

가 가 ,

2

, , ,

, 2

, 가 ,

, 가 .

(基材)

- up method)

, 가 (build
가 .

가 , (via hole) (conductive connection)
(opening portion)

가 가 , 가
가 가 , ,
가 .

, 가

가 , 가 ,

9 - 23065
(electroless plating)
6 - 314878

가
, 가 ,

(electrolytic plating)

가
가
가
가
(低部)

가 가

가
가
(mask layer)

(opening) 가 (全面)

가 가

1 4 1

(1a) (非)

(1b)

(1c)

(1d)

(1e) 가

(1d) (1e)

(1e)

가 가
(hole) 가

가

(1a)

(1e)

(soft etching)

가

가

(1a)

가

(1e)

(1a)

(1a)

(1e)

1

가 가
가 가
가 가

2

(2a)

가

(2b)

가

(2c)

(2d)

2 , 가 ,

, 가 .

(2a) ,

, 가 가

, , , - , - , , , ,

2 , 1 가
가 가 ,

3 , ,

(3a) , ,

(3b) ,

(3c) ,

(3d) .

3 , ,
가 가 가 , ,
가 가 , ,

(3a)

(opening)

3

가 가

가

4

(4a)

(4b)

(4c)

4

가

4

가 가

가

(chip)

가

가

1

1

(1) (3)

2 1

(4) (6)

3 1

(7) (9)

4 1

(10) (12)

5 1 (1'), (4'), (9') .
 6 .
 7 2 (1) (4) ,
 8 2 (5a) (6) ,
 9 2 (7) (9) .
 10 3 (1) (3) ,
 11 3 (4) (6) ,
 12 3 (7) (9) ,
 13 3 (10) (11) .
 14 4 (1) (2) ,
 15 4 (3) (5) .
 16 가 .

11 , 20 , 21 , 22
 , 23 , 24 , 24a , 25
 , 27 , 40 .

[1]

1 (1) 가 (21) (22) ,
 , (21)
 (22) ,
 1 (2) , (22)
 (10) , , , , ,
 (22) .
 , 가 가 (metallic ion source), (al
 kaline source), , (沈
 着)

1 (3) (10) (22) (11) (11)

가 가

1 (2)

(10)

(1a)

(22) (10) (11) (11) (10)

(11)

(1b) 2 (4) (11) (24a) (22) (11)

(24)

(1b) (24) 20 200 μm (24) 가 (24)

(24a)

(1c) 2 (5) (24) (24a) (25)

(25)

100 300 μm (25) (가) (24a) (1c) (24)

(25)

(1d) 2 (6) (24) (24) (undercut) 가

가 (24a) (24)

가 2 (6) 가

(24) (11) (24) (24a) (11) (

2 (6) (11) (22) (/) ,

(24a) (25)

가
 가
 가 (11), 4 (12) (11) (27), (22), (22) (24a) (24a) 가

가
 1, 2
 3, 3 () 2, 1
 가 2 () 1, 2

[1]

(1)
 (2), (1a)

가
 가
 (3) () (dry film res
 ist)

(銅箔) 가 () 가

(4) 가 가 , 가 가 , 가 가

(5) (1d) (1e) , (26a) . , , .

(6) 가 , 가 . , .

(7) 1 (1) (1a) , 5 (1') (1a) , (22) (22) (26) (29) (10) (24) (5 (4')) , 가 (5 (9')) .

[2]

7 (1) (21) , (22a) (21) , (22a) 가 (22a) . , , , , .

(2a) 7 (2) 가 , (21) (22a) (22a) (22) (23) .

(2a) , , , , , , .

(22a) , (23) (23) .

(photo - decomposition), 가 (photo - crosslinkage) (photo - polymerization) / 가 (laminating) .

() (laminator) ,가 가 (coaters) () . (

(23) (potho plotter) (removed pattern)

(23) 가 (22a) (22) (22a) (24) (浸漬) (22a)

(22) (23) , 10 100 μm (23)

(2b) (22a) 7 (3) 가 (24) (23) (22a) (24) (24) 20 200 μm, (24) 가 (2b) (24a)

(2c) (25) 7 (4) (24) (24a) (25) 20 μm (25) 가 () (24a) (24) (25)

(2d) (24) 8 (5a), (5b) (22a) (24) 8 (5b) 8 (5a) (22a) (24) 4) (23) (24) (24a) (23) 8 (5a), (5b)

(23)

(22)

(24a)

(25)

, 8 (6)

(25)

(25)

, 9 (7)

(26)

(26a)

(26a)

(24a)

가

,가

, 9 (8)

가

(26)
가

(26a)

(24a)

가

, 9 (9)

가
가

(27a)

(26)

가

1

6

(30)

가

가

가

가

9 (9)
(23), (23)

(22),
(24a)

(22)

(24a)
가

[2]

(1)

(2)

)

(

, 11 (4) , (20a) , (23)
(22)()
(24a)
(24a) , (23)

가

(24a) (23) (20a) (20b)
(23) , (22)
(24a) 가 ,
(23) (22)
, 5 μm

(3b) 11 (5) , (24a)
(24) ,
(3b) (24) , 20 200 μm,
(24a) (24) 가

(3c) 11 (6) (24) (24a)
(25) (25) () (25)
(24a)
100 300 μm, 가 , (3c) (24)
(25)

(3d) 12 (7) (24) , (24)
(23) (24a) , (23)가 - , - , ()
(24a) (25) 12 (7) (22)

12 (8) (25) , , , ()
25) , , ,

(4) , . 가 가
가 , 가 .

[4]

, 14 (1) (21) (22) .
가 , (21) .
(22) , .
(4a) , 14 (2) (22) (24) (24)
(22) (24a)

(22)
, 가 가 , , , .
, , .
, .

(24) , 20 200 μm, (4a) ,
(24) 가 (24)

a) (22) ,
가 (22) , (24) , , , , .
, (24) 가 , 가
가 .

(4b) , 15 (3) (24) (24a) (25)
(25) . (25) (가) (24a) ,
100 300 μm, 가 .

2.

1 ,

(1a)

(1b)

(1c)

(1d)

(1e) 가

3.

2 ,

(1a)

(全面)

(1e)

(soft etching)

가

4.

2 ,

(1a)

(1e)

가

5.

2 ,

(1a)

6.

2 ,

, , , - , - , , , , ,

7.

, 가 , , 가

8.

1 ,

(2a) 가 ,

(2b) 가

(2c) ,

(2d)

9.

8 ,

(2a) , .

10.

8 ,

, , , - , - , , , , ,

11.

8 10

12.

1 ,

(3a)

(3b)

(3c)

(3d)

13.

12 ,

(3a)

(opening)

14.

12 ,

15.

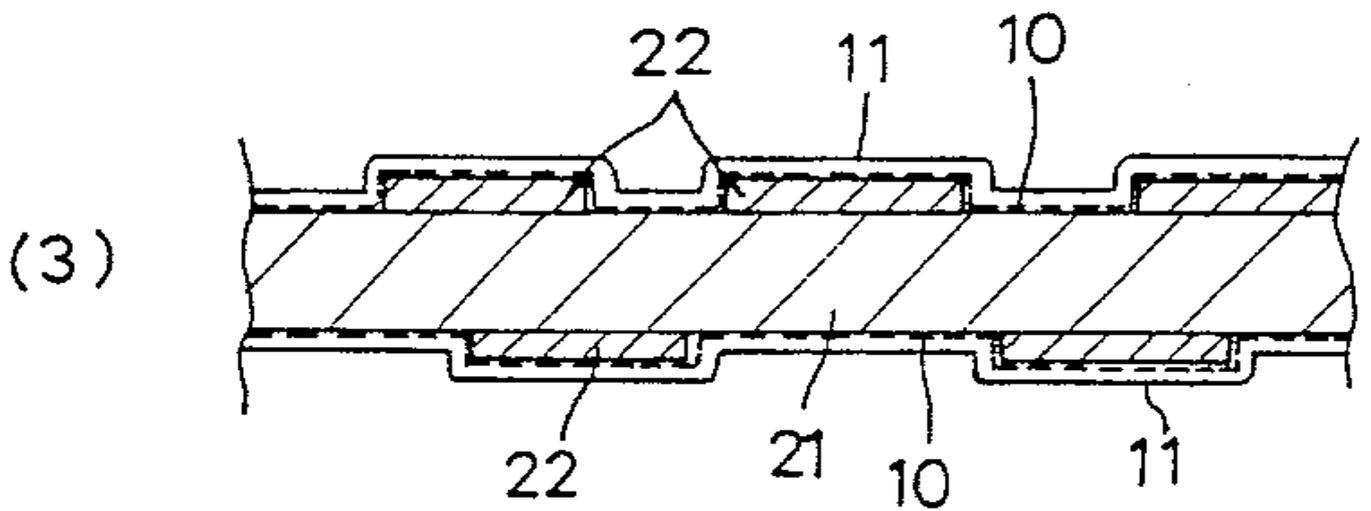
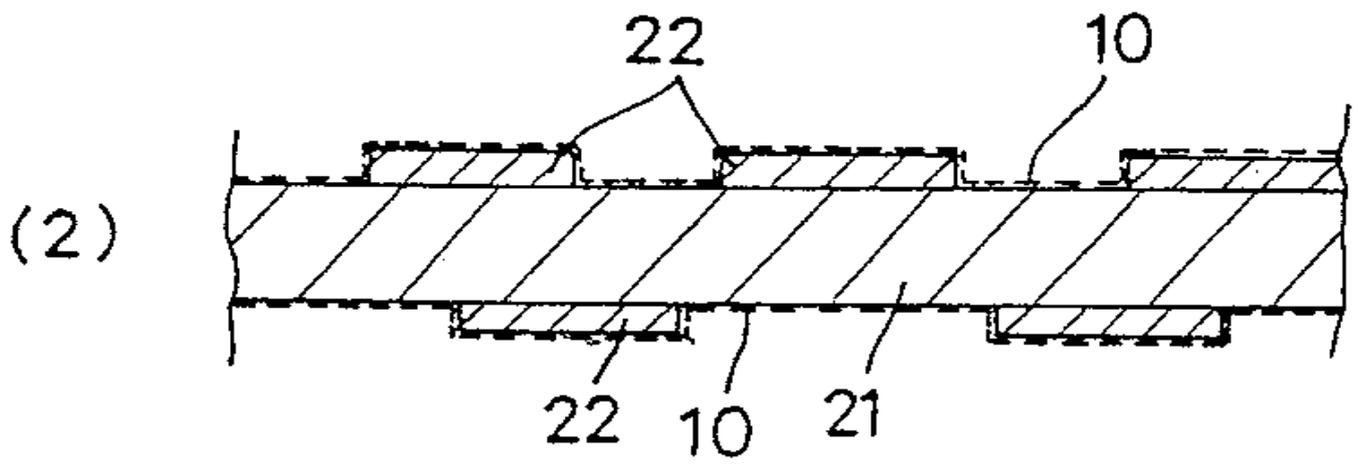
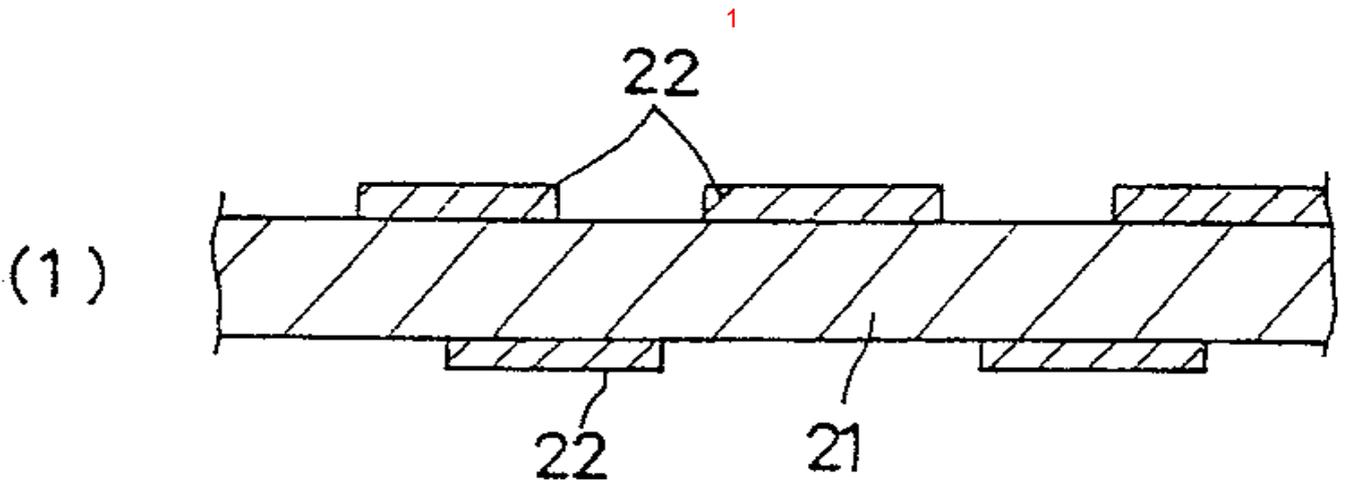
12 14

