

(19)  
(12)

(KR)  
(A)

(51) 。 Int. Cl. <sup>7</sup>  
H01L 23/48

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2001 - 0090540  
2001 10 18

(21) 10 - 2001 - 0015233  
(22) 2001 03 23

(30) 2000 - 088593 2000 03 24 (JP)  
2000 - 252846 2000 08 23 (JP)

(71) 가 가  
가 가 711

(72) 가 가 711 가  
가 가 711 가  
가 가 711 가  
가 가 711 가  
가 가 711 가

(74)

:

(54)

, ,  
, ,  
, 가 , ,  
, , 가

, 가 가 .

3

, , , ,

1 TCP , TCP

2 , 1

3 1 (a) (b).

4 3 1

5 4

6

7 가

8 7 가

9

10 1 (a) (b).

11 10a 10b

12 10 1

13 12

14

15 가

16

17 1 (a) (b).

18 17

19 17 1

20 19

21

22 21

23

24 2 (a), (b) (c).

25 24 (a e)

26 2 (a)

27 26 (a e)

28 2 (a) (b).

29 3

30 29 (a f)

31 29 (a g)

32 3

33 32

34 32

35 3 (a)  
(b).

1.

2.

가 , (LSI )  
 가 (tape carrier package; TCP) .

TCP (tape automated bonding; TAB) ( )  
 (copper foil)  
 )가 (copper lead) ( )  
 가 가 가 가 가

1 TCP TCP가  
 TCP(10) (1)( )  
 (2) (1)  
 (sprocket hole; 3) (4) ( " " )  
 (5) (9)

(4) (1) 1 (5) 2  
 ) (2) ( )  
 (2) (6) 가  
 , 1 (1) (6)  
 , (7) (7) 가

(a) (e)가

(a) 가 , 가 ,  
 가 가 ,  
 가 가

(b)

(c)

(d)

(e)

가

가

가

(through hole)

가

iller)

가

(f

가

가

가

가

)

가

(overflow)

가  
(

가

2

12

2

가

2

3가

1

1

가

3

가

가

가



가 가

1 3

(inorganic filler)가

가 가

1

3

1

(a)

(b)

(20) , (22) (21) , (23B)  
 (23A) (21X) (21) (24)  
 (23)가 (21) (25) (21Y) (23)  
 (21) (25) (27) (26) (21) (22)  
 (27) (28) (25) (23A)  
 (29) (21) (29) (25) (29)  
 (21) (22) (30)

(30) , 가 가 , 가  
 가

(23) , (23) (24) (24)  
 (23) , 가 (24)  
 (23) (23)

3

1

4

9

4

가 (25) (21) (21) ,  
 가 , (bismaleimide triazine; BT) , (aramide)  
 가 (21) (PPE) ,  
 가 가 , 25 $\mu$ m 100 $\mu$ m, 75  
 $\mu$ m

(22) , (21) , (25)  
 (21) (21) 가 (21)  
 (21) 가

(30) (21) (21)( 가 (25) ) (22)  
 (22) (29) (22) (29)가 (30)가  
 (30) (Bi) , - (Sb) (Ag - Sn), - (Pb - Sn), - (Ag - Sn - Cu),

(27) (26) (25) (25) (26) (27) 가  
(20) (26) (27)

5 (31) (21)

6 (23) (31) (29)가 (21) (22) (21) (30) (22) (23) 가 (21) (29) (22) (30) (30)

(23) (29) (29)가 (29) (23) (29)가 (stud bump) (29)

(29) 70μm, 가 30 60μm (20) (29) (29) 90 150μm (29) (2)

7 (23) (23)가 (24) 7 9 (21) (31) (24)

7 (24) (23) (24) (23) (23) (23) (24) (23) (24) 가 (24) 가 8 (24) (23) (23) (23) 가 (24) 가

0μm , 9 , , (24) (23) (23B) 가  
 , , 7 8 500μm (23) 50 10  
 , , (20) 120 300μm  
 (thin - small outline package; TSOP) 1200μm 1/4 .  
 , (26) (28) (26)  
 (27) .  
 , 9 " u"  
 (20)( 3) .  
 2  
 10 1 (a) (b) . 1  
 3 가 .  
 (24) , (40) ( ) (32) . (32)  
 , (23) (21) (24)  
 , (24) , (25) .  
 10 (40) 11 (44) . ,  
 (40) (32) (40) (28)  
 4)가 , (23)( 3 ) (4)  
 (40)  
 , 가 가 ( 가 ) , 가 ,  
 가 가 , 가 가 .  
 10 1 12 16  
 . 4 9 1 4 9 가 .  
 12 (33) (22) 가  
 4 1 (22) 1 (23)  
 (29) , (33)  
 (24) , (33) (22)  
 (22) 25 100μm 가 , (33) 500μm . (34)  
 (25) (33) . 12 1  
 , 13 , (24) (32) (33)  
 , 1 , 가 (33) (34)  
 (31) .

, 14 , 가 1 (23)  
 (31) (29) (21) (22) (23) (23A) (30) .  
 , 15 , (23) (21) 15 16 ,  
 (24) (31) .  
 15 (24) (23) (24) ( (   
 23) , 1 8 (24) (23) (23) .  
 (23) (24) (23) (23) 가 가 . , 가  
 (24) (23) 가 가 .  
 , 16 , (24) , (32) , (23) (23B)  
 .  
 , (28)가 1 (26)  
 .  
 , 가 16 " u"  
 (20)가 ( 10).  
 3  
 17 1 1 (a) (b) .  
 3 1 3 가 .  
 (21) (60) 3 (24) (23)가 (G)  
 (24) (G) (36) (23) (36) ( ) 가 ,  
 (21) (36) ( ) 가 ,  
 (25) .  
 17 (6)가 18 (66) (66)  
 . , (60) (32) (60) (28)  
 (66)가 , (60) 2 (23)( 3 ) .  
 17 1 1 (60) 19 22  
 가 . 4 9 1 4 9  
 19 4 가 , (21) (23)

(32) (37) 17b (36) (21) (36) 가  
 (21) (21) (37) (23) (G) (21) (22) 1 (21) (22) 1  
 (29) . (21) (22) 1 .

(36) (21) (37)  
 (21) . , (36) (21) (32) (25)  
 1 (22) 25 100 $\mu$ m 가 , (32) (22) 19 . , (32) (22) 500 $\mu$ m . , (32) (25)

, 20 , (31) (37) (21)  
 , 1 가 (23) (23A) (29) (21)  
 (22) (23) (30) . (21) (21)

, 21 , (23) (36) (37) (G)  
 (24) 가 . , (23) . 21 22 ,  
 (31) 가 .

, 22 , (36) , (24) , (32) ,  
 (23) (23B) .

, (28) 1 (26) (27)  
 .

, 22 " u"  
 (20)( 17) .

4

23 (21) , 2 12  
 가 가 , , 23  
 3 , 1 2 .

5

24 2 24a , 24b , 24c  
 . 1 4 가 ). 100 (

B) (101) (121), (125), (123)  
 (123A) (123)  
 (129) (129) (125)  
 (124) (123) (123)  
 (121)

(132) (125) (123)  
 (124) , (132) 24a  
 ( entasis ) , 24B  
 (132)  
 (Ag - Sn), - - (Ag - Sn - Cu) (Bi) (Sb)

25 24 (101) 1 4  
 가 ,

25a (123A) (129)가 (123)  
 (125) (121)가 (129) (121)  
 (125) 1

25b (123) (123A) (129) (121)  
 (125) (121) (123) (121)  
 ( )

(129)가 (125) ( ) 가  
 (129)가 (125)

25c (125) (132)  
 (132) 24b ( )  
 (132) (125)

(132) 24(b) (132)

(Sn), (In) 가 (125) 가 (125)  
 가 가

25d (124) (124) (125)  
 (132) (123) (123) (123A)  
 (121) (124) (dotting)

, 25e , (24) (123) 가  
 . 25d , (124) (123) ( )  
 , . (123) 가 25e  
 , (132) (124)

25 ,  
 (121) 25a 25e . ,  
 (121) (101)( 24)

6

26 2 26a 26b .  
 (102) , 5 (132) , (128)가  
 (125) (121) , .  
 5 (128) (132)

, 27 26 (102) . 1 4 ,

, 27a , (123A) (129)가 (123) ( )  
 121)가 . (121) (125) , (128)  
 . (121H) , (121H) (125) (125)  
 . (129) , (121) , (125) 1  
 . (121H) 1 (22)

, 27b , 5 25b  
 (121)

, 27c , (124) 5 25d .

, 27d , (124) (123)  
 . 27d , (124) (123) ( ) ,  
 (123) (124) , (123)  
 가 (124)

, 27e , (128)가 . (128) (121H)  
 (125) , (121H)

27d , 27e .

27 ,  
 (121) 27 a e ,  
 . (121) (102)( 26)



7

28 2 28a 28b

(103) , 5 (132) 6 (128)가

(103) 5 6

25 27 28 (103) 28

(103)

, 6 가 , 27a (123) (121)가

27b (121)

, 23c (125) (132)

25d (124)

, 27d , 27e

28 (103)

(121)

(121) (103)( 28)

1 2

7

8

29 7 29a (104)

(124) (123)가 (123)

(124) (123B) (123A) (125)

(124) (123) (123A) (12)

9) (125) (129) (123) (123B)

(129)

29b (104') , (125) (126)

(125) (128)가 (126)

, 29a (104)

30 29 (104, 104') 1

4

, 30a , (123) (123) (123A) (

129) (125)

(125M)

, 30b (124) , (124) (125M) (125M)  
 (124) (123) , (125M) .  
 (124) , , , (polycy  
 clic aromatic resin)가 , , 가 (124)  
 , , , (filler)  
 (spheres) 가 . 2 10 $\mu$ m . 가  
 , 30c (125) , (125M)가 (124) (125)  
 (129) .  
 , (124) (123) .  
 29a (104)가 .  
 , 30c (126) , 30d (127) (125) (124) (127)  
 (125) , (126) .  
 , 30e , (124) (123)  
 , 30f (127) 가 .  
 25c (132) 가  
 29b (104') .  
 125M) , , ( (125M) (104 104')( 29) .  
 , 31 29a 29b (104, 104')  
 , 31a , (125M) (125M)  
 (125) , (125M)  
 (125)  
 , 31b , (123) (123) (123A) (125)  
 (129) ,  
 , 31c , (124) (125) (125A)  
 (124) (123) , (125)  
 (125M) .

(124) 30b .

, 31d (125M) , (125M) (125)  
 (125M) , (125M) (125) (125M) , (

125M) (125) (124) . , ,

, (124) (123) .

26) 29a 가 29a (124) (1  
 (125) 가 (125) ,

, 31d , 31e, 31f 31g (126) ,  
 , (128) 30d, 30e 30f .

26) 29b (104')가 29b (124) (1  
 (125) 가 (125) ,

9

32 7 32a, 32b 32c  
 (105, 105', 105" ) 29a (104) (132)  
 (132) (125) (124) ,  
 (124) .

, 32a (105) , (124) (124) 32b  
 (105') , (132) (124) .

32c (124) (132A) (12  
 4) (132B) . (124)  
 (126) (126) (132B) (125)

, (132, 132A, 132B) (Cu), (Ni), ( ) , - (Sn - Ag)  
 , - (Sn - Pb) .

31 32a 32c (105, 105', 105" ) 8 30  
 (125)  
 (132) 8 가 30 31 a f

10

33 31a (105) .

(126) (106) 3 (105) 32a  
 (128) 29b ,  
 (132) (128)

11

34a 32b (105')

(124) (107) 2 (105') (125)  
 (132) (126) (124)  
 (138) 가  
 (138) (125) (132)

34b 32b

(105') 33 2 (105') 2  
 34a (107)

12

35a 3

(109) 29b (124) (143)  
 (143) (125) 2 (145) 35b  
 (143) (143) (147)  
 (124) (143) (147)  
 (strontium titanate) (149) 가 가  
 가 가

(143) 가

(143) 35a , 24a, 24b, 29a, 32a 32c

가 가

(57)

1.

(through hole)

가

(filler)

2.

1

3.

1

4.

1

가

5.

1 ,

가

6.

1 ,

가

7.

1 ,

가

8.

1 ,

9.

3 4

가

가

10.

가

11.

10 ,

12.

10 ,

13.

10 ,

14.

10 ,

가

15.

16.

15

17.

18.





22.

20 ,

23.

20 ,

24.

23 ,

25.

20 ,

26.

25 ,

가

27.

20 ,

(inorganic filler)가

28.

23 가 , 가

29.

24 가 , 가

30.

24 가 , 가

가

31.

가

32.

31

33.

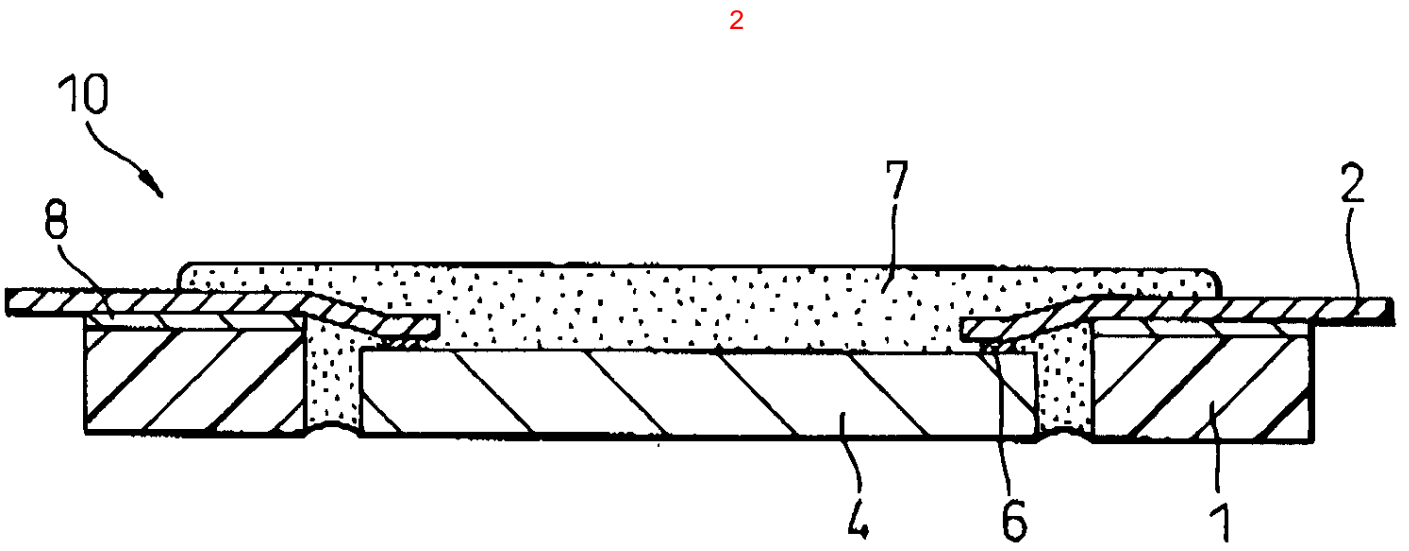
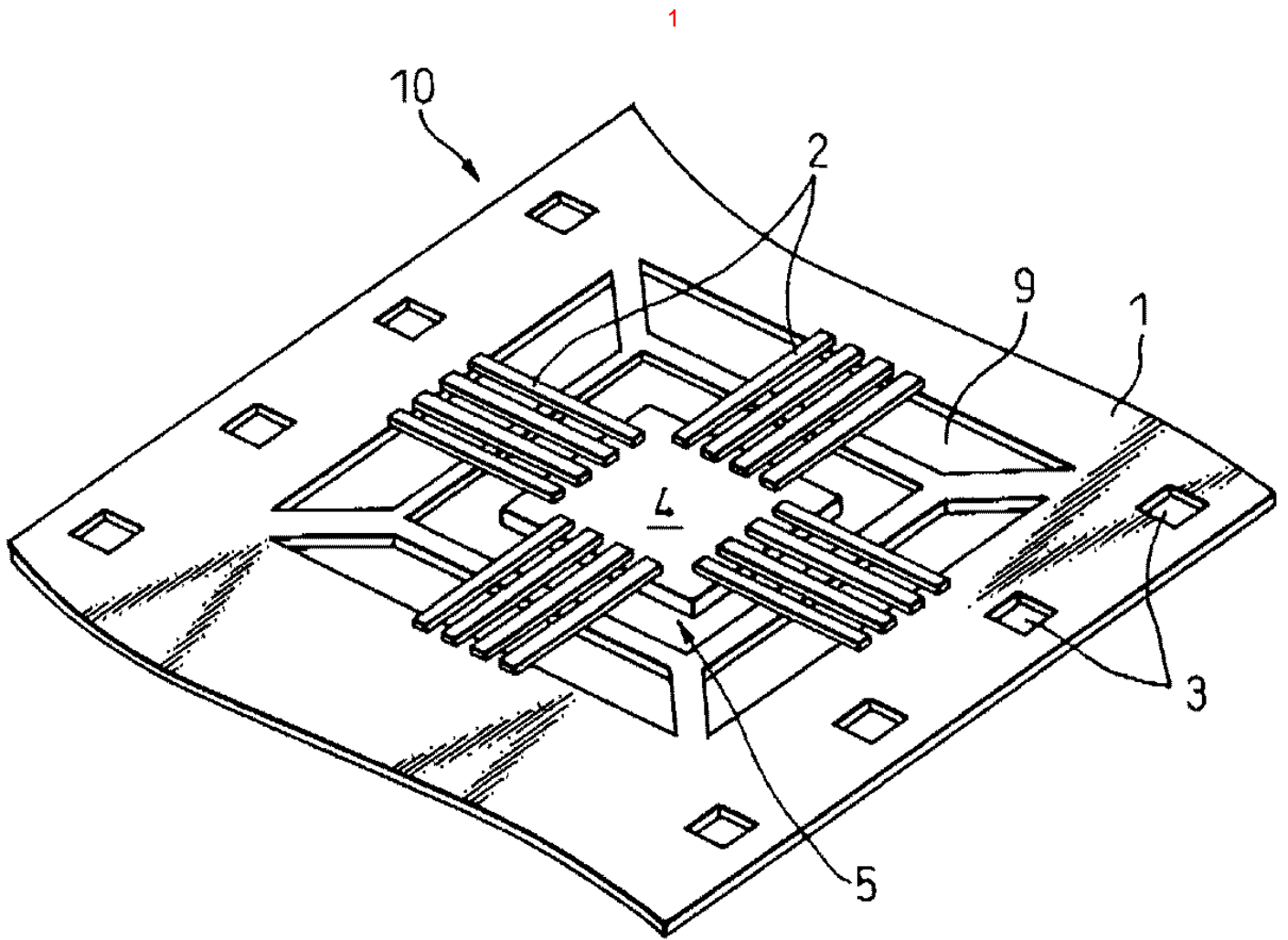
32

가

34.

