

(19) (KR)
(12) (B1)

(51) 。 Int. Cl. ⁷ (45) 2001 10 25
H01L 33/00 (11) 10 - 0296202
(24) 2001 05 08

(21) 10 - 1997 - 0082674 (65) 1998 - 0064844
(22) 1997 12 27 (43) 1998 10 07

(30) 8 - 351374 1996 12 27 (JP)
9 - 292958 1997 10 24 (JP)

(73) 가 가
가 가
가 22 22

(72) 가 70 - 1 가 903

(74)

:

(54)

PN (42) (45) LED (41) LED (41)

(52) 가 , LED (45) , (46, 47) ,
(53, 54) , LED (41) , PN ,
(45) (46, 47) , (56, 57)
LED (41) , (45)

1a

1a		LED (41)			
1b	1a	LED (41)			
2	1	LED (41)	LED (60)		
3	2	LED (60)	(61)		
4	3	(61)	LED (60)	(dicing)	
5	4	(sheet)(61)	LED (41)		
6a					
6b					
7a					
7b					
8a	Ag				
8b	Ag				
8c	Ag				
9	LED (41)				
10	(45)	LED (41)			
11a	6a , 6b			가	
11b	6a, 6b				
11c	6a, 6b			UV	
11d	6a, 6b				
12		LED (81)			
13		LED (91)			
14	13	LED (91)	(94,95)		
15		(92)	(46)		

16		LED (96)	.
17		LED (101)	.
18		LED (111)	.
19		LED (121)	.
20a		LED (1)	.
20b		LED (1)	가 .
20c		LED (1)	.
21a		LED (11)	.
21b			LED (11) .
22a	21	LED (11)	.
22b	21	LED (11)	.
22c	가	LED (11)	.
23	21	LED (11)	.

PN

(, " LED")

가

가 .

LED
LED

, PN

2

LED

PN

가 .

LED

가

2mm

PN (2) , 20a, 20b 20c , (3, 4) LED (1)
 , PN , PN (2) 20A, 20B 20C , PN
 (3,4) PN (2) LED (1) ,
 (6,7) (5) (8) (5)
 (6,7) LED (1) (8) (5)

20a LED (1) (5) 가 , 20b
 , LED (1) (5) 가 (10) LED (1)
 PN (2) 가 PN (2) (6)
 . 20c LED (1) (4) . PN
 (2) P N (3) 가 , PN (2) (3,4) , PN
 (3) 가 . (3) 1/10 μm(1000) (A)
 u)

LED JP - B2 56 - 44591 (1981),
 JP - A 54 - 22186 (1979), JP - A 57 - 49284 (1982), JP - A 6 - 177435 (1994), JP - A 6 - 326365 (1994), JP - A 7 - 283439(1995), 8 - 172219 (1996) JP - A 9 - 51122 (1997)

JP - B2 56 - 44591(1981) , LED , L
 ED . LED1
 . LED PN

JP - A 54 - 22186(1979) , . LED LED
 가 , 가 LED . LED PN

JP - A 57 - 49284(1982) , LED , LED
 LED . LED PN

JP - A 6 - 177435(1994) , LED LED
 , 가 LED , LED PN LED

JP - A 6 - 326365(1994) , LED . PN 가
 가 . JP - A 8 - 172219(1996) , PN LED PN 가
 . , PN PN

21a 21B JP - A 7 - 283439(1995) JP - A 9 - 51122(1997) LED
 . 21a , 21b LED (11) PN 가
 가 , (12) . PN 가
 (13,14) , (16,17) (5)
 (6,7) . (16,17) .

22a, 22b 22C 21a 22b LED (11) (5)
 22a LED (11) 가 22b LED (11) 가
 가 가 , PN (12) ,
 가 . 22C LED (11) (5) LED (
 11) (16,17) (5) (20) (21)
 LED (11) (23) (22) 가 , LED (11)
 (13,14) (5) (6,7) , (6,7) 가
 , (13,14) (6,7) , LED (11)
 (16,17) (5) .

23 22a, 22b 22c (12) LED (11)
 . s1 , P (31) N (32)
 PN (2) , (33) (4) P (31) N (32)
 (33,4) (Au) (AuBe) . s2 , P (31)
 P s3 , (30) (33) , P (33)
 (34) , (34) , P
 (35) , (3) (33) . s4 , (3)
 30) (3) (3) . s5 , (
 . (30) , (H₂SO₄)
 110 μm
 (H₂O₂) .
 , s6 , , OMR . s7 ,
 s5 (37) , .
 s8 , Ag (38) (30) , s9 LED (11)
 . , (30) , LED (11)

20a, 20b, 20c, 21a 21b LED (1,11) , (11)
 , (5) 가 , (10)
 (5) (6,7) 가 . , LED (1,11)
 " PN (2)" 가 , 가 2
 1a 21b , (12) PN (2) LED (11)
 , (10) (5) (6,7)

, 20a, 20b 20c LED (1)

가 . ,

, PN

가 가

, PN

PN

PN

PN

가

가

가

, PN

가

가 , PN

가

가

가 가

(repair)

가

가

, 가

PN

, PN

, PN

, PN

- V

- VI

가

가

P N

P N

P N

P N

, PN

가

' 가 , , PN 가
, ,
가 , PN
, PN
, 가
, ,
,
, 가
, PN
, PN 가
가 , PN 가
, PN
, PN 가
, 가
, PN
PN 가 , PN 가
PN 가

,
,가 가 . , , PN

, 가, , PN

, PN 가 PN (bridgee)

, PN 가 PN

(brazing)

PN PN

PN

(squeegee)

(squeegee)

1		LED (41)		1a PN (42)
PN (45)	(42)	LED (41)	(43,44) P (42)	N LED (41)
			(46,47)	(45)

LED (41) (50) (52) .
 (52) PN (42) 가 (41)
 43) LED (41) (44) LED (41)
 (53,54) (43,44)
 (53,54) , CT 225K() (Ag)
 1B LED (41)

1a , LED (41) LED (41) (52)
 가 (50) , (45) LED (41)
 가 , (46,47) (53,54) 가 (56,57)
 , LED (41)

2 5, 6a, 6b, 7a, 7b, 8a, 8b, 8c, 9 10 1a 1b LED (41)
 , 2 250 μm LED (60) . LED , N
 N (epitaxial) , N P PN . L
 ED (43) (44) LED
 (43,44) 0.2 μm (Au) (Ag)

LED (60) (GaP) (GaAs) -V 가
 . LED (60) -V -VI 가
 (SiC)

(52) , (SiO₂)
 (Al₂O₃) PN (42)

3 LED (60) (61) . (6
 61) 150g/25mm , 4 , (6
 1) LED (60) LED (41) . 40 μm
 50 μm . 300 μm LED (41) 250
 μm , 5 (61) 41 100 μm .

6a, 6b 6c UV (62)가 LED (41) 가 . 6
 a UV (62)가 (61) , (63)가 (61)
 , 6b , UV (62)가 LED (41) (43)
 10 μm 가 . UV 가 가
 UV - 80D .

7a 7b (64) UV (62) (65)
 . UV (62) LED (41) (64) UV (62)
 LED (41) (65) , UV (62) (65)
 , (65)

7b UV (62)가 , UV (62)가 (43)
 52) . UV (62)가

8a, 8b 8c (43) Ag 8a , A
 g (66) (61) , (63) (61) ,
 8b , Ag (66) 50 μm . Ag (61)가 ,
 8C . Ag (66)가 50 μm (63)
 . 150 2 가 Ag (66) ,
 (53, 54)

9 LED (41) (53, 54) (52)
 (41) . (67) . LED
 (52) LED (41) 50 μm , LED (41) 25 μm
 . 0.30mm x 0.30mm

10 9 LED (41) (45)
 (56,57) (46,47) , LED (41) (56,57)
 , LED (41) (56,57) (45)

ED (41) , UV (62)가 4 6a, 6b, 7a 7b L
 3 LED (41) 가 (52) . 2
 s7 , (12) LED (11) s5 , s
 5 LED (11) . 3 ,
 (61)가 LED (60) , LED (60) 4 .

5 LED (41) , LED (41) 100 μm , 4
 50 μm . 5 , LED (41) 50 μm 100 μm
 , 4 6a LED (60) . LED (41)
 , (52) (45) ;
 (52)

11a, 11b, 11c 11d 6a 6b 11a
 , 6a (70)가 (71) , 11b
 , (70) (72) (70) UV (62)

(72) (63) (63) (71) (71) X가 ,
 (63) 11C (71) , UV (62)
 (70) 11d , (72)가 (70) ,
 UV (62) (71) X (70) . 8a, 8b 8c
 Ag (66)

12 LED (81) (84,85)
 PN (42) (82,83) (46,47)
 (84,85) 1a 1b (52) ,
 LED (41,81) (56,57) (45)

13 LED (91) (92,93) LED (91)
 (45) PN (42) D 가 (45)
 (45) , PN (42) 가 (92,
 93) PN (42) (45) ,
 (50) (45) , PN (42) (45)
 가

14 13 LED (91) (94,95) (46,47)
 D (91) (94,95) 가 (45) (46,47) , LE
 f/cm² (94,95) , " MORFIT TG - 9000R" (HIGHSOL COMPANY)
 2 20 kg

(94,95) 10 % (coarse p
 articles)가 10 μm

15 14 가 (92) (46)
 (94) 가 (94)
 가 (97)가
 .가 (96) 가 (96) (92)
 (46) (92) (46)
 3) (47) 가가 , LED (91) 가 (9)
 (45)

(96) d LED (91) (50) (45) D
 , (96)가 PN (42) PN (42)
 PN (42) , 12 15
 (82,83;92,93) 1a 1b (53,54) 2

(43,44) , .

16 LED (97) . LED (97) 13 15 LED ((91) (50) , PN (42) (52) (92,93) , (46,47) 52) (92,93) LED (97) (45) (92,93) ,

17 LED (101) (102,103) (104,105) (106,107) (43,44) (104,105) 가 (106,107) 가 .

18 (112,113) (104,105) (116,117) (43,44) (10 4,105) (116,117) .

19 LED (121) (122) (123)

(122) PN (122) (123) LED (121) (123) 가 가 (123) 54 - 22186(1979) 가 가 .

(53,54) (82,83; 92,93; 102,103; 112,113; 122) (53,54) (82,83; 92,93; 102,103; 112,113; 122) , (46,47) ,

가 , 가 , PN 가 , 가 가 .

(57)

1.

, PN

, PN

가

가

2.

1

- V

, - VI

3.

2

(brazing)

4.

2

5.

2

6.

2

, PN

가

(recess)

가

7.

6

가

8.

, PN

, PN

가 , , 가 ,

PN

9.

8 , PN

10.

PN , PN ,

;

PN

가

11.

PN , PN ,

;

PN

가

12.

11 ,

13.

11 , - V , - VI

14.

11 ,

15.

11 ,

16.

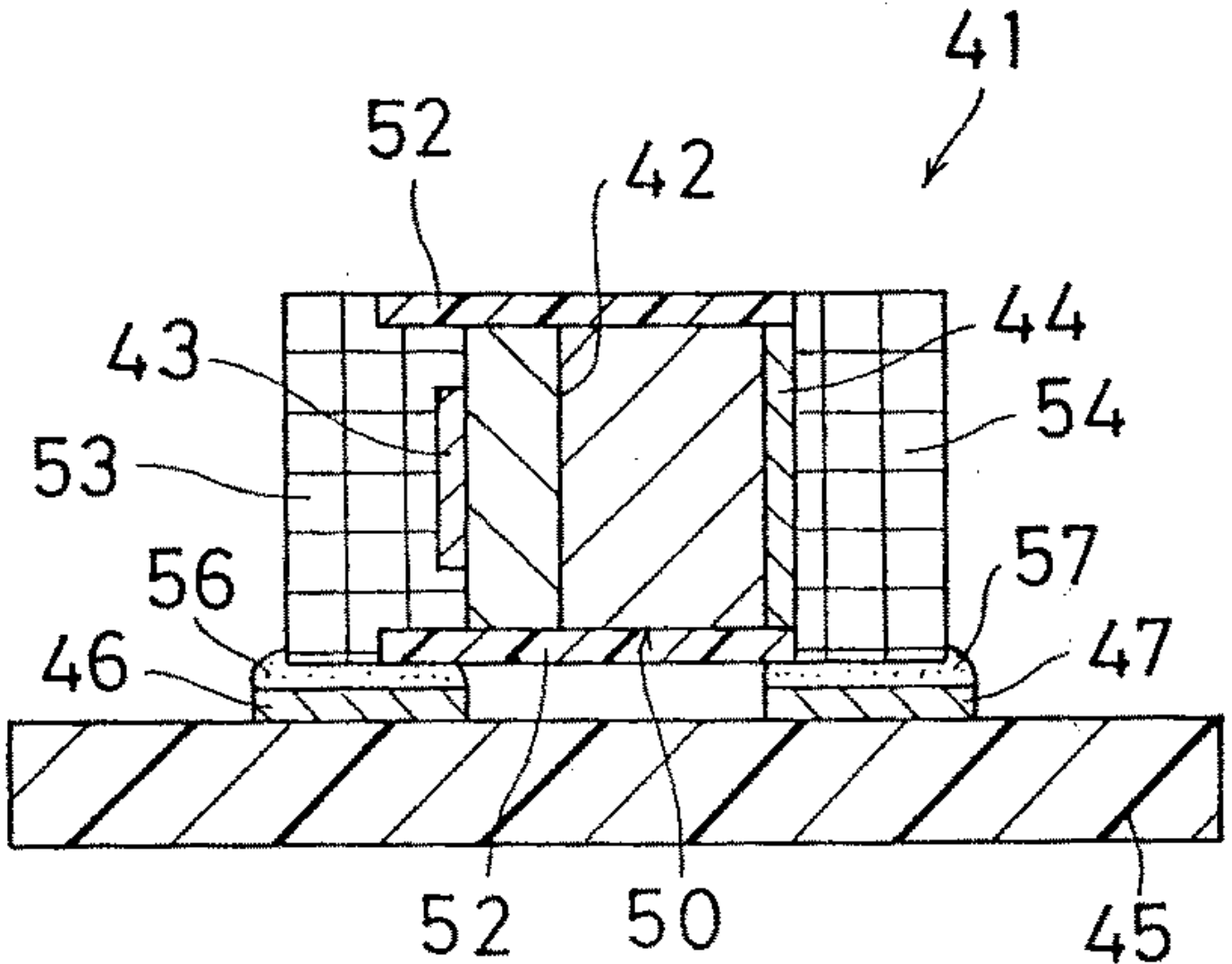
11 ,

17.

