

(19)
(12)

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(A)

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2001 11 15

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[illegible]

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[illegible]

(72)

	,	- 5656	,	.	6
	,	- 5656	,	.	6

(74)

•

•

(54) k 31

k ₃₁			(72, 76, 79)	2 - 2
	2	(A1,A2;B1,B2;C1,C2)	.	
가	,	가	.	
. 1	2			

6

, ,
 , k_{31}
 .
 (coherent) 가 (echo) , PZT (plate) (scanheads) (transducer) (timed excitation) (beamformer) . , .
 가 , (sensitivity) 가 , (aperture) , 1. (0
 5D 2D hms) , 20 300 Ω , 100 Ω .
 (electromechanical) (a stack) (effective) , 가 , 1.5D 2D , 가 , .

, k_{31} .
 .
 가 , 가 , 2
 .

1 (piezoelectric transducer) .

2 k_{31} .

3 2 (sub) .

4a k_{31} , .

4b 4a (printed) .

5 k_{31} .

6 2D .

, 1 , 3 , 가
 2 (energizing) 2 k_{31}
 가 2
 1 3 (energized).
 ,

k_{31} , 3 (poled), 1 ,
 2 (top) 가
 , 1 (kerf) 2
 ,

2 (polarity) 가 2 2
 , 4 가 4 3 2
 . 3 (poled).
 . 2

2
 1 3 k_{31}

, 1 2 1 , 가 ,
 1 1 1 2
 2 3 , (filler)

k_{31} , 2 3
 . 2 3
 . 1 2 , 1
 3 (emitting) 가 , (poling direction) 3 .
 1 (row) k_{31} (composite)
 ,
 1 k_{31} , 1 ,
 1 , 3 가 . 3
 ,
 ,
 ,
 k_{31} , (trace)
 .
 k_{31} ,
 ,
 k_{31} ,
 ,
 k_{31} , 3 , 가 가
 , 2 , 2
 , k_{31} , , 2 , 2
 1 . 2 1 2
 k_{31} ,
 ,
 .
 . k_{31} 2 - 2 (compos
 ite)
 , , 1 (dimension) (kerf cuts)
 ,
 (return) 1 3
 (poled) k_{31} .
 k_{31} , k_{31}
 2 - 2 .

, , 1

,

1 3 , 2 k_{31} .

2 k_{31} ,

.

1 (12) , (12) 가 .

(12) , 가 ,

(14) (16) .

가 (10) 가 가 (18) (20)가

(3 1)

3 3 , k_{33}

2 k_{31} (24 26)

(10)가 가 1 , 3 (28) 3 . 3

(Poisson) (cross coupling) (strain) 1 ,

1 3 가 1 (pressure wave) , 3

1 3

1 가 3

3 (inherent electromechanical coupling inefficiency) . ,

, k_{31}

3 k_{33} (32) 2 (12a 12b) . (1

6a 16b) 가 (two units) (14a 14b) .

(matching layers) (damping layer) 가 (patient)

3 가 ,

(inverse) , 가 가 .

$C = \frac{\epsilon A}{d}$, ϵ , A , d

3 , 1×1 , 1 2 ,

1/2 .

4a, k_{31} , (22a, 22b), $(34, 36)$, (32), 2 , k_{31} , (32), 2 , 가, 1×2 , 가, 2 , 2 , 4 , (34, 36), $1/2$, $C = \frac{\epsilon A}{d} = \frac{4\epsilon}{1/2} = 8\epsilon$, 3, 16, 4a, 3, 1/16, k_{31} .

, 4a, 4b, (40), (42)가, (40), (46), 가, (40), (34, 36), (40), (46), 2, (44), (48), (32), 2, PCB, 4a, 1.5D, 2D, EP 0 872 285, (acoustic backing material), (flex circuit).

(32), (Chomerics), (Eccobon), d) 가, (squeegeeing), 2, (22a, 22b), 2 - 2.

(51, 53, 55, 57, 59), 5, (62, 64, 66, 68), 가, (51, 53), (62), (excited), (return)가, (64), (51), (64), 2, (55, 57), (66), 가, 68), (55, 57).

