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(21) 10 - 1999 - 0013462 (65) 1999 - 0083238
 (22) 1999 04 16 (43) 1999 11 25

(30) 10 - 107896 1998 04 17 (JP)

(73) 가 가

1 1 1

(72) 가 50가 가
 가 50가 가

(74)

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(54) ,

6), (33), 1 (28), 2 (29), , (41), (1) (2)
 (42),

(44) Mo/Al/Mo (47), (48),
 (9), (33), (39), (40), (48),
 (49), (39), (30), (34), (35), (48),
 (40), (39), (39), (49), (40),
 (39)

1

1 1 ,
 2 1 A - A ,
 3 1 B - B ,
 4 1 ,
 5 4 ,
 6 2 ,
 7 2 ,
 8 2 3 ,
 9 4 ,
 10 5 ,
 11 6 ,
 12 6 ,
 13 ,
 14 ,
 15 14 .

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1: 2:

3: 4:

5: 6:

7: n⁺ a-Si 21:

22: 23:

24: 25:

26: 27:

28: 1 29: 2

30: 33:

34: 35:

36: 37:

38: 39:

40: 41:

42: 43:

44: 45, 46:

47: 48:

49:

26a', 30a, 48a, 49a: 1

26a'', 30b, 48b, 49b: 2

26A, 30c: 3

, CRT(Cathode Ray Tube)

가

, 가

, TFT (Thin Film Transistor) , TFT (a - Si:H)

TFT , , , ITO (Indium Tin Oxide)

ITO 가

13 . 14, 15 , 14, 15 TFT

, 14 (a) , (1) (2) , (2) (端部)
 (2) (3) . , 14 (b)
 (4) a - Si:H (5)
 , (5) (6) , (6)

, 14 (c) , n⁺a-Si:H (7) , (5)
 (7) . , 14 (d) (8)

14, 15 , , . 7
, 가 , 가가

TFT(, TFT)

TFT)

TFT

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 , (撮像)
 (1)
 1 1 , 2 1 A - A , 3 1 B - B
 .
 2 (21) (22) (24)
 (23) (23) ,
 (24) (21) (22)
 (25) .
 (21) 1, 2 (26) (26)
 (SiO₂) 1 (28) 1 (28)
 (SiN_X) 2 (29) 1 (28)
 (SiO₂) , 2 (29)
 (SiN_X) .
 (26) (1) 800 (26) (26a)
 (1) (一端) (邊側) (26b) , (26b) 1
 (30) 가 .
 .
 1 (26) (27) (26a) 3
 (26a'), 2 (26a') 3 (26A) , (30) 1 (30a),
 2 (30b) 3 (30c) 1 (26a', 30a) Mo/Al/Mo
 , 2 (26a', 30b) (, ITO) 3 (26A, 30
 c) (26) .
 .
 , (21) (1) (26) (33) (33a)
 (33) (1) , 1024 × 3 (33b) (33) (33b) (33) (33a)
 (1) .
 .
 (33), (33a) (34) (30) 1, 2 3
 .
 , (26) (33) TFT(20)가 TFT(20)
 (26) , (35) .

, (21) (36) (22) 2 (36) TFT(20) (100) (33) (R), (G) (2)
 6) (B) (35) (37) 가 (37) (35) ITO
 (38)

(39) (34) (33) , (33) (33) (33) (端面)
 (39) (40) 0.5 2 μ m 가

(33) , TFT(20) (35) 1 Mo 2
 (23) (33) 2 1 1 20%
 , , , , (35) 1
 2

4, 5 (21) (21) 4, 5

, (1) Al - Nd Mo Al - Nd Mo Mo
 200nm, 30nm Al - Nd Al Al 10 10
 Al Al 0nm , , , , , ,
 0nm , 4 (a) 800 (26), (26a) (3)
 3a) 1 , , (30, 34) 1

, 4 (b) CVD 300nm (29), 50nm (42)
 1 (28), 50nm (41) 200nm (28) 2
 a - Si:H CVD , , , , ,
 , 1 CVD , , , , ,
 Si, (微結晶) Si , , , , ,
 a - Si:H

, , , 4 (c) (26) (42)
 , , 2 (43)

, 4 (d) (ohmic contact) CVD 30nm (41)
 Si:H , , , , , n⁺ a -

4, 5 1 (21) 14, 15 (21)
 , 1 ITO (35) (30) (33) (30a, 34a) (45, 46), (48) 가 Mo/Al/Mo
 (47) (39) (40), (48),
 (49) (33) 1 .

$$20) \quad (48) \quad (49) \quad , \quad 1 \quad , \quad . \quad . \quad . \quad , \quad (33) \quad \text{TFT}(2)$$

(48), (40), (39), , (39), (49), (40)
 (39) , 2 (段差)

1 a - Si:H (39) (21) (39), Si

$$, \quad (26) \quad \text{Al} \quad \text{Al} \quad (\quad \text{Al} - \text{Nd} \quad \text{Al} - \text{Y}) \quad ,$$

, 5 (d) (35) 2 ITO , In Zn O
 IZO (35) 2 . IZO , IZO Al
 (電蝕) :

, Al (30) (34) (35) ITO

, 1 , , 가

$$\begin{array}{ccccccccc}
 , & & (48) & & (49) & & 2 & & \text{ITO} \\
 (48) & & (49) & & 1 & & . & & \text{Mo} \\
 & & (48) & & (49) & & . & & . \\
 & (2) & & & & & & &
 \end{array}$$

2 (26) (33) (26b, 33b) (45, 46) 가 1

$$6 \quad (21) \quad 2 \quad , \quad 1 \quad \text{TFT} \\ \quad . \quad , \quad 7 \quad (21) \quad 2 \quad . \quad , \quad 7 \\ (21) \quad 2$$

, , (1) 300nm Al Al

. , 7 (a) , Nd 2% Al , , Al
 . , (26b) (26) . , (26) Al

7 (b) , CVD 300nm
 (51), 50nm a-Si:H (41) 200nm
 () 300nm 1 , , 50nm (51)
 1 2

, (43) , (前) , , 2
 30nm n⁺ a-Si:H (48, 49) CVD , ,
 Mo/Al/Mo 3

, 7 (c) 3
 (33), (48) (49) (41) 1 (48a, 49a) , ,
 39) PE (40) (33a) (33), (48), (49),
 (26a)

, 7 (d) 4 (30) 가
 (51) 가 PE (45) .

, 7 (e) H₂O, H₂ O₂ 가 가 Ar 가 , H₂O 가 Ar
 5 (49) 2 (48b, 49b) (35) , (33), (33), (26) (35)
 . ITO Al HI 가 CH₄/H₂ 가 RIE

2 1

2 (48), (49), (40) (39)
 가 1 (30) 1 (34) 2 , 1
 IZO , (33) (35) Al ITO
 1

7 (e) ITO
(48) (49)
Mo/Al/Mo 3 (1 2) 5μm
2μm 1 (33) 2
1 2

, ITO (49b) (33)(1) (33)
(3)

(相違) . , 8 (b) 3 . 가 2 , 9

ITO 가 7.0W/cm², 가 60 ITO . , ITO 80nm . , 20

4 ITO . ITO ITO
 $\text{, } (\text{HCOOH})_2$ 1% 3.4 %
(9 (c)).

, ITO (35) 230 5 80%

, , 5 (45) (9 (d)). (51) 가 PE

Ar가, Kr가, Mo 25nm, 1.3Pa, 40kW, 2.0%, Al - Nd, 350nm
 Mo 50nm, AI - Nd
 AI, AI - Y, AI - Gd, 가

, 6 , (), (48, 49) 偈 . ,
 (43) (48) (49)
 . (9 (e)).

, (48) (49) ITO 가 , (49) (48) (35)

(-4)

1 3 TFT (48) (49) Mo/Al/Mo (4)
 7), , (47) ., Mo Mo₂ 88 μ cm 가
 , ., Mo 가, (48) (49) 가
 49) Mo , (48) (49) 가

$$4 \quad 5 \quad , \quad \text{TFT} \quad , \quad V(\quad) \quad . \quad (48) \quad (49) \quad (47) \\ 49)$$

, 3 4 9

, CVD SiO_2 (1) MoW $\text{CF}_4 + \text{O}_2$ 300nm 가 CDE() , 35 가 가 MoW 가 (26) (9 (a)).

