

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl.⁶
H01L 23/488

(45)
(11)
(24)

2003 08 21
10-0386061
2003 05 20

(21) 10-1996-0047703
(22) 1996 10 23

(65)
(43)

1997-0024089
1997 05 30

(30)	95-275817	1995 10 24	(JP)
	95-275818	1995 10 24	(JP)
	95-275819	1995 10 24	(JP)
	95-275820	1995 10 24	(JP)

(73) 가 가 1 7 12

(72) 1 7 12 가 가

(74)
:

(54) 가

, 가 , 가 .
, 가 , 가 .
, 가 , 가 .
, 가 , 가 .

, SMD

1

1		1			
2	1		(SMD)		
3		2			
4		3			
5	4		(SMD)		
6		4			
7		5			
8	7		(SMD)		
9			(SMD)		
10					
11		6			
12		7			
13		8			
14		9			
15		10			
16		11			
17				16	
18	16				
19		12			
20				19	
21	19				
22					

(crack)

가

가

2-17162(laid open on 1st May in 1990) , 2
 -205351(laid open on 15th of August in 1990) , 3-259555(laid open on 19th of November in 1991)
 , 1-191453(laid open on 1st August in 1989) , 4-84482(laid open on 17th of March in 1992)
 6-209055(laid open on 26th of July in 1994)
 , 4-162736(laid open on 8th June in 1992) 6-37127(laid open on 10th of Februar
 y in 1994) Japanese Utility Model Application Laid-Open No, 4-46551(laid open on 21th of April in
 1992)

(lead)

(metallic ball)

가

[]

1(a)

1(b)

(18a)

(11)

(18b)

(11)

(11)

(dipless)

(SMD)

2

1

(SMD)

9

9

가

(2)

(3)

(1)

(2)

()

()

(4)

(5)

(6)

(4)

(6)

(gull wing)

가,

(4)

(7)가

(dimple)()

(1)

(1)

(SMD)

가 1.2 mm

(lot)

가

A

B

, SMD가

가

SMD가

가

, SMD

IR

VPS

est)

가

SAT

가

(zyglo)

가

SAT(Supersonic Cracks T

10

10(a)

가

10(b)

(peeling)

A
0(d-1)]

[10(c-1)]

[1

[10(c-2)]

[10(d-2)]

B가

, 2 가 (12) (13) , (18b)가
(12) (11) , (14) (15)
(16)
(14) (16)
가, (14) (17)가
(18b)가 (11)
가 (11) , (11) , SMD
3 2 , 3(a)
(28b) (21) , 3(b)
(28a) (28a) (21)
(29)
1 , SMD 1
(18a)가
, 2 (28a)가 (29)
가 , SMD
(21)
(water vapor pressure) , SMD
4 3 , 4(a)
) (38a) , 4(b) (convex rige)(38b)가 (31)
(31)
(31)
5 3 가 (SMD)
(32) (33) , (32) (31)
(34) (38b)
(36) (35)
(14) (36)
(14) (37)가
(38b)가 (31)
(38b) (31) (31)
(31) (B). (31) , S
MD
6 4 , 6(a)
(41) (48a) 6(b) (48b)가 (41)
(41)
(41)
(48a) (49)
(48a) , SMD 3
(48a) (48b)가 (41) (49)

가 , SMD (41)

가
가 (41) (41) SMD 7(a)

7 5 7(b) (51)

(wave) (51a) (51b)가 (51)

8 5 가 (52) (SMD) (51)

(53) (54) (51b) (55)

(52) (56) (56)

가, (54) (57)가 (51)

(51) (51b)가 (51)

(51)

가 3 6

(1) 1 2 가

(2) 3 4 U V

가

(3) 1- 4 (press-processed)

(1) 가 가

(2) 가 가). (

(3)

(4) SMD 가

(5) 가

(6) 가

가

(7) 가

6-8
11 6 (1) 가 (2)

(4) (1) , 0.5 ~ 2.0mm (1)

(3) (2) (5) (1)

(1) (1) (6) (3) (7) (8) (8)

(8) (9) 가 (mother board) (IR, VPS, (air) (1) 가

(4), (3), (8)

(1)

(3), (2) 가 (1) (3) 가 (1) (8)

(1) 가 (8)

(3) (3) 가 (1)

12 7 (1) (2) (3) (5) (1) (6) (3) (7) (8)

1 가 (10) (5) (3) 1 가

ON (1) (1) (6) (8)

