 TFT (1) , (28) TFT (32)
 (10) , 1 (14) (31)
 TFT (1) TFT (32) .
 2
 6 2 LCD 7 C - C 6
 LCD 2 LCDD , (30) 1 LCD
 6 , (30A) 가 (26) . (30) ,
 (30A) (8) (30B)
 .
 , 가 , (30) 가 (guide) (30) , 1 (14)
 (30B) , (31) TFT (1) (14) (31)
 (33) TFT (32) . 2 LCD (34) TFT (32)
 1 , 6 7 , 1 4
 가 , .
 3
 8 3 LCD 9 D - D 8
 LCD 3 LCD , (35) 1 LCD
 .
 8 , 3 LCD , TFT (1) (35) , (26)
 (8) 3 " □ " (35A)
 .
 , , (35) , 1 (14)
 가 , (35A) 가 (14) (31) TFT (1) (34) (35A)
 TFT (32) (33) TFT (32) .
 , 1 가 3 .
 4
 10 4 LCD 11 E - E
 10 LCD 4 LCD , (36) 1 LCD
 .
 10 , 4 LCD , TFT (1) (36) , (26)
 2 , (23) (8) 2 " L "
 (36A) .

가, 1 (14) (31) (36) , 1 (14)
 (31) TFT (1) (34) TFT (32) (36A) (33) TFT (32)
 .

, 1 가 4 .
 5

12 5 LCD . 13 F - F
 12 LCD . 5 LCD , (37) 1 LCD
 , (26) 12 , 5 LCD , TFT (1) (37)
 " L" 2 (23) (8) 2
 (37A) .

가, 1 (14) (31) (37) , 1 (14)
 . , (31) TFT (1) " L" (37A)
 (32) , (31) TFT (32) (33) TFT
 .

, 1 가 5 .
 6

14 6 LCD . 15 G - G
 14 LCD . 6 LCD , (38) 1 LCD
 , 3 , R (), G (), B () , 6 LCD , TFT (1) (38)
 (33) TFT (32) (34) TFT (32)
 (26) .

1 5 , (20) (2) , 6 , (20) TF
 T (1) (20) (38) , , (38)
 .

, , 1 (14) (31) (38) , 가 1 (14)
 TFT (1) (34) TFT (32) (33) TFT (32) , (31)
 .
 , 1 가 6 .

7

16 7 LCD . 17 H - H

16 LCD . 7 LCD , (39) 2
 6 LCD . 17 , 7 LCD , TFT (1)
 (39) , 2 , 3 , R (), G (), B ()
 (B) (39A) , (G) (39B) , (34) TFT (32)
 (33) TFT (32) (26) .

, , (39A) , (39B) (39A)
 , (39) . , (39)

, , (39) , 1 (14)
 가 , 1 (14) (31) (39)
 1) TFT (1) (34) TFT (32) (33) TFT (32) , (3)

, 2 가 가 7 . , (39)

8

18 8 LCD . 19 I - I
 18 LCD . 8 LCD , (40) 3
 7 LCD . 19 , 8 LCD , TFT (1)
 (40) , 3 , 3 , R (), G (), B ()
 (R) (40A) , (B) (40B) (G)
 (40C) , (34) TFT (32) (33) TFT (32)
 (26) .

, , (40A) , (40B) (40A)
 , (40C) (40B) , (40)
 39) . , 7 , (40)

, , (40) , 1 (14)
 가 , 1 (14) (31) (40)
 1) TFT (1) (34) TFT (32) (33) TFT (32) , (3)

, 7 가 가 8 . , (40)

9

20 9 LCD . 21 J - J
 20 LCD . 9 LCD , (41) (13)
 6 LCD . 21 , 9 LCD , TFT

(1) (41) , 3 , R (), G (), B ()
 (34) TFT (32) (33) TFT (32) , (13) ,
 (26) .
 , (13) , (41) 6
 , (13) 1 (14) . (14)
 (13) , (41) .
 , , 1 (14)
 가 , 1 (14) (31) (41)
 (31) TFT (1) (34) TFT (32) (33) TFT (32)
 .
 , 6 가 9 . , (41)
 가 .

10

22 10 LCD 23 K - K
 22 LCD 10 LCD , (42) 2
 9 LCD . 23 , 10 LCD , (1
 3) (42) , 3 , R (), G (), B () 2 (42
 A) (42B) 2 (34) TFT (32)
 (33) TFT (32) (26) .