(51) , CVD 300nm , 50nm
 (41), 300nm 50nm (a - Si:H)
 4 . , (裏面) 2
 (26) (43) (9 (b)).

SiH₄ 가 PH₃ 가 CVD . , TFT , CF₄ O₂ 가 CDE
 50nm . , n⁺ a - Si:H (44)

, ITO, In_2O_3 , SnO_2 , % 90:10 ITO
 Ar 0.4Pa, Ar Kr
 H_2O 3.4×10^{-3} Pa, H_2O O_2
 가 200 ITO () 60 .

ITO 가 7.0W/cm², ITO 가 800
20 60 . , ITO ITO

, 3 , $(\text{HCOOH})_2$ ITO
 (9 (c)).

ITO (35) 230 5 80%

, 4 (51) (45) (9 (d)).

Ar가, Kr가, Mo, 25nm, 1.3Pa, 40kW, 2.0%, Al-Nd, 350nm
 a, 15kW, Ar가, Kr가, Mo, 50nm, 1.3Pa, Al-Nd
 AI, AI-Y, AI-Gd, V, 가

, 5 , , , , , (48, 49) 가
 (43) , , (48) (49) PE
 (9 (e)).

, 4 TFT (48) (49) (23) () , TFT

(5)

5 ITO (35) 가 4 , TFT (48) (4
 9) ITO (35) .

SiO_2 (1) MoW (26) (10, 1 (a)). , MoW (51) (10, (b)).

, (51) (41), (43) (

, 3 (10 (d)) . 5 , , , Mo/Al - Nd/V (41)

, 4 (51) (45) (10 (e)),
 ITO , 5 (35) (10
 (f)).

, 5 TFT (48) (49) ITO (35) , IT
 O (35) , 4 (48) , (49) (23) (49) (48)
 (49)

(6)
 1 5 TFT TFT 가

11 6 , 11 6

, (1) MoW 230nm , 1 480 (26)
 , 1 (26') (11 (a)).
 , CVD 350nm 2 (29) 1 (28)
 250nm 50nm a - Si:H , 50nm n + a - Si:H , 25nm , 350nm
 CVD , 50nm Mo/AI/Mo (47a, 47b, 47c)

, Mo/AI/Mo (47a, 47b, 47c), 2 , , , 2
 (29) 2 (11 (c)). Mo/AI/Mo (47) , , , TFT
 , SF₆ /O₂ /HCl 가 (40) (39) (29)

, 3 , BHF 3 ,
 (45) (11 (d)).

, 150 H₂O , , 40nm ITO , TFT
 , 4 (49) , (35) , , (50) (48) (11 (e)). (49)
 (48),

ITO (35) 가 3% , TFT (50) ,
 Mo/AI/Mo (47) , SF₆ /HCl

(48) (49)

, 230 30 ITO (35) , , , TFT (35)
 , , (45) , (33) (35)
 (34)

, ITO (35) , ITO , Mo/AI/Mo (47) , ITO

, ITO (35)	(24)	,	,	,	,	,
,	,	12	,	12	,	가
, 6	Mo/Al/Mo	,	,	,	,	,
TFT	,	,	,	4	,	,
,	가	,	,	,	TF	,
T	,	,	,	,	,	,
(7)						
7	6	,	TFT	,	TFT	(4
8)	(49)	(47c)	,	,	,	
,	7	4	5	TFT	(48)	(49)
(47c)	,	,	,	(48)	(49)	
,	,	Mo	V	(Ta),	(Ti),	(W)
I/Ta	(47)	(48)	(47c)	,	,	Mo/A
,	,	(49)	(47c)	,	,	,
CDE	O ₂	CF ₄	가	1:1	60	,
	35	,		200	,	,
,	(48)	(49)	(47c)	,	,	Mo/Al/Ti (47)
,	, EDTA	,	,	,	,	
EDTA						
	25	,		125	,	,
	35	,	200	,	,	,
,	(48)	(49)	(47c)	,	,	,
,	(48)	(49)	(49)	,	,	,
,	,	,	,	,	,	,
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,	,	,	CVD	,	,	,
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가 , , , TF

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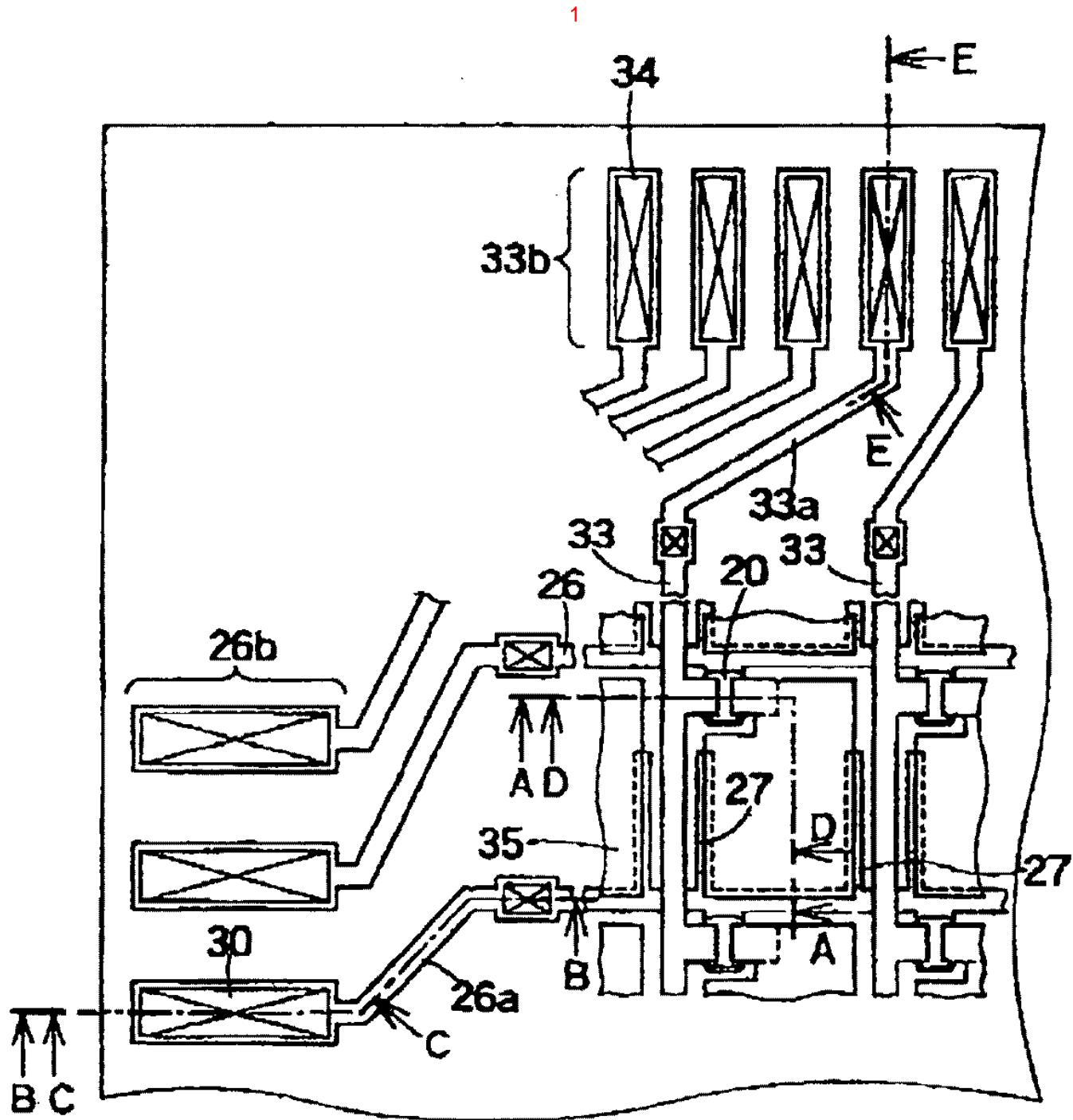
14 ,