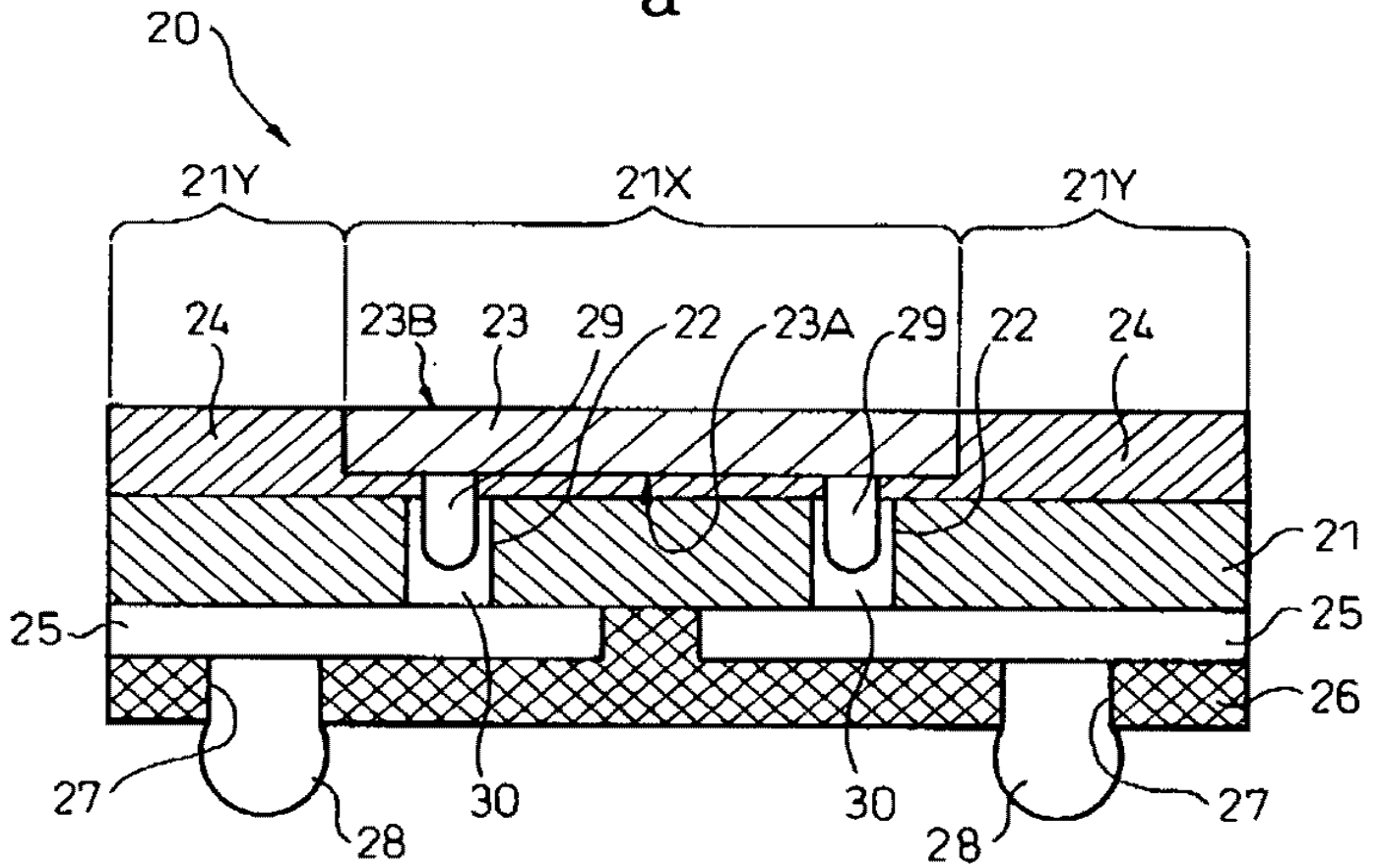
31



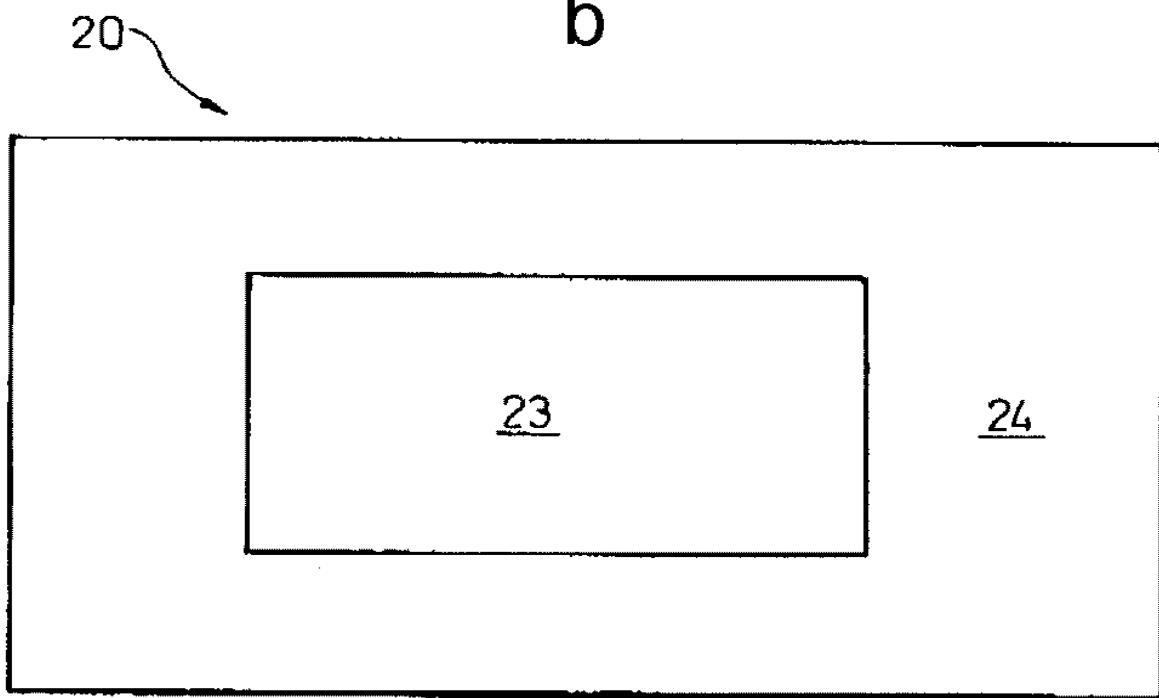


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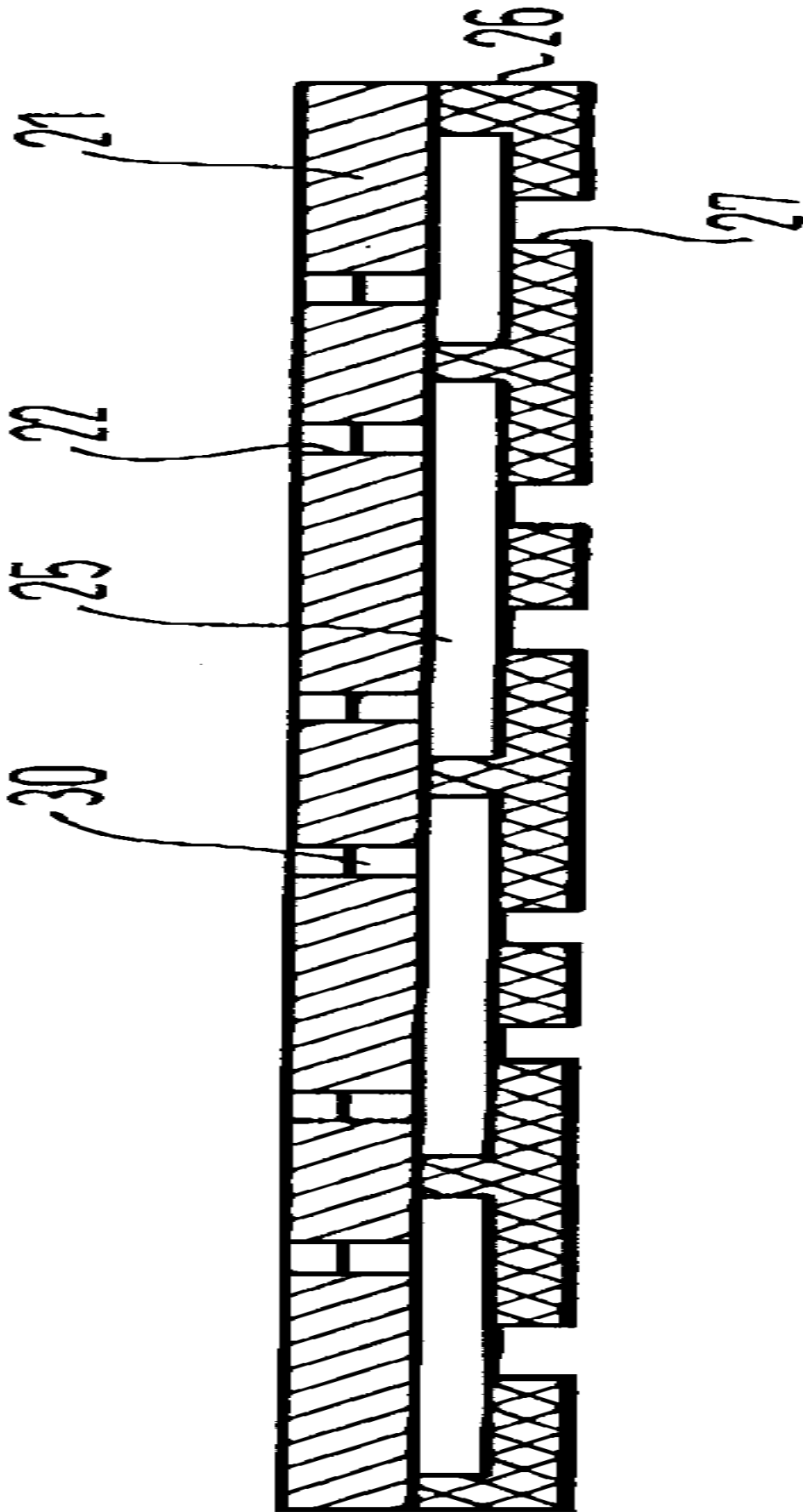
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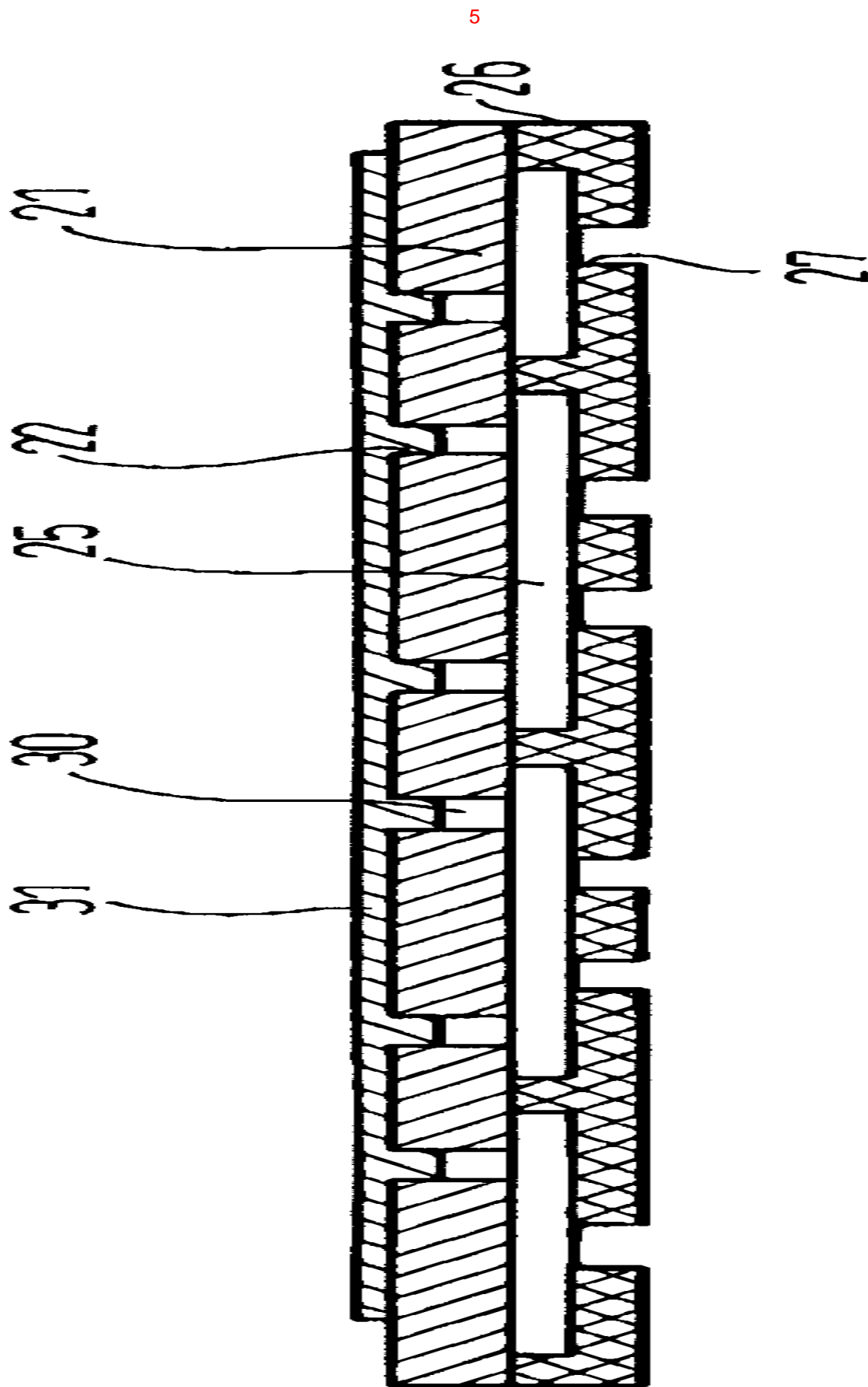


b



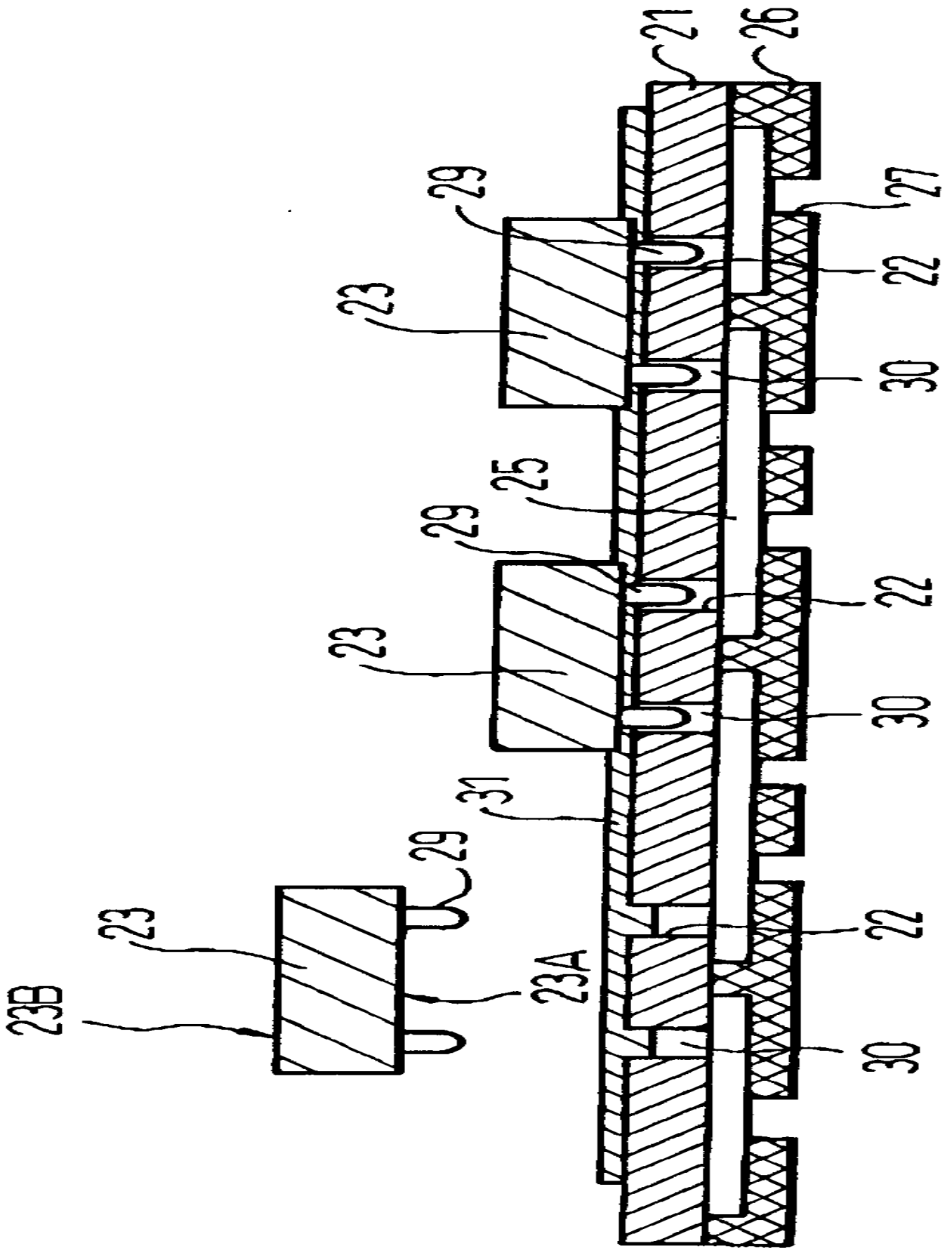
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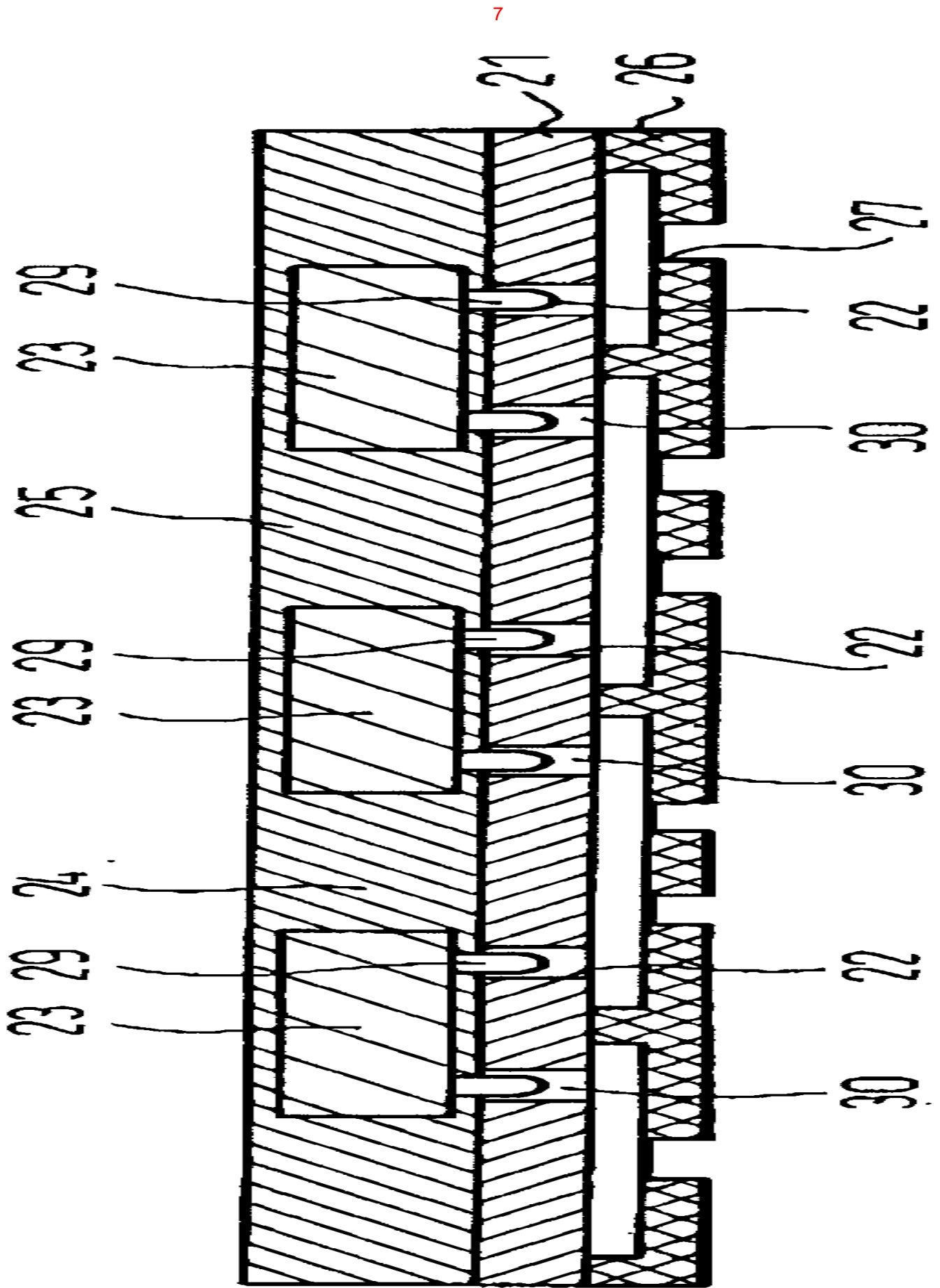


