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(21) 10-2003-0068541
(22) 2003 10 02

(30) 10/263,851 2002 10 03 (US)

(71) 10504

(72) 13760 1106

13850 1724

(74)

:

(54)

(LCP) 1 LCP N
2
LCP 가 1 2

1

1 (LCP)

2 , LCP

3 4 , LCP

5 , LCP

6a-6b , LCP

7a-7b , LCP DS

8a-8b , LCP (plane)

9a-9b , LCP

10a-10b , 1 2 LCP

11a-11b , 1 2 LCP

12 ,

13 ,

(LCP)

1 ,

1 ;

2

, 1 1 (LCP) , 1 LCP 가 2 , 1 2 1 LCP 2

2 ,

N 2 N (page) , (L CP) 1 ; 2

1 2 LCP

가 , LCP

(LCP)

가 . LCP
LCP

가 (, ,)

. LCP

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LCP

(, LCP)

가

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가 LCP

가

, W.L.

BIAC

. BIAC

: <http://www.gore.com/electronics>

가 LCP

가

LCP

ZYVEX LC

P

가

6,274,242 (Onodera , 2001)('Onodera '242')

LCP

LCP

Onodera '242

LCP 1 4

가

가
odera '242

LCP

Onodera '242

5

. On

LCP

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(, , ,),

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가

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가

가

가

가

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(, (CTE), , 1000 100)

, LCP

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LCP

, LCP

LCP

LCP

가

(T NI)

, T NI

LCP

, LCP

가

가

, LCP

(,)

가

(251-260) 가 (259)
 (271-277) , (271, 273, 275 277) 가 , (272, 가
 274 276) , 1 2 가 1 가
 가 2가 (251-260) 가 , 가
 (251-260) , 가)
 , 2 2 가 , 1
 가 2 , (251-260) 1
 , 2 ,
 (TNI)
 , LCP 가 .
 LCP (,)
 가 LCP 가 . 1994
 (, T NI)
 (edge squeeze out)
 , 2002 6 9 T NI , 15
 um 가 2 mil Gore BIAC 20 25 ppm/ CTE x y (, BIAC
 (CTE)가 13 x 18)
 LCP Gore BIAC
 15 / 4 가 6 560 가 , 20 30 , 20 / 가)
 ()
 Gore BIAC 635 가 (T NI 560 가) 가
 2500 psi (PTFE)
 , x y () CTE가
 1 / 180 , 6 lbf/
 0 (PTFE/SiO₂ Cu) , Roger 2800 30 가 Roger 280
 12 um 가 . Gore BIAC LCP(50 um) 50 um Roger 2800
 LCP Roger 2800 4 lbf/

LCP (, 15 um Gore BIAC LCP)
 50 500 um . Gore BIAC LCP 2 ()
) , 1 BIAC LCP 가 , ,
 , PHI 가 75 4' x 4'
 600 가 TMP 13' x 18' 가 125 (Wabash) ,
 , 2 .
 LCP ()
 LCP 가 (, T < T_{NI}) T
 Gore BIAC LCP , T_{NI} 635 . Gore BIAC LCP , 635
 , T_{NI} 536 . Rogers ZYVEC LCP 가 620 ,
 , 540 620 545 580 가 . Rogers ZYVEC LCP ,
 , 440 520 465 가 520 536 ,
 , 590 가 .
 2500 psi , 1000 3000 psi
 , 2000 2500 psi 가 ,
 가 , 가 .
 가 LCP 2 5 , 60
 , , ,
 2 60 15 30 2 , 가 , ,
 , , ,
 .
 180²), , ()
 LCP CP LCP LCP , 가 L
 LCP (,) ,
 LCP , LCP ,
 PTFE .
 10 , LCP
 25 ppm/ CTE(, LCP CTE); 3 6 GPa
 ; 0.003 ; 96 121 2 atm 0.2% . LC
 P ,
 ' (book)' ,
 4) (5)) 가 (' ; (3