1

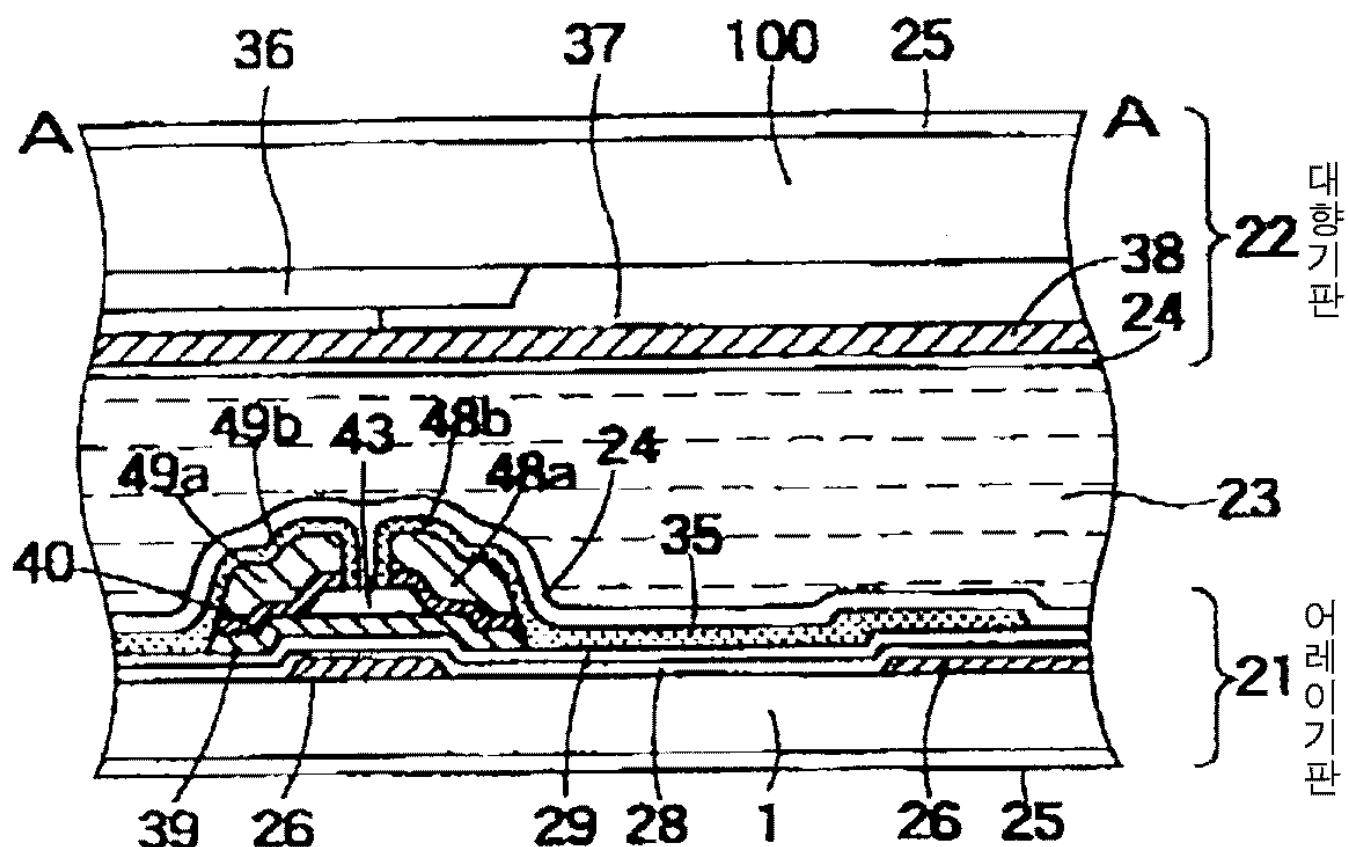
16.

