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10 - 0297358  
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(73) 가  
 5 3 6  
 가 가  
 가 가 가 가 72

(72) 가  
 가 1 - 71, 202  
 가 가 67 - 27 - - 103  
 가 가 6 - 31 - 27 - - 가 101  
 가 가 1 - 16 - 3  
 가 가 7 - 1 - 36  
 가 1621 - 3 - 205  
 2 - 17 - 28  
 가 308 - 1

(74)

:

(54)

(10)

가

1

[ ]

[ ]

1

2 1

3 1

4 E<sup>2</sup>PROM (10 )5 1 E<sup>2</sup>PROM 가 가

6(a), (b) 1

7 2

8 2

9 2

10 2

11(a) 11(d) 2

12

13

14

15

16

17

\*

1, 40 :                      12 : 1

14 : 2      16 :

22 :                      38 :

182 :            192 :

196 :

[ ]

(46) (40) 가 , 가 가 .  
(46) (40) (10)가 (42)  
(46) (載置) (42) (46) , ,  
(46) (42) ( 380kHz 13.56MHz)  
RF (44) (46) (42)  
(10) (10)

, (38b) 2 (38) (38a) 1  
 (46) (42) (46) (42)  
 . (46) (42)  
 , 가 .  
 , , .  
 (10) .

(1) (10) (38) 가 (10) ,  
 .  
 (10)

(2) 가 (10) 가 (10) (46) (4  
 2) 가 , (10) 가 (10)  
 . (10)  
 . (10)

(3) 가 ( CI) 가 가 (10) (10) (10)  
 . 가 ( ) (10)  
 ,  
 , CVD  
 ,  
 가 가 .

1 가 , , 가  
 , 1 , 1  
 , 2 , 2  
 , 1 , 1  
 , 2 , 1 2  
 , 1 2  
 , 2 1 , .

2 가 , 가 , 1 , 1  
 , 2 , 2  
 1 , 1 2  
 , 1  
 (外) , .

2 1 .  
 2 1 .

(1) (2)가 (2) (1)  
 (3) (3) (3a)가 , (4) (4a)가 (2)  
 , (4) (4) (4a)가 ,  
 . (4) (10) (7) .

(6) (2) 가 ( ) (給氣管)(5) ,  
 (6) 가 (2) (1) (100)가 .  
 (100) (7) (1) (10) (1) , (1) ,  
 (10) (10)가 .

3 1 .

(10) 1 (12) (10) 1 (1  
 ( ) 2) 2 (14) Ep 2 . 1 (1  
 가 1 (12) , .

1 (12) 2 (14) (16) (16)  
 (20) (20) - 196 .  
 (1) (30) (32) .

(32) 1 (12) , 1 (12)  
 (20) (32) 1 (12), 2 (14), (16)  
 (32a) , (32a) (32b) .

, (30) (32) (32a) ,  
 (32) 가 ,  $\text{Cl}_2$  (S) (30) 1 (12) (30a)  
 . , (30) (33) .

(30) (32) (1) (P) (34) 가

3 2 (14), (16) (20) ,  
 (36) (10) 1 (12) (10) 1  
 (12) ( ) (36) He 가 가 ,

(30)가 , 1 2 (12, 14) RF (44) , 2  
 (30) (30a) , 1 (12)  
 , RIE 가 , 가  
 가 , 가 (30)  
 (30a) , (38)  
 (30) , (38) (30) ,

, (34) (P),

.

( (30)) ( 1 (12)) ( (30a)) ,  
( (30b)) . , (10)  
3  
가 .

, (38) (30) (30a) 1 (12) 가 .  
(30) 1 (12) ,  
가 .

(38) 3 (10)  
, 가 가 ( , ).

(10) (10)  
(10)  
(10)  
, , 가 가 .

(32) (10) (22)  
(22) (16) (凹) .

(22) (12) , (32) (22)  
(10) SiC, 가  
(22) (10) 가 (10)가 .

(22) 1 (12) (10) , (10)  
(10) 가 , (22) (10) 가 ( C  
, (10) (22) 가  
(22) , Cl (10)가 (22) .

6(a), 6(b) 1 (22) 6(a) (22)  
(10) 6(b) (22) (10)

(22) , (22) (22)

[ 1]

(22) (10)가 . 가 E<sup>2</sup>PR  
OM 가 .

E<sup>2</sup>PROM 가 ( 가 ) E<sup>2</sup>PROM  
(10 ) , E<sup>2</sup>PROM , E  
PROM 가 E<sup>2</sup>PROM (浮動) , 가  
, (V<sub>Th</sub>) . ,  
E<sup>2</sup>PROM .

4 E<sup>2</sup>PROM (10 ) , E<sup>2</sup>PROM 가 가

4 A - B (V<sub>Th1</sub>)  
(V<sub>Th2</sub>) , V<sub>Th</sub> (= V<sub>Th2</sub> - V<sub>Th1</sub>) 가 .

(38) , S N 4 가 .  
4 (10 ) .

, (22)  
가 .

5 가 (10 ) A - B ( :mm)  
, V<sub>Th</sub> ( ;V) .

5 , V<sub>Th</sub> 가  
V<sub>Th</sub> 가 8[V]가 (22) ,  
2[V] . V<sub>Th</sub> 가 .

7 2 . ,  
3 1 .

8 2가 1 (22) (32C)  
(32C) (32) (32b) , ,  
(16) .

(22) 1 가 (12) (32) .  
(22) 가 . (22) 1 (12) (10)  
SiC, .

, 2 1 .

11(a) 11(d) 2 (22) . 11(a)  
(22) (10) . 11(b) (22) (10)  
11(c) (22) (22a) (22b) 가 .

(22a) (10) , (10) 11(d)  
(22) 7 8 2 .

(22) , (22) (22)

[ 2]

(22) (10) , 2 ,  
11(d) (22) .

예 칭 조건

압력	75 mTorr
가스 유량	100 SCCM
가스	C <sub>2</sub> H <sub>2</sub>
RF 주파수	13.56 MHz
RF 파워	0.39 W/cm <sup>2</sup>
자장	120 gauss

9 (100 ( mm) ,  
( nm/min) .

186mm( , 8 d=18mm) (22) (10)  
, , 256.7nm/min ,  
± 10.7% .

200mm( , d=25mm) (22) 211.2nm/min ,  
± 6.4% . 186mm 14mm (22) ,

220mm( , d=35mm) (22) 198.7nm/min ,  
± 6.8% . 220mm 200mm

250mm( , d=50mm) 185.3nm/min ,  
± 15.3% . 250mm (22) ,  
(22) (10) , ,

(22) (22) , (10) , ,  
(22) 가 ,  
(22) 가 .

± 7% ± 10% , ± 7% (22) (10) 130~150%

[ 3]

, (22) 7  
 2 (38) 2 (22)  
 (10) 10 (10) ( mm) ,  
 ( nm/min) .  
 186mm(d=18mm) (22) (10) ,  
 , (10) 175.8nm/min ,  
 ± 35.1% .  
 200mm(d=25mm) (22) 133.6nm/min ,  
 ± 32.6% . 186mm 14mm ,  
 .  
 220mm(d=35mm) (22) 108.0nm/min ,  
 ± 27.0% . 220mm 220mm  
 , .  
 250mm(d=50mm) (22) 84.4nm/min ,  
 ± 11.2% . 250mm  
 .  
 (10) 가 (22) ,  
 , .  
 (22) , .  
 9 10 (38)  
 , (38)  
 .  
 , 가 가 .  
 1 2 (30) (30a)  
 , (38) (30)  
 .  
 , (22) SiC Al ,  
 (22) 가 (10) .  
 (22) (10) (22)  
 (10) .  
 , (22) .  
 (22) 「 」  
 . , 가 .  
 , , (14) , .  
 , , .

CVD

가

(2)( 2 )

(100)

12

17

(100)

(frog leg)

, 12

1 (110)

, 2 (112) ,

(114) , (116)

1 (110)

1 (110)

가

(180)

(182)

가

(118)

2

1

(120,120)

1

(120,120)

, 1 (110,110)

2 (122,122)

(180)

(180)

2 (112)

1 (110)

2 (112,112)

가 1 (110,110)

2 (122,122)

2 (122,122)

(114)

2

3 (124,124)

3

(124,124)

2 (112,

112)

, 3

(124,124)

2

(112,112)

가

(114)

(126)가

(126)

(128)가

가

(126)

(lightening hole)

(130)

(118)

1

(110)

2

(112)

1 (110)

2 (112)

가

, 1

2

(110,112)

(118)

(110,112)

가

가

1 2  
3 (124,124)

(134)

(132)

3

(124,124)

(134)

(134)

(132)

(116) 13

1 (110,110)

2 (120,120)

2

(112,112)

2 (122,122)

1 (120,120)

2 (122,122)

(116,116)

(136,138)

, 1 (120,120)

(116,116)

13

17

(116,116)

(140)

(142)

1 (120,120)

1

(144,144)

, ,

(116,116)

(136,138)

가 (144,144)

(146,146)

, (144)

(146)

(142)

, ,

(144,144)

(184,184)

(146,146)

(186,186)

가

(144,144)

(188)

(142) (140) (148) (150) (116) (146)  
 (152,154) , 1 (120,120) (144) (156,158) , (146)  
 (154) (144) (156) (160,162)가  
 . , (146) (152,154) , (144) (156,158)  
 (148) (150) (146) (160) (144) .

, (140) 1 (120,120) 16  
 (156) (148) (150), (144) (162), (144)  
 (144) (158) , (144) , (144)  
 , 1 (110,110) . , (116,116) 15  
 (148) (150), (146) (160), (146) (154)  
 (146) (152) , (146) , (146)  
 (136,138) 2 (122,122) , 2 (112,112)

, (146) (152) (144) (156) 2 , 2  
 (152,156) 가 (164)

, 1 (110,110) (118) (118a) (166)가  
 , (166) (168) (170) (172) ,  
 (170) (18) (114)  
 . , (118) (182) (190) 가  
 .

(144,144) , (146,146) , (118) (118a) 5  
 (192) (192) (194) (194)  
 (144), (188), (182) (96) . ,  
 (192) (144), (146) (118) (184,186,190)

(100)

, (2) 가 , (114) (12  
 6) 가 (140) (140) (148) (150),  
 (162), (156,158) (144,144) 1 (110,110) 1 (  
 120,120)

, 1 (110,110) , (140) (148) (150), (160), (1  
 54,152) (146) , (146) (133,1  
 38) 2 (122,122) , 2 (112,112)

. , 2 3 (124,124) (114) , 가 .  
 , (116) , 가 가 , 가  
 , (140) 4 1 (120,120) (144)  
 (146) 가 .  
 , (140) 1 (110,110) , 2 (112,112) 가 ,  
 (132) (134) (134)가 (114)  
 가 .  
 , (114) 가 (170) (170) (17  
 2) (168), (118) (166) (118)가 ,  
 1 (110,110) 2 (112,112) (114) (140) 가  
 .  
 , (180) , (1  
 44,144), (146,146), (118) (118a) 5 (192) (196)가  
 (118a) , 0 (192) (118)  
 (118a) (170) 1/10 가 가 ,  
 1 (120,120) (144), (146) 4 가 .

