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SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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## JUNCTION BOX WITH BARRIER ELEMENT

### CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to U.S. Provisional Application No. 61/552,148 which is fully incorporated herein by reference. The present application is also related to U.S. Provisional Patent Application No. 61/552,057 entitled “Ultrasonically-Welded Junction Box,” the disclosure of which is also fully incorporated herein by reference.

### TECHNICAL FIELD

[0002] The present invention relates generally to photovoltaic modules, and in particular to methods and devices for providing a junction box for a photovoltaic module.

### BACKGROUND

[0003] Photovoltaic modules are commonly installed outdoors to allow for direct sunlight exposure. Outdoor installation exposes the modules to moisture in the form of precipitation and humidity. Moisture can be harmful if it accesses the interior surfaces of the module. In particular, moisture can promote corrosion of surfaces within the module. Moisture can also promote structural damage if allowed to freeze within the module. Modules typically have a hole in a back panel through which conductors connected internally to the module will pass for external connection to the module. The hole is typically covered by a junction box through which the external conductors pass for connection with the internal module conductors. It is therefore desirable to manufacture a module with a junction box that is sealed against moisture ingress.

[0004] During assembly, junction boxes are typically attached to the back panel of the module using an adhesive, for example, a liquid or a tape-based adhesive which can also serve as a sealant. The module opening typically allows at least two conductive tapes, which connect with the internal module conductors to be folded back at the edges of the opening for connection with external conductors which pass into the junction box. While both of these sealants provide certain advantages, both are also associated with certain disadvantages. For instance, a liquid sealant may require substantial curing time, and therefore, can reduce

manufacturing efficiency. Liquid sealants may also require pressure to be applied to the junction box while the sealant cures. Foam tape can provide instant tacking. Unfortunately, the bonding strength of foam tape decreases during exposure to high temperatures and high humidity.

[0005] An improved sealing attachment of the junction box to the back panel is desired.

#### **DESCRIPTION OF DRAWINGS**

[0006] FIGs. 1A-1B depict a photovoltaic module having an attached junction box according to one or more embodiments;

[0007] FIGs. 1C-1D depict respective arrangements of internal conductors of a photovoltaic module;

[0008] FIG. 2 depicts a cross-sectional view of FIG. 1B along section B-B of FIG. 1B;

[0009] FIGs. 3A-3B depict a photovoltaic module having an attached junction box according to one or more additional embodiments;

[0010] FIG. 4 depicts a cross-sectional view of the photovoltaic module of FIG. 3B along section C-C;

[0011] FIG. 5 depicts a process for coupling a junction box to a photovoltaic module; and

[0012] FIG. 6 depicts a method for forming a junction box.

## DETAILED DESCRIPTION

[0013] Embodiments described herein are directed to a photovoltaic module having a front cover, a back cover, photovoltaic cells between the front and back covers, and a junction box, also termed a cord plate, provided over an opening in the module back cover and including a barrier element. The barrier element may be configured to provide a barrier against moisture, water and water vapor entry into the module opening. Also, the barrier element provides an electrical connection to one or more internal conductors of the module. The barrier element may be coupled to the back cover panel of the photovoltaic module by ultrasonic welding. The barrier element may be formed as two conductive portions separated by an insulating material. The electrically insulating material allows for the barrier element to connect multiple internal conductors of a module to respective multiple external conductors.

[0014] A barrier element of the junction box may be formed of a metal and may be ultrasonically welded to the back cover panel. In certain embodiments, the barrier element of the junction box may be formed of a conductive polymeric material and may be ultrasonically welded to the back cover panel. By way of example, a barrier element formed of a conductive polymeric material may be ultrasonically welded to at least one of a glass and polymeric back cover panel. The junction box may include a housing overmolded to the barrier element and having a cavity for providing access to the module internal conductors. The junction box housing has an upper cover. A cover of the junction box closes the cavity after external conductors are electrically connected to the module internal conductors.