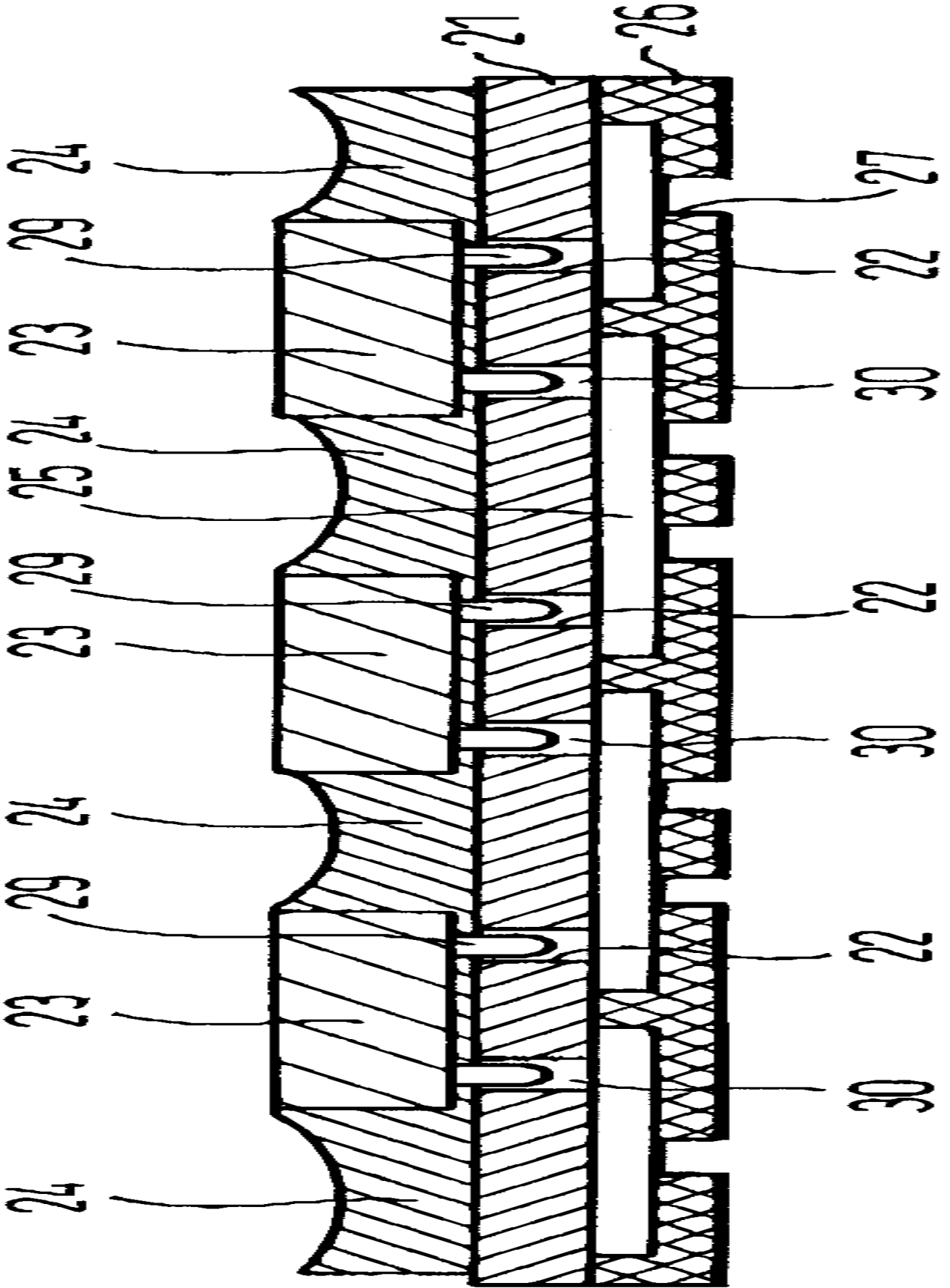




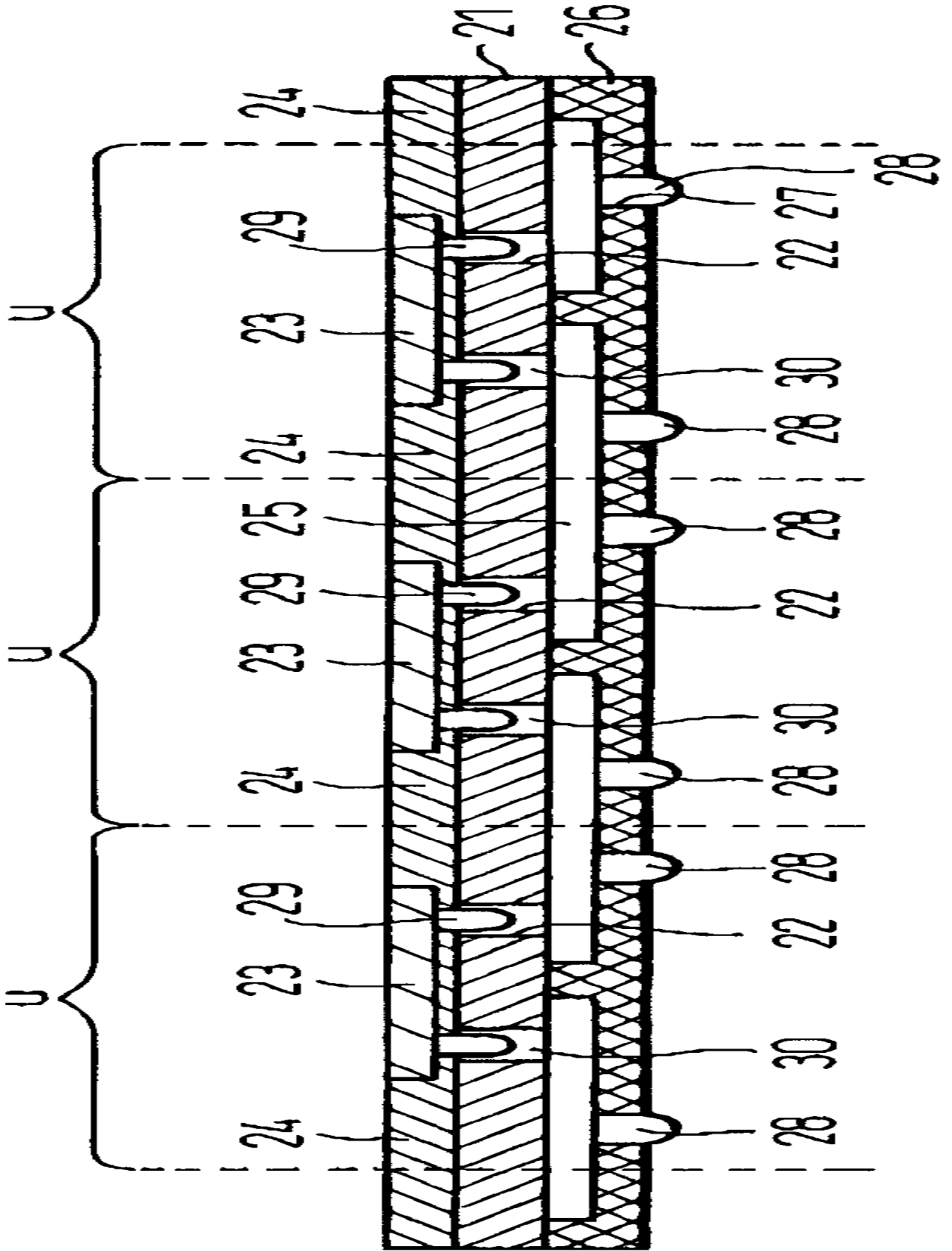
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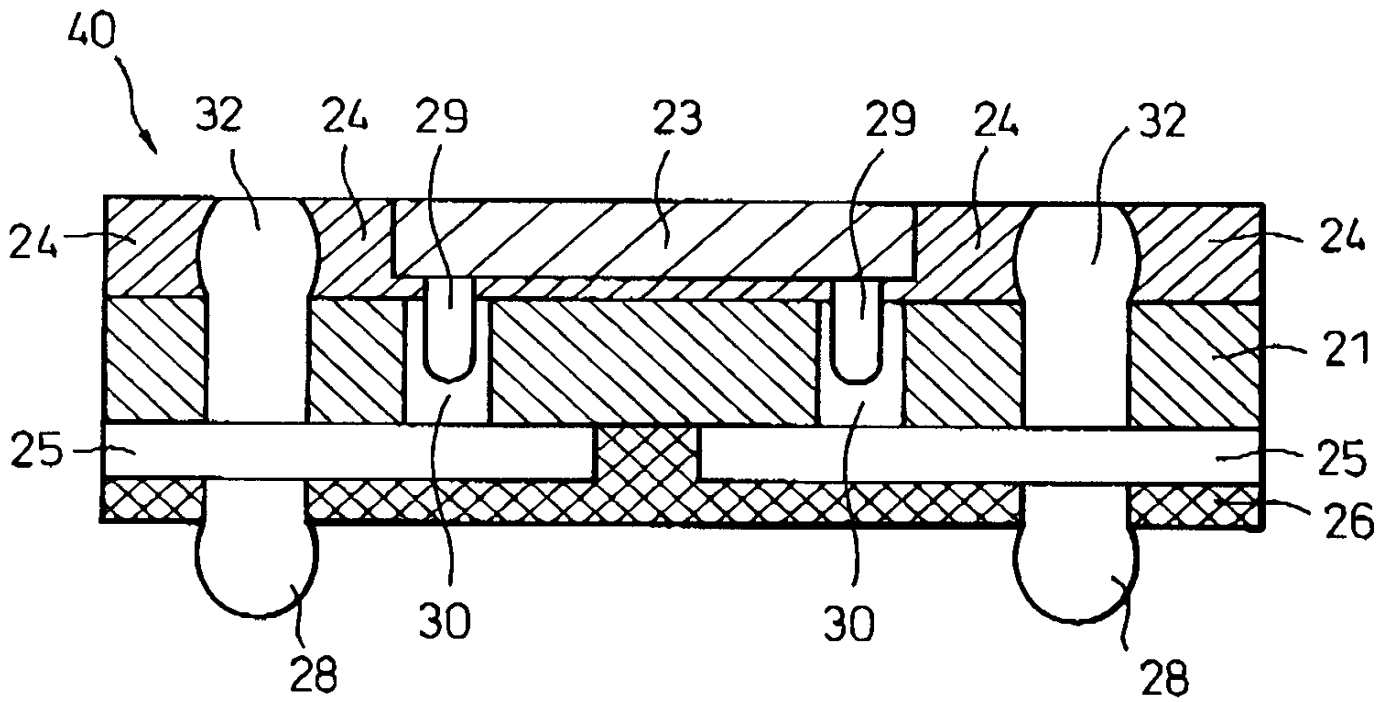


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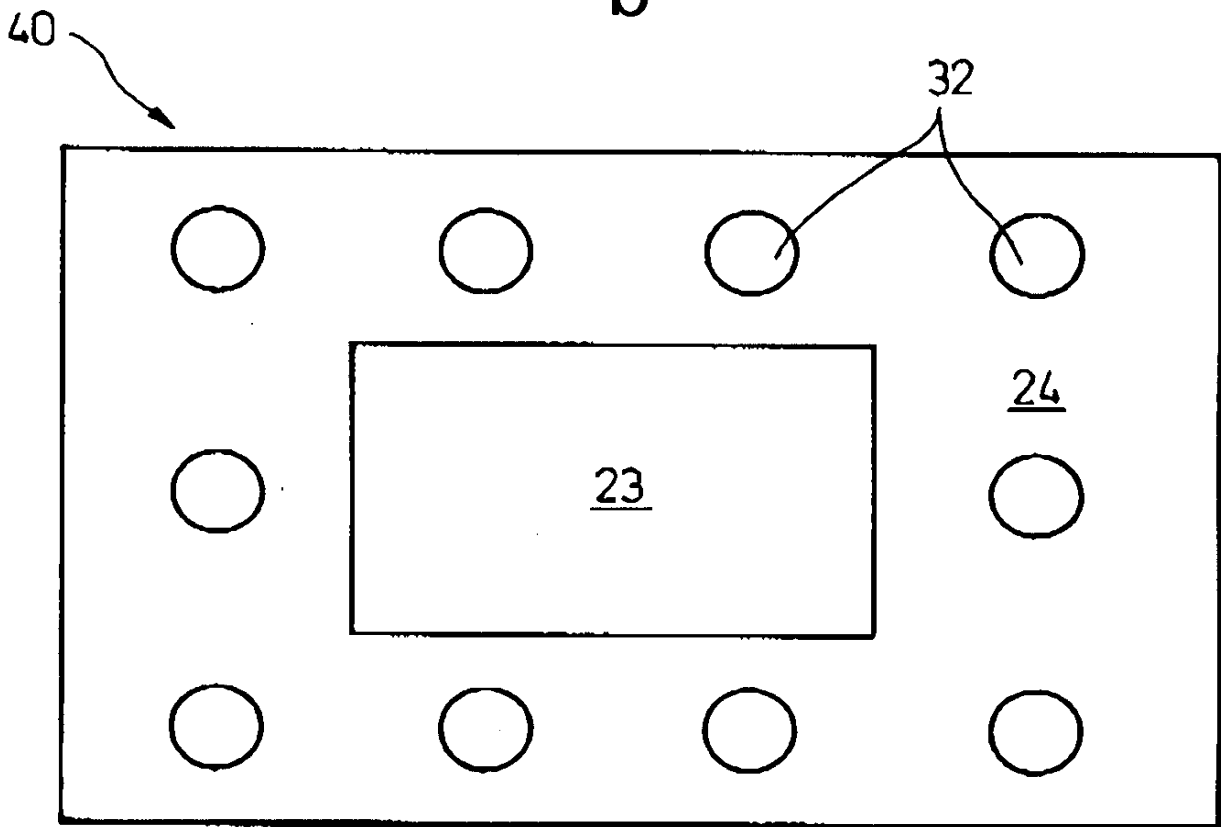