, (13) , (42) 7
 , (13) 1 (14) .
 , , 1 (14)
 가 , 1 (14) (31) (42)
 (31) TFT (1) (34) TFT (32) (33) TFT (32)
 .
 , 9 가 10 .

11

24 11 LCD 25 L - L
 24 LCD 11 LCD , (43) 3
 10 LCD .
 25 , 11 LCD , (13) (43) , 3
 (G) , (R) (43A) , (B) (43B) ,
 (32) (43C) , (34) TFT (32) (33) TFT
 (26) .
 , (13) , (43) 9
 , (13) 1 (14) .

가 , 1 (14) (31) (43) , 1 (14)
(31) TFT (1) (34) TFT (32) (33) TFT (32)

10 가 11

12

26 12 LCD 27 M - M
26 LCD 12 LCD , (6) (34)
(29) 가 1 LCD

27 , 21 LCD , (29) (6)
, 1 11 LCD , (6)
TFT (1) 가 가 (6) (13)
, (3) TFT (1) (13) TFT (32) (34) (13)

TFT (32) , (33) , (6) , TFT (1) (34)
, (3) TFT (1) TFT (32) (34) (13)

1 가 12

N - LCD , T

(poly - Si) , TFT 가 TFT ,

TFT , TFT TFT
가 , TFT TFT TFT

10 가 11

, TFT TFT .

(57)

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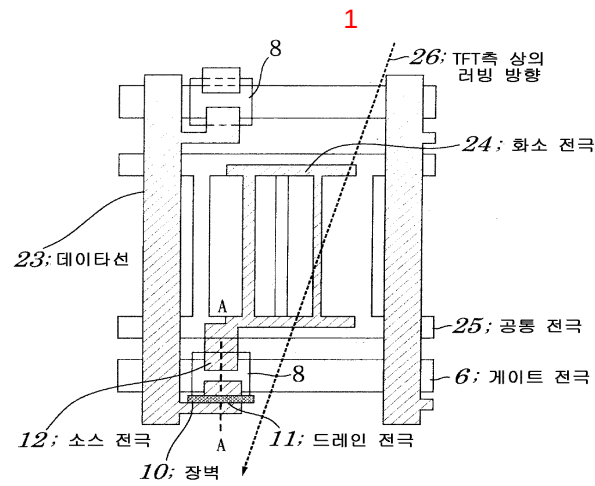
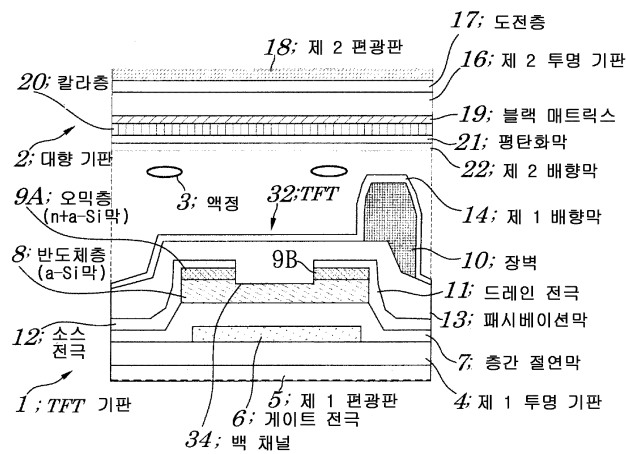
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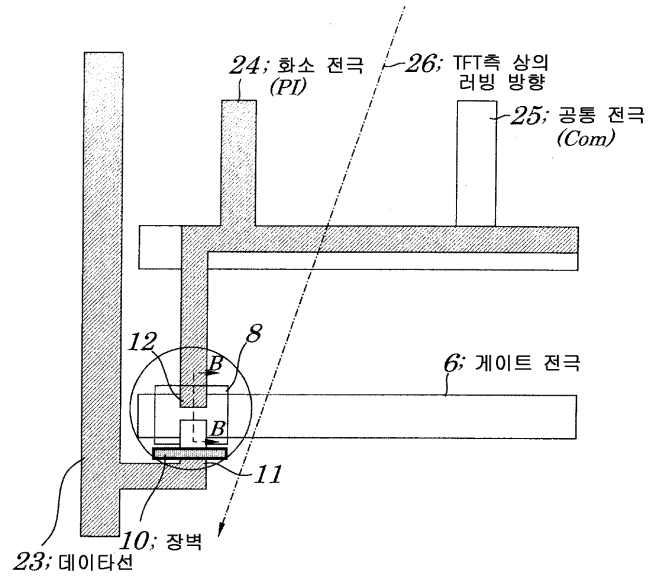
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13