[0015] One distinct advantage of coupling the junction box to the back cover panel by ultrasonic welding is that barrier element may be instantly tacked to the back cover panel. Ultrasonic welding allows for rapid assembly of a photovoltaic module, even when liquid sealants are used, as ultrasonic welds can fix a barrier element or junction box firmly in place while the liquid sealant is permitted to cure.

[0016] FIGs. 1A – 1B illustrate a first embodiment of a module 100 with an attached junction box 110 in perspective views, while FIG. 2 illustrates the attached junction box 110 in a cross-sectional view. Referring first to FIG. 1A, a bottom side of the photovoltaic module 100 is depicted. Photovoltaic module 100 includes back panel cover 105, front cover panel 106, photovoltaic cells 107 positioned between the front cover panel 106 and the back

cover panel 105, and a junction box 110 for making electrical connections between external conductors 155 and 160 (FIG. 1B) and internal conductors 140a, 140b (FIGs. 1A, 1C, 1D) of module 100. Photovoltaic module 100 may further include a plurality of internal layers forming photovoltaic cells 107 which are configured to produce an electrical potential output based on absorbed light energy. An edge seal may be provided around the entire periphery of module 100 to prevent entry of materials or moisture into the area containing the photovoltaic cells 107. The edge seal can be formed of polyisobutylene (PIB) or other sealing materials. Junction box 110 provides a sealed enclosure for the interconnection of the external conductors 155, 160 to the internal conductors 140a, 140b of a module 100. Internal conductors 140a, 140b are accessible through a hole 135 in the back cover 105 of module 100 which is covered by junction box 110.

[0017] Barrier element 115 of the junction box 110 is also shown in FIGs. 1A, 1B and 2. Barrier element 115 is configured to be ultrasonically welded to back cover panel 105, the latter of which may be a back cover glass of module 100. The barrier element 115 engages with a sealing material 145 (FIG. 2), and together they provide a watertight seal to prevent moisture from accessing the inside of module 100 through the opening 135 in the back cover panel 105. As better shown in FIG. 2, sealing material 145 may be enclosed within a peripherally extending portion 115a of barrier element 115, and extends completely around the opening 135.

[0018] To fulfill electrical connections within the junction box 100 and to further facilitate ultrasonic welding of the barrier element 115 to the back cover panel 105, the barrier element 115 is formed of a conductive material. In addition, barrier element 115 is formed of two separate conductive portions 119 and 123, which are electrically separated by an insulation material 117. Insulation material 117 allows the separate conductive portions 119, 123 of the barrier element 115 to electrically connect with respective internal conductors 140a, 140b of module 100. Barrier element 115 has an outer peripheral area 115c and inner peripheral area 115d which may be used to ultrasonically weld the barrier element 115 to the back cover panel 105. Peripheral area 115c may extend outwardly from a housing 120 which fits over the barrier element 115 as illustrated in FIGs. 1D and 2. In addition, the inner peripheral area 115d of the barrier element may also be ultrasonically welded to the back cover panel 105

through cavity 108 residing in the housing 120. Barrier 115 may be formed of one of aluminum, copper, nickel or any other suitable metal.

[0019] Housing 120, which fits over the barrier element 115 may be overmolded to the barrier element 115. Housing 120 may also be attached to the barrier element 115 by adhesive, a press fit, or any other suitable attachment mechanism.

[0020] If housing 120 is overmolded to the barrier element 115, the overmolding may be by one or more molding techniques known in the art. Overmolding may be any molding process where two or more materials are combined to produce a single part. Overmolding may employ a flowable plastic such as a thermal plastic or a thermal plastic elastomer (TPE). The plastic may include high temperature amorphous resins or semi-crystalline resins such as acetal, liquid crystal polymer (LCP), polyester, polyamide, and polysulfone. TPE is a class of polymers that have the characteristics of thermoset rubber. Unlike rubber, however, TPE can be melted and processed in an injection molding machine. With these qualities TPE combines the advantages of rubber-like materials with the cost, throughput and quality benefits of injection molding.

[0021] Back cover panel 105 to which the barrier element 115 of the junction box 110 is ultrasonically welded may be formed of a glass, such as borosilicate glass, soda lime glass, a metallic glass, metal or formed of a polymer. A metallic glass may be an alloy having an amorphous or glassy structure.