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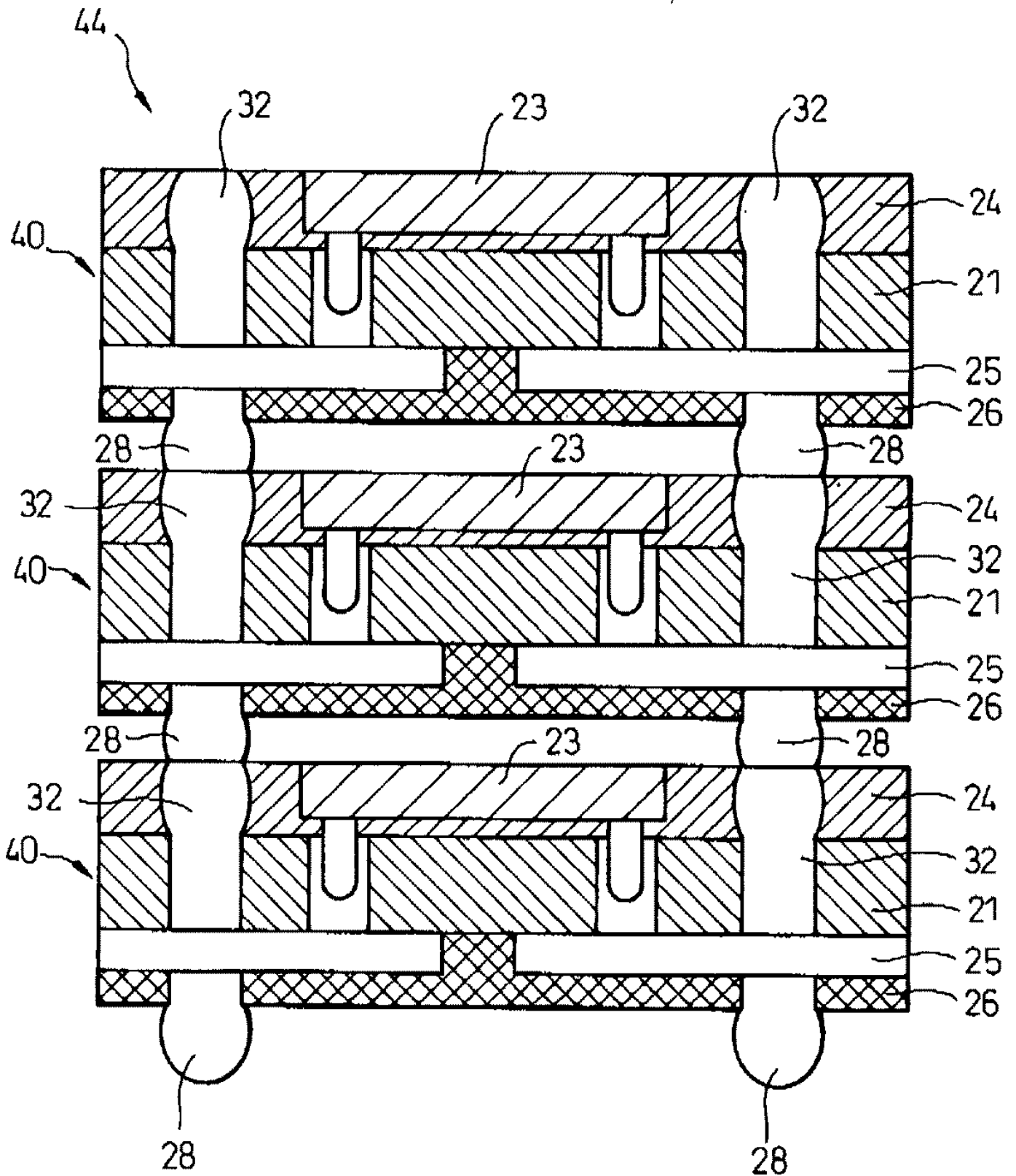
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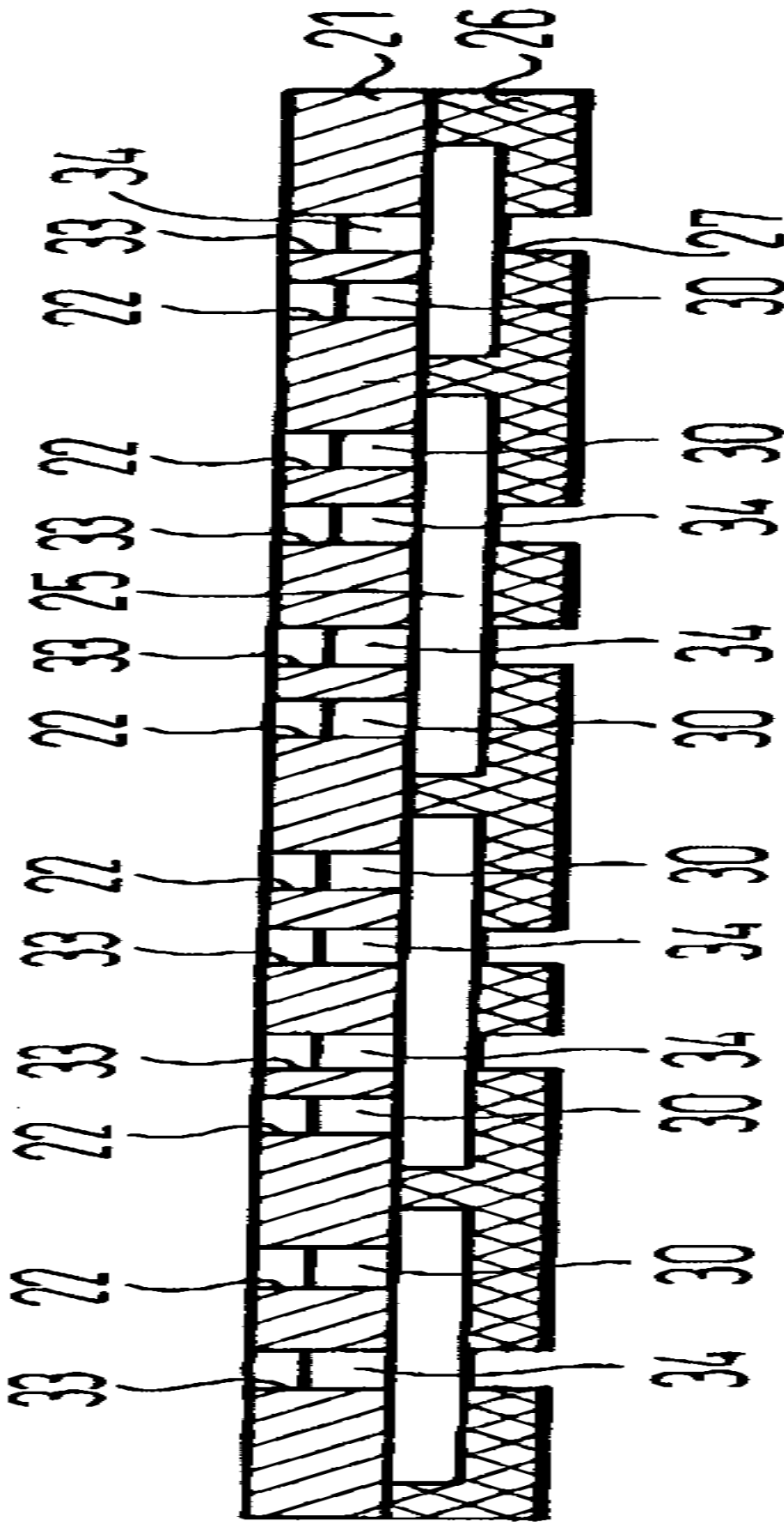


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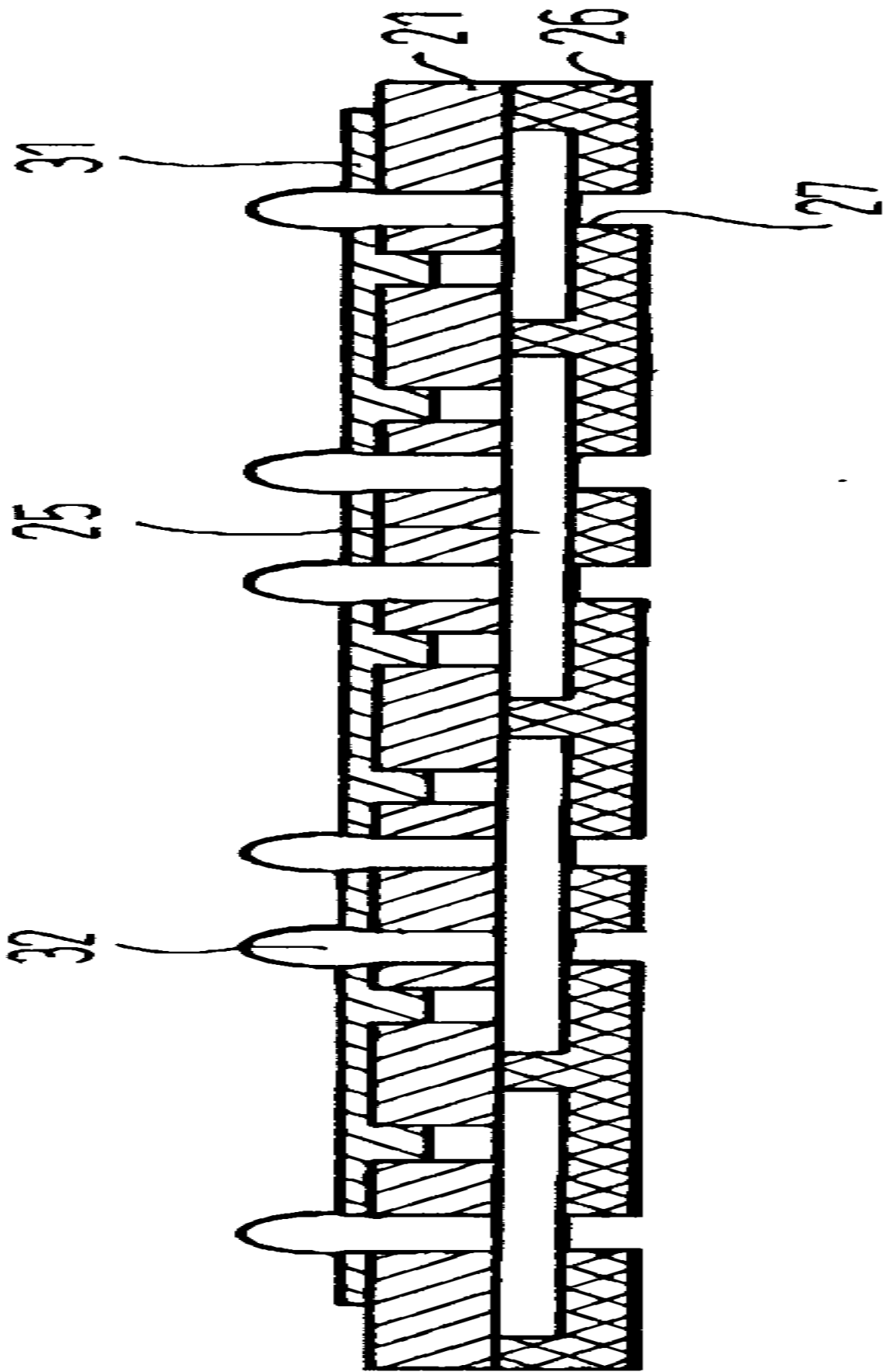


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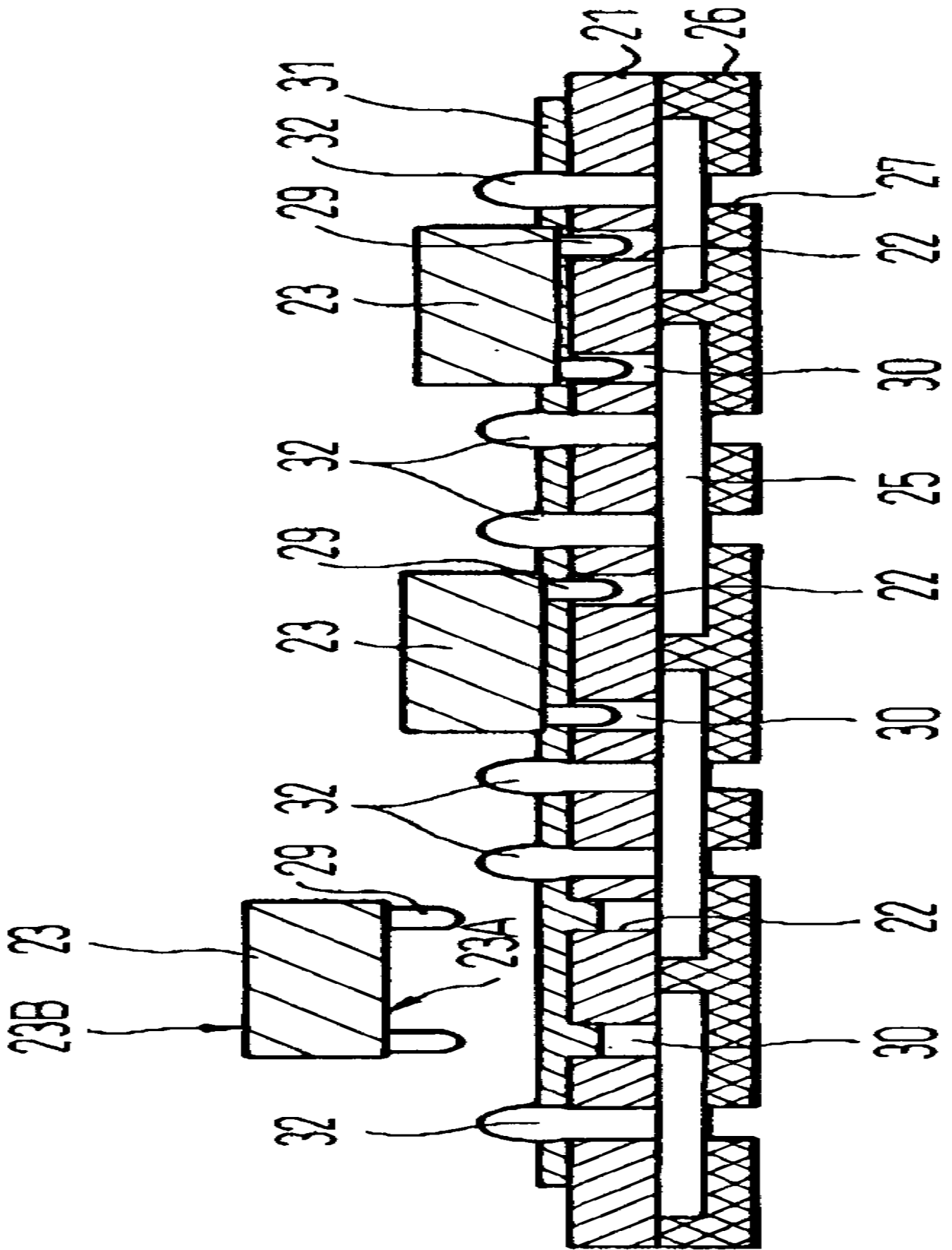