11 ,

가

1a



1b

53

41

52

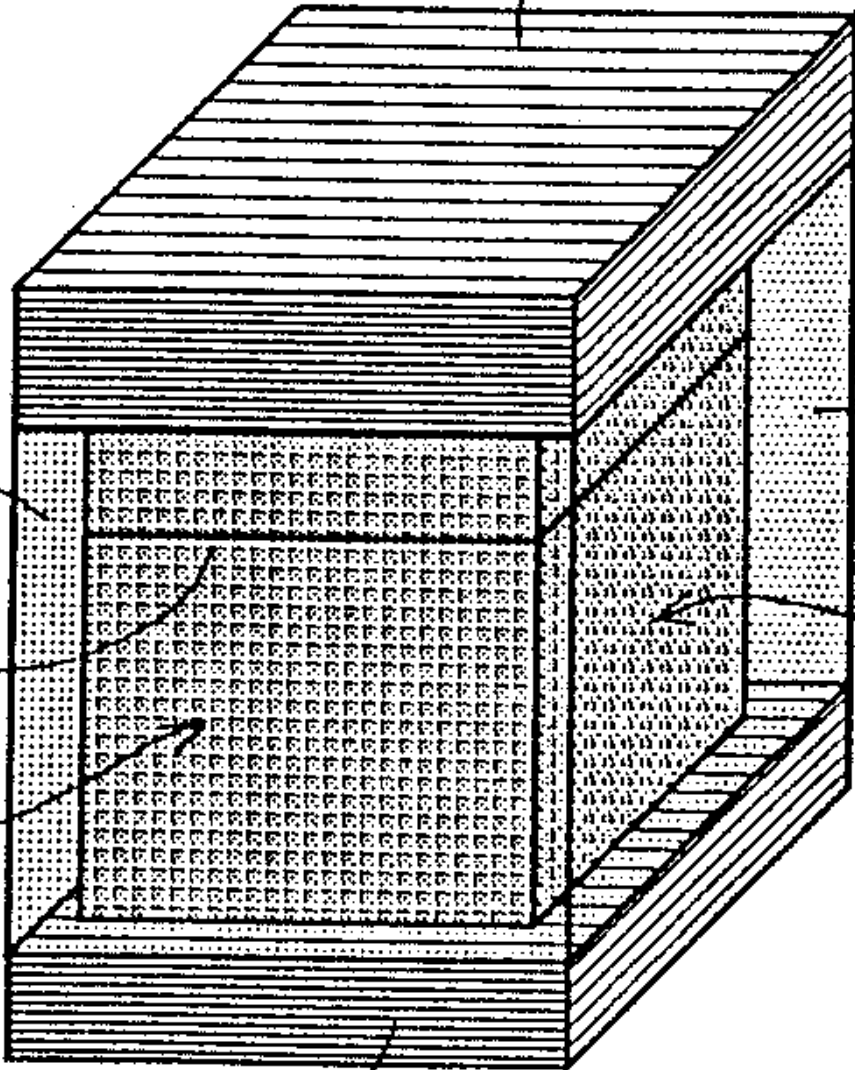
52

42

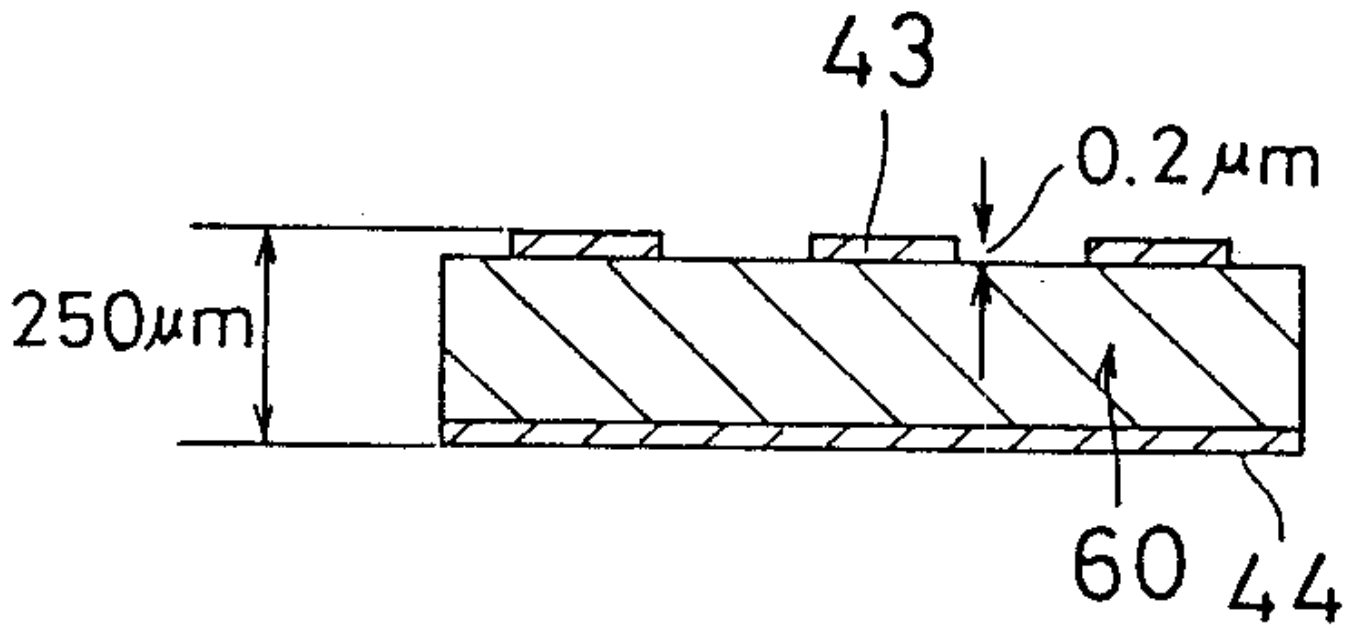
50

50

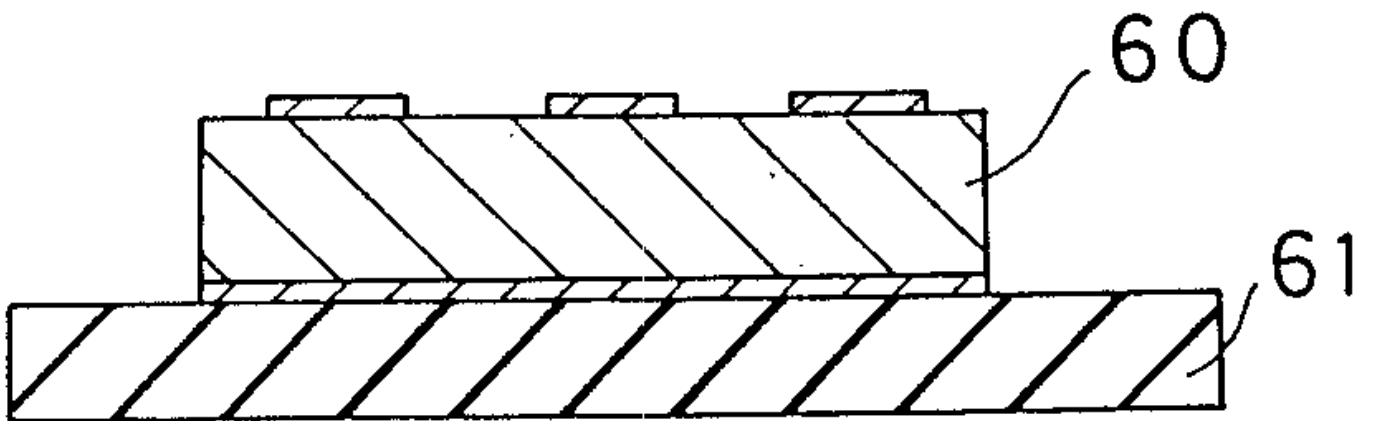
54



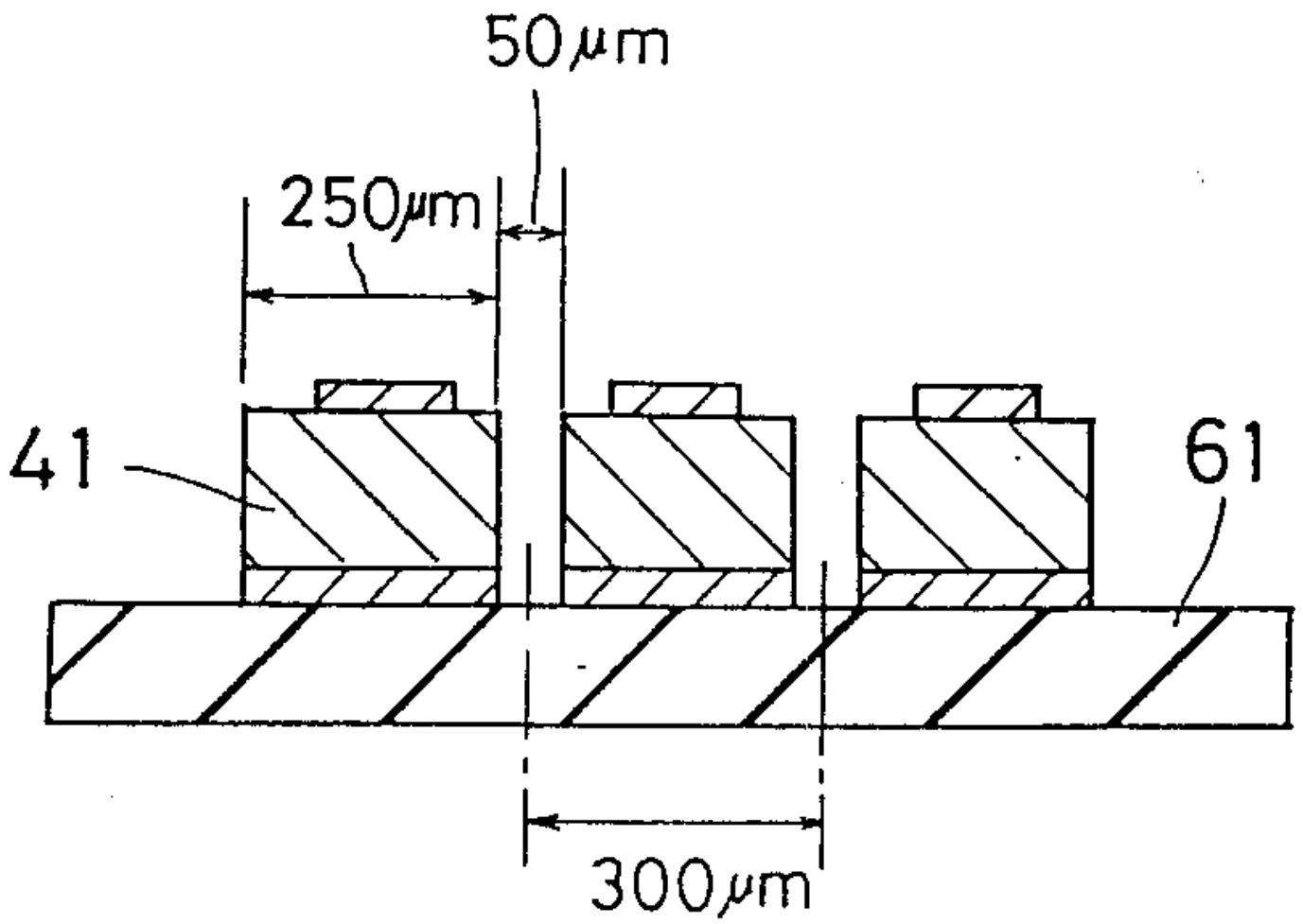
2



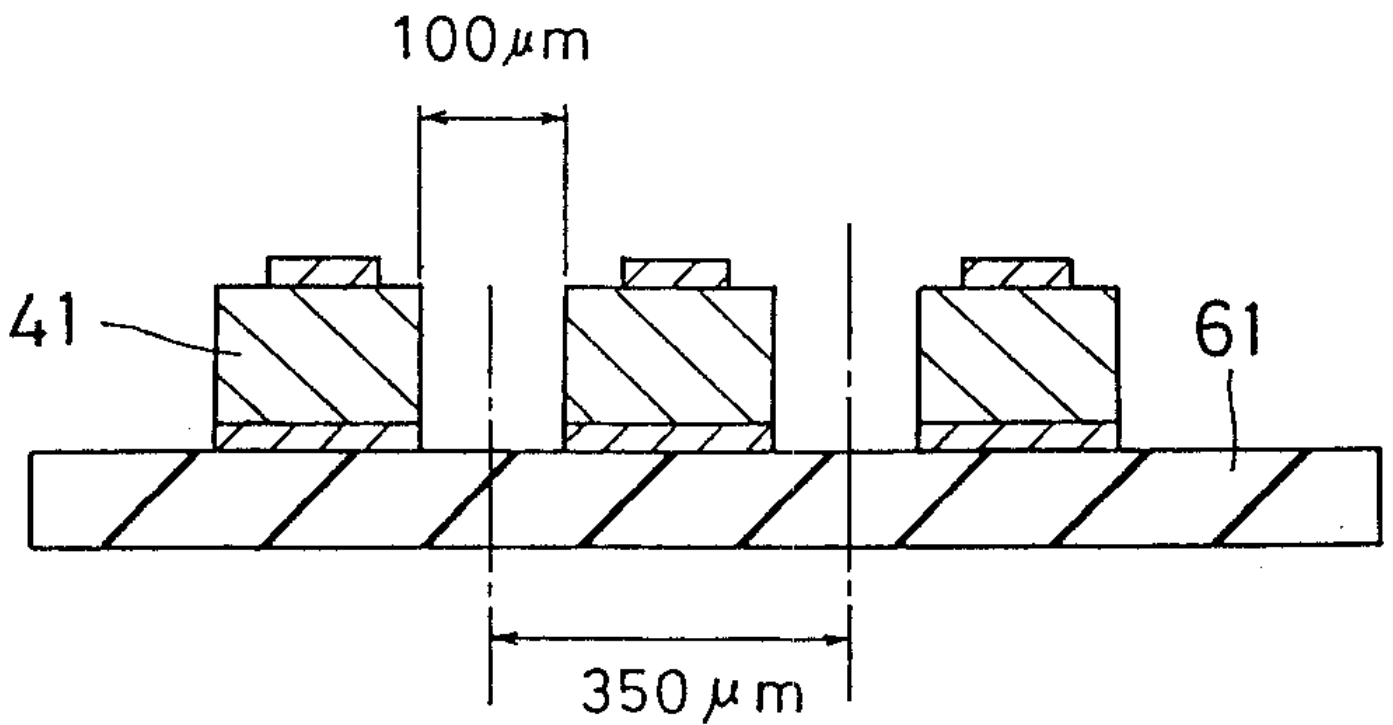
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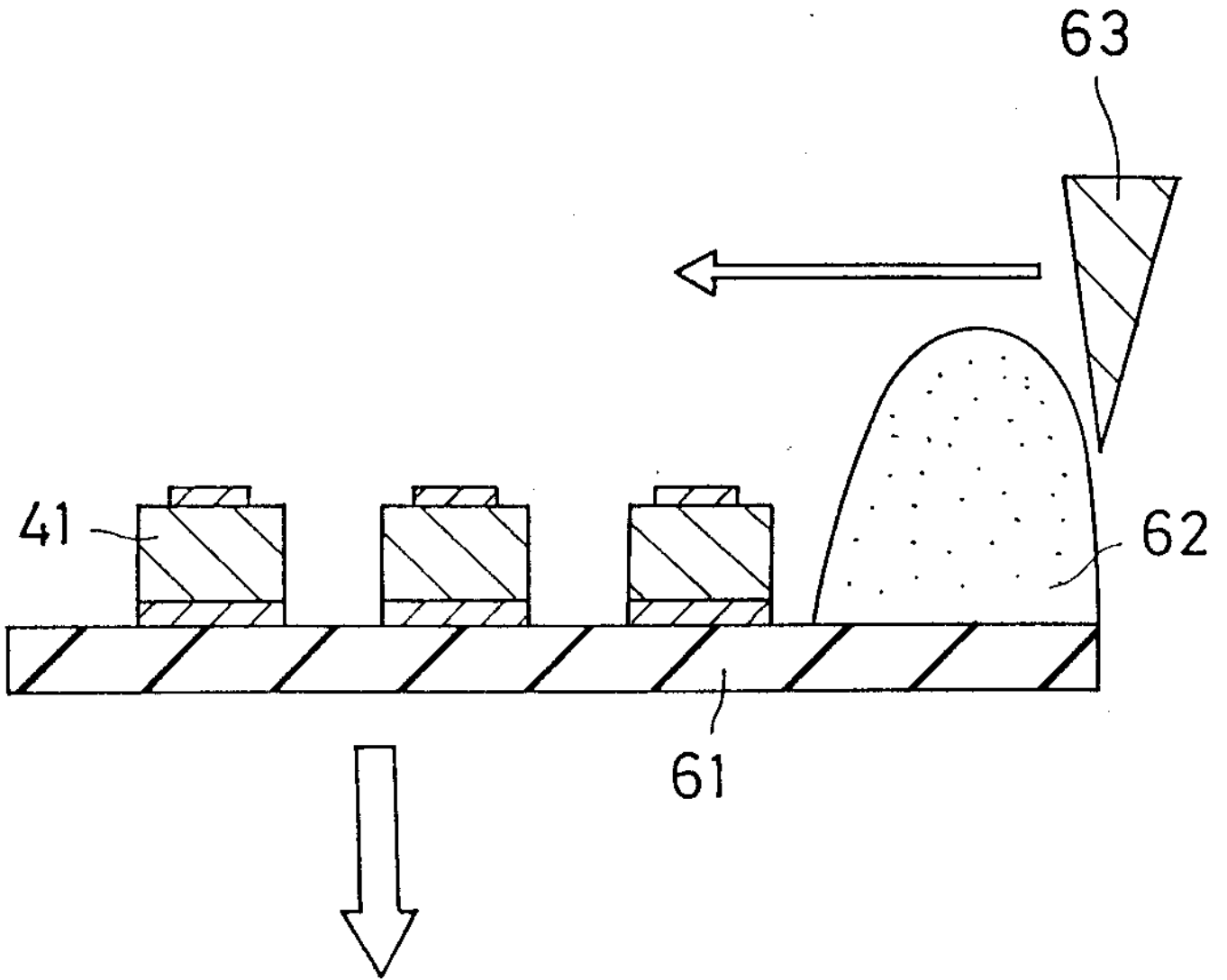
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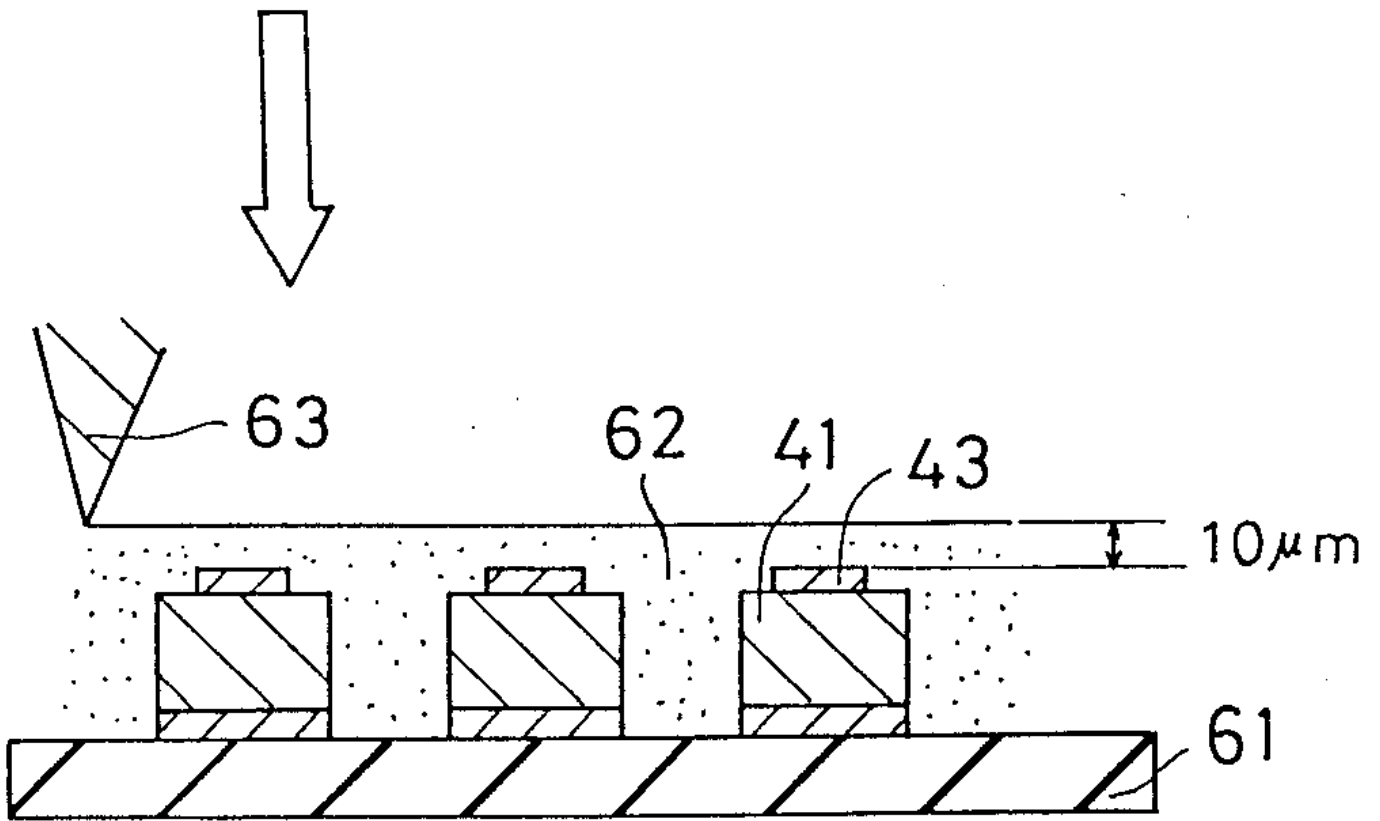
5