(57)

1.

; 가 ; 가 ,  
 ; (shoulder portion) 1 , 가  
 ; 2 ; 1 2 2  
 RF 가 ; 가 ,  
 1 , 1 1 가

2.

1 , 가 , 2 .

3.

2 , 가 , 1 .

4.

1 , .

5.

4 , SiC , .

6.

1 , 1 가 , 1 , 가 .

7.

6 , (recess)가 , (recess) .

8.

7 , 가 , 2 .

9.

6 , 가 , 2 , .

10.

9 , 가 , .

11.

1 ,

.

12.

11 , 가

.

13.

11 ,

.

14.

가

; 가

;

;

(shoulder portion)

1

가

;

RF 1

가

;

2

;

1

2

1

2

; 1  
;

1

, 2

;

가

,

1

,

1

가

,

1

1

.

15.

14 ,

.

16.

15 ,

.

17.

15 ,

.

18.

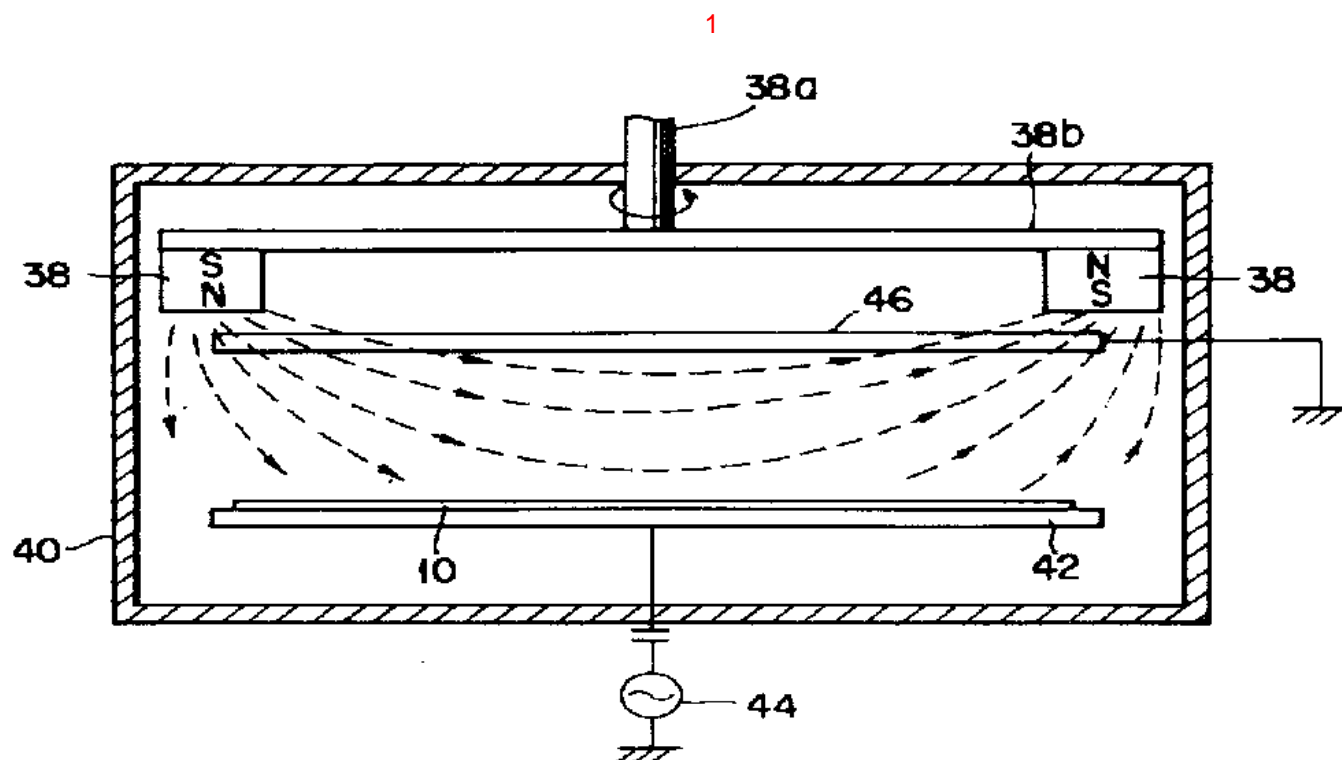
14 ,

.

19.

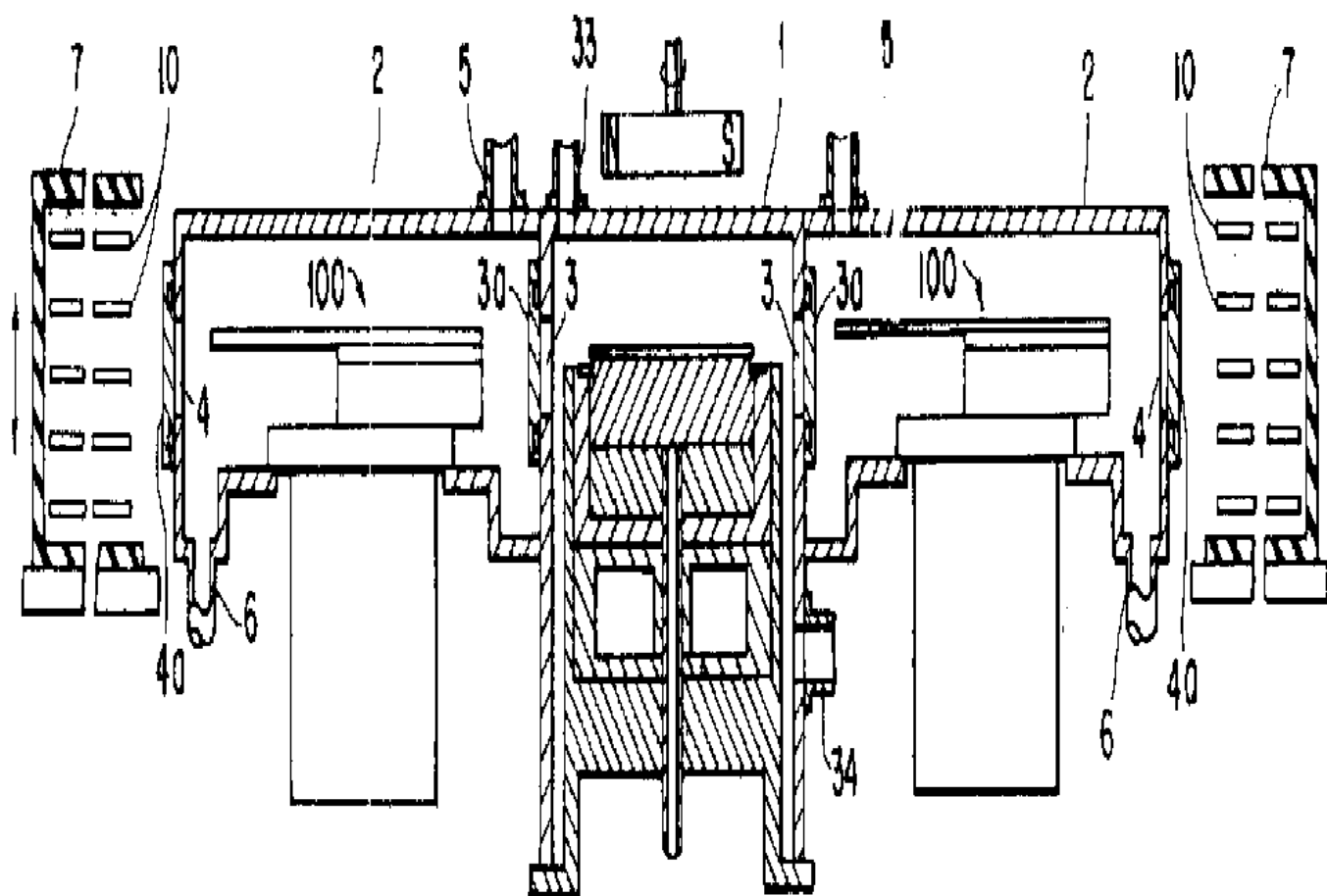
18

SiC

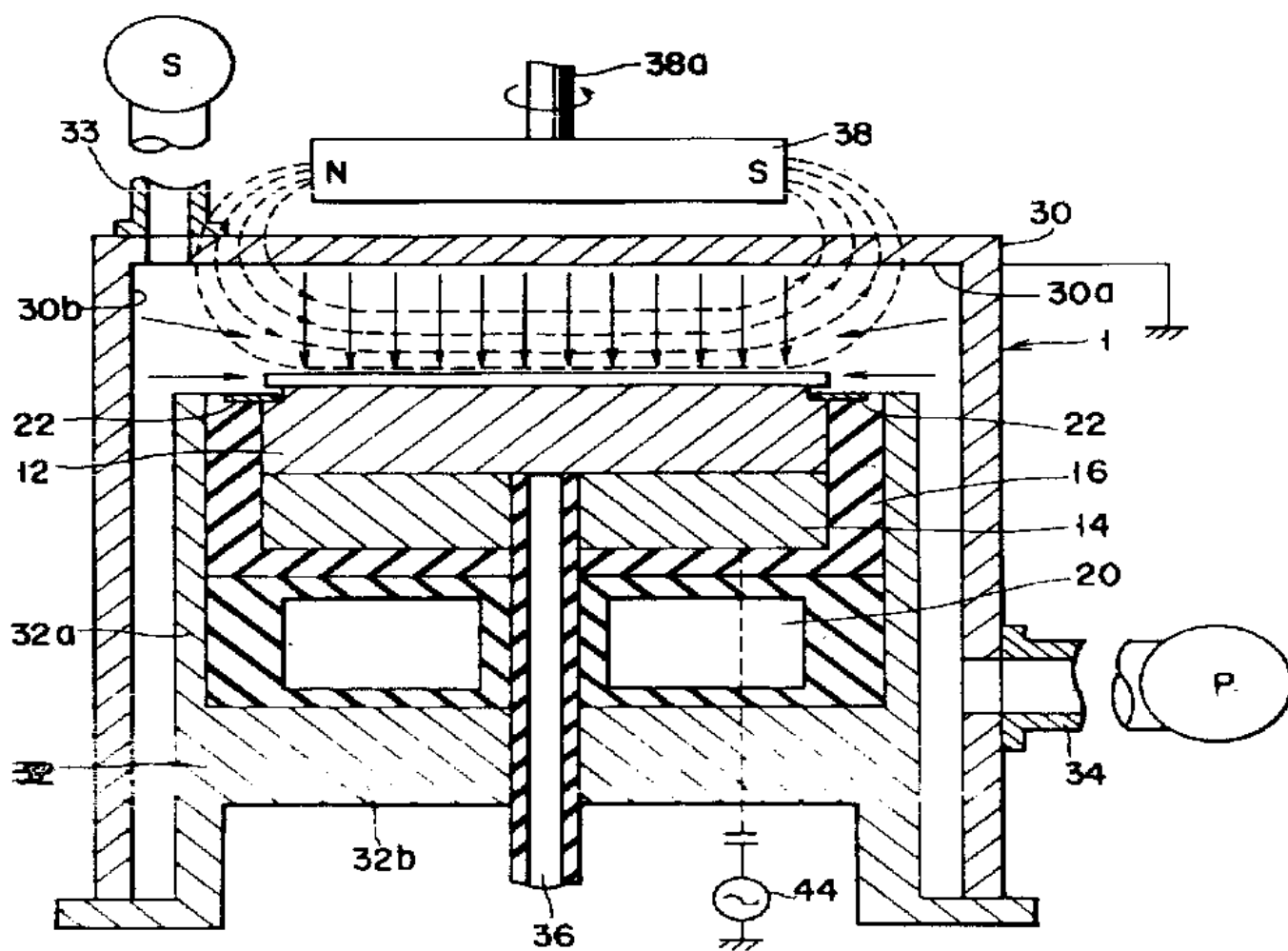


( 종 래 기 술 )

