

(72)

,	94566,	,	4820
,	94585,	,	1043
,	75019,	,	221
,	75206,	,	5630

(74)

:

(54)

1 가 1 1 2

1 1 1

1

(IC) , IC

" " , 가

(" (foot)")가 (" (fences)" " (stringers)") , (" (undercut) " (bias)") , (" (slope)) ,

가 , , .
 , .
 (,) , ,
 " (run - to - run)" , ,
 , ,

(, ,) (SE
 M: scanning electron microscopy) , 가 ,
 SEM 가 , , 가 ,
 SEM , ,
 가 ,
 가 ,

가 가 ,
 가 ,
 / ,

가 , ,

(illuminate) . 1 , ,
 , 1 , , ±1° , , ±0.5°
 , 1 , , 가 , ,
 , 1 2 1

1 , 가 .

2 가 . , 1 1

1 ,

±1° , ±0.5°

가 , 가 , 1

2 1

가 , 가

1 ,

2 ,

3 ,

4 " "

5a ,

5b ,

5c 가 ,

5d 가 ,

6 1 ,

7 ,

8 ,

9 ,

10 ,

11 .

가

(10)

(18) (10) (12) (14), (16) (12)

(22) (12) (20) (21) (22) (12)

(20) (24) (26) (sweep) 200nm 900nm (coherence) (14)가 (20) (22) (20) (28) (2)

0) (24)가 (26)가 (14) (16)가 (20) (28)

(16) (18) (14) (18)

1) (22) (21) (26)가 (2) (12) $\pm 1^\circ$ (26) $\pm 0.5^\circ$ (21) (21) (21)

22) (21) (28) (14) (21) (21)

가

(12)

(21) (20)

(21) (21)

(20) (21) (21) (21) (21) (50)

(20) (20) %

(20) (scribe line) (21)

(21) 1/2 1 (21) 2
(21) (21)

2 가 (50) (log) 2 , 0° (52) , 90° 90° (52) (50)가

(52)가, SEM (52)

3 (64) (62) (60) (64)
(62) (64)

가 가 가 (62)

4 " " (82) (84) (80) " " (82) (84)
4) , 0° , 90°

(80) (84) (84) (swing) 가
() 가

5a	5d		5a	(100)
(112)	(100)	(110)	(112)	(100)
	(116)	(114)	(110)	
	(116)		-70°	+70°
5b		(102)		(102)
(110)	(112)	(102)	(110)	(114)
(116)	(112)	70°	0° ()	
	(114)			
5c	가	(104)	가	(104)
(112)	가	(104)	(110)	(112)
(114)	(116)		(116)	0°
70°		(114)	(116)	
	(114)	(114)	(116)	(114)
(116)	(118)			
5d	가	(106)	가	(106)
(110)	(112)	(115)	가	(110)
(112)	가	(114)	(106)	(116)
	-70°	+70°	(116)	(116)
	가	(104)	(114)	(116)
				0°
6	1			(
200)		(200)	(202)	(204)
	(212)	(216)	(210)	(216)
	(212)	(216)	(220)	(206)
	(212)	(220)	(210)	(214)
				(216)

(220) (214) (200)
 (220) (210) (220) (214)
 (200) 가
 (220) (210) (214)
 6 (220)

7 (300) (300) (302) ()
 304), (306), (308), (310) (310) (312)
 (300) (302) (304) (314)