(3) (7) (8) 가 가

13 8 8 (12)

6 7 3 7 (10) (11) (12)

ON (1)가 1 2 가 (11) (10) (12)

(11), (10) (12)

6-8 (1)

1000 가 (bumping)

(2) (3) (2)

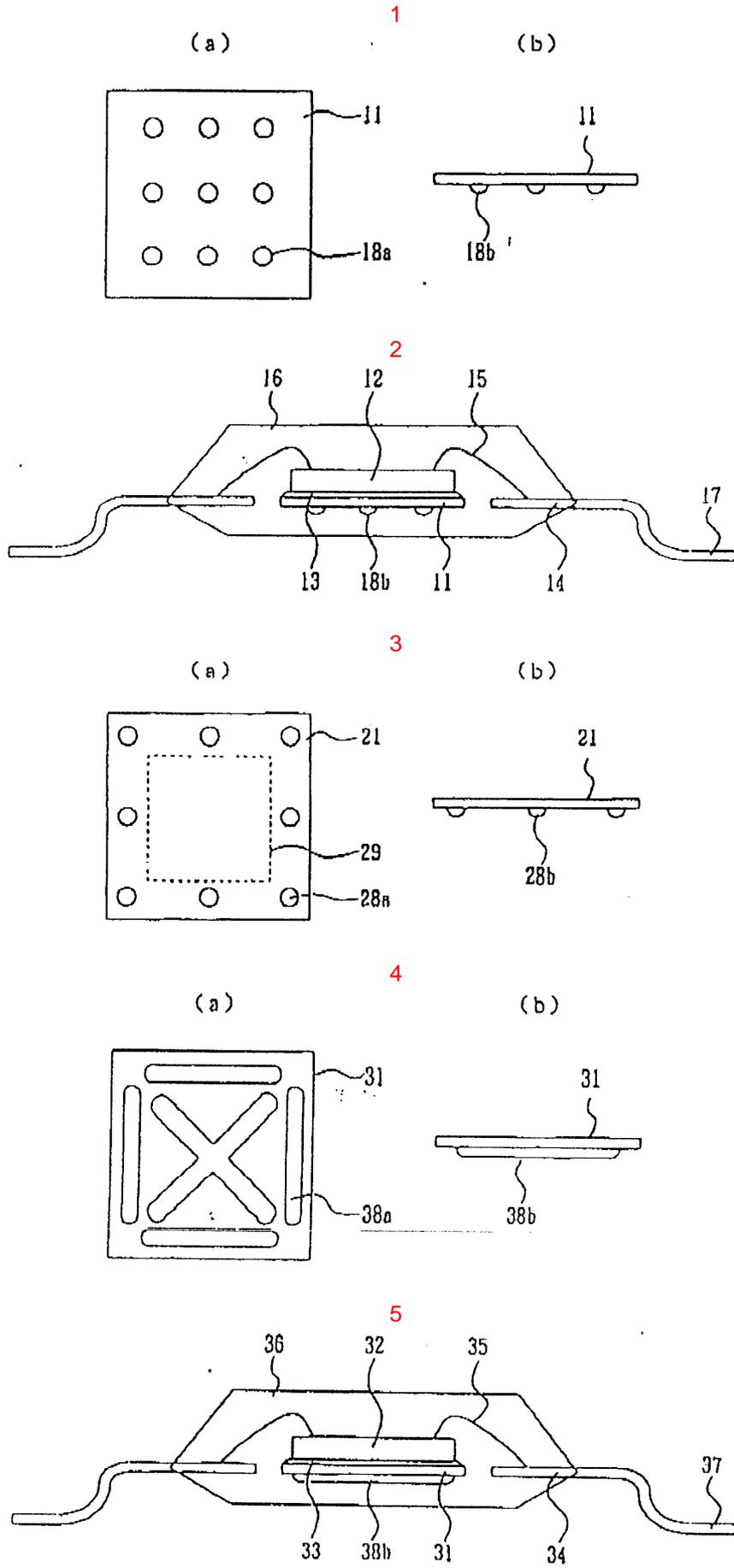
10 9 14

, (11) (12) .
 , (12) Au (13) (11) (12) .
 , (12) (11) , 가
 , (16) 가 , (14) .
 , (11) (15) .
 (14) (11) , (16) ,
 , 가 .
 15 10 10 .
 (21a) ,
 . (21) , (21a) ,
 (27) , 가 (21a) 가 (21)
 , (21a) (27) 가 (21)
 (22) Au (23) (21) (22) .
 , (24) (21) (21) (25) .
 , (24) (21) 가 (27) ,
 , 가 .
 (1) , ,
 (2) , ,
 , 가 .
 , 11 12
 16 11 , 11(a)
 , 11(b) , (11) (12) (13) 가
 (16) (16) .
 , (11) (16)
 , (13a) (16) (11)
 17 11 , 17(a)
 , 17(b) (13) (16)
 (11) (20) (21) .
