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(73) 4 - 1 - 12 - 1305

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(72) 2 - 5 - 6 - 213

4 - 1 = 12 = 1305

(54) 가

가 , (40) (24) , (10) (10) , (12) , (14) (10) , (16) , (16) , (24) 가 ,

가 , 가

1

1 1 가 .

2 1 가 .

3 2 B - B .

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5 2 가 .

6 5 가 .

7 6 B - B .

8 2 가 1 .

9 3 가 .

10 9 가 .

11 A 11 B 10 A - A B - B .

12 4 가 .

13 12 가 .

14 13 A - A .

15 5 가 .

16 15 가 .

17 16 A - A .

18 6 가 .

19 7 가 .

20 19 가 .

21 8 가 .

22 9 가 .

23 22 가 .

24 A 24B 23 A - A B - B .

25 10 가 .

26 25 가 .

27 A 27 B 26 A - A B - B 10 가 .

28 11 가 .

29 12 가 .

30 12 가 .

31

가

가 LSI

LSI , MOS

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(100)

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(n - Si)

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(14)

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(16)

(10) 가

(40)

가

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(18)

(20) , (22)

n - Si

(42)

n - Si

(18)

(10)

가

(20) , (22)

p

(42)

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(20) , (22)

(20) , (22)

(18)

가

(18)

p

(10) 가

2 , (20) , (22) 가 (22) 2 (10) 가 2

가 , (24) , (10) 2 가 (26) , (28) n - Si (42)

(28) (20) , (22) 가 p (22) , (28) n - Si (42)

2 (22) , (28) (26) , , 2 가 , (26)
 (42) (22) , (28) (22) , (28) p
 , , (28) 가 (10) 가 2
 (22) , (28) 가 (22) , (28) 2

3 2 B - B , , (10) p , n - Si (42)
 (20) , (22) , (28) (20) , (22) , (28) (40) (20) , (22) , (28) (1)
 8) , (26) , , (18) , (26) , (26) n - S i (42) MIS(-
) MOS(- - -) 가

, (18) 2 (20) , (22) , , 2 (16)
 , (18) 가 , (19) 가 (19) 2 (18) n - S i (42)
 p (19) 가 , , (20) , (22) 가

가 , (26) 2 (22) , (28) , , 2 (24)
 가 , , (22) , (28) 가

, , 1 (100) (18) 2 (16)
 , | , , (10) , (18) , , 2
 (10) 가 , , 1 (18) , , 2
 , , 1.5

「 . 」 가

(4 , 「 X 」 가) 1/2

가 4 , 4

5 2 가 (200) . , 6 5 가

(40) , 가 (200) (10) n (n - Si) (10)

(16) , (24) , (32) (10) (12) , (14) .

(10)

, 2 (10) , (12) , (14) 가 ,

(16) (10) (12) 가 (18) n - Si (42)

, (40) T 2 (18) (20) , (22) (18)

(18) (10) 가 (20) , (22) p

n - Si (42) , 2 (20) , (22) (18)

, p (18) (12) 가 (20) , (22) , , (20)

가 (10) (10) (12) 가 (20) , (22) , (20) , (22) 가

22) (10) (10) (12) 가 (20) , (22) , (20) , (22) 가

, (24) (10) (40) (12) 2 T 2 가 (26) (28) , (30)

n - Si (42) , (28) , (30) (20) , (22) 가 p (28) , (30) n - S

, (42)

2 (28), (30) (26), , (26)
 (28) 가 , p ,
 (10) (10) , 2 , (28), (30) ,
 (30) (10) (10) .

$$5 \quad , \quad (12) \quad 가 \quad (32) \quad 2 \quad (16), (24) \quad 가 \\ (34) \quad (36), (38) \quad , \quad (10) \quad (12)$$

7 6 B - B , n - Si (42),
 , (28), (30) (10) p (28), (30)
 , (26), (40) n - Si (42) MIS(- - -) MOS (- -)
) 가 .

, (26) 가 , 2 (28), (30)
 26) 가 (26) n - Si (42) p (27)
 , (27) 2 (28), (30) 가 . , ()

가 (16) (32) 가 ,

가 (46) (10-2) (10-3) T (48)
 n - Si (42) , 가 (10-2) (10-3)
 2 (22), (50) . (46) (22), (50) 가
 2 (22), (50) (48) . 11 A 11 B
 가 (300) . 11 A 10 A - A
 1 3 . , 11 B 10 B - B
 , (44) 가 2 (20), (45)
 (52) 가 .

,	가	(300)		(10)		2
(16), (24)		(10)		(10 - 1)	(10 - 3)	
		(43), (46)	.	.	.	
,	가	(16)		(10)	가	2
		(12), (14)	1.5		(43)	
		(10 - 2)		(10 - 2)	.	.
가		(24)		(10)	2	가
		(12), (14)	1.5		(46)	
		(10 - 3)		(10 - 3)	.	.
,		2				2
		1.5				
(12), (14)	.	.	,	(16), (24)		
(10)			,	(12), (14)	0.5	
(43), (46)				(10 - 2), (10 - 3)	.	.
,		(12), (14)	2.5		(16), (24)	,
		(43), (46)		(10 - 1)	(10 - 3)	.
.				.	.	.
	가	(300)		(10)		(16), (24)
			2.5	0.5		2
(12), (14)		가		.	.	.
,	가	(300)		(10)		,
			(43), (46)	.	.	.
,		가		가		.
,	가	(300)				.
	가					.

$$g \quad g \\ (16) \quad (43) \qquad \qquad \qquad 9 \qquad \qquad (24) \quad (46)$$

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$$6), (24), (32) \quad \text{가} \quad (400) \quad (10) \quad 2 \quad (10 - 1), (10 - 2) \\ (46) \quad . \quad (1)$$

, (16) , (24) , (32)
 (46) , (10) 2 (10)
 (10 - 1) , (10 - 2)

, 가 (400) (10) (16) , (24) ,
 (32) 2 (12) , (14) 가 ,

, 가 (400) ,
 가

, 가 12 (24) , (16)
 (32)

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5 가

1 3 가 (100) , (300) 가 (10)
 가 (500) , 16 15

15 5 가 , , 16 15
 가

, 가 (500) n - Si (42) (40)
 (10) (60) (10) (60)

4 (62) , (68) , (74) , (80)

(10) 3 (60) 가 , , (60)
 (10) (10)) (14)

(62) (10) 가 L (60)
 , (40) 가 2 (63) n - Si (42)

(63) (62) 가 , , 2 (64) , (66) (64) , (66) p
 , , (10) 가 (60)

가 (68) (10) 2 L (60)
 Si (42) (40) 가 2 (69) n -
 (69) (70) , (72)

(10) (69) 2 가 (60) (68)

(74), (10) (40) 3 L 2 (60)
 (75) 가 (75), (76), (78) n - Si (42)
 (75) 3 가 (60) (74) 가
 (10)

(80), (40) (10) L 2 (60)
 (81) 가 (81), (82), (84) n - Si (42)
 (60) (80) (10)
 (81)

17 16 A - A (63) n - Si (42) 2 , (62)
 (40), (86) (63) 가 , (64), (66)
 (64), (66)

가 , (68) (40) (69) n - Si (42) 가
 2 (70), (72) 가 , (69) (69)
 2 (70), (72) (88)

2 (74) (40) (75) n - Si (42) 2
 (76), (78) , (75) 가 ,
 (76), (78) (90)

2 (80) (40) (81) n - Si (42) 2
 (82), (84) 가 , (81) (82)
 2 (82), (84) (92) 가 ,

, 3 가 (500) (80) (12),
 (14), (68) . , (74) 2 2
 , , , , , , , , (62)

가 , , , , , , , ,
 , , , , , , , , (12), (14)

가 (500)
 가

			가					
2	4	가	(200), (400)				(10)	
		가	.			가	(600)	
18	6	가	.	.	.	.	.	.
	,	가	(600)	n - Si	(42)	가	.	(40)
	(10)		(60)		(10)	.		(60)
4		(62), (68), (74), (80)		.	.	.	.
	(10)		(60)	가	가	가	.	4
62), (68), (74), (80)		.	(60)	.	.	.	.	(1)
) 가	.	.	.	.	.	.	.
	(62)		(10)	(12)	가	가		(60)
	,	가	(40)	T	.	.		(63) n - Si
42)	(63)	.	.	2	.	.	(64), (66)	
.		(62) 가	.	가	.	.	(64), (66)	p
	(60)	.	.	.	.	.	(12) 가	가
	가	(68)	(10)	(60)	.	.	.	(12)
2	가	.	(60)	.	.	.	,	(40)
T	.	(69)	n - Si	(42)	.	.	(69)	가
2		(70), (72)	.	.	.	.	.	가
	(68)	.	.	.	.	.	.	.
(12)	2	가	.	(10)	.	.	(60)	.
		.	(60)	가	.	.	.	
			