가

2

5

(in phase)

6

2D

(plate) 2

(A1, A2, B1, B2, C1, C2)

가

(80)

6

(C1, C2)

(A1, A2, B1, B2)

(circle)

가

EP 0 872 285 A2

1

(backing)

(A1, A2)

(74)

(72)

(B

1 B2)

(74, 78)

(B1, B2)

(76)

(C1, C2) (A1 - A2) (B1 - B2)

(C1 - C2)

(C1, C2)

, 2

(79)

가

(C1 - C2)

(A1 - A2)

(B1 - B2)

(C1 - C2)

(A2, B1)

2D

(staggered)

(C1 - C2)

(C1 - C2)

(78)

(74)

(72, 76)

(80)

(57)

1.

1

3

(poled) k_{31}

(transducer)

1 (kerf cuts) ;

;

(energizing) ;

(return)

, k_{31} .

2.

1 ,

(filler) , k_{31} 2 - 2 ,

k_{31} .

3.

2 ,

, k_{31} .

4.

1 3 ,

2 ,

1 (row)

;

;

;

, 2 k_{31} .

5.

4 ,

, 2 k_{31} .

6.

5 ,

, 2 k_{31} .

7.

6

,

, 2 k_{31}

.

8.

4

7

,

,

1

,

, k_{31}

.

9.

8

,

1

,

1

,

3

가

, k_{31}

.

10.

9

,

3

, k_{31}

.

11.

1

10

,

(traces)

, k_{31}

.

12.

1

10

,

, k_{31}

.

13.

11

12

,

, k_{31}

.

14.

8 13 ,

2 ,

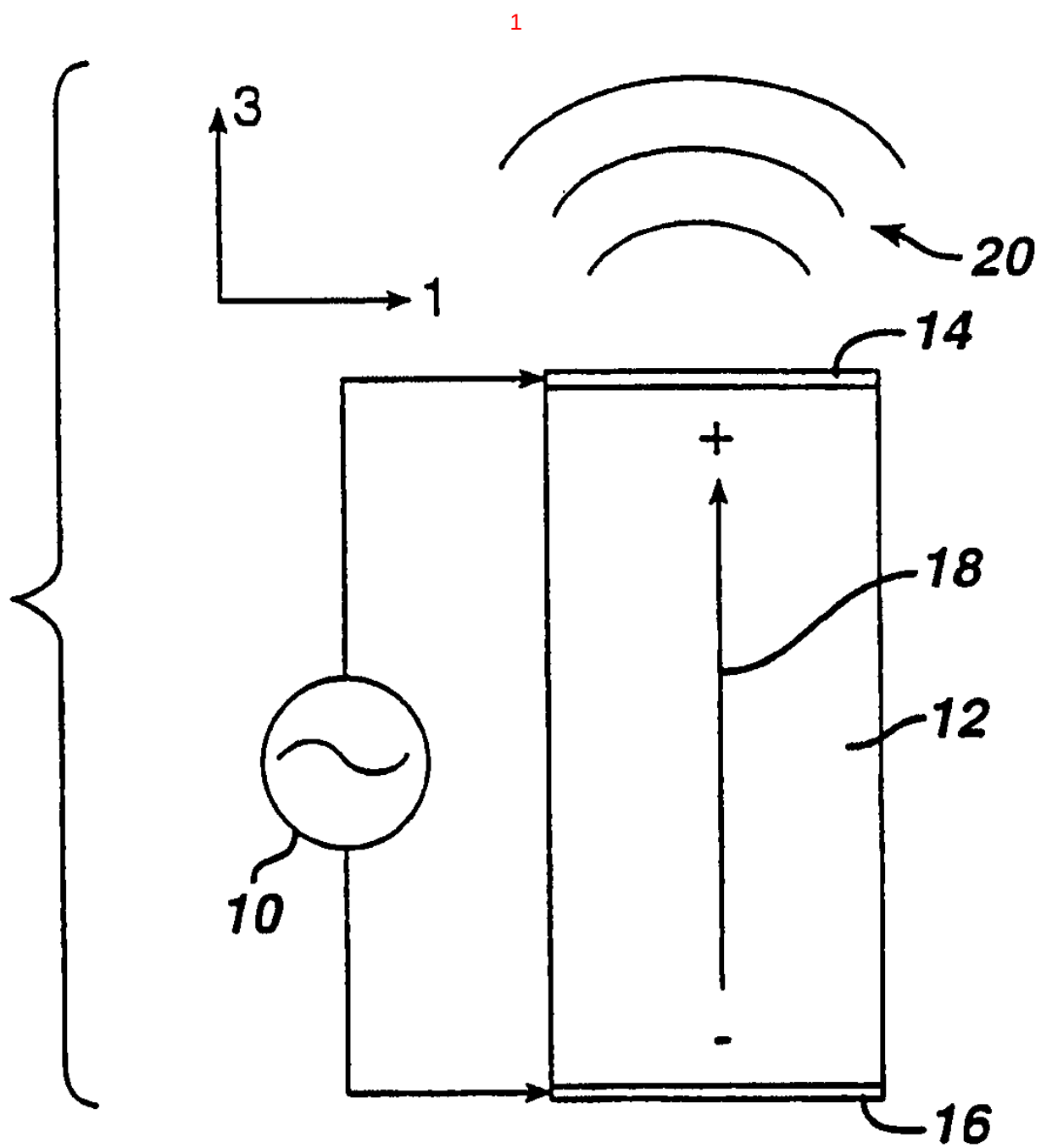
2 1 , k_{31} .