 , (17) (20) (21)
 (18)
 18 11 , 가 (11) (15) (13)
 (1) 18(a) , 가 (11) (15) (13)
 , (11)가 (15) .
 (2) , 18(b) , (11) (16)
 (11) , (13) , (16)
 , 가 .
 (3) , 18(c) , (19) (16) (13)
 , 18(c) A-A , (16) (13) (d)
 18(d) 12 , 19(a)
 19 , 19(b) ,
 (31) (32) (33a), (33b), (33c)가

(4) 가 () ()
 가
 가
 가 가 가
 (1) (2) 가 가
 가 가

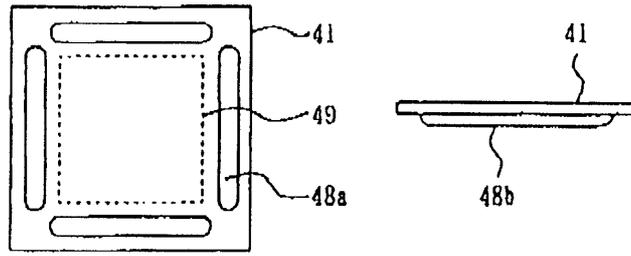
(57)

1. 가 ; ;
2. 가 ; ;
 V 가 ; ;
3. V 가
4. V ; 1 1 2 가 ;
5. 가 ; ;
 ; ;
6. ;



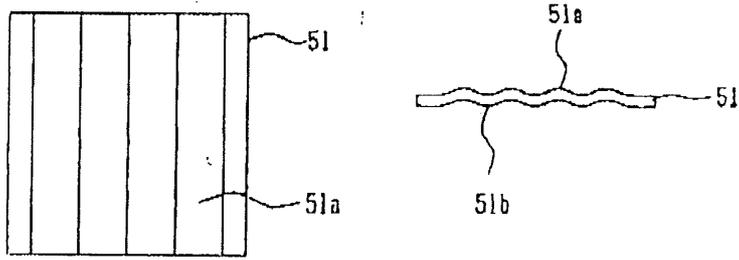
6

(a) (b)

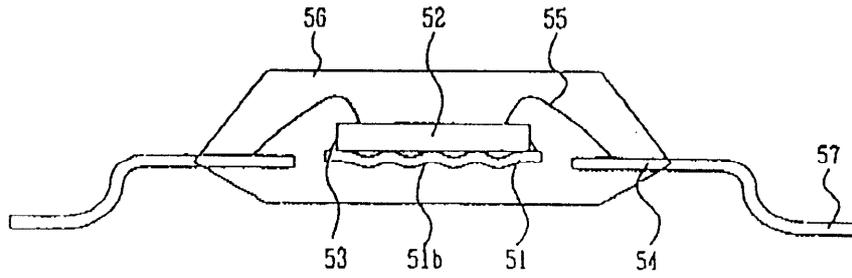


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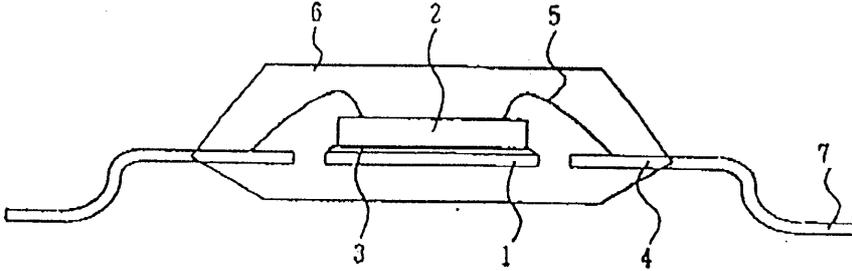
(a) (b)