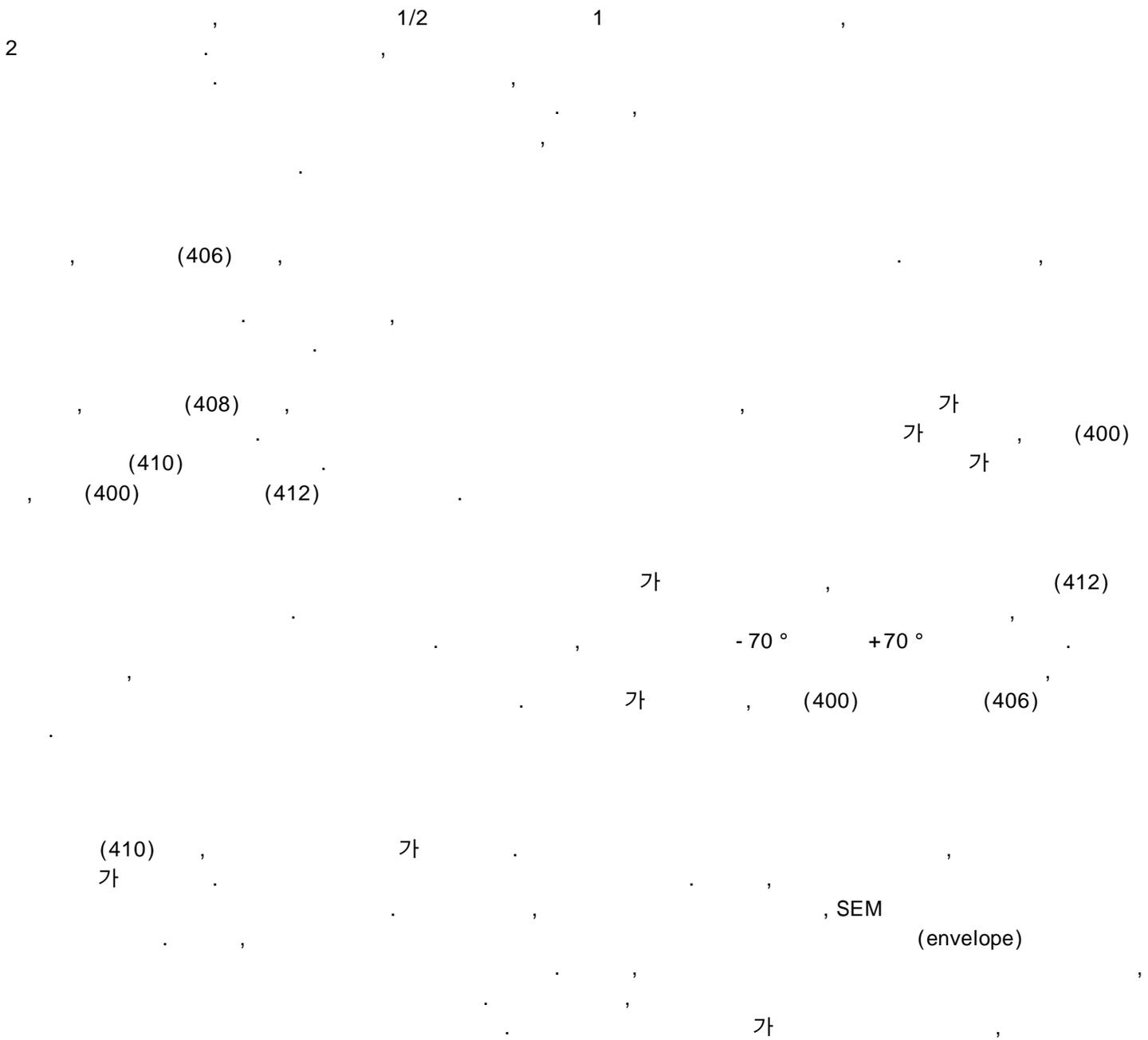
(302) (306) (308)
 (314) (310) (310) (312)
 (310) (310) (314) 가
 (302) (304)
 가 (302) (304)가 가

(300) (308)
 2 (314) (3) ()
 14) (304) (telescopic)
 , 2 (divergence)가

(dark current)
 (chopped) 1 가

8 (400)
 (402)

(404) 가 ()



, (414) ,

, 가 가 .