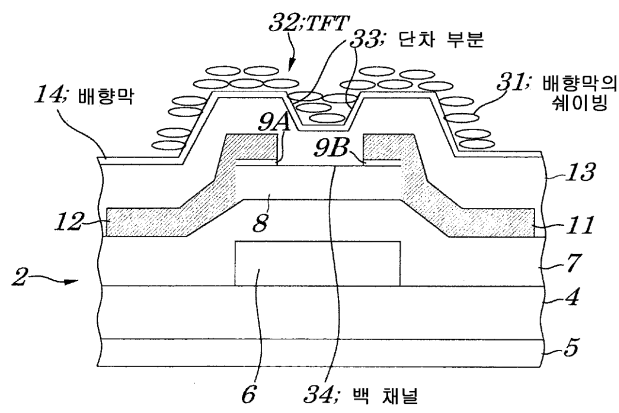
가

**2**

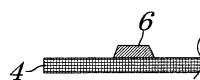
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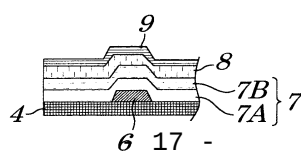
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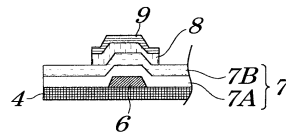
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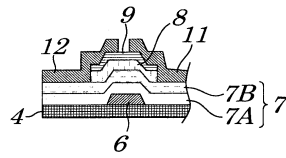
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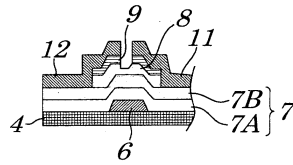
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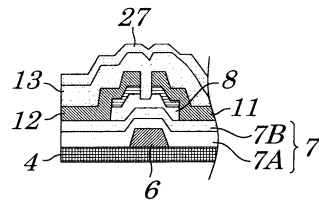