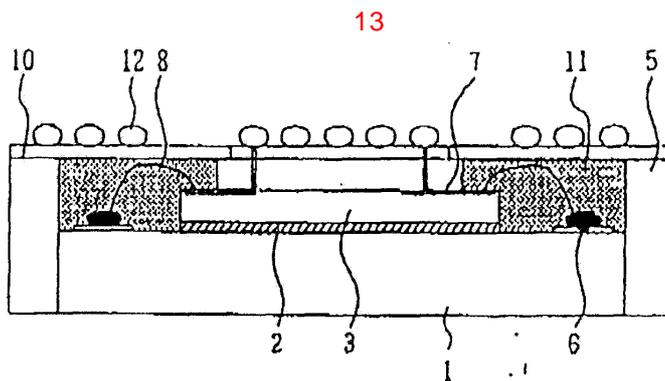
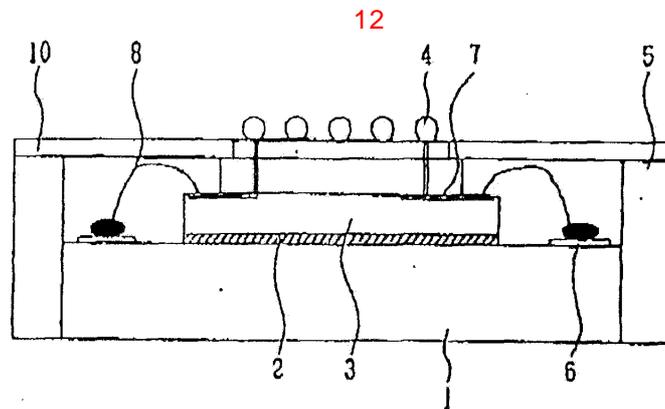
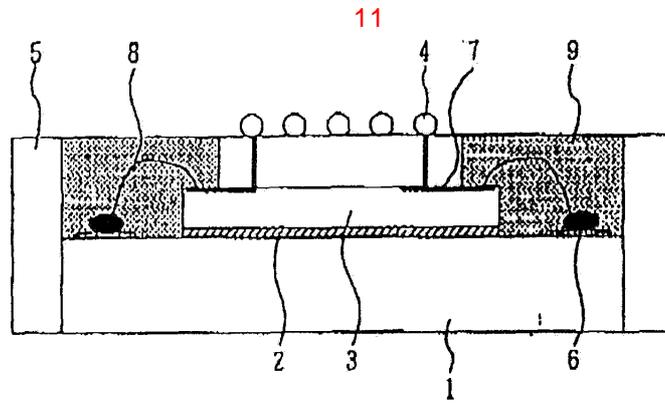
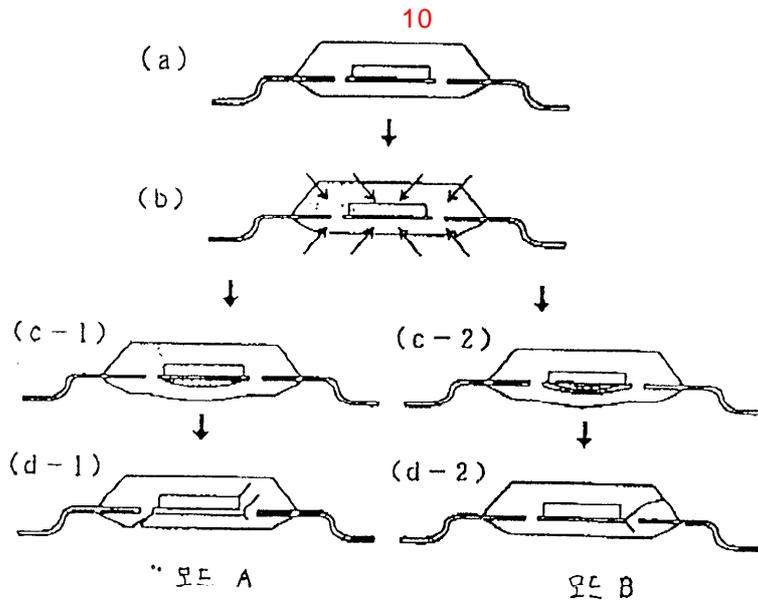