16.

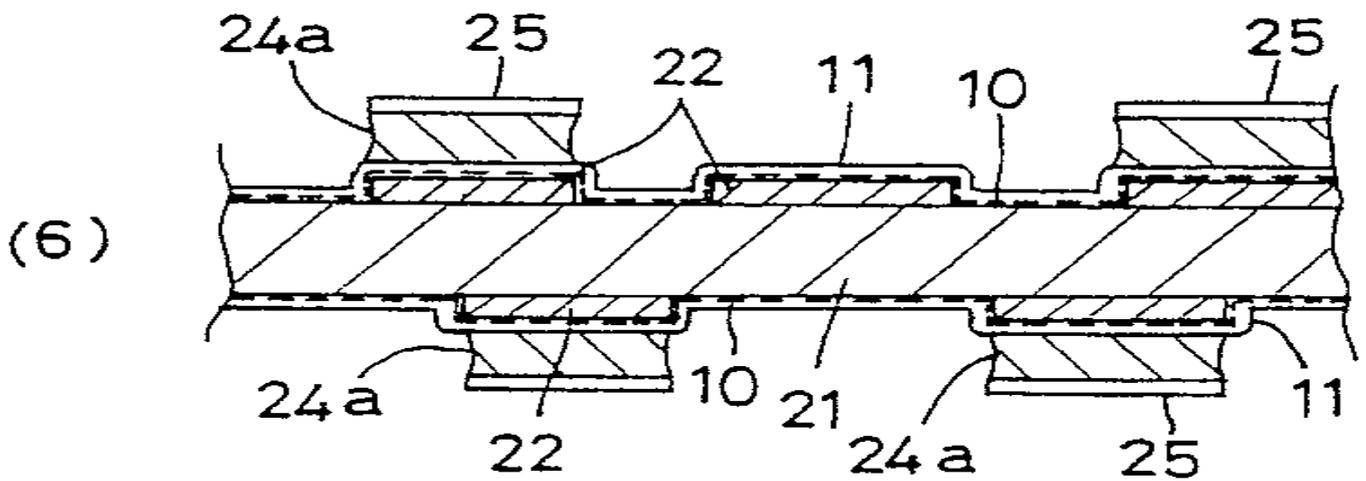
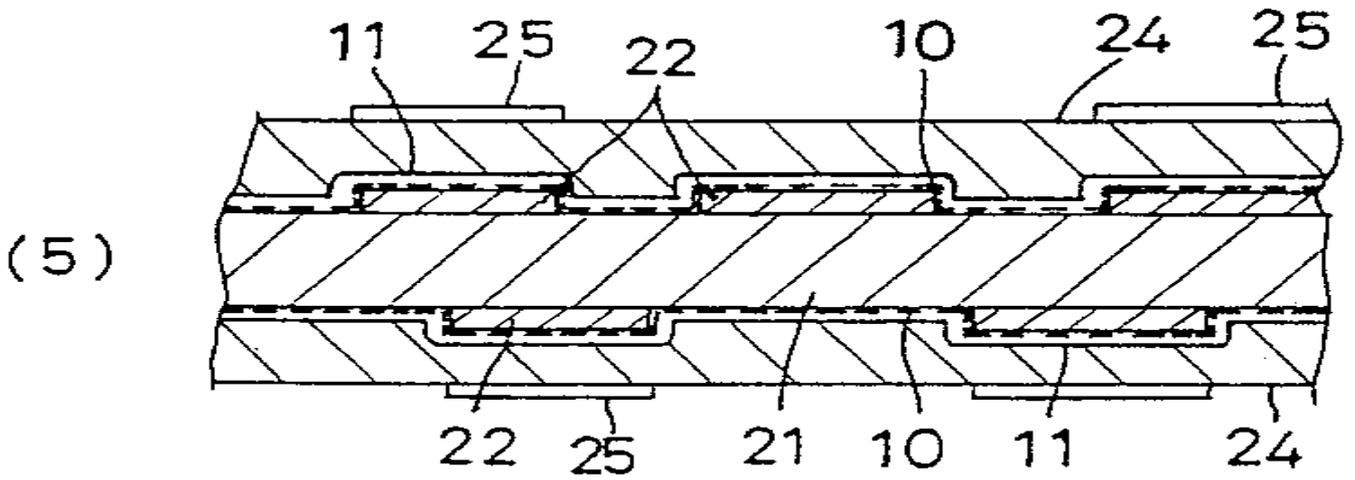
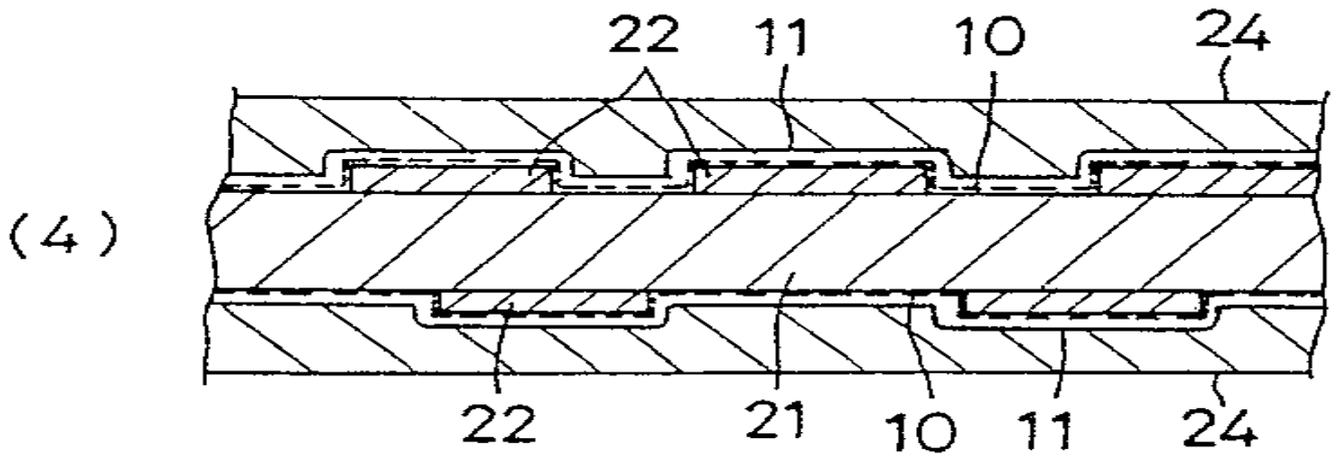
1 ,

(4a)

