

(19)  
(12)

(KR)  
(A)

(51) 。 Int. Cl.<sup>7</sup>  
H01L 21/336  
H01L 29/78

(11)  
(43)

10-2004-0101569  
2004 12 02

(21)	10-2004-7017367
(22)	2004 10 28
	2004 10 28
(86)	PCT/JP2003/005621
(86)	2003 05 02

(87)	WO 2003/094238
(87)	2003 11 13

(30) JP-P-2002-00131012 2002 05 02 (JP)

(71)                   가         가

6      6-3

(72)	가	981-8007	4	11-12
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981-3131 21-1

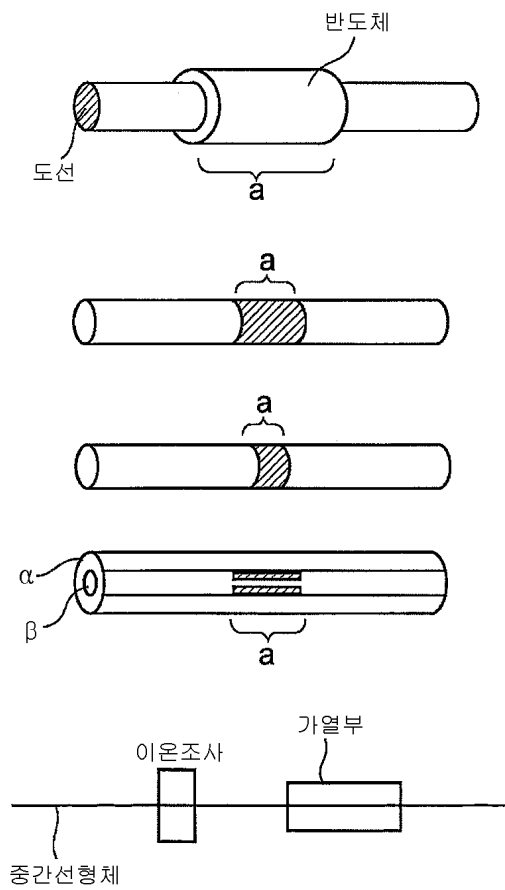
981-3222 가 5 13-18

(74)

⋮

(54)

가 , 가 ,  
가  
가  
가  
가  
가





10mm .

1mm .

1μm .

가 10 .

가 100 . 1000 .

, , , .

가 , , , .

가 , 가 , 가 , 가 .

pn pin 가 .

, .

, , .

가 .

가 .

가 .

가 , 50% .

가 , 70% .

가 , 50% .

가 , 70% .

, .

, ,

가 .

가 .

가 가 .

가 가 .

가 .

20m/sec

( )

가

(discrete, ),

(thyristor)

( , FET, ),

DRAM, , SRAM

( )

가

가 ,

, NPN

, N

, P

, P

3가

, 3가

가

가 ,

가

NPN

NPN

가

가 ,

( , )

가

( )

, 10 $\mu$ m 가 10mm 가 1 $\mu$ m , 5mm 가 0.1 $\mu$ m . 1mm 가

$1\mu\text{m}$  가 (極細) (型) ,  
 가 , ( ) 가 ,  
 가 ,  
 (melt blow) , (jet)  
 , 100000 가 1000  
 1 , 0.1 10~10000, 10 ,  
 ( )  
 , MOSFET(1), (1), MOSFET(2), (2) ..... MOSFET(n),  
 (n)  
 , MOSFET(k)(k=1 - n) MOSFET ,  
 가 .  
 , MOSFET  
 , MOSFET ,  
 ( )  
 , , ,  
 ,  
 , 1 ,  
 ,  
 ,  
 ,  
 가 (dipping) ,  
 ,  
 ,  
 ,  
 가 ,  
 ( : 가 )  
 가 ,  
 ( )

lyacene), ( ), (polythiazyl), (3- ), (po  
 ,  
 .  
 , , (3- )  
 ,  
 (Na, K, Ca) . AsF<sub>5</sub> /AsF<sub>3</sub> ClO<sub>4</sub><sup>-</sup> . n  
 .  
 , SiO<sub>2</sub> .  
 , 가 , ( )  
 , : )  
 .

1 .

2 .

3 .

4 .

5 .

6 .

7 .

8 .

9 .

10 .

11 .

12 .

13 .

14 .

15 .

16 .

1 .

6 , MOSFET .