9

(502) ,

(500)

(504) ,

가 . , ,

(506) ,

, ,

()

2

1/2

1

(508) , 가 (500)
 (510) 가 가
 (500) (512) .
 12) 가 , (5
) 70° 0° (
 00) (506) 가 , (5

(510) 가 , 가 ,
 가 , SEM
 가 ,
 (514) , 가 가
 10 (600)
 (602) ,
) (

가

1/2 1

2

(604)

(606)

(608)

(600)

(610)

가 가 (600)
가 가

가

(610)

70°

0°

(612)

- 70°

+ 70°

가 (600)

(604)

(608)

가

가

SEM

가

(614)

가

11

(702)

(700)

가

0°

)

(

가

1/2 1

2

(704)

(706) , 가 (700)
(708) 가 가
(700) (710)

(710) (700) 가 ,

-70° 70°
(704) 가 (700)

(708) 가 ,
가 , SEM

가

(614) , 가 가
가 가

(57)

1.

- 1 ,

1 ,

1 2

2.

1 , 200nm 900nm .

3.

1 , 50% .

4.

1 , 0° 70° .

5.

4 , -70° +70° .

6.

1 , 0° +70° .

7.

6 , 0° +70° .

8.

6 , -70° +70° .

9.

6 , 가

10.

9 , 가 0° .

11.

1 ,
1 ,
1 2 .

12.

11 , 가

13.

11 , .

14.

12 , .

15.

14 , .

16.

15 , .

17.

1

1 ,

1 2 ,

,

18.

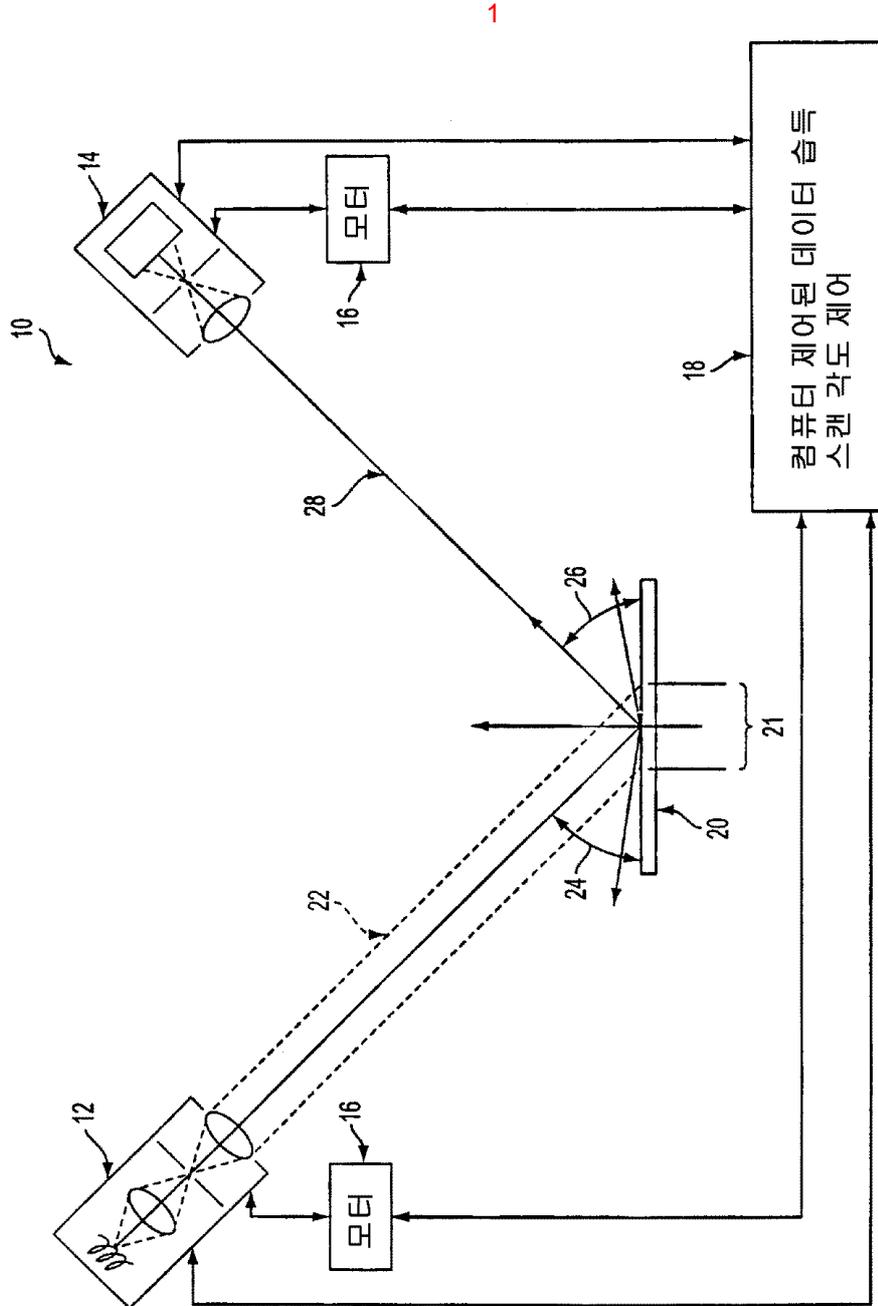
17 , 200nm 900nm .