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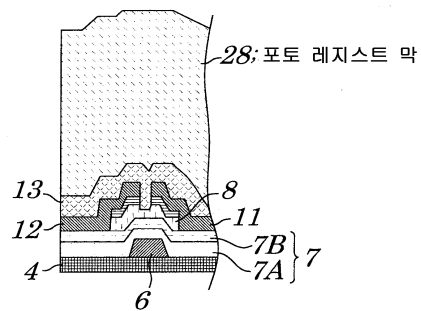
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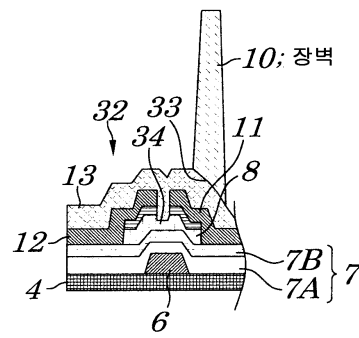
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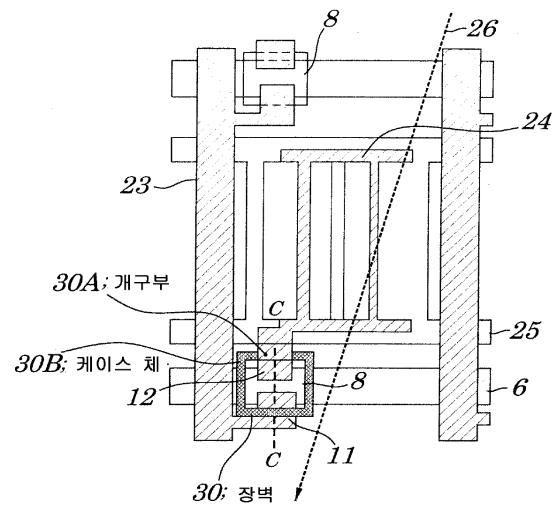
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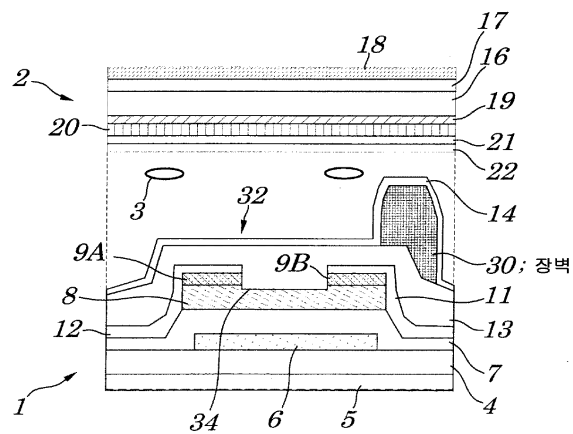
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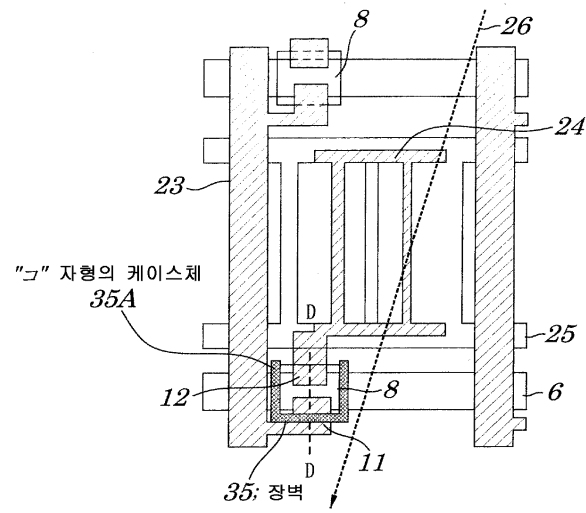
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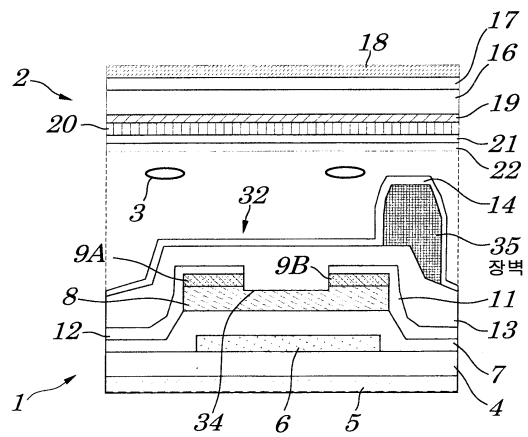