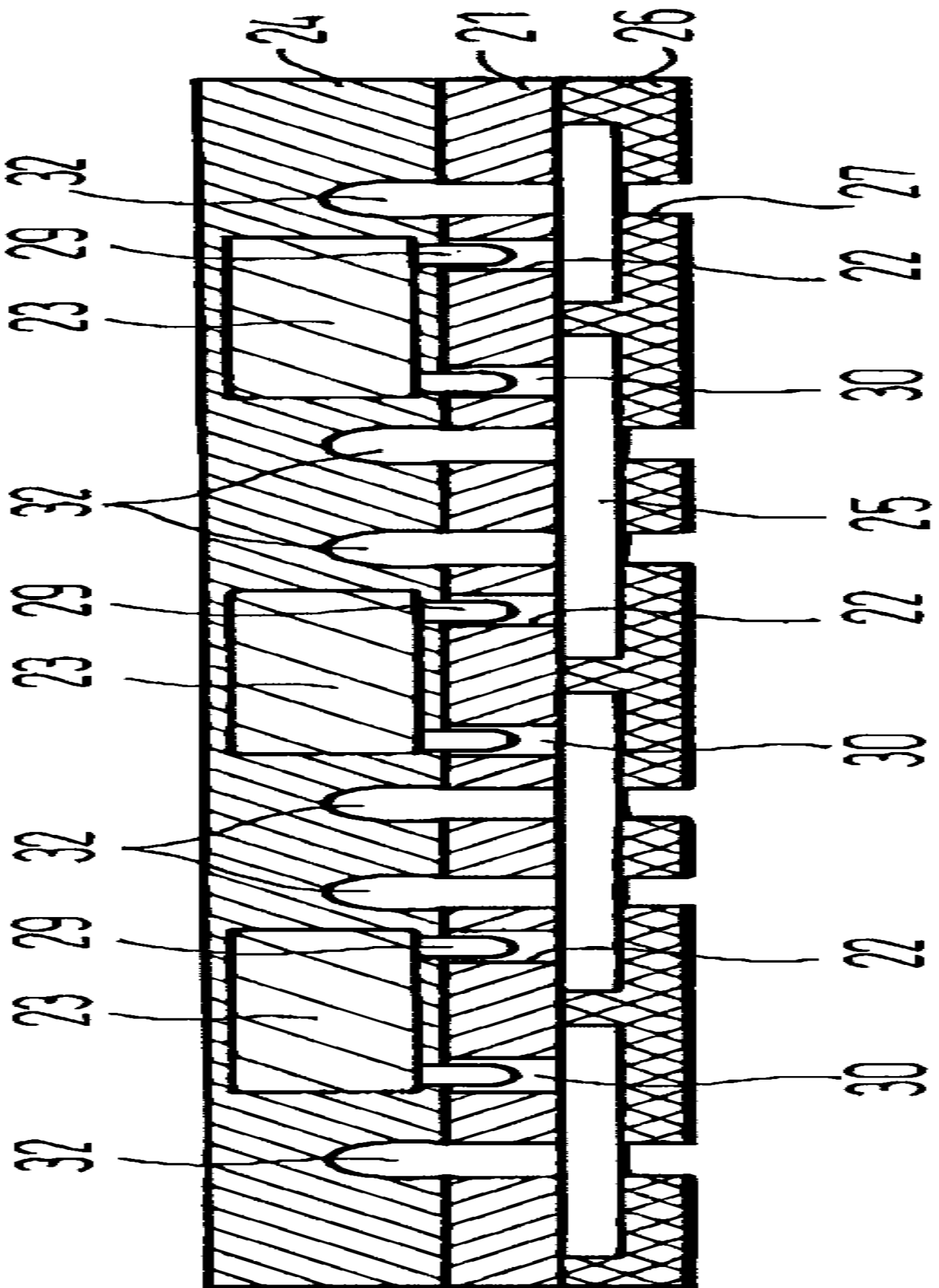


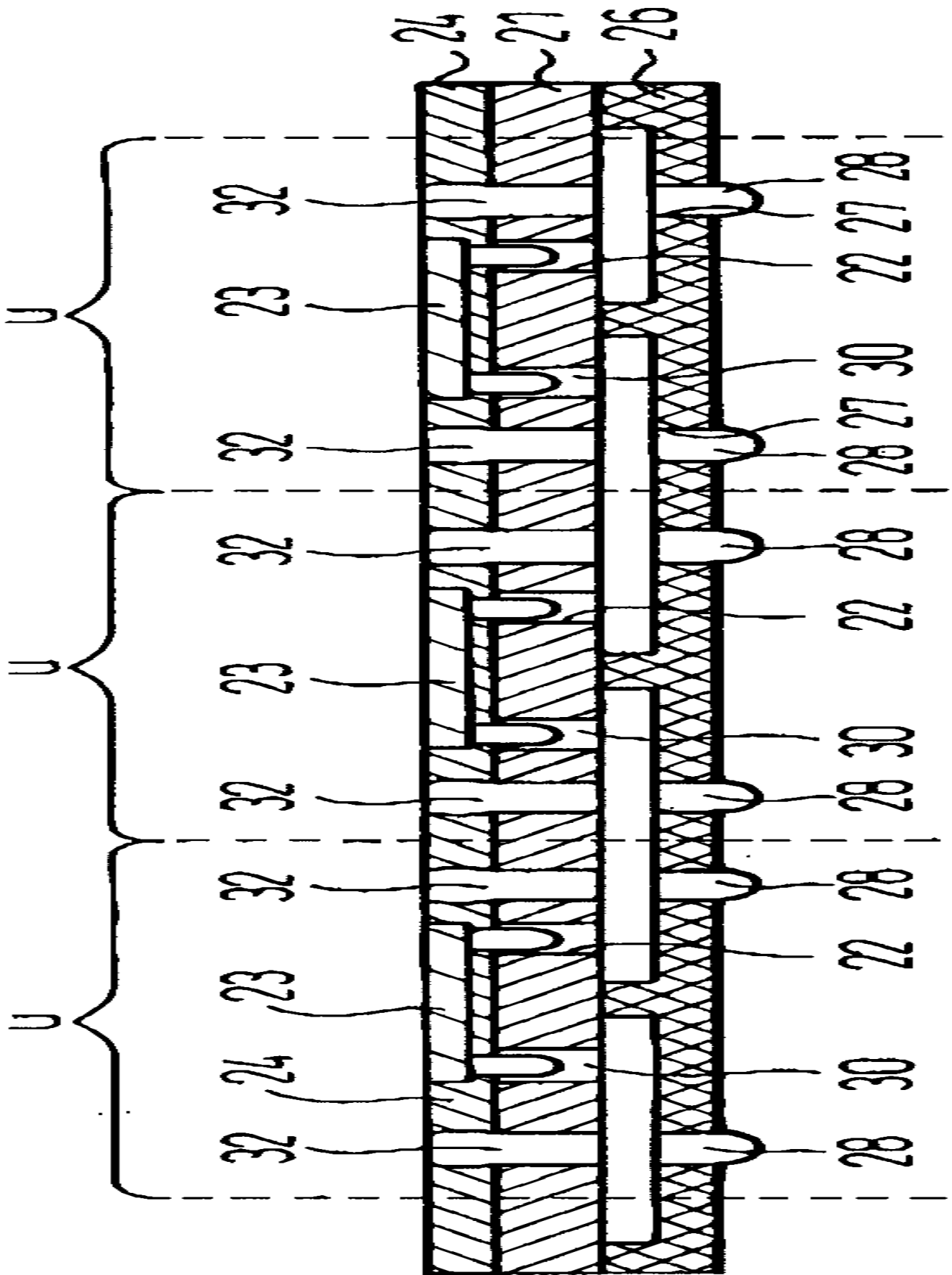
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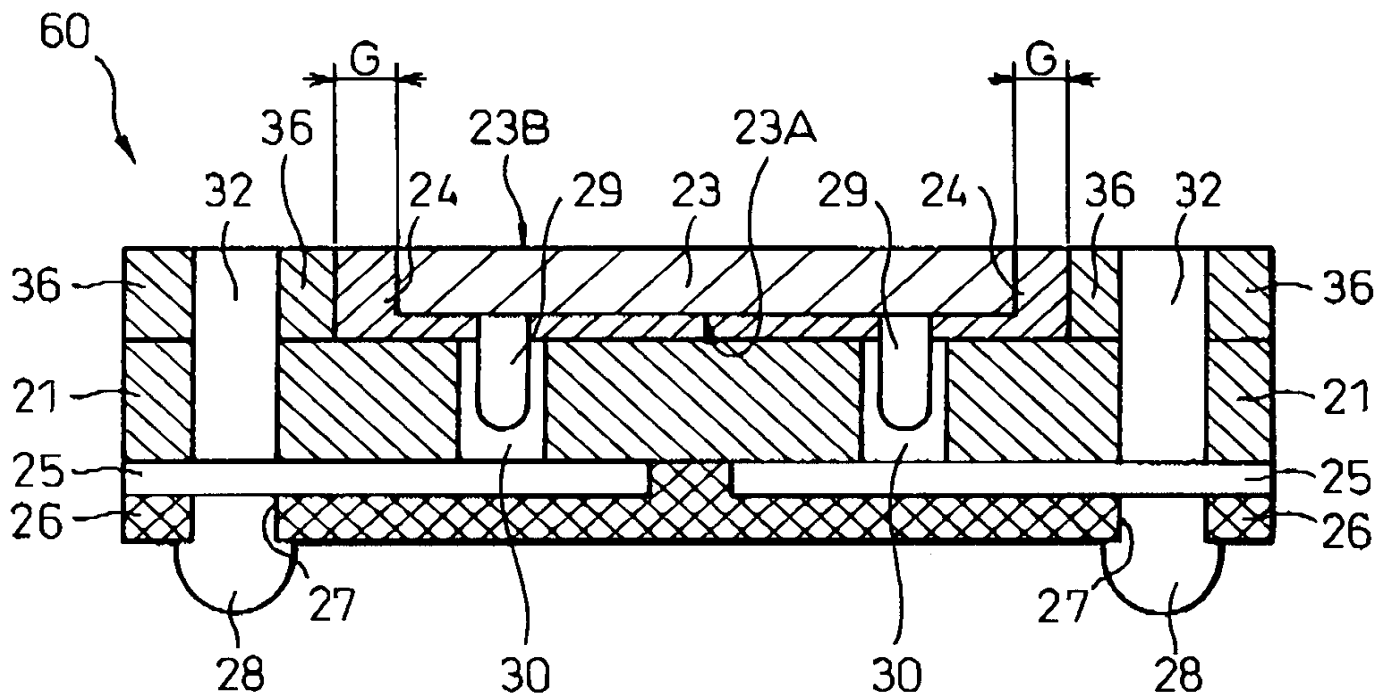




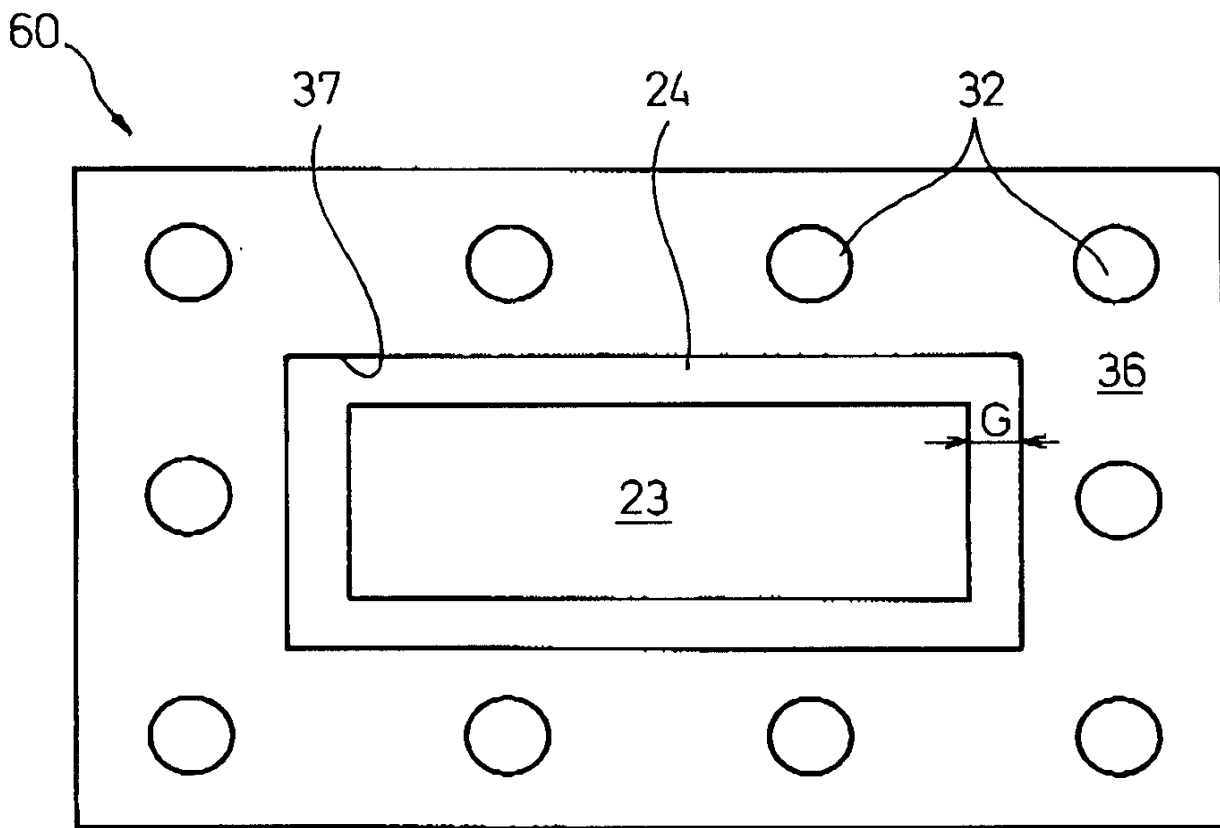


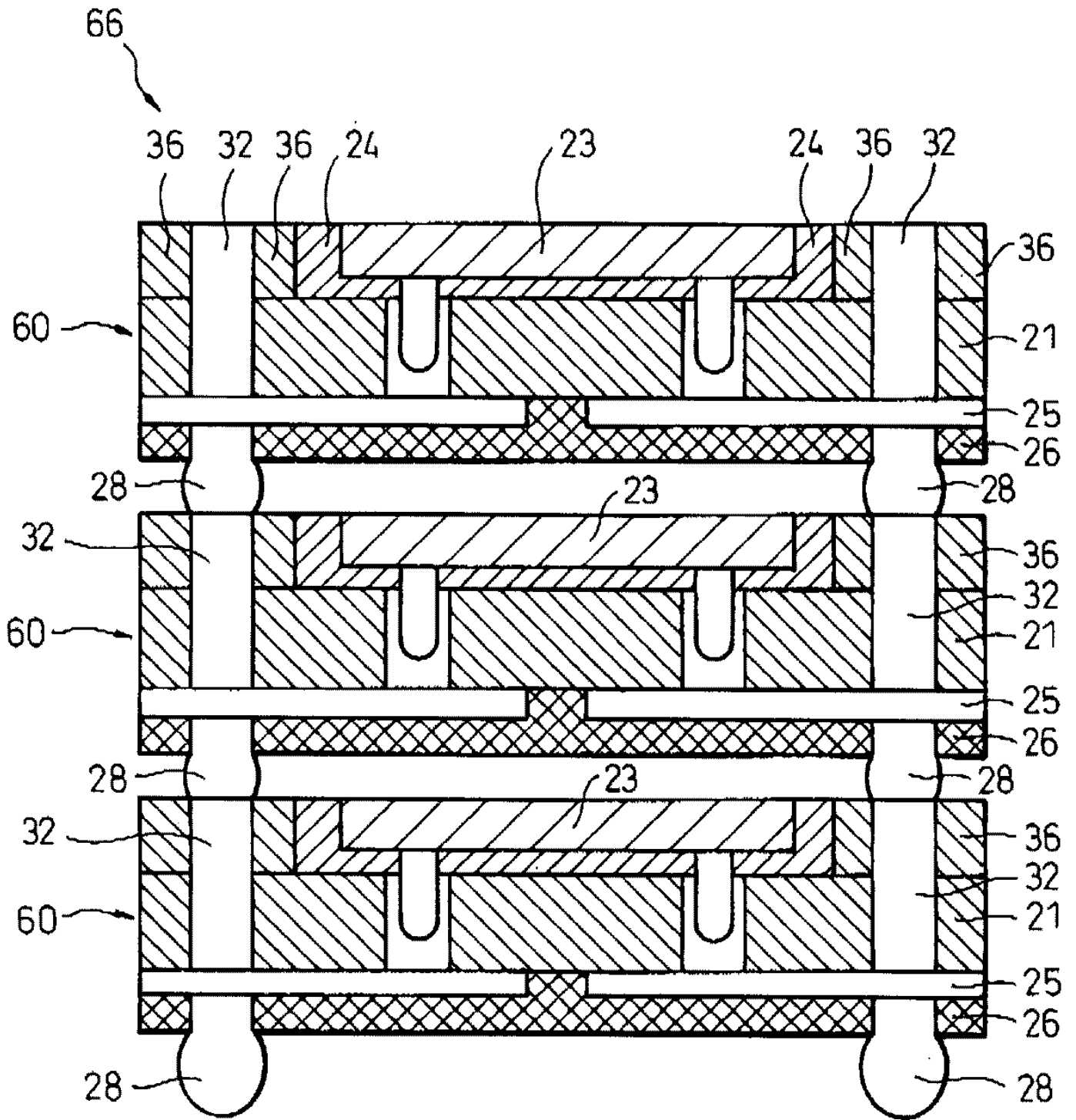
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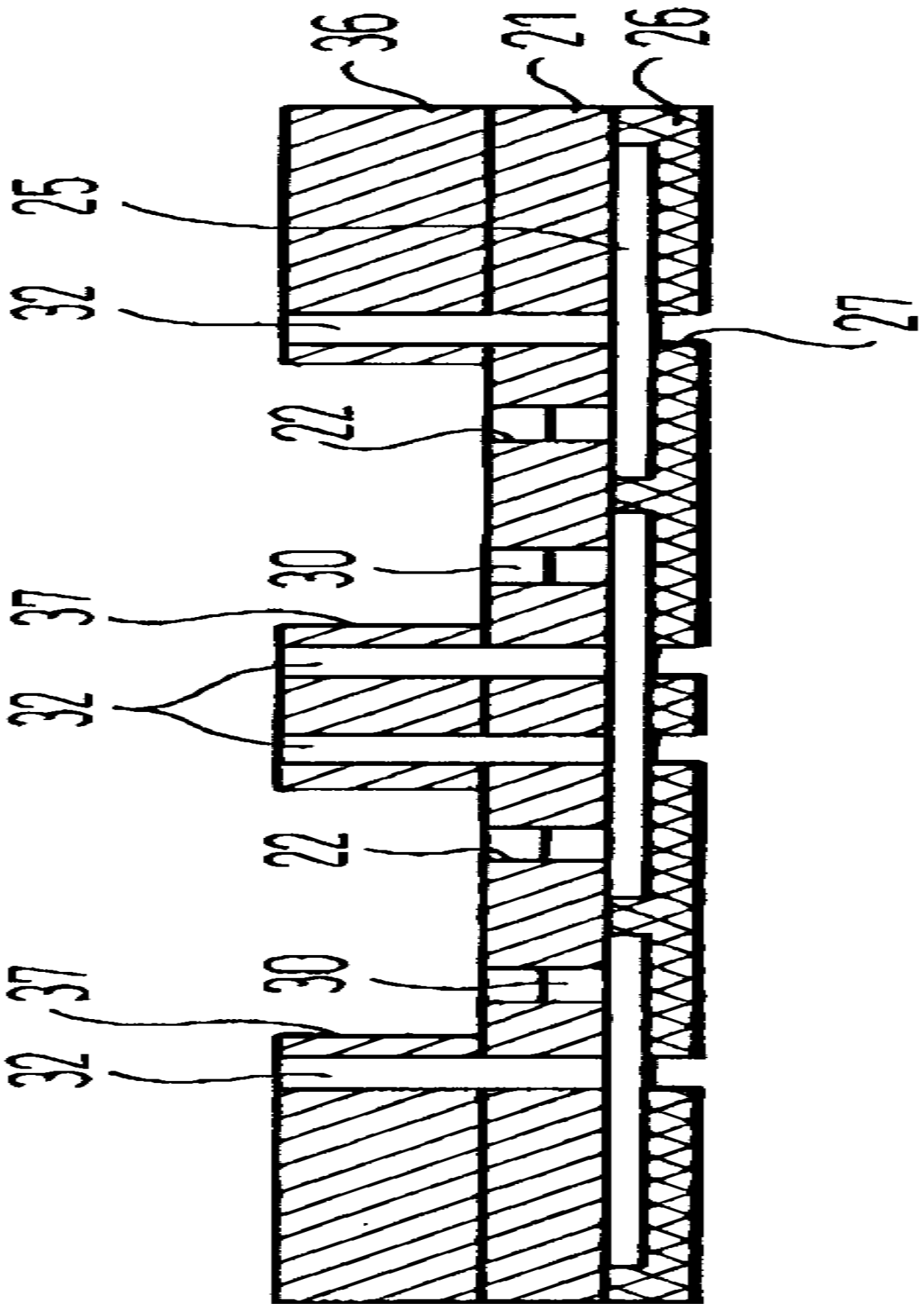
a



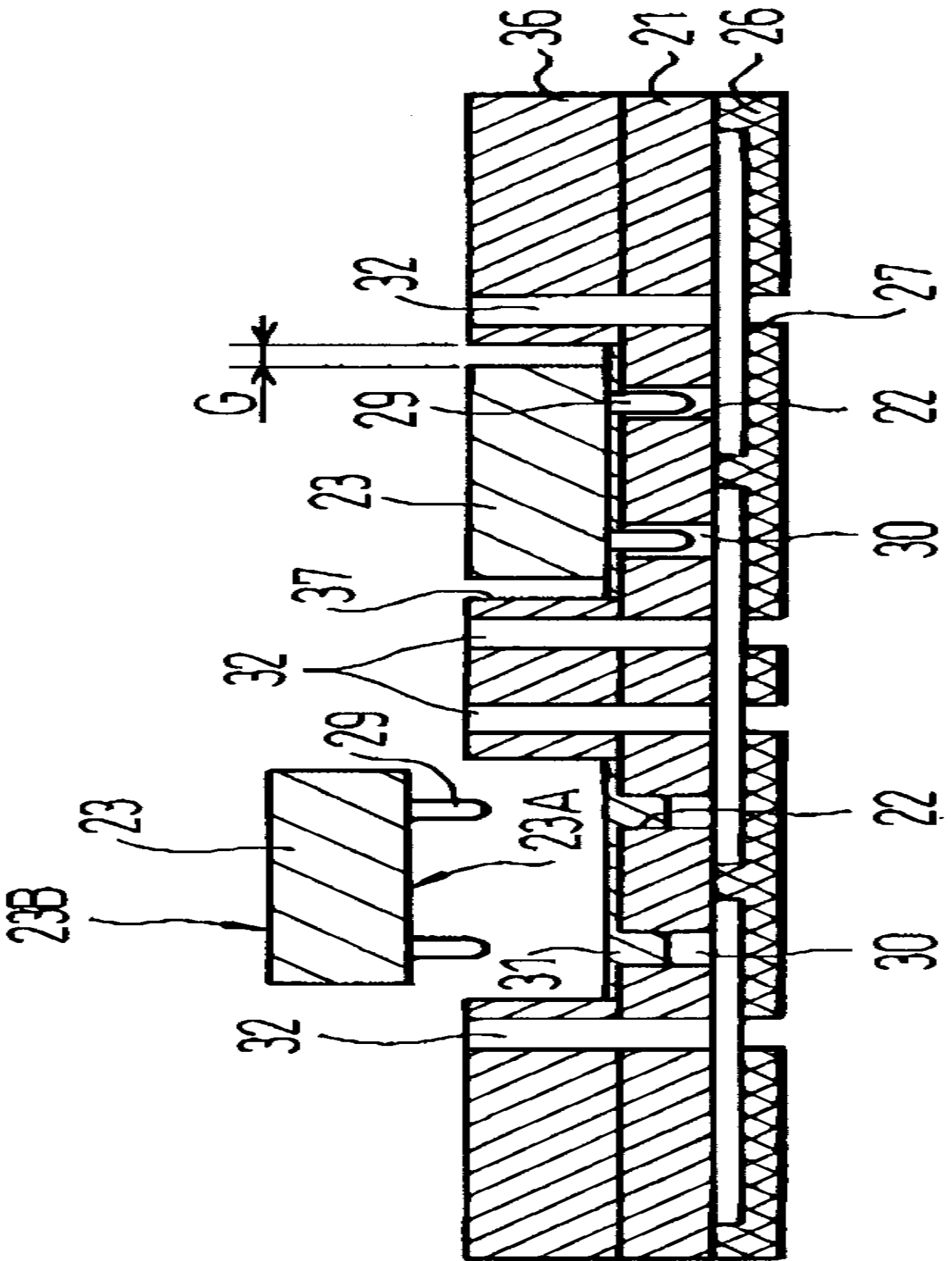
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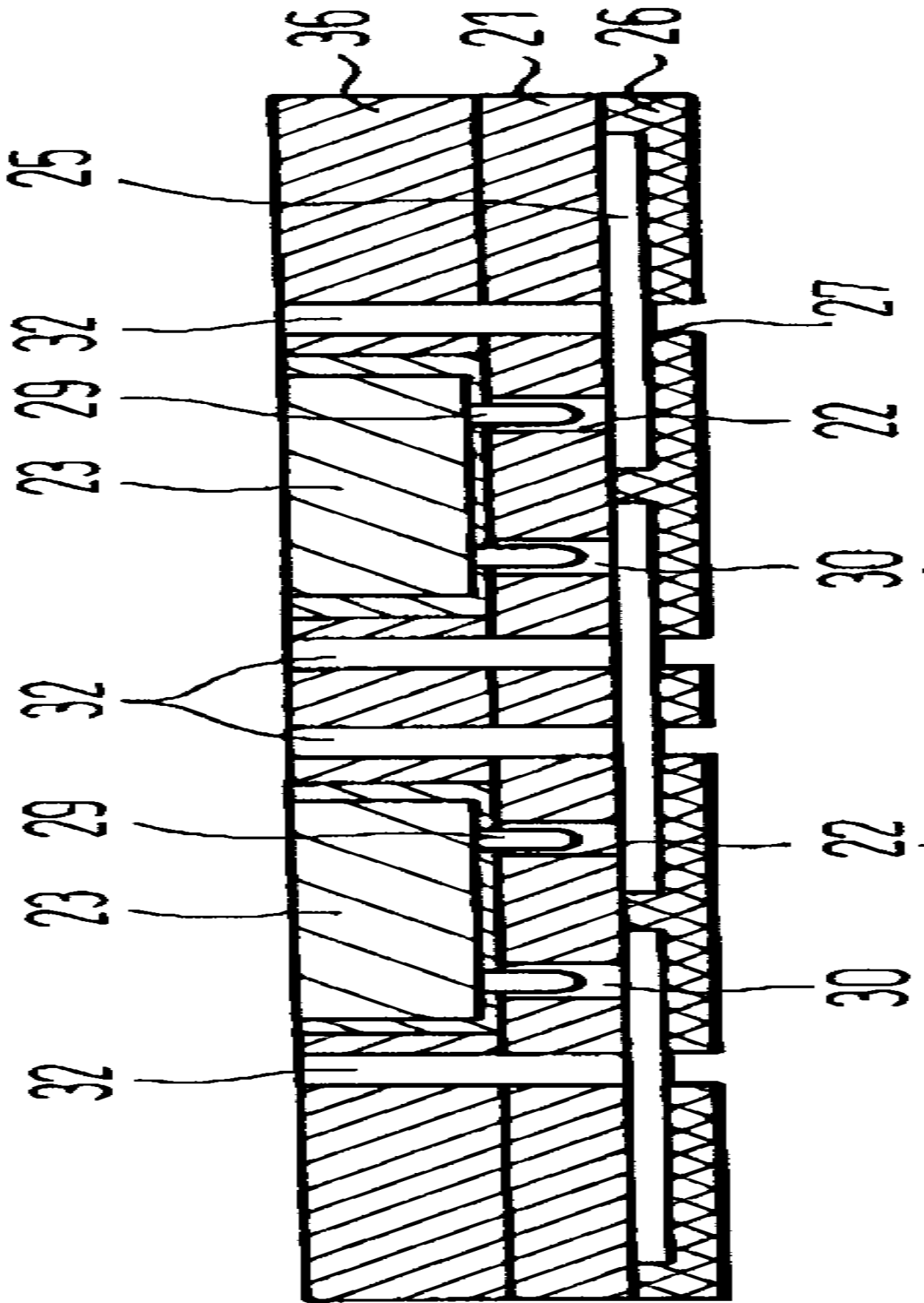




