(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 0 779 997 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
18.04.2007 Bulletin 2007/16

(21) Application number: **95920303.5**

(22) Date of filing: **06.06.1995**

(51) Int Cl.:
G03G 5/02 *(2006.01)* ***G03G 15/00*** *(2006.01)*
G03G 5/10 *(2006.01)*

(86) International application number:
PCT/NL1995/000201

(87) International publication number:
WO 1996/007955 (14.03.1996 Gazette 1996/12)

(54) **IMAGING APPARATUS AND PHOTORECEPTOR THEREFOR**

EINEN PHOTOREZEPTOR ENTHALTENEN BILDERZEUGUNGSAPPARAT

APPAREIL D'IMAGERIE ET SON PHOTORECEPTEUR

(84) Designated Contracting States:
DE FR GB IT

(30) Priority: **07.09.1994 US 301775**
18.05.1995 IL 11378795

(43) Date of publication of application:
25.06.1997 Bulletin 1997/26

(73) Proprietor: **Hewlett-Packard Indigo B.V.**
6221 SH Maastricht (NL)

(72) Inventors:
- **BELINKOV, Haim**
  Rishon Lezion (IL)
- **GAZIT, Alon**
  70400 Nes Ziona (IL)
- **KANDER, Ilan**
  43000 Ranaana (IL)
- **KRUMBERG, Yakov**
  76284 Rehovot (IL)
- **MEIRI, Ilan**
  70600 Yavne (IL)
- **NIV, Yehuda**
  74051 Nes Ziona (IL)
- **ROSEN, Yossi**
  76284 Rehovot (IL)
- **SHIFF, Ami**
  81543 Yavne (IL)
- **YITZHAIK, Shlomo**
  75231 Rishon Lezion (IL)

(74) Representative: **Yennadhiou, Peter et al**
Hewlett Packard Espanola S.A.
Legal Department
Avda. Graells, 501
08190 Sant Cugat del Vallès (B) (ES)

(56) References cited:
EP-A- 0 205 138
DE-A- 2 009 346
DE-A- 2 064 580
DE-A- 2 746 065
DE-A- 3 514 809
DE-A- 3 519 043
FR-A- 2 116 064
GB-A- 2 080 566
US-A- 5 223 361

- **RESEARCH DISCLOSURE, no. 170, June 1978 HAVANT, HAMSHIRE, GB, page 41 G. L. FEWSTER ET AL. 'Photoconductive element'**
- **DATABASE WPI Week 9308 Derwent Publications Ltd., London, GB; AN 93-062579 & JP,A,05 011 516 (MITSUBISHI PAPER MILLS) , 22 January 1993**

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 0 779 997 B1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to image forming and image transfer apparatus especially for use in electrostatic imaging using a sheet type photoreceptor.

BACRGROUND OF THE INVENTION

[0002] Organic photoreceptor materials for use in toner imaging are well known. In some systems the organic photoreceptor is coated onto a drum or endless belt on which an electrostatic image is formed. In other systems a sheet of photoreceptor material is mounted onto a drum to provide the same function.

SUMMARY OF THE INVENTION

[0003] The present invention seeks to provide, in a first aspect thereof, improved image forming apparatus utilizing a new sheet photoreceptor configuration.

[0004] The present invention further seeks to provide, in a second aspect thereof, an improved sheet photoreceptor for use in such apparatus as defined in present claim 1.

[0005] There is thus provided, in accordance with a preferred embodiment of the invention imaging apparatus including:

a substantially rectangular organic photoreceptor sheet including a backing layer, a conductive layer and a photoconductive layer, wherein along one edge of the sheet there is an exposed conductive area, preferably an exposed portion of the conductive layer;

a drum having a longitudinal cavity formed therein and including a slot formed between the cavity and the cylindrical surface of the drum into which the one edge of the photoreceptor sheet is inserted; and

a rotatable element within the cavity which, in a locking position, presses the sheet, and preferably the conductive area thereof against a wall of the cavity, fixedly and removably holding the photoreceptor sheet in place, and providing an electrical connection between the conductive layer and the drum.

[0006] Alternatively, the conductive area is pressed against the rotatable element.

[0007] In a preferred embodiment of the invention, the drum is at substantially ground electrical potential.

[0008] In a preferred embodiment of the invention on a portion of the photoreceptor sheet, along a second edge thereof opposite the one edge, both the photoconductive and conductive layers are not present: and wherein the portion of the photoreceptor sheet overlies the slot.

[0009] Preferably, the chargeable photoreceptor includes a dust masking layer, preferably of paper, between the backing layer and the drum. Preferably, the dust absorbing is attached to the backing layer adjacent to the slot.

[0010] There is further provided, in accordance with a preferred embodiment of the invention, a substantially rectangular organic photoreceptor sheet including a backing layer, a conductive layer and a photoconductive layer wherein along one edge thereof the photoconductive and the conductive layers are not present, such that the backing layer extends beyond the edge of the photoconductive and conductive layers.

[0011] Preferably the photoreceptor sheet includes a dust masking layer, preferably of paper, adjacent the backing layer. Preferably, the dust absorbing is attached to the backing layer only along an edge of the dust absorbing layer. Preferably the dust masking layer is attached adjacent to and displaced from an edge of the photoreceptor opposite the one edge thereof at which the photoconductive and the conductive layers are not present.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

Fig. 1A and 1B are cross-sectional, simplified, overall and expanded, partial drawings, respectively of a drum on which a photoreceptor is mounted, showing a mounting method for photoreceptors in accordance with a preferred embodiment of the invention; Figs. 1C and 1D show an alternative method for mounting photoreceptors in respective open and gripping configurations;

Fig. 2A and 2B are respective top and side views of a photoreceptor in accordance with a preferred embodiment of the invention;

Figs. 2C and 2D are cross-sectional partial side views of the photoreceptor of Figs. 2A and 2B;

Fig. 2E is a cross-sectional partial side view of a photoreceptor in accordance with another, preferred, embodiment of the present invention;

Fig. 3A and 3B are cross-sectional partial side views of two, respective, types of insulated-edge photoreceptors, constructed in accordance with a further preferred embodiment of the present invention; and

Figs. 4A, 4B, and 4C are respective side view, top view, and side view illustrations of three, respective, steps in a preferred method of forming the insulated edge photoreceptor of Fig. 3A.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0013] A novel photoreceptor sheet 12 and apparatus and a method for mounting the sheet on a drum 10 are shown in Figs. 1A - 1D and 2A - 2D.