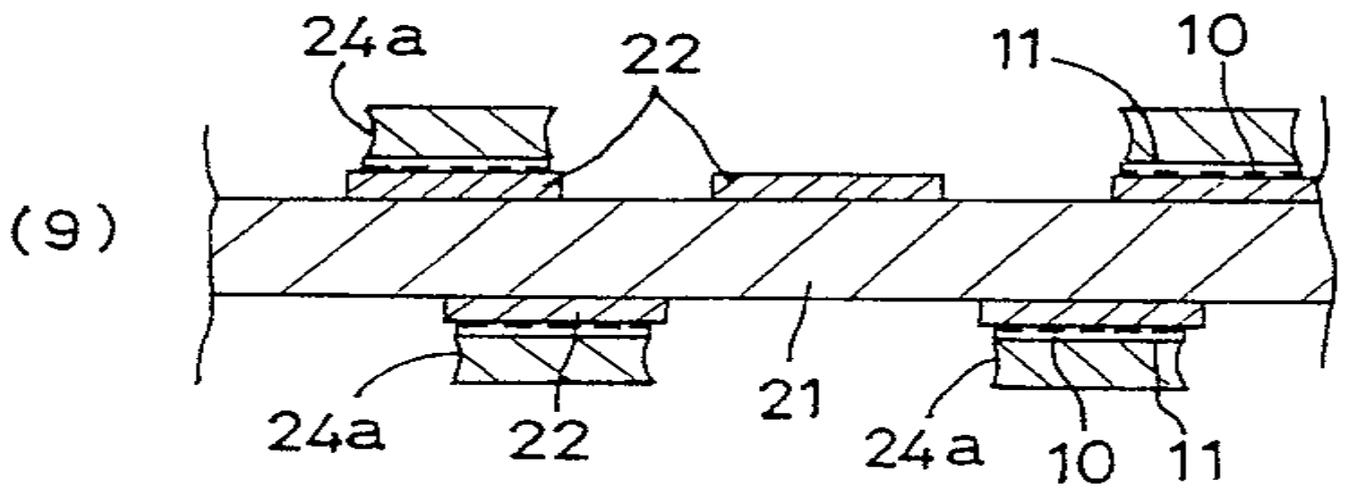
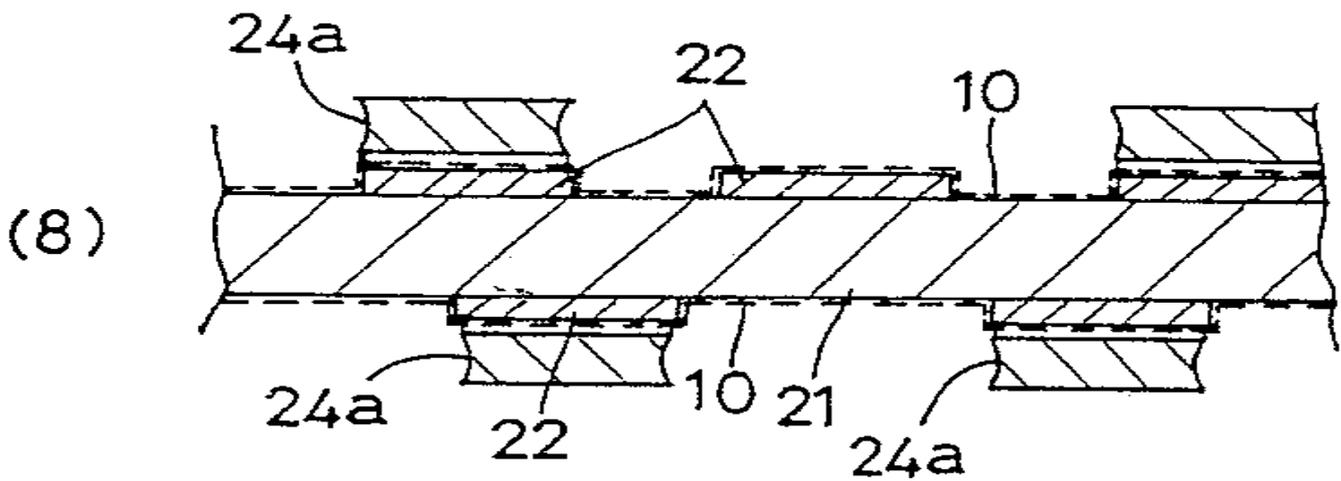
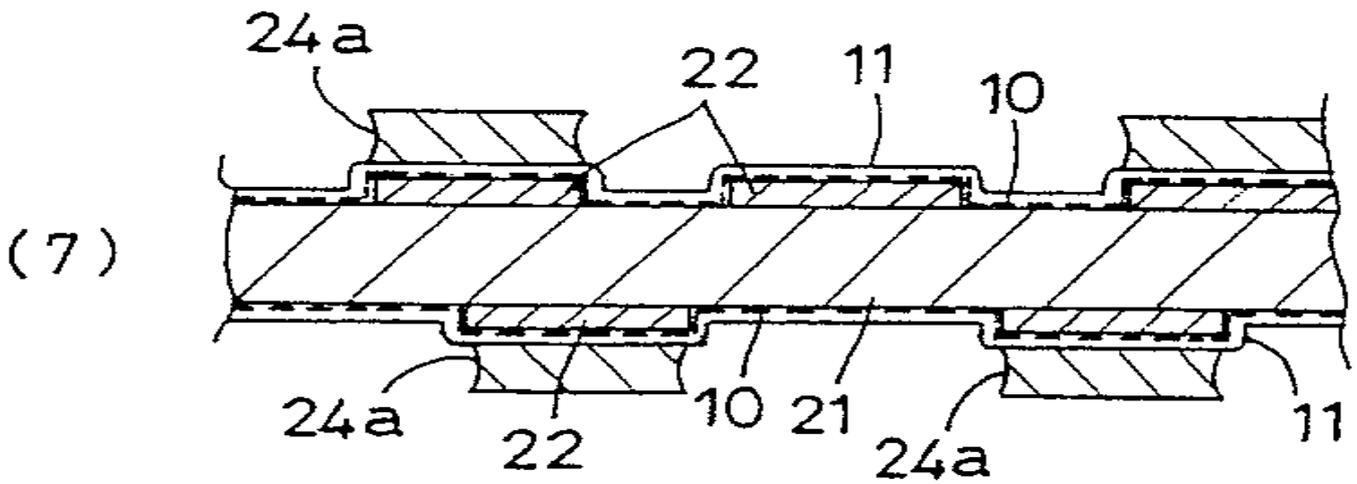
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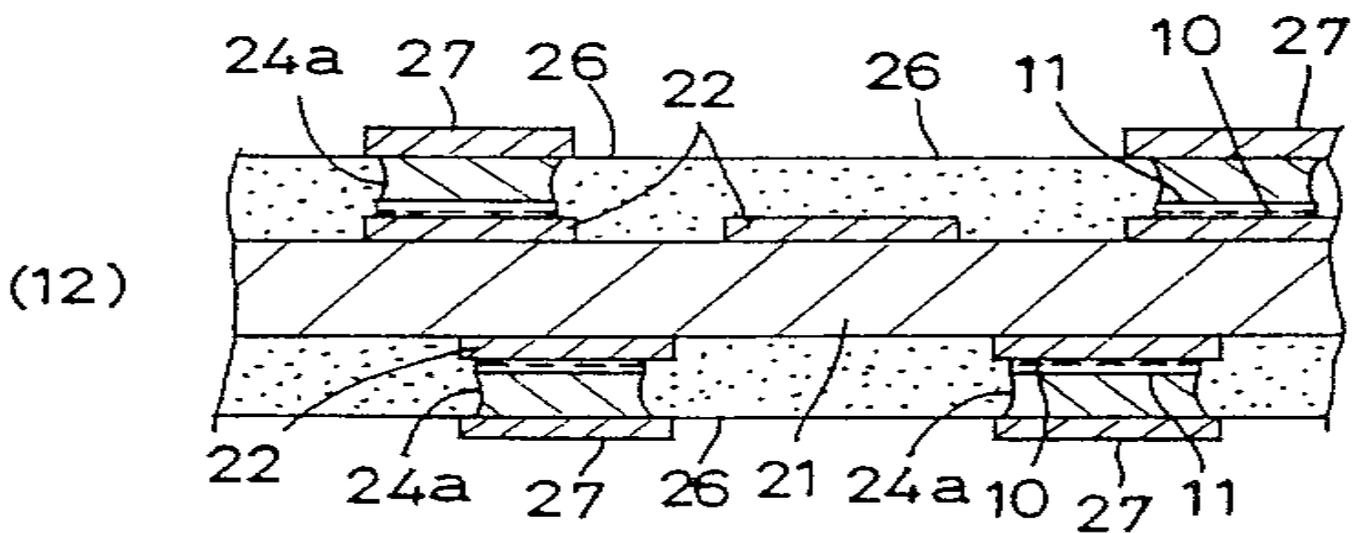
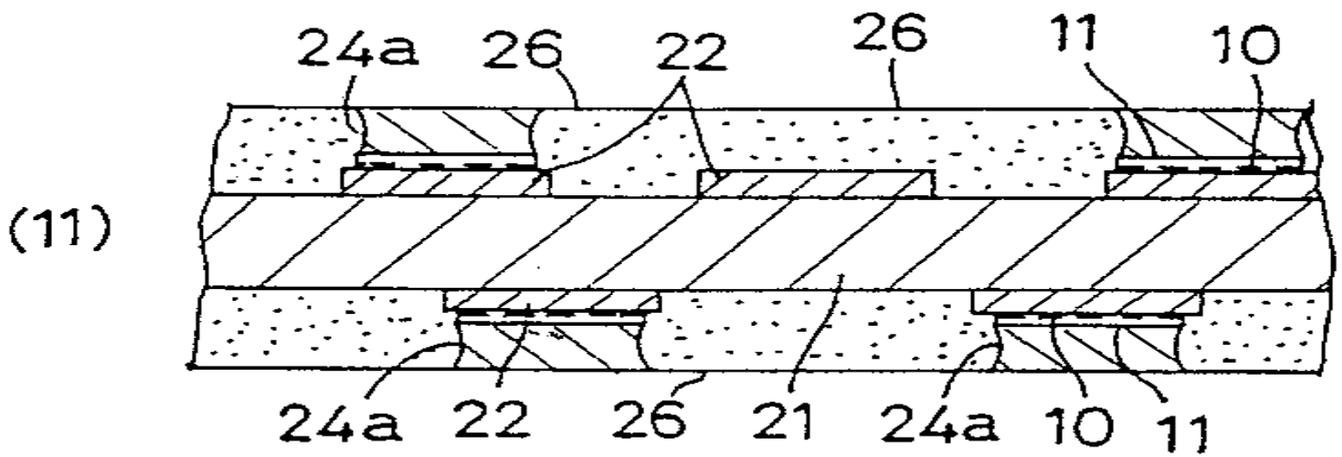
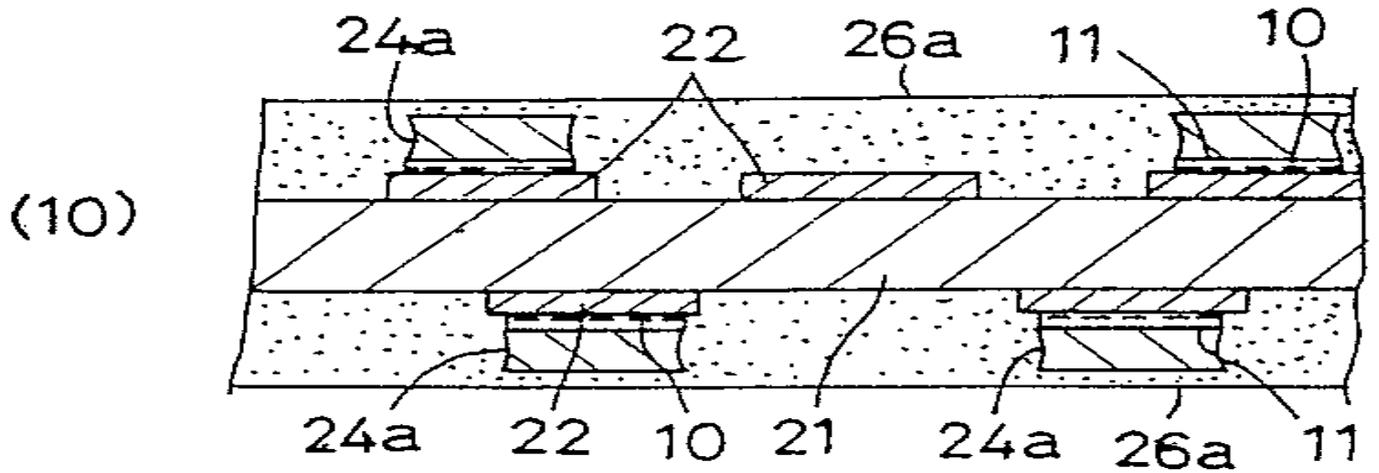


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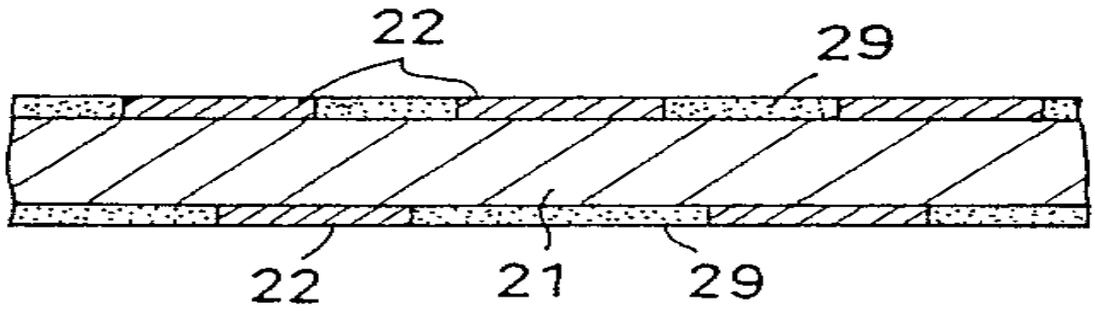
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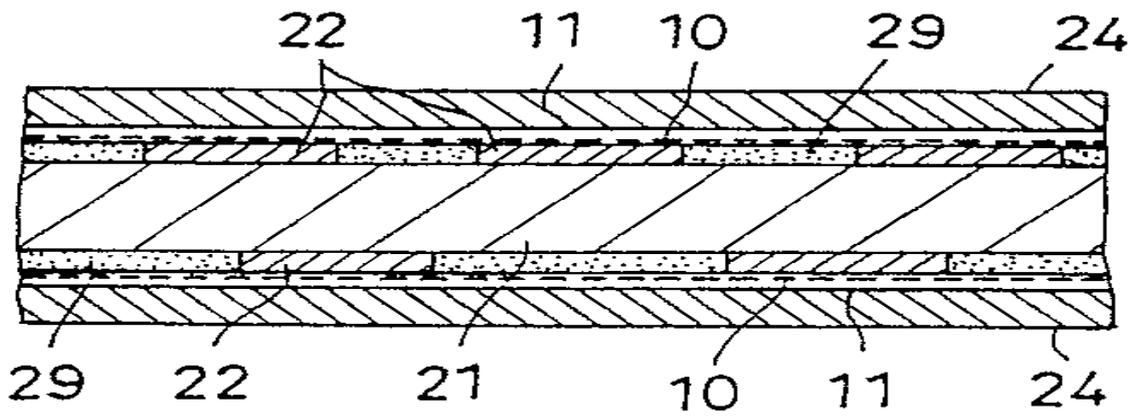