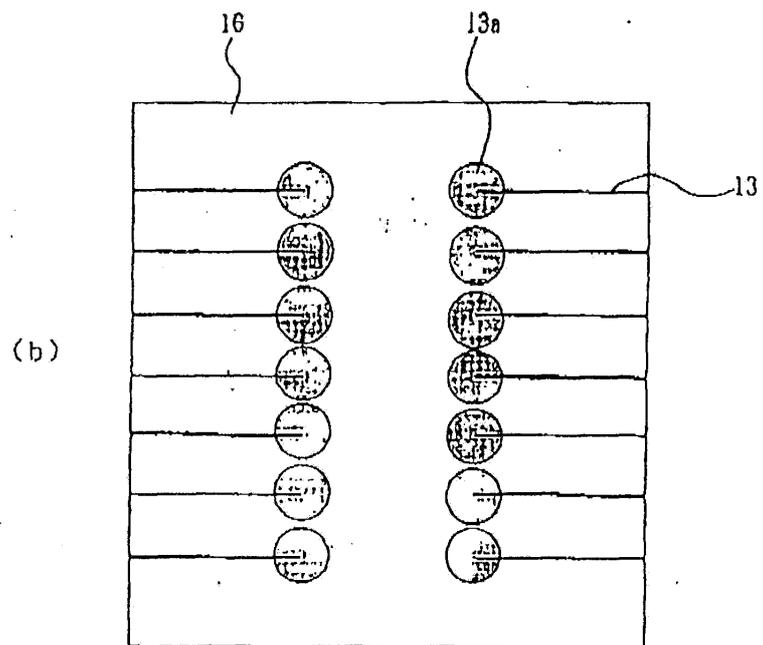
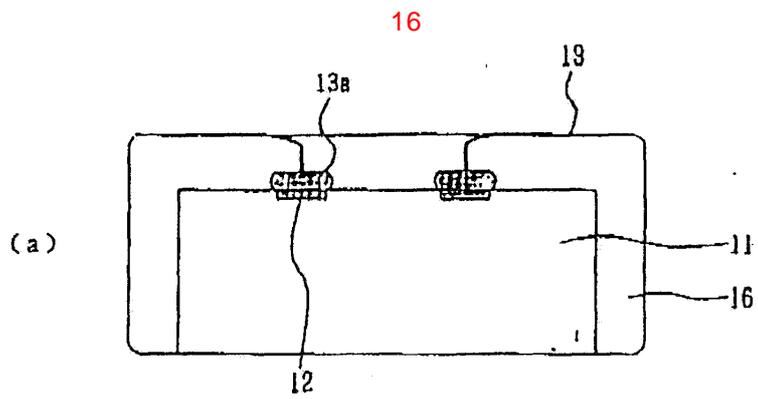
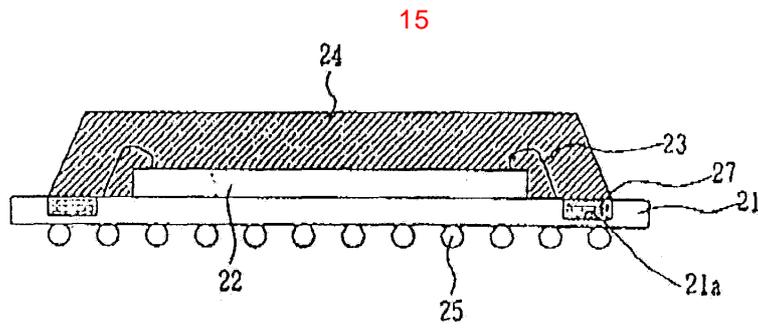
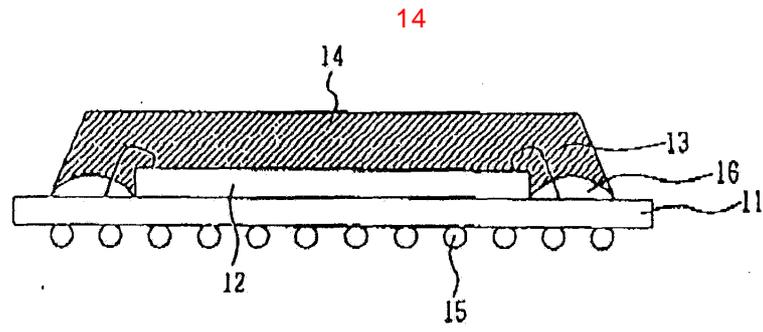
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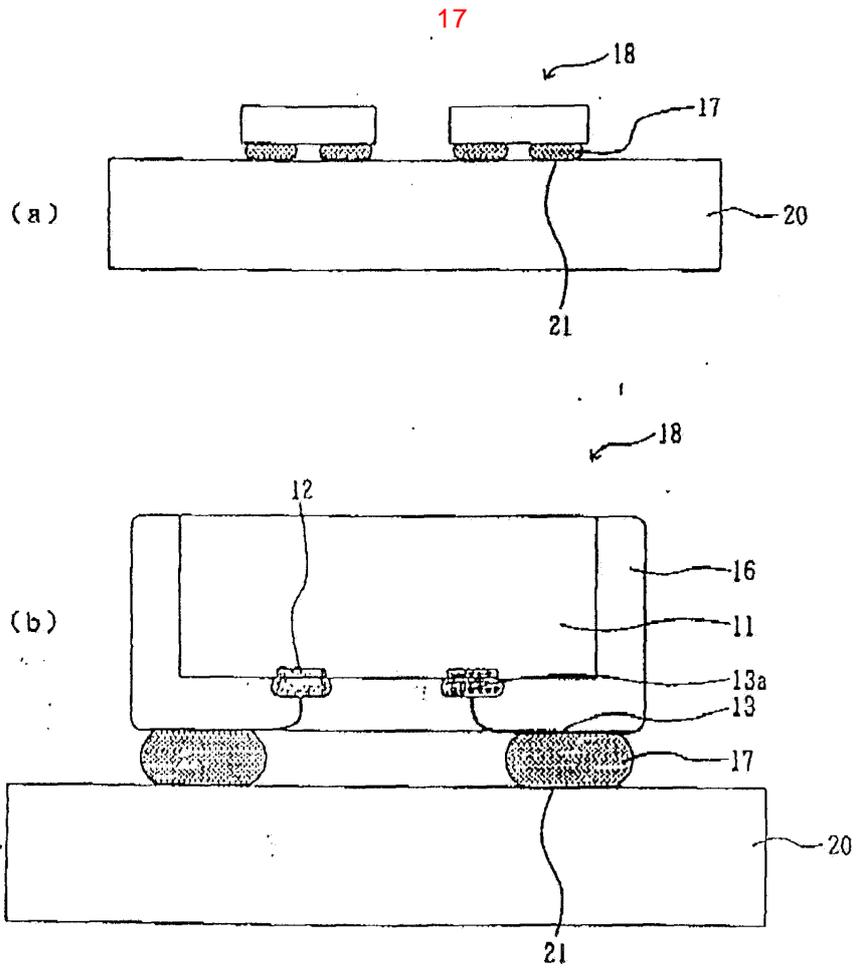