	(74)		(10)	(60)	.	.	.	(12) 3
		(60)	.	.	.	.	,	T
	(75)	n - Si	(42)	.	.	.	(40) 가	2
	(76), (78)	.	.	.	.	.	가	.
2)	3	가	.	(75)	.	.	.	.
		.	(10)	.	.	.	.
		.	(60)	.	.	.	.
		
	(80)		(10)	(60)	.	.	.	(12) 가
		(60)	.	.	.	.	,	T
	(81)	n - Si	(42)	.	.	.	(40) 가	2
	(82), (84)	.	.	.	.	.	가	.
(90)	가	.	(81)	.	.	.	.	.
		.	(10)	.	.	.	.
		.	(60)	.	.	.	.
		

(82), (68), (74), (80) 7 가 , (63),
 (69), (75), (81) 가 (64), (70), (76),
 (82) (66), (72), (78), (84) .

(14) 가 (600) (80) 2 (12),
 3 가 . , (74)
 1 가 . , (68)
 2 , 2 가 (12), (14) .

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, 가 (600) 1 4 .

가

19 가 7 . . , 20 19
 가

,
 (110), (112) 가 (700) 1 2 (122), (130) 2

. (110) (114) , (1
 22) . (112) (118) .
 , (112) (120) .
 (116) . (110) . (130)

T (122) 2 (110) (112) (40) (124) n - Si (42) (40) (124)
 가 . 2 . (126), (128) , (124)

, (130) (112) (116) (40)
 T (132) (132) (132) n - Si (42) (40)
 (134), (136)

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11

가

가 (1100) 1
 (10)
 (18), (20), (22)
 가 , (24)
 (10) 1/4

가 (100) (16), (24)
 . , (16)
 (10) 1/4
 (26), (22), (28)

가 , (16), (24)
 가 , (16), (24)

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 가 (1100)
 (16), (24)

(18), (26) 1/4
 (16), (24)

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가 (1200) 5
 (18), (20), (22)
 26), (28), (30)

가 (200) (16)
 . , (16)
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 (10)

, (16), (24)
 (16), (24)

30 2 8
 (24), (32)

가 , , (16),

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31 ,
 (14) ,
 (18), (26) 1
 (100) (160)
 (160)
 (162) (162),
 (12)

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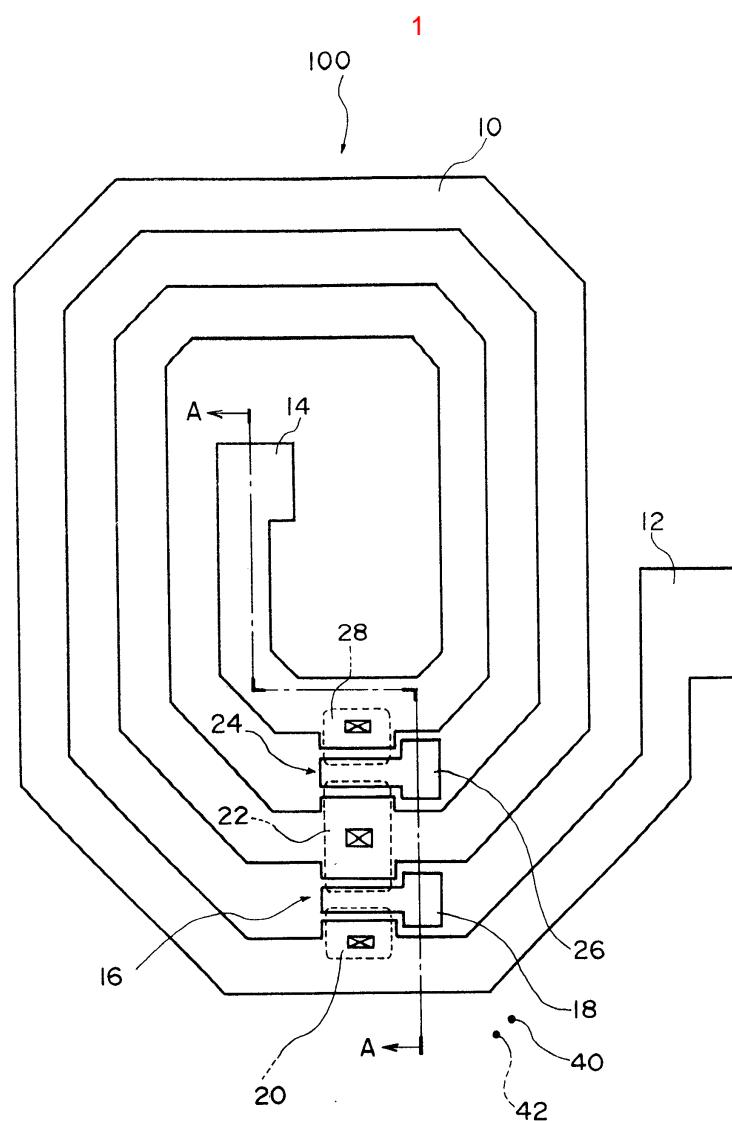
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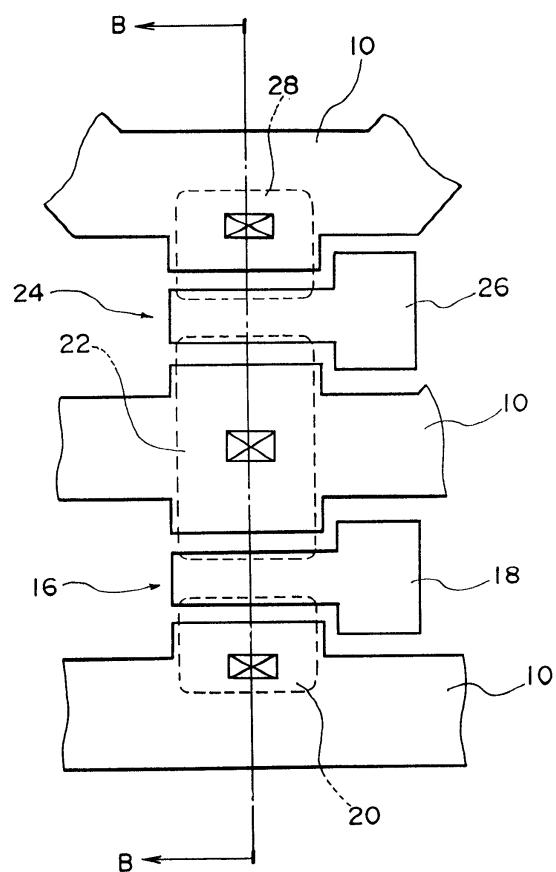
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14