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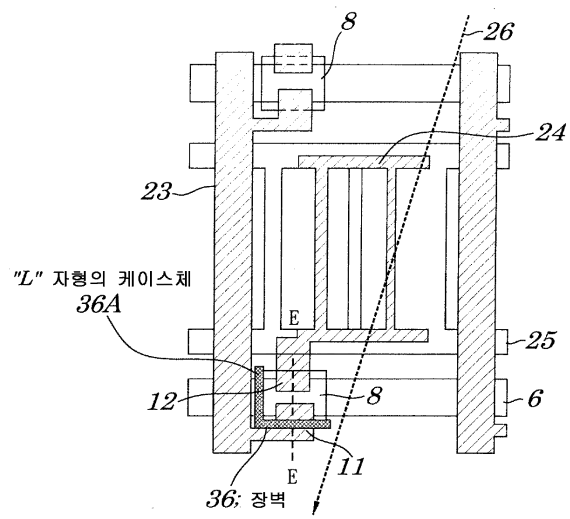
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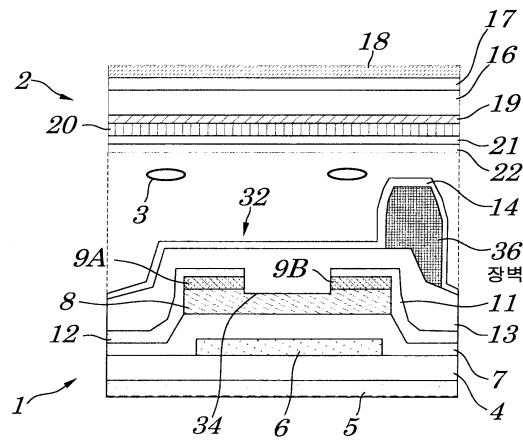
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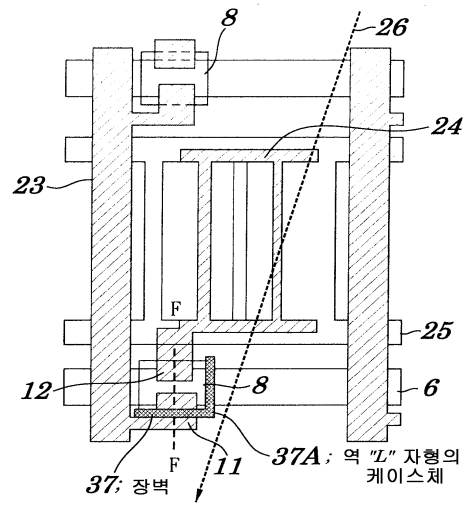
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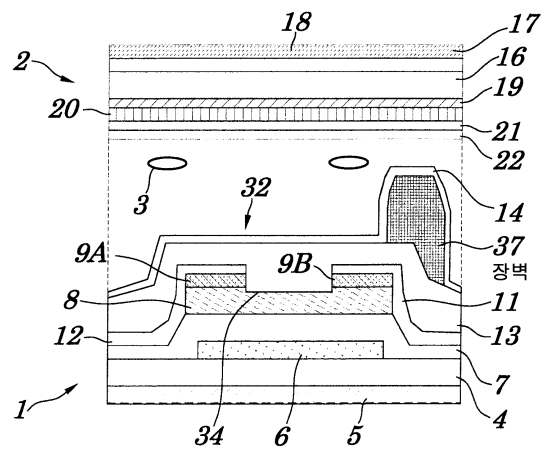
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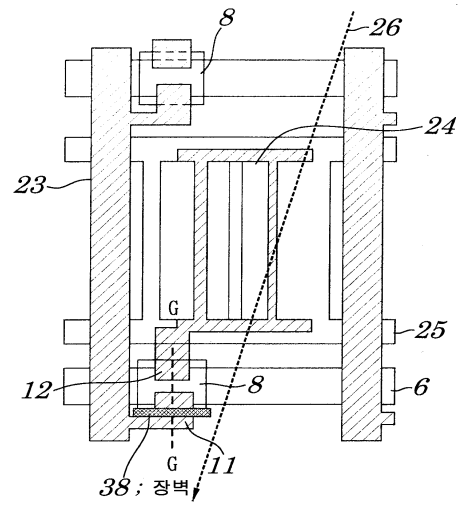
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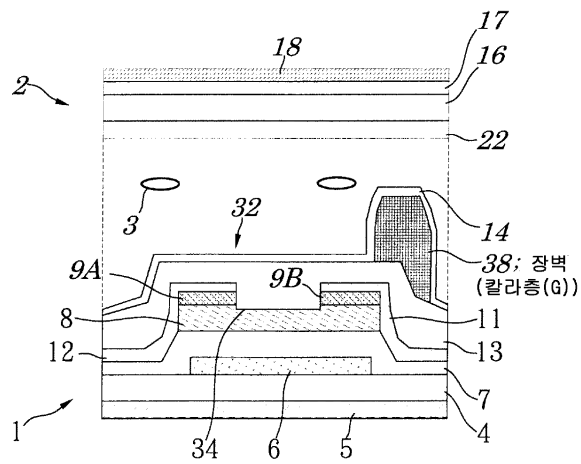