[0014] Photoreceptor sheet 12 is preferably mounted on drum 10 using the mechanisms shown in Figs. 1A and 1B or 1C and 1D. As shown most clearly in Fig. 1B, one end of photoconductive sheet is inserted into a slot 140 which forms the entryway to a cavity 142 formed in drum 10. An eccentric cylindrical cam 144 which is situated in the cavity can be rotated to one of two positions. With the cam in a first position shown by dotted lines in Fig. 1B, the photoreceptor can be inserted into the slot and between the cam and a wall of cavity 142. After the photoreceptor is in the position shown in Fig. 1B, cam 144 is rotated to the position shown by the solid lines, thereby pressing the cam against the photoreceptor and holding it in position on the drum.

[0015] Figs. 1C and 1D show a rotating member 20 having a resilient element 22, such as a row of spring fingers attached thereto and facing toward the outside of the drum. When the rotating member is in an open position as shown in Fig. 1C, the photoreceptor can be inserted into slot 140 past resilient element 22. Preferably, resilient element 22 guides the inserted end of the photoreceptor to position 141 which acts to assure that the photoreceptor is positioned without skew relative to the rotating direction.

[0016] When the rotating element is turned as shown in Fig. 1D the resilient fingers press against the photoreceptor and hold it firmly against the outer wall of cavity 142.

[0017] A preferred embodiment of the photoreceptor sheet 12 which is especially suitable for mounting in accordance with the method illustrated in Figs. 1A to 1D is shown in Figs. 2A-2D.

[0018] Photoreceptor sheet 12 consists essentially of an especially configured photoreceptor and an attached sheet of paper or other dust encasing material such as rubber. As shown most clearly in Figs. 2B-2D, a central portion 150 of photoreceptor sheet 12 comprises four layers, a paper layer 151, which is shown bottom most on Figs. 2B-2D and is in contact with drum 10, a backing layer 152, such as of Mylar or the like adjacent to the paper layer, preferably attached thereto and preferably not attached thereto over its entire surface, a conducting layer 154 overlying the backing layer and a photoconductive layer 156 overlying the conducting layer. In general the photoconductive layer comprises a charge transport layer and a charge generation layer; however, these are referred to herein as a "photoconductive layer" for simplicity of the discussion, since the exact construction of the photoconductive layer or layers does not form a part of the present invention. A preferred photoreceptor is, for example, Emerald 2 (manufactured by Lexmark®). To improve compatibility of the photoreceptor when it is used with liquid toner, the photoconductor should preferably be treated by one of the treatments specified in PCT publication WO 91/17485 which corresponds to copending U.S. publication 5,376,491.

[0019] In general these applications describe several processes. In one process, the photoreceptor sheet is mounted on a drum with the photoconductive surface facing outwards. The sheet is subjected to heat treatment which removes stress from the photoconductive layer without removing it from the backing layer. The photoreceptor is now cooled, without removing it from the drum. When the photoreceptor is removed from the drum, the photoconductive layer is in compression and the backing layer is in tension.

[0020] In a second process the photoreceptor sheet is subjected to tension and heated to a temperature at which the photoconductive layer is stress released but at which the backing is not stress released. The sheet is cooled and then the tension is removed. This process also results in a photoreceptor sheet in which the photoconductive layer is in compression and the backing layer is in tension.

[0021] In a third process the surface of the photoconductive layer is chemically treated to remove stress from the layer and make it more plastic or elastic than it previously was. Preferably materials such as cyclohexanone are used to chemically treat the photoconductive layer.

[0022] What should be noted in Figs. 1B-1D is that not all of the layers extend to the ends of photoreceptor sheet 12. In particular, the end of the sheet which is inserted into slot 140 (the "leading edge" of the sheet), as shown in Figs. 1B-1D, has only two layers, i.e., backing layer 152 and conducting layer 154. This assures that the conducting layer, when pressed against the interior of cavity 140 by cam 144 or member 22, will make good electrical contact with the cavity wall. This provides convenient grounding of the conductive layer, even when the backing layer and the paper layer are not conducting.

[0023] Alternatively, the photoreceptor can be provided with a conductive edge which is electrically connected with the conductive layer and either the cavity wall or resilient member 22, or both.

[0024] The paper layer, as indicated above, is not attached to the back of the backing layer over the length of the photoreceptor. However, in a preferred embodiment of the invention, the paper is attached to the backing layer near the leading edge of the photoreceptor and at the end of the paper, i.e., at reference numeral 158. The function of the paper layer is to reduce the effect of dust or other particles which may be on the drum (or possibly between the photoreceptor and the paper) from effecting the imaging process by causing pressure points on the surface of the photoreceptor. The optimum thickness of the paper layer has been found, for the particular photoreceptor described above, to be between about 50 micrometers and 300 micrometers and a soft, open weave paper such as Nordland Woodtree uncoated white bond printing paper (120g/m^2, =150 micrometers thick, manufactured by Nordland, Germany) is preferred.

[0025] The other end of the photoreceptor (its trailing edge), which is shown in detail in Fig. 2D preferably comprises only the backing layer, and, as shown in Figs. 1B -1D, the backing layer extension is long enough to overlay slot 140 so as to avoid liquid toner entering cavity 142.

Further, the outer surface of drum 10 is shaped near slot 140 (at reference numeral 160) to provide a slope so that the contact between the photoreceptor and surfaces which it contacts is smooth, i.e., such that the overall diameter of the drum and the photoreceptor and, if present, the overlaying trailing edge, remains independent of the angular position on the drum.

[0026] All the layers other than the backing layer are removed at the trailing edge mainly to obviate any chance that the conducting surface will touch a charging device such as a scorotron which is normally present in electrostatic imaging apparatus. Due to the absence of grounded conducting layer 154 at the trailing edge of the photoreceptor sheet, the generally dielectric backing layer 152 remains substantially constantly charged, at the trailing edge, when the photoreceptor sheet is in operative use. This results in electrostatic attraction between drum 10 and the charged trailing edge of sheet 12, assisting in the adherence of sheet 12 to drum 10. It should be noted that sheet 12 is generally not attached to drum 10 by mechanical means, other than at the leading edge, to account for possible variations in the length of sheet 12 during operation. The electrostatic force provided by the dielectric trailing edge of sheet 12 allows circumferential relative motion between sheet 12 and drum 10.

[0027] Finally, if the photoreceptor is pressed against another surface, the trailing edge of the photoreceptor is cut at a slight angle to square, of about 1 in 35. This angle is used to provide a smooth transition of contact, at the edge, for a cleaner blade, used to clean untransferred toner from the photoreceptor, prior to the next imaging cycle. A photoreceptor sheet having square cut ends or having one or both edges cut at a slight angle is referred to herein as a "substantially rectangular" photoreceptor sheet. All edges and transitions are preferably smooth without jagged margins.