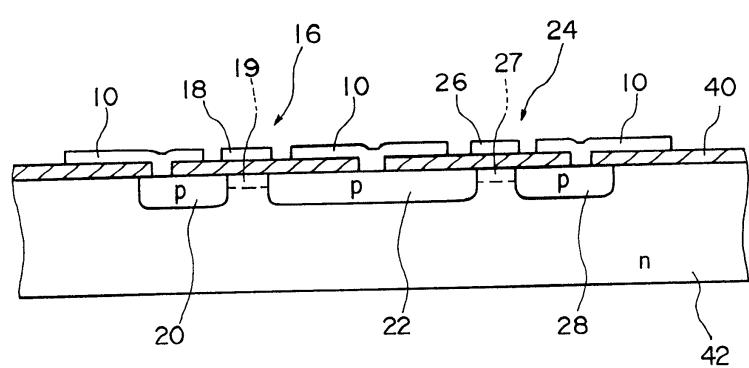
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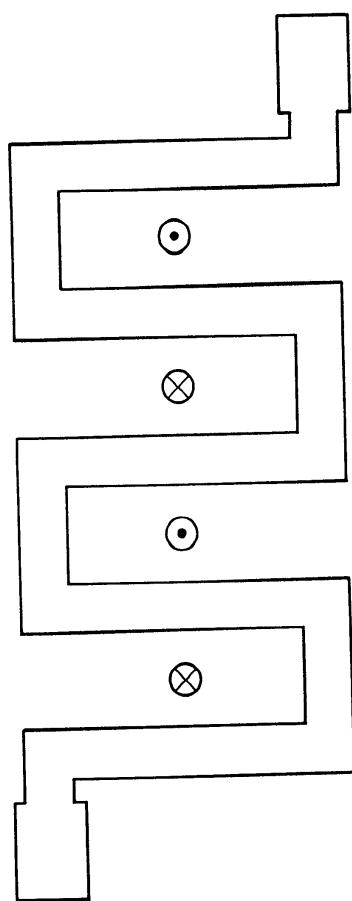
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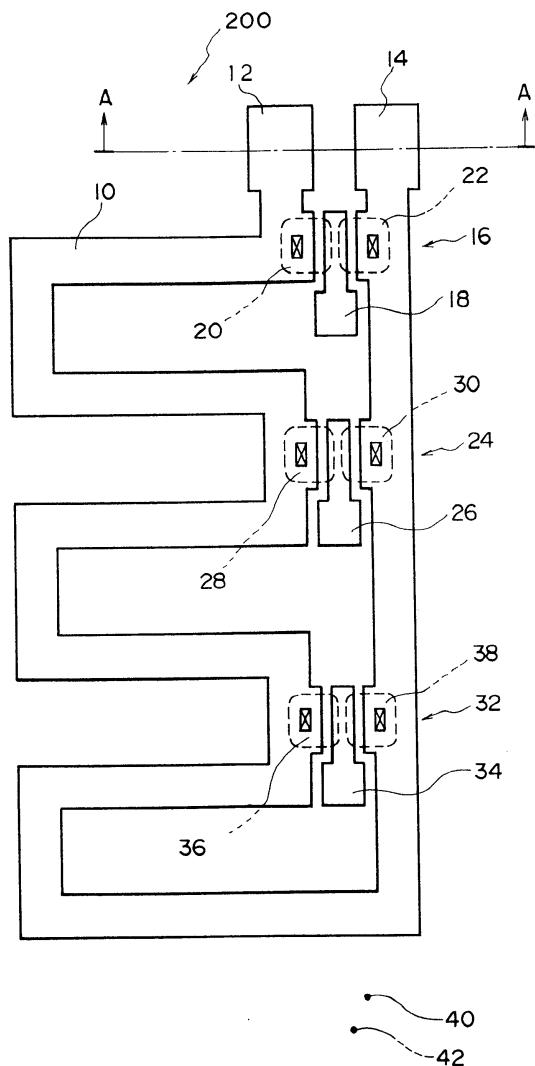
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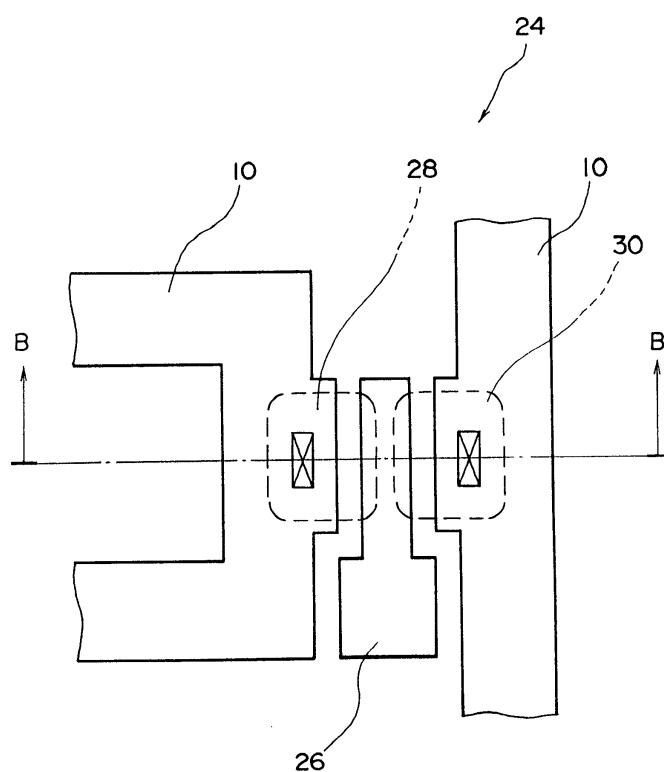
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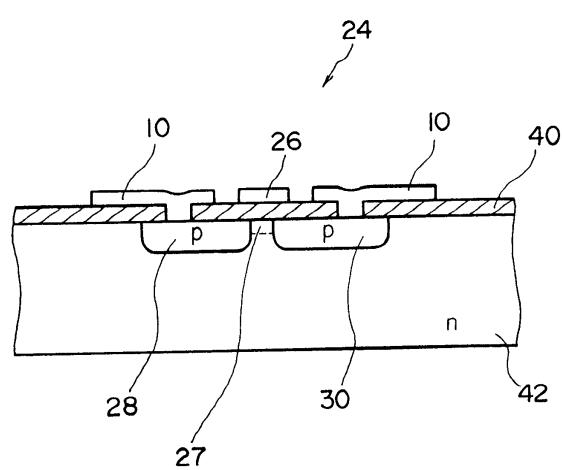
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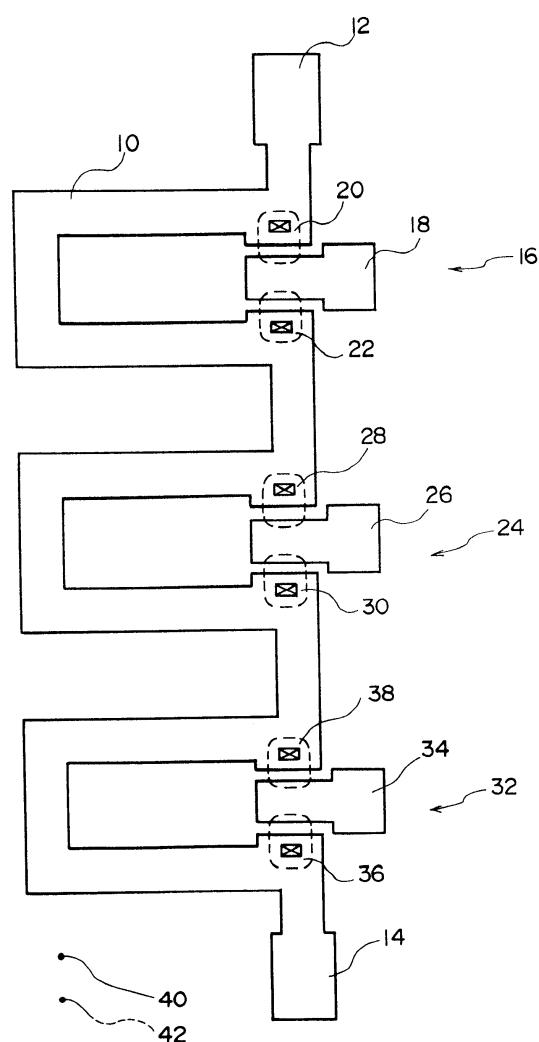