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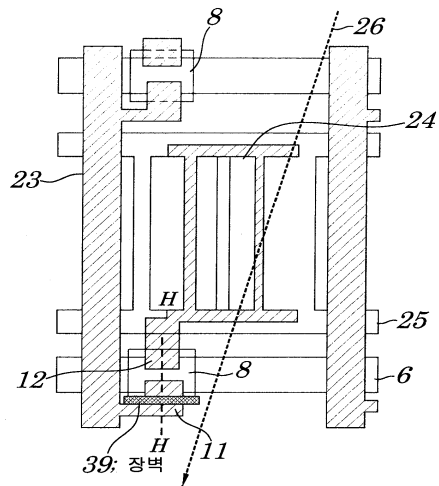
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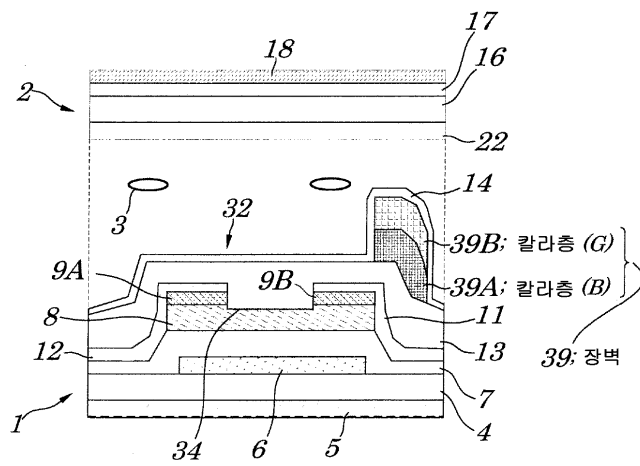
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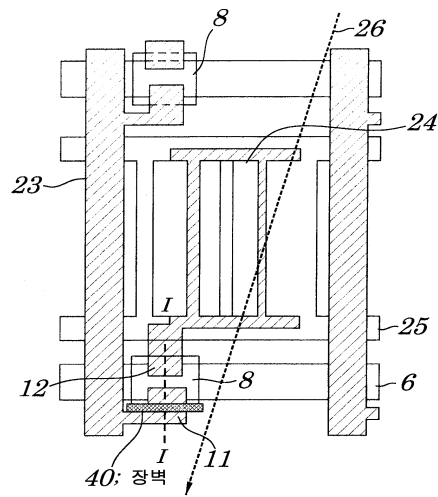
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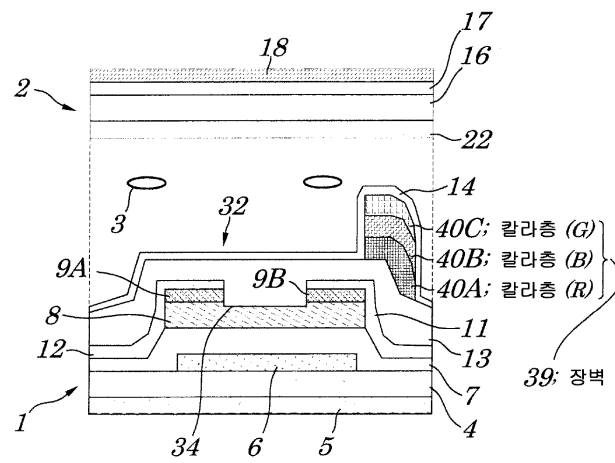
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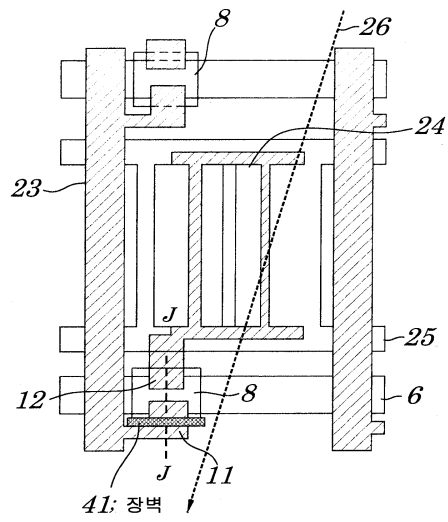
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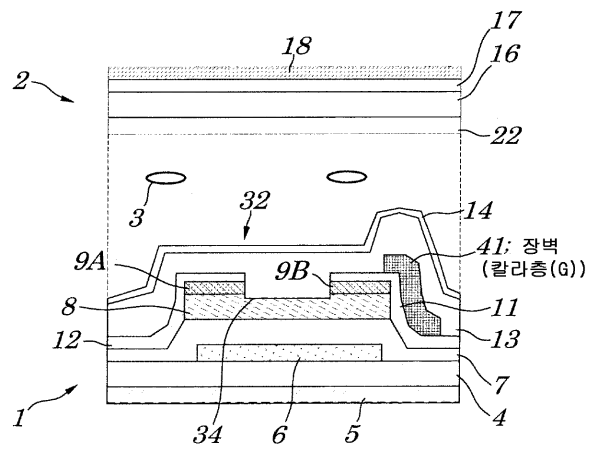