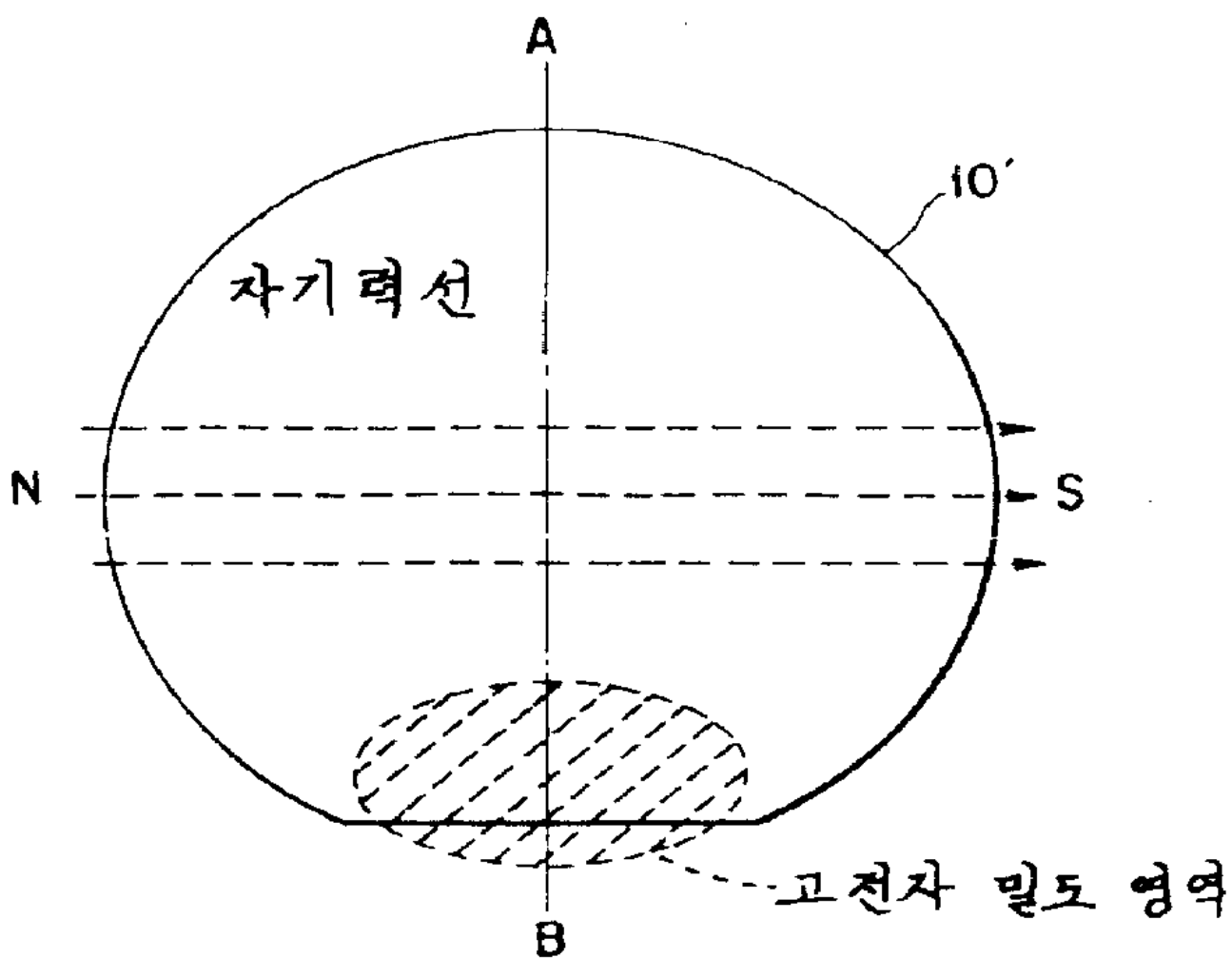
2



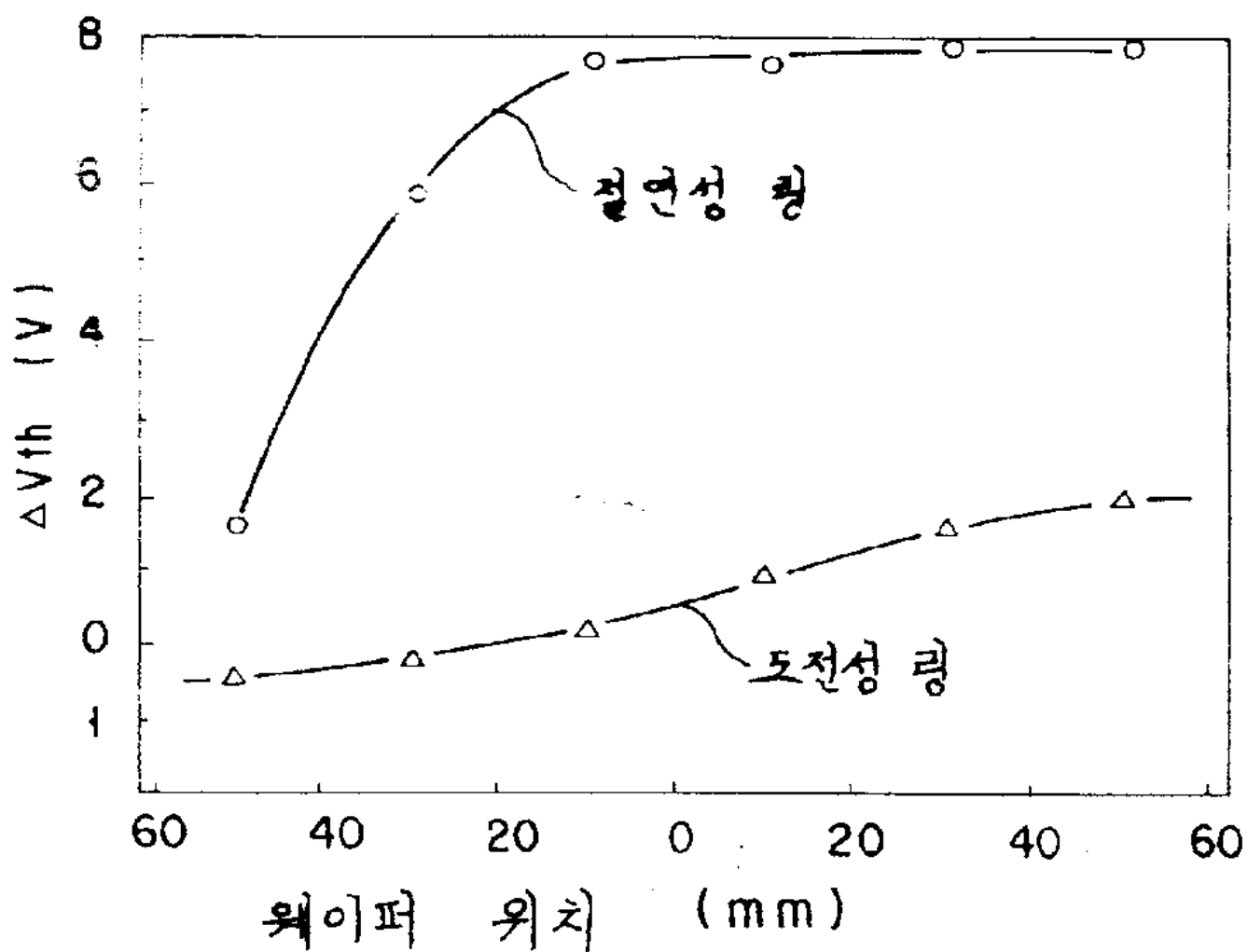
3



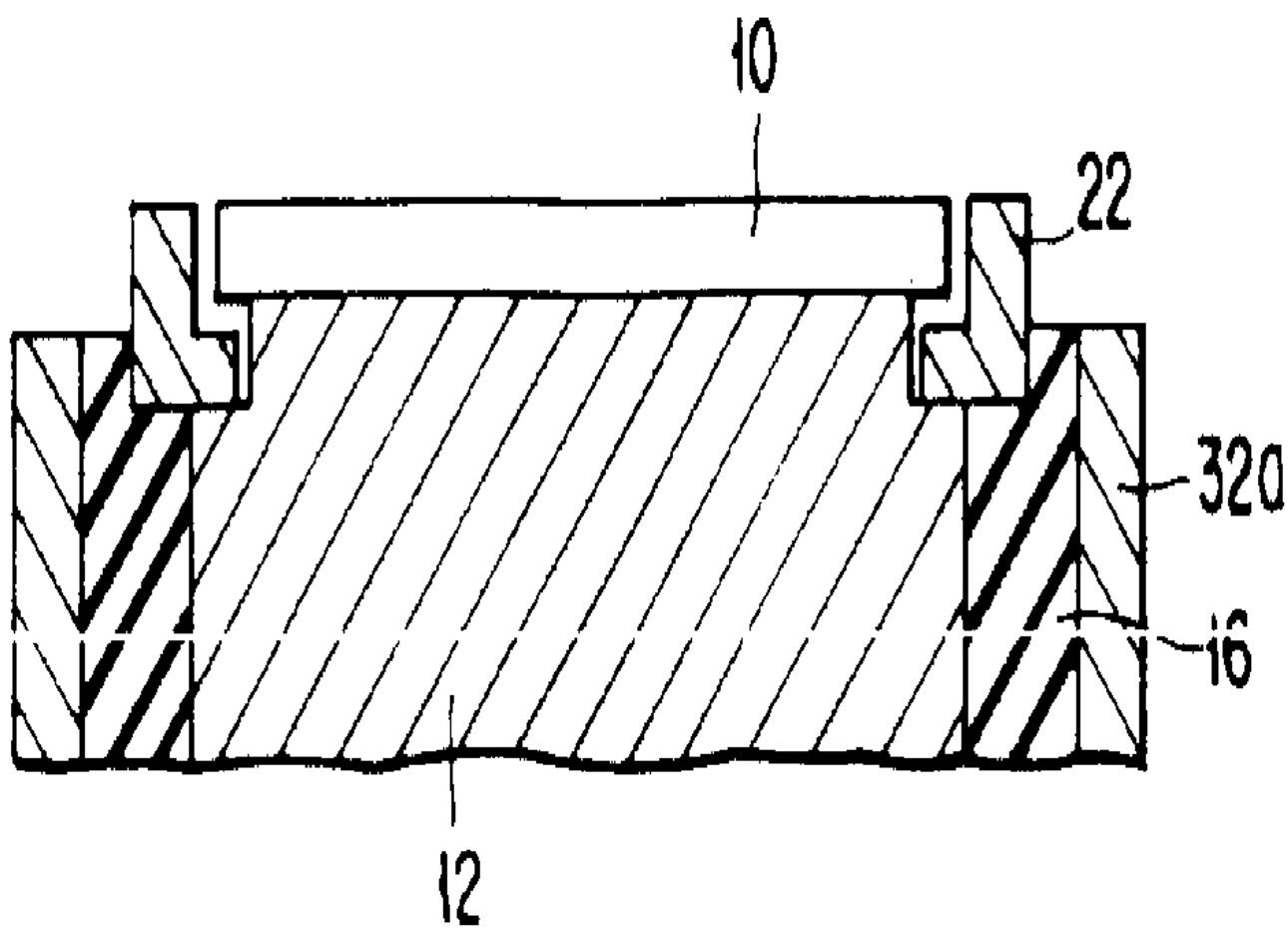