(1) 가 , (2), (4), (3), (5) .

2 .

(20) 21,22,23) 가 2 3 , (

(23) (24) . (24) (25) ,

1 , 3 가 .

(30), (31), (32), (34)가 , (24) .

(30) (30a) . (31) (31a) . (32) (34a) , (32a,33a) (32) . (34) .

(24) 가 , (25) .

(3- ) .

(Na, K, Ca) .  $\text{AsF}_5 / \text{AsF}_3$   $\text{ClO}_4^-$  . n

,  $\text{SiO}_2$  .

가 .

( 2)

4 2 .

1 4b (41a,41b) . (41a) (41b) .

(41) A-A 4a , 4b B-B 1 .



(3) (4), (3) (5) (45), (45), (46) (46) (47) (4),

(40a) 5 (41a) (40a) (32a,33a)  
(41a) ( )

30a, 31a, 32a, 33a, 34a , 40a,41a  
40a,41a 가 1  
(47), (46), (45) . 40a, 41a

40a, 41a , 5  
. 40a,41a , A-A , B-B

, A-A , 가

, (46), (45) , (41a)  
가 가

( 3)

6

1, 2 , 가

2

, (1) (2) ( 6a).

2 , ( 6b). , (2) (61) ,

, (62) (61) (61) ,  
2

, (62) ( ) (63)  
( 6c).

, 2 ( 6d).

, 가

( 4)

1

7

(1) (a) (1) (7b).

(1) (b) (2) (7c). (b) (3,4) (c) (7c, 7d). (4) (5) (d) (d2)

(6) 8 6 5 (82)( $v_1 - v_0$ ) 20m/sec 50m/sec 100m/sec ( $v_0$ ) ( $v_1$ ) 20m/sec , 가 가 가 8c 가 , 8b , 8b , 가 가 8c 가 , 8b 50% , 가 가, 가 , 100 0~±5° 가 , 70% , 가

( 7)

9 7 .

(5) 가 (70) 가 , (5) 가 ,  
(2) (1) 가 . (4) (3) 가 ,

, (1) .

가 , , 2 가 7

3) , (70) (5) , (4), ( (2)  
SiO<sub>2</sub> (1) .

( 8)

10a 8 .

pin 가 .

, (102) 가 , n (101), i (100), p (103), (104)  
, p (103) (105)

(102), n (101), i (100) .

p (103), (104) 가 가 . , p (103)  
가 가 , p (103)

, (102), n (101), i (100), p (103), (104)

, 10a i , p (103) i  
(100) , .

10a (104) p (103) , .

, p (103) (104) p+ . p+ p (103) (104)  
가 , i .

p , n , i 가 . p , n . p /n , ,

, 가 .

( 9)

10b 9 .

3), i 8 pin , . p (8  
(80), n (81) 가 . , (82,83)

10b

가

( 10)

가 , p n

, p n 2 ( i 3 )  
p p n 1

p /n

p /n

, 가

( 11)

(延伸)

가

10%

. 10~99%가

. 100×(

)/(

)

1mm

가

. 10μm

가

. 1μm

가

. 0.1μm 가 가

( 12)

11

12

(111)

( 11a).

11b). (111) 가

(112)

(

, (112)

(113a,113b,113c,113d)

, 가  
( 11f) 가

( 11d), ( 11e),

, (114a,114b,114c,114d)

가

가

,

가

가

, 11f

,

(114c)

(114d)

, ( 11a), ( 11b), ( 11d)  
(dipping),

가 11g

가 (115)

가 가

11h (

)(117)

50% 70%

( 13)

12

12

12a a

12b 가

12c

가

12d 가 가 2 a

가

12e

가 가

12 가 1 , 2

BOX( ) , O SiO<sub>2</sub> BOX

( 14)

13

13 DRAM . DRAM 가

13a

MOSFET(209a1) (207) (S<sub>1</sub>, S<sub>2</sub> .....), (G<sub>1</sub>, G<sub>2</sub> .....)

13b , MOSFET (209a1) (207) . MOSFET

MOSFET(209a1) (203) (201), (202), (204,205),

(210) (201) MOSFET(209a1, 209b1.....)가

13a MOSFET(209a2,a3.....) 가

MODFET

(204) 13c (S<sub>1</sub>)

13d (205)

(207)

S<sub>1</sub> (204) (204) (S<sub>1</sub>) MOSFET(209a2,a3.....) (S<sub>1</sub> 206)

MOSFET

(205) (207) , (210)

13 , MOSFET가

(210) , MOSFET

가

( 15)

MOSFET

MOSFET



16

가

MOSFET

가

가

, 가 가 ,

(57)

1. 가

## 2. 가

### 3. 가

4.  
가

5.  
가

가

6.  
가

7.  
가

8.  
가

9.