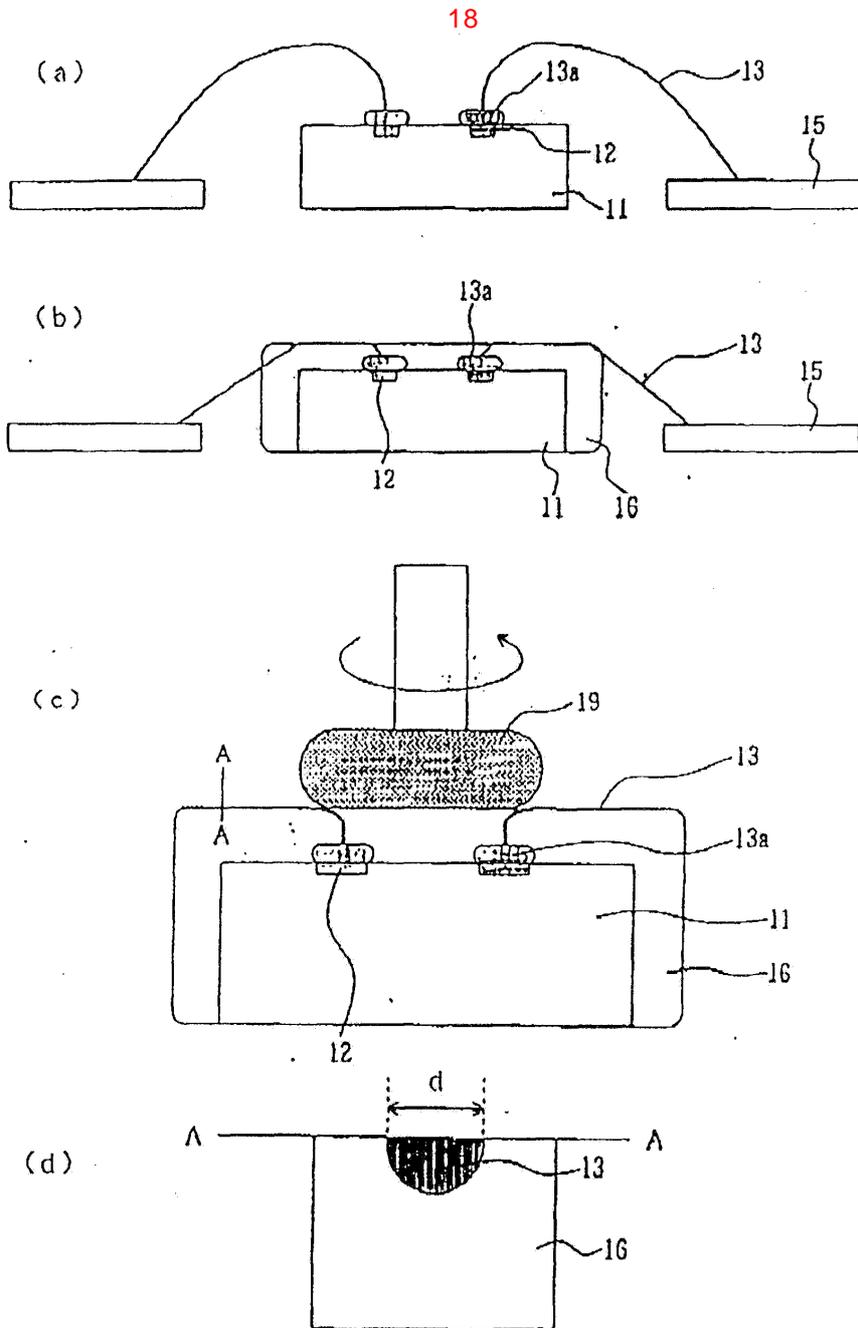
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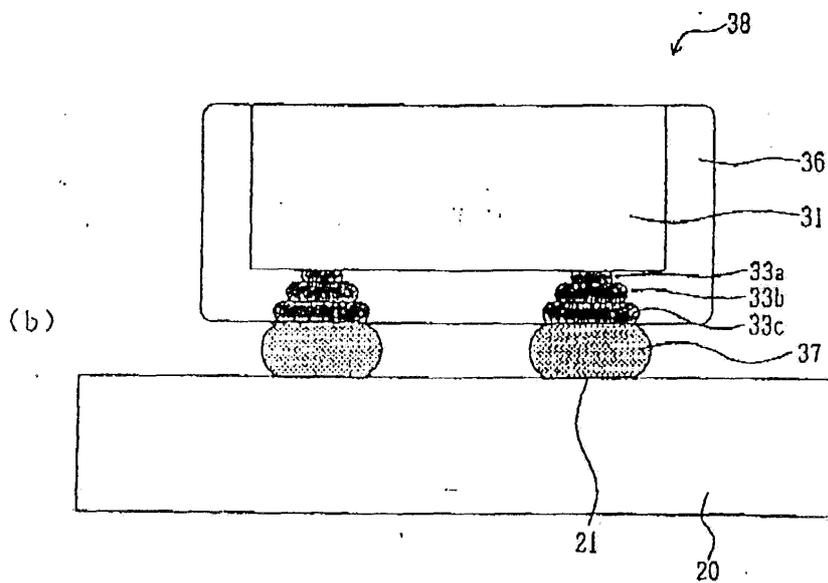