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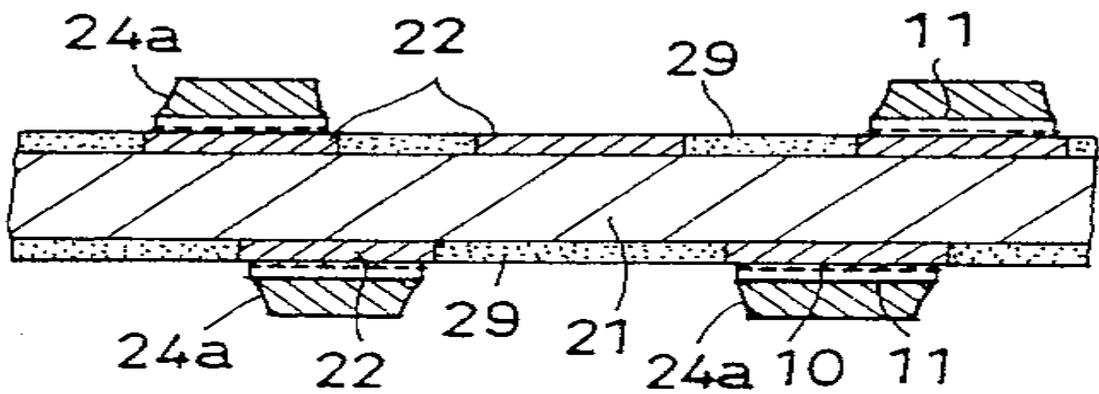
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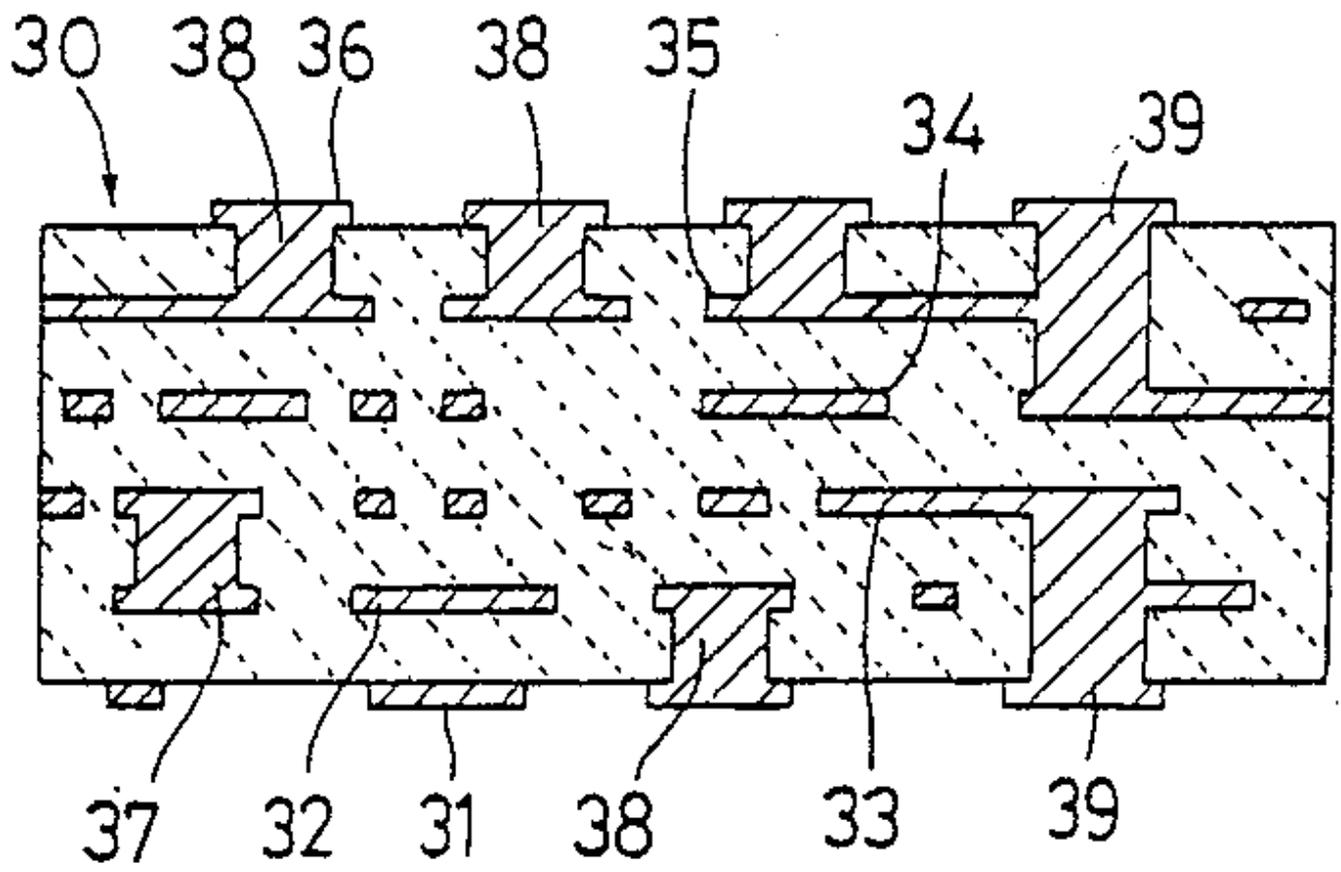
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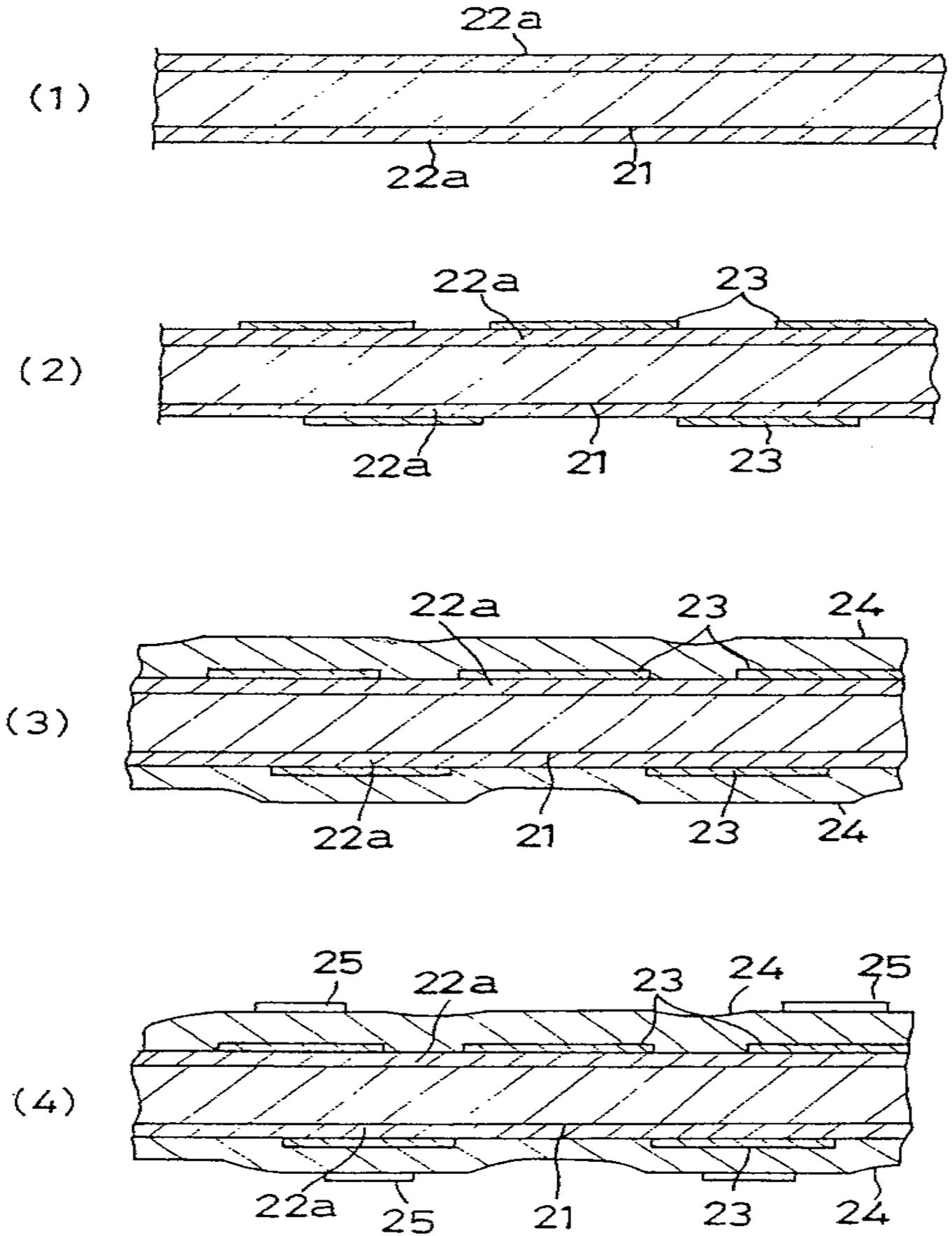
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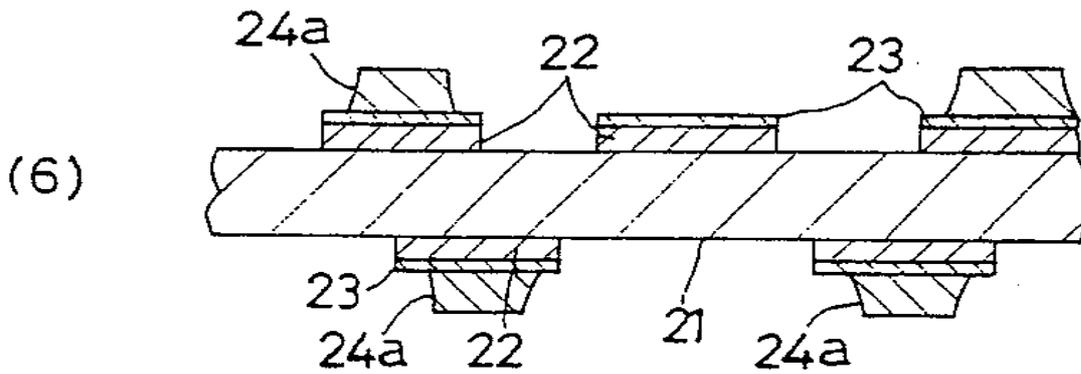