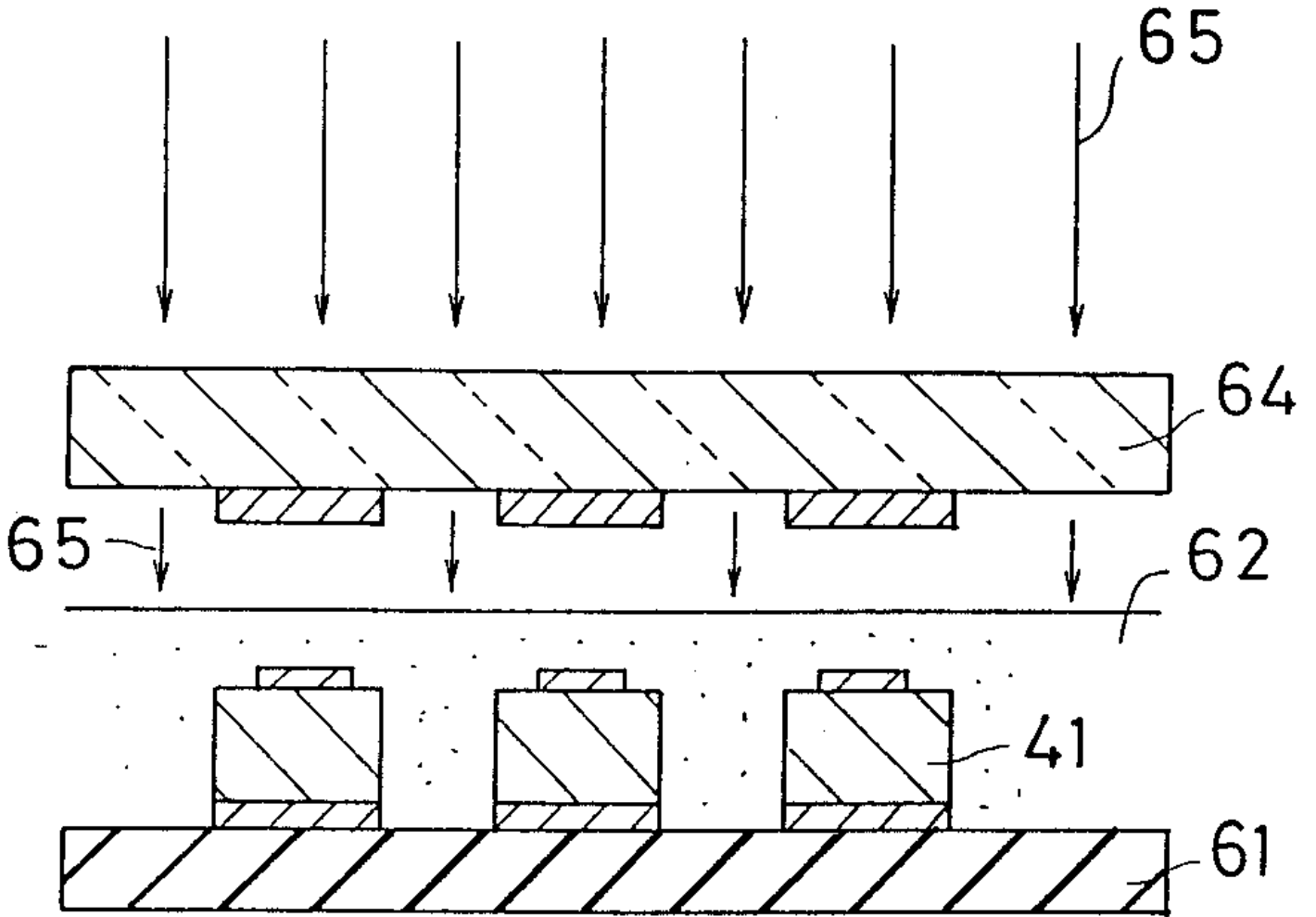
6a



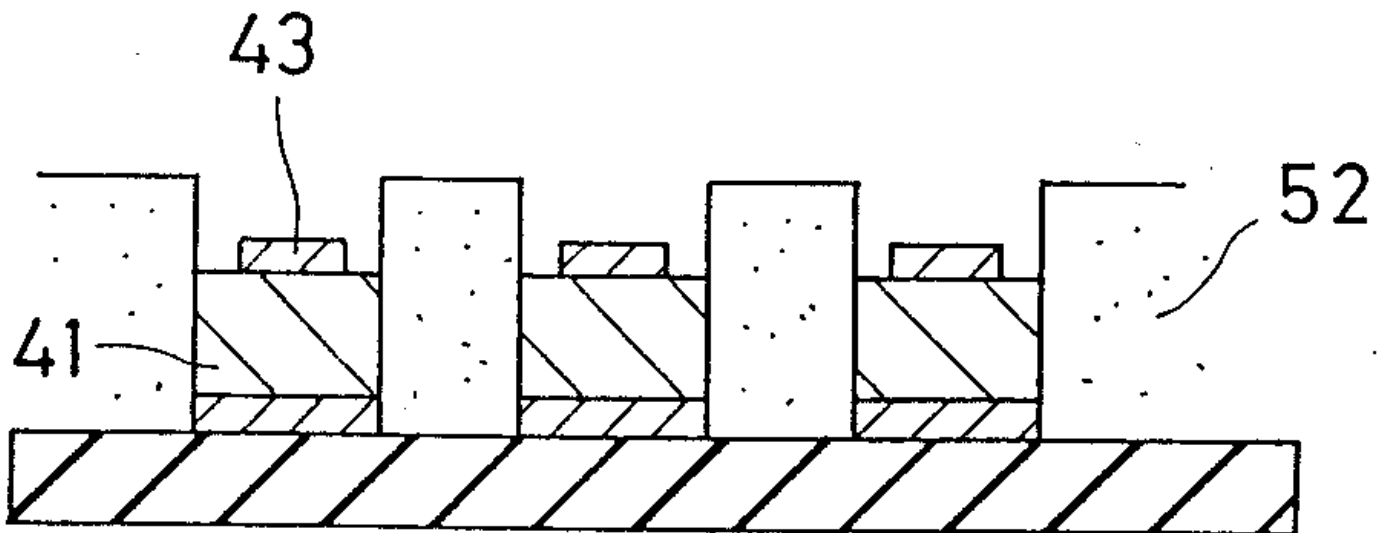
6b



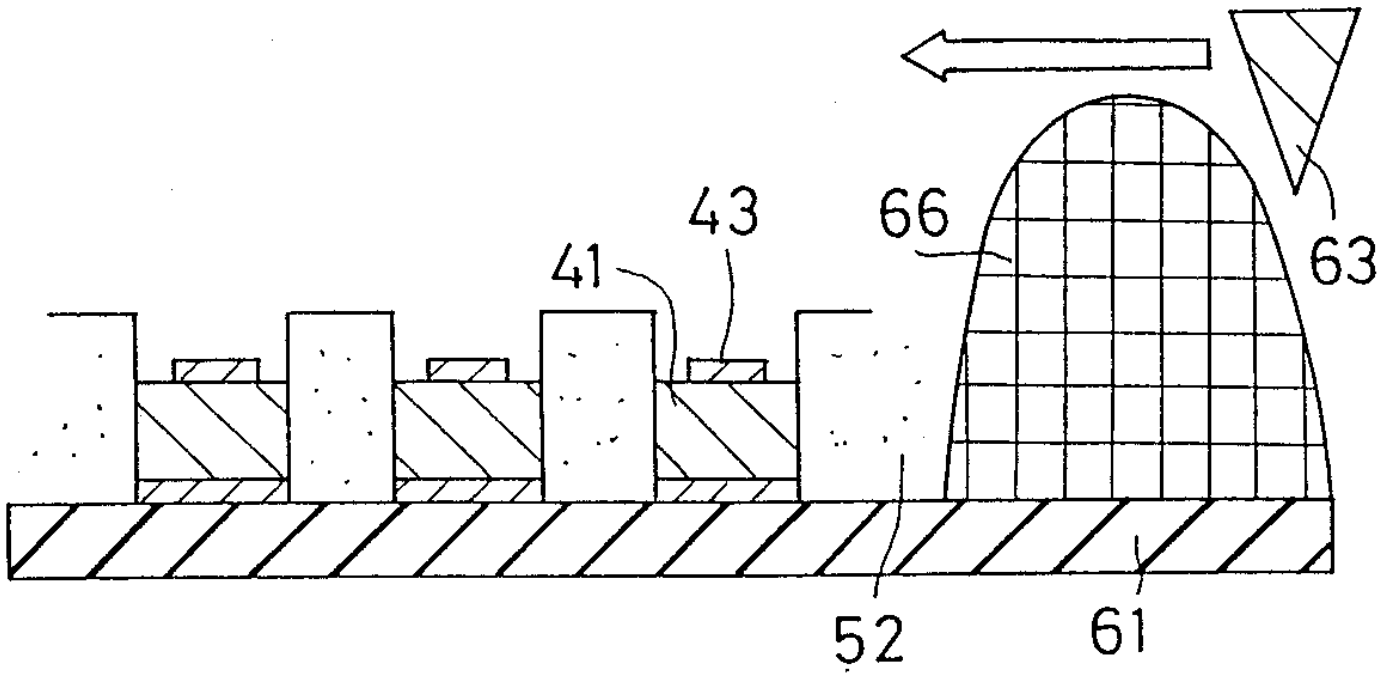
7a