19.

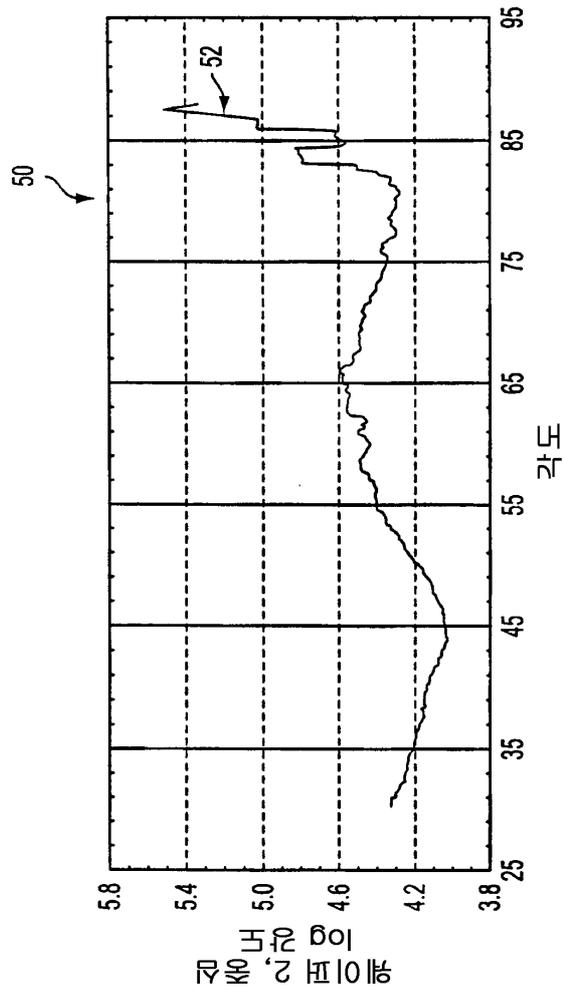
17 , 50% .

20.