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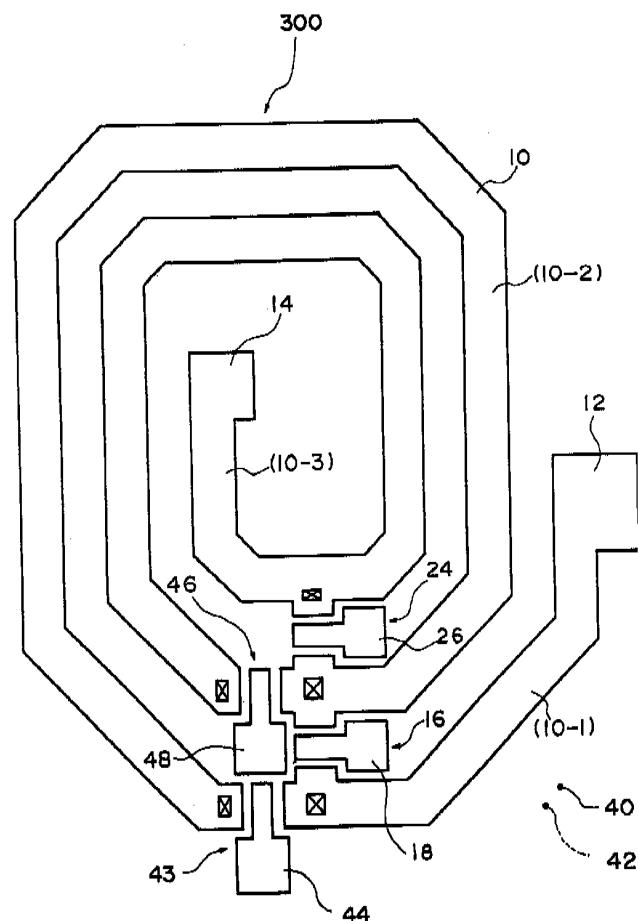
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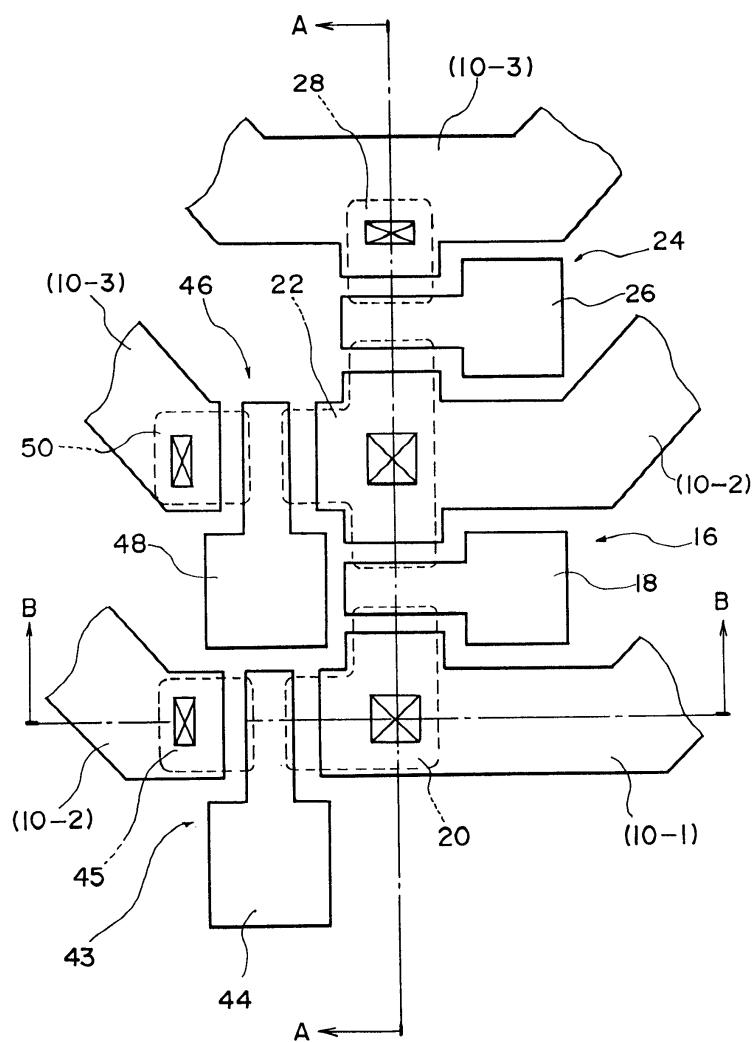
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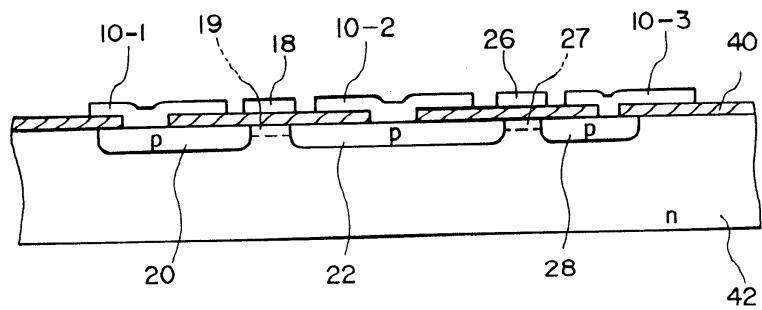
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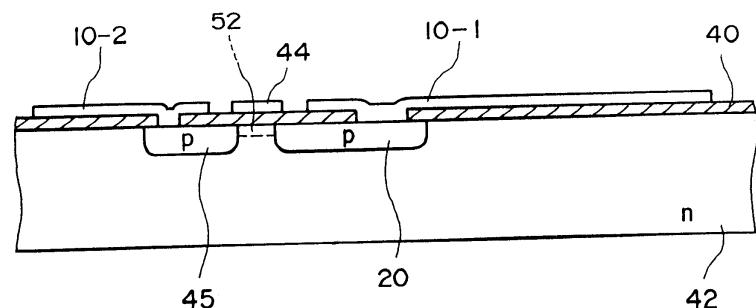
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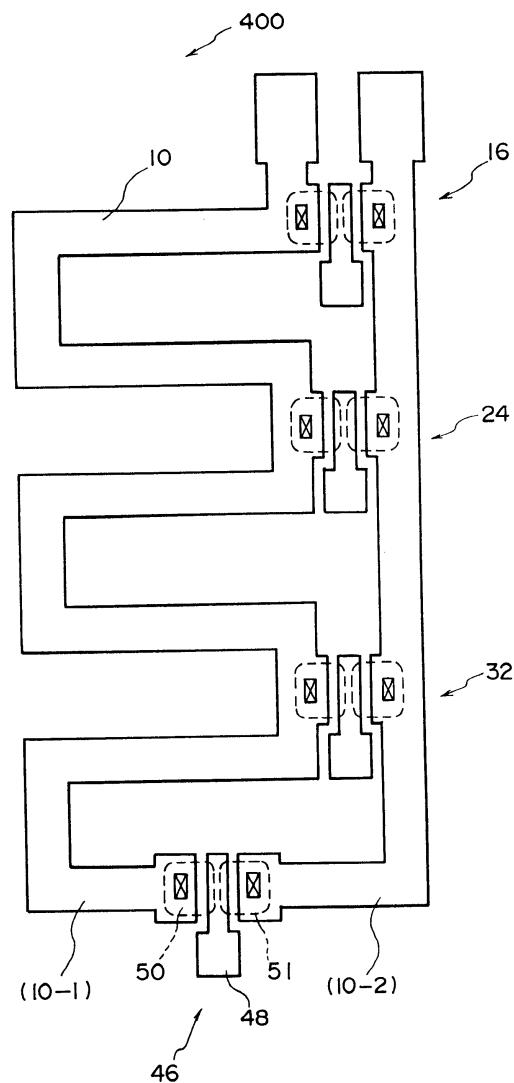