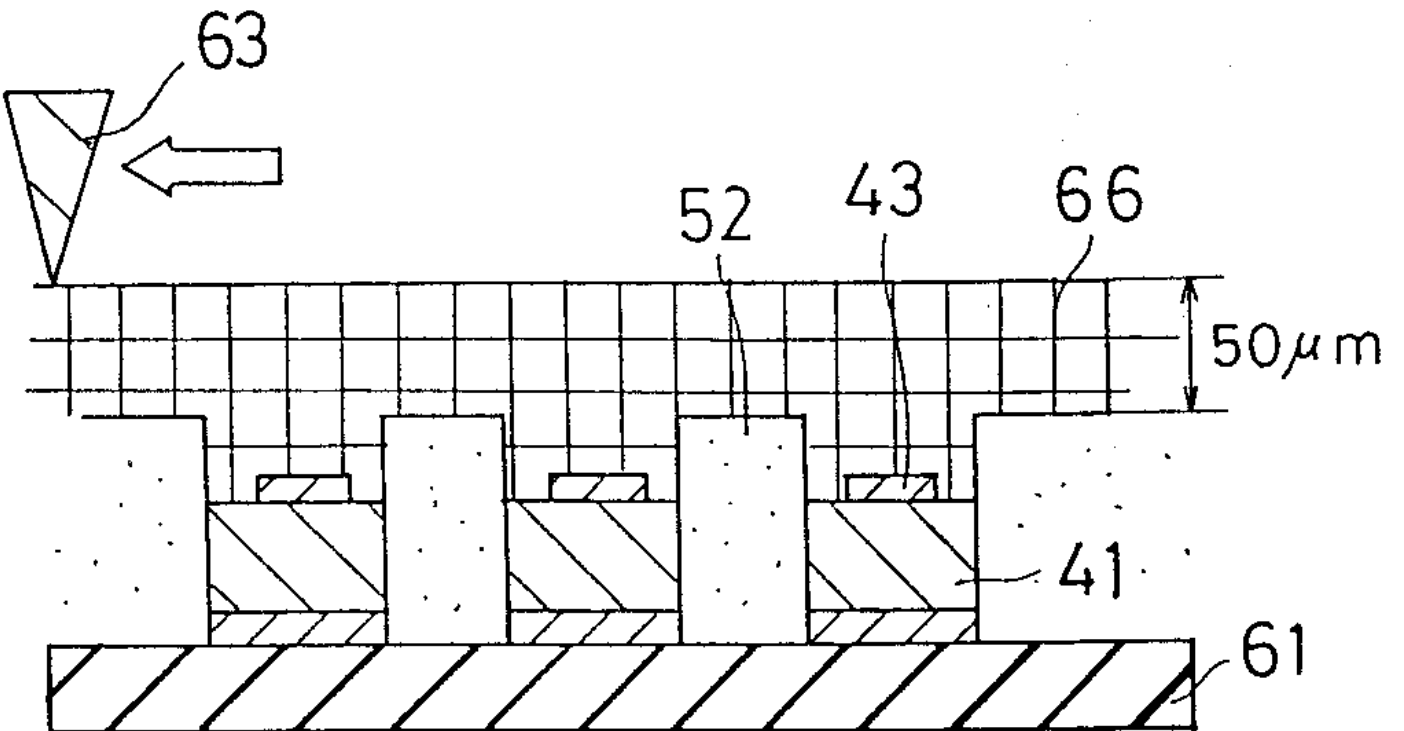
7b



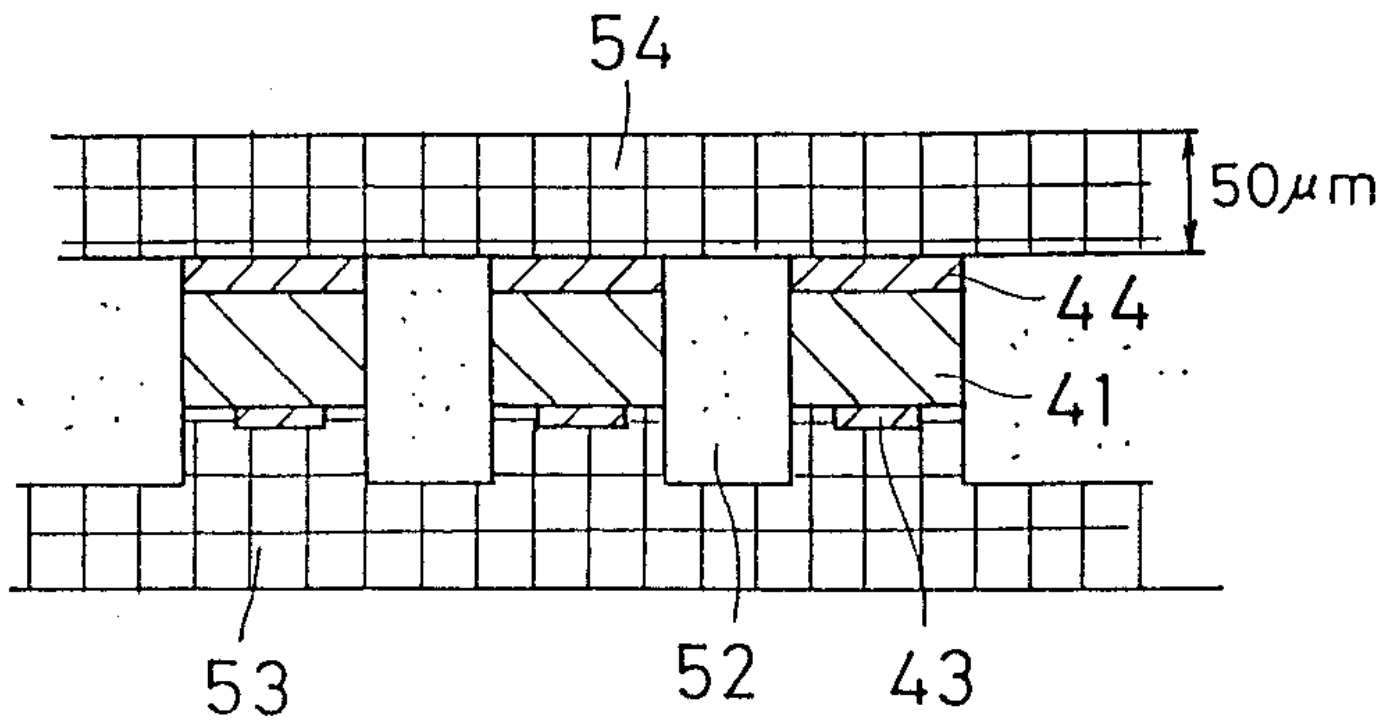
8a

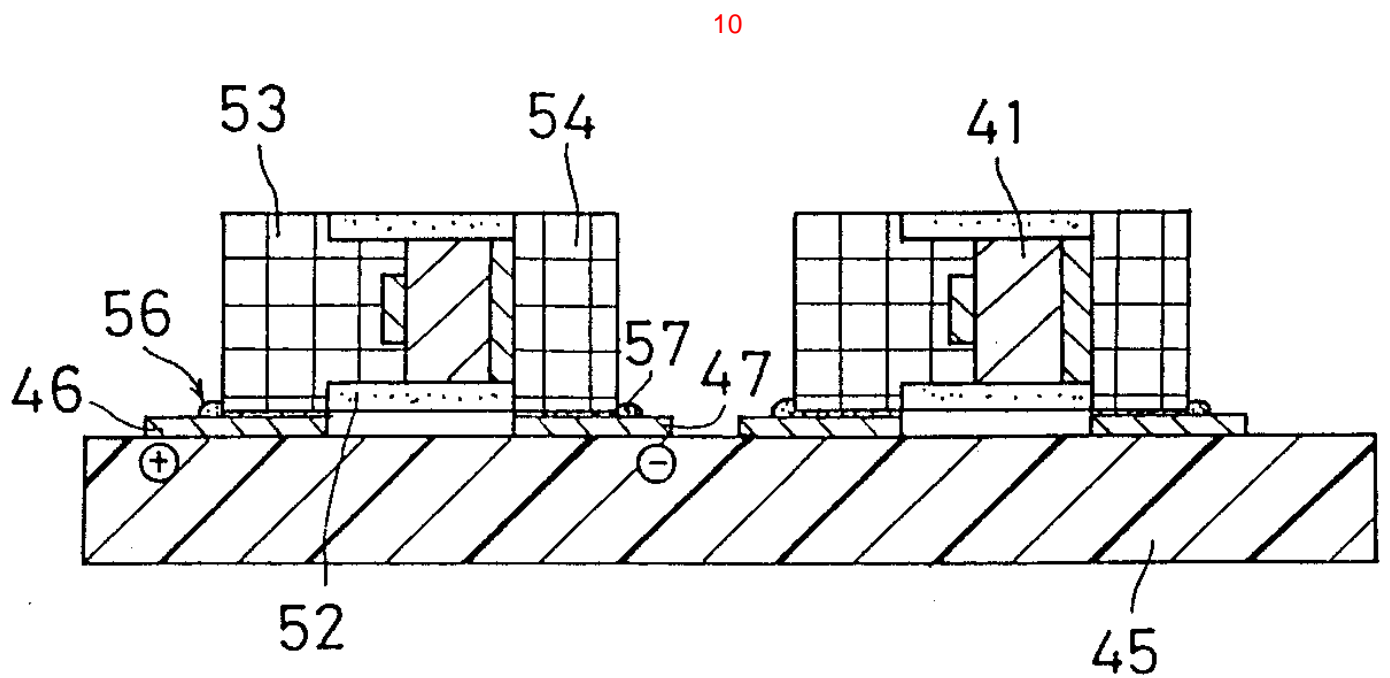
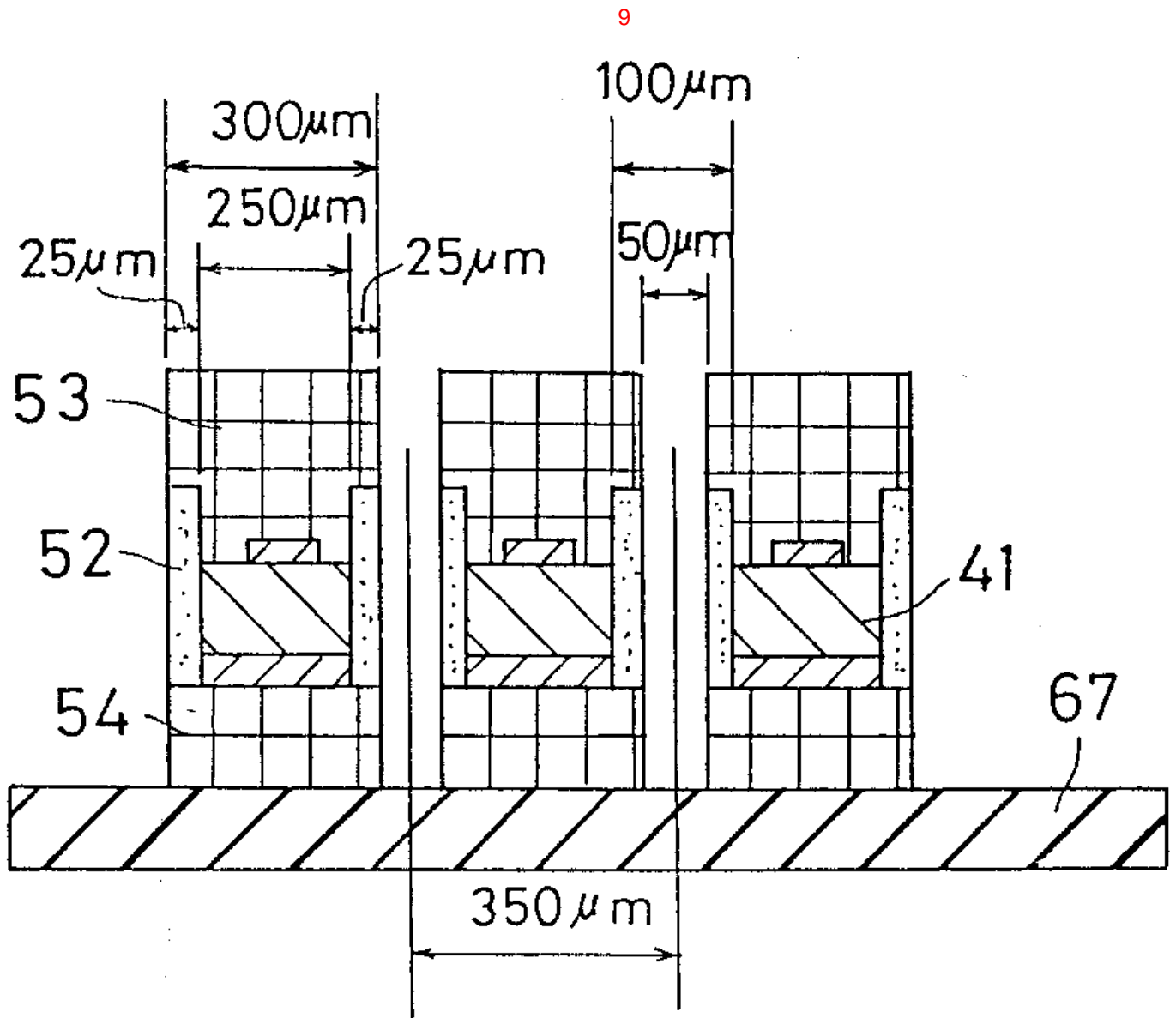