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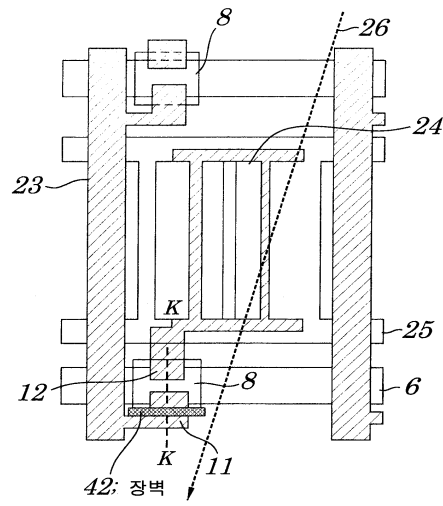
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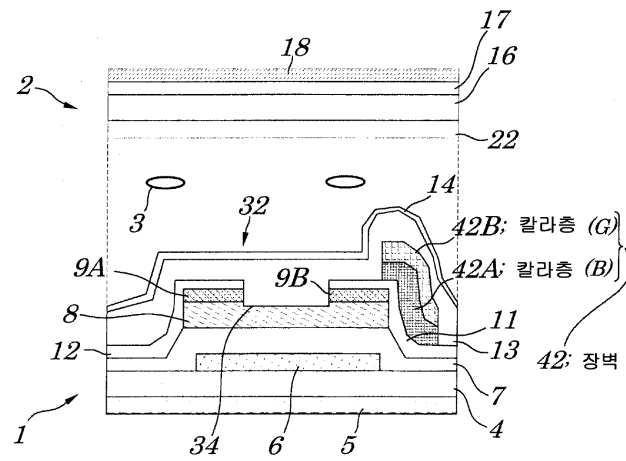
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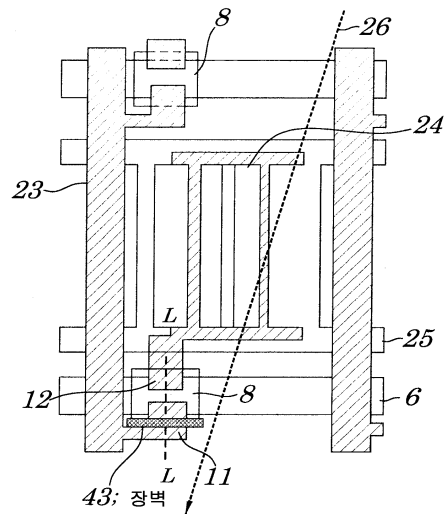
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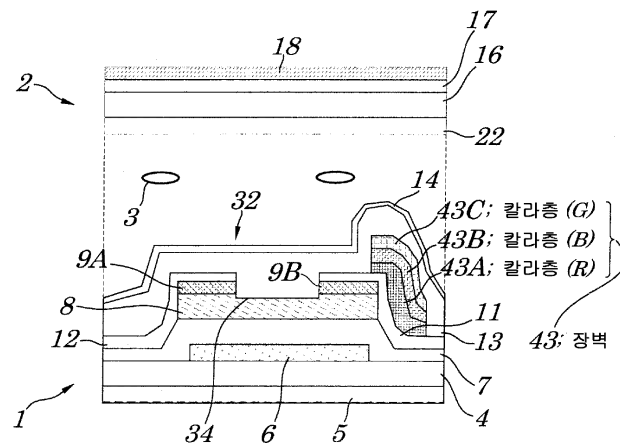
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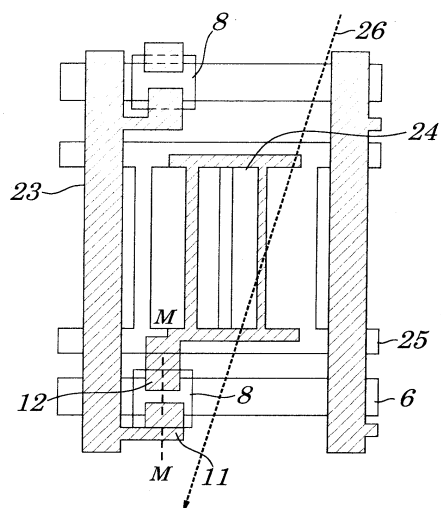
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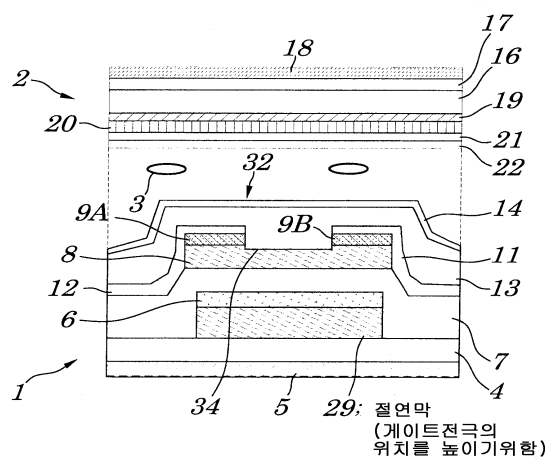
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26