가

10.

가

11.



가

12.

가

13.

가

가

14.

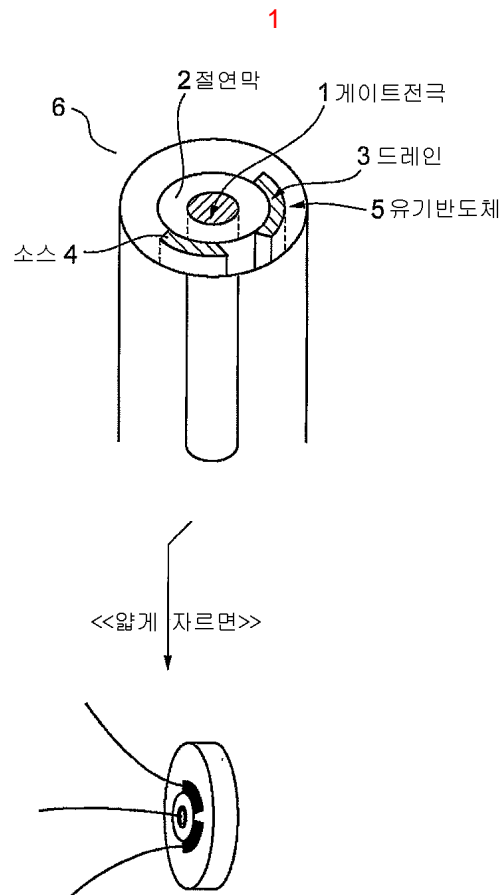
가

15.

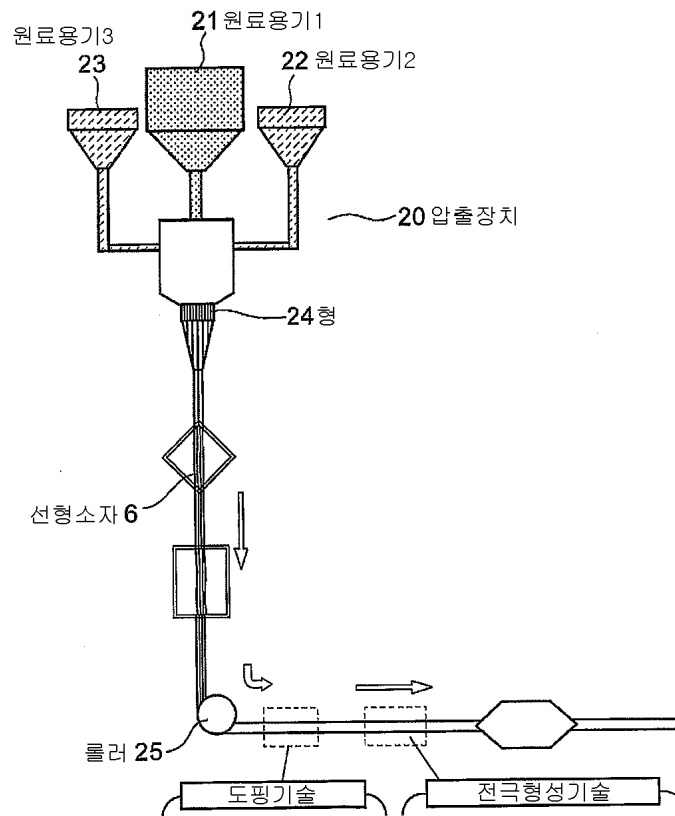
가

16.