3 4 , LCP
 (304), (308), (300), (302), 3
 311-313), 가 (320), (329), (340) (322), (324 326), (328), (
 (300) (322, 324, 326 328) (311-313) 3 (308)
 (320) 가 (329) (322, 324, 326 328) 가
 (330) () , ()
 (334) (334) 가 (334)
 5000 psi 가 (330) 가
 , 1000 3000 psi 가
 , 가 (340) 가 (342) (340)
 (311) (322) (324) (312) (324) (326)
 (313) (326) (328) 3 (311-313)
 (304) (308) (310)
 (311-313) 1 (, (312) (324 326)) (310) (330)
) 가 (330) (310) , (3
 22, 324, 326, 328) (311-313) LCP
 LCP
 4 3 (312) (324 326) (312)
 (362 364) (380), (358) (390) (312) (370),
 1 373) (372) (372) (370) (37)
 (372) 가
 73) (372) (371 3
 (380) (381 383) (382) (371 373)
 (382) (381 383) (372) (392) (371 373)
 (390) (391 393) (392)
 (392) (391 393) (372) (371 373)
 (362 364)
 (324 326) (324) , 가 (354) 가 가 (351) (
) (352) (324) (, ,) (324) (
 312) 가 (312) (355) (353) (324) (
 가 , 가 (354) (312) (355)
 5 , LCP
 가 (400) (402) (404) (404)
) (418) 가 (419) (410) (419) (419) (419)
 가 (410) (419) (410) (404) (418) 가
 (410) (419) (412) 가 가 가 (420)(,)
 (418) . 가 (404) (418)
 408) . 가 (418) (419) 가 ()
 (406) (419) . 가

가 (410) 가 (420) 가 (416) (414) (404) , 가 (420)
(410) 가 (410) 가
(400) (410) (410)
5 (419) (404)

P 1 , LC
(, $T < T_{NI}$) T LCP , LCP 가
, 1000 3000 psi 가 , 2 60 15 30
2

)가 (, / -) (, LCP
, (2) ,

LCP

(, LCP LCP) (, ,

()

가 (,) , ,

1 LCP :

6a-6b(, ' 6'); 7a-7b(, ' 7'); 8a-8b(, ' 8'); 9a-9b(, ' 9'); 10a-10b(, ' 10'); 11a-11b(, ' 11'). 6 11
12 13 가 LCP

P 가 (, $T < T_{NI}$) LC
(, 1000 3000 psi)
2 60 15 30 LCP
/ LCP 가 , $T < T_{NI}$ LCP
T_{NI} LCP LCP LCP
T_{NI} LCP TPD

13

13 (500) ('D' ; (500)가 LC
; LCP ; LCP ;)
, (500) LCP D (500)가 LCP
, (500) LCP D

(510) 1 (,) ' ' 'P'
() , (,)

(520) D (521) (522) 'DS' . D (521)
 ;) ; LCP ; LC
 P (520) () D (521) 가
 , D (521) (520)
 , (522)

(530) D (531) (532 533) 'SDS' . D
 (531) ; LCP ;) ; LCP
 ; LCP ;)
 , (530) D (531)
 , (530)
 (532 533)

(540) D (541) D (542) 'DSD' . D (541
 542) ; LCP ;) ; LCP
 , DS ;) (, DS DS (540) D DS
 LCP , D (540) 7 . D (541 542) 1

(550) P (552) D (551) 'PD' . D (551)
 ;) ; LCP ; LC
 P (550) 가 (550) D ()
 551)

(560) D (561) D (563) P (562) 'DPD'
 . D (561 563) ; LCP ; LCP ;)
 ; ; LCP ;)
 61) PD (562) 2 (, PD (550)) , P (562) 1 D (560) (5
 P (562) 2 D (563) , P (562) 1

(570) D (572) (573) DS P (571)
 'PDS' . P (571) D (572) DS , P (571)
 (573) . D (572) (572) ; LCP ;) (, (5
 ; ; LCP ; LCP ;)
 70) (571) PD , DS (520) , D (572) 1
 D (572) (574) (573) (522)

(580) , D (583) (585), D (581)
 (584) P (582) D (581 583) 'SDPDS'
 D (581 583) ; LCP ; LCP ;) ;
 ; LCP ; LCP ;)
 , D (581 583) (580) P (582)
 D DPD (581 582) (586 587) DS (520) (584 585) (522)

6 11 1 LCP

6a-6b TPD LCP (10) D (11)
 (12) (11) ()

; LCP ; LCP ;) .

7a-7b TPD LCP (13) DS (14)
 (17) . DS (14) (16) (15) .
 (16) ; LCP ;) (, ; LCP
) . (17) DSD (13

8a-8b TPD LCP (20) (21)
 (22) . (22) PD (13) .