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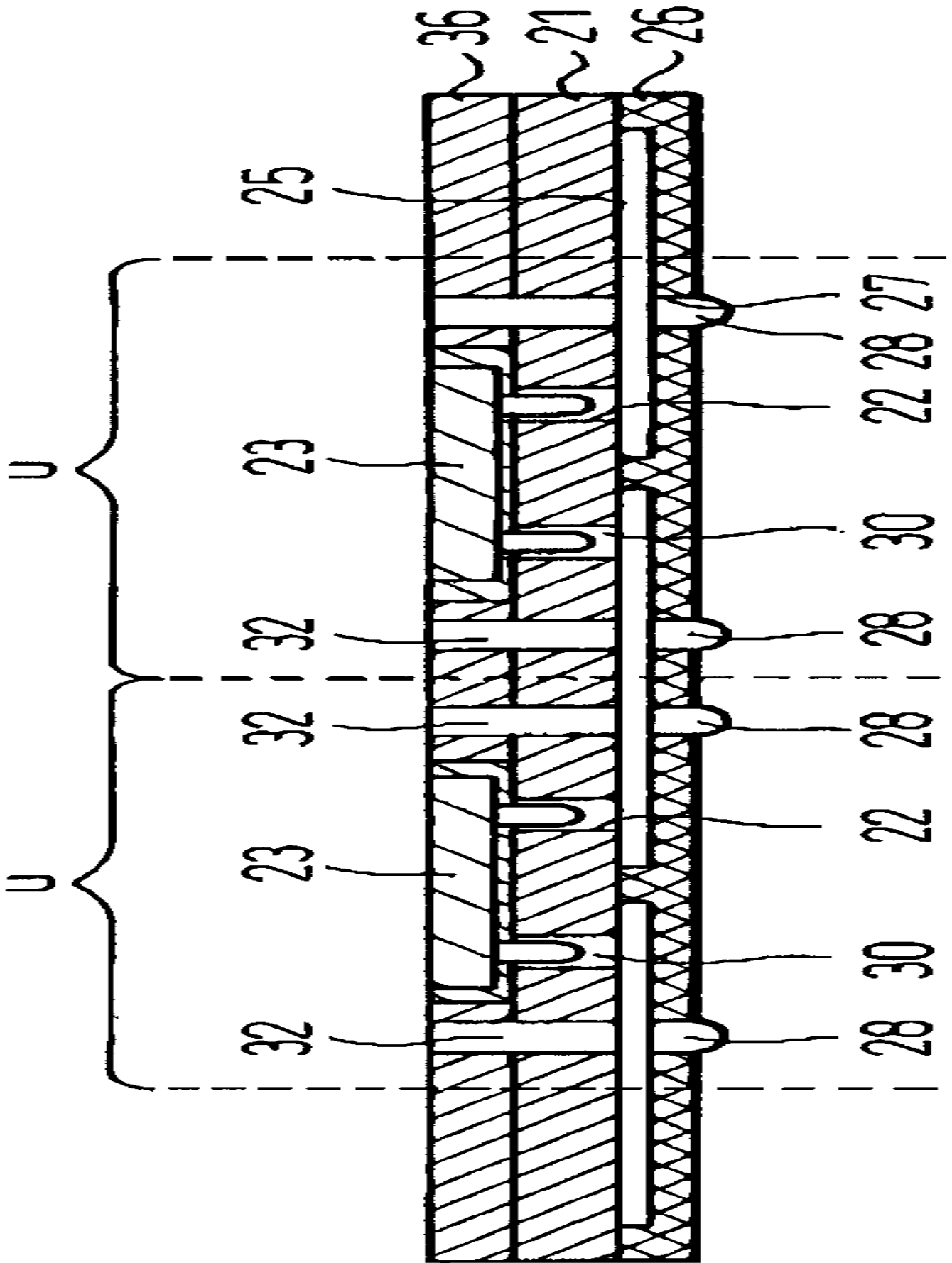


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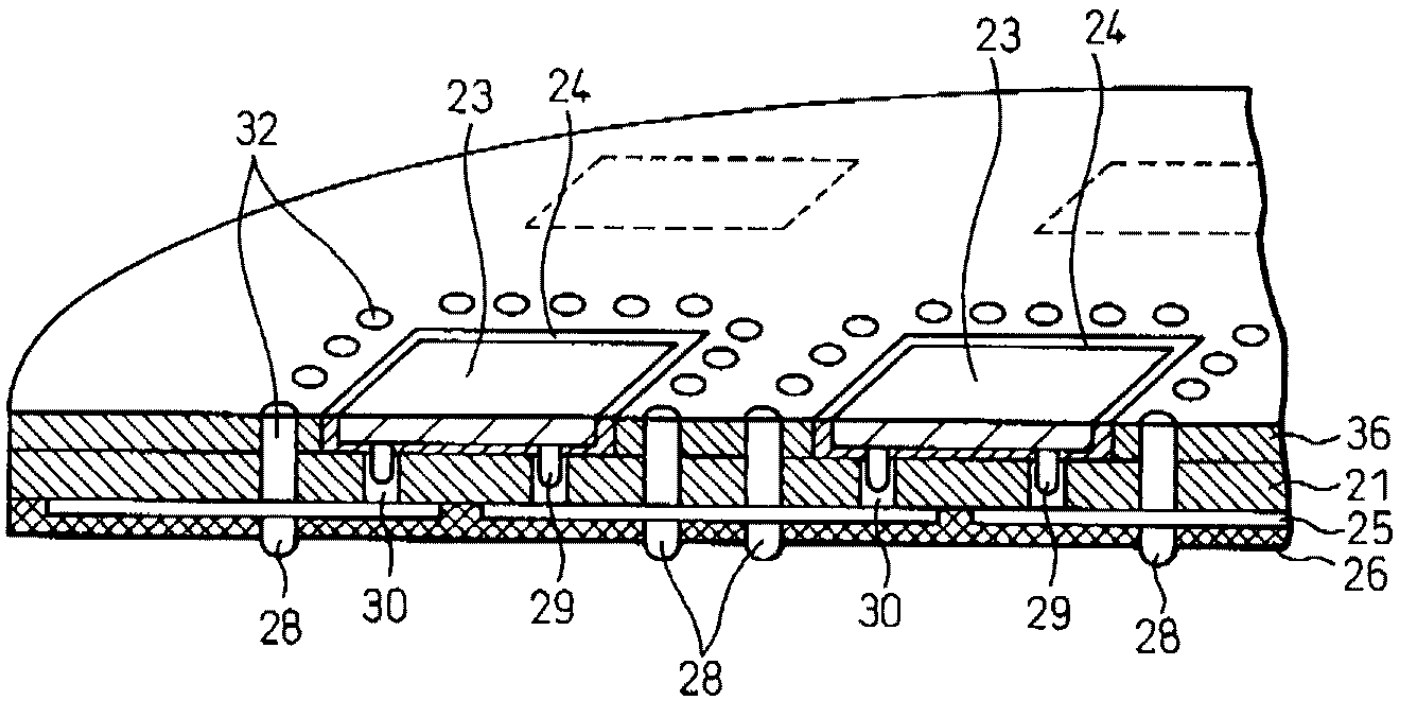




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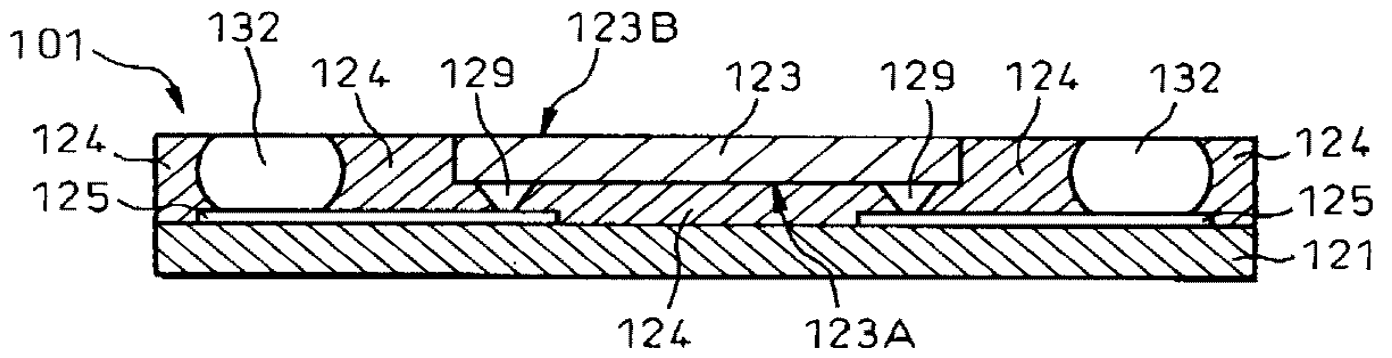


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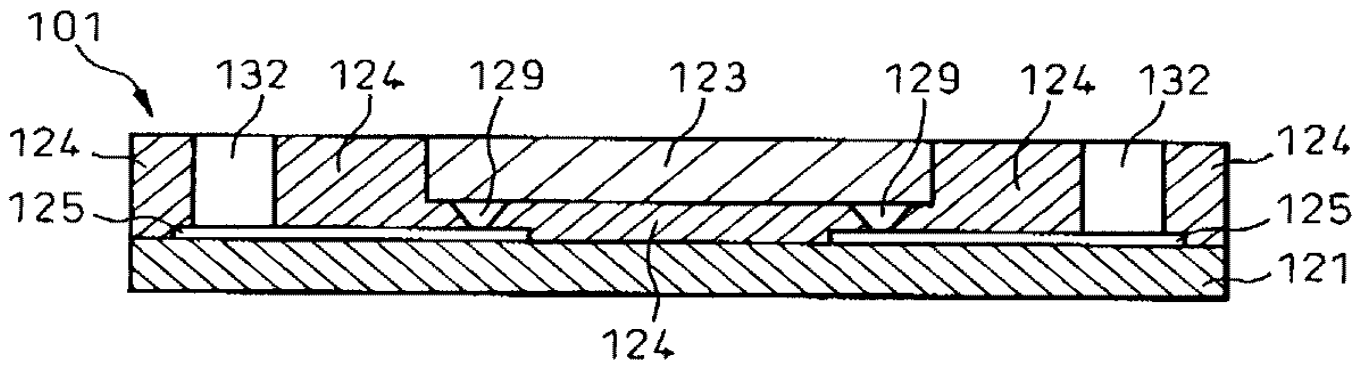


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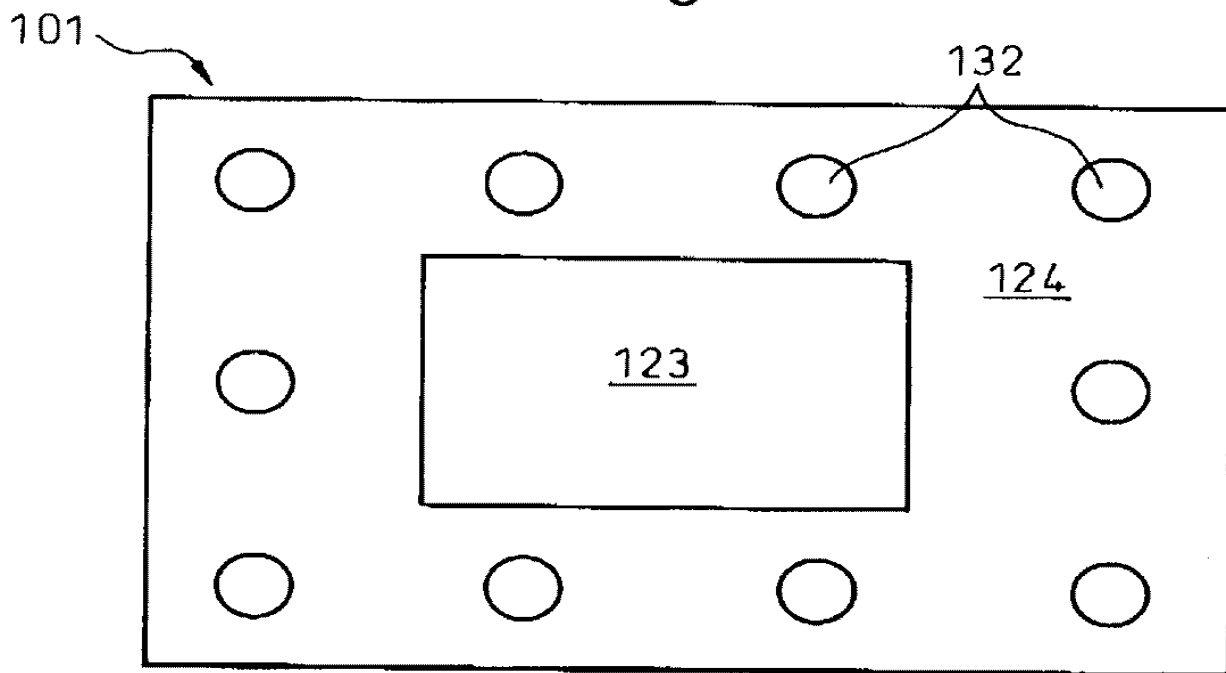
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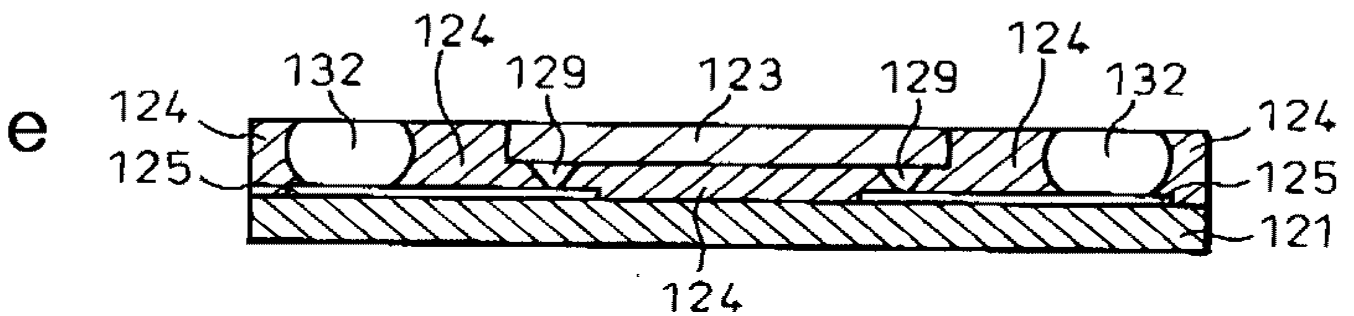
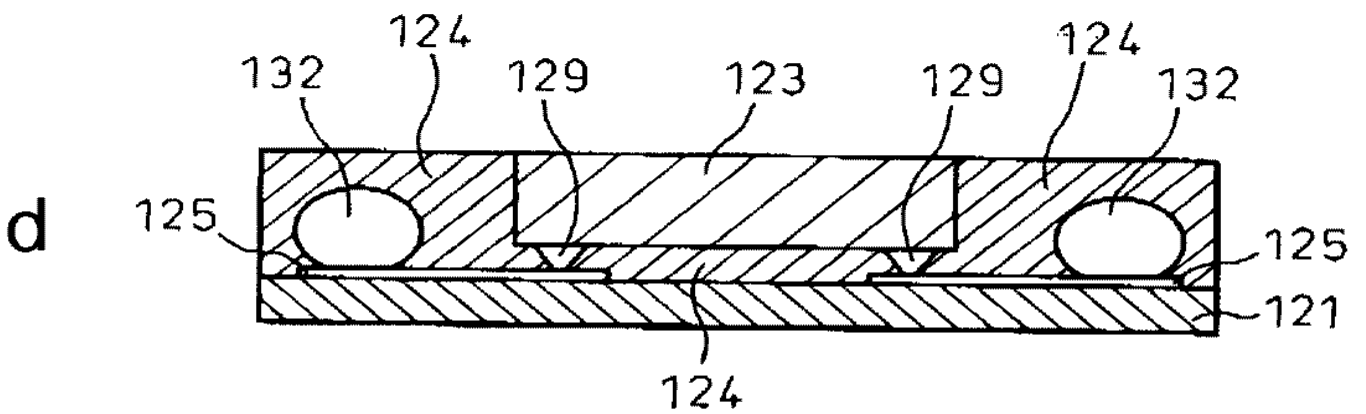
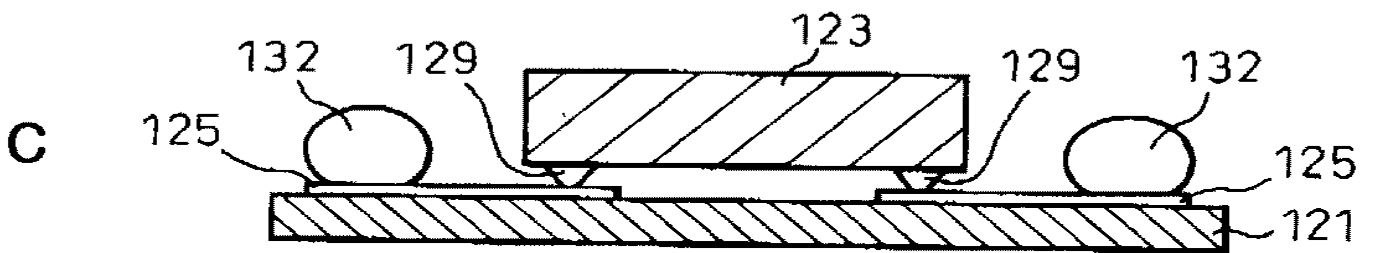
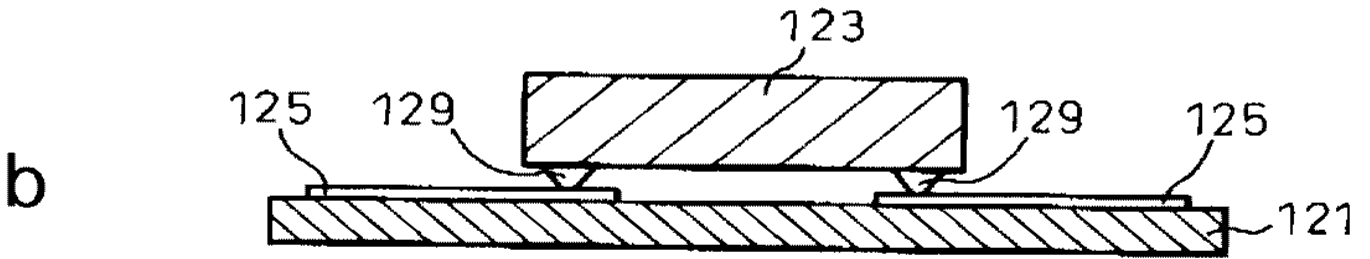
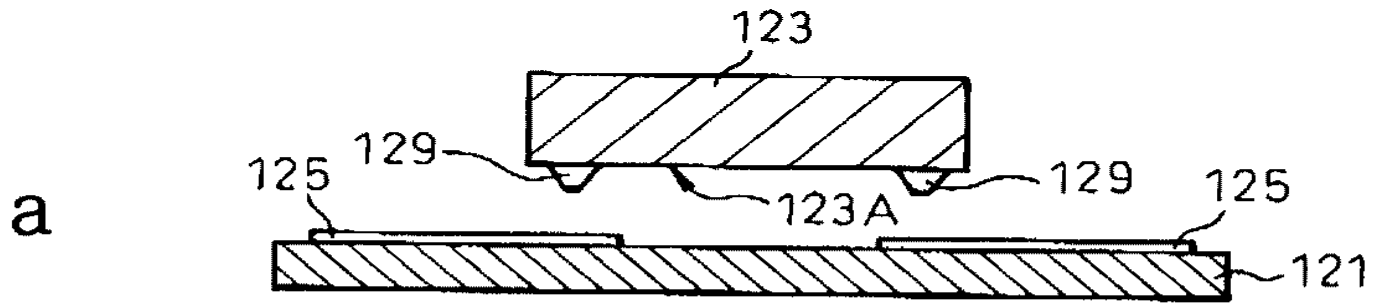
b