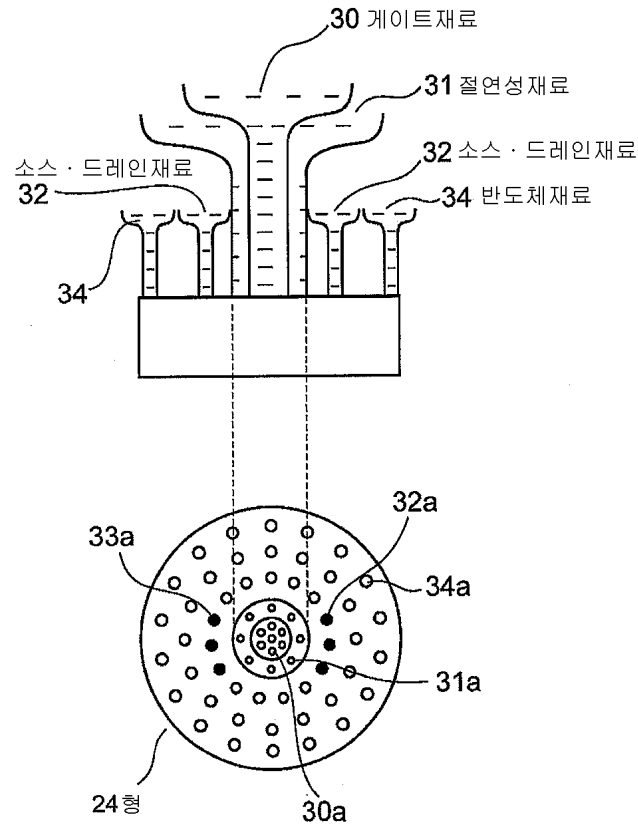
가



2

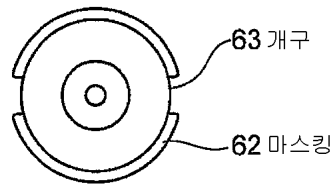


3

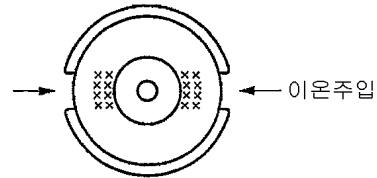




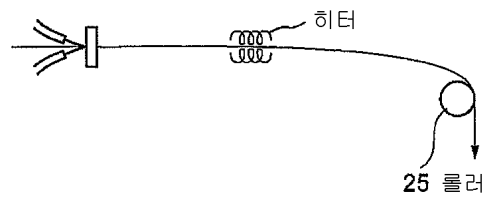
6c



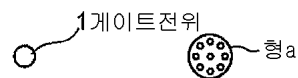
6d



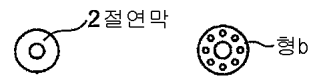
7a



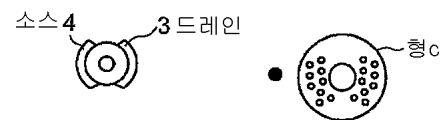
7b



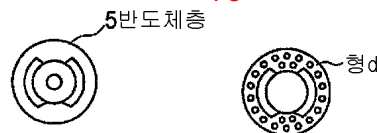
7c



7d

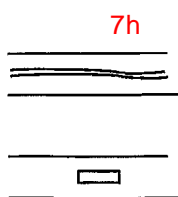
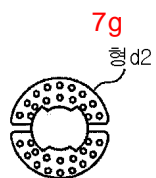