9a-9b TPD LCP (23) (24)
 (26) . 9 (25) LCP (23)
 (26) PD (13) .

10a-10b TPD LCP (31 33) (32)
 (34) . (34) DPD

11a-11b TPD LCP (41 43) (44)
 (42) (45) . 11 (44)
 (41), (43) (13) . (45) DPD

12 N S₁, S₂, ..., S_N (N 2)
 N 13 13

N (LCP) 1 , N 2 :

가 , , .

(57)

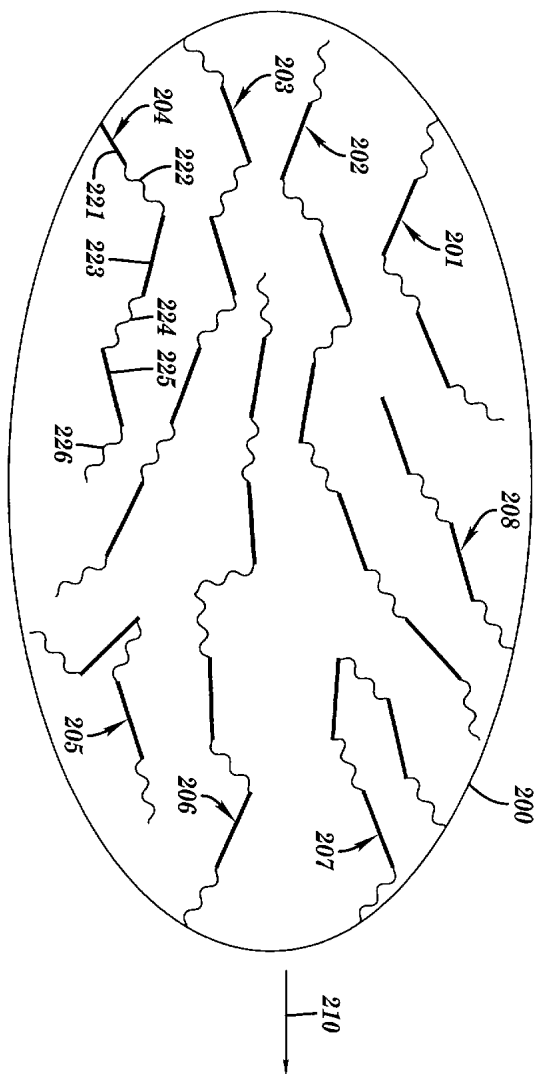
1.
 1 ;
 2
 , 1 1 (LCP) , 1 LCP 가 2 , 1 LCP 2

2.
 1 , 1 LCP
 가 1 2 1 LCP

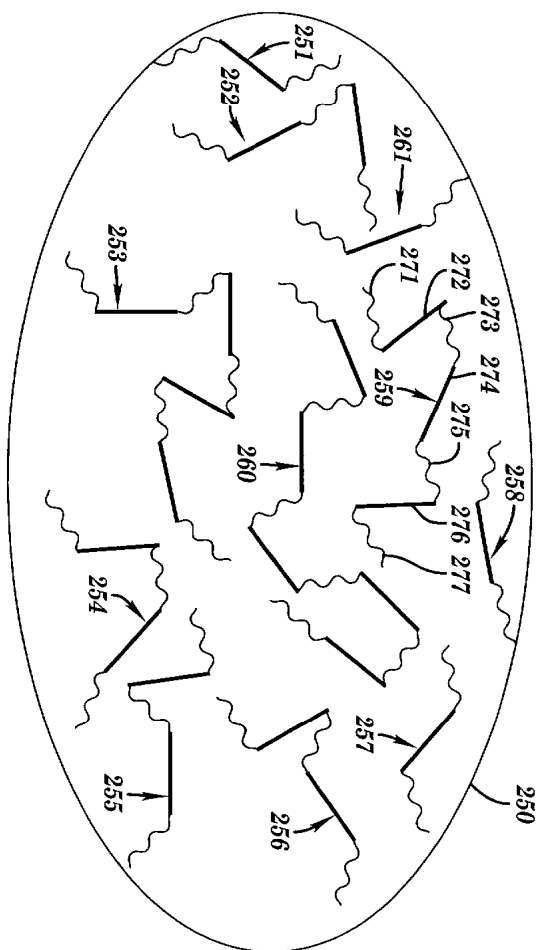
- 1 3. , 1 LCP (CTE) 1 CTE 가 2 1 LCP
- 1 4. , 2 LCP
- 1 5. , 2 2 LCP , 1 2 LCP 1 LCP
2 LCP
- 1 6. , 2 , 1 2
- 1 7. , 2 1 LCP 1
1 LCP
- 7 8. , , 1 LCP
- 7 9. , 2 LCP 2 3 , 2 LCP , 3 2 LCP 2 1
3
- 9 10. , , 1 LCP , 2 LCP
- N 2 11. N , (LCP)
1 ; 2
가 가 1 2 , LCP LCP
- 11 12. , LCP
- 11 13. , LCP (CTE)
- 11 14. , 1000 psi 3000 psi
- 11 15. , N 1 2 1 1 1 LCP 가 D
1 2