4



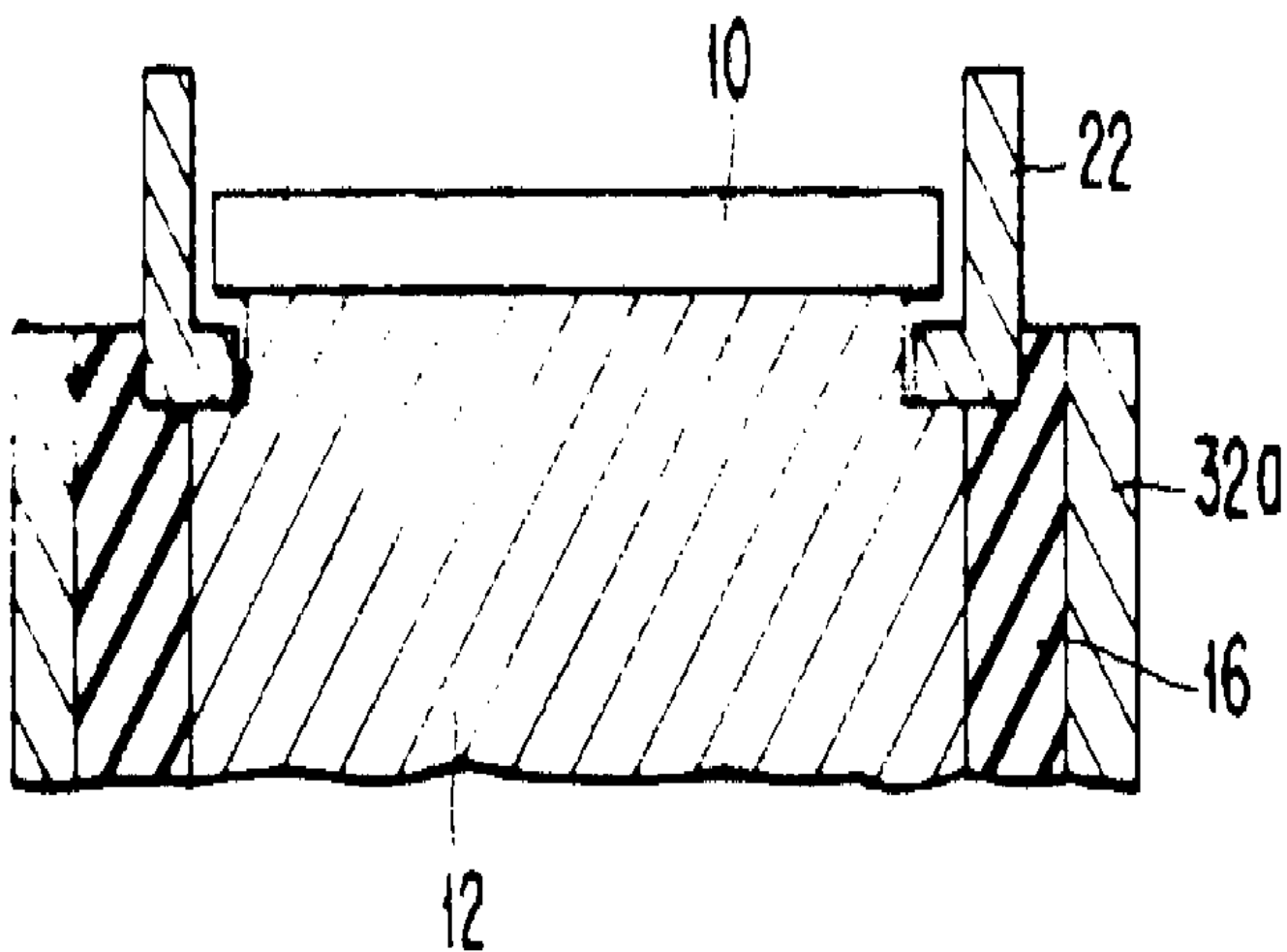
5



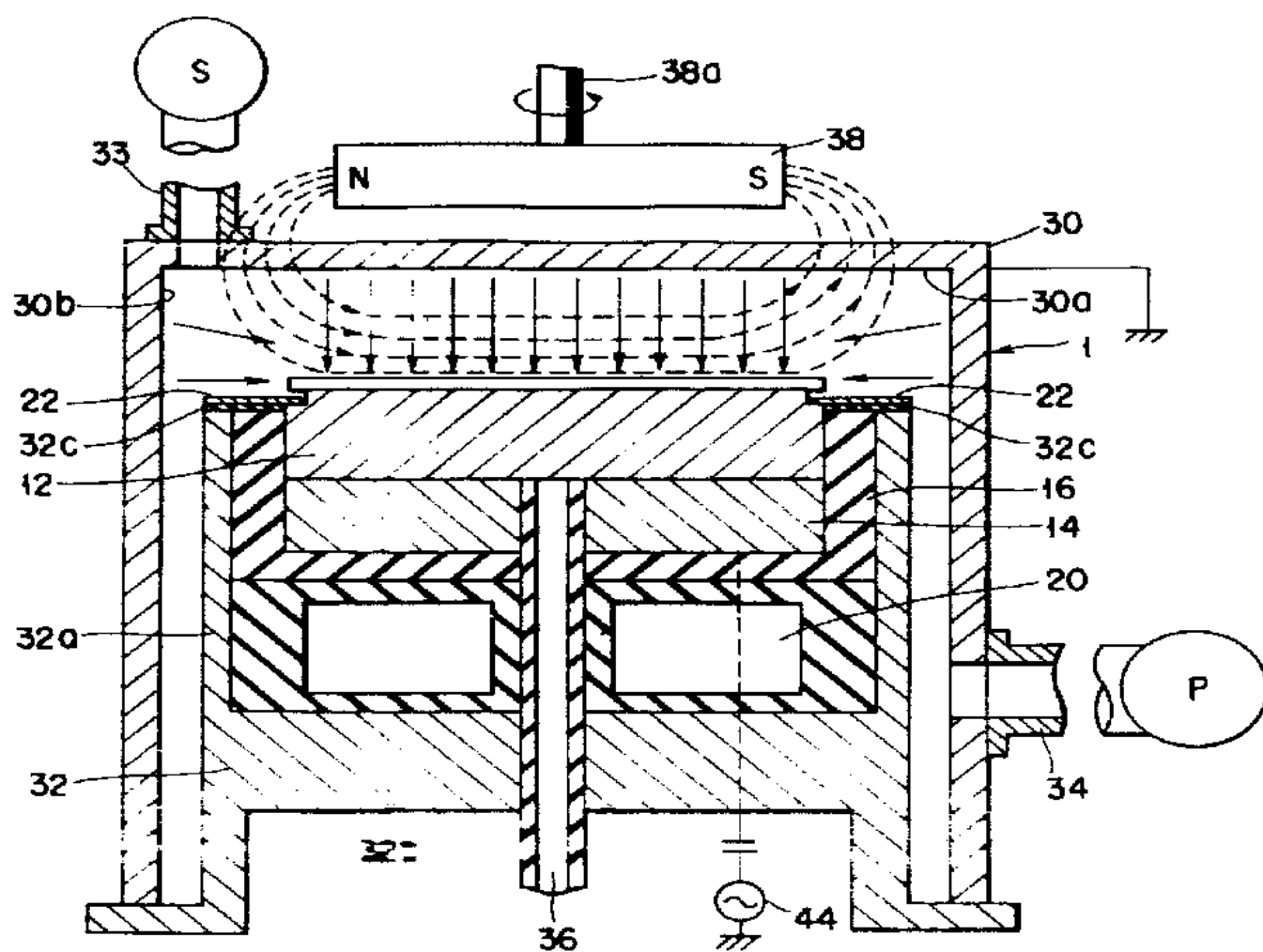
6a



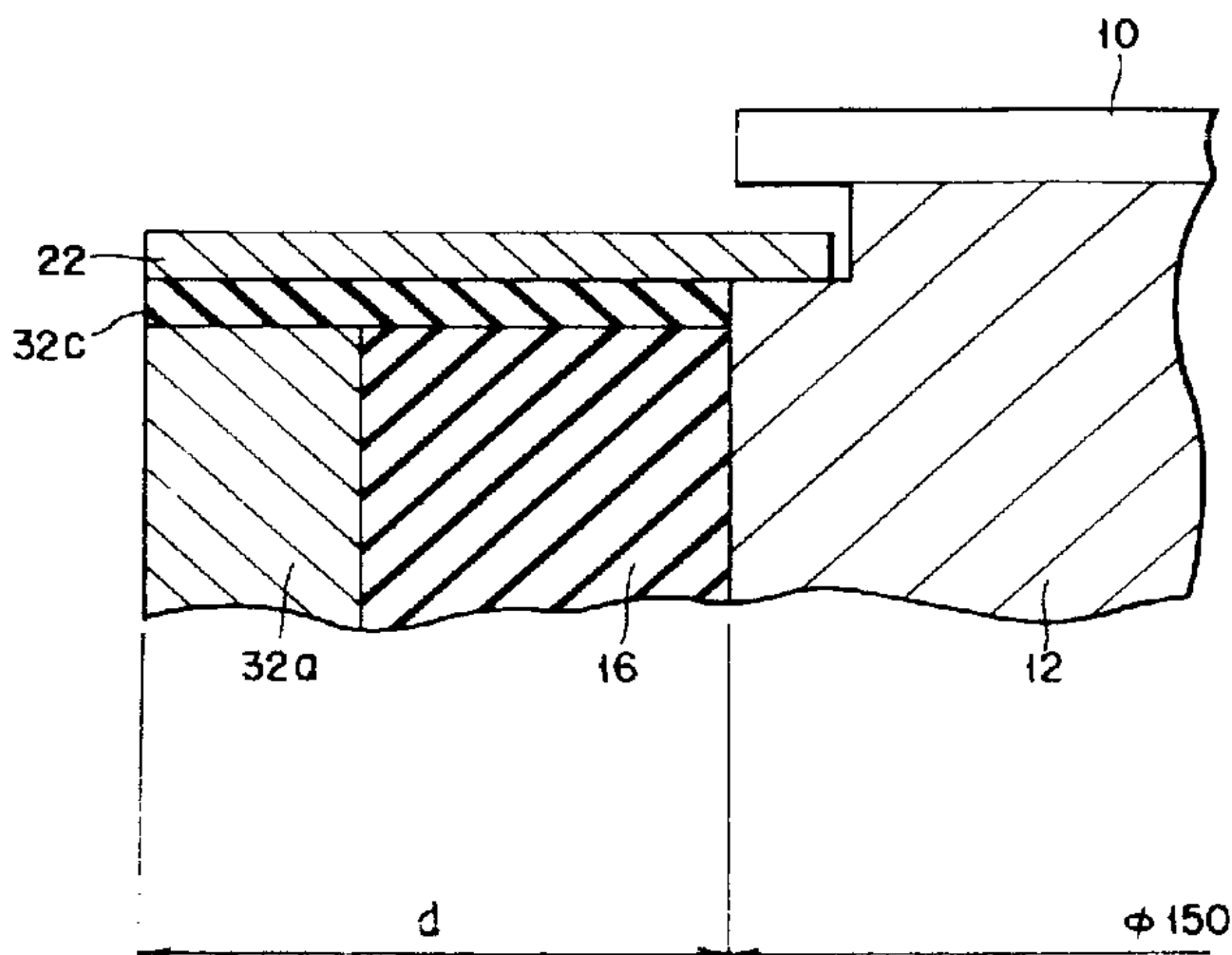