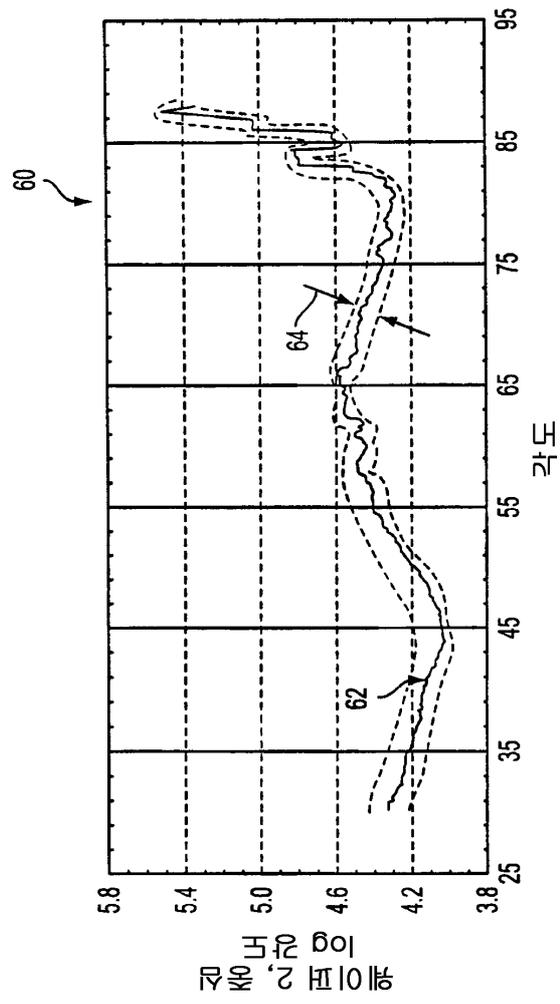
17 , 0° 70° .



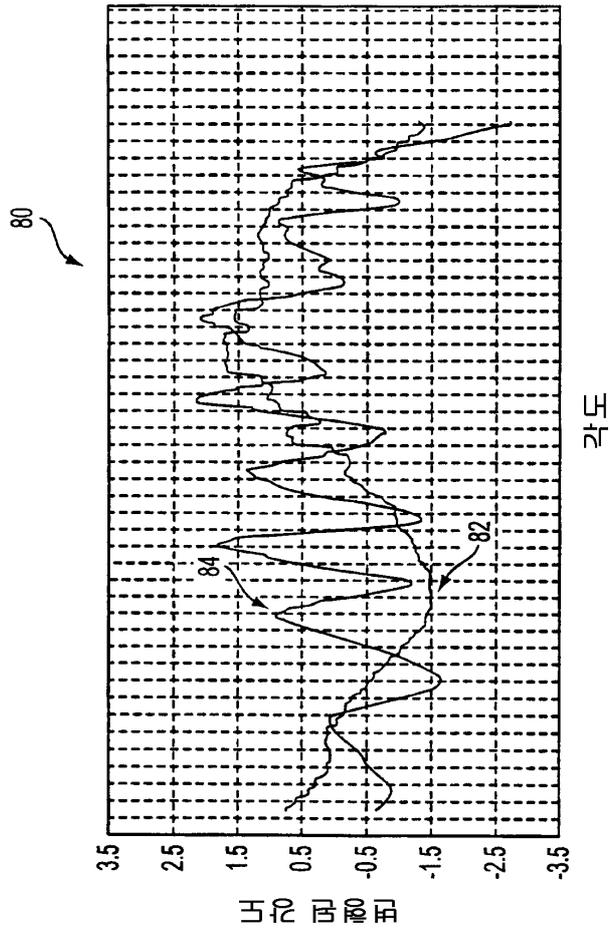
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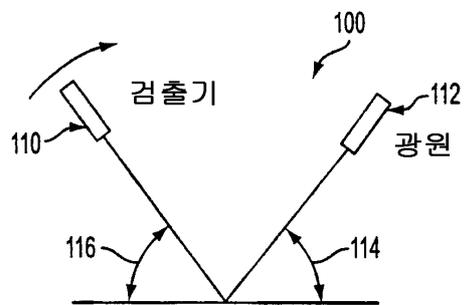
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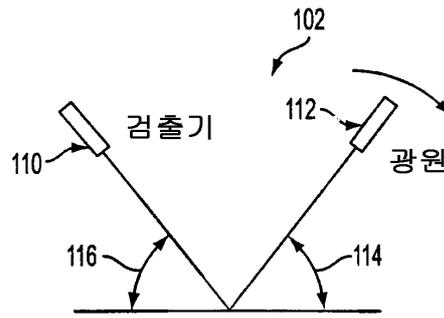
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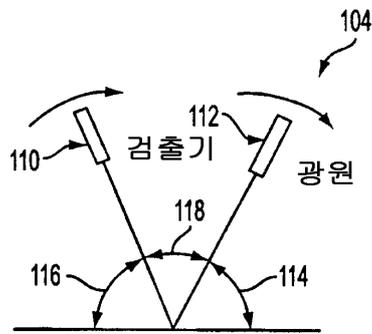
5a