[0028] For clarity, the overlapping end of the photoreceptor sheet is not shown in Figs. 1C and 1D.

[0029] The dimensions of the leading and trailing edges of the photoreceptor can be varied to suit the particular application. The present inventors have found that the leading, conductive edge (inserted into slot 140) of the photoreceptor is preferably about 13 mm wide and the trailing edge (for overlap) is preferably about 20 mm wide.

[0030] For reference the direction of rotation of drum 10 is shown by an arrow 162.

[0031] To avoid possible voltage breakdown, for reasons described in detail below, it is generally desired that the trailing edge of photoconductive layer 156 extend beyond the trailing edge of conductive layer 154 or, at least, that the two edges be substantially aligned, as shown in Fig. 2D. Unfortunately, these desired arrangements of the trailing edges have been found to be extremely difficult to implement. Fig. 2E illustrates an alternative, more practical, embodiment of the trailing edge of photoreceptor sheet 12 in which conductive layer 154 extends slightly beyond photoreceptor layer 156.

[0032] The above described photoreceptor sheet 12 may be used in any known electrostatic imaging device. However, in a preferred embodiment of the present invention, liquid toner imaging apparatus is used, preferably of the type described in U.S. Patent publication 5,745,829 , filed January 11, 1995. In such imaging apparatus, an electrically biased squeegee roller (not shown) is used for squeegeeing a layer of liquid toner which is developed onto the photoreceptor surface. The squeegee roller is typically electrically biased, preferably to a negative voltage of 1300-1600 Volts, and urged against the photoreceptor with a predetermined pressure, typically approximately 90 grams per centimeter along the length of the squeegee roller. This provides both electrical and mechanical squeegeeing of the layer of liquid toner on the photoreceptor.

[0033] It has been found that the large difference in electric potential between the squeegee roller and conductive layer 154 of sheet 12, which is typically grounded as described above, may result in electrical breakdown at the trailing edge of layer 154. This breakdown of voltage may occur during actual contact between the squeegee roller and the trailing edge of layer 154 or by arcing between the squeegee roller and the conductive layer. Actual contact between the edge of layer 154 and the squeegee roller is possible, particularly in the embodiment of Fig. 2E, due to slight compliance of the generally resilient sheet 12 when urged by the generally rigid squeegee roller.

[0034] It is appreciated that the above described breakdown results in gradual, accumulative, deterioration of both photoreceptor surface 12 and the squeegee roller. Consequently, the cumulative damage to the squeegee roller results in degraded performance of the imaging apparatus due to less effective and inhomogeneous squeegeeing of the liquid toner on the photoreceptor surface. Thus, in a preferred embodiment of the present invention, the trailing edge of layer 154 is insulated to prevent breakdown, as described in detail below. It should be noted that insulation of the trailing edge of layer 154 is preferred also in the desired, yet not readily implemented, arrangement (not shown in the drawings) in which the trailing edge of layer 156 extends beyond the trailing edge of layer 154.

[0035] Figs. 3A and 3B which schematically illustrate two types of trailing edges, analogous to the two types of trailing edges shown in Figs. 2D and 2E, respectively, whose conductive layers 154 are electrically insulated at edges 170 and 172, respectively, in accordance with a preferred embodiment of the present invention. According to this preferred embodiment, a layer 175 of, preferably dielectric, insulating material is applied to trailing edge 170 (Fig. 3A) or trailing edge 172 (Fig. 3B), preventing electrical breakdown thereat. To ensure complete coverage of edge 170 or edge 172, layer 175 preferably extends slightly beyond edges 170 or 172, both on photoreceptor layer 156 and on backing layer 152. The extension of layer 175 on layer 156 is indicated by reference numeral 176. For imaging systems using a

scraper, such as a doctor blade, extension 176 is preferably made extremely thin to avoid damage to the scraper. This is because the scrapers used by such imaging systems are generally extremely sensitive to protrusions in the direction of scraping.

[0036] In a preferred embodiment of the invention, insulating layer 175 is formed of HumiSeal® type 1A24, a vinyl-modified-epoxy based dielectric material, available from Columbia Chase Corporation, New York, USA. This insulating material is provided in a solids concentration of 20-24 percent by weight and a viscosity of 100-130 centipoise and has a drying/handling time of 15 minutes and a recommended curing time of 24 hours in room temperature. The material can be thinned, for example using acetone, to adjust the viscosity of the material for a given method of application. The cured layer is generally transparent, highly adhesive, very flexible and very durable to varying temperature and humidity conditions. The cured layer has a dielectric withstand voltage of approximately 3,900 Volts, a dielectric constant of approximately 2.88 at 1MHz and 25 degrees centigrade, a dissipation factor of 0.002, an insulation resistance of approximately 350,000,000 Megohms and a moisture resistance of approximately 30,000 Megohms. The material is also highly resistant to solvents and various chemicals.

[0037] Although the use of HumiSeal type 1A24 is preferred, layer 175 may be formed of any other suitable dielectric material. For example, layer 175 may be formed of HumiSeal type 1A33, a polyurethane based dielectric material, or the layer may be formed of a material based on polyvinyl alcohol (88% hydrolyzed).

[0038] Reference is now made to Figs. 4A-4C which schematically illustrate a preferred method of applying layer 175 to edge 170, by metered brushing. It should be appreciated that the same application method can be used for applying layer 175 to edge 172 if sheet 12 is constructed as in Fig. 2E. Although the method of Figs. 4A-4C has been found effective, it should be appreciated that other application methods, such as spraying or dipping, may also suitable.

[0039] Fig. 4A illustrates a first step in the metered application method, in which a series of drops 178 of the insulating material are guided along the surface of an application blade 177 to a portion of backing layer 152 close to edge 170 of layer 154. Drops 178 are preferably separated from edge 170 by a gap of approximately 3-4 millimeters. The series of drops formed on layer 152 in parallel with edge 170 is shown in Fig. 4B. Sheet 12 is preferably positioned on a detachable base layer, preferably formed of paper or the like, which extends beyond sheet 12 at least at the portion indicated by reference numeral 179. This enables application of at least one drop of insulating outside the boarders of sheet 12, allowing complete coverage of edge 170 by the brushing described below.

[0040] Fig. 4C illustrates a preferred brushing technique, wherein a smooth and straight edge of a brushing sheet 180, preferably formed of a resilient material, is urged against the sheet 12 and moved in a brushing motion along edge 170. Brushing sheet 180 may be formed of any suitable rubber or plastic material having a suitable resilience and surface smoothness. In one preferred embodiment of the invention, brushing sheet 180 is formed of the material used for the intermediate transfer blanket described in U.S. Patent publication 5,745,829. In the configuration of drops 178 shown in Fig. 4B, the brushing action is from bottom to top, starting from region 179 outside sheet 12.