6b

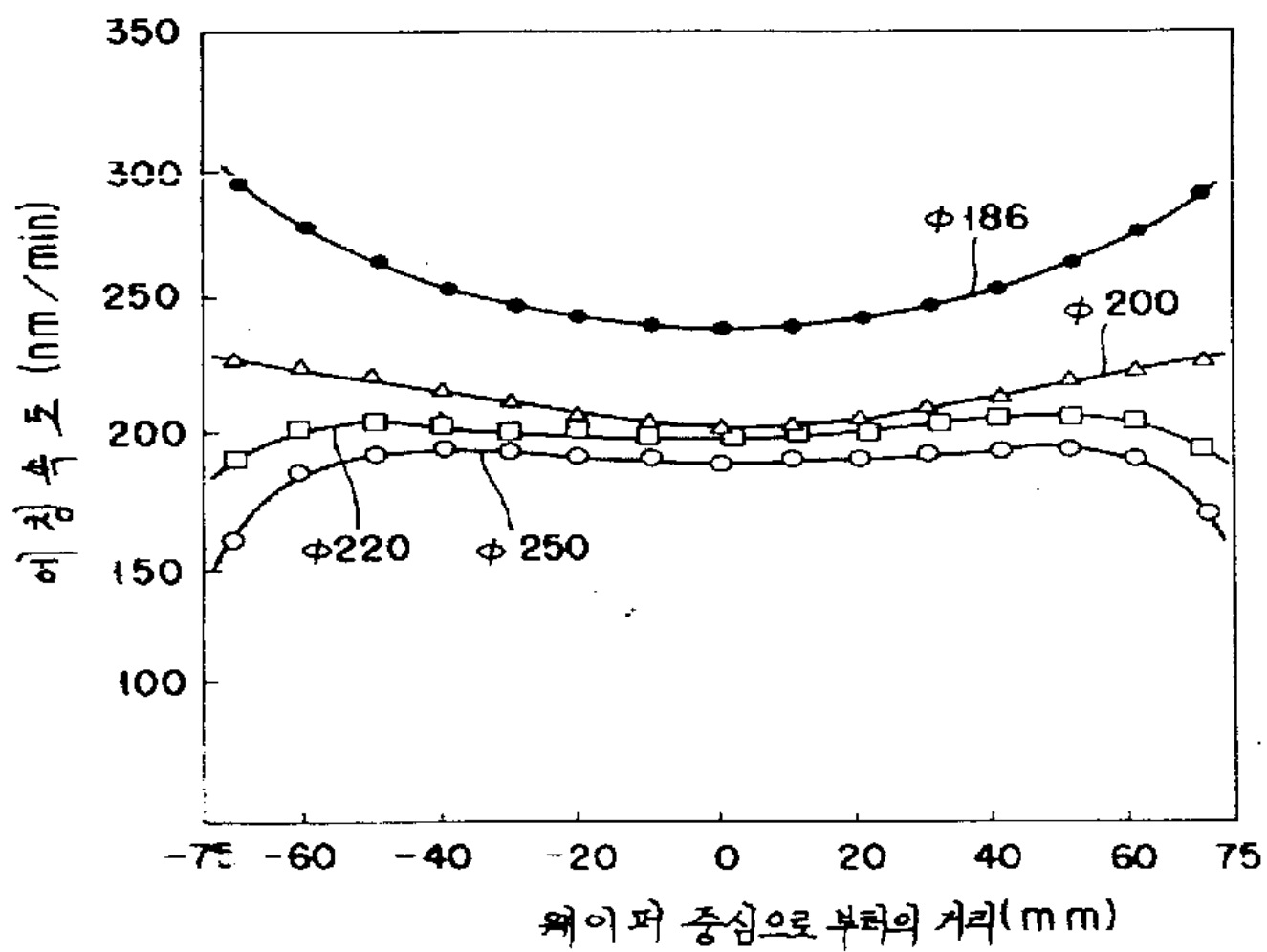


7

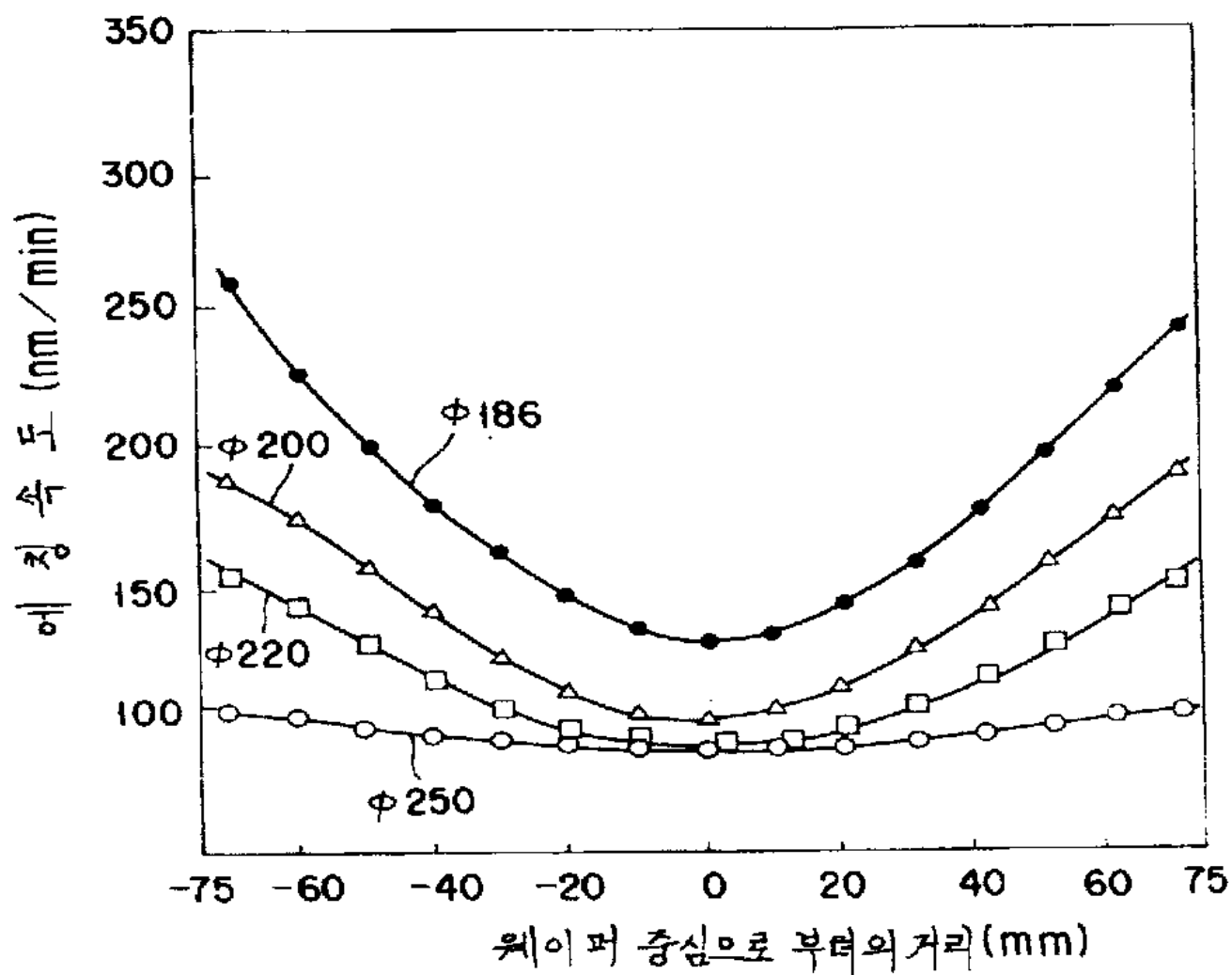


8

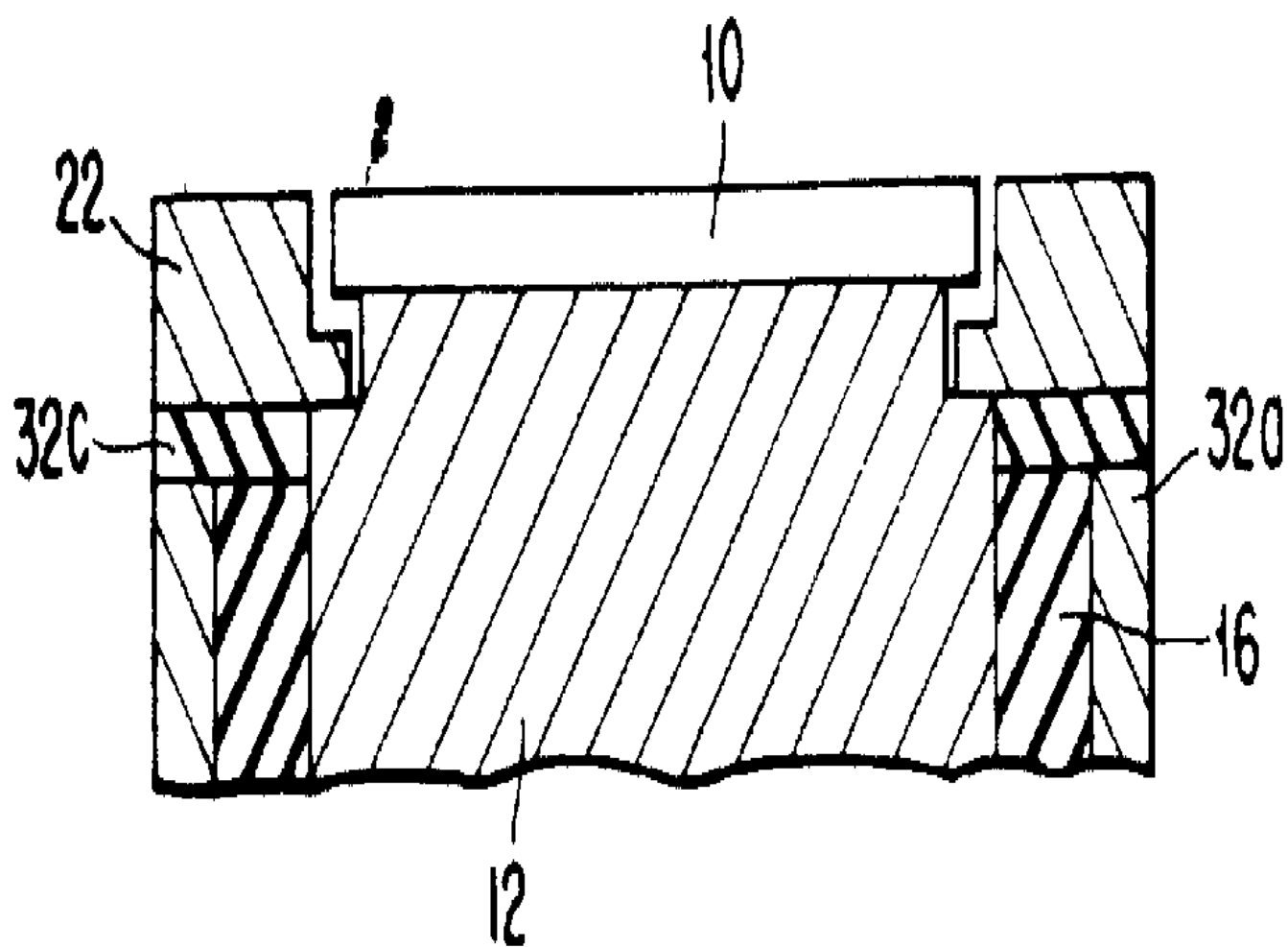