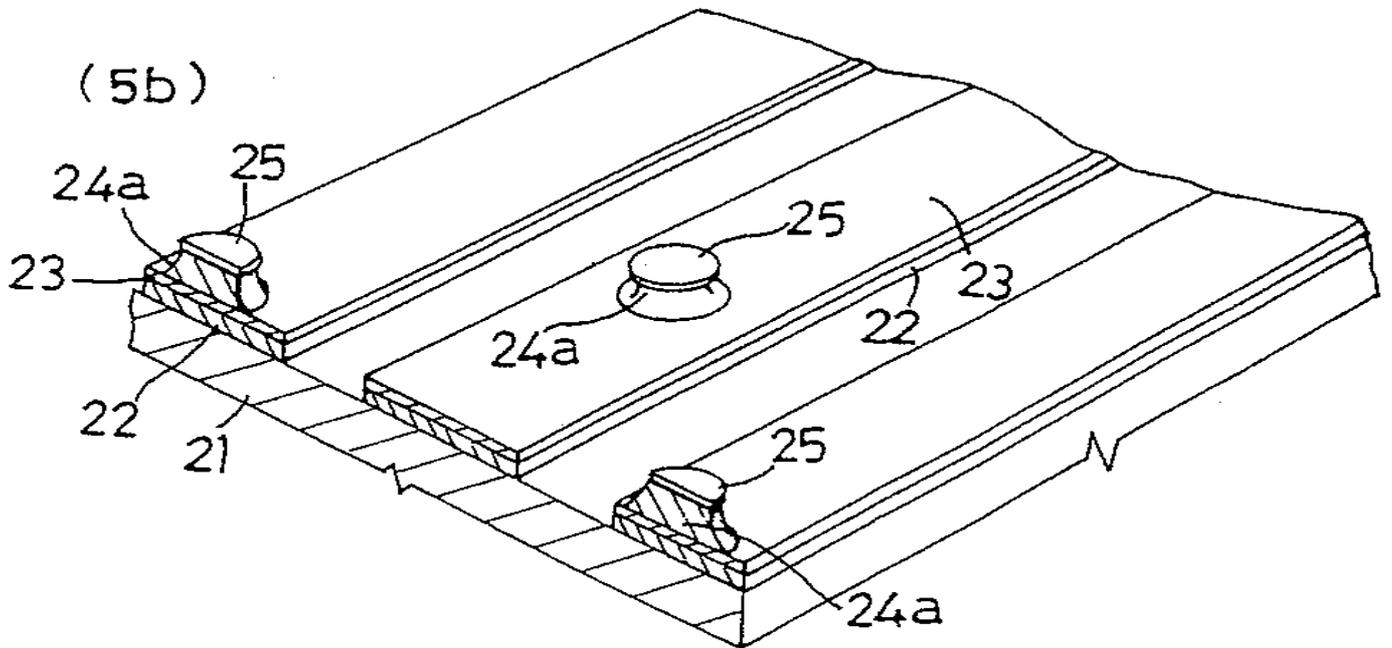
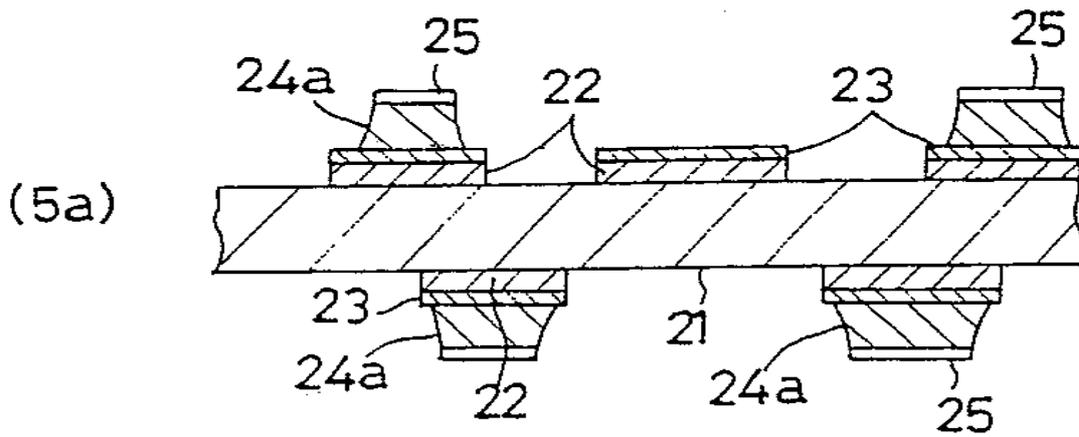
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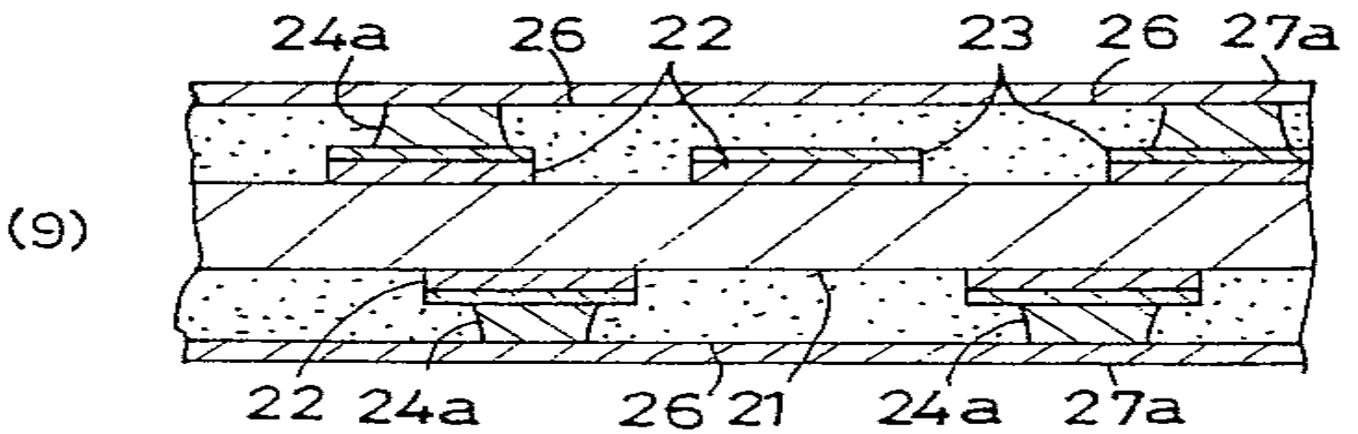
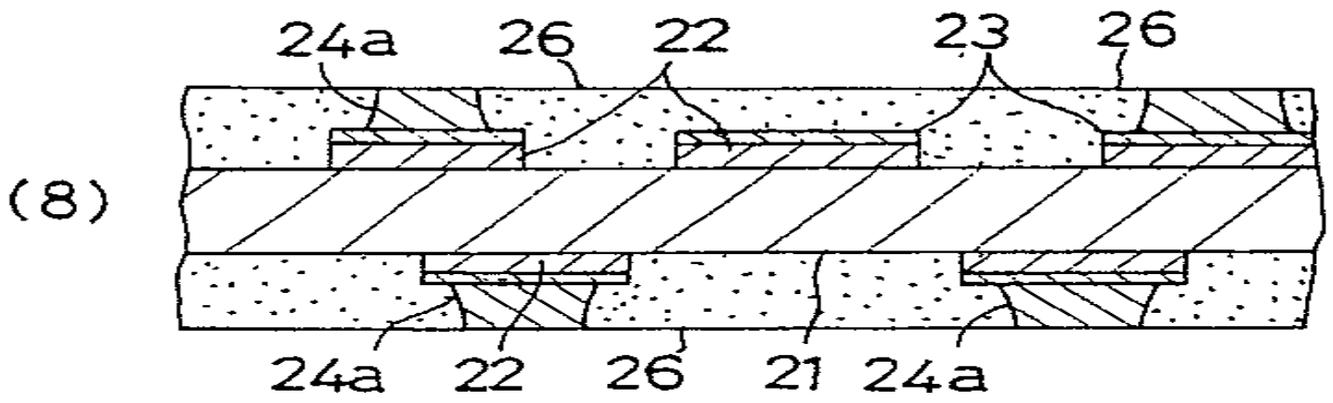
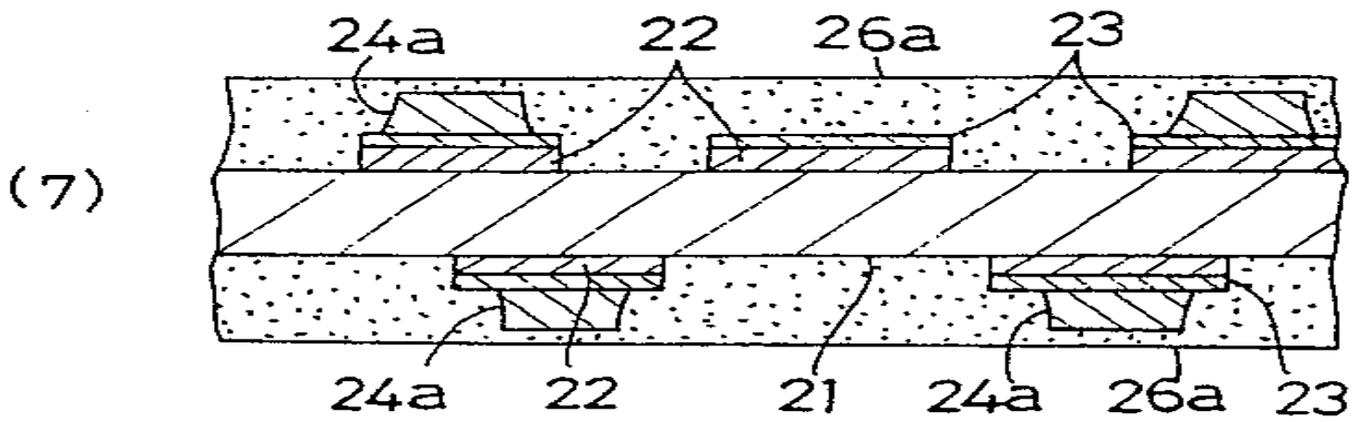
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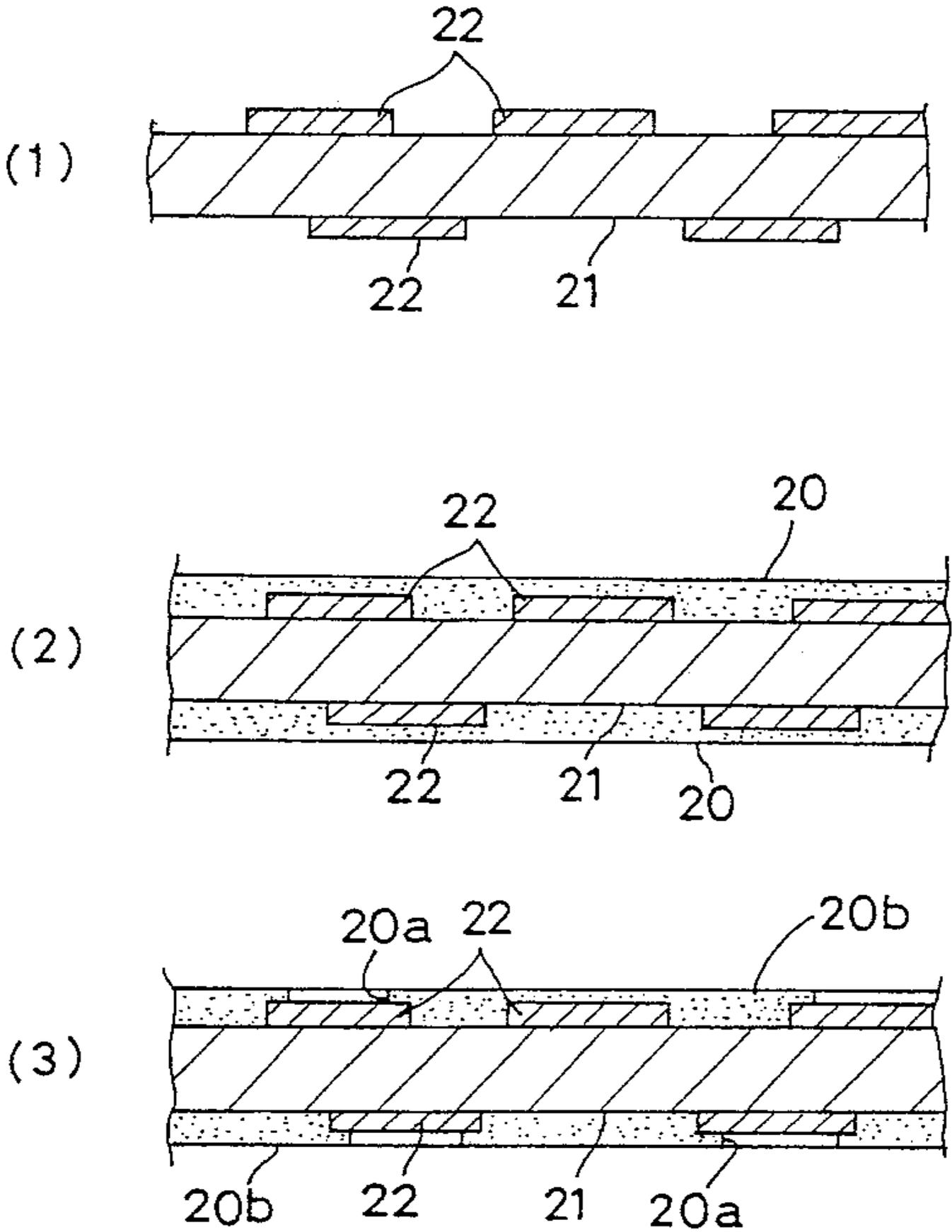