- 11 16. , N 1 2 1 P 1 1 LCP 가 D
- 16 P 17. , P 1 LC
- 11 18. , N 1 2 1 DS 1 1 LCP 1 2 가 D D
 가 D DS DS , 1 2 D
- 11 19. , N 1 1 LCP 가 D , N
 2 P 1, 2 3 , N 1 3 2 LCP 가 D
 2 , 1, 2 3 1 3 가
- 19 P 20. , P 1 LC
 P , 2 LCP

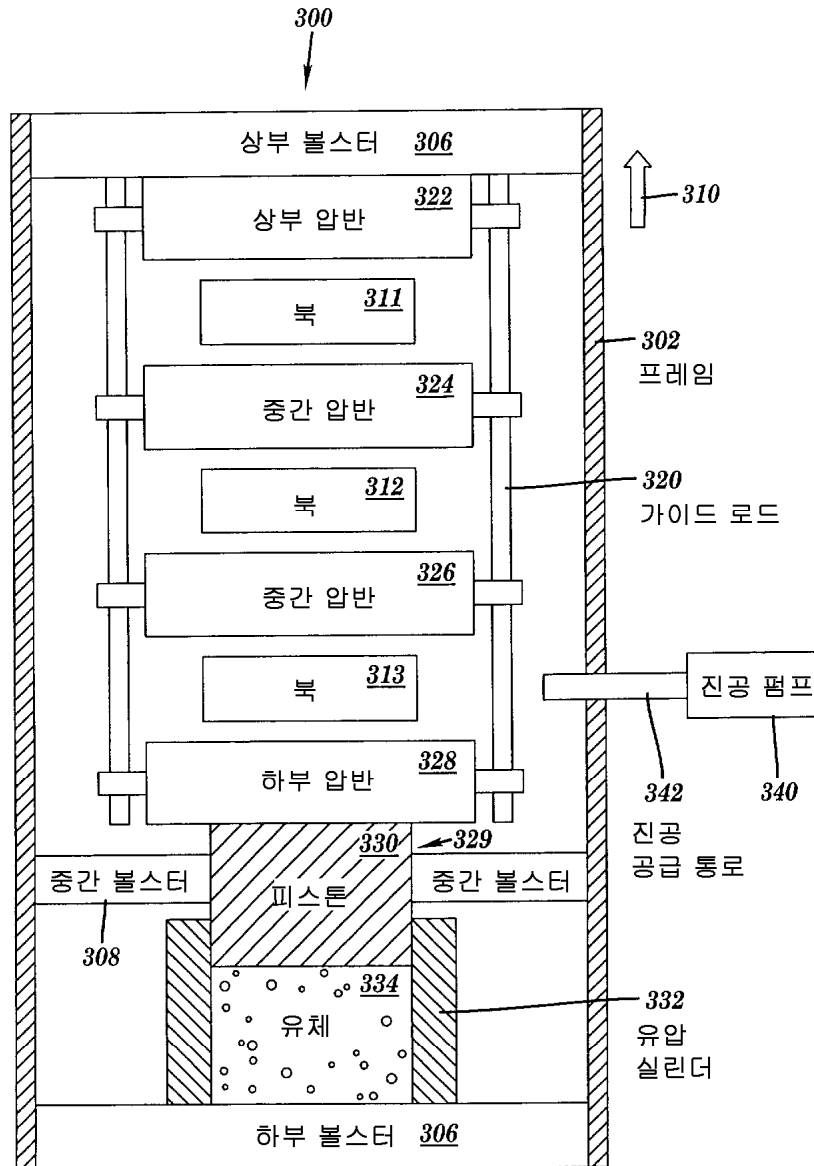
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~ 중합체 쇄의 반가요성 성분