[0022] The cavity 108 within the housing 120 permits access to the interior of junction box 110 to allow electrical connections to be formed between module internal conductors 140a, 140b and external conductors 155, 160. The housing 120 covers and may be overmolded to the barrier element 115, as noted. The junction box housing 120 also includes one or more openings 130 in order to receive external conductors 155, 160 shown in Figure 1B. Housing 120 may additionally include a cover 121 which can cover and thereby enclose the cavity 108. Cover 121 can be removable or fixed once it is secured to the housing 120.

[0023] Sealant material 145 which may be employed with the barrier element 115 may be one of a liquid sealant, such as a silicone-based sealant, or a tape-based sealant such as the solar acrylic foam tape manufactured by 3M, or any other type of suitable sealant. Ultrasonic welding of the barrier element 115 to the back cover 105 allows for joining the junction box

110 to the back cover panel 105 to provide an instant tack and ample bonding strength when exposed to proper temperature and humidity which would allow a liquid sealant to properly cure once it is applied. The welded barrier element 115 and sealant material 145 provide a moisture barrier having a very low moisture vapor transmission rate.

**[0024]** FIGs. 1C – 1D depict in greater detail examples of possible arrangements of the module 100 internal conductors 140a, 140b. Referring first to FIG. 1C, opening 135 in the back panel 105 provides access to spaced internal conductors 140a and 140b which are in the form of tape conductors which respectively connect the positive and negative bus bars within the module 100. The internal conductors 140a, 140b in FIG. 1C are spaced apart at their terminating ends. FIG. 1D shows a different arrangement of the tapes 140a and 140b in which they longitudinally extend across the opening 135.

**[0025]** The manner in which the barrier element 115 is connected to the conductive tapes 140a, 140b of module 100 is now shown with specific reference to the cross-section of FIG. 2. The cross-section is taken along the line B-B of Figure 1B. As shown in FIG. 2, the conductive portion 123 of the barrier element illustrated extends into opening 135 in the back cover and physically contacts conductive tape 140a which runs on the interior of the module. FIG. 2 employs conductors 140a, 140b arranged in the manner shown in FIG. 1D. The portion 123 of the barrier element 115 illustrated in FIG. 2 may be directly ultrasonically welded to the illustrated tape 140a or another manner of electrical connection may be employed, such as soldering.

**[0026]** FIG. 2 also illustrates the electrical connection of an external conductor 155 to the portion 123 of the barrier plate 115 illustrated in FIG. 2. The external conductor 155 is soldered or otherwise electrically connected to illustrated portion 123 of barrier plate 115 at a location above the attachment point of the electrical connection of portion 123 of the barrier element 115 to the tape 140a. However, the external conductor 155 may be attached to the conductive barrier element portion 123 illustrated at any portion thereof illustrated in FIG. 2.

**[0027]** Once the junction box 110 is installed and electrical connections have been made through housing cavity 108, a potting material can be added to cavity 108. In one example, potting material 165 may be injected into junction box 110 and may fill, or nearly fill, the interior of the junction box. Potting material 165 can serve at least three useful functions.

First, it may provide a moisture barrier that prevents moisture from reaching any inner surfaces of the module that are corrosion-prone. Second, the potting material may serve as an insulating material that prevents short circuiting. Third, the potting material can provide structural integrity to the components housed within the junction box. In particular, the potting material may envelop cable 155 to prevent undesired movement and disconnections.

[0028] In another embodiment, housing 120 may be formed by overmolding it to barrier element 115 after electrical connections have been made to the barrier element. In this case, the overmolding may fill an entire area between barrier element 115 and an outer surface of the junction box housing. As another alternative, housing 120 may be formed by overmolding it to barrier element 115 after electrical connections have been made to the barrier element 115 with the overmold housing 120 having a cavity therein which may be filled with a potting compound and with the housing 120 having a cover 121 or not having a cover 121.