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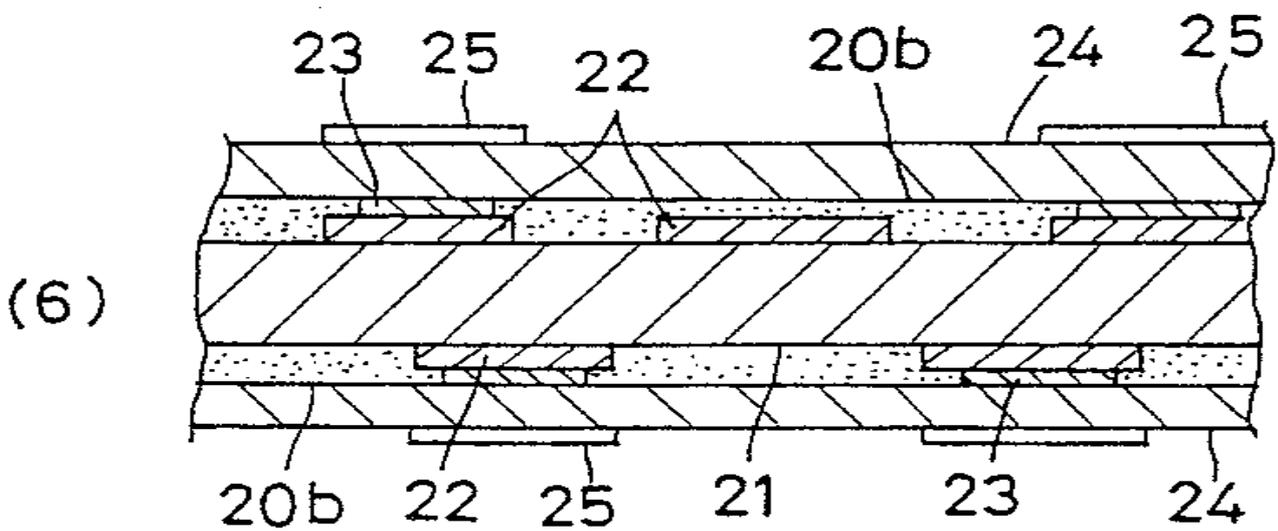
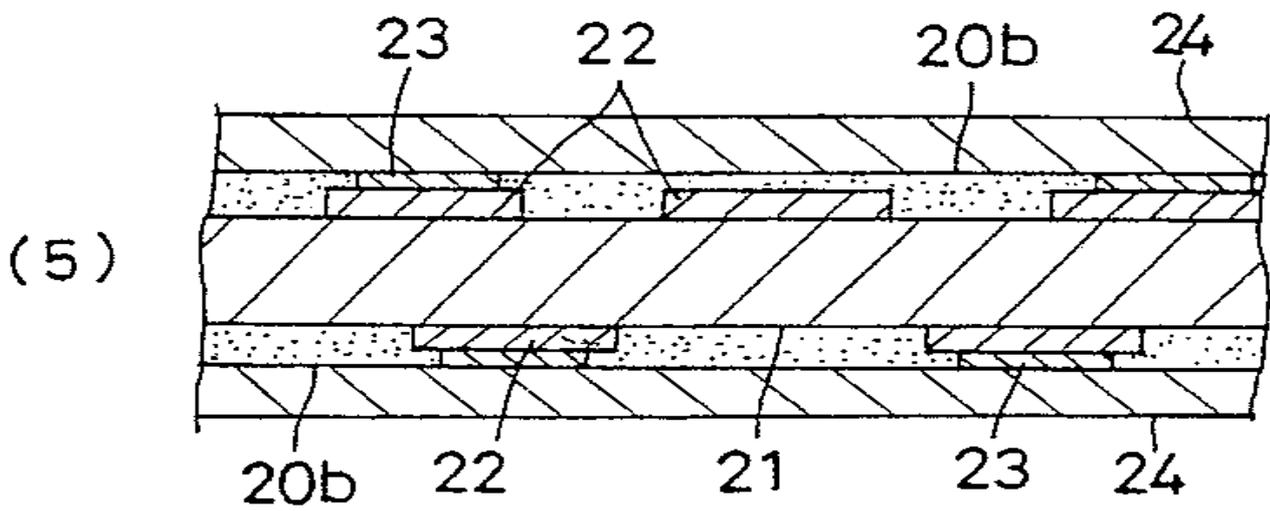
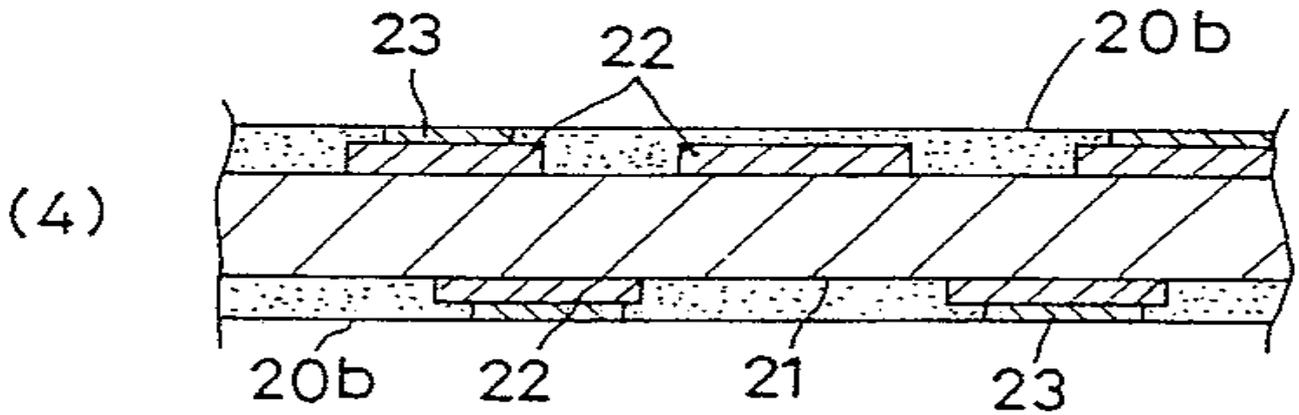
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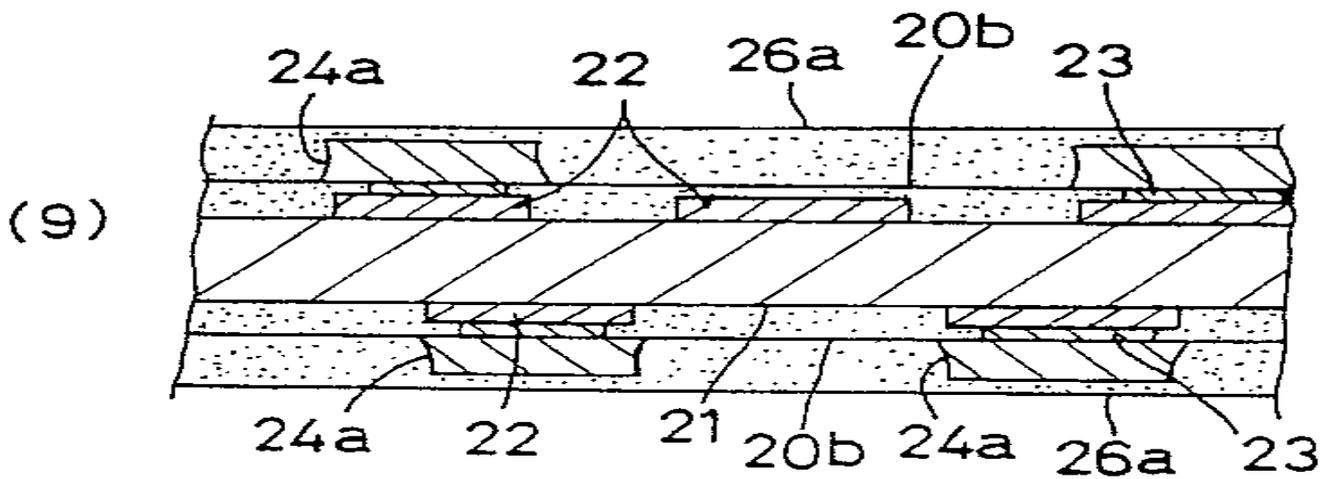
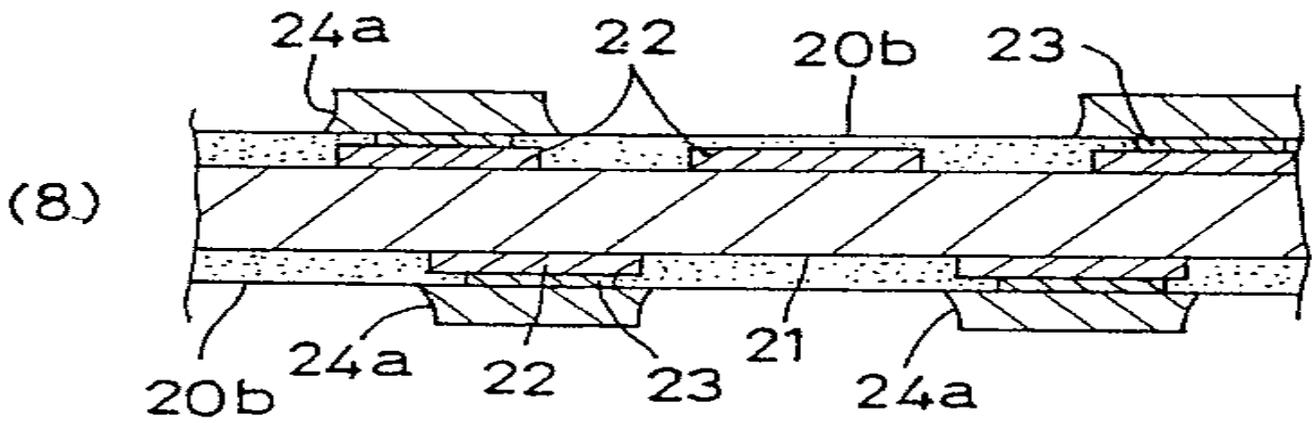
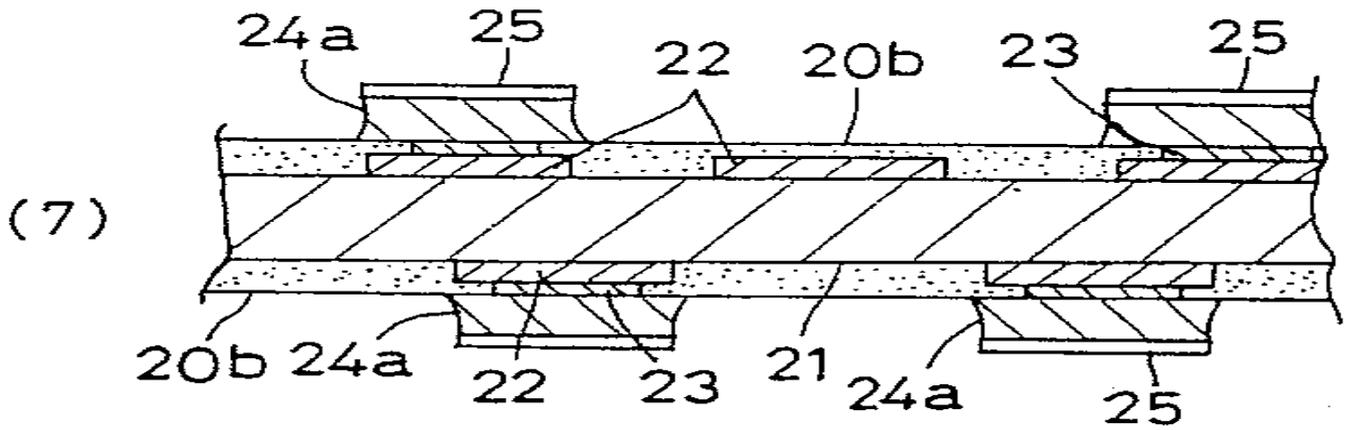