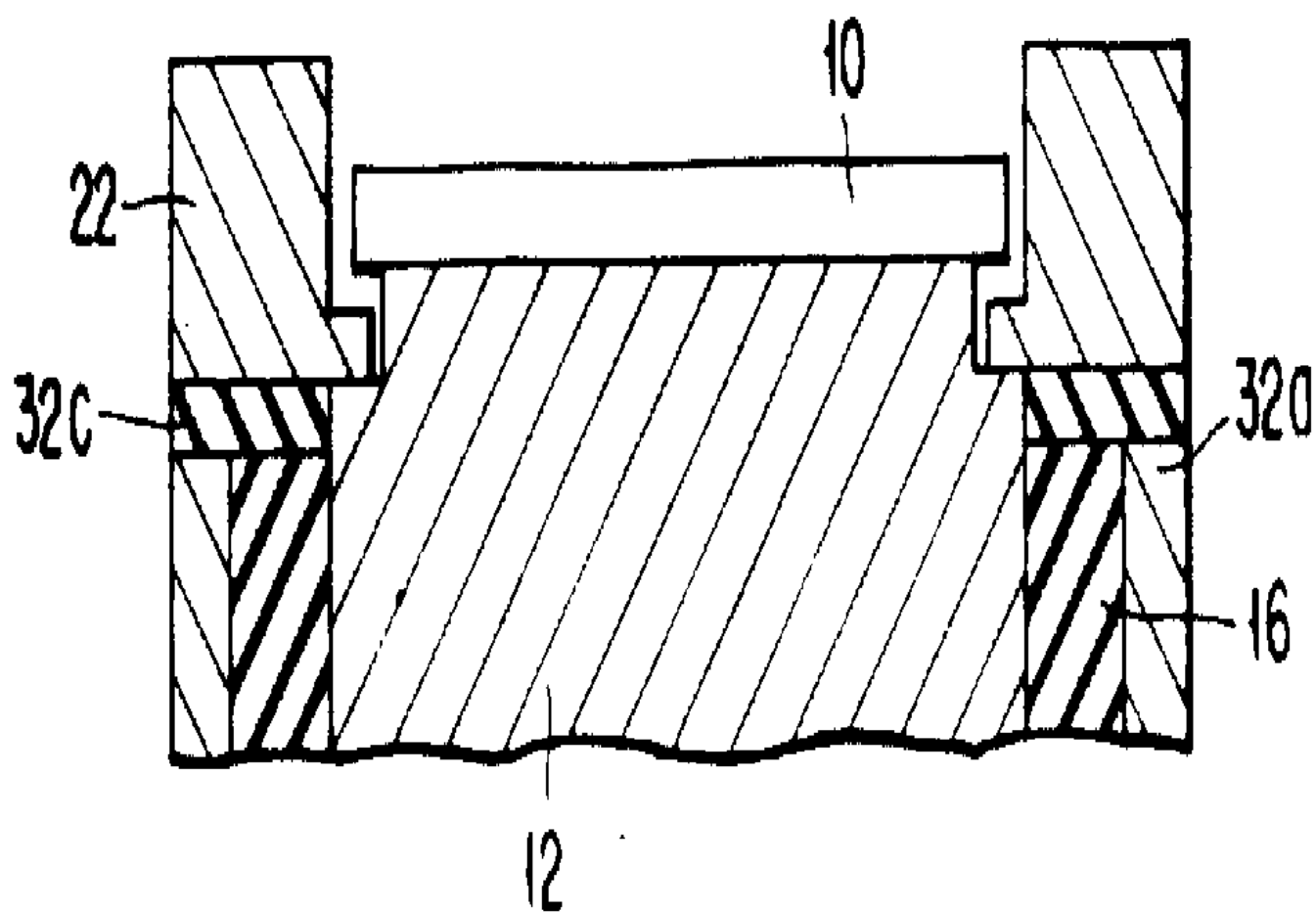
10



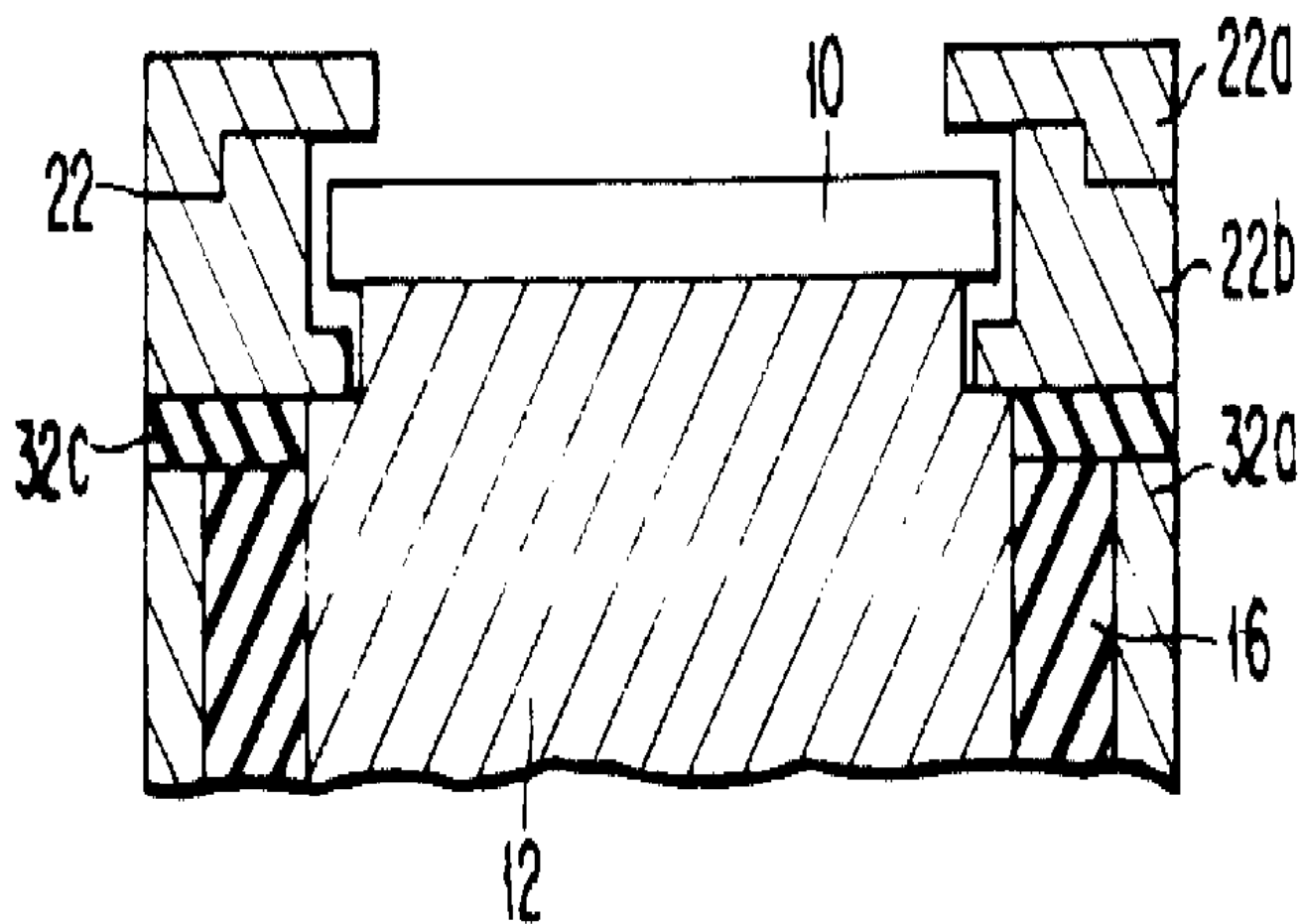
11a



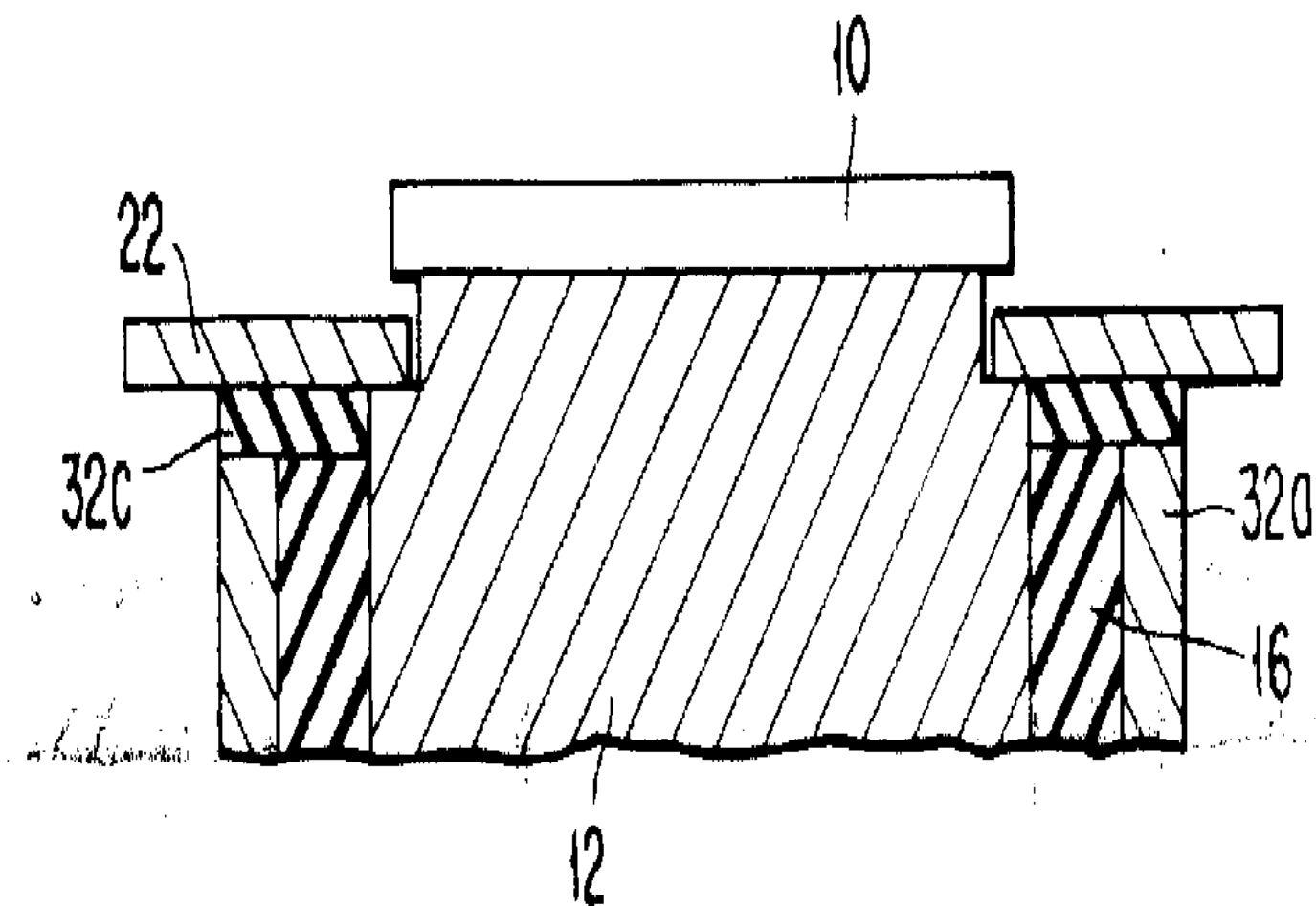