8b

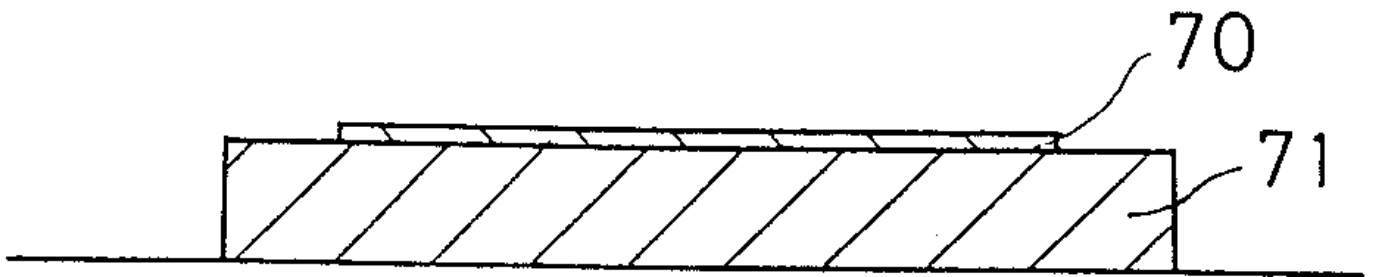


8c

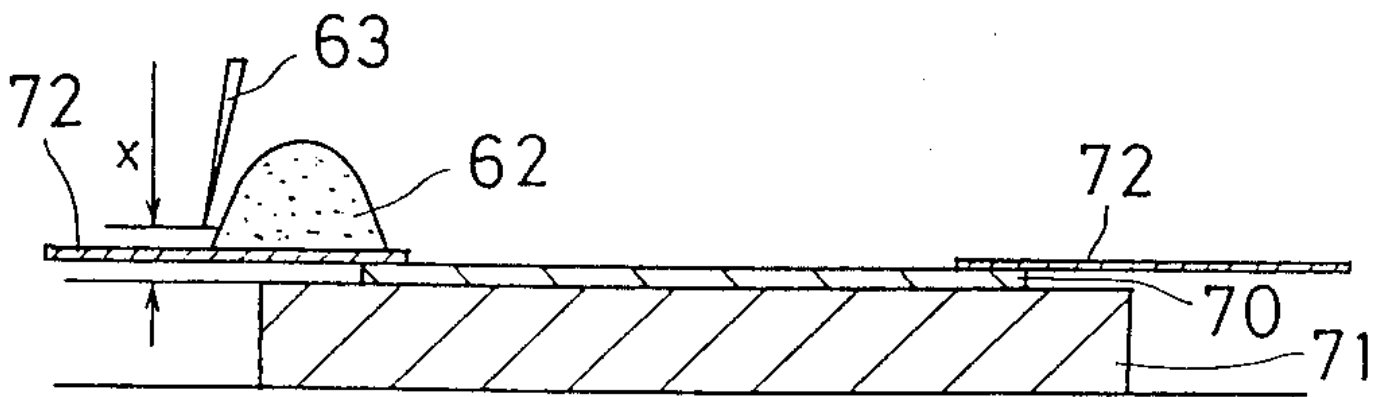




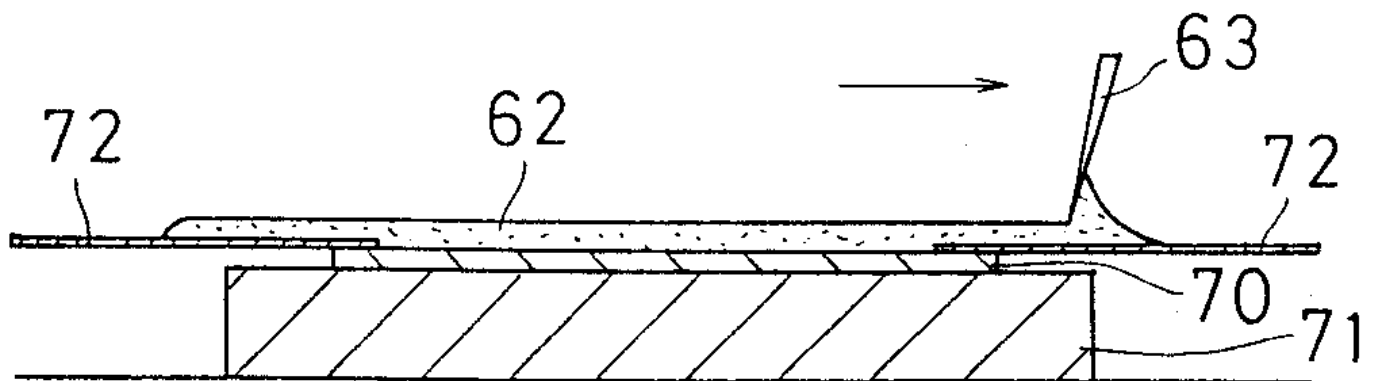
11a



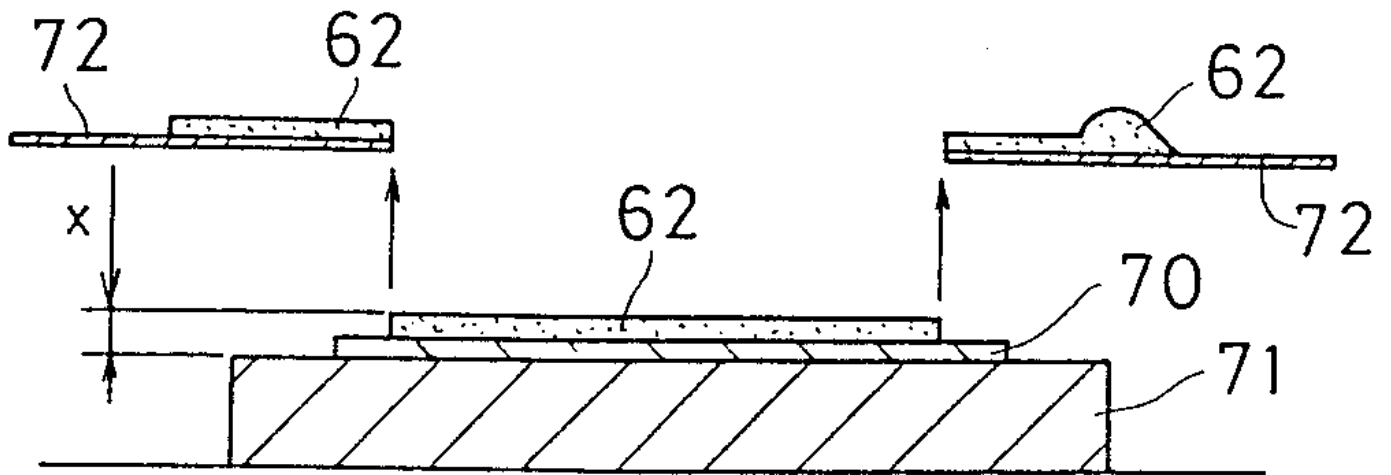
11b



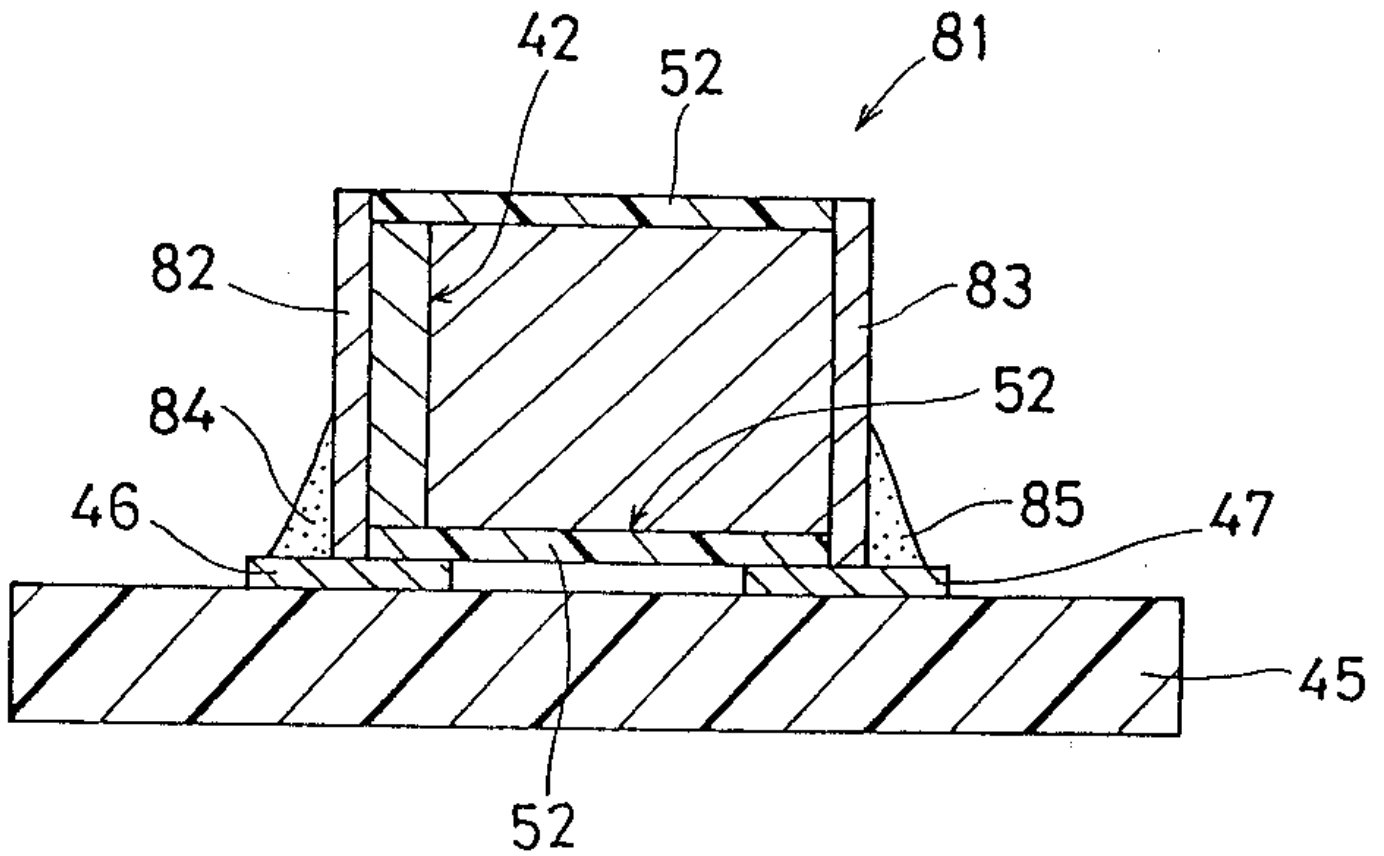
11c



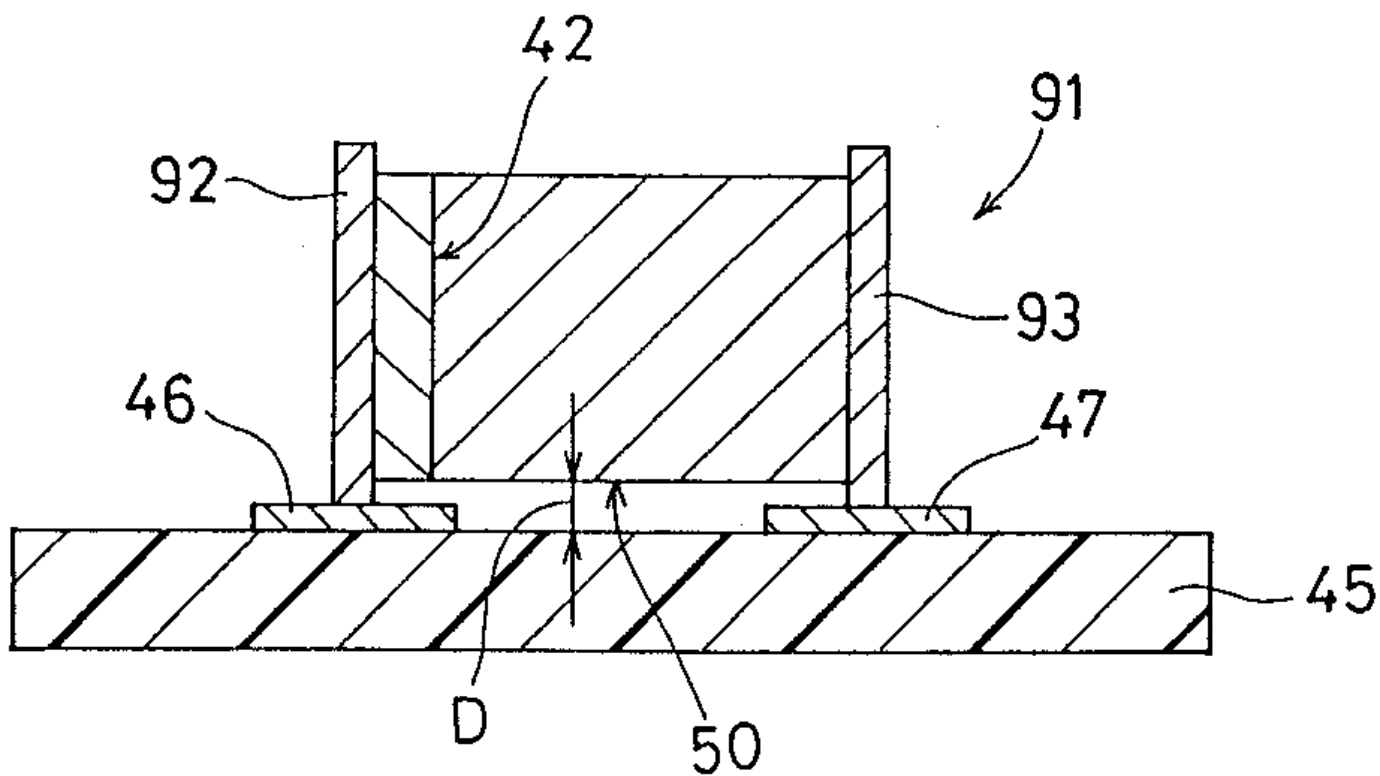
11d



12



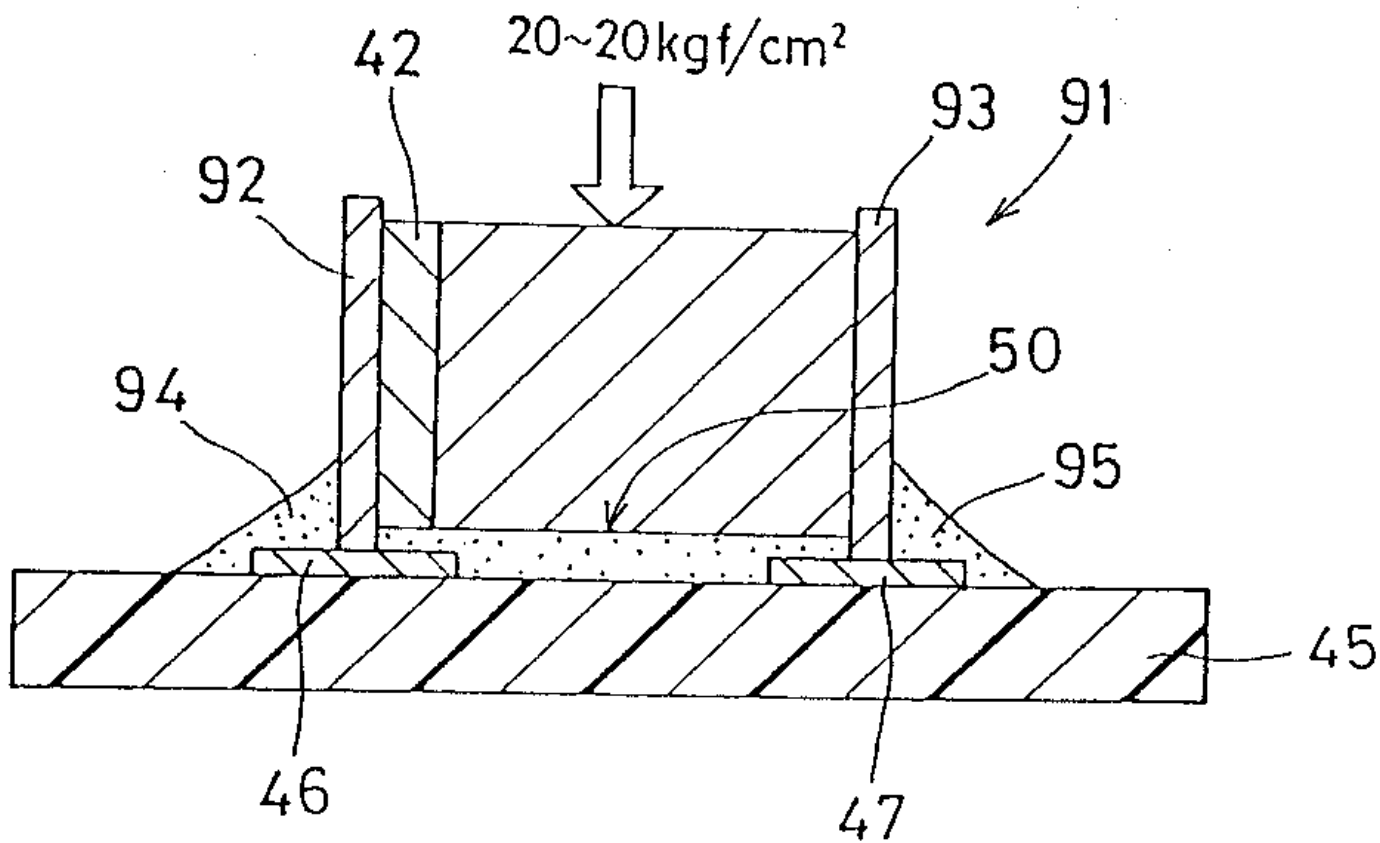
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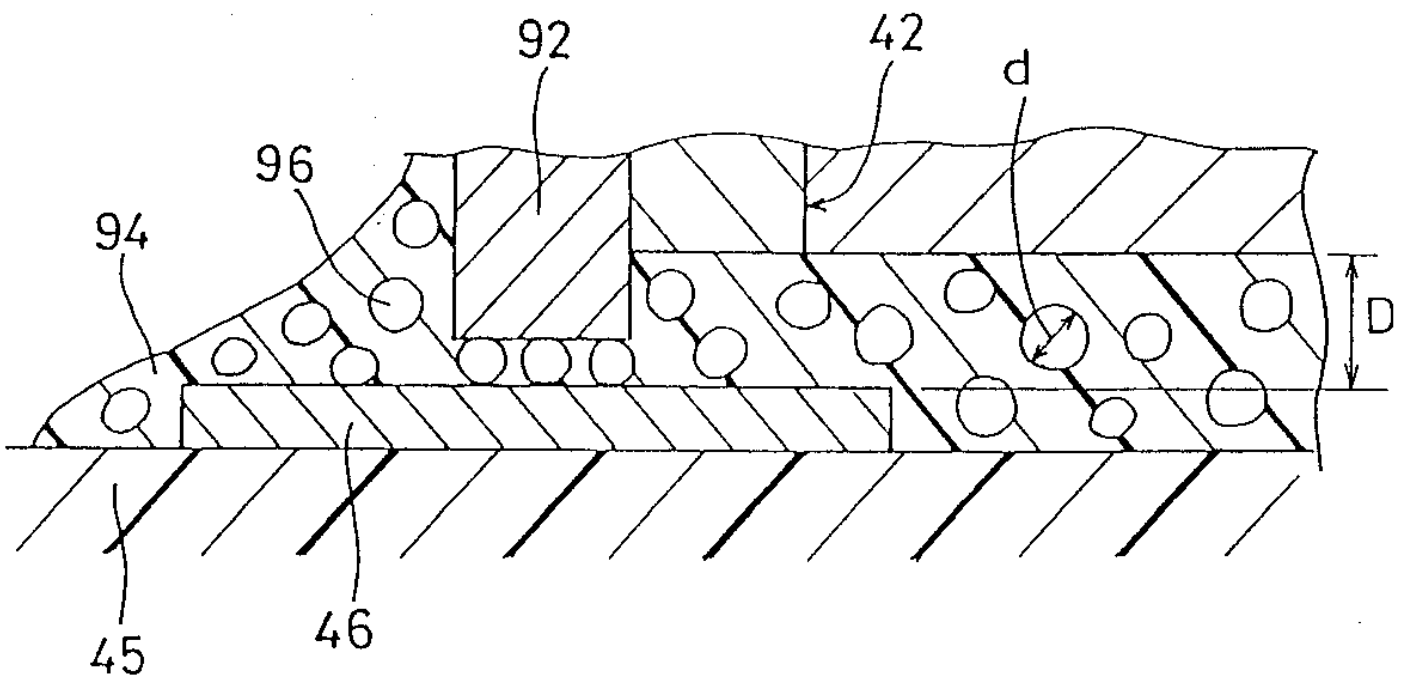
14