c

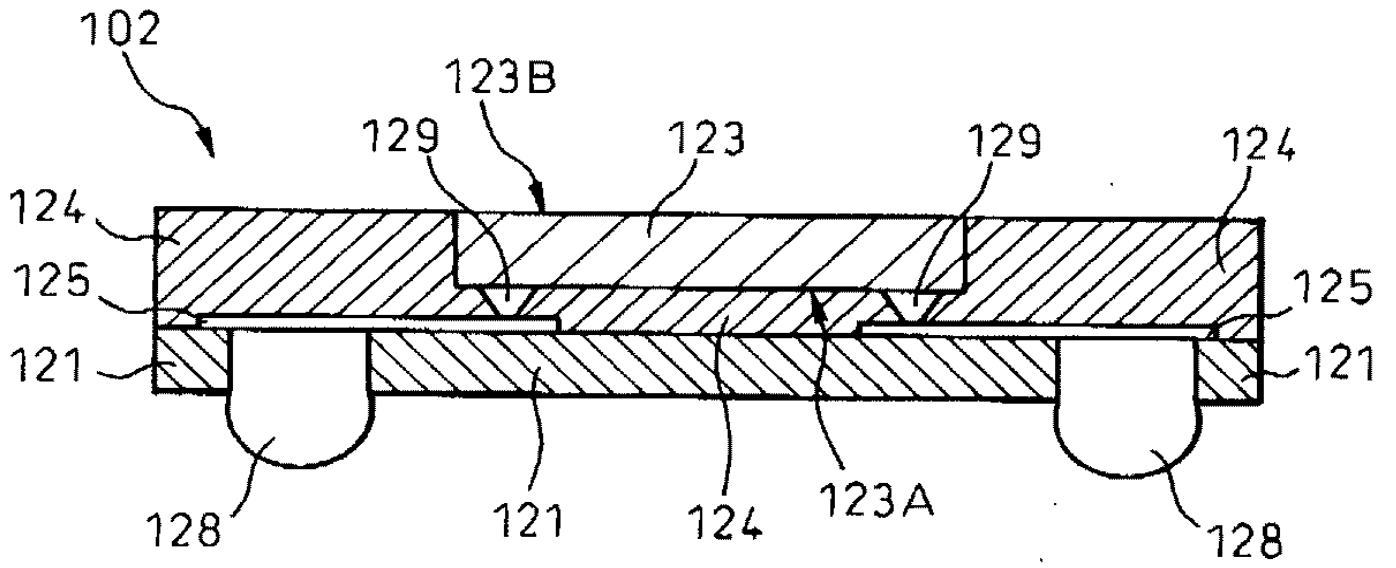


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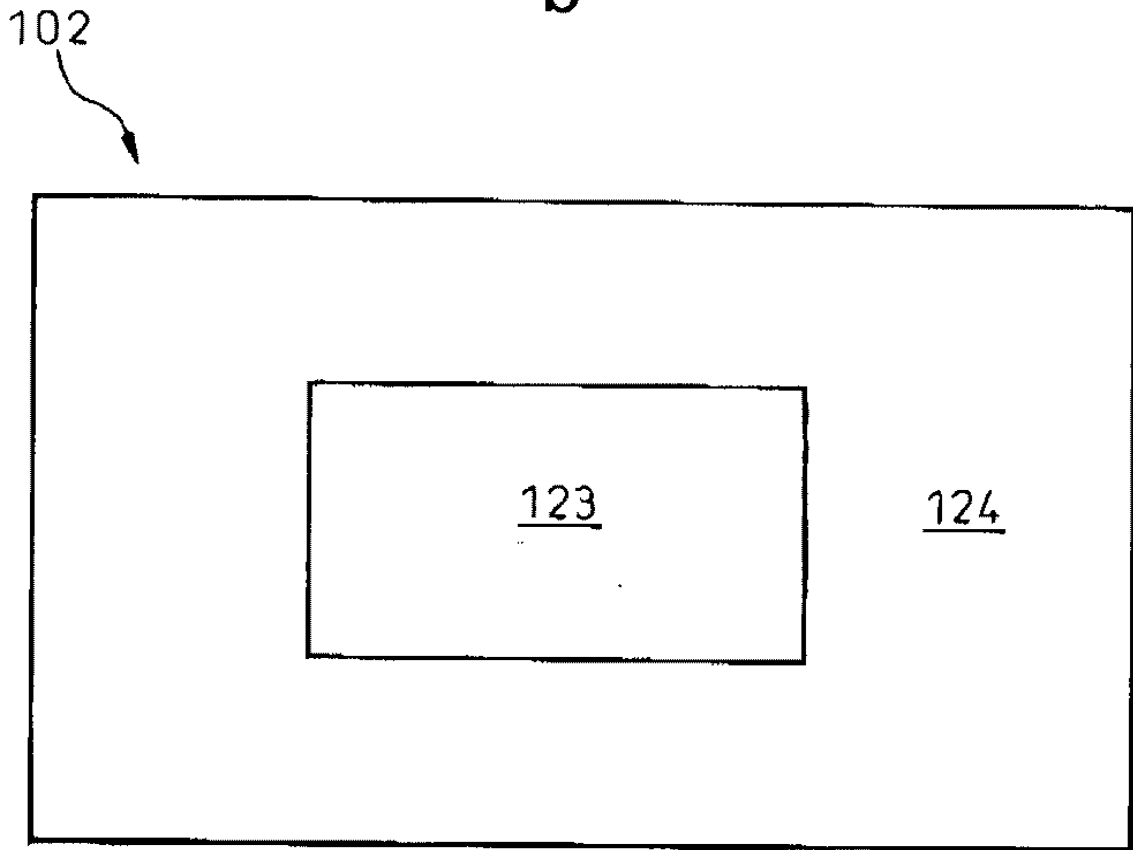


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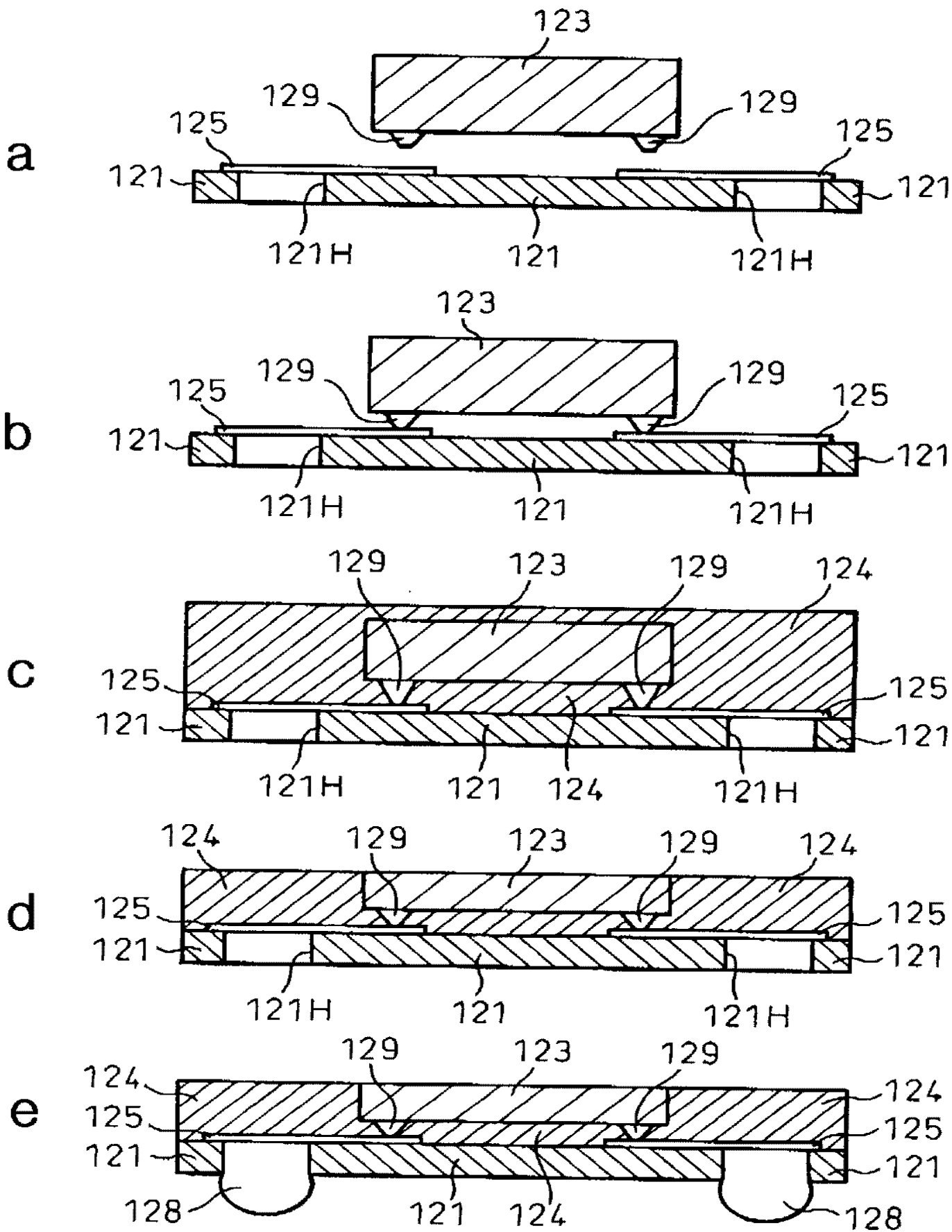
a



b

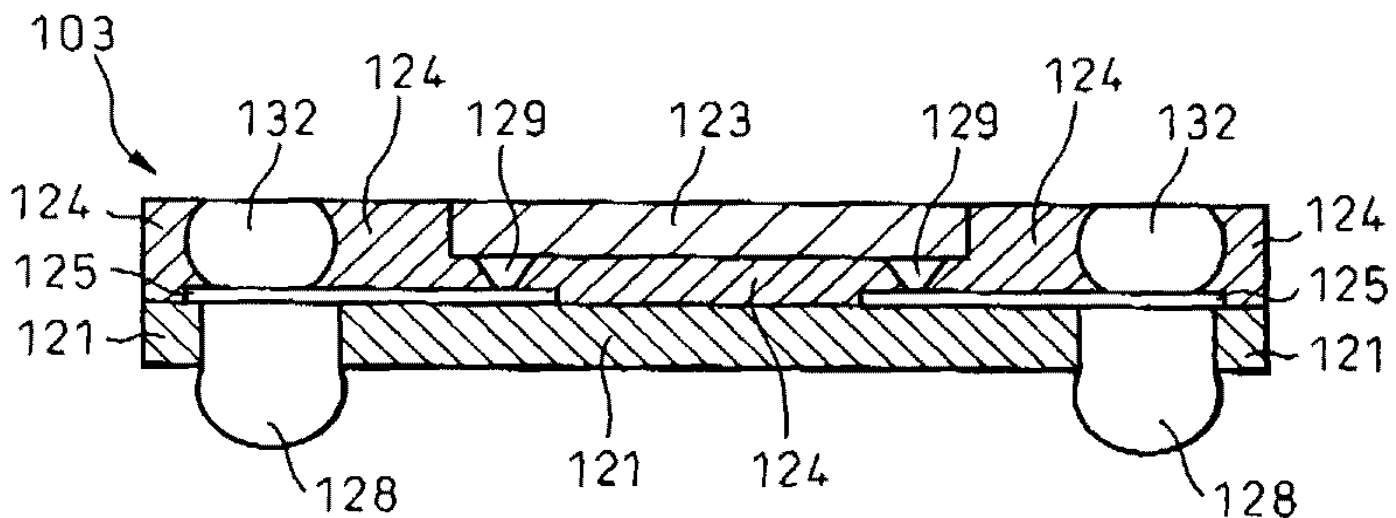


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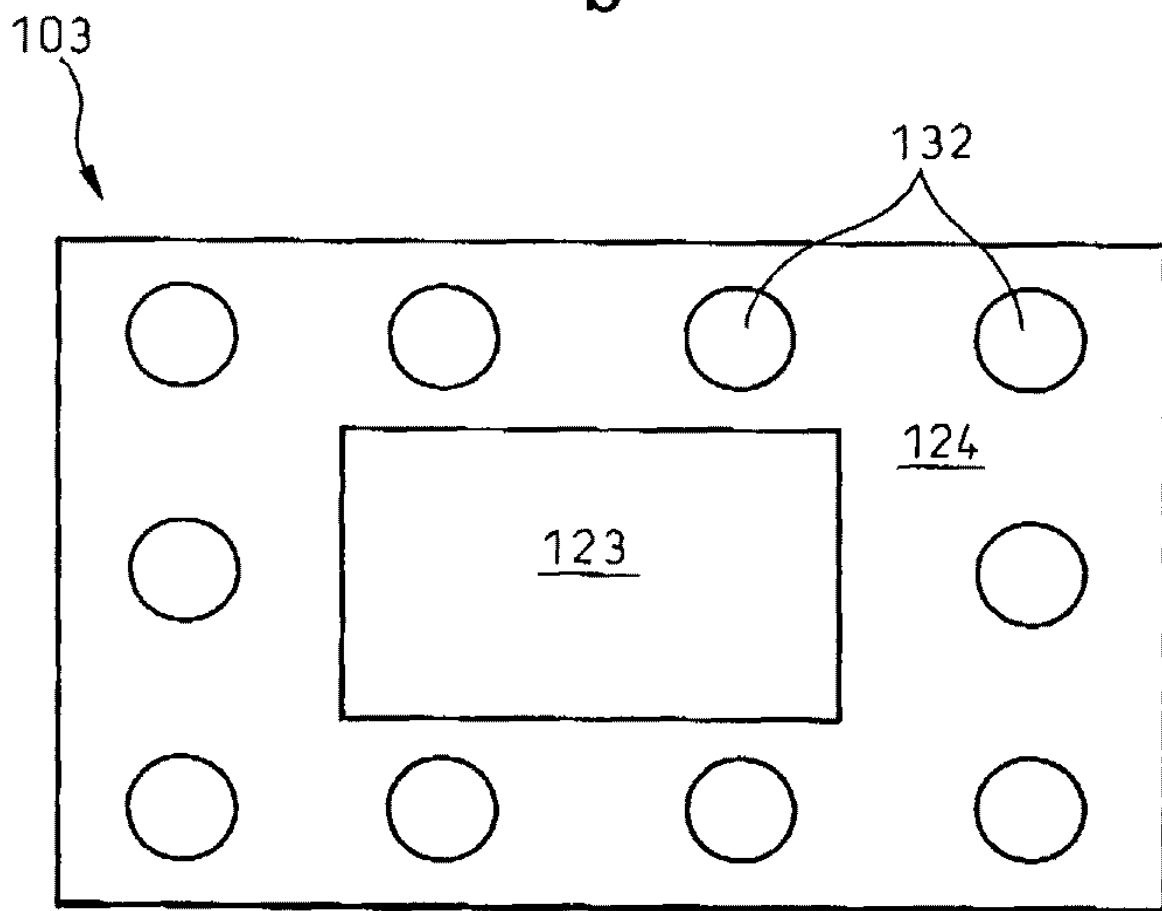