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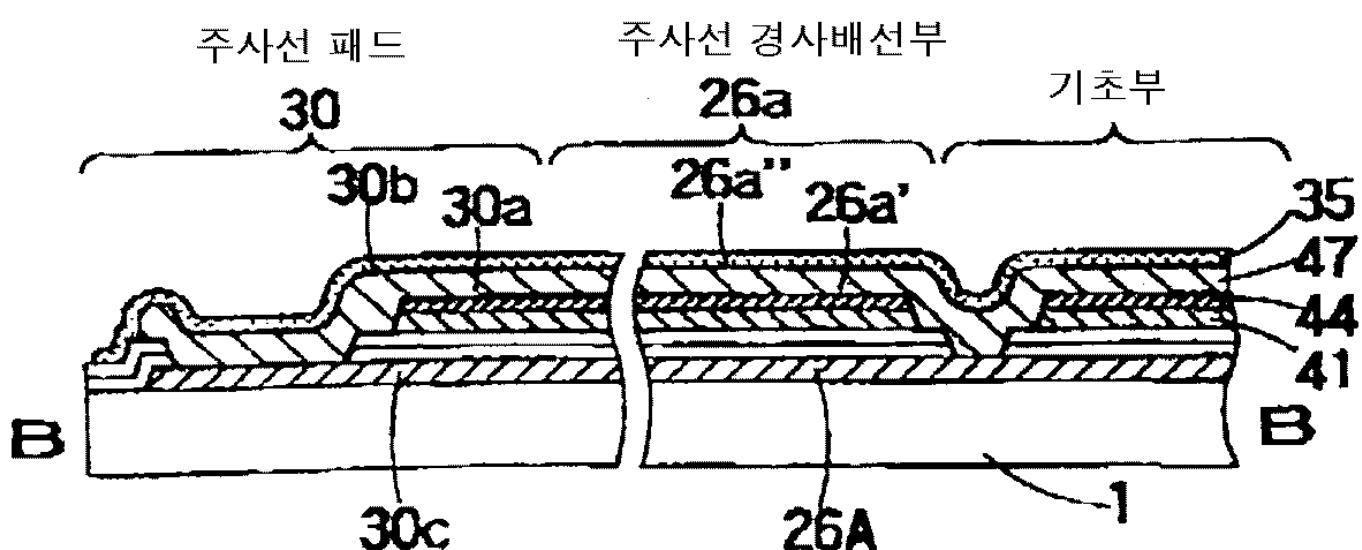
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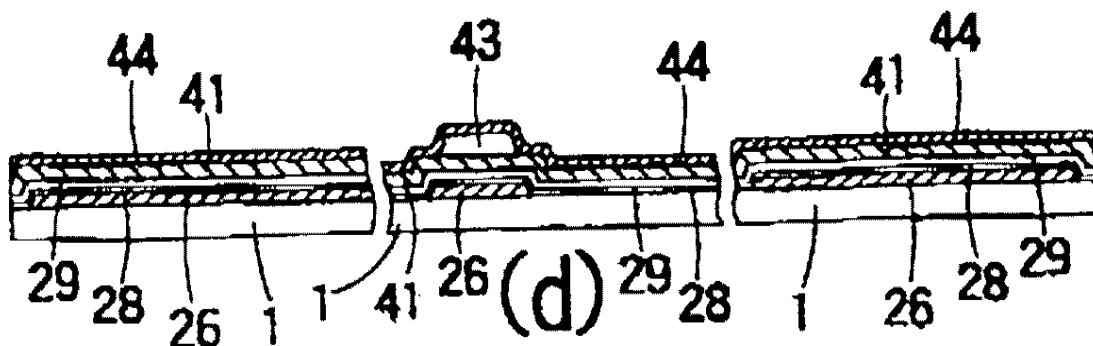
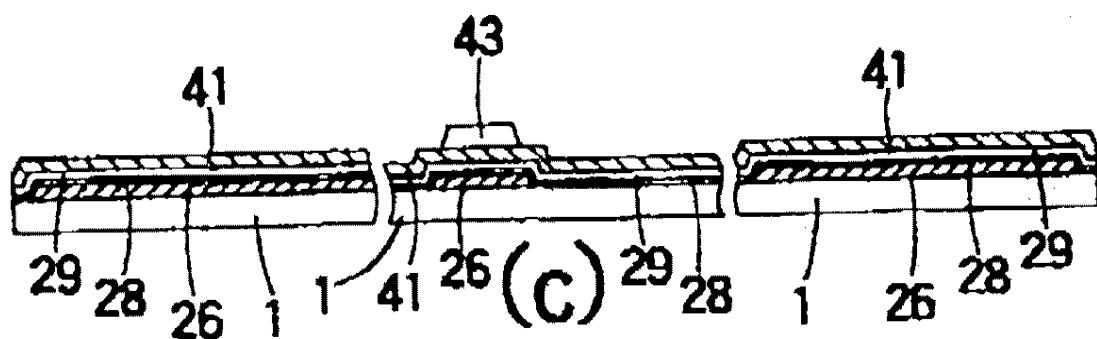
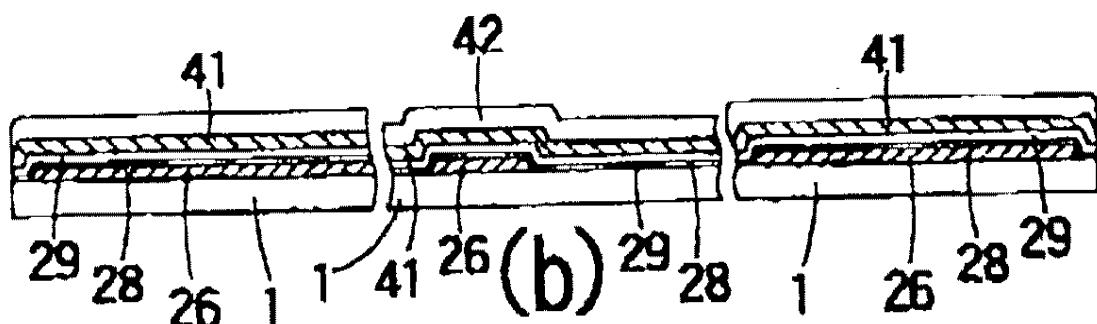
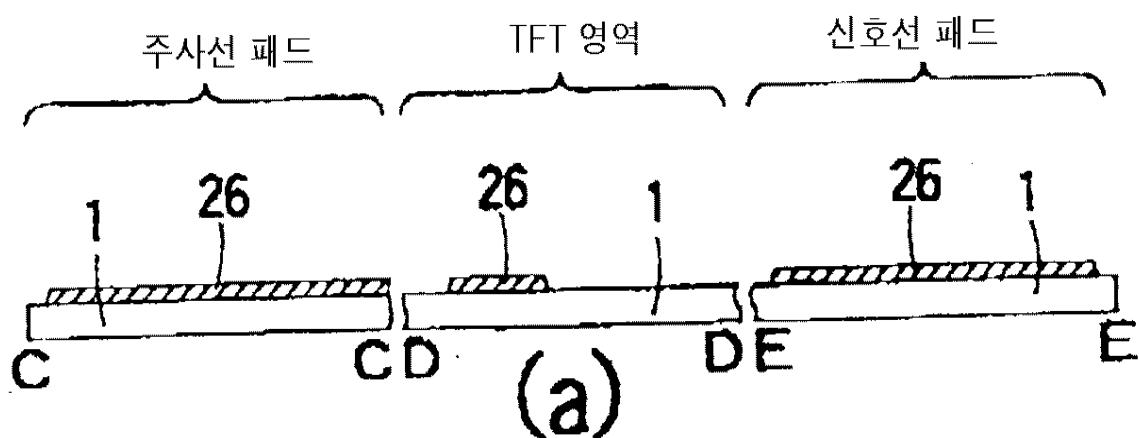
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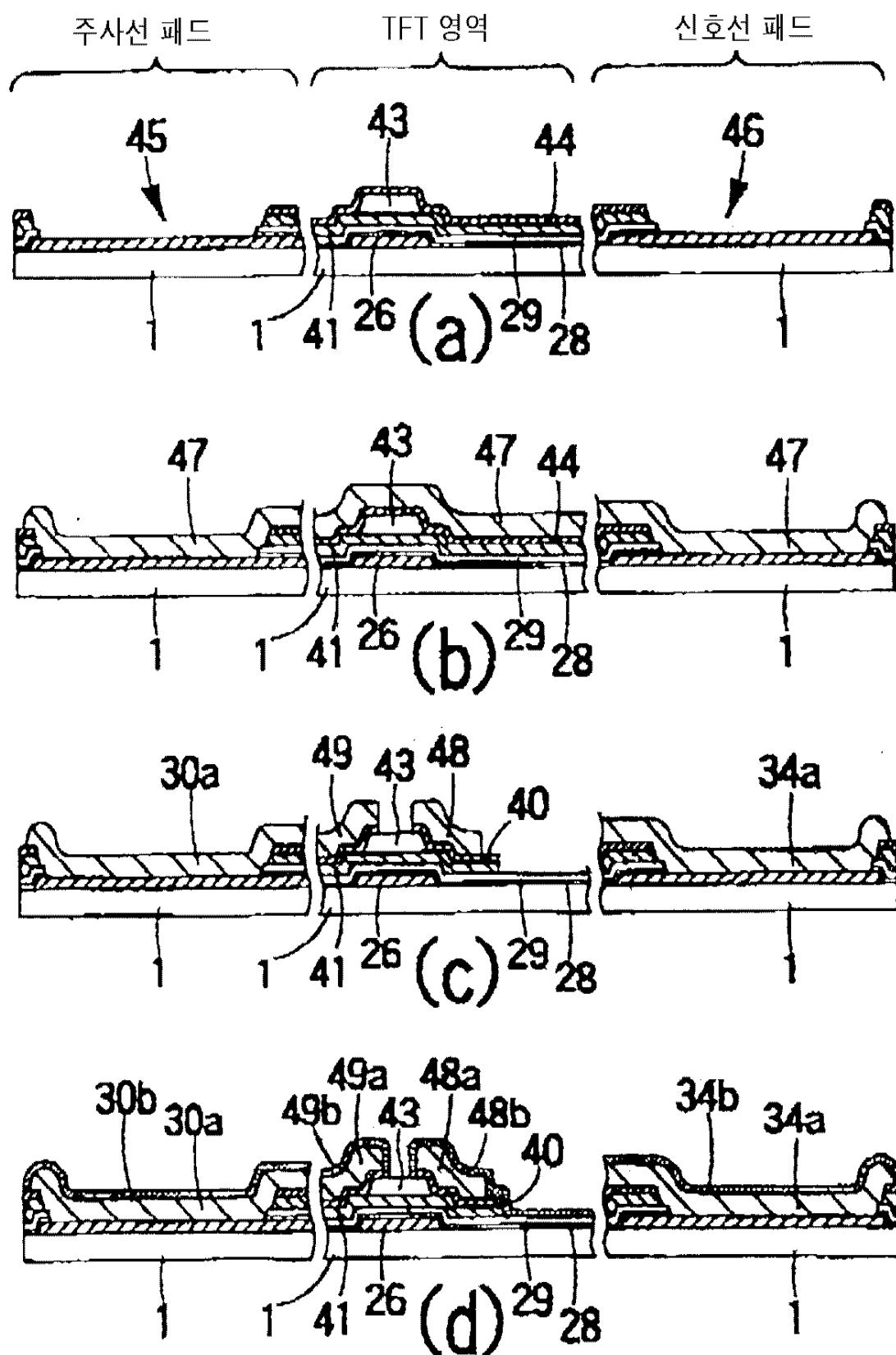
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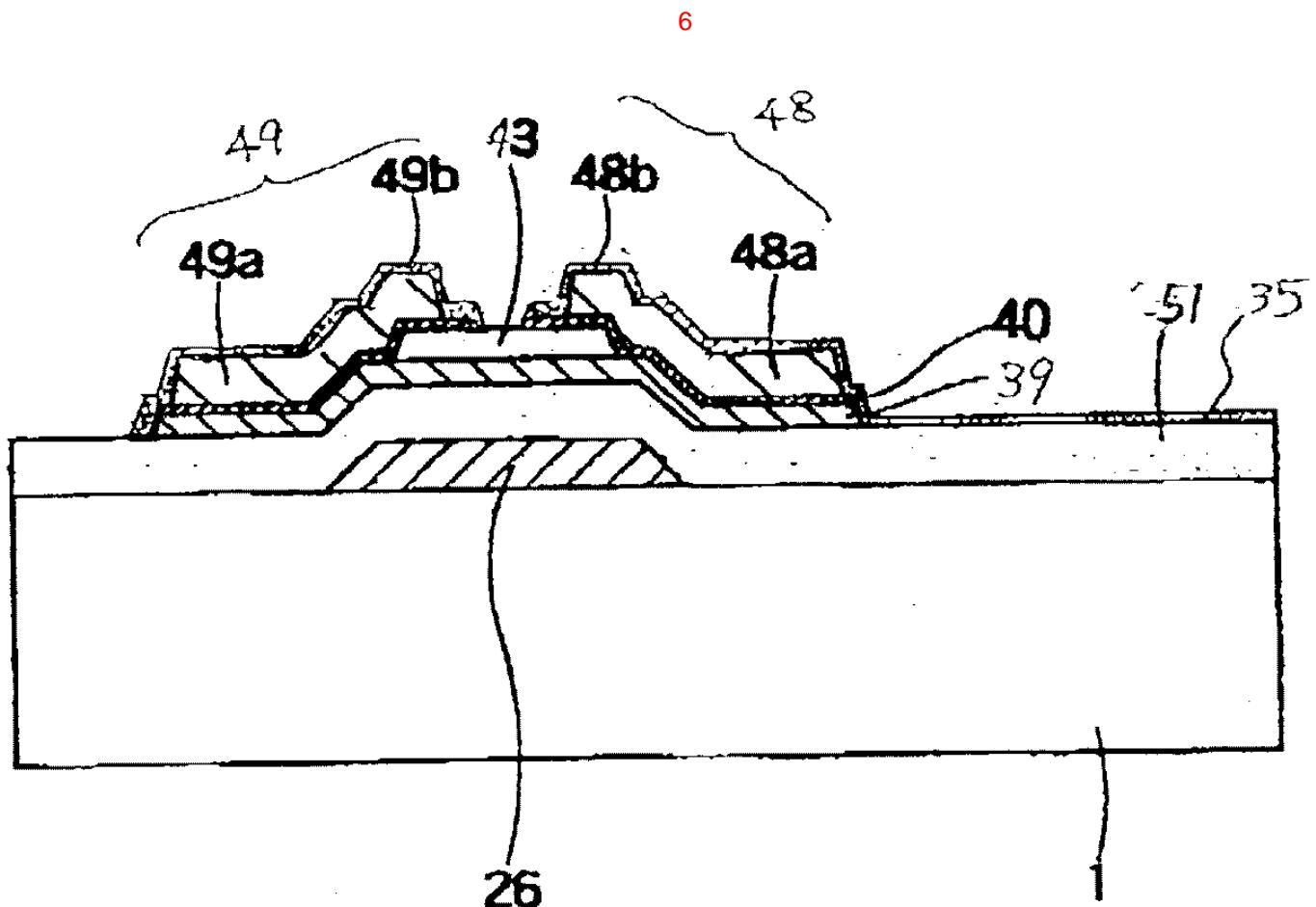