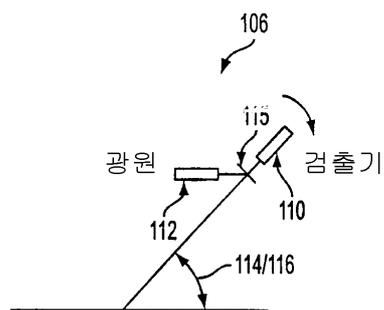
5b



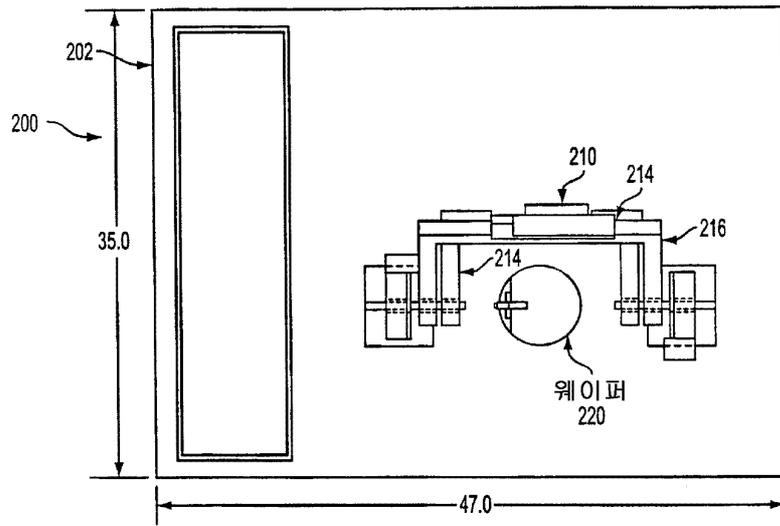
5c



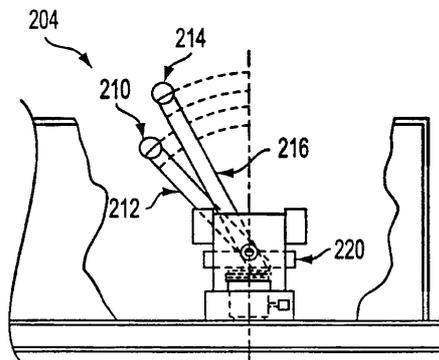