15.

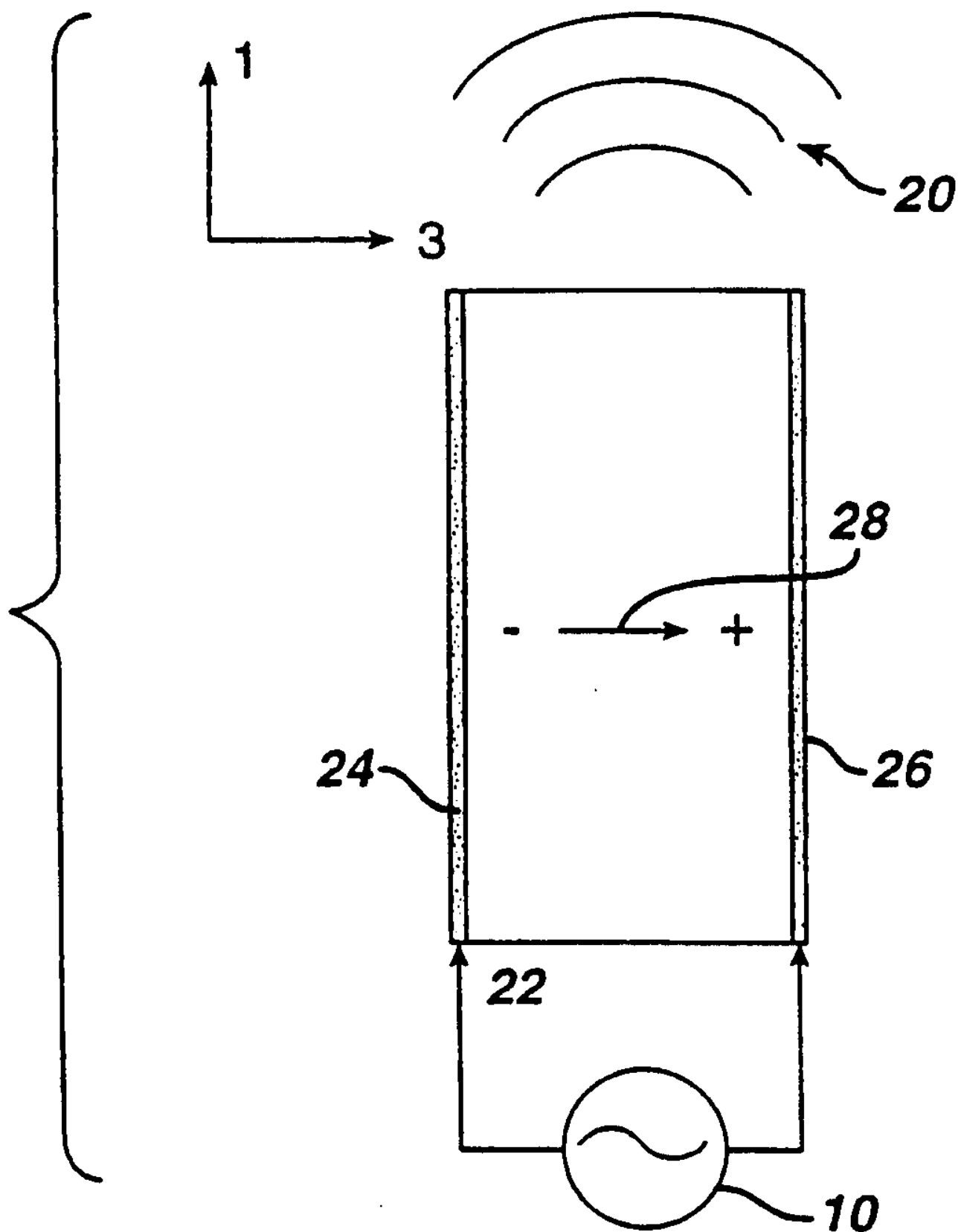
4 14 ,