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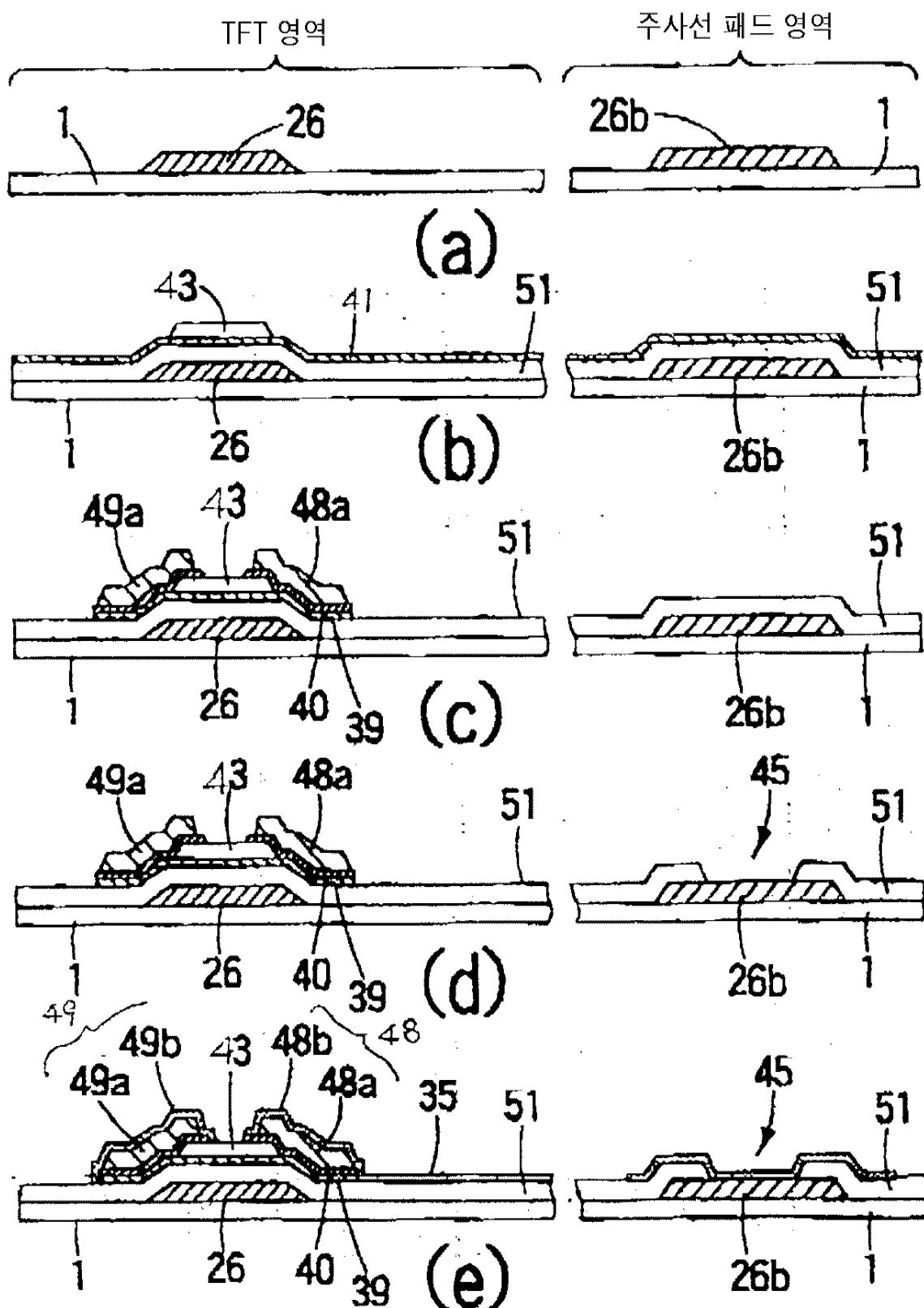


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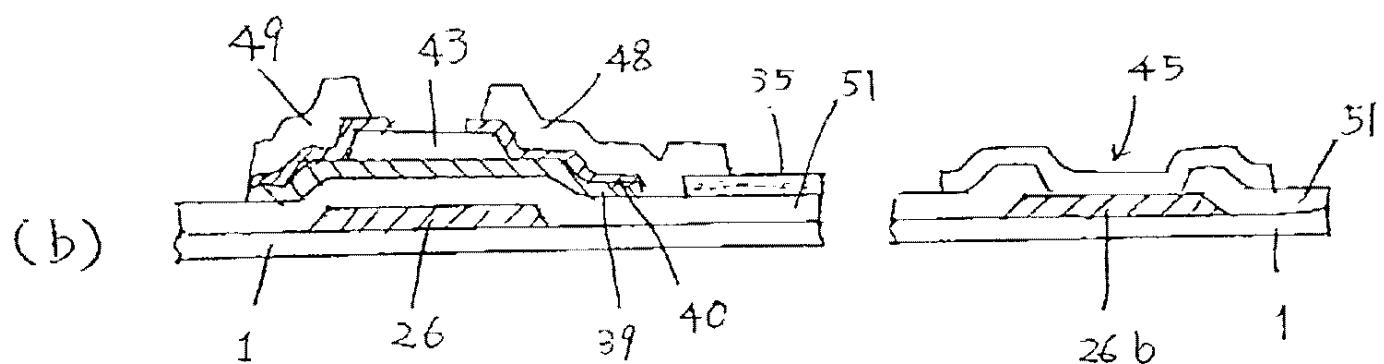
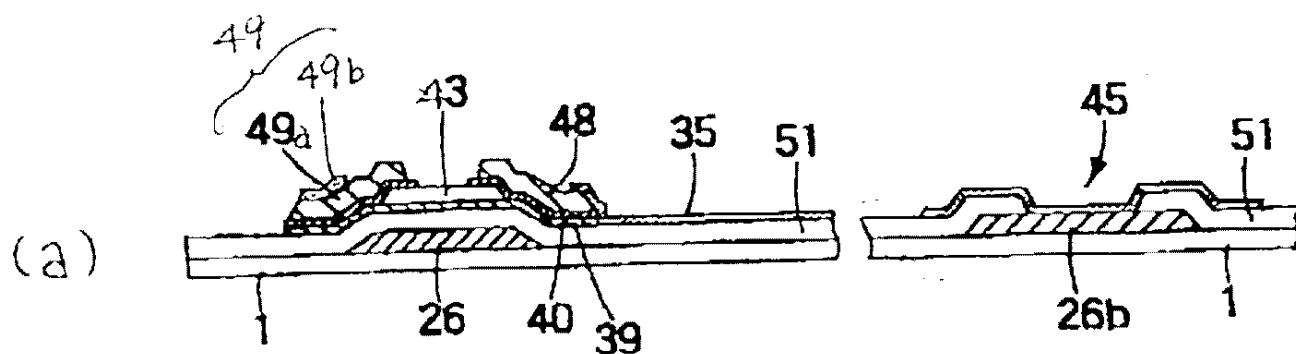