가압

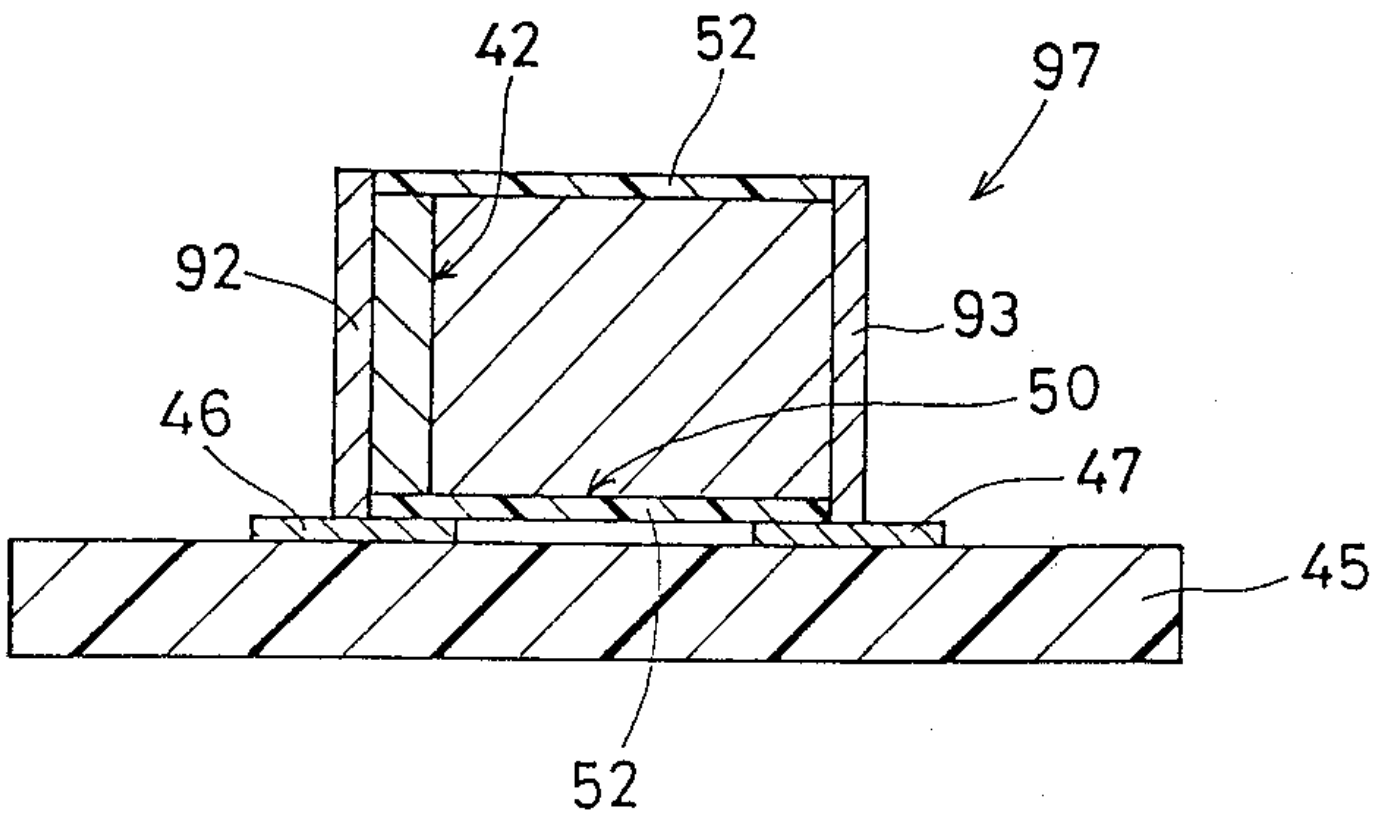
20~20kgf/cm²



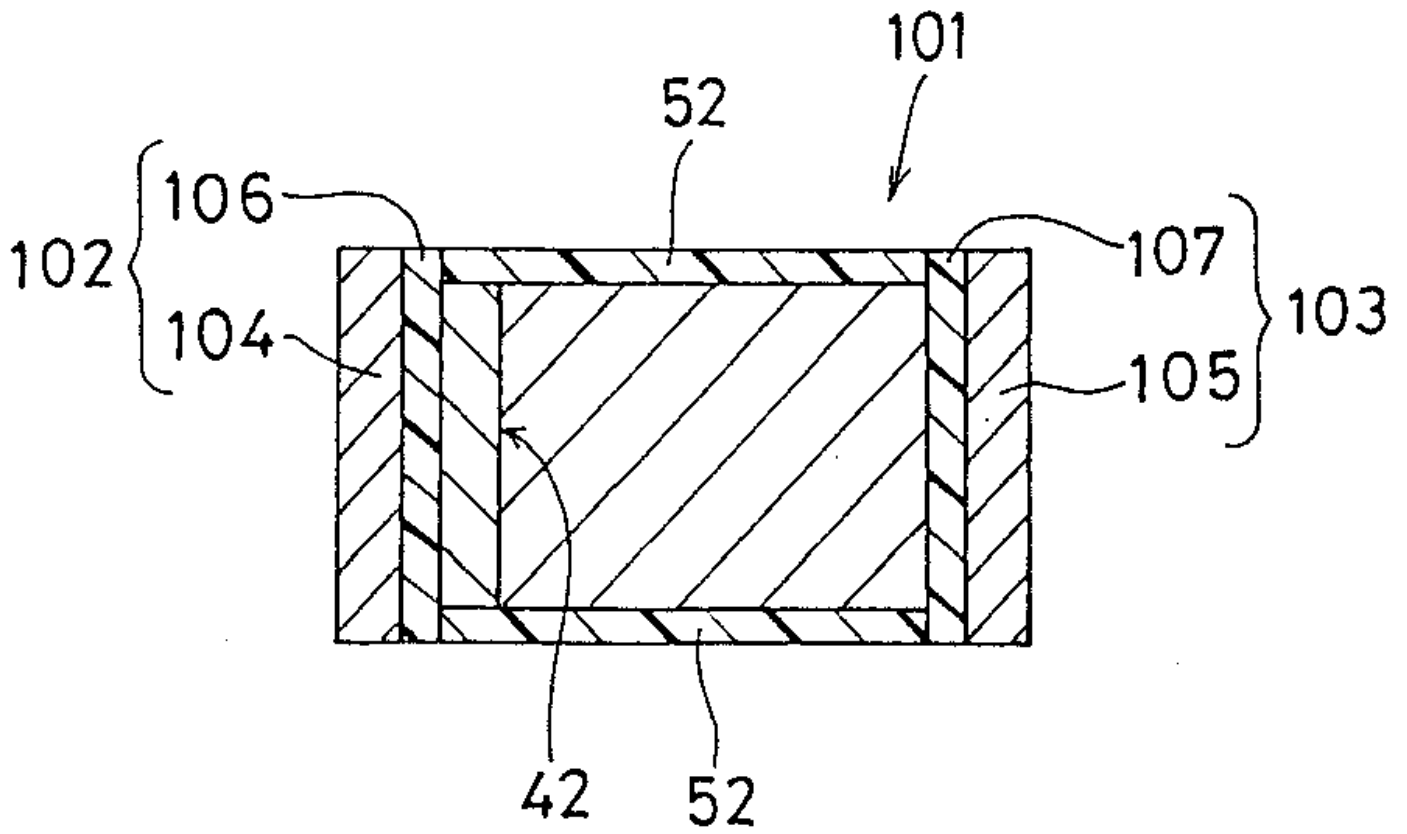
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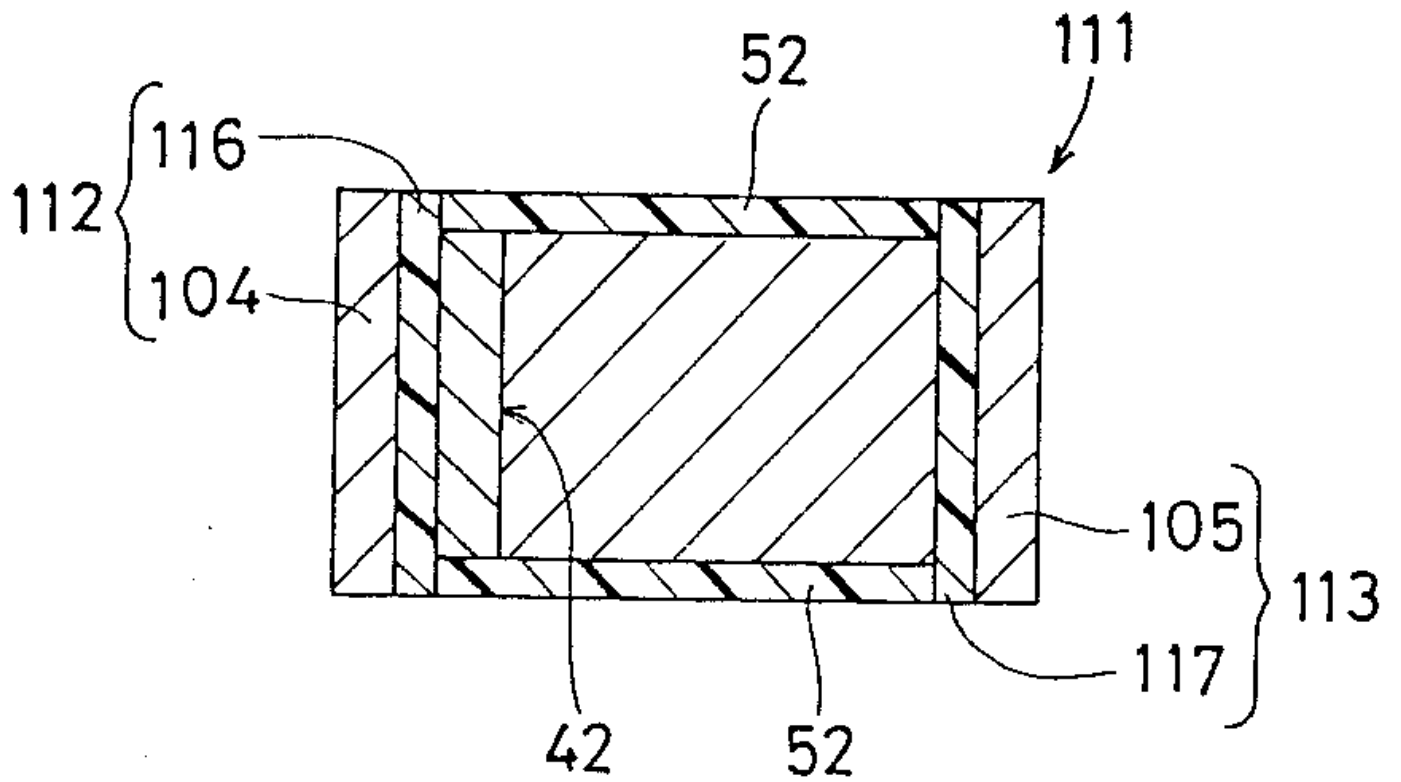
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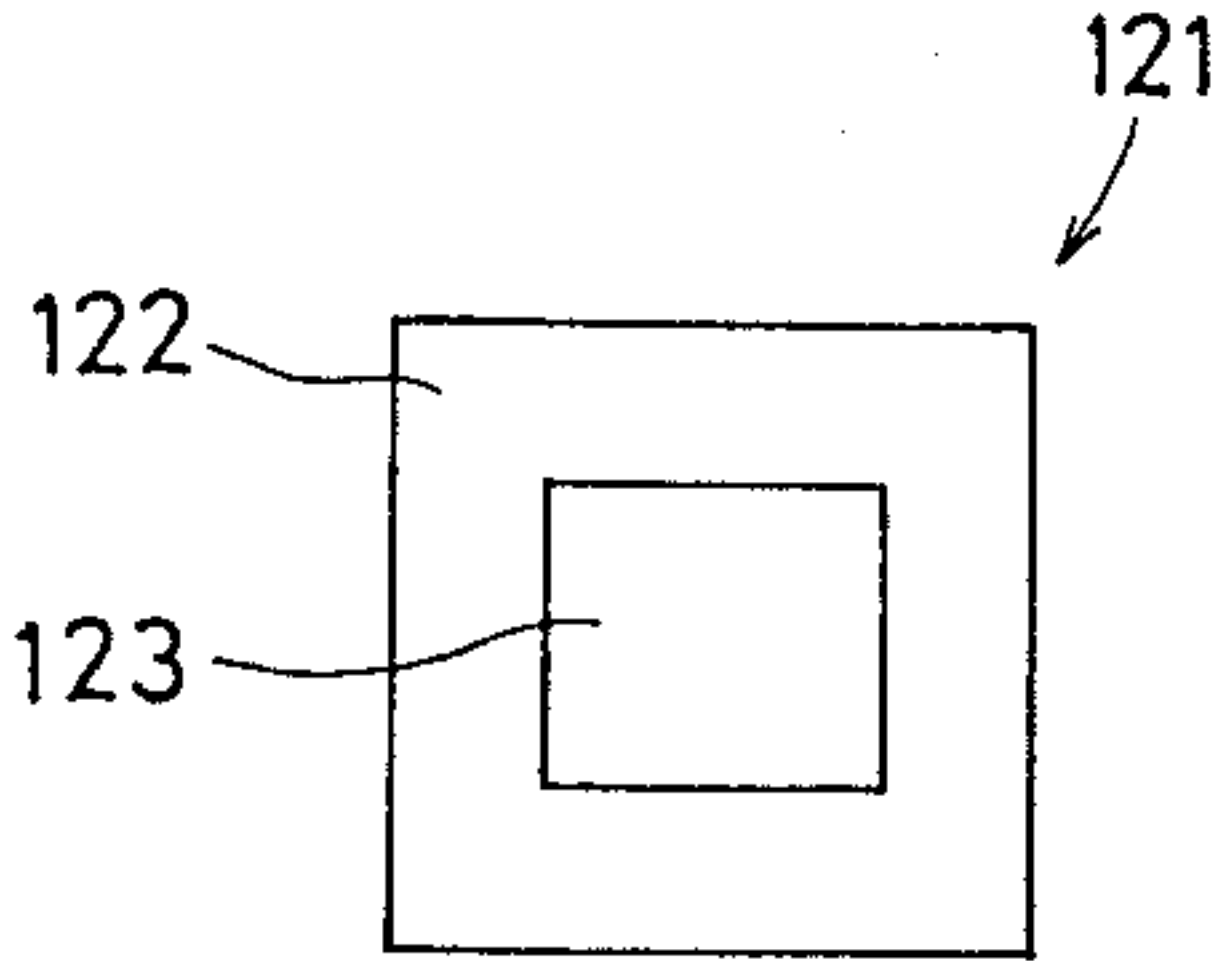