5d



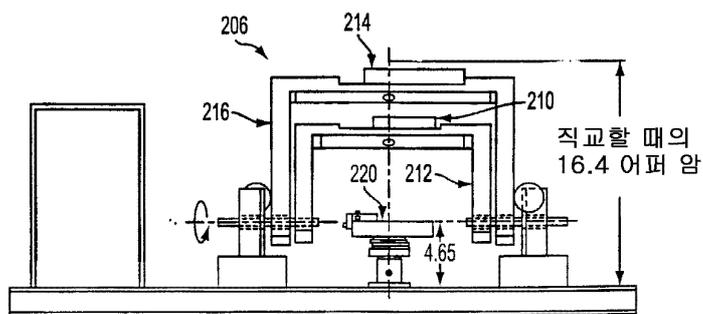
6a



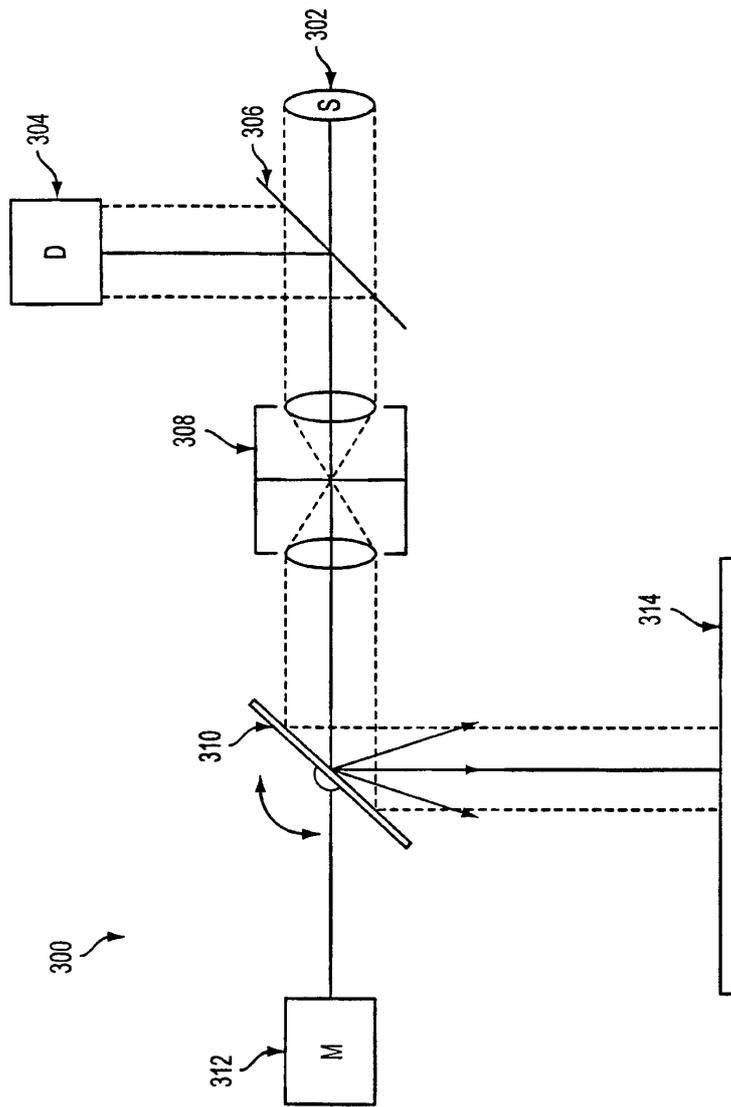
6b



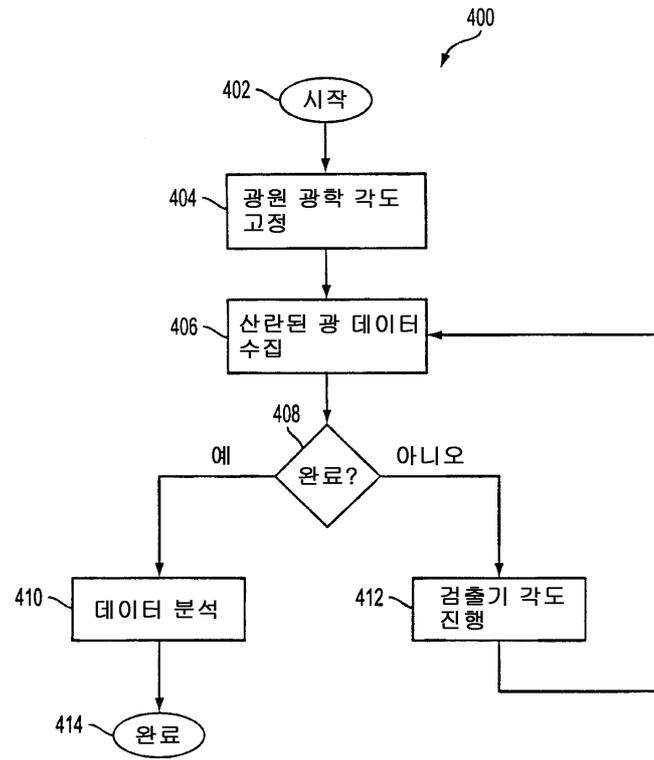