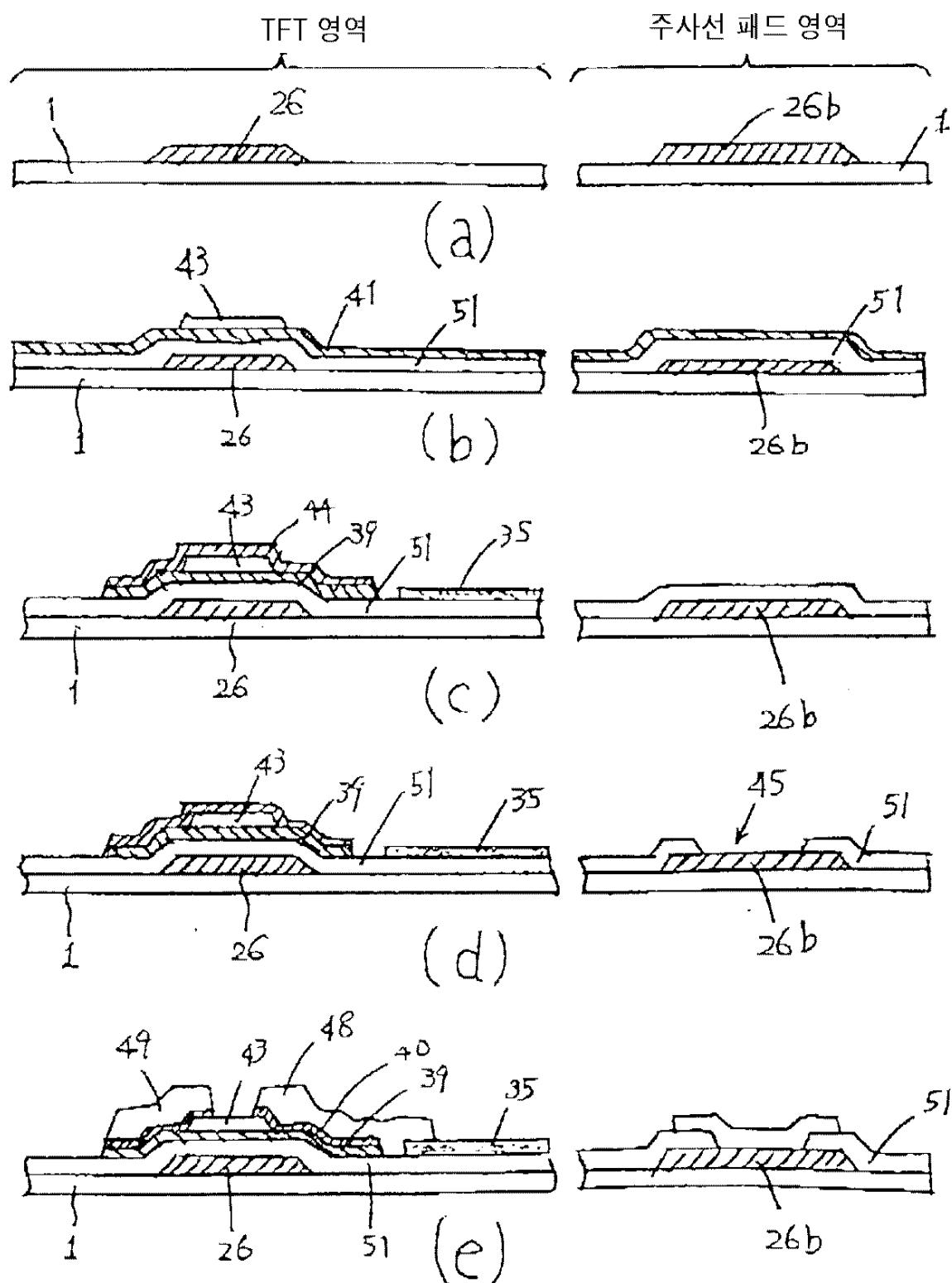


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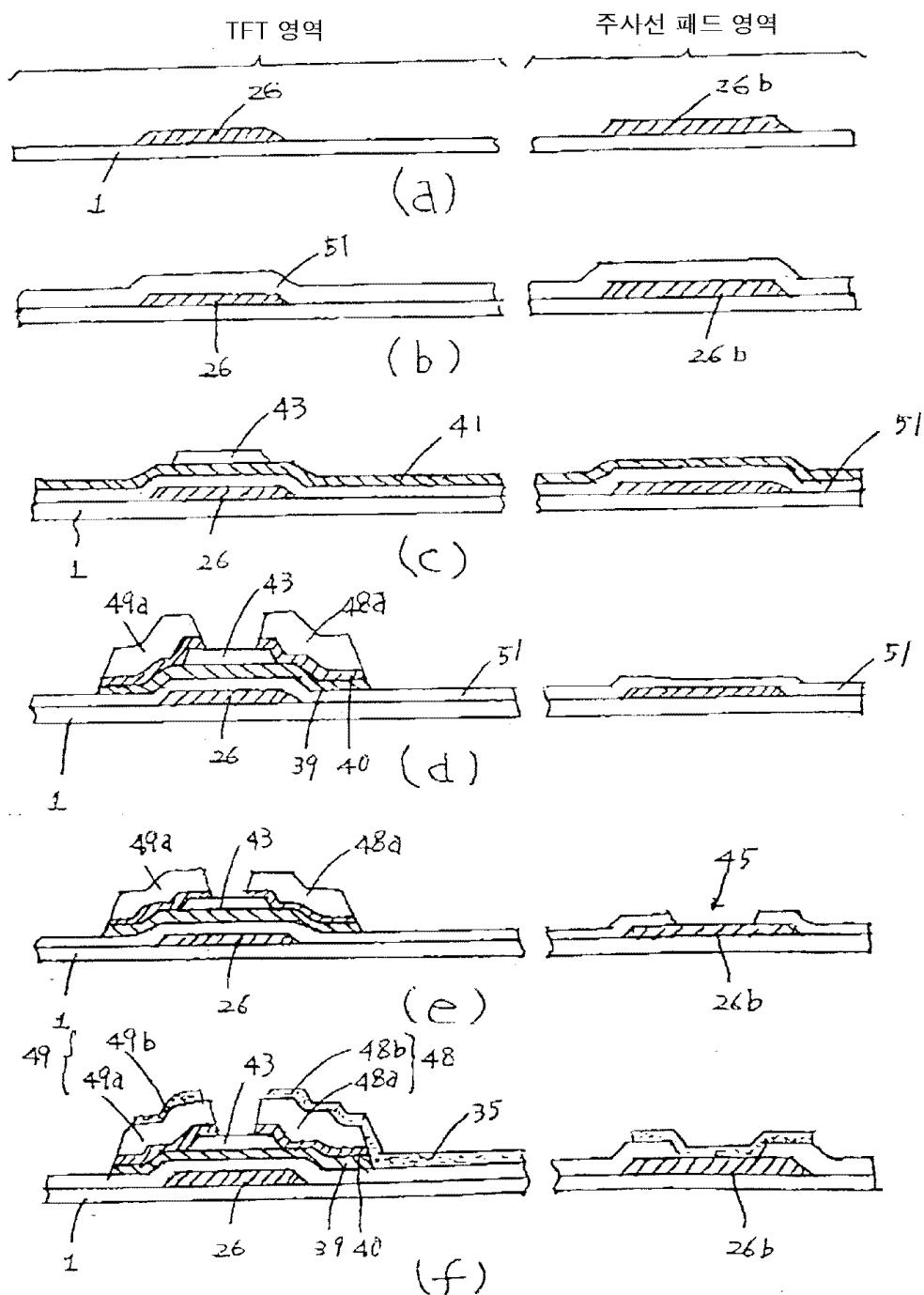