, k_{31}

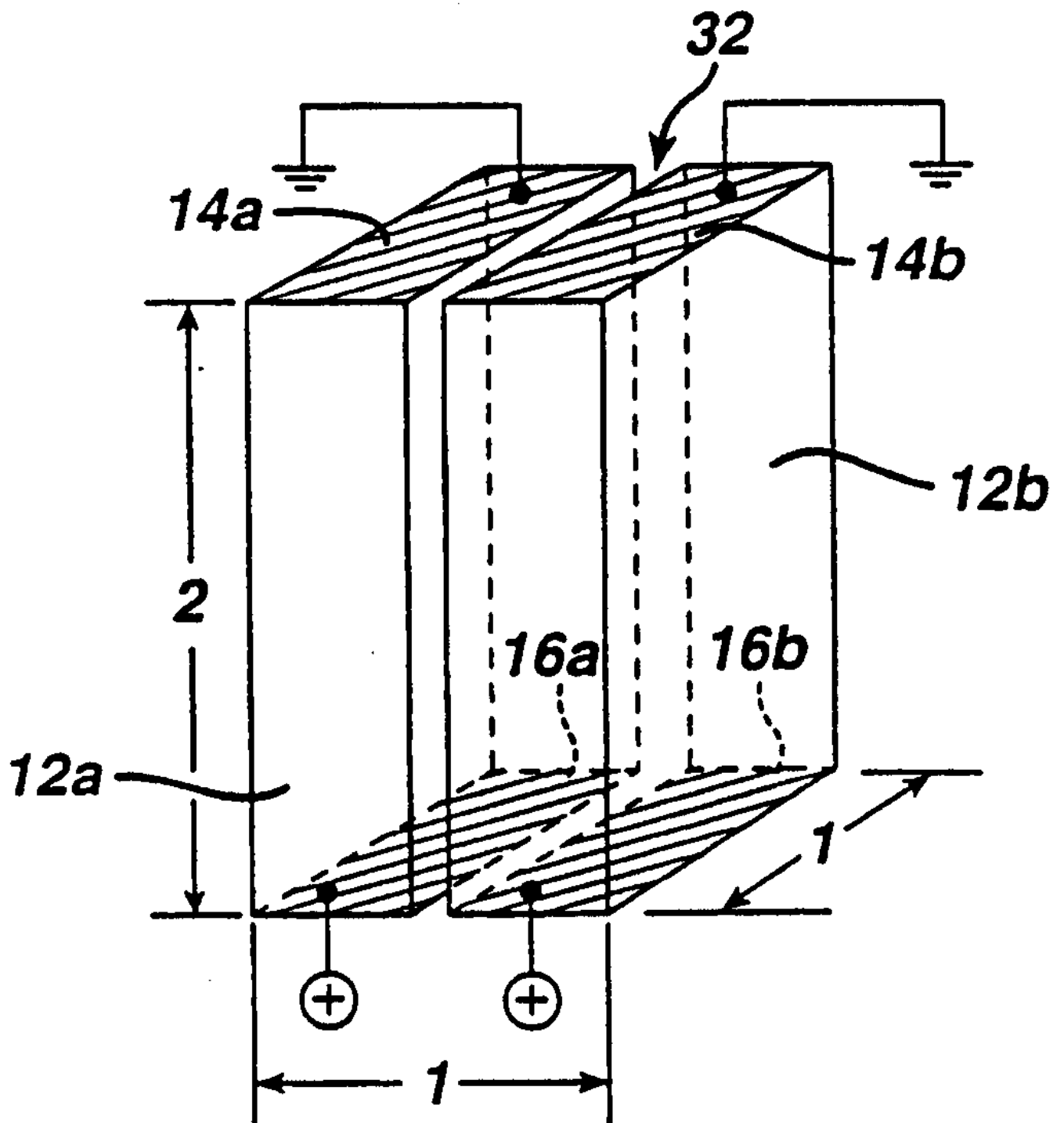
.