11b



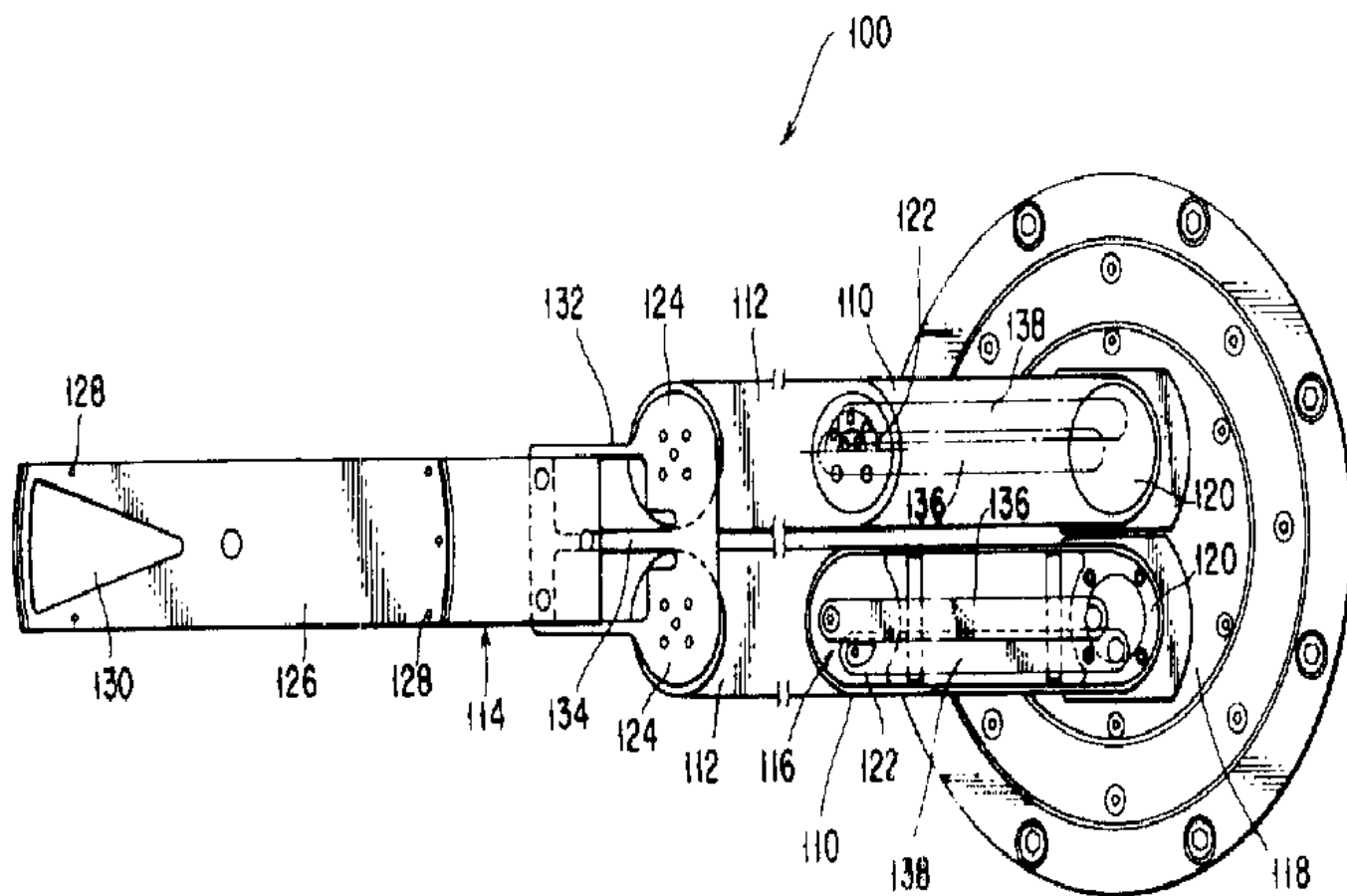
11c



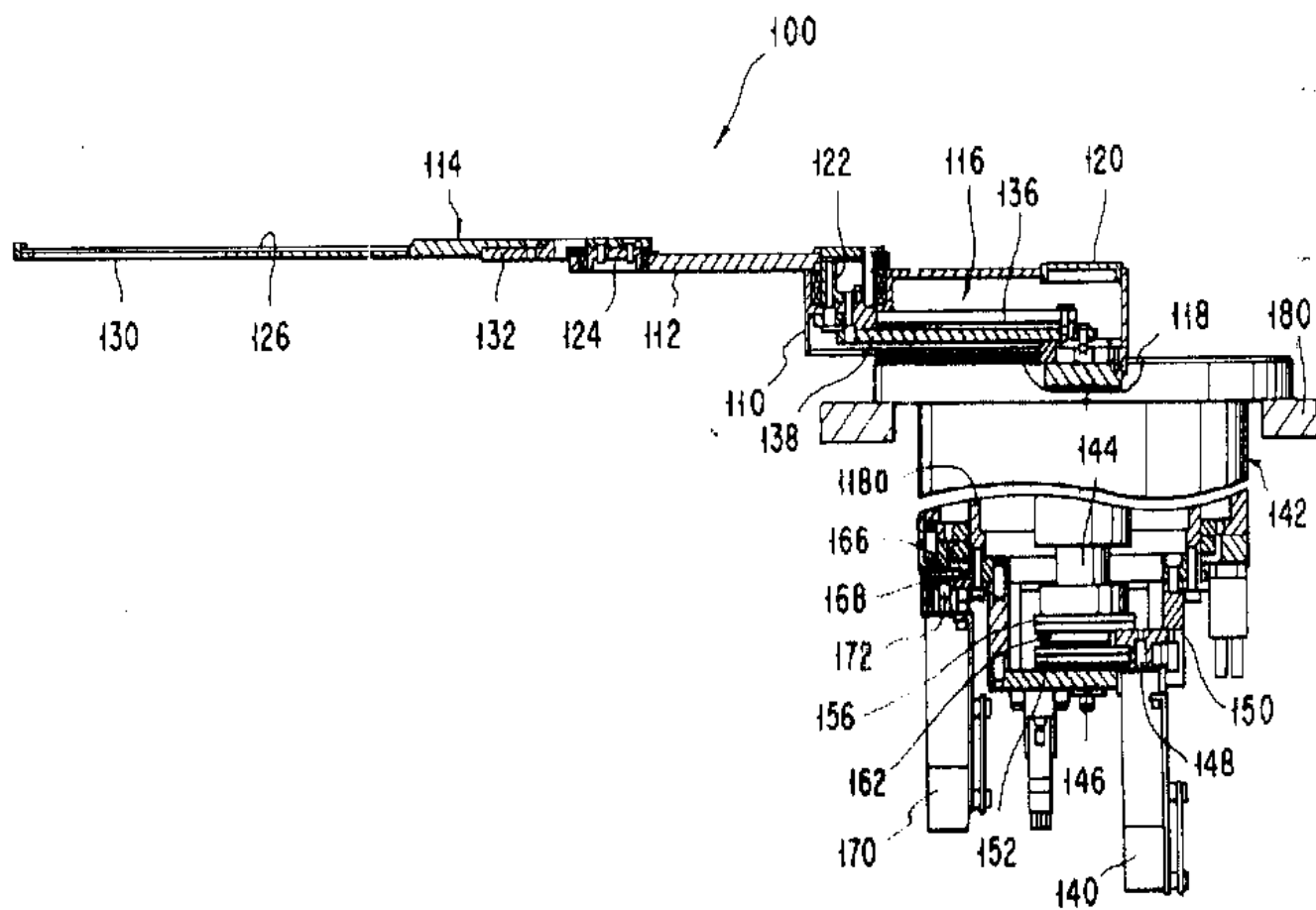
11d



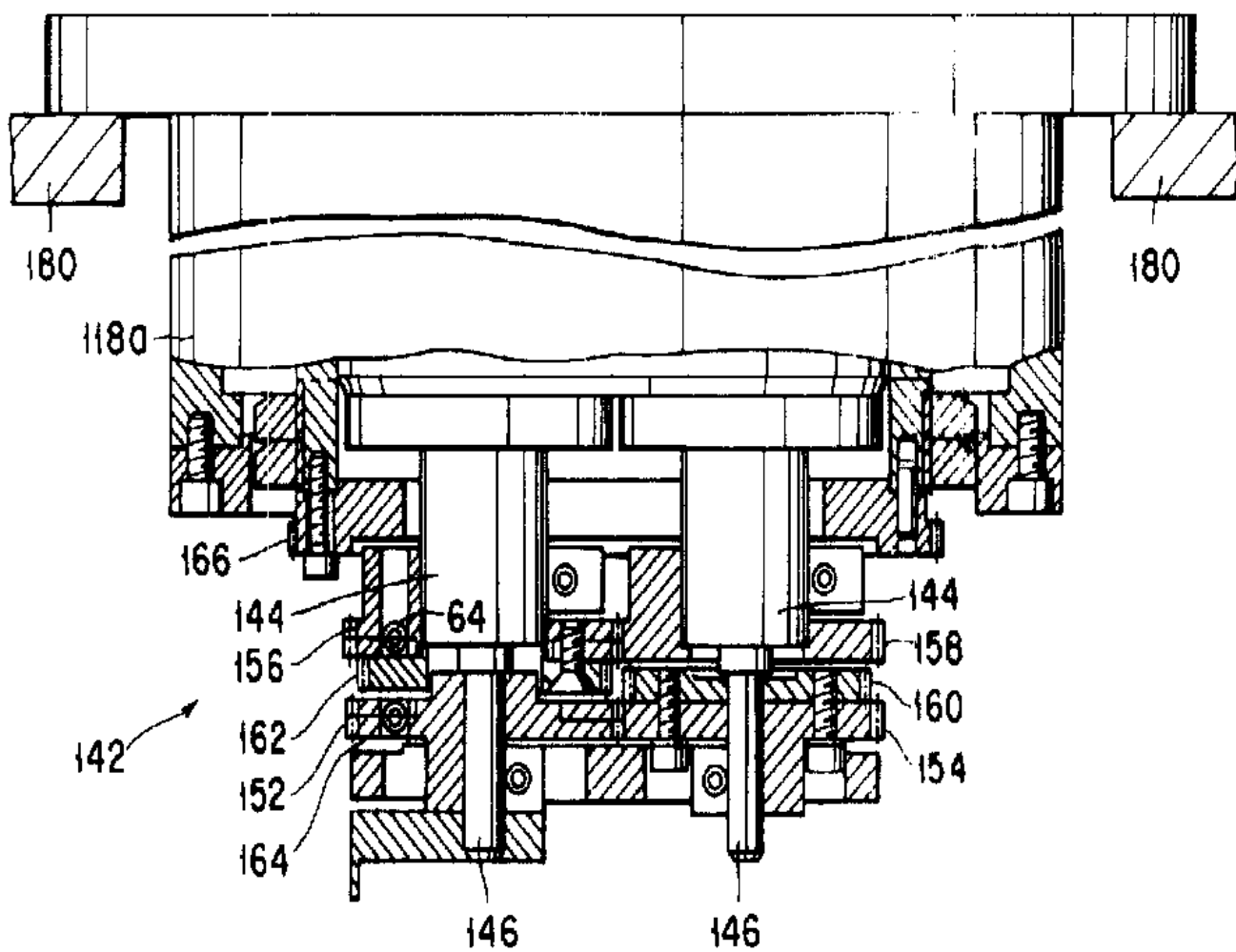