8

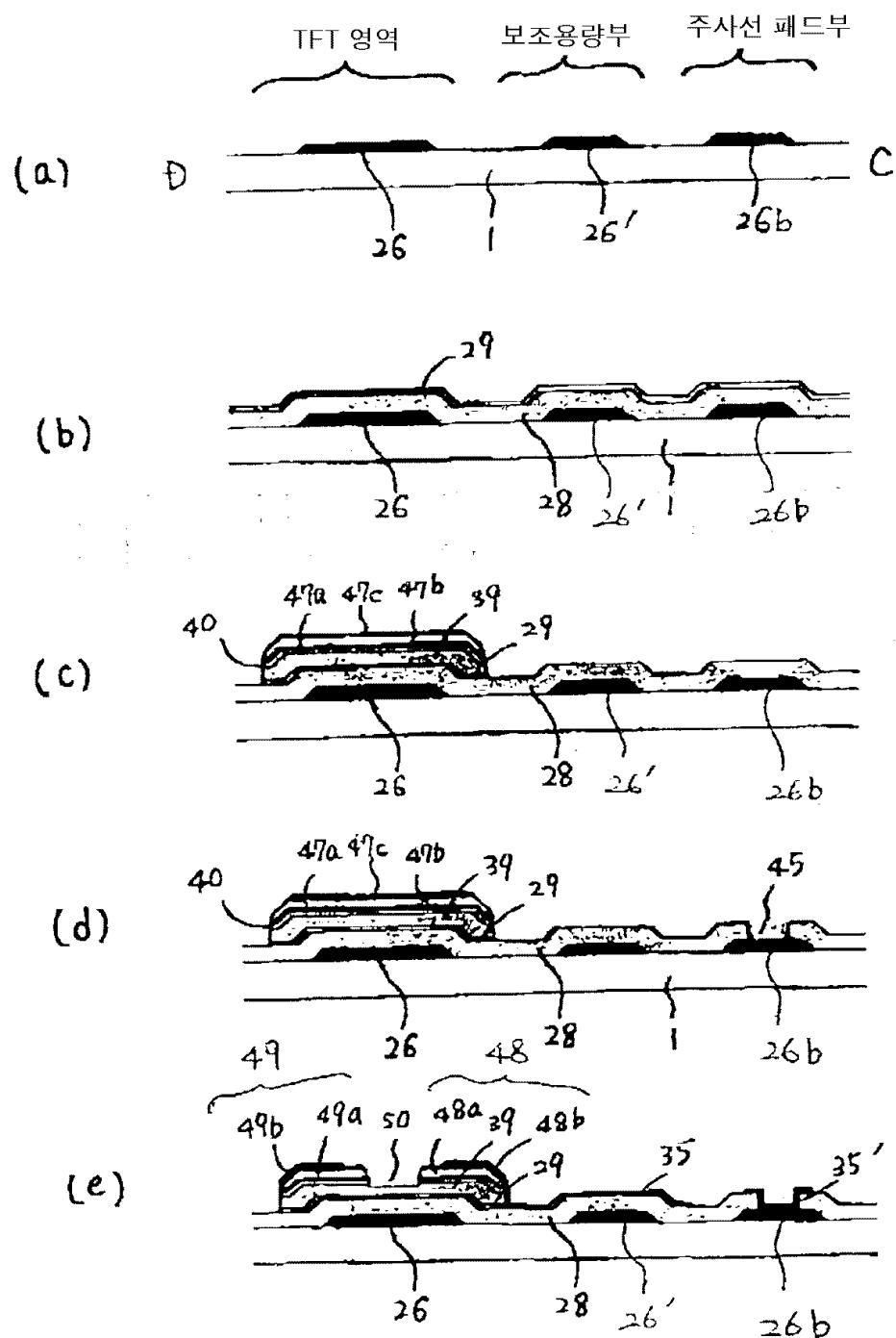




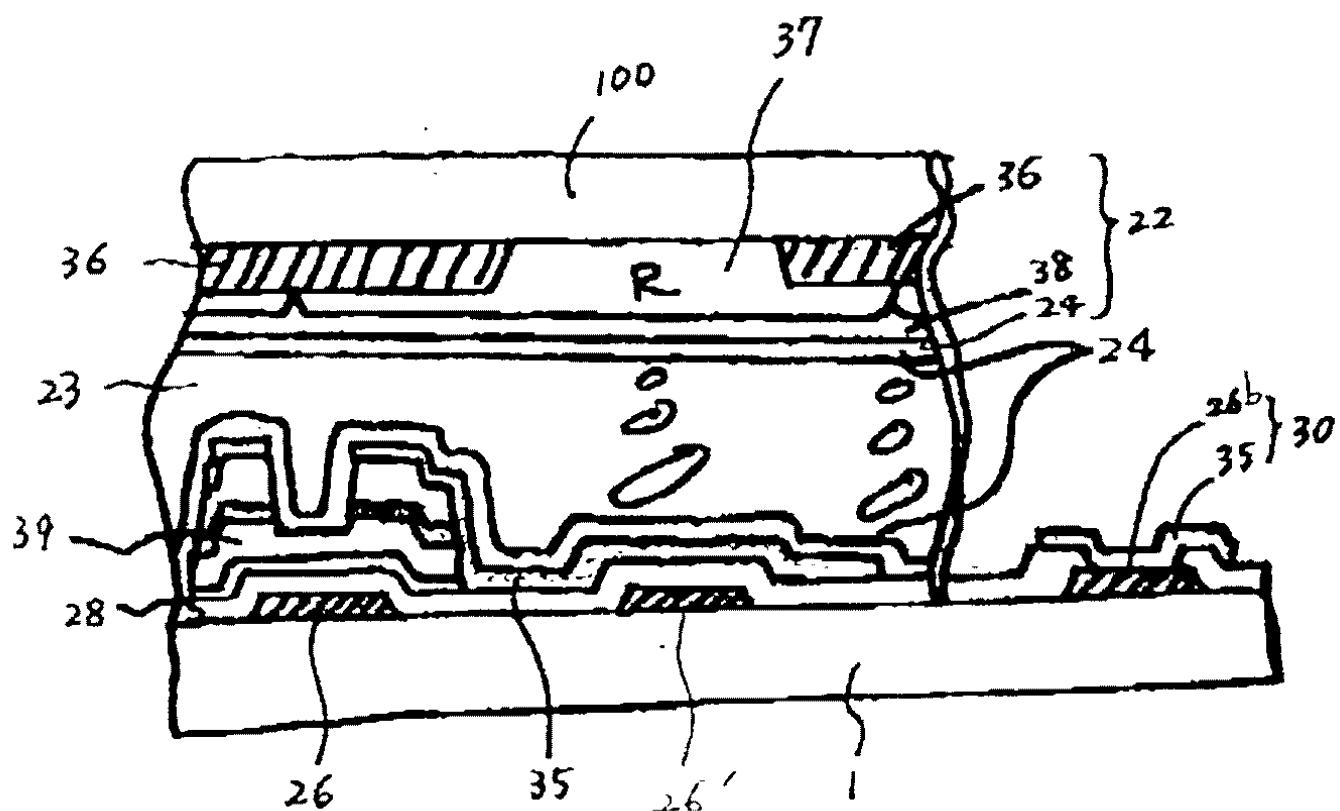
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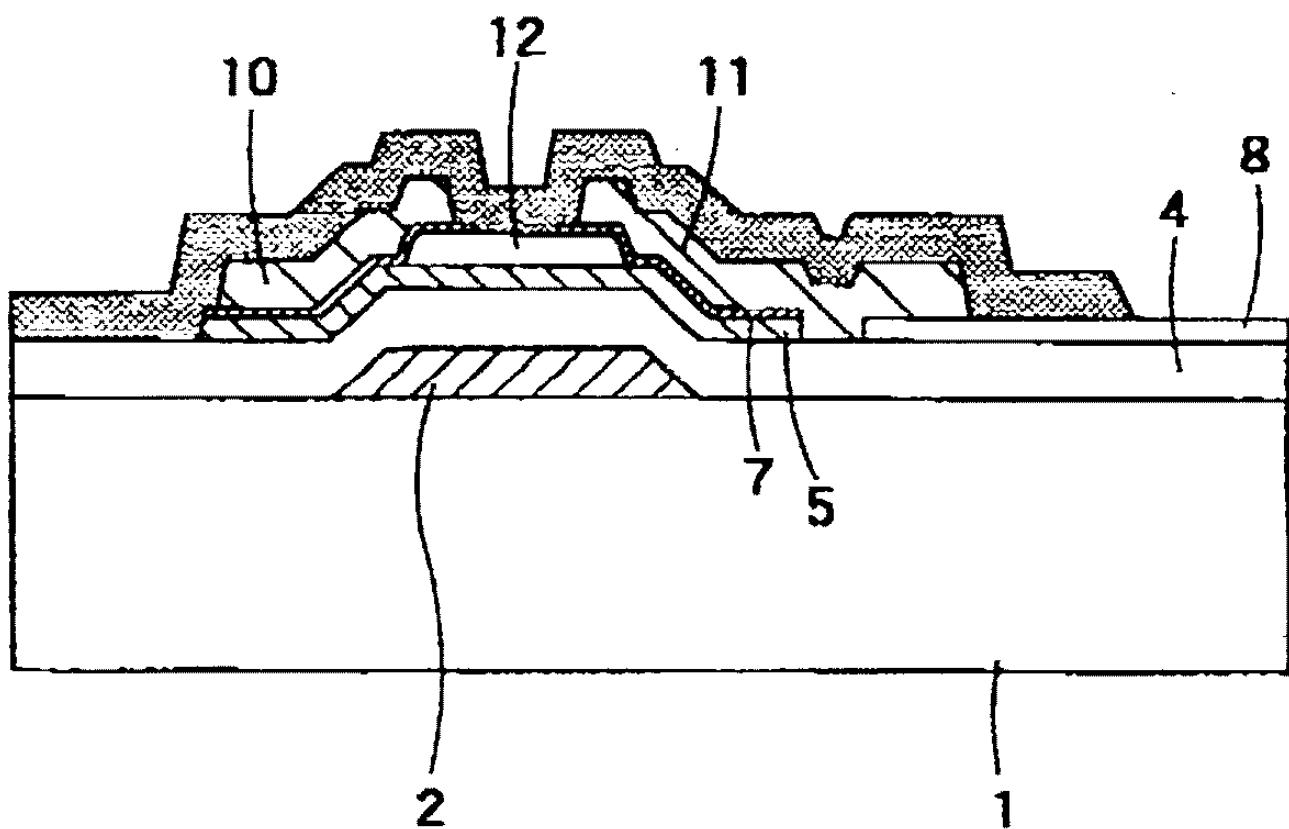
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12