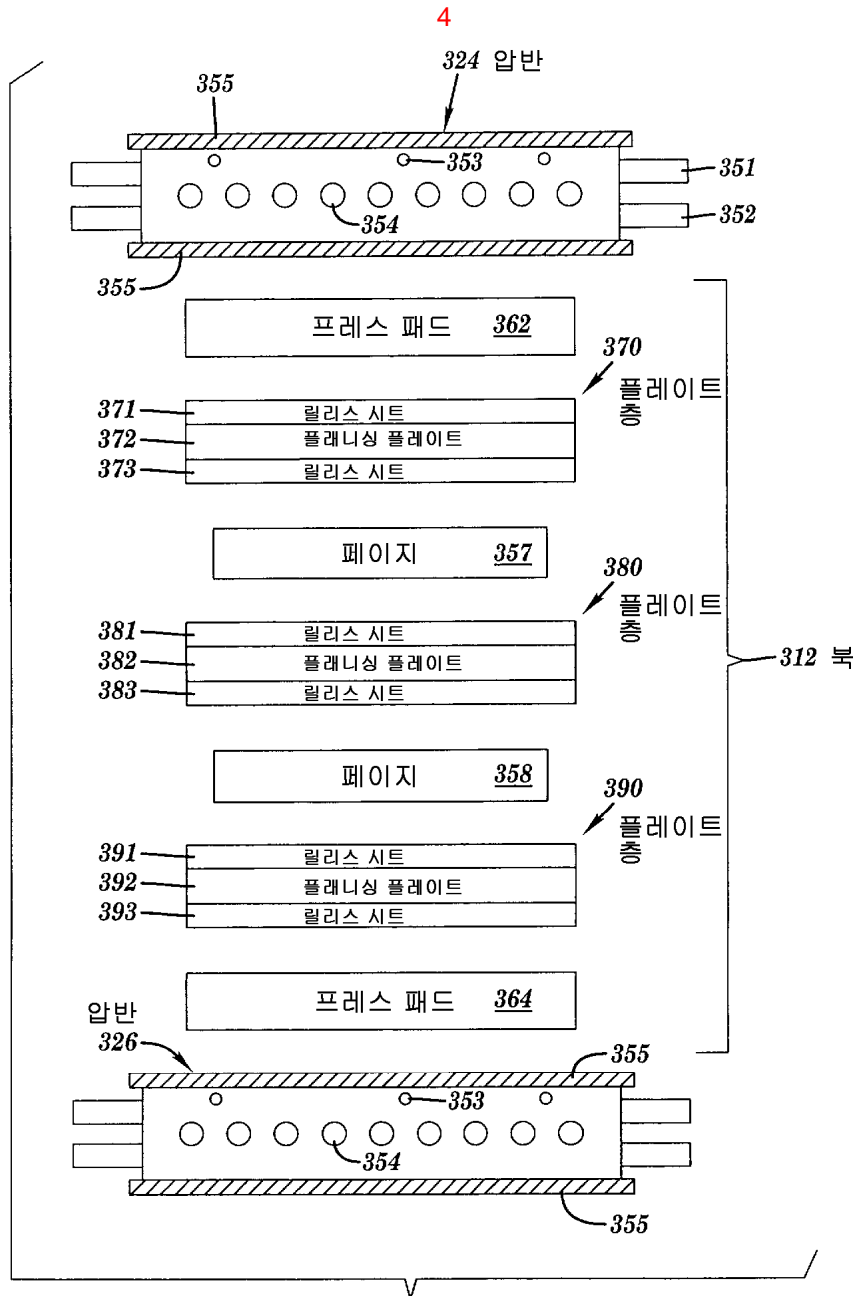


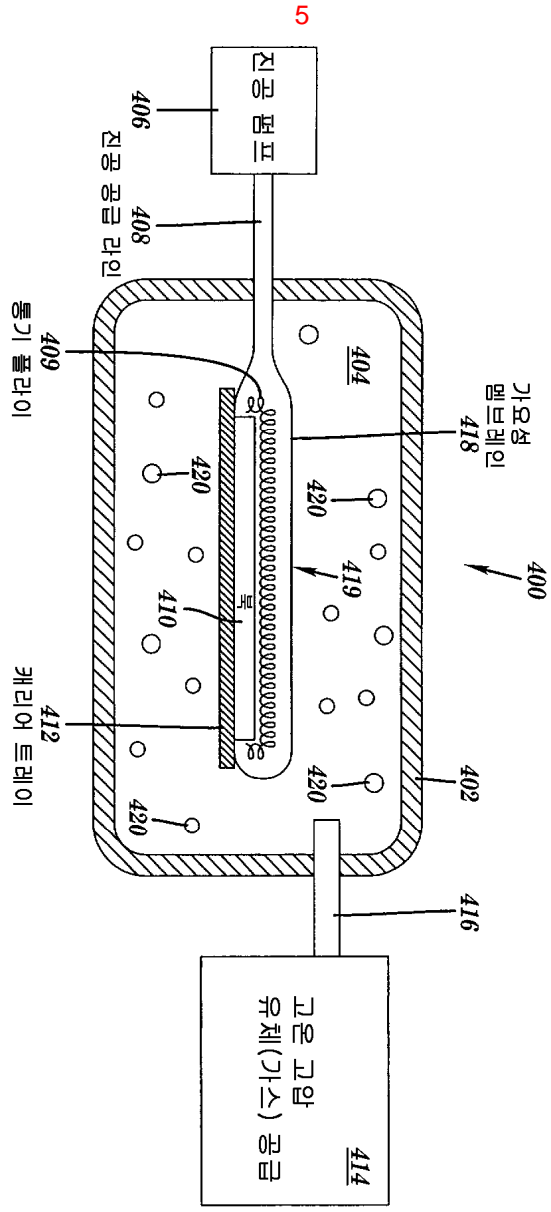
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~ 중합체 쇄의 반기요성 성분



3



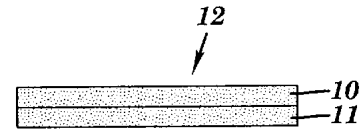




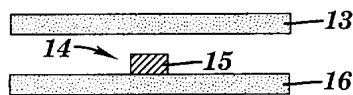
6a

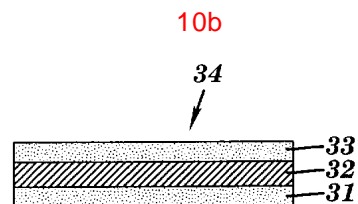
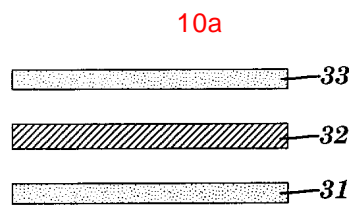