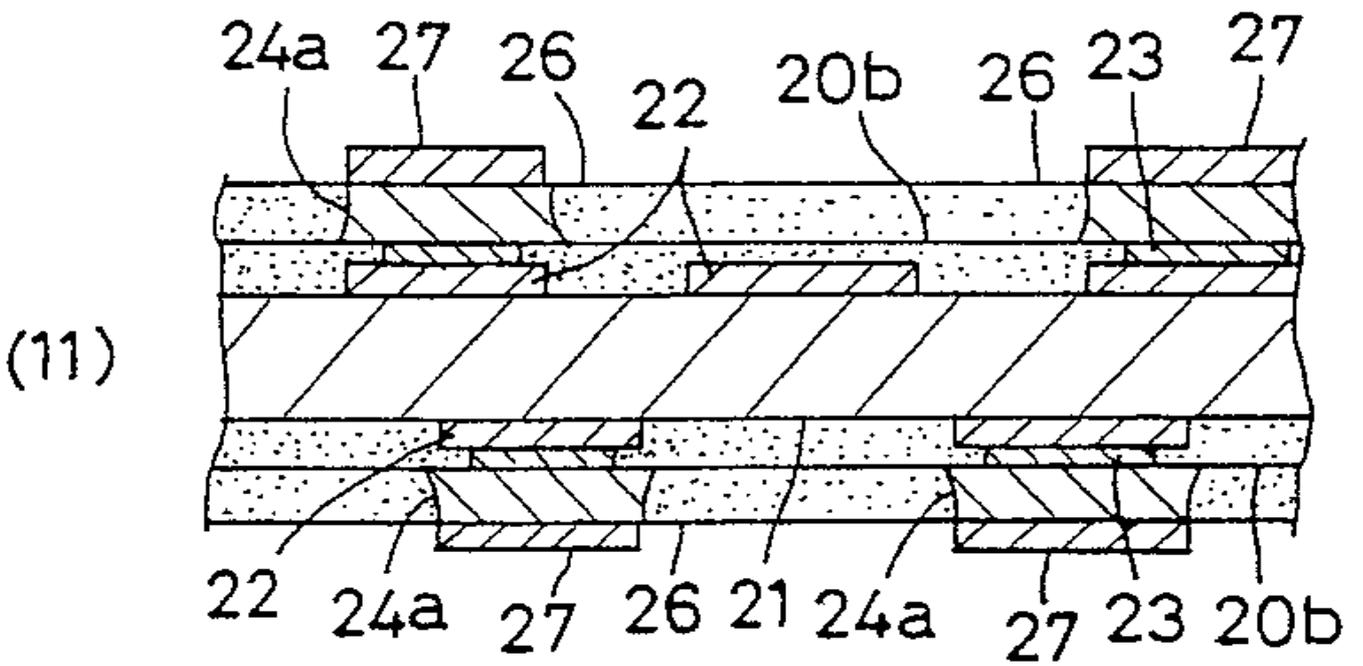
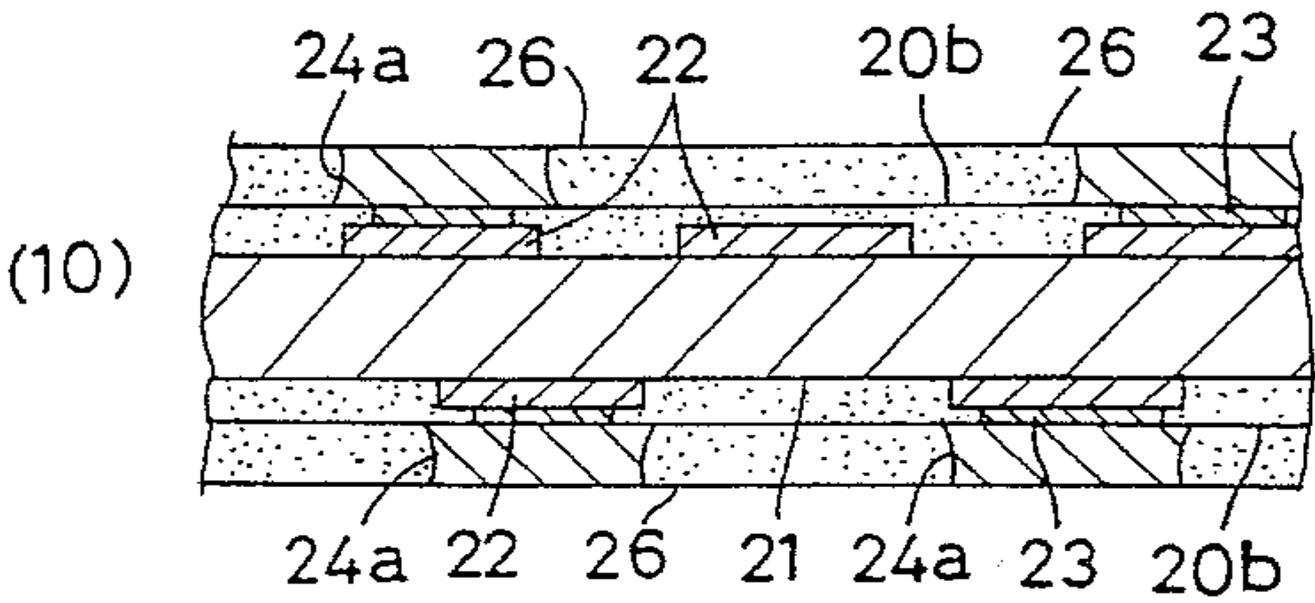
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11