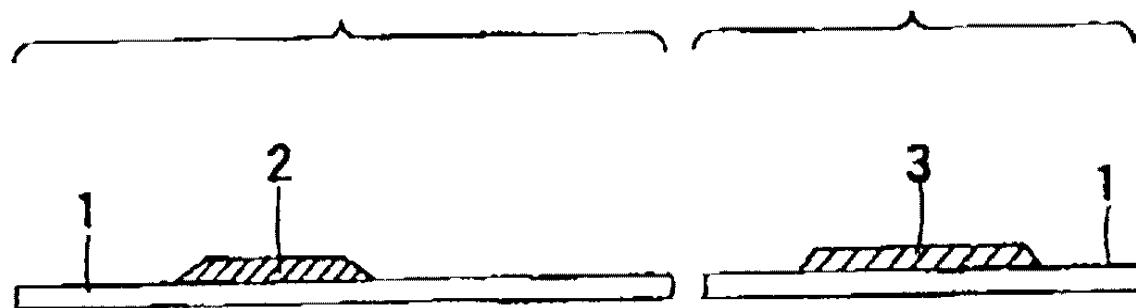


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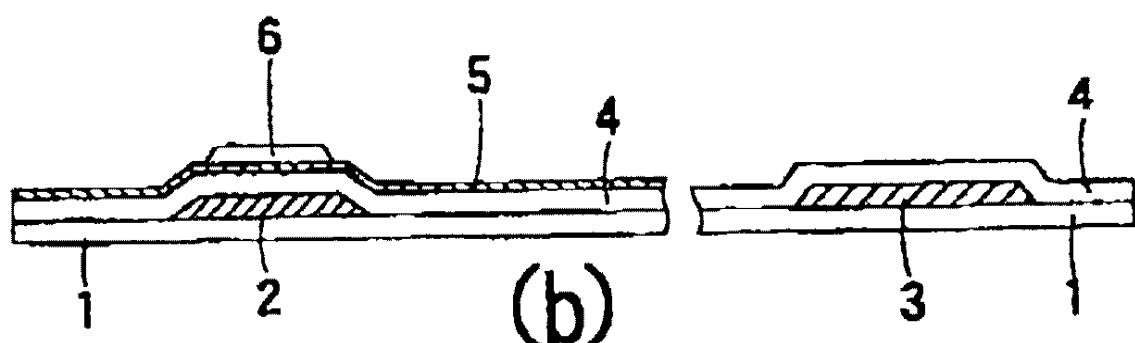


TFT 영역

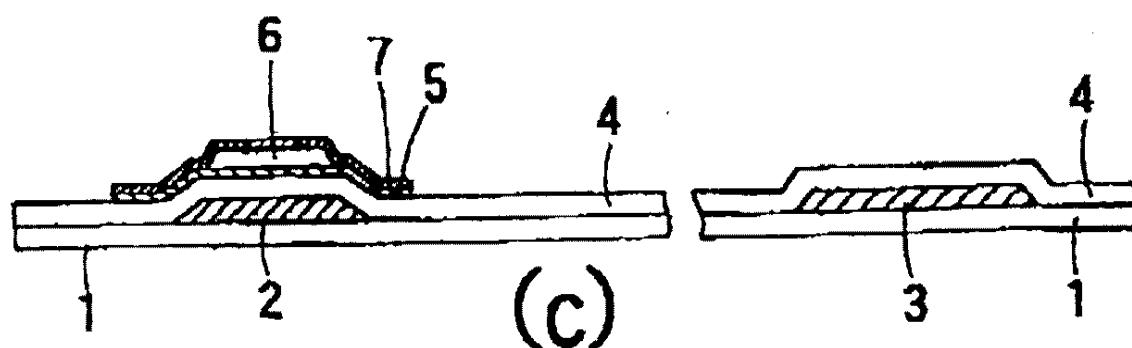
주사선 패드 영역



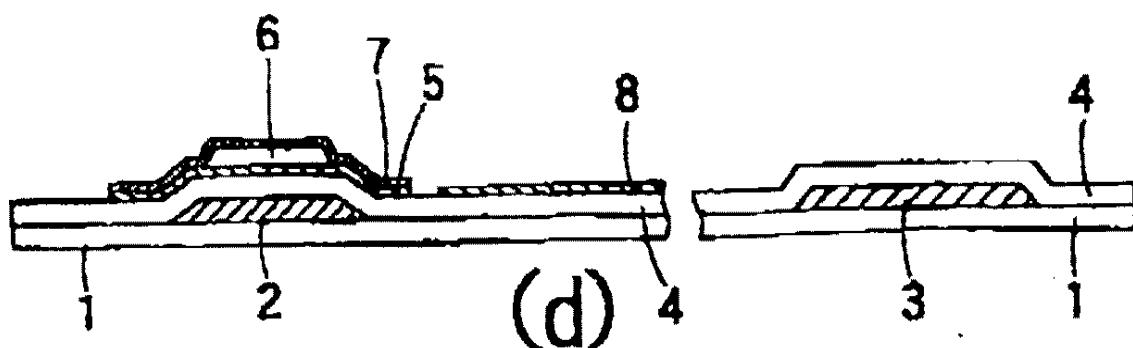
(a)



(b)



(c)



(d) 4

15