[0029] Referring now to FIGs. 3A-3B and 4, another embodiment is illustrated. Like elements to those in FIGs. 1A, 1B, 2 have the same reference numbers. Referring to FIG. 3A, the underside of photovoltaic module 100 is depicted. Module 100 includes back cover panel 105, front cover panel 106, photovoltaic cells 107, and junction box 310.

[0030] A barrier element 315 is provided for junction box 310 which generally corresponds to the barrier element 115 of FIGs. 1A - 1B, 2 described above. Barrier element 315 may be formed of one of aluminum, copper, nickel, a polymeric material, or any other suitable non-ferrous metals.

[0031] A disassembled view of junction box 310 is depicted in FIG. 3A. Junction box 310 includes a housing 120 having a cavity 108 below a cover 121, a sealant material 145, and a barrier element 315. Barrier element 315 includes an electrically insulating material 335 which separates barrier element 315 into two electricity isolated conductive portions 330a, 330b. The electrically insulating material 335 allows for the two portions 330a, 330b of barrier element 315 to connect with respective internal conductors 345, 350 (FIG. 4) of module 100.

[0032] Barrier element 315 includes a peripheral edge 315c which extends around the periphery of the bottom surface of barrier element 315 along which ultrasonic welding can

occur. Ultrasonic welding can also occur along interior peripheral area 315d. The conductive barrier element 315 may be formed of aluminum, copper, nickel, or any other suitable non-ferrous metals. The housing 120 of junction box 310 may be overmolding to the barrier element 315 or otherwise affixed to the barrier element 315. In certain embodiments, housing 120 may be removably coupled to barrier element 315. Housing 120 has holes 130 which may receive external conductors 360, 365 (FIG. 3B).

[0033] The external conductors 360, 365 may be coupled to region 330a and region 330b, each region being further electrically coupled respectively to an internal conductor 345, 350 of module 100. Barrier element 315 is configured to cover opening 135 of the back cover panel 105 and provide a substantially water tight barrier once ultrasonically welded to back cover panel 105. As shown in FIGs. 3A and 4 internal module conductors 345 and 350 may extend through opening 135 and be folded back over back cover 105 and electrically contact under surfaces of conductive portions 330a and 330b. Internal conductors 345 and 350 may be associated with respective positive and negative bus bars or other conductive elements within module 100.

[0034] A sealant material 145 may be provided and applied between back cover panel 305 and junction box 310 in a recess in the area 315a of the barrier element 315. Sealant 145 may be one of a liquid sealant, such as a silicone-based sealant, and a tape-based sealant, such as Solar Acrylic Foam Tape manufactured by 3M or any other suitable sealant.

[0035] Barrier element 315 is ultrasonically welded to back cover 105 along a peripheral edge 315c and/or along an internal periphery 315d and provides, with sealant material 145, a moisture barrier for the opening 135 of back cover panel 105, the moisture barrier having a very low moisture vapor transmission rate.

[0036] Referring now to FIG. 4, a cross sectional view is depicted of the photovoltaic module 100 of FIG. 3B along the line C-C. As shown in FIG. 4, the conductive portions 330a and 330b, which are electrically separated by insulation material 335, are each respectively coupled to internal module conductors 350, 345 which are folded back on an upper surface of back cover 105. Conductors 350, 345 may be tape conductors which pass through the opening 135. The electrical interconnection of 330a and 330b to conductors 350, 345 can be made by ultrasonic welding, soldering, or other electrical connection techniques.

The first and second internal conductors 345 and 350 may be part of an internal bus system of module 100. After first and second internal conductors 345 and 350 have been folded back against the back cover panel 105, barrier element 315 is ultrasonically welded to back cover panel 105 to secure the electrical connection between the conductive portions 330a, 330b and respective internal conductors 350, 345.

[0037] Once junction box 310 is welded in place, external wires 360 and 365 which pass through openings 130 can be connected to conductive portions 330a, 330b. Wires 360 and 365 may be industry-standard connectors to allow for ease of installation. Within junction box 310, wires 360 and 365 can be electrically connected to internal conductors 345 and 350 being electrically connected to respective conductive portions connection 330a and 330b. This electrical connection can be made by ultrasonic welding, soldering, or other technique for electrically connecting conductors 360, 365 to respective portions 330b, 330a of barrier element 315.