[0041] To ensure complete coverage of edge 170, the total amount of insulating material in drops 178 is equal to at least the volume enclosed by the trailing edges of layers 154 and 156, protruding layer 152 and the brushing plane defined by the action of brushing sheet 180. The resilience of the edge of brushing sheet 180 ensures gap-free application of insulating layer 175 to edge 170 and maintains the thickness of extension 176 of layer 175 at a minimum.

Claims

1. A substantially rectangular organic photoreceptor sheet comprising a backing layer, a conductive layer and a photoconductive layer wherein along one edge thereof the photoconductive and the conductive layers are not present such that the backing layer extends beyond the edge of the photoconductive and conductive layers.

2. An organic photoreceptor sheet according to claim 1 wherein the edge of the conductive layer is coated with a layer of insulating material.

3. A photoreceptor sheet according to claim 2 wherein the insulating material comprises a dielectric material.

4. A photoreceptor sheet according to any of the preceding claims wherein the respective edges of the photoconductive layer and the conductive layer are aligned.

5. A photoreceptor sheet according to any of the preceding claims wherein the edge of the conductive layer extends slightly beyond the respective edge of the photoconductive layer.

6. A photoreceptor sheet according to any of the preceding claims wherein the edge of the photoreceptor at which the photoconductive layer and the conductive layer is not present is somewhat out of square with adjoining edges of the photoreceptor.

7. A photoreceptor sheet according to any of the preceding claims wherein along a second edge thereof

opposite the one edge, the photoconductive layer is not present such that the conductive layer is exposed forming a conductive area.

8. A photoreceptor sheet according to any of the preceding claims wherein only the backing layer extends beyond the conductive and photoconductive layers along only one edge thereof.

9. A photoreceptor sheet according to any of claims 1-8 and further comprising a dust masking layer adjacent the backing layer.

10. A photoreceptor sheet according to claim 9 wherein the dust making layer is a paper layer.

11. A photoreceptor sheet according to claim 9 or claim 10 wherein the dust masking layer is attached to the backing layer only along an edge of the dust masking layer.

12. A photoreceptor sheet according to any of claims 9-11 wherein the dust masking layer is attached adjacent to and displaced from an edge of the photoreceptor opposite an edge thereof at which the photoconductive layer and the conductive layers are not present.

13. Imaging apparatus comprising:

a substantially rectangular organic photoreceptor sheet comprising a backing layer, a conductive layer and a photoconductive layer, wherein along one edge of the sheet there is an exposed conductive area;
a drum having longitudinal cavity formed therein and including a slot formed between the cavity and the cylindrical surface of the drum into which the one edge of the photoreceptor sheet is inserted; and
a rotatable element within the cavity which, in a locking position, presses the sheet against a wall of the cavity, fixedly and removably holding the photoreceptor sheet in place and providing an electrical connection between the conductive layer and the drum.

14. Apparatus according to claim 13 wherein the conductive area is an exposed portion of the conductive layer, the photoconductive layer being absent.

15. Apparatus according to claim 13 or claim 15 wherein the conductive area is pressed against the wall of the cavity.

16. Apparatus according to claim 13 or claim 14 wherein the conductive area is pressed against the rotatable element.

17. Imaging apparatus according to any of claims 13-16 wherein the drum is at substantially ground electrical potential.

18. Imaging apparatus according to any of claims 13-17 wherein, on a portion of the photoreceptor sheet, along a second edge thereof opposite the one edge, both the photoconductive and conductive layers are not present and wherein said portion of the photoreceptor sheet overlies the slot.

19. Imaging apparatus according to any of claims 13-18 wherein the chargeable photoreceptor comprises a dust masking layer between the backing layer and the drum.

20. Imaging apparatus according to claim 19 wherein the dust masking layer is attached to the backing layer adjacent to the slot.

21. Imaging apparatus according to any of claims 13-20 wherein the photoreceptor sheet comprises a photoreceptor sheet according to any of claims 1-12.

22. Imaging apparatus according to any of claims 13-21 wherein only the one edge has an exposed conductor.

Patentansprüche

1. Eine im Wesentlichen rechteckige Lage eines organischen Photorezeptors, die eine Unterstützungsschicht, eine leitfähige Schicht und eine photoleitfähige Schicht aufweist, wobei entlang einer Kante desselben die photoleitfähige und die leitfähige Schicht nicht vorhanden sind, derart, dass sich die Unterstützungsschicht über die Kante der photoleitfähigen und der leitfähigen Schicht hinaus erstreckt.

2. Eine Lage eines organischen Photorezeptors gemäß Anspruch 1, bei der die Kante der leitfähigen Schicht mit einer Schicht eines isolierenden Materials beschichtet ist.

3. Eine Photorezeptorlage gemäß Anspruch 2, bei der das isolierende Material ein dielektrisches Material aufweist.

4. Eine Photorezeptorlage gemäß einem der vorhergehenden Ansprüche, bei der die jeweiligen Kanten der photoleitfähigen Schicht und der leitfähigen Schicht ausgerichtet sind.

5. Eine Photorezeptorlage gemäß einem der vorhergehenden Ansprüche, bei der die Kante der leitfähigen Schicht sich etwas über die jeweilige Kante der photoleitfähigen Schicht hinaus erstreckt.

6. Eine Photorezeptorlage gemäß einem der vorhergehenden Ansprüche, bei der die Kante des Photorezeptors, an der die photoleitfähige Schicht und die leitfähige Schicht nicht vorhanden sind, zu angrenzenden Kanten des Photorezeptors nicht ganz rechtwinkelig ist.

7. Eine Photorezeptorlage gemäß einem der vorhergehenden Ansprüche, bei der entlang einer zweiten Kante derselben gegenüber der einen Kante die photoleitfähige Schicht nicht vorhanden ist, derart, dass die leitfähige Schicht freigelegt ist, wobei ein leitfähiger Bereich gebildet ist.

8. Eine Photorezeptorlage gemäß einem der vorhergehenden Ansprüche, bei der sich lediglich die Unterstützungsschicht entlang lediglich einer Kante derselben über die leitfähige und die photoleitfähige Schicht hinaus erstreckt.

9. Eine Photorezeptorlage gemäß einem Ansprüche 1-8, die ferner eine Staubmaskierungsschicht benachbart zu der Unterstützungsschicht aufweist.

10. Eine Photorezeptorlage gemäß Anspruch 9, bei der die Staubmaskierungsschicht eine Papierschicht ist.

11. Eine Photorezeptorlage gemäß Anspruch 9 oder Anspruch 10, bei der die Staubmaskierungsschicht lediglich entlang einer Kante der Staubmaskierungsschicht an der Unterstützungsschicht angebracht ist.