7e



7f

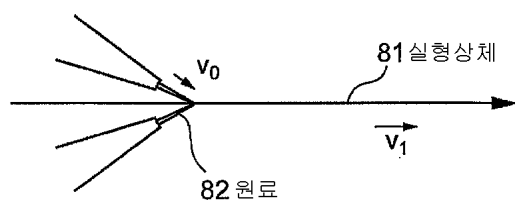




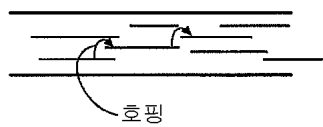
8a

$v_0$  : 원료사출속도

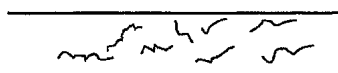
$v_1$  : 실형상체의 주행속도

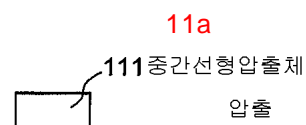
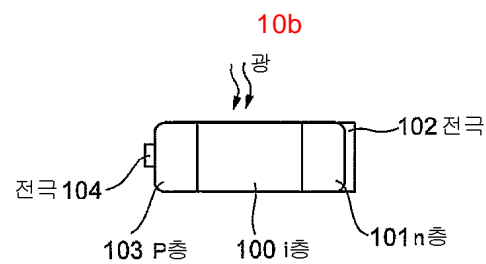
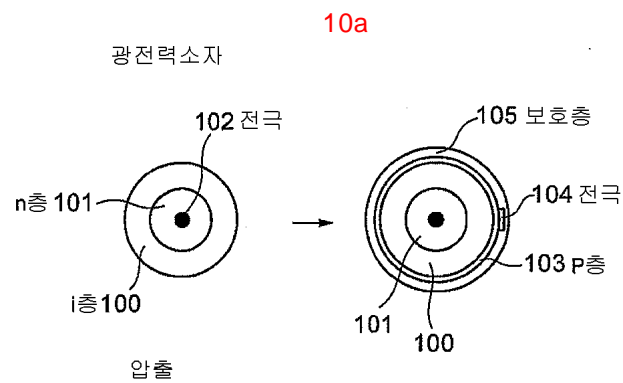
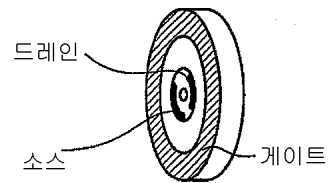
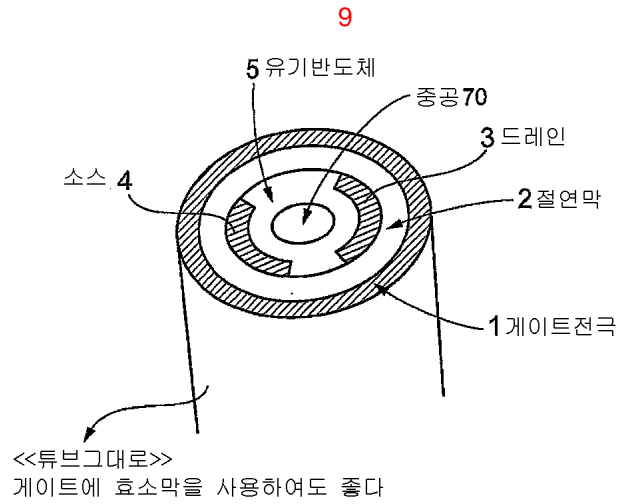


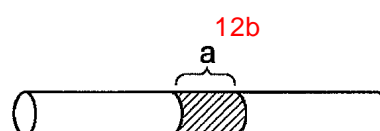
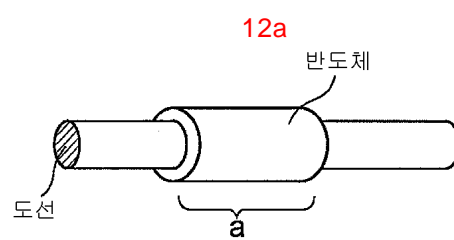
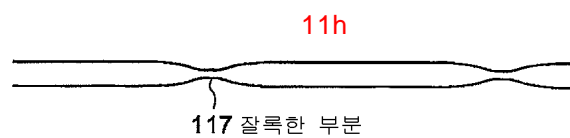
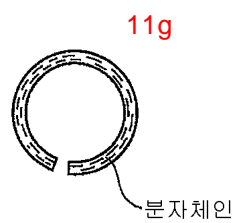
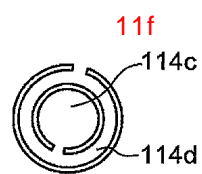
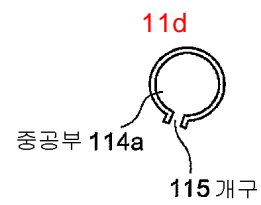
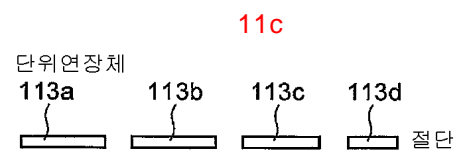
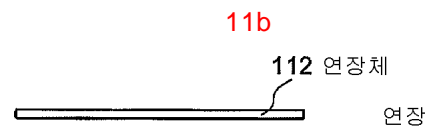
8b