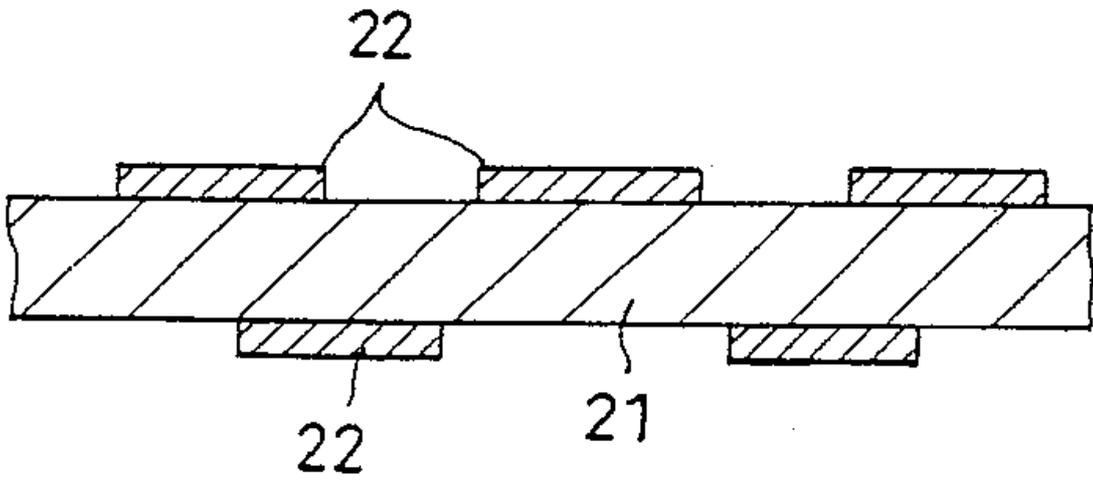




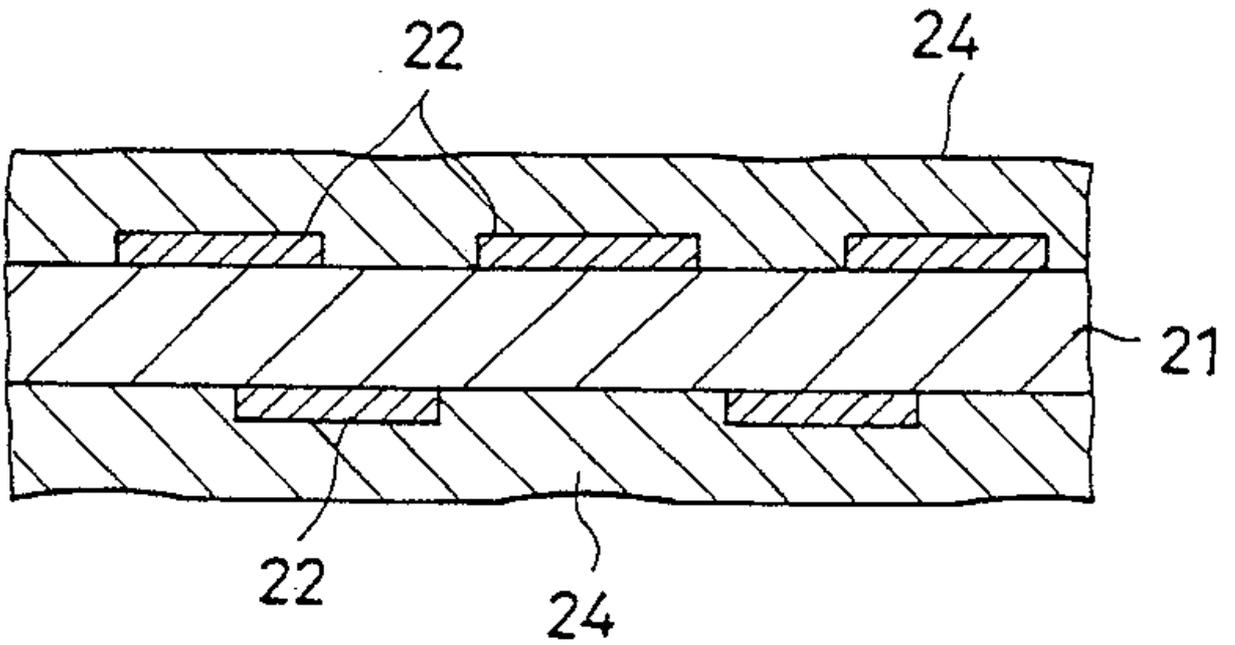


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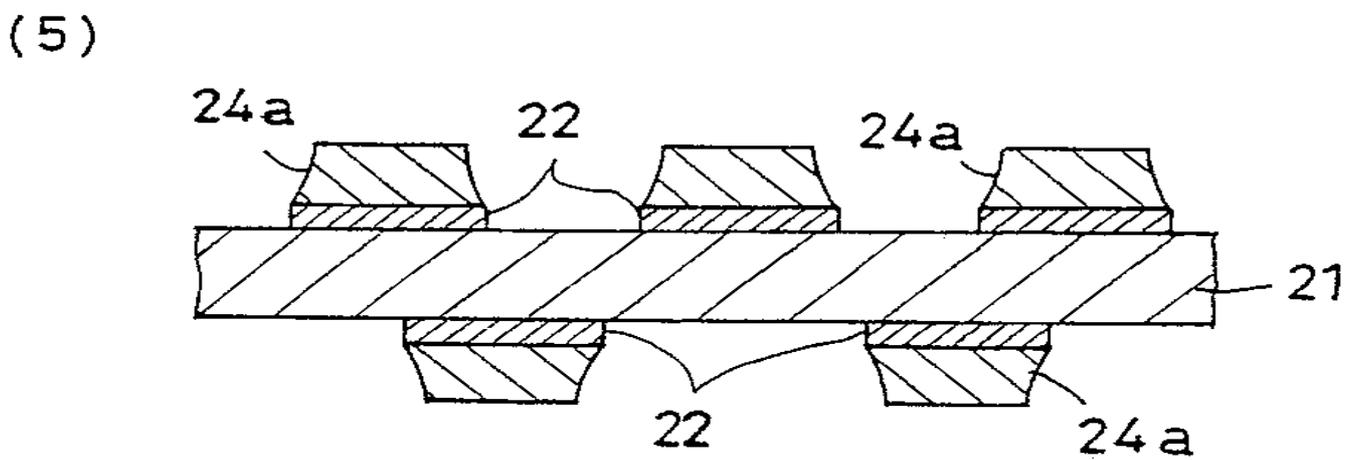
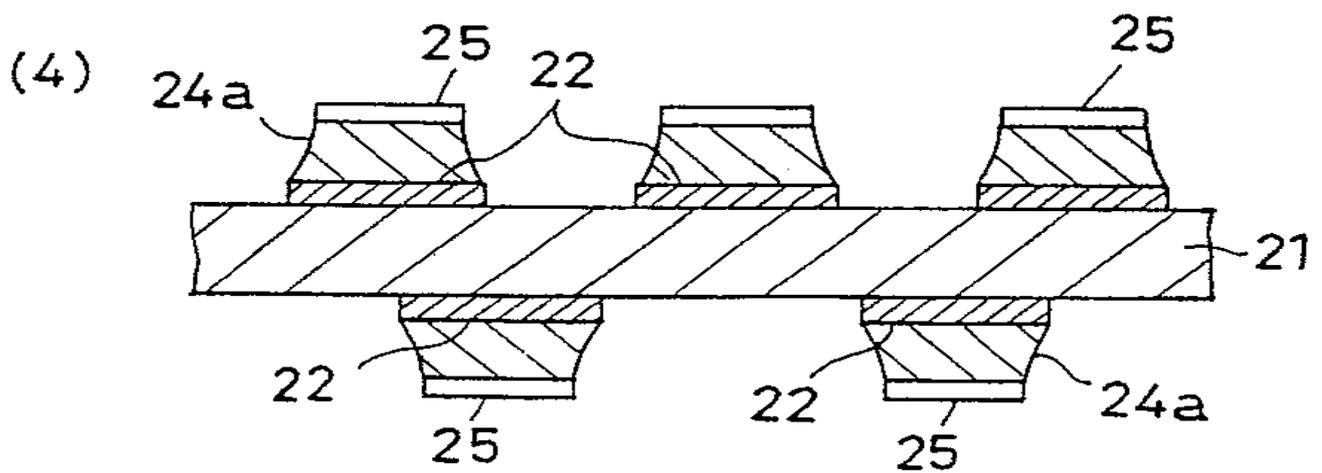
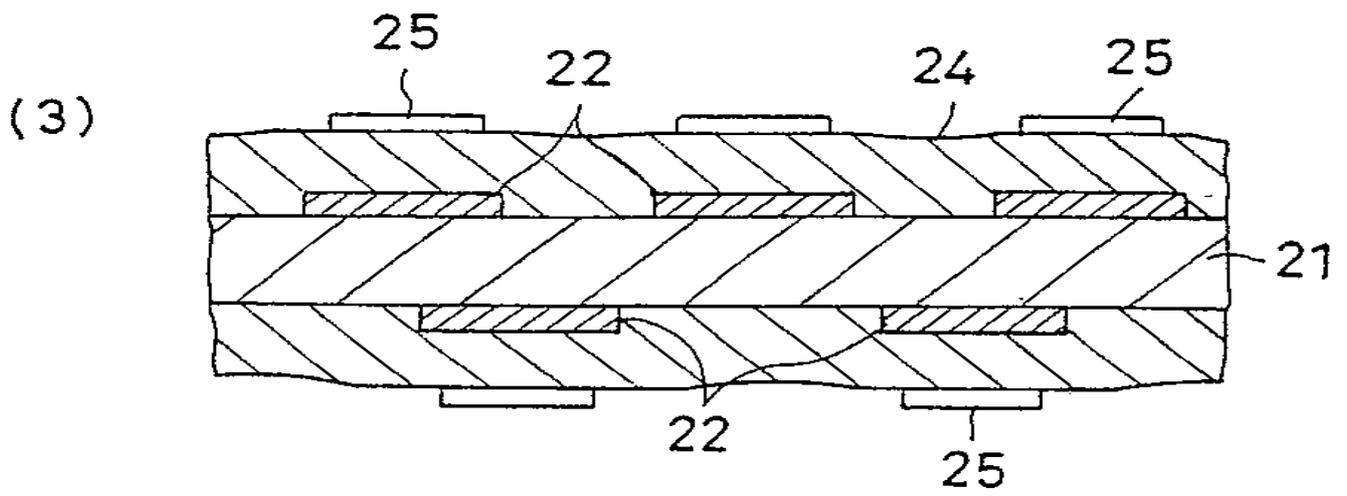
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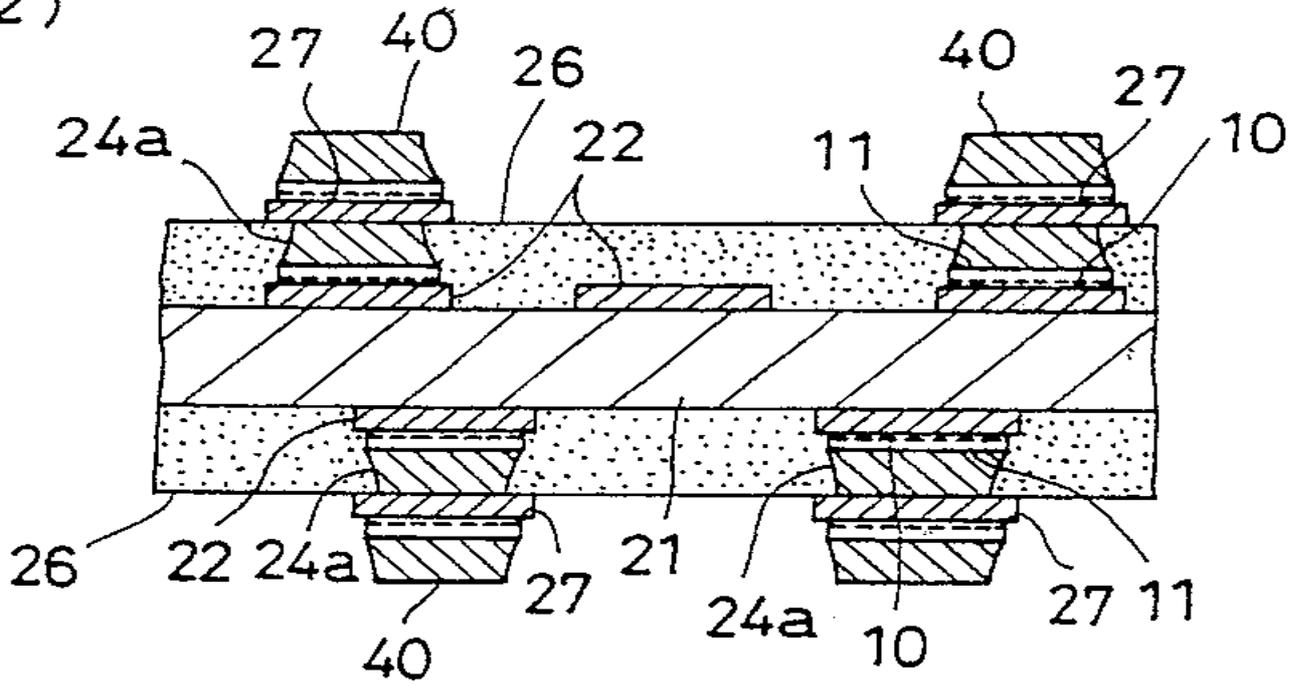
(2)



15



(12')



(9')