6c

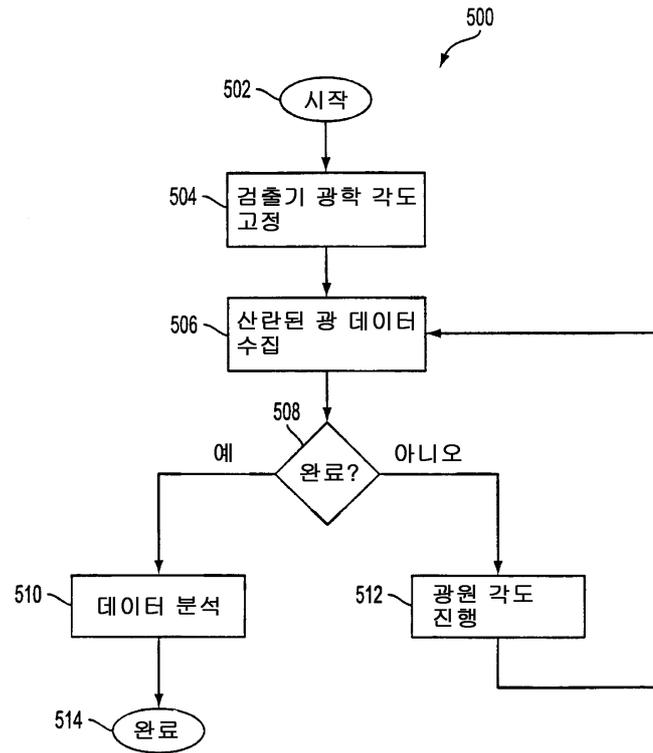


7

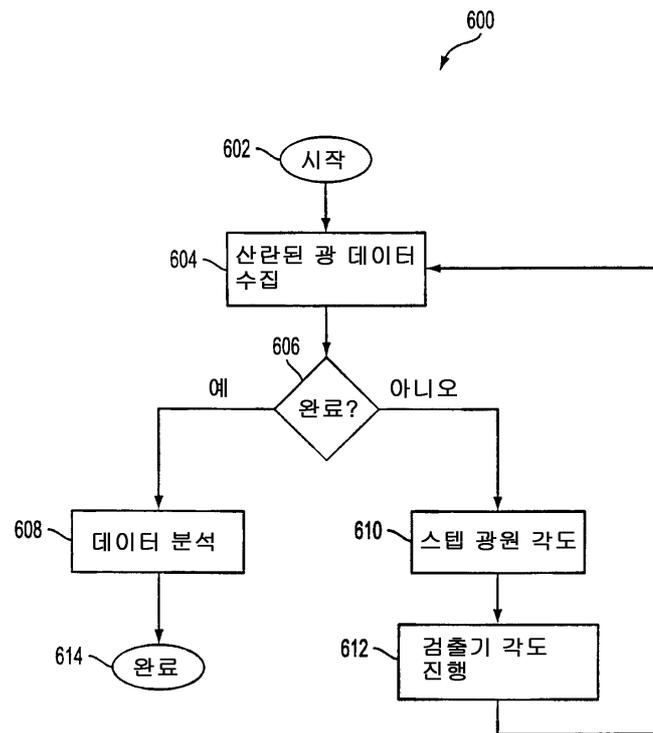


8





10



11