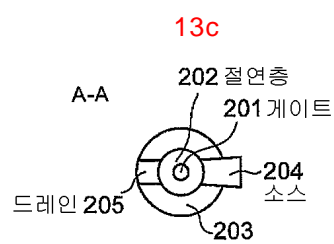
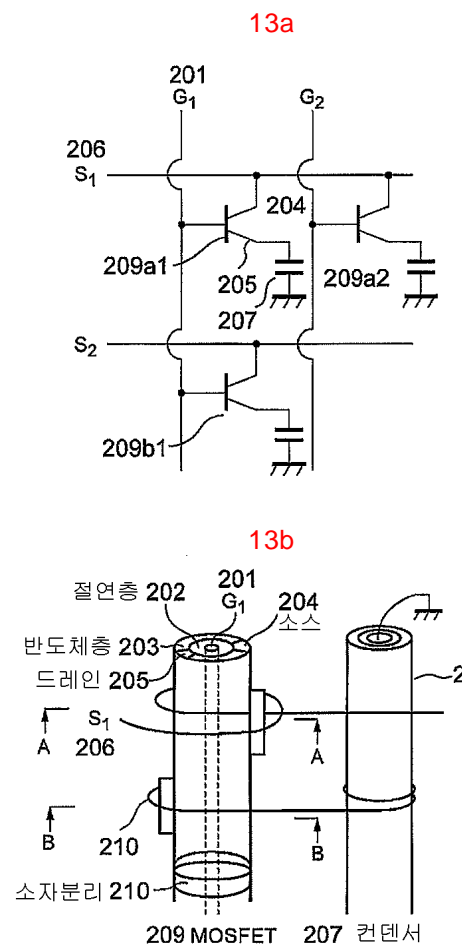
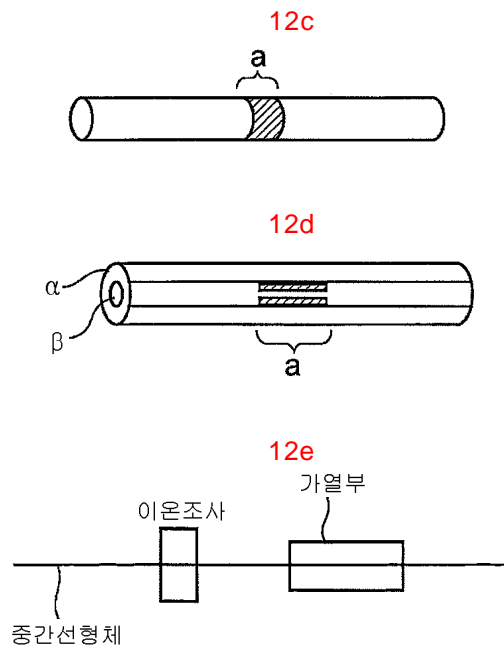


8c

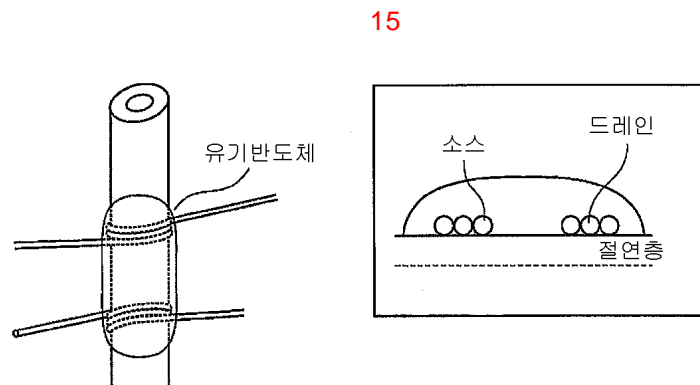
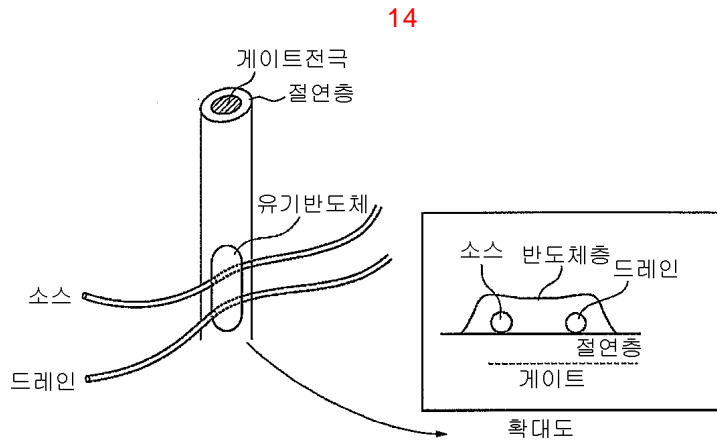
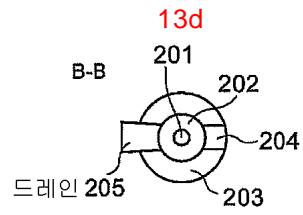












16