[0038] Once electrical connections have been made, a potting material can be added to the cavity 108 within the housing 120. In one example, the potting material may be injected into the housing 120 and may fill, or nearly fill, the interior. Potting material may serve as an insulating material and can provide structural integrity to the components housed within the junction box 310. In particular, the potting material may envelop conductors 360 and 365 to prevent movement and undesired disconnection. A cover 121 may be installed over the filled cavity 108.

[0039] Referring now to FIG. 5, one method is depicted for coupling a junction box to a photovoltaic module according to one embodiment. Method 500 may be initiated by positioning a junction box 110 or 310 having an overmolded barrier (115 or 315) adjacent to a back cover panel at block 505. A sealant material 145 can be applied to the underside of the junction box or cover panel 115 prior to positioning the junction box 110, 310 adjacent to the back cover panel 105. The junction box 110, 310 may be positioned and barrier element (115, 315) can be ultrasonically welded to the back cover panel 105 at block 510.

[0040] Ultrasonic welding can include any industrial technique where high-frequency ultrasonic acoustic vibrations are applied to create a weld between similar or dissimilar materials. The welding may be performed by an ultrasonic welding machine. Ultrasonic

welding works particularly well with thin metals, since they are unable to effectively dissipate all heat generated by the ultrasonic waves and, therefore, melt at the joint area. Upon cooling, the metal solidifies to form joints. Ultrasonic welding of the barrier element of a junction box to a back cover panel of a photovoltaic module provides an instant tack time.

**[0041]** Referring now to FIG. 6, one method is depicted for forming a junction box according to one or more embodiments. Method 600 may be initiated by forming a conductive barrier element (115, 315) at block 605. The barrier element (115, 315) is configured to allow ultrasonic welding to a back cover 105 of a module 100. At block 610, a housing 120 may be coupled to the barrier element. The housing 120 may be overmolded to the barrier element or otherwise affixed thereto.

**[0042]** While this disclosure has been particularly shown and described with references to exemplary embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the scope of the disclosure encompassed by the appended claims.

## CLAIMS

What is claimed is:

1. A photovoltaic module comprising:
  - a front cover panel;
  - a back cover panel;
  - a plurality of photovoltaic cells between the front cover panel and back cover panel;
  - a plurality of internal conductors connected to said plurality of photovoltaic cells and accessible through an opening in said back cover panel; and
  - a junction box including a conductive barrier element having a plurality of conductive portions respectively electrically connected to said plurality of internal conductors, said barrier element being ultrasonically welded to the back cover panel.
2. The photovoltaic module of claim 1, wherein said barrier element is configured to surround and seal the opening of the back cover panel.
3. The photovoltaic module of claim 2, wherein said conductive portions of the barrier element extend into said opening and contact a respective internal conductor in the opening of the back cover panel.
4. The photovoltaic module of claim 1, further comprising a sealant between said barrier element and the back cover panel.
5. The photovoltaic module of claim 1, wherein the barrier element is formed of a non-ferrous metal.