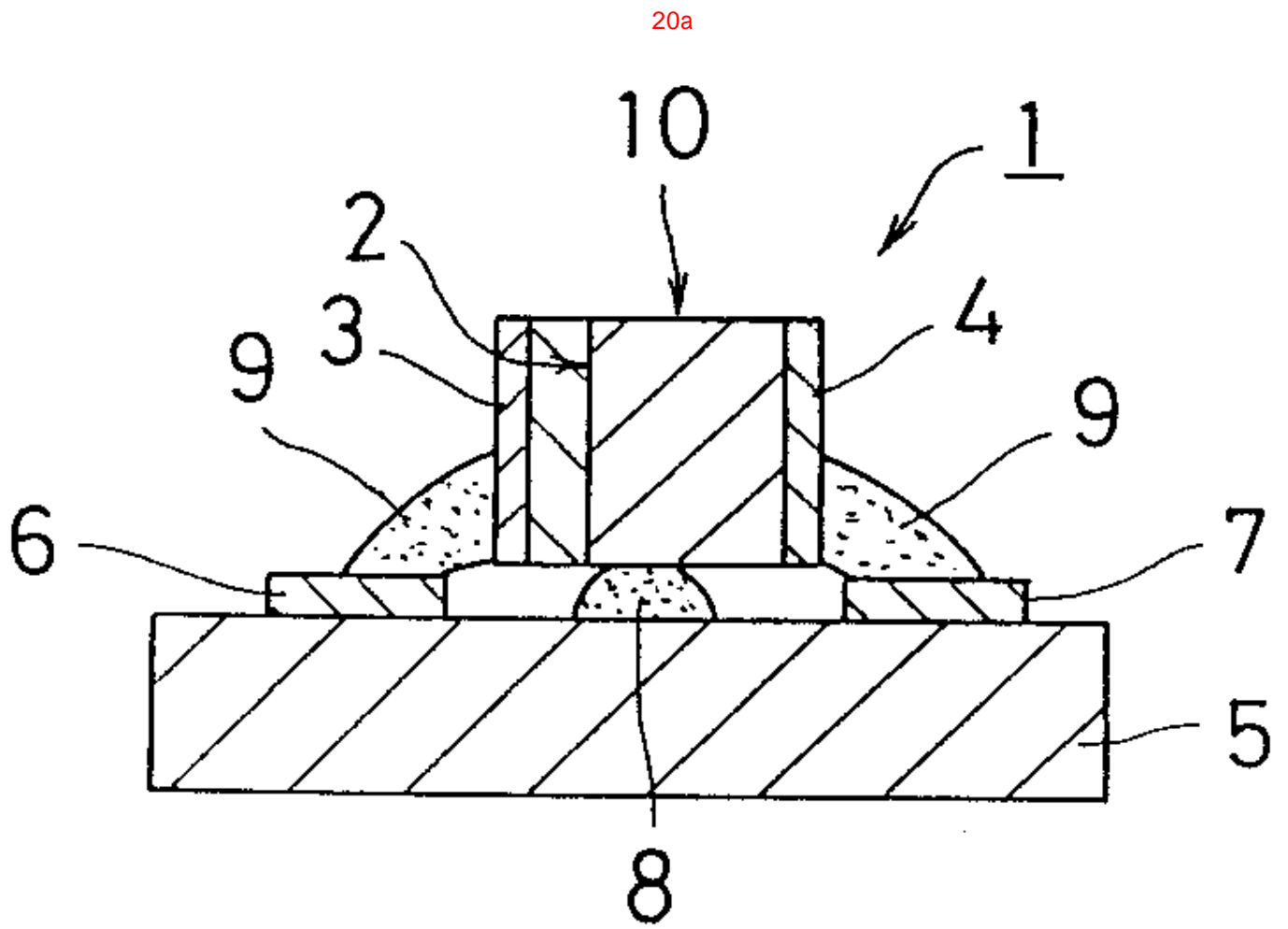
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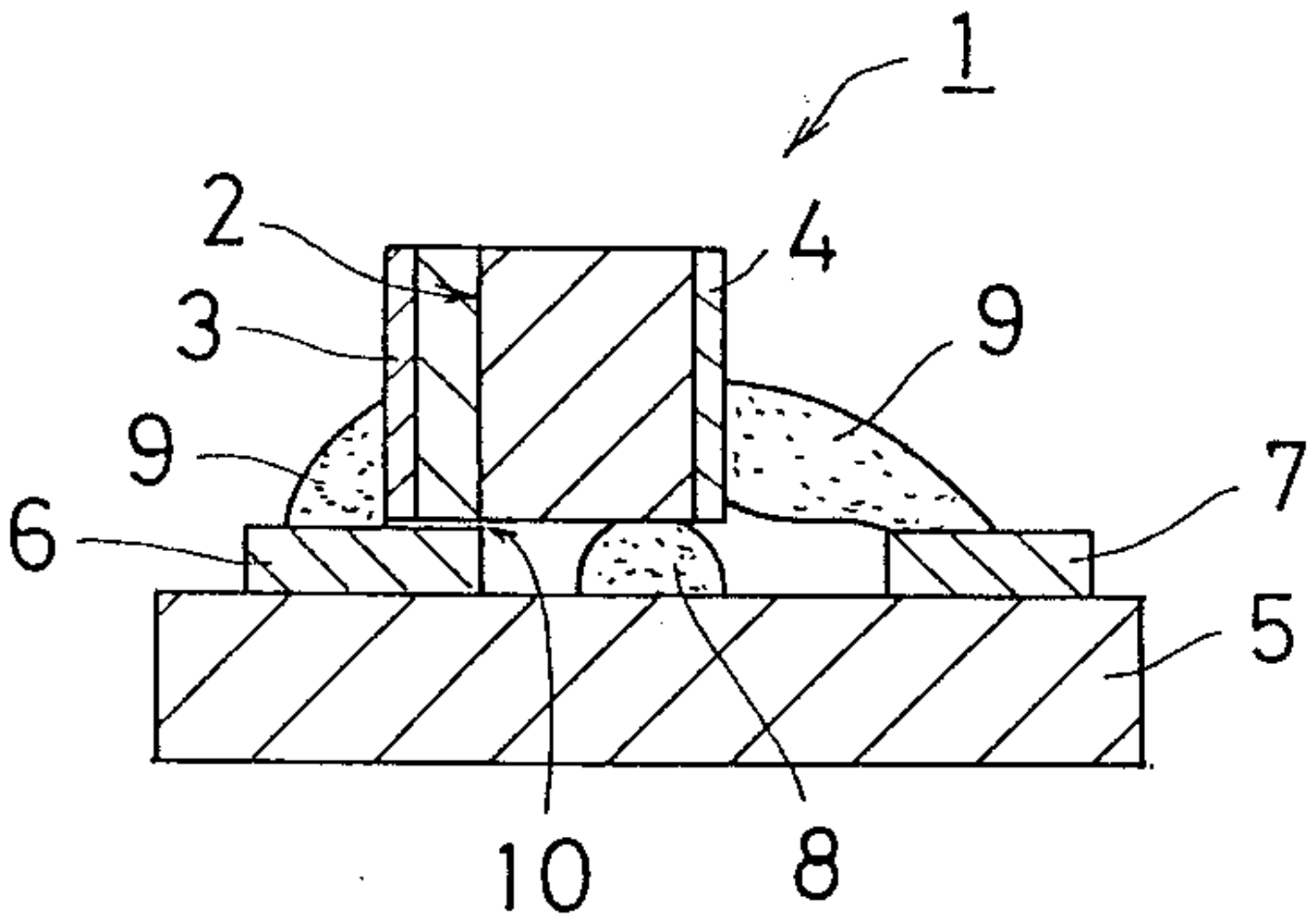
18