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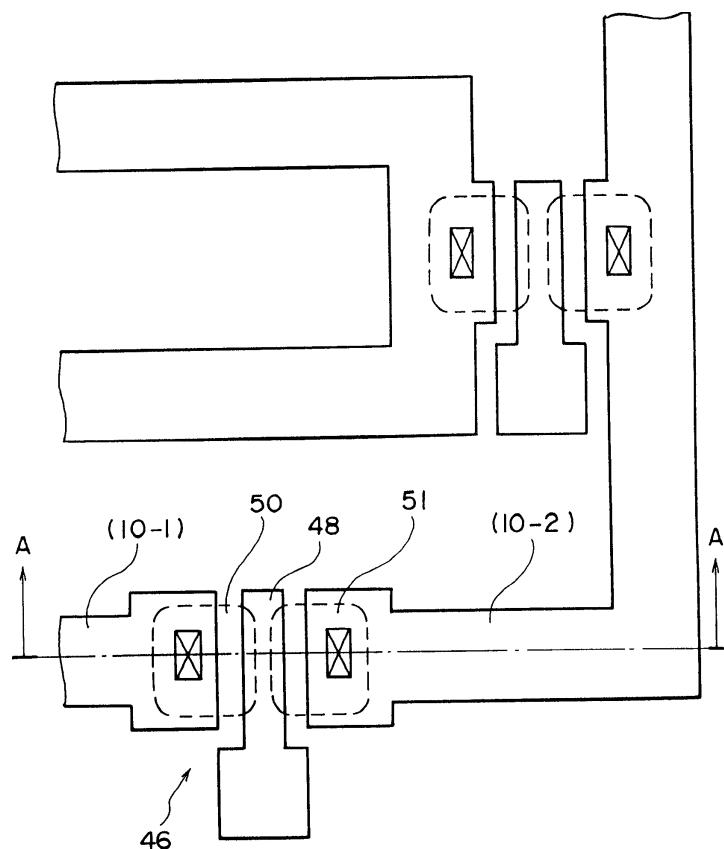
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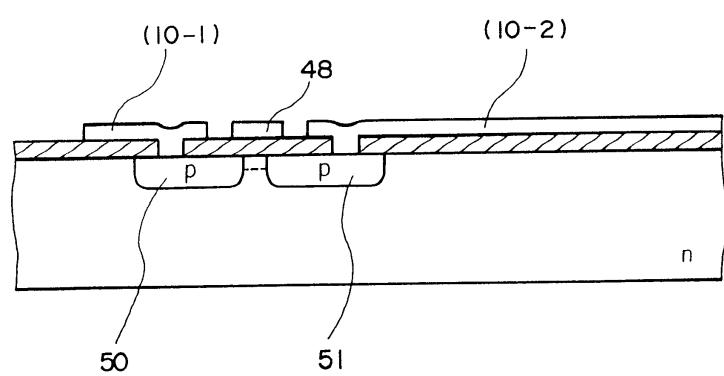
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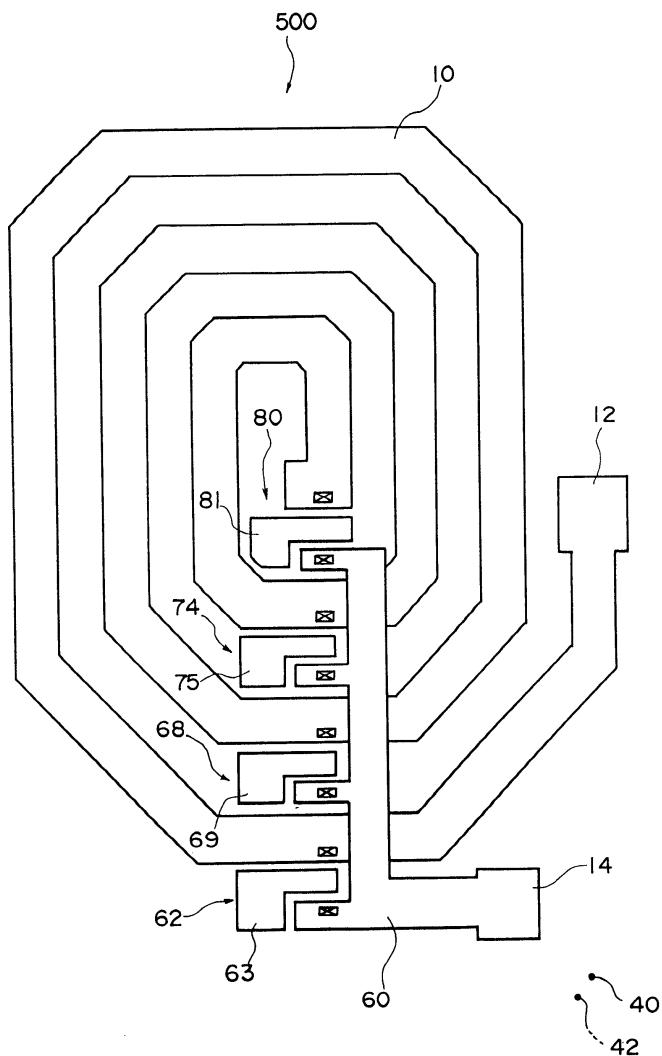
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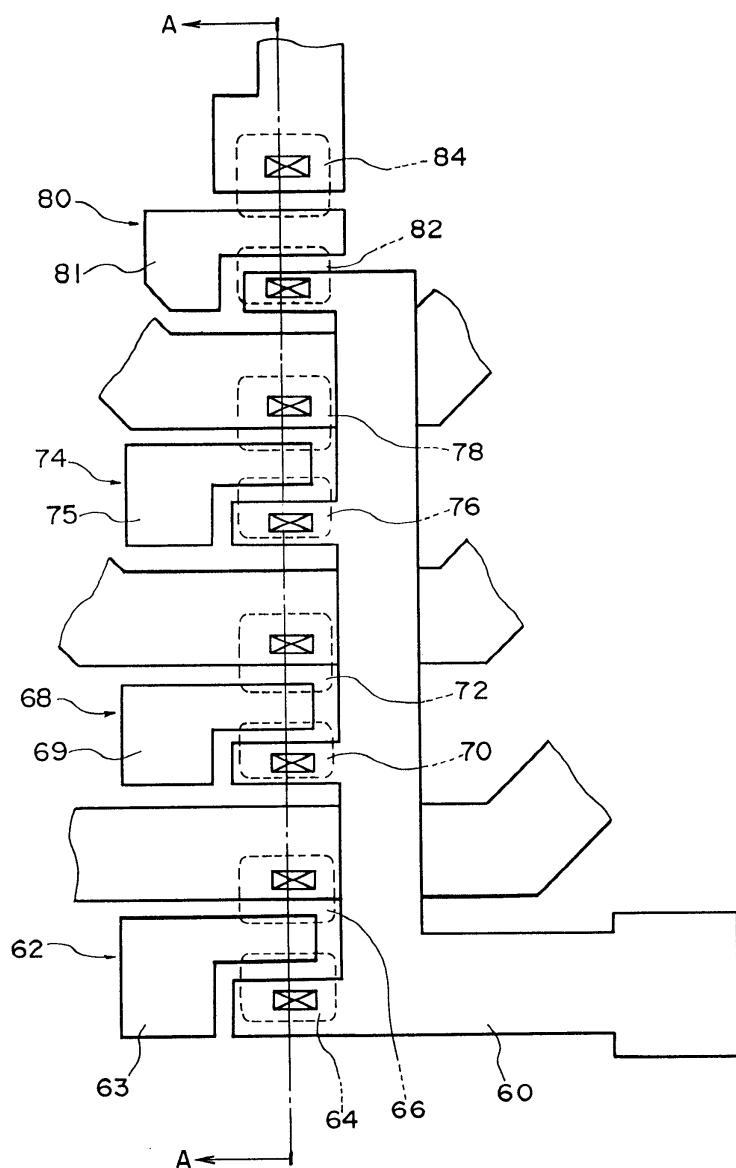
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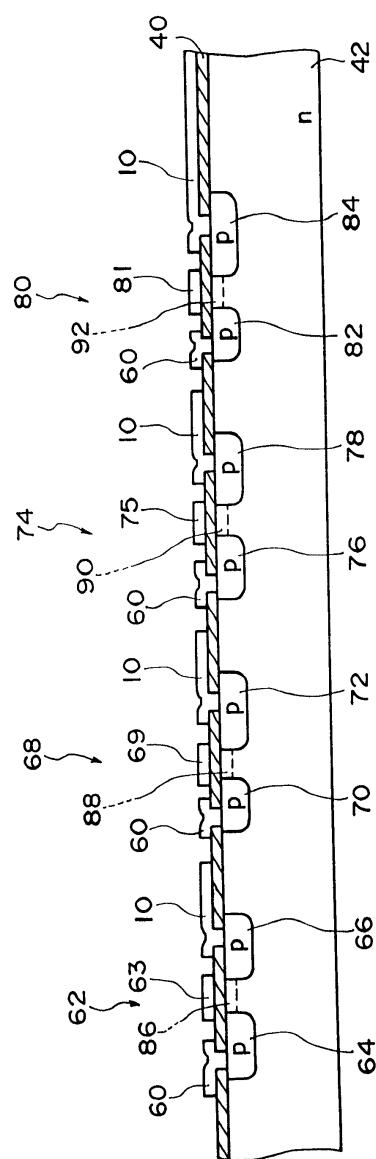