12. Eine Photorezeptorlage gemäß einem der Ansprüche 9-11, bei der die Staubmaskierungsschicht benachbart zu und verlagert von einer Kante des Photorezeptors gegenüber einer Kante desselben angebracht ist, an der die photoleitfähige Schicht und die leitfähigen Schichten nicht vorhanden sind.

13. Bilderzeugungsvorrichtung, die folgende Merkmale aufweist:

eine im Wesentlichen rechteckige Lage eines organischen Photorezeptors, die eine Unterstützungsschicht, eine leitfähige Schicht und eine photoleitfähige Schicht aufweist, wobei sich entlang einer Kante der Lage ein freiliegender leitfähiger Bereich befindet;
eine Trommel, in der ein longitudinaler Hohlraum gebildet ist und die einen Schlitz umfasst, der zwischen dem Hohlraum und der zylindrischen Oberfläche der Trommel gebildet ist und in den die eine Kante der Photorezeptorlage eingebracht ist; und
ein drehbares Element innerhalb des Hohlraums, das in einer Verriegelungsstellung die Lage gegen eine Wand des Hohlraums drückt, die Photorezeptorlage fest und entfernbar in Position hält und eine elektrische Verbindung zwischen der leitfähigen Schicht und der Trommel liefert.

14. Vorrichtung gemäß Anspruch 13, bei der der leitfähige Bereich ein freiliegender Abschnitt der leitfähigen Schicht ist, wobei die photoleitfähige Schicht nicht vorhanden ist.

15. Vorrichtung gemäß Anspruch 13 oder Anspruch 14, bei der der leitfähige Bereich gegen die Wand gedrückt ist.

16. Vorrichtung gemäß Anspruch 13 oder Anspruch 14, bei der der leitfähige Bereich gegen das drehbare Element gedrückt ist.

17. Bilderzeugungsvorrichtung gemäß einem der Ansprüche 13-16, bei der die Trommel sich im Wesentlichen bei einem elektrischen Massepotential befindet.

18. Bilderzeugungsvorrichtung gemäß einem der Ansprüche 13-17, bei der an einem Abschnitt der Photorezeptorlage entlang einer zweiten Kante derselben gegenüber der einen Kante sowohl die photoleitfähige als auch die leitfähige Schicht nicht vorhanden sind und bei der der Abschnitt der Photorezeptorlage den Schlitz überlagert.

19. Bilderzeugungsvorrichtung gemäß einem der Ansprüche 13-18, bei der der aufladbare Photorezeptor eine Staubmaskierungsschicht zwischen der Unterstützungsschicht und der Trommel aufweist.

20. Bilderzeugungsvorrichtung gemäß Anspruch 19, bei der die Staubmaskierungsschicht an der Unterstützungsschicht benachbart zu dem Schlitz angebracht ist.

21. Bilderzeugungsvorrichtung gemäß einem Ansprüche 13-20, bei der die Photorezeptorlage eine Photorezeptorlage gemäß einem der Ansprüche 1 bis 12 aufweist.

22. Bilderzeugungsvorrichtung gemäß einem der Ansprüche 13-21, bei der lediglich die eine Kante einen freiliegenden Leiter aufweist.

Revendications

1. Feuille de photorécepteur organique sensiblement rectangulaire comprenant une couche de support, une couche conductrice et une couche photoconductrice, dans laquelle, suivant un bord de celle-ci, les couches photoconductrice et conductrice ne sont pas présentes de manière que la couche de support

s'étende au-delà du bord des couches photoconductrice et conductrice.

2. Feuille de photorécepteur organique selon la revendication 1, dans laquelle le bord de la couche conductrice est recouvert avec une couche de matériau isolant.

3. Feuille de photorécepteur selon la revendication 2, dans laquelle le matériau isolant comprend un matériau diélectrique.

4. Feuille de photorécepteur selon l'une quelconque des revendications précédentes, dans laquelle les bords respectifs de la couche photoconductrice et de la couche conductrice sont alignés.

5. Feuille de photorécepteur selon l'une quelconque des revendications précédentes, dans laquelle le bord de la couche conductrice s'étend légèrement au-delà du bord respectif de la couche photoconductrice.

6. Feuille de photorécepteur selon l'une quelconque des revendications précédentes, dans laquelle le bord du photorécepteur au niveau duquel la couche photoconductrice et la couche conductrice ne sont pas présentes n'est légèrement pas d'équerre avec des bords contigus du photorécepteur.

7. Feuille de photorécepteur selon l'une quelconque des revendications précédentes, dans laquelle, suivant un deuxième bord de celle-ci opposé au un bord, la couche photoconductrice n'est pas présente de sorte que la couche conductrice est exposée en formant une zone conductrice.

8. Feuille de photorécepteur selon l'une quelconque des revendications précédentes, dans laquelle seule la couche de support s'étend au-delà des couches conductrice et photoconductrice suivant seulement un bord de celle-ci.

9. Feuille de photorécepteur selon l'une quelconque des revendications 1 à 8 comprenant en outre une couche de masquage de poussière adjacente à la couche de support.

10. Feuille de photorécepteur selon la revendication 9, dans laquelle la couche de masquage de poussière est une couche de papier.

11. Feuille de photorécepteur selon la revendication 9 ou 10, dans laquelle la couche de masquage de poussière est fixée à la couche de support seulement le long d'un bord de la couche de masquage de poussière.

12. Feuille de photorécepteur selon l'une quelconque des revendications 9 à 11, dans laquelle la couche de masquage de poussière est fixée adjacente et décalée par rapport à un bord du photorécepteur opposé à un bord de celle-ci au niveau duquel les couches photoconductrice et conductrice ne sont pas présentes.

13. Appareil d'imagerie comprenant :

une feuille de photorécepteur organique sensiblement rectangulaire comprenant une couche de support, une couche conductrice et une couche photoconductrice, dans laquelle, suivant un bord de la feuille se trouve une zone conductrice exposée ;
un tambour ayant une cavité longitudinale formée dans celui-ci et comprenant une fente formée entre la cavité et la surface cylindrique du tambour dans laquelle ledit bord de la feuille de photorécepteur est inséré ; et
un élément rotatif à l'intérieur de la cavité qui, dans une position de blocage, presse la feuille contre une paroi de la cavité, en maintenant la feuille de photorécepteur en place de manière ferme et amovible et en fournissant une connexion électrique entre la couche conductrice et le tambour.