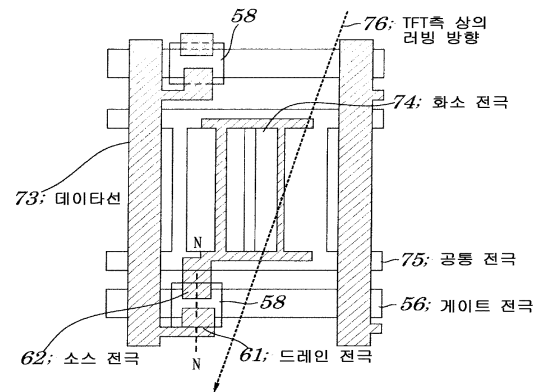


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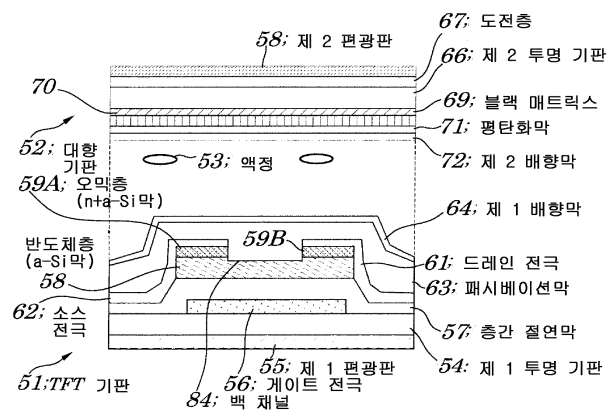
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종래 기술



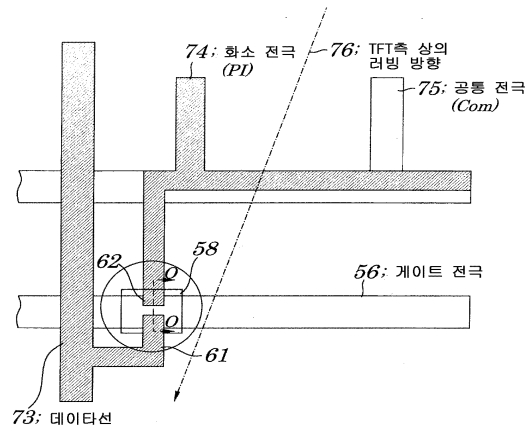
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종래 기술



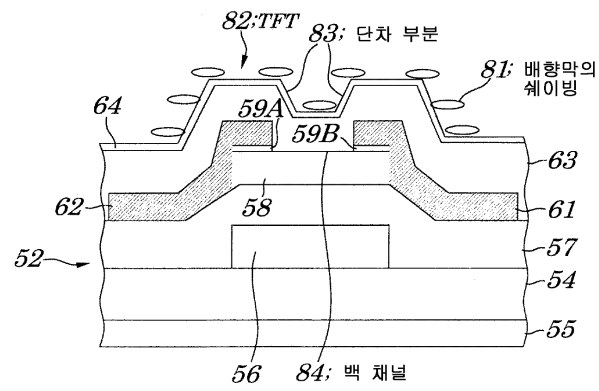
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종래 기술



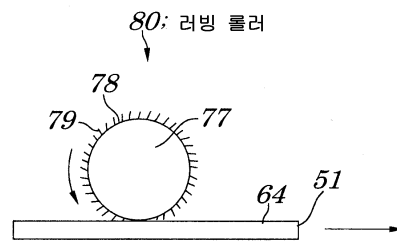
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종래 기술



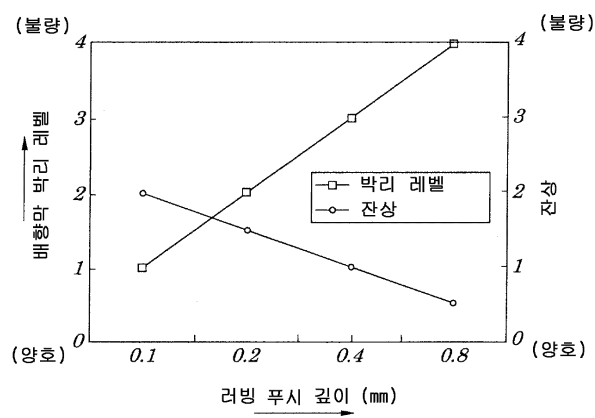
32

종래 기술



33

종래 기술



专利名称(译)	液晶显示装置及其制造方法		
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[标]发明人	MATSUMOTO KIMIKAZU		
发明人	MATSUMOTO,KIMIKAZU		
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代理人(译)	韩国专利公司		
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摘要(译)

提供一种LCD (液晶显示器)，其中取向层的剃刮集中地积聚在TFT基板内的TFT (薄膜晶体管) 环境区域中。为了在TFT基板的TFT的背面沟道上涂覆包括台阶的TFT环境部分，并且将其布置在摩擦方向的下游侧的位置，形成位置。液晶显示器。