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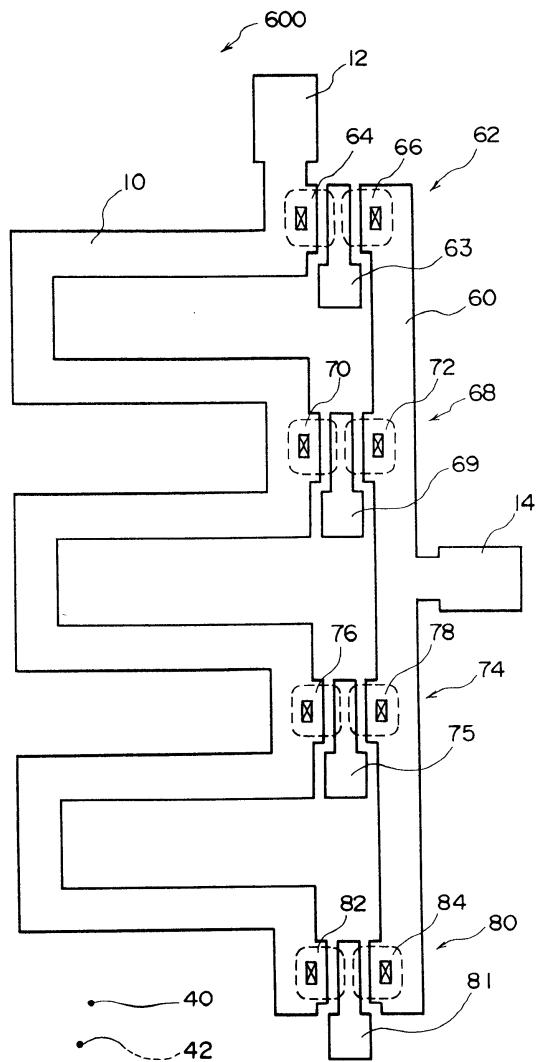
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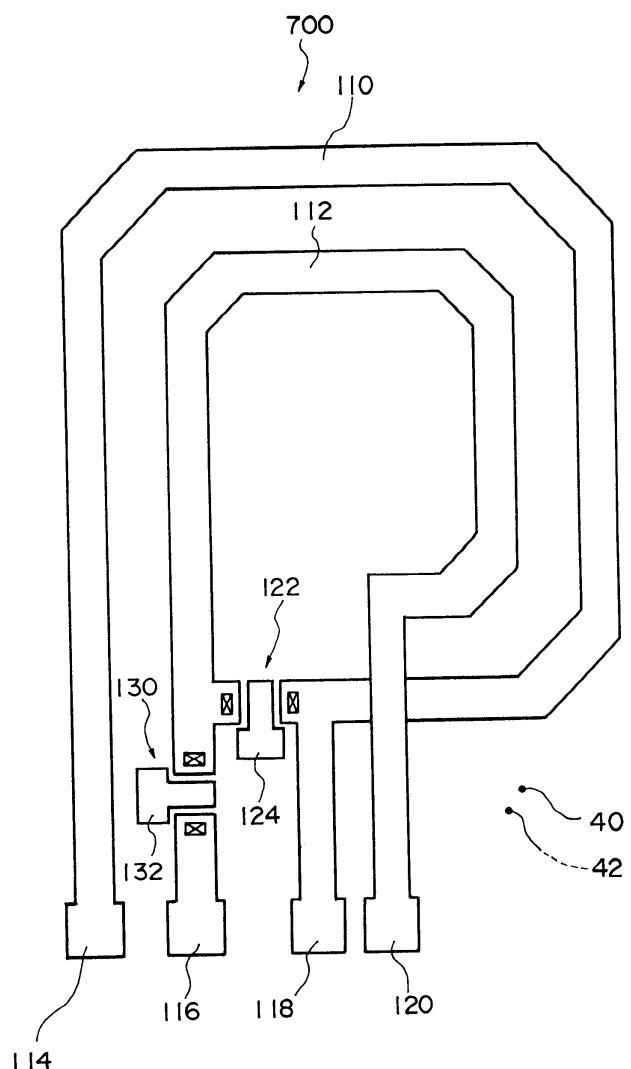
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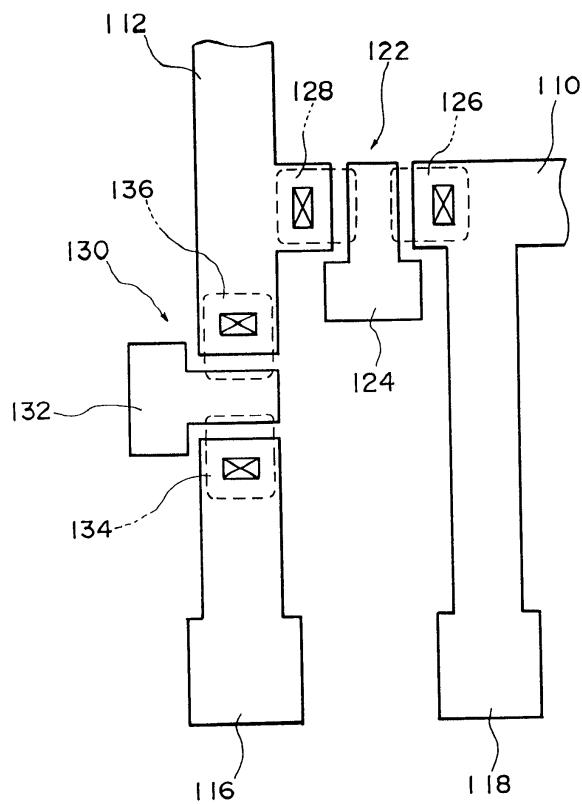
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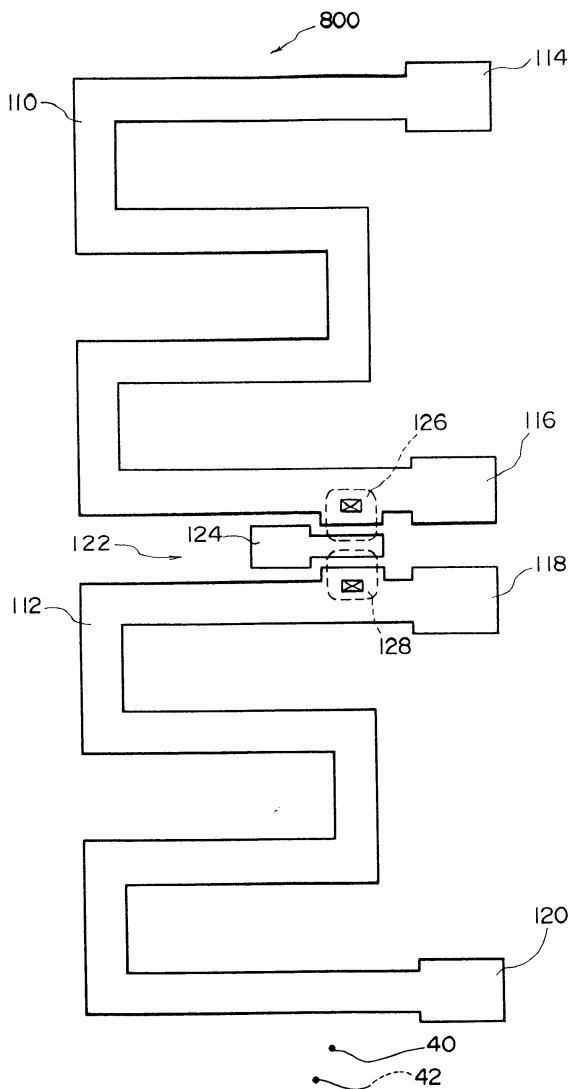
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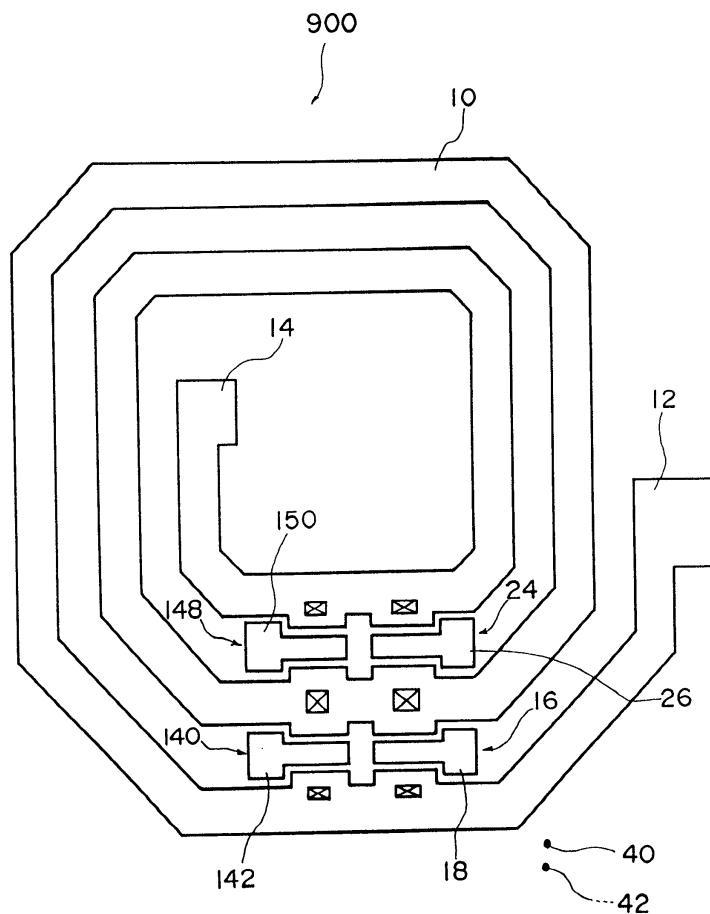