14. Appareil d'imagerie selon la revendication 13, dans lequel la zone conductrice est une partie exposée de la couche conductrice, la couche photoconductrice étant absente.

15. Appareil d'imagerie selon la revendication 13 ou 14, dans lequel la zone conductrice est pressée contre la paroi de la cavité.

16. Appareil d'imagerie selon la revendication 13 ou 14, dans lequel la zone conductrice est pressée contre l'élément rotatif.

17. Appareil d'imagerie selon l'une quelconque des revendications 13 à 16, dans lequel le tambour est à un potentiel électrique sensiblement de masse.

18. Appareil d'imagerie selon l'une quelconque des revendications 13 à 17, dans lequel, sur une partie de la feuille de photorécepteur, suivant un deuxième bord de celle-ci opposé au premier bord, à la fois les couches photoconductrice et conductrice ne sont pas présentes et dans lequel ladite partie de la feuille de photorécepteur recouvre la fente.

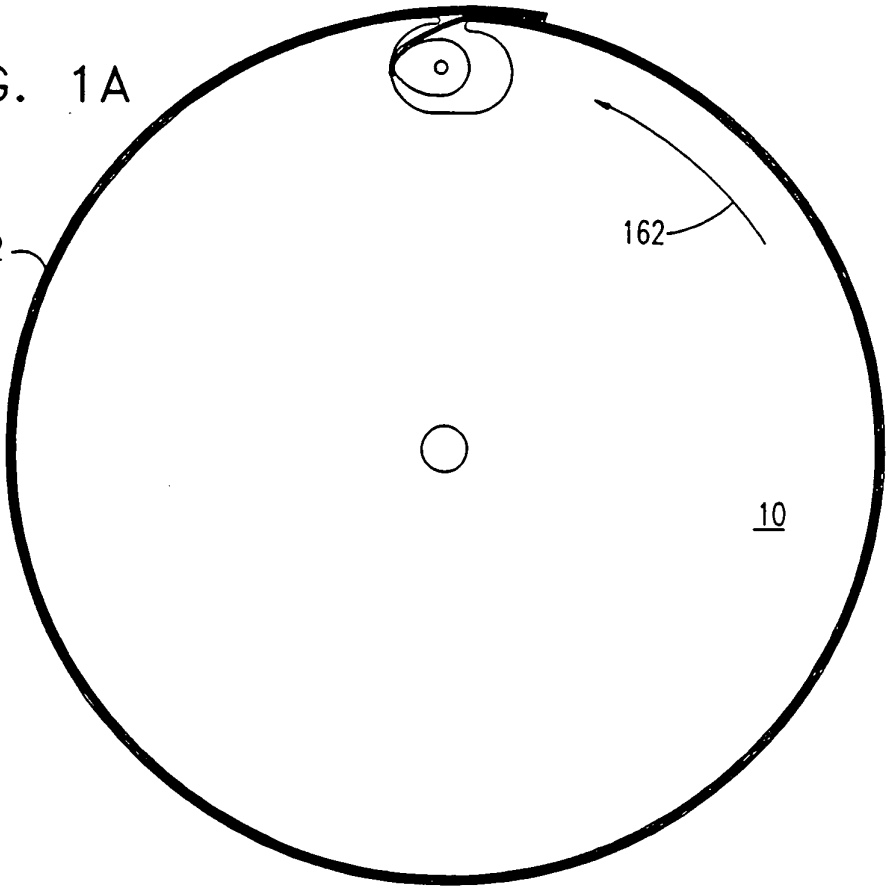
19. Appareil d'imagerie selon l'une quelconque des revendications 13 à 18, dans lequel le photorécepteur chargeable comprend une couche de masquage de poussière entre la couche de support et le tambour.

20. Appareil d'imagerie selon la revendication 19, dans lequel la couche de masquage de poussière est fixée à la couche de support adjacente à la fente.

21. Appareil d'imagerie selon l'une quelconque des revendications 13 à 20, dans lequel la feuille de photorécepteur comprend une feuille de photorécepteur selon l'une quelconque des revendications 1 à 12.

22. Appareil d'imagerie selon l'une quelconque des revendications 13 à 21, dans lequel seul le premier bord a un conducteur exposé.