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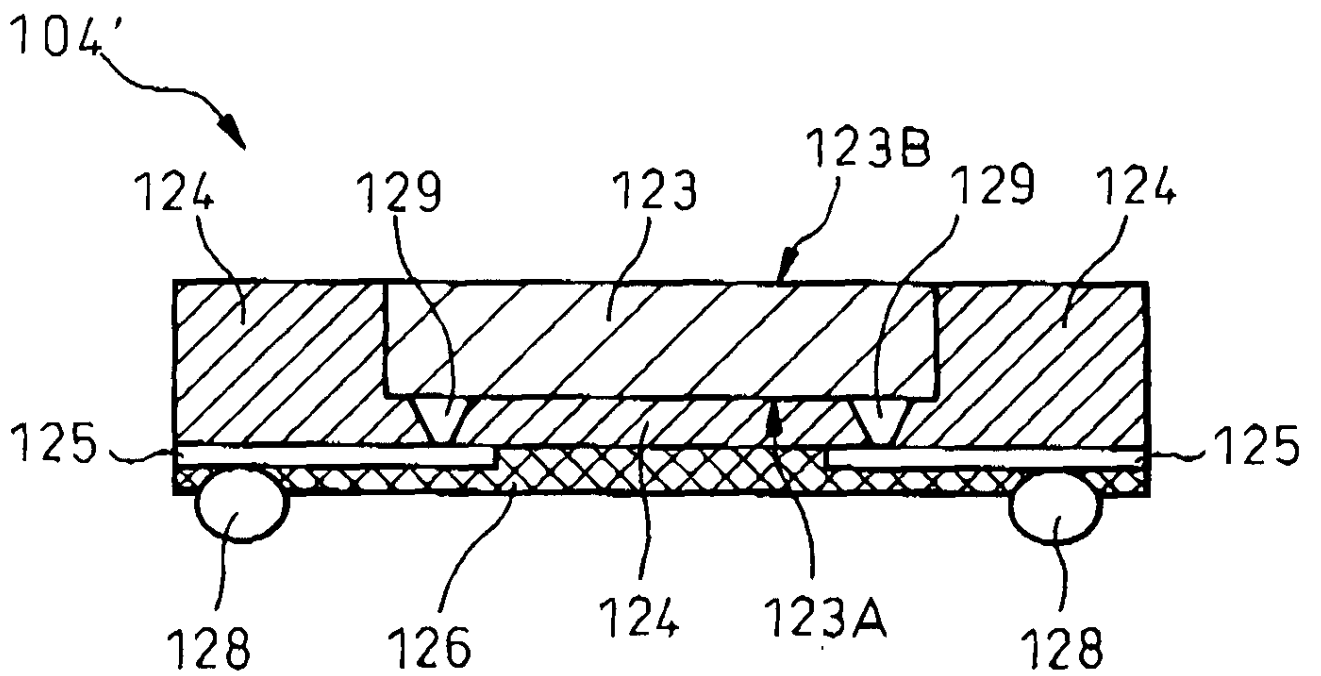
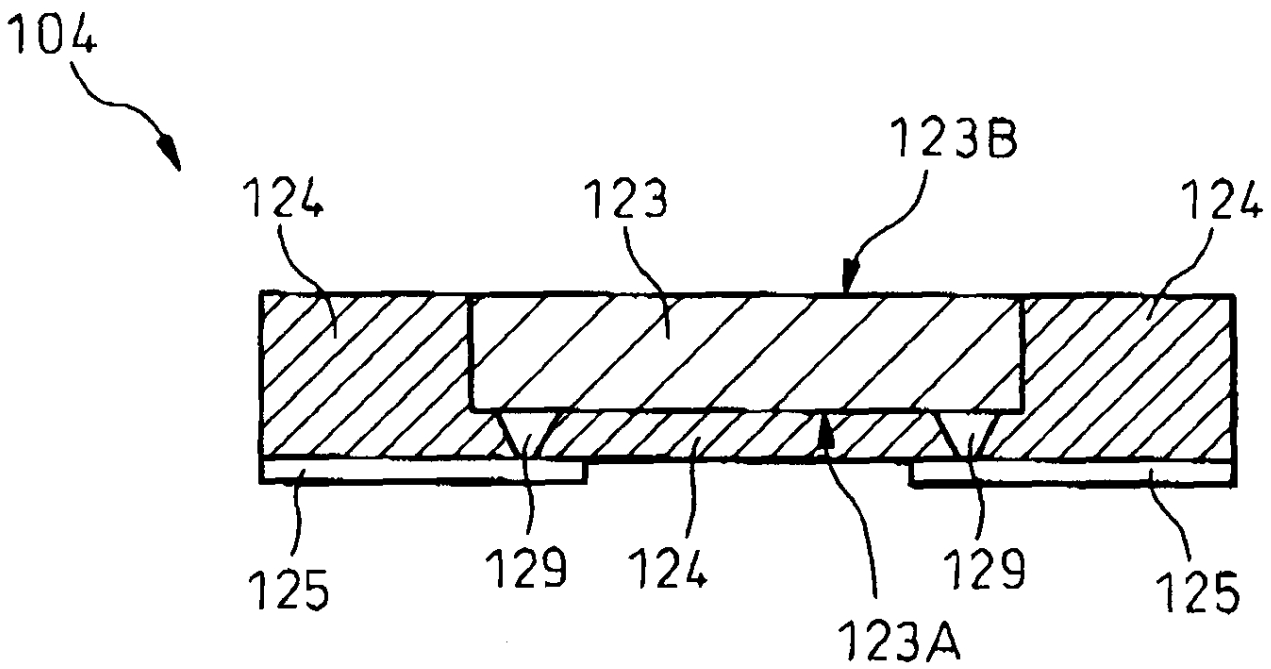
a



b

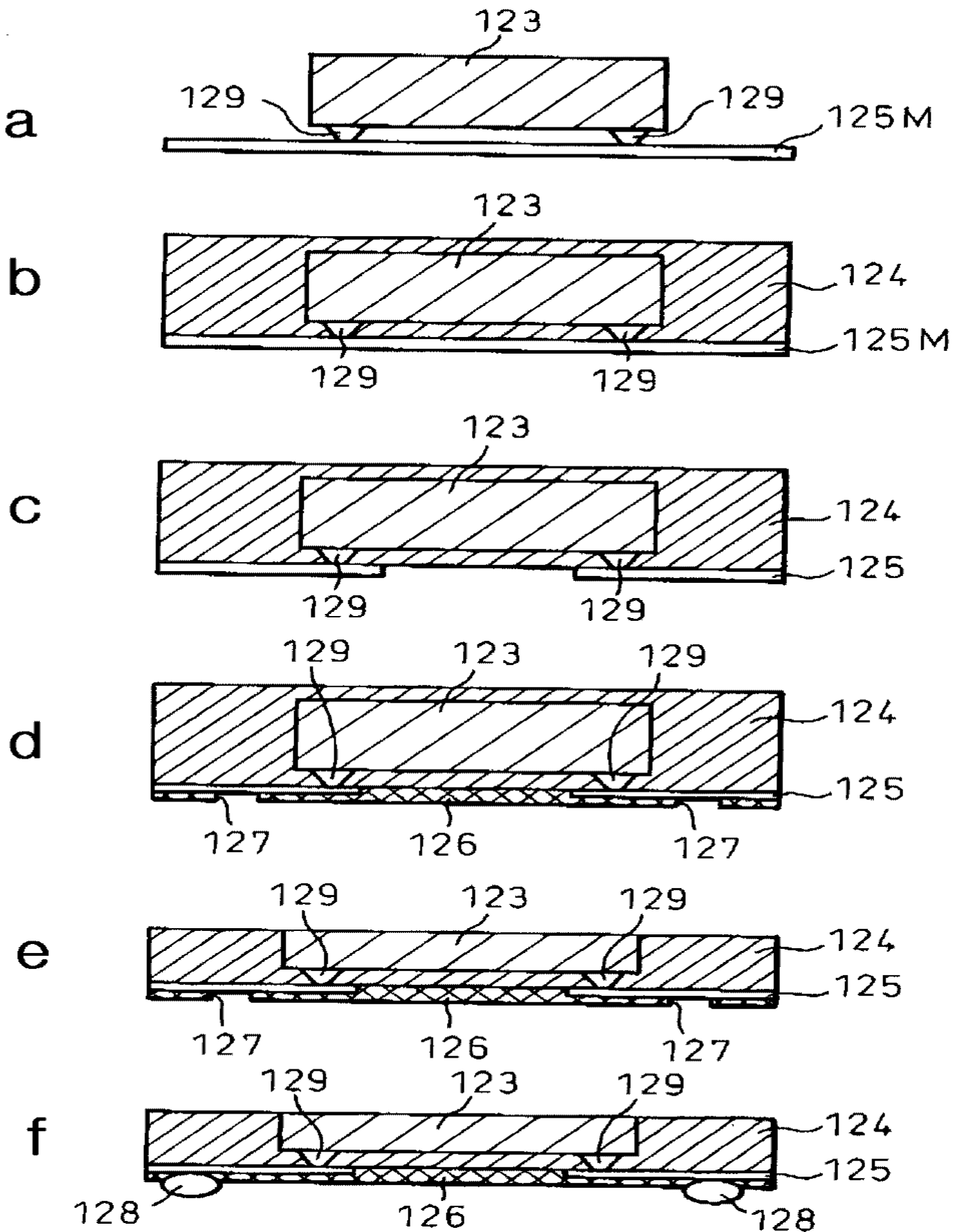


29

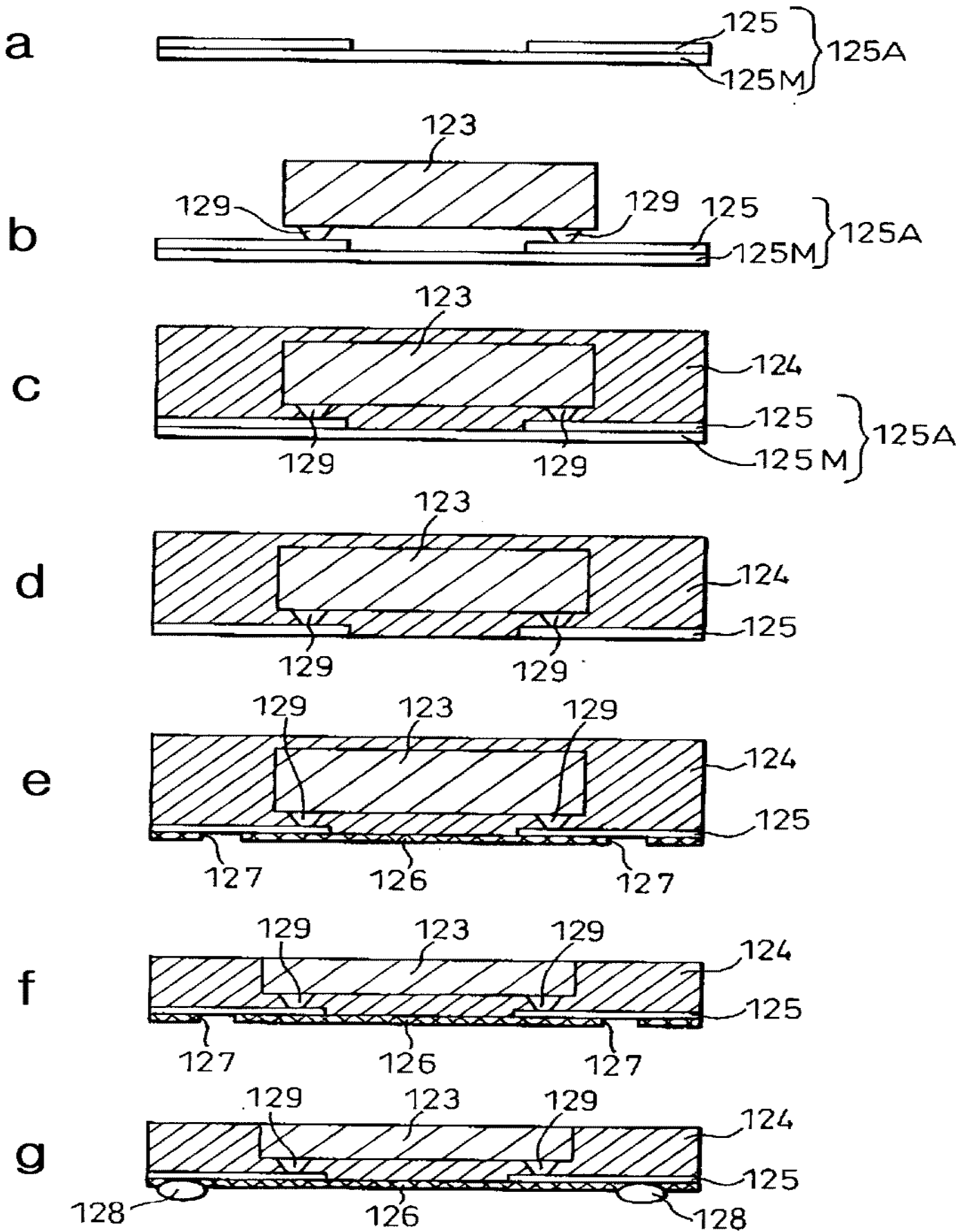




30

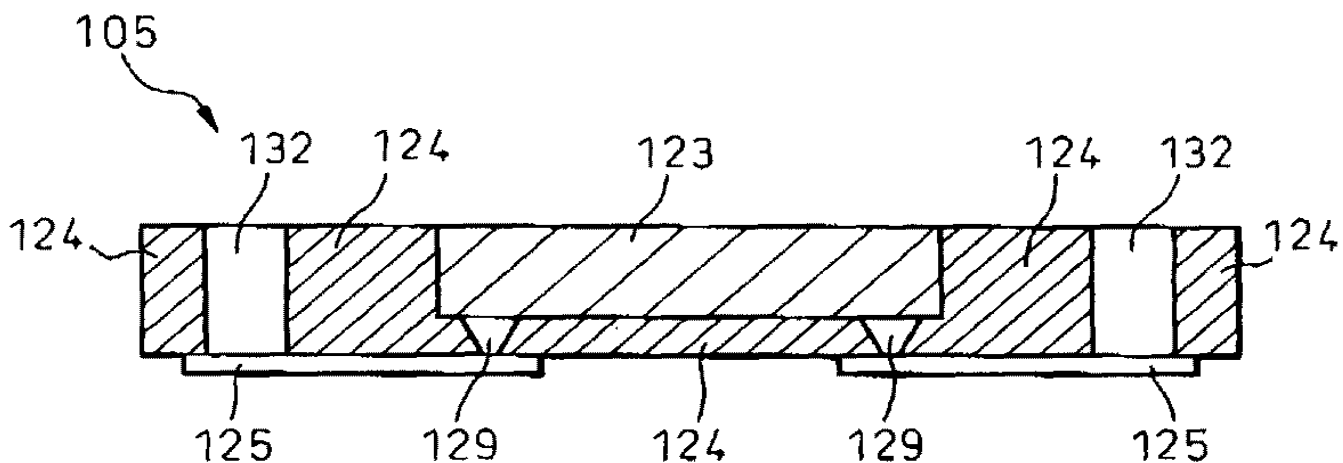


31

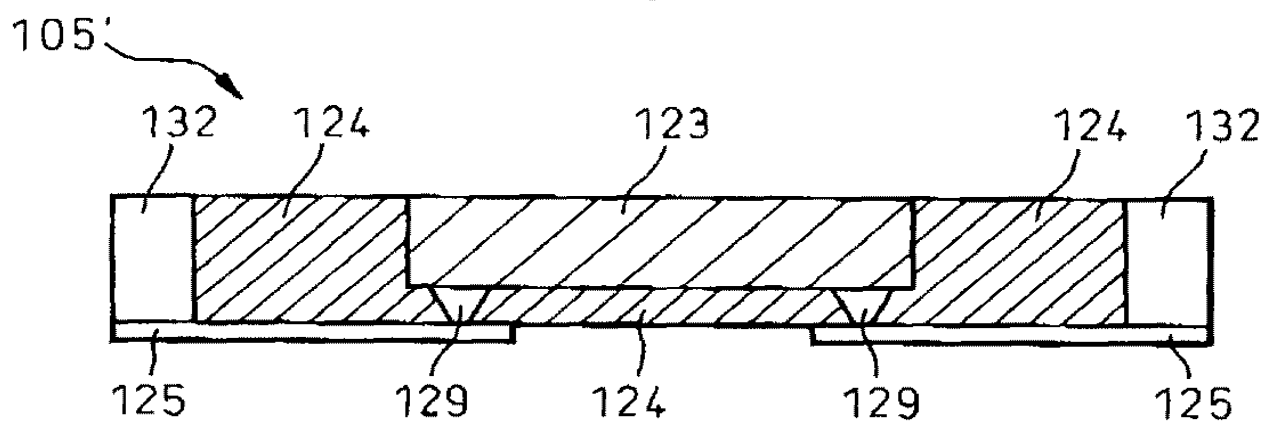


32

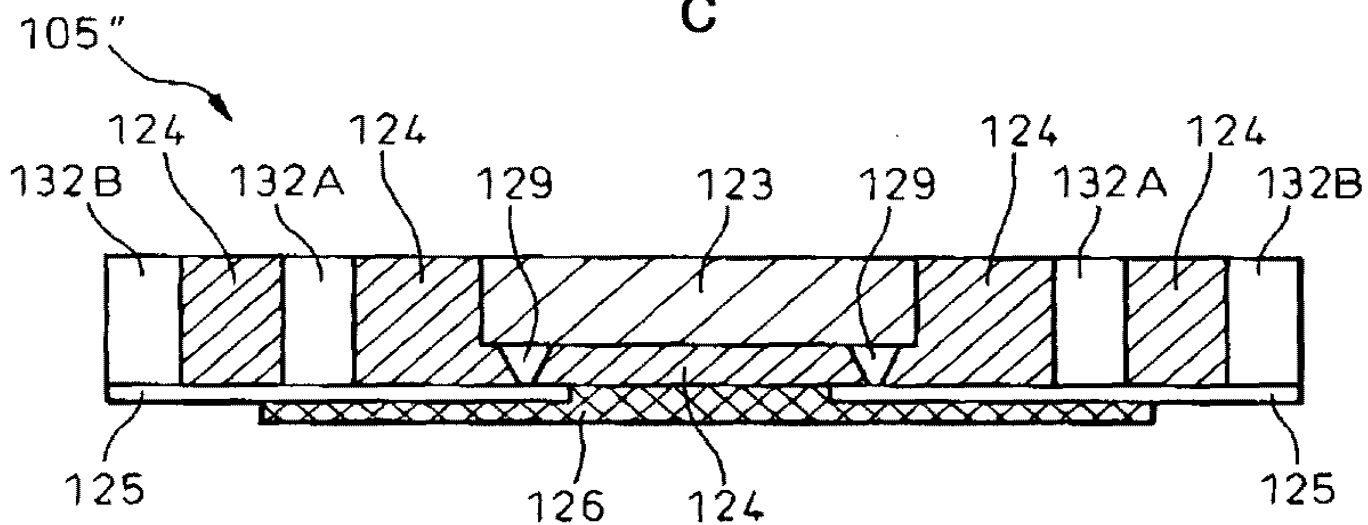
a



b



c



33