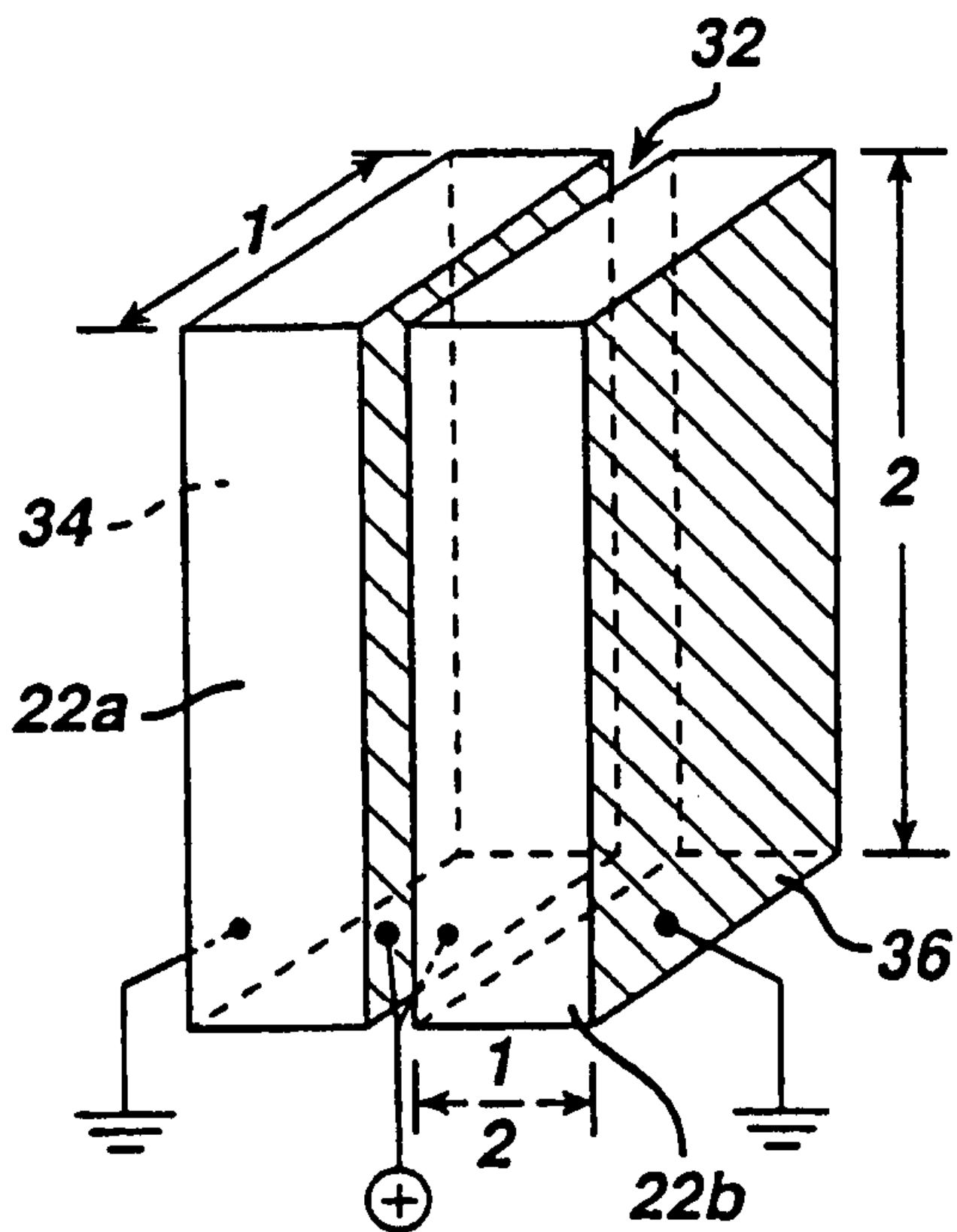
2



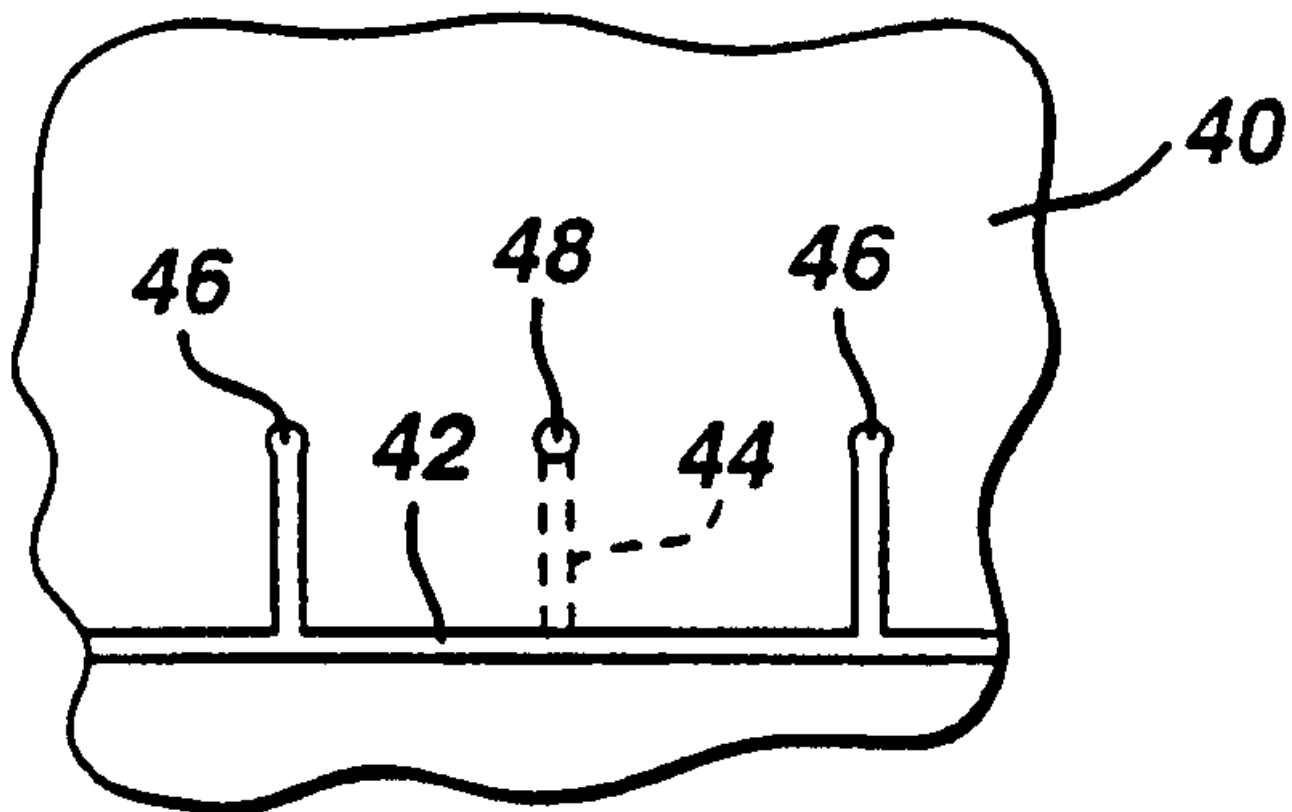
3



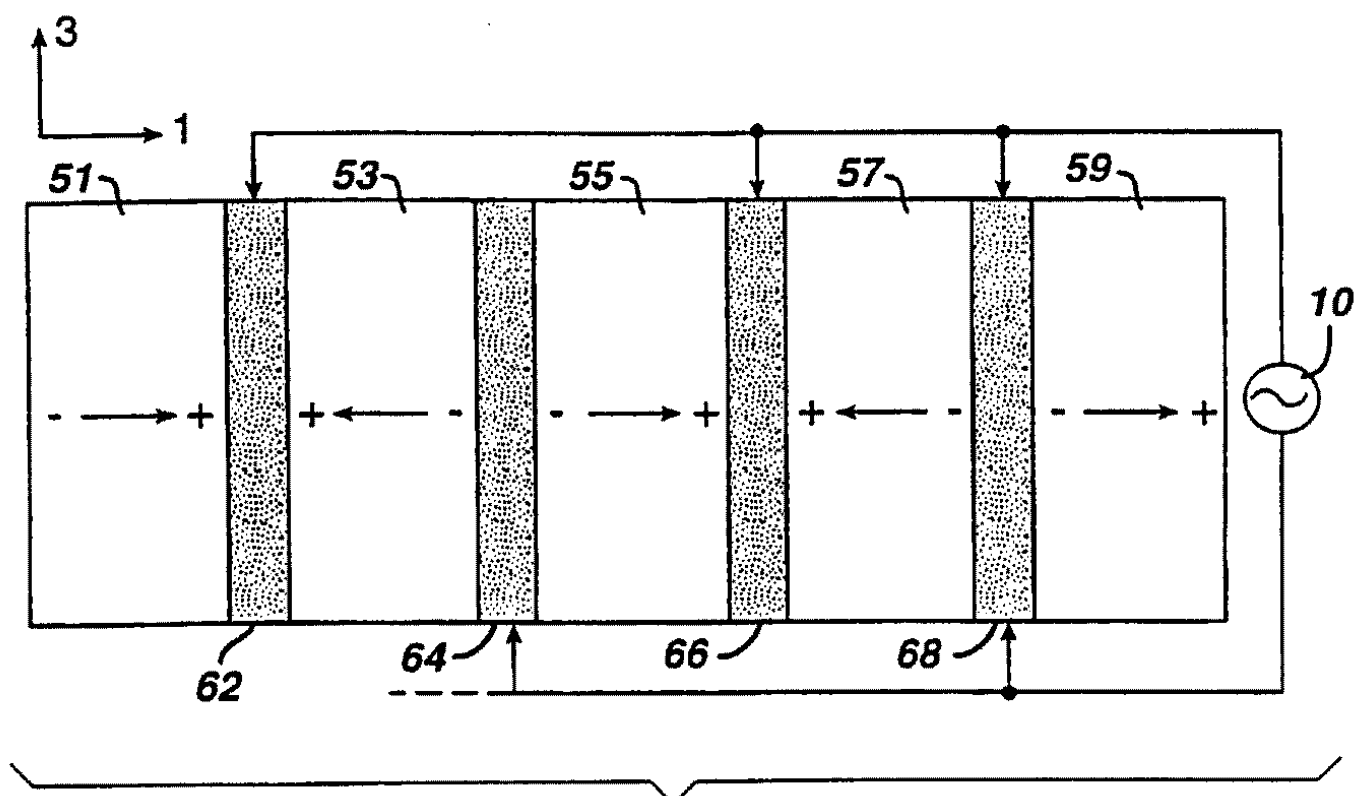