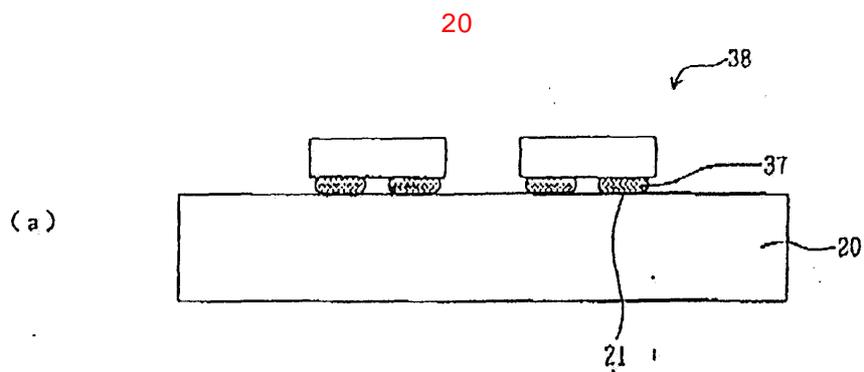
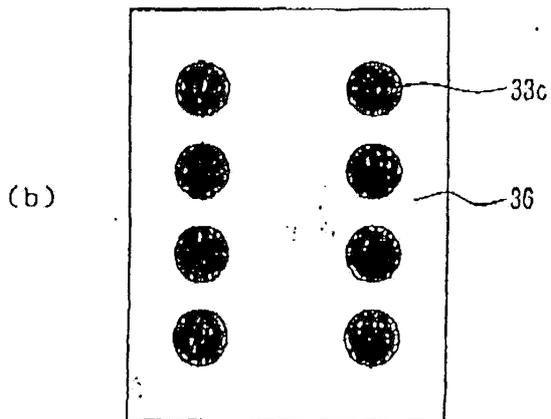
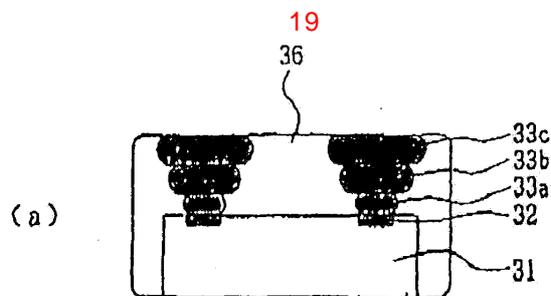