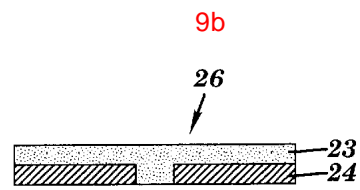
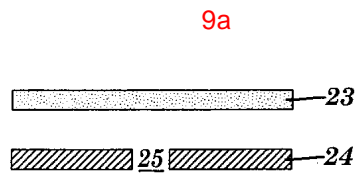
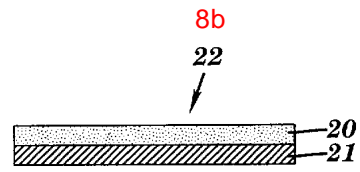
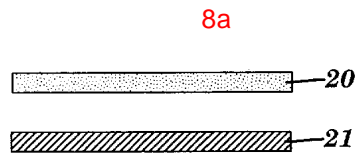
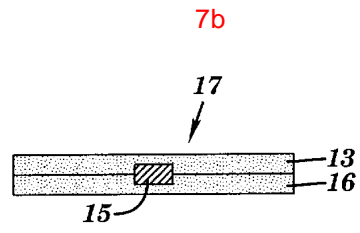


6b

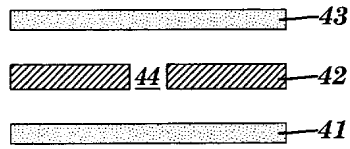


7a

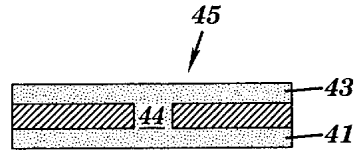




11a



11b



12