FIG. 1A



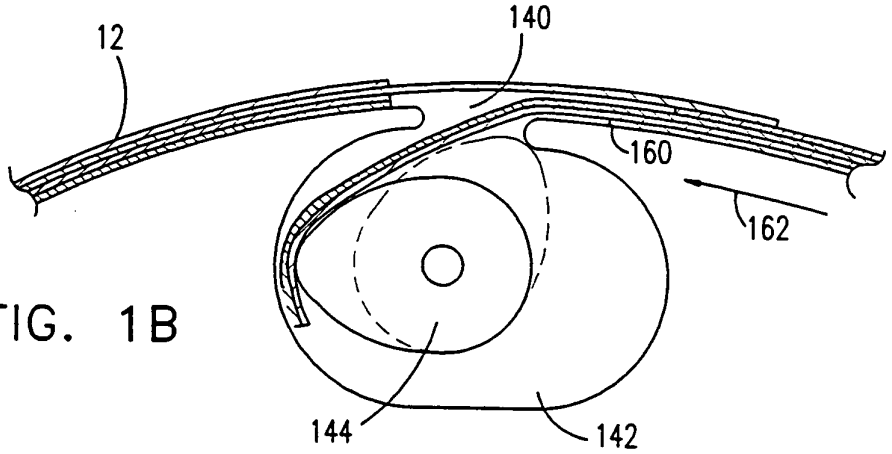


FIG. 1B

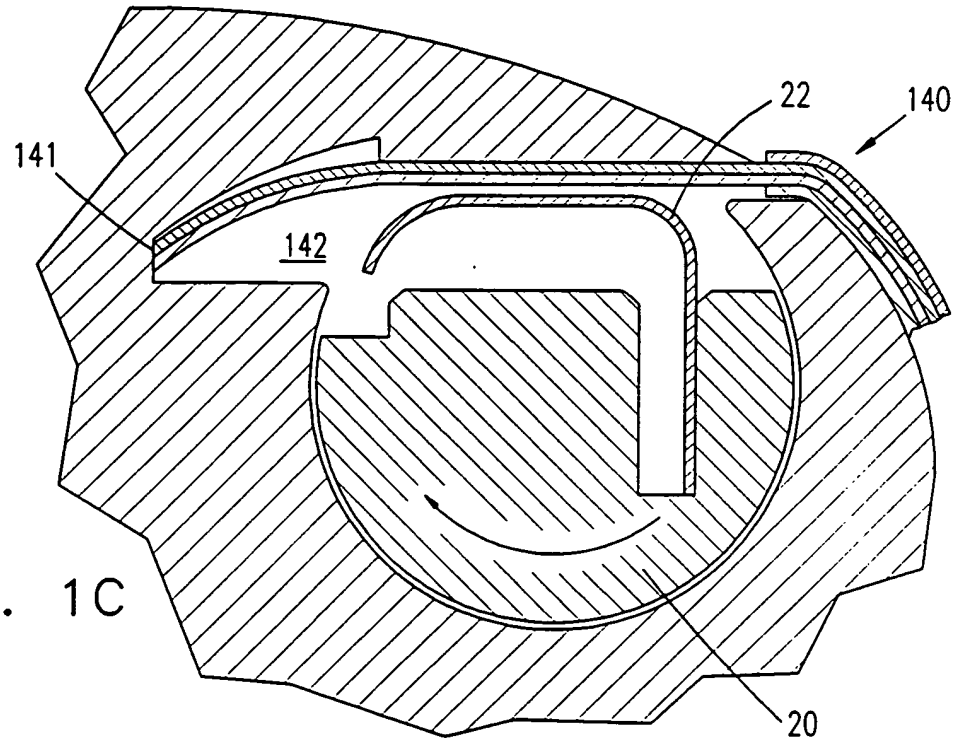


FIG. 1C

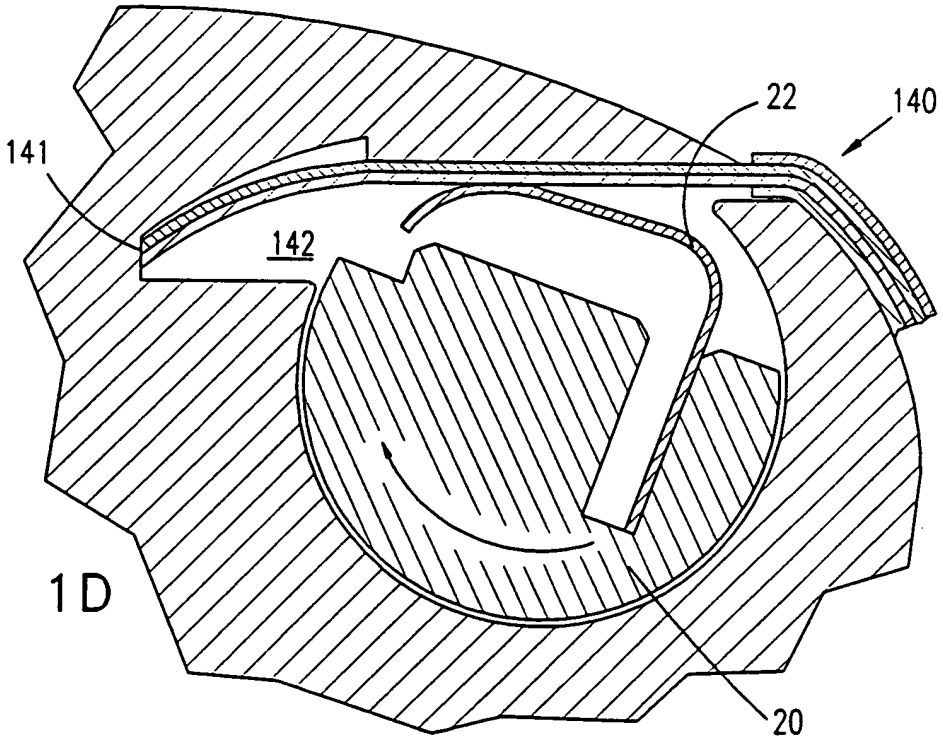


FIG. 1D

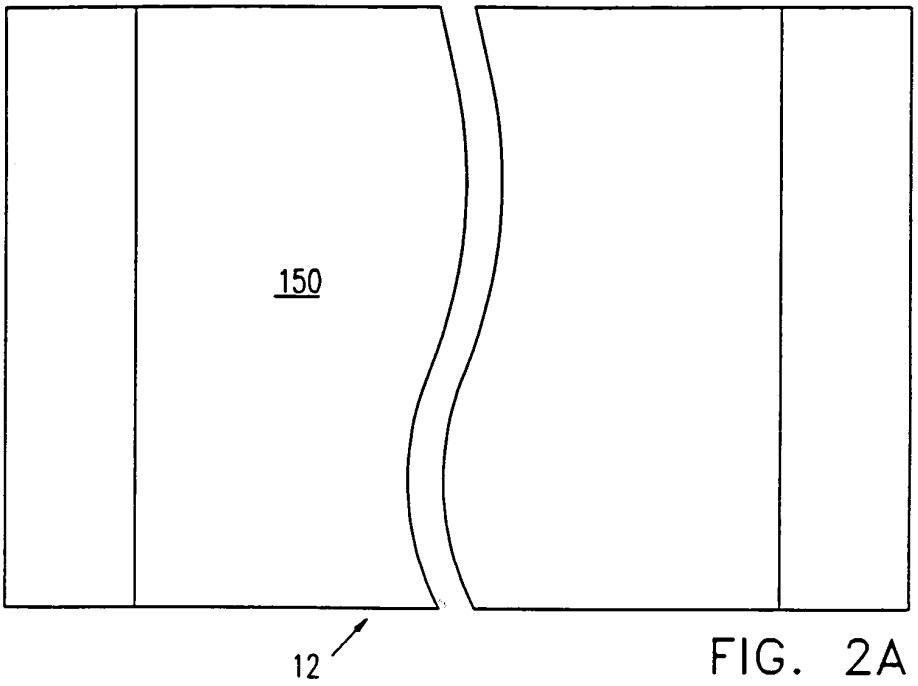


FIG. 2A

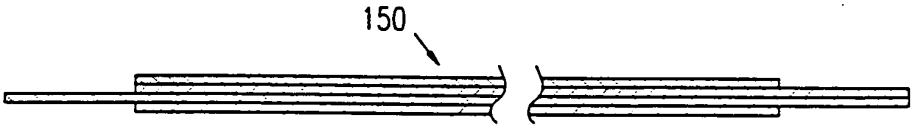


FIG. 2B

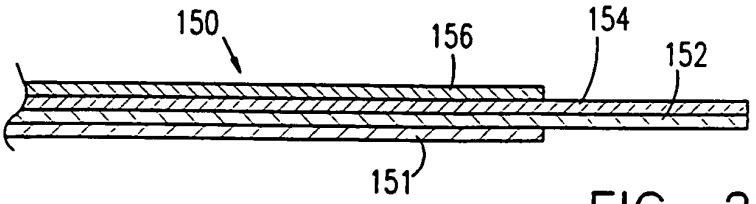


FIG. 2C