4a



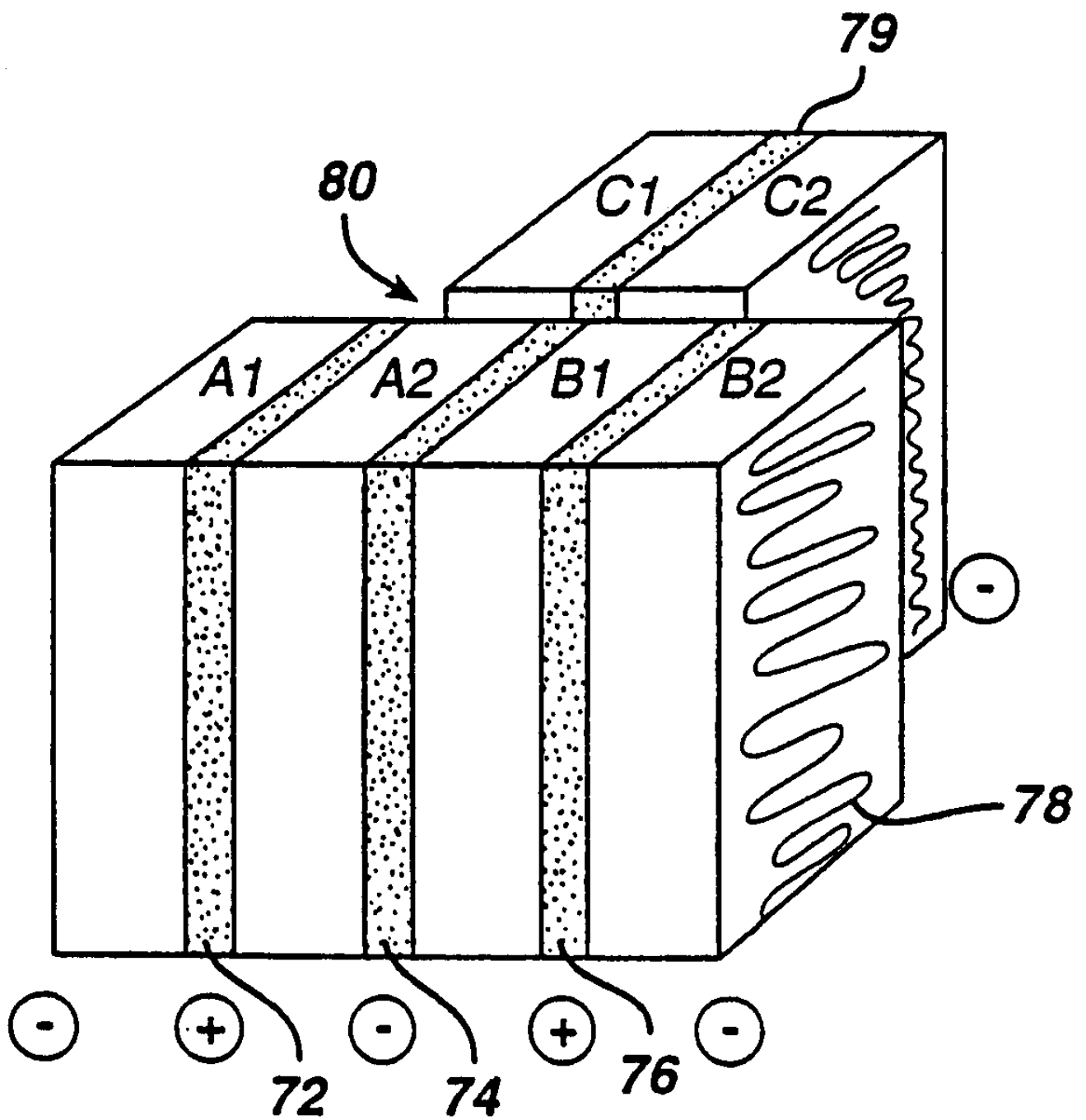
4b



5



6



专利名称(译)	以k31模式操作的复杂超声换能器阵列		
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摘要(译)

以k 31模式操作的超声换能器阵列装置由压电子元件 (A1, A2 : B1, B2 : C1, C2) 形成, 其被组合以便与导电填充材料形成2-2复合材料 (72, 激活电位施加在导电填充材料上。返回电位施加在子元件的面向外的表面上。其良好的导电填充材料包括导电环氧树脂。在一维和二维中, 它形成在交替排成行的横截面中, 其中这种器件的阵列连接到激活电位的相对极性到导电环氧树脂中。超声换能器阵列装置, 压电子元件和填充物。