12



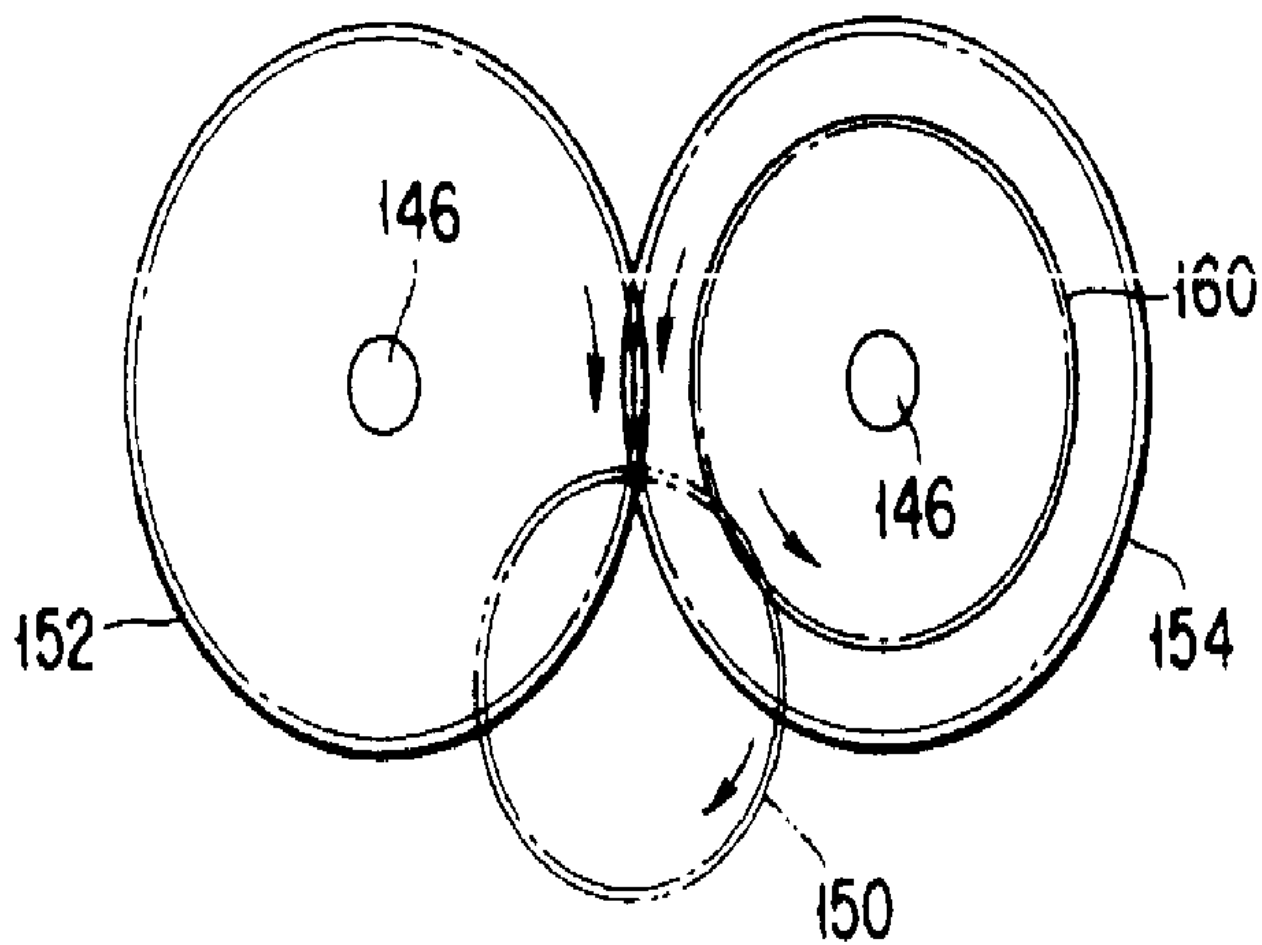
13



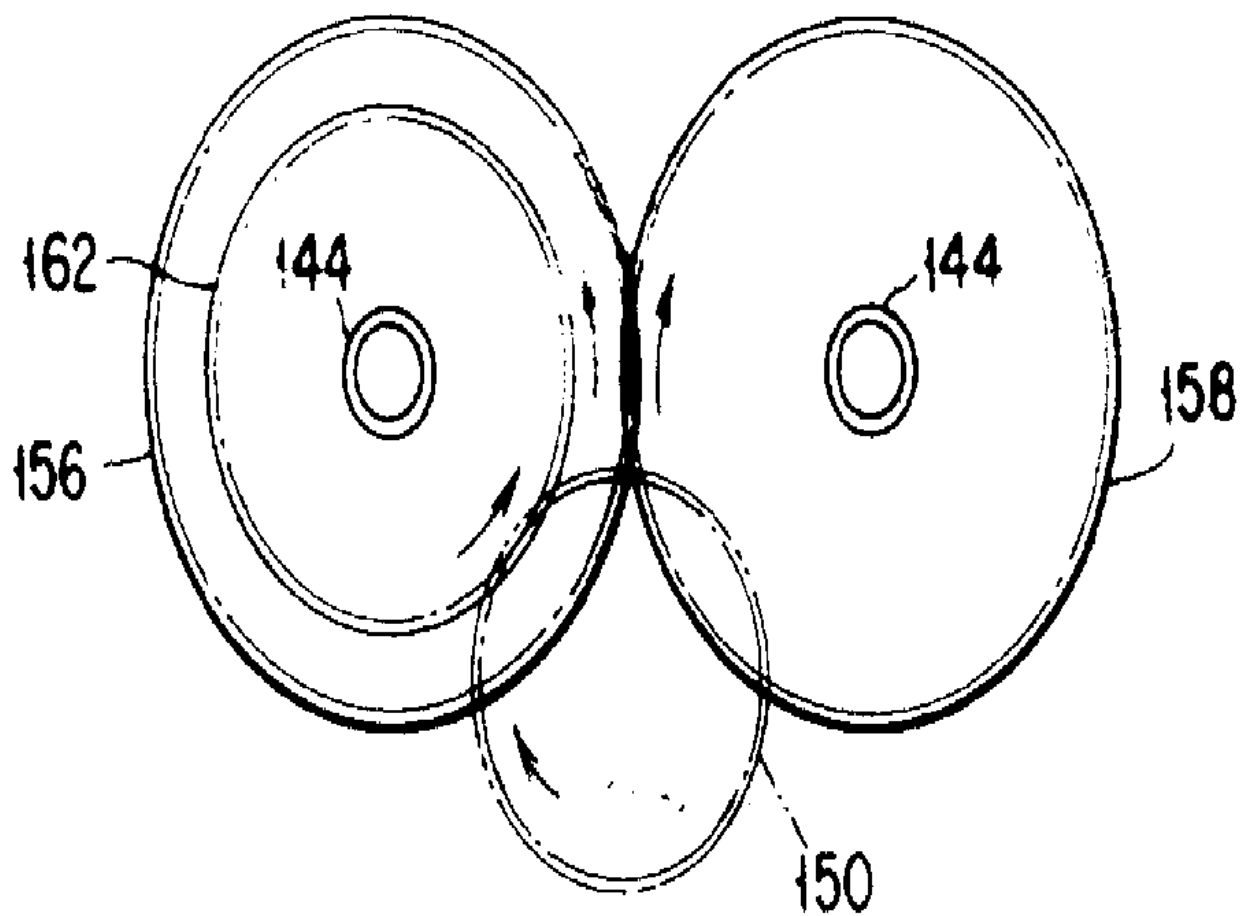
14



15



16



17