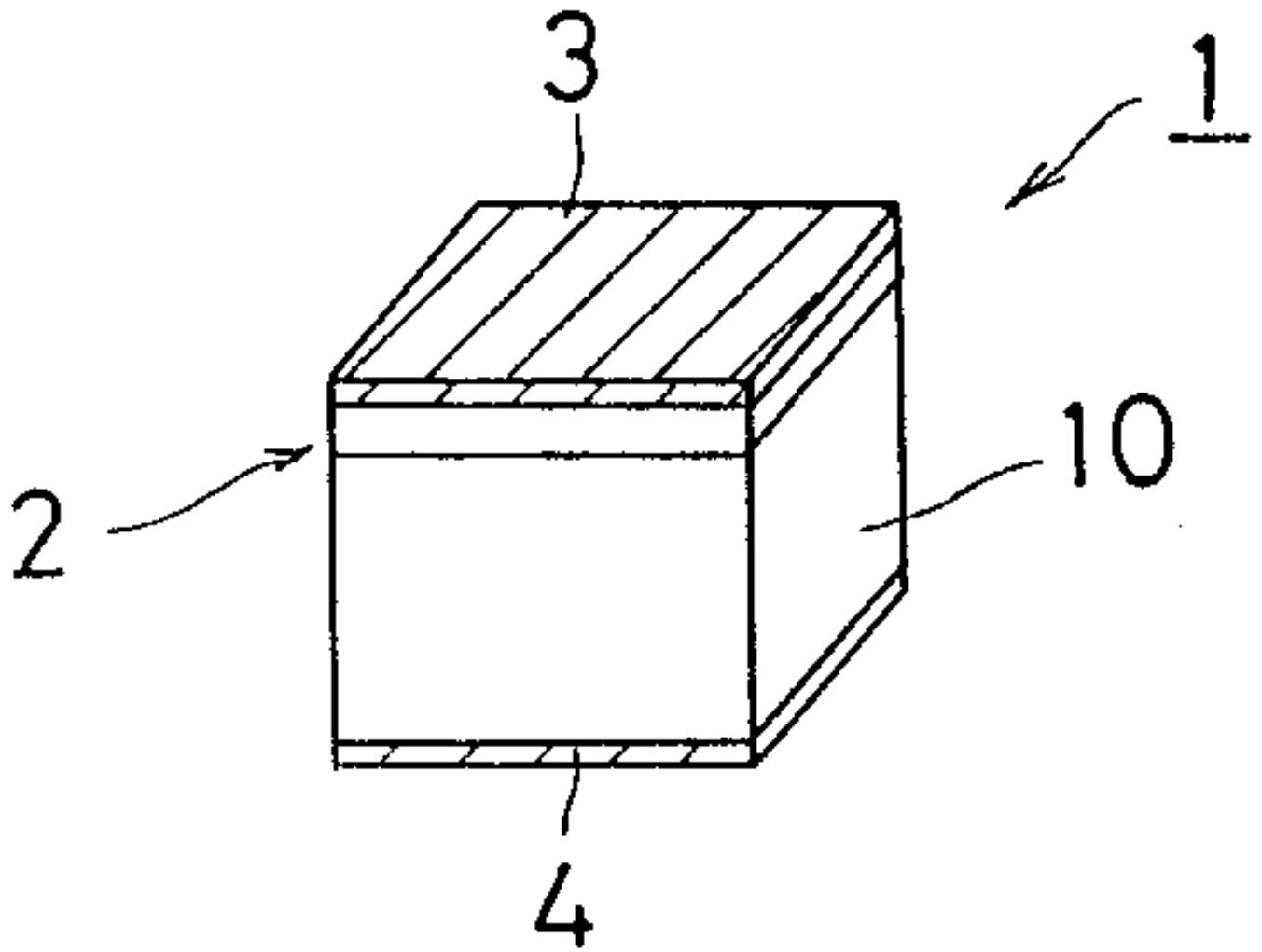




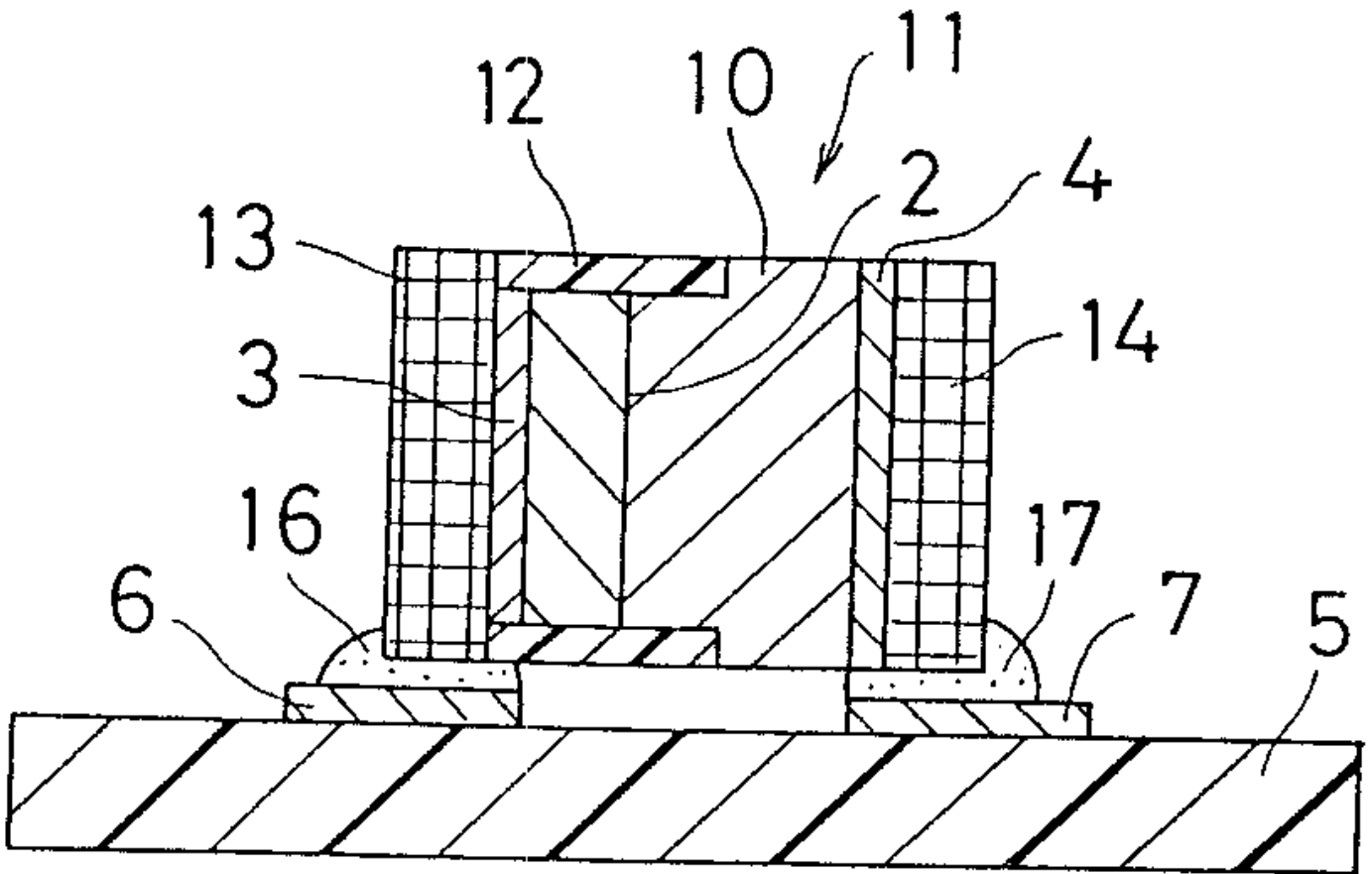
20b



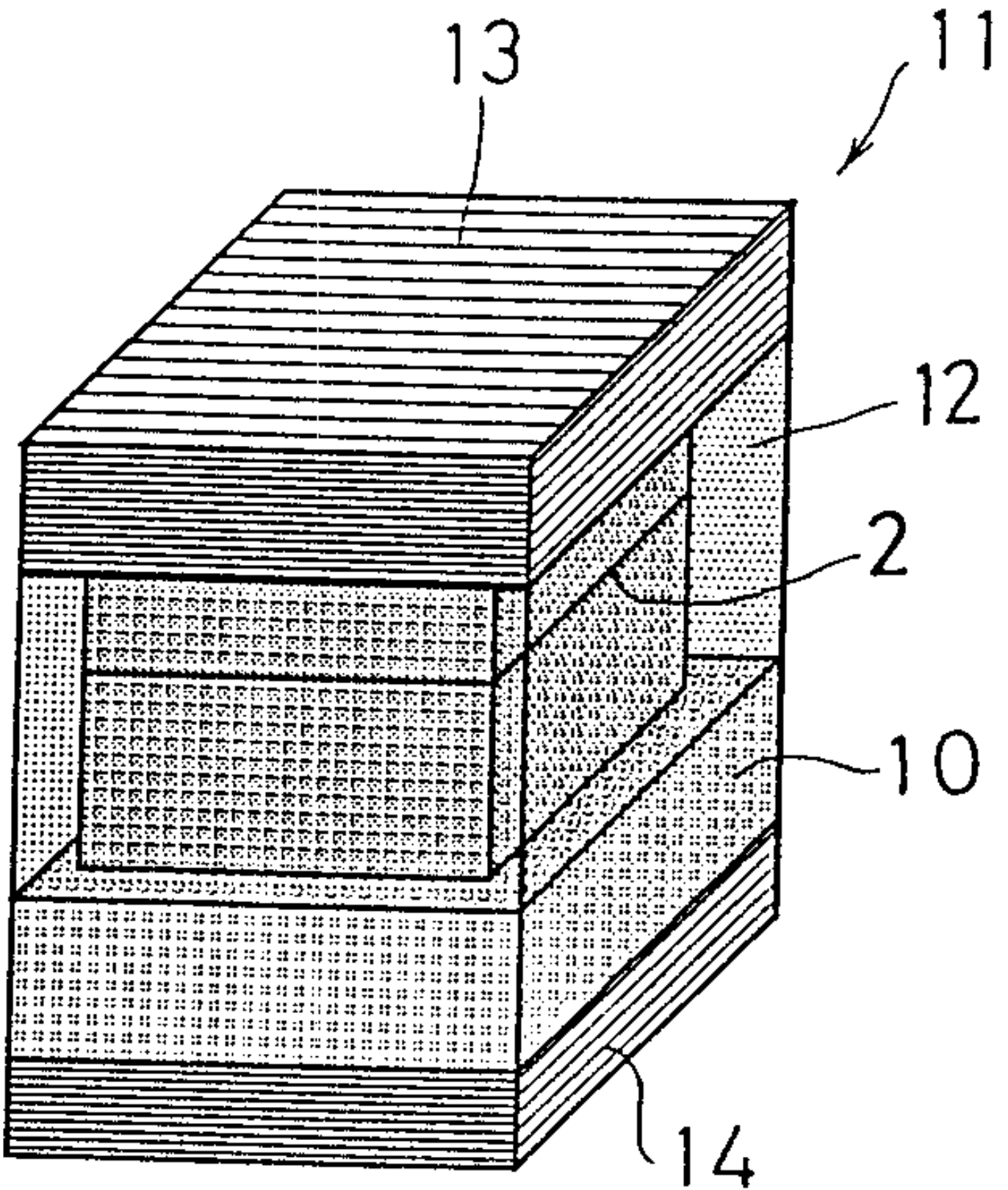
20c



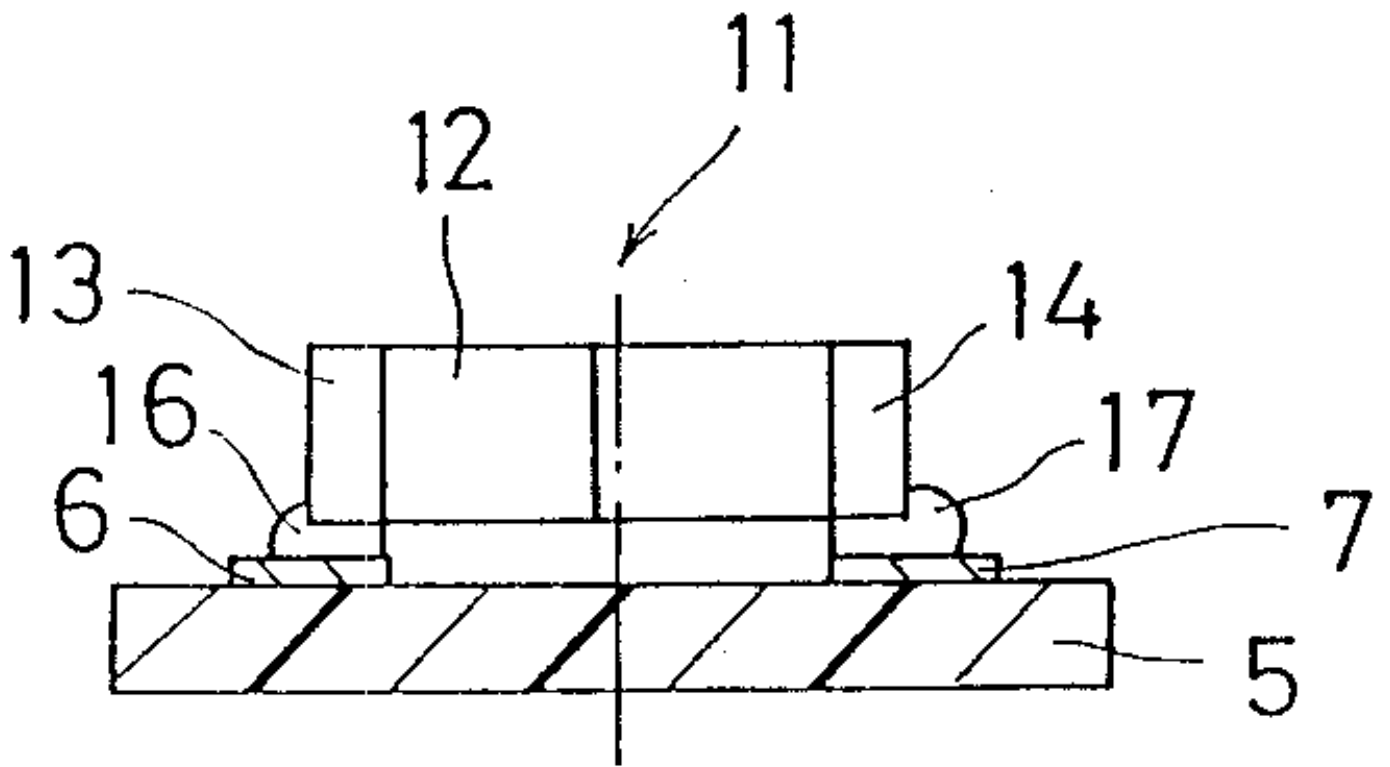
21a



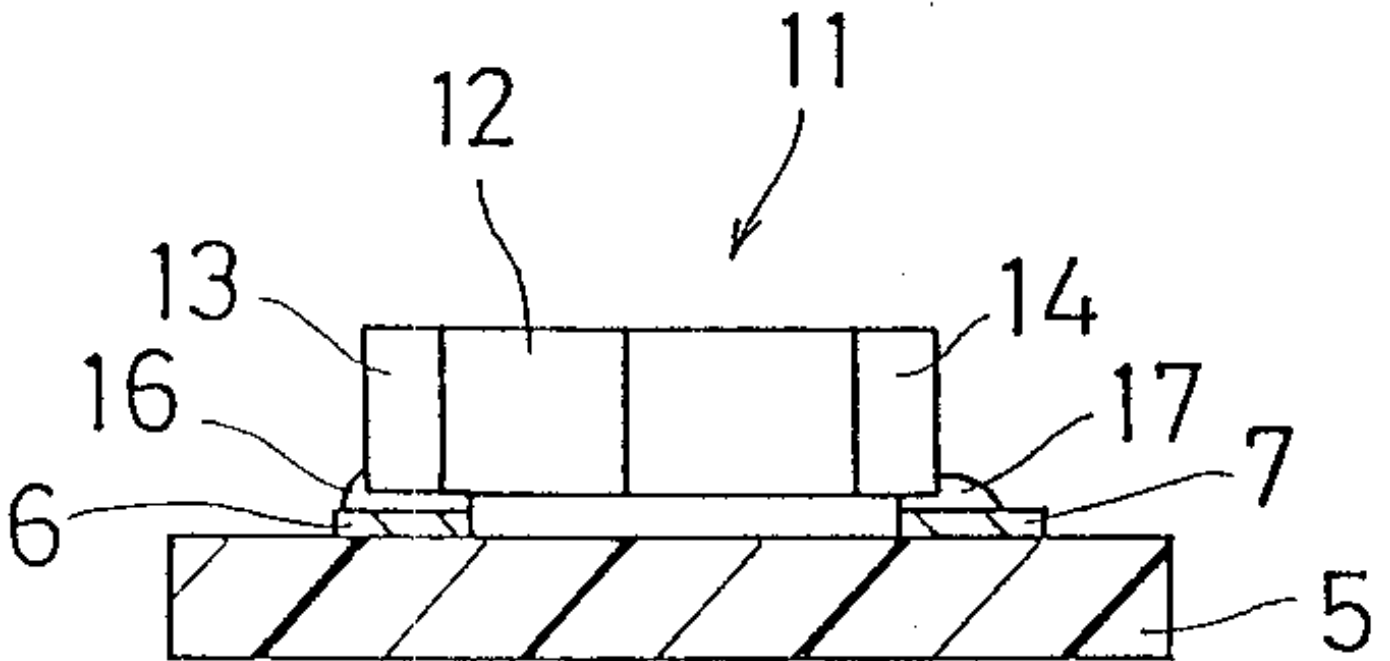
21b



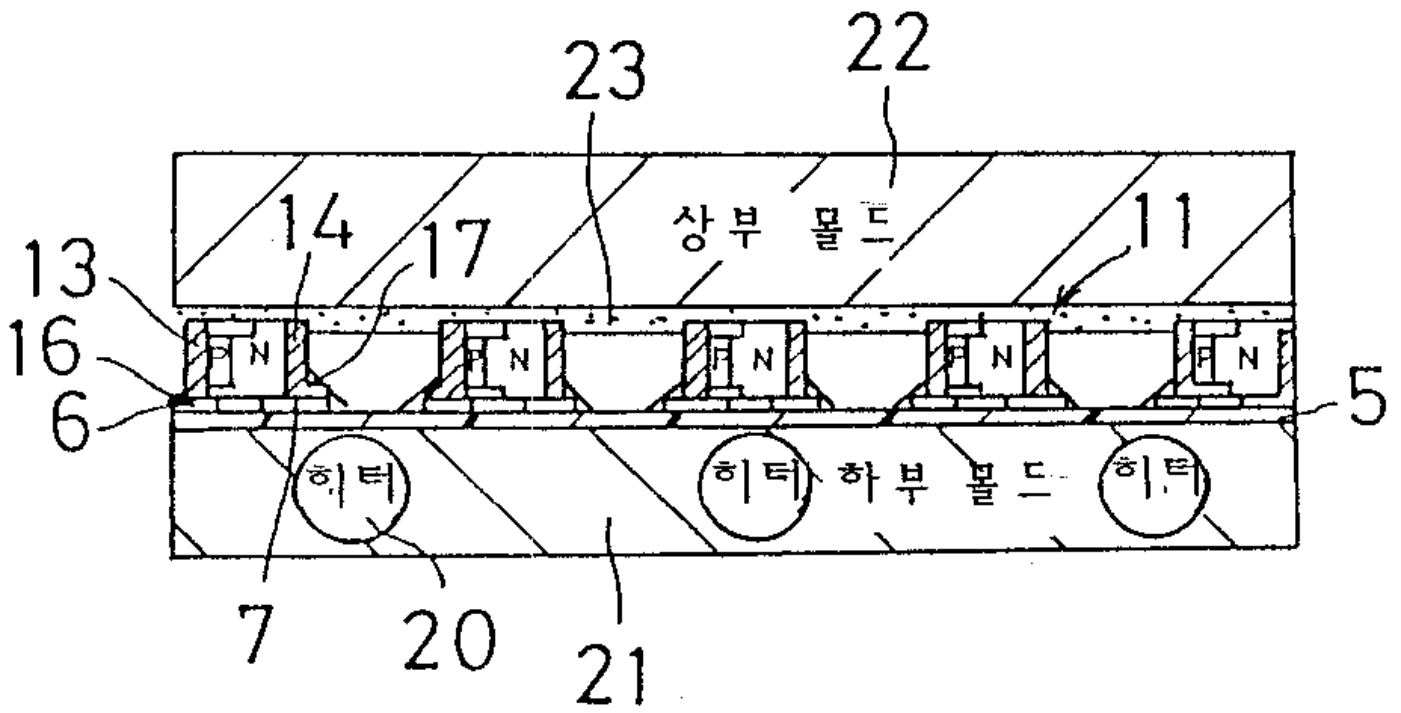
22a



22b



22c



S1	<p>P 증착</p> <p>Au AuBe</p>	
S2	<p>P 전극 포토 에칭</p> <p>유리 마스크 레저소현상제 린스</p>	
S3	<p>SCUM 제거</p> <p>P 전극 에칭 레지스트</p> <p>P 전극 레지스트 제거</p> <p>P 합금</p>	
S4	<p>레지스트용 세정제 전처리</p> <p>보호용 레지스트 포토 에칭</p>	
S5	<p>하프 다이싱 시트 블레이크</p> <p>원 이터 제거</p> <p>H₂SO₄, H₂O₂</p> <p>다이싱 후 에칭</p>	
S6	<p>보호 레지스트 제거</p> <p>OMR 박리액</p>	
S7	<p>수지 아세톤</p> <p>수지층 형성 (포토 에칭)</p>	
S8	<p>Ag 페이스트 전극 형성</p> <p>Ag 페이스트</p>	
S9	<p>시트 블레이크</p> <p>풀다이싱</p>	

단위: μm
수평균 TYP 값