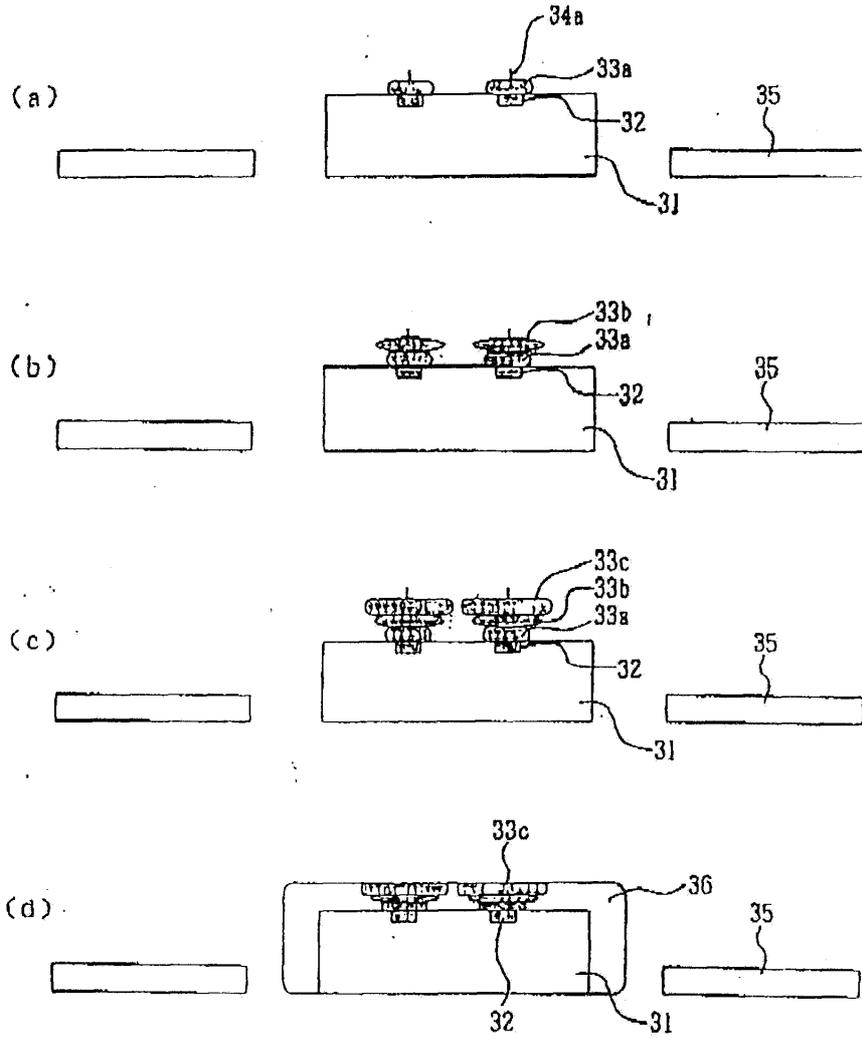








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