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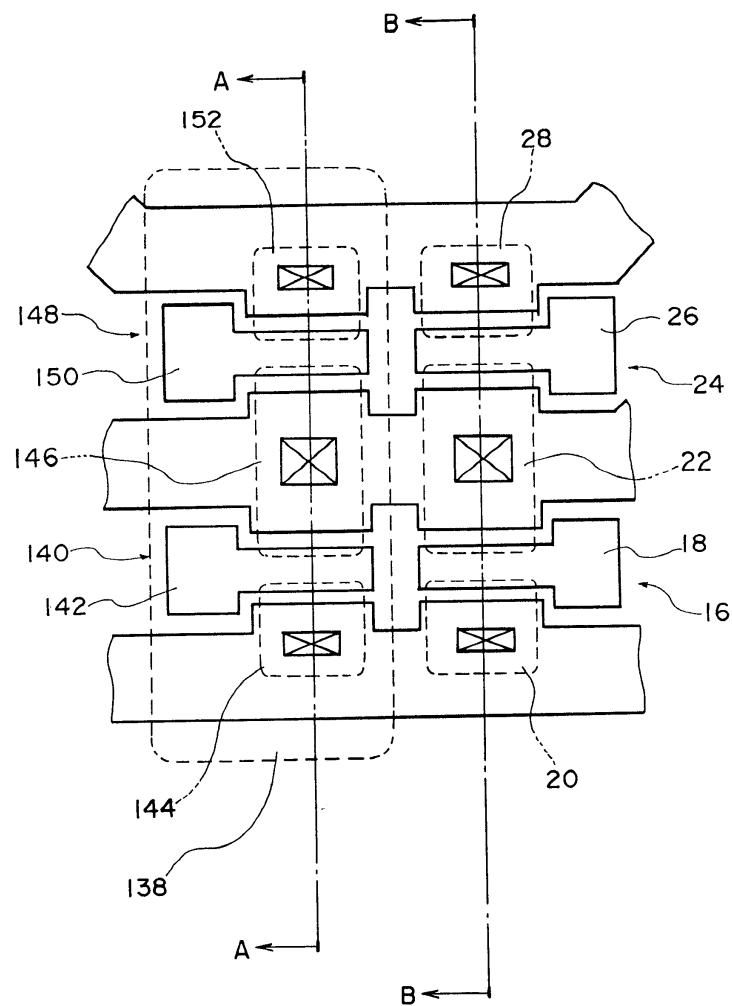
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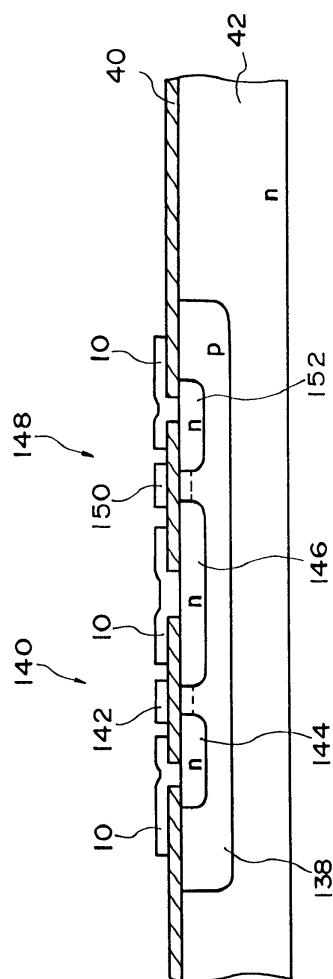
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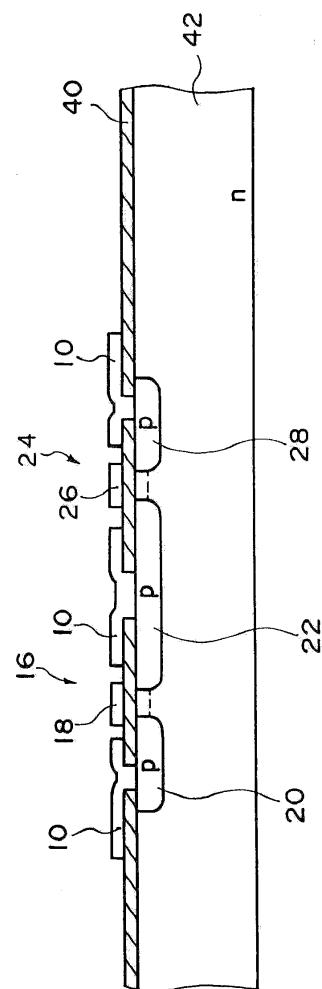
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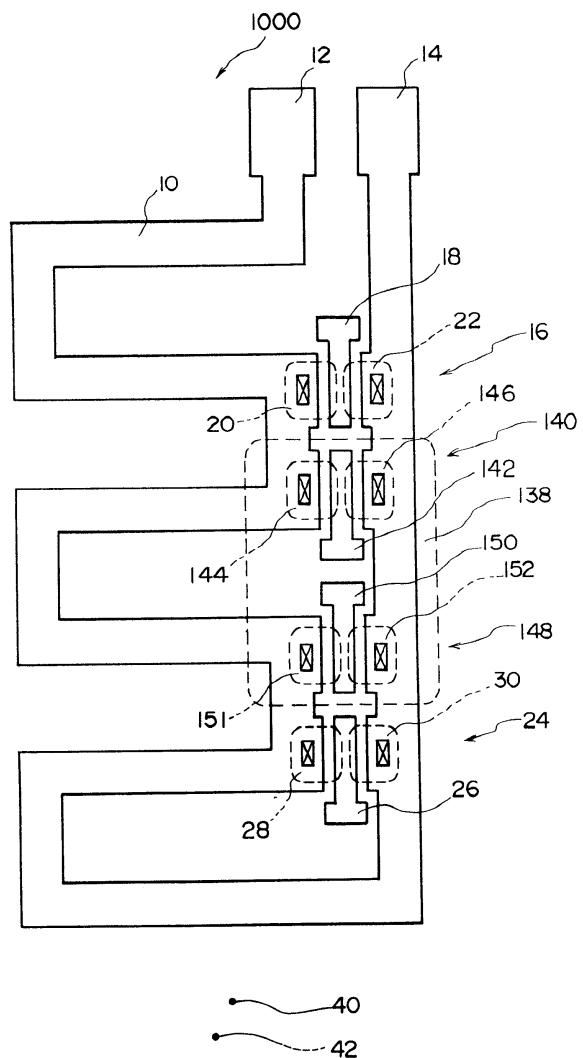
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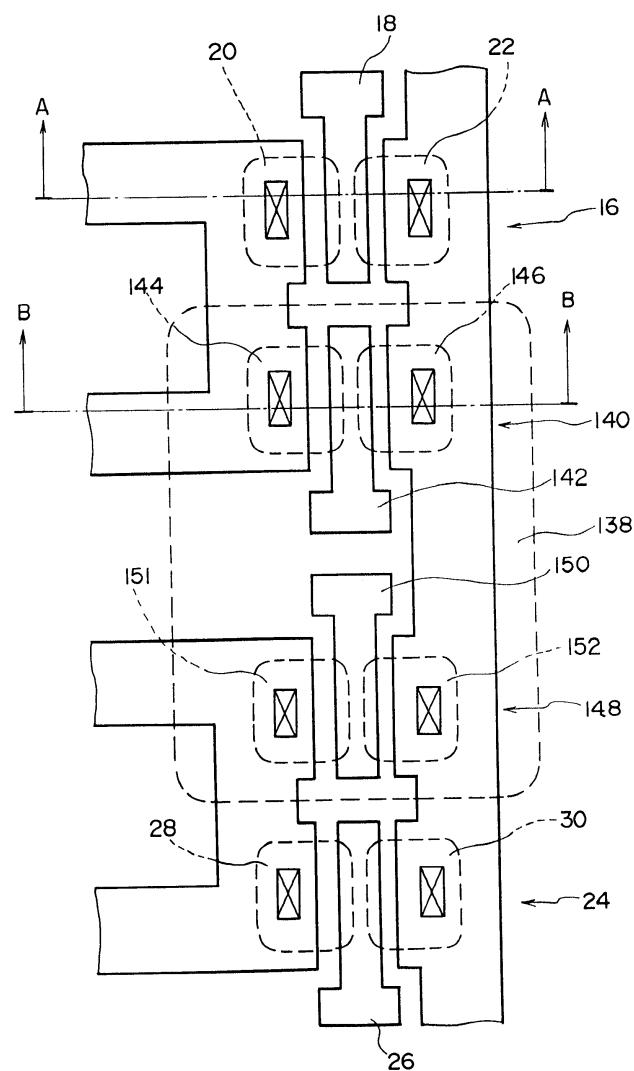