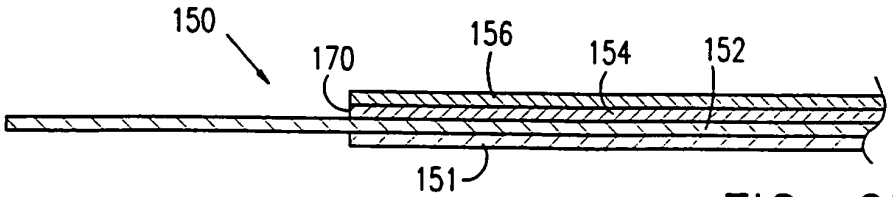


FIG. 2D

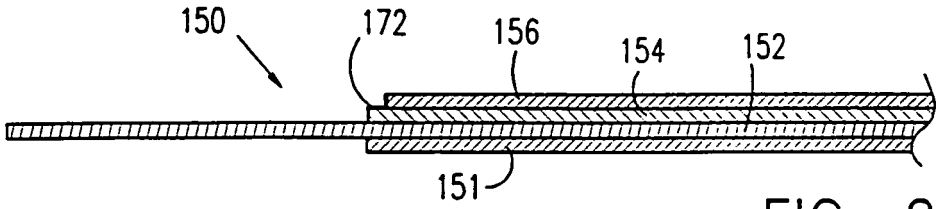


FIG. 2E

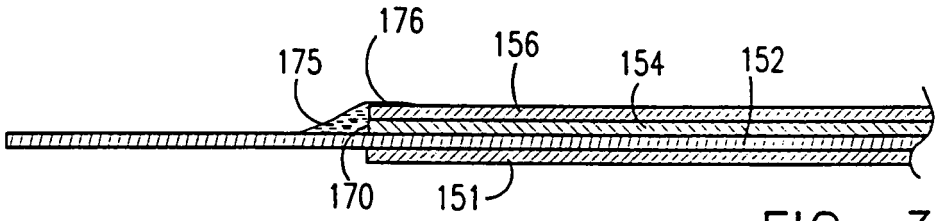


FIG. 3A

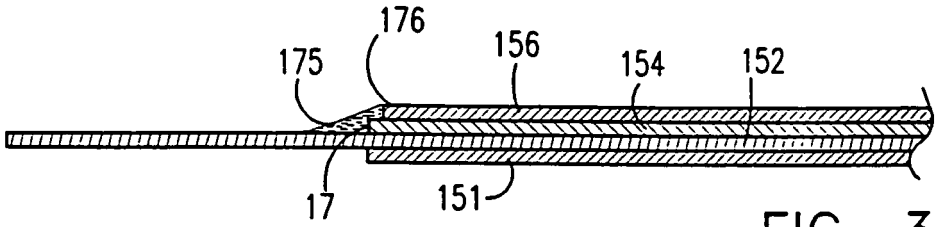


FIG. 3B

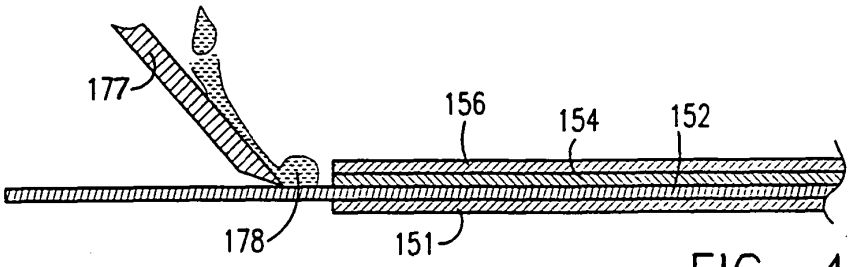


FIG. 4A

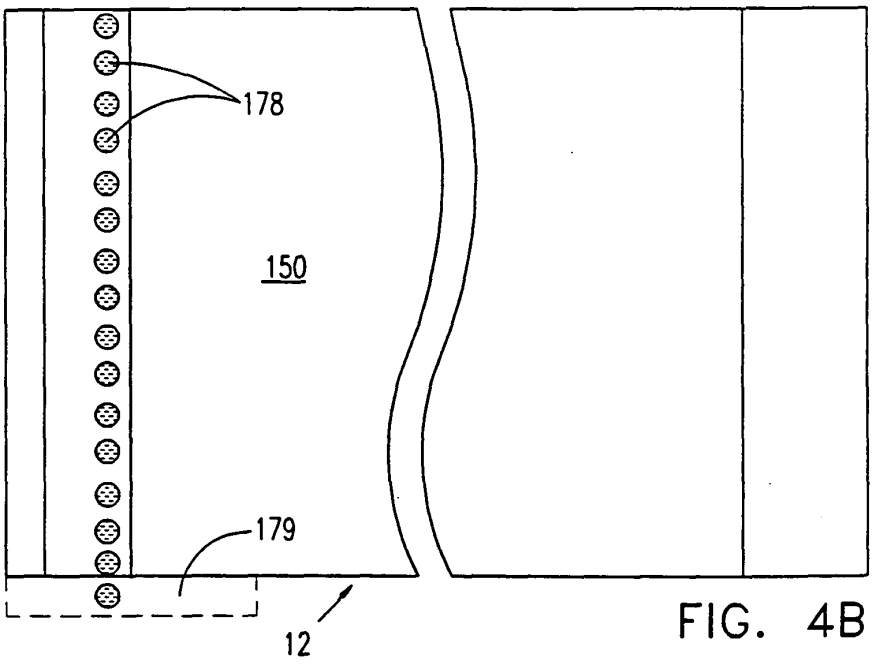


FIG. 4B

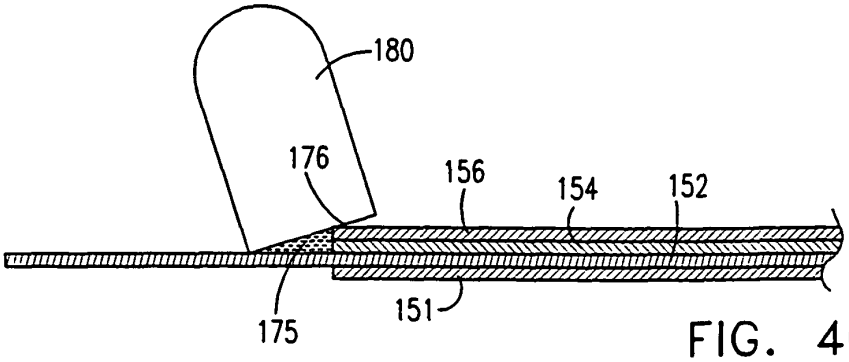


FIG. 4C