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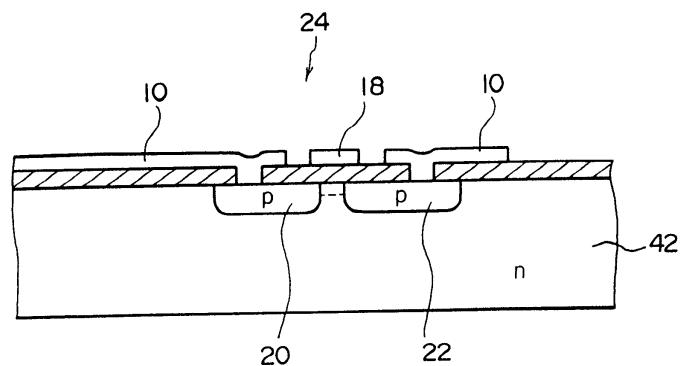
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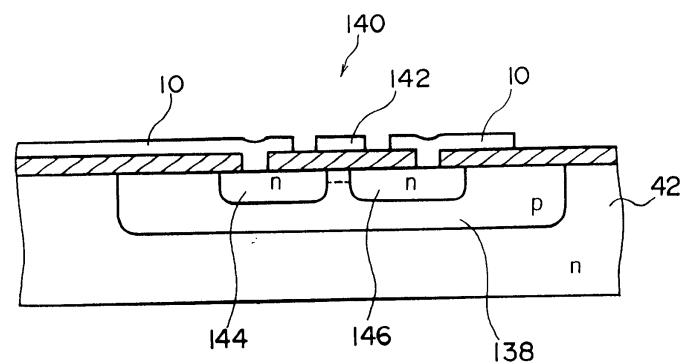
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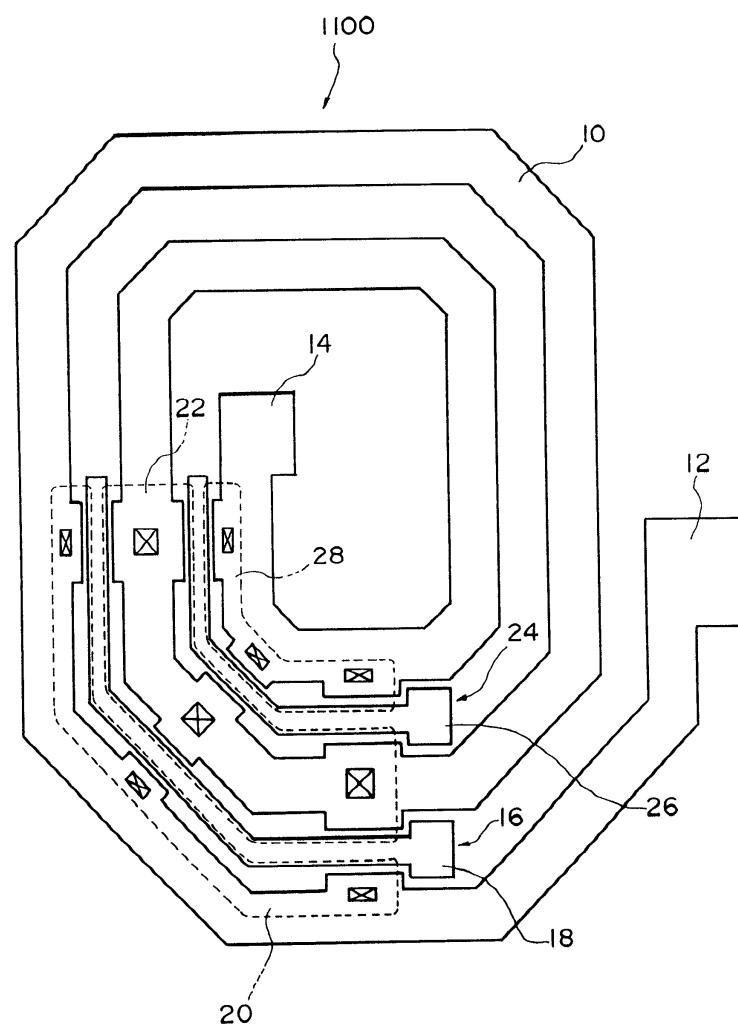
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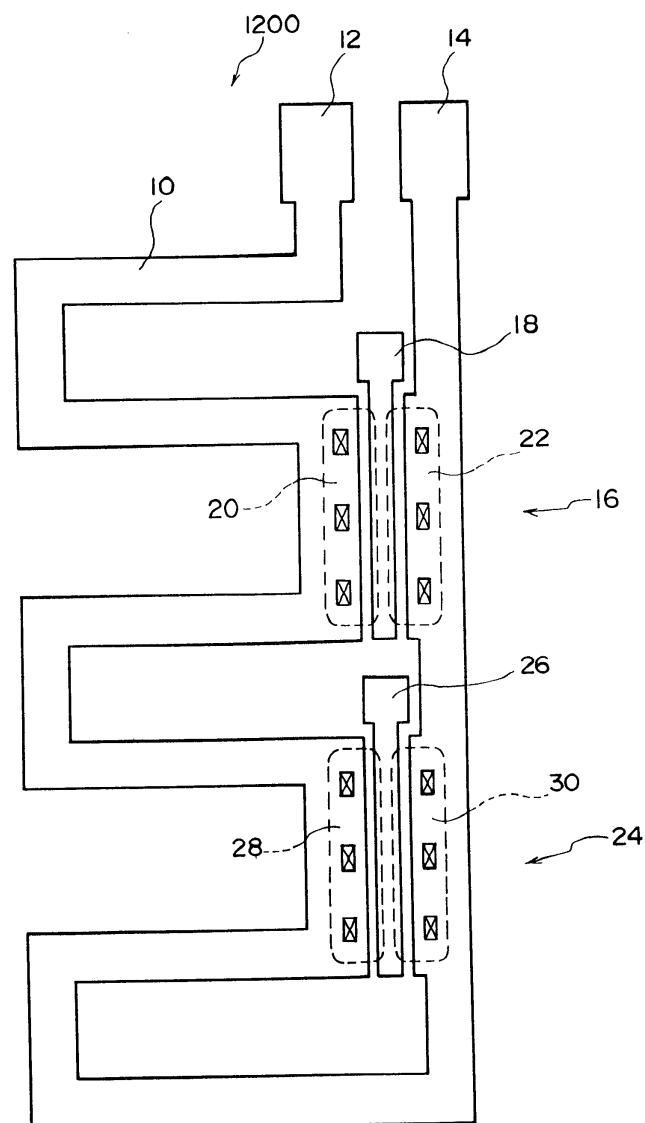
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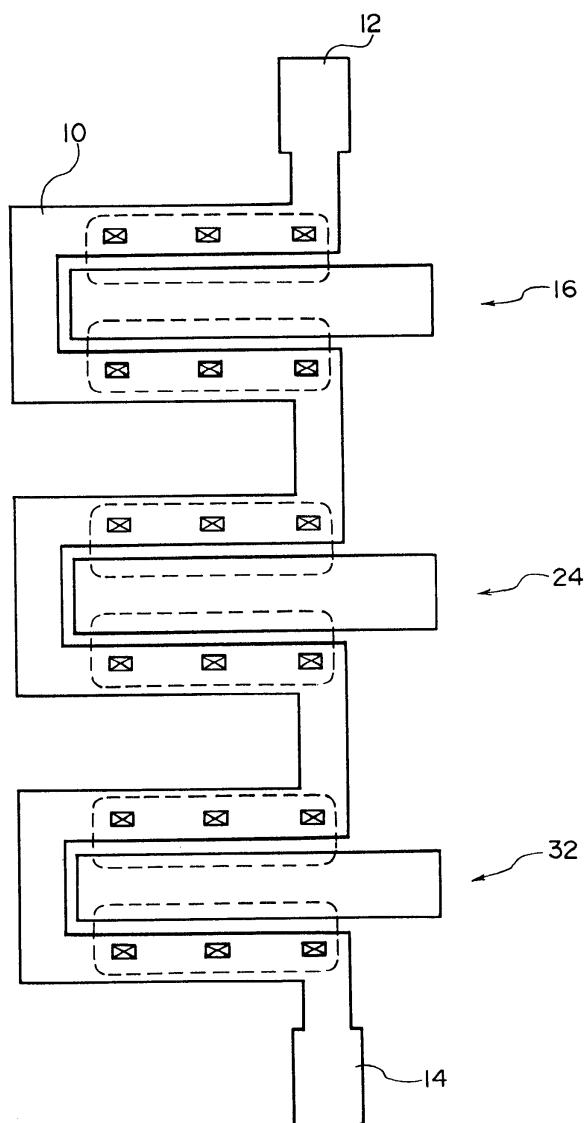
28



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