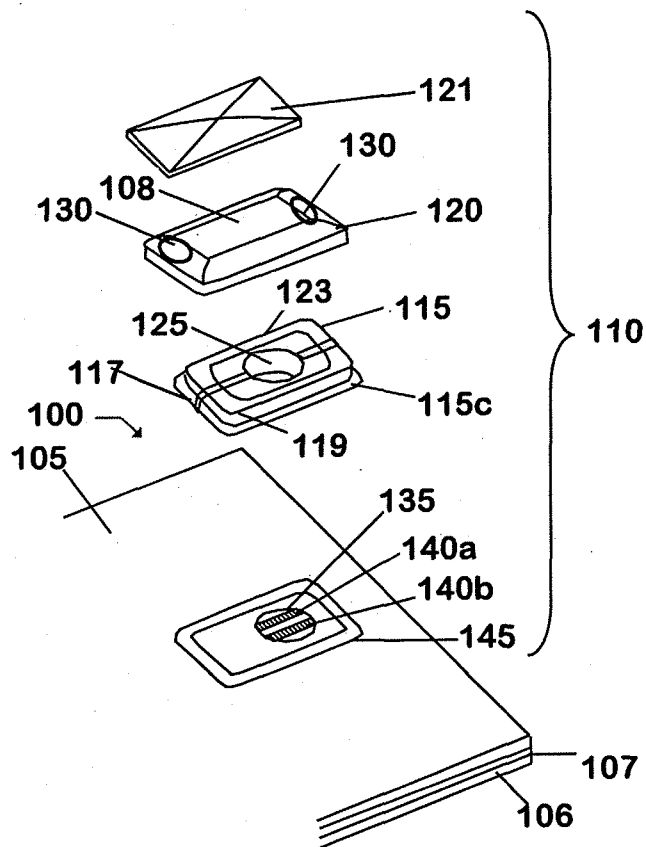
6. The photovoltaic module of claim 1, wherein the barrier element is formed of a polymeric material.
7. The photovoltaic module of claim 1, wherein the barrier element includes at least two conductive portions and an insulation region separating them.
8. The photovoltaic module of claim 7, wherein the at least two conductive portions each secure a respective internal conductor against the back cover panel.
9. The photovoltaic module of claim 3, wherein said conductive portions each include a respective area to which an external electrical conductor is attached.
10. The photovoltaic module of claim 9, wherein each said external conductor is attached to a respective conductive portion at a location within said opening.
11. The photovoltaic module of claim 8, wherein the internal conductors extend out of said opening and are folded over said back cover panel.
12. The photovoltaic module of claim 11, wherein said conductive portions each include a respective area to which an external electrical conductor is attached.
13. The photovoltaic module of claim 1, wherein the junction box further comprises a housing having a cavity provided over said opening, said housing being overmolded to the barrier element.
14. The photovoltaic module of claim 13, wherein the junction box further comprises a cover for closing said cavity.

15. The photovoltaic module of claim 13, wherein the junction box includes a potting material which fills said cavity.
16. The photovoltaic module of claim 1, wherein the junction box further comprises a housing overmolded to the barrier element, said housing filling an area between the barrier element and outer surface of the housing.
17. The photovoltaic module of claim 1, wherein the conductive barrier is configured to provide a moisture barrier to the opening in the back cover panel.
18. The photovoltaic module of claim 4, wherein said sealant is provided within a recess of said barrier element.
19. A junction box comprising:
- a housing;
  - a conductive barrier element provided within said housing and having two electrically isolated conductive portions for electrically interconnecting internal conductors of a photovoltaic module with external conductors;
  - said barrier element being formed of a material which is ultrasonically weldable to said module.
20. The junction box of claim 19, wherein said housing contains a cavity for permitting access to areas of said conductive portions of said barrier element.
21. The junction box of claim 20, further comprising a peripheral area in said barrier element for receiving a sealing material.

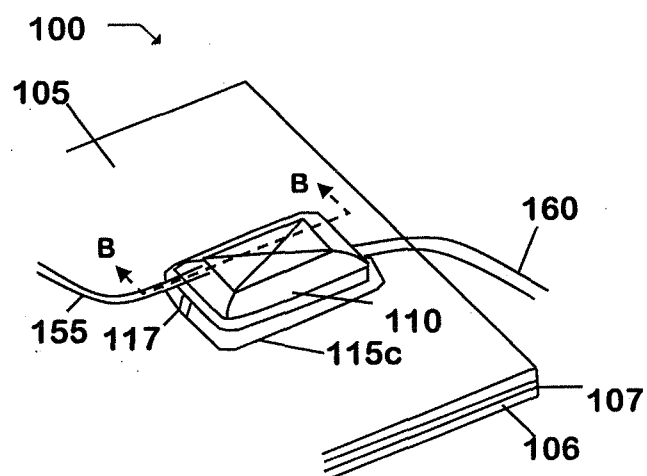
22. The junction box of claim 21, wherein said peripheral area includes a recess for receiving said sealing material.
23. The junction box of claim 19, wherein said conductive portions are configured to extend into an opening in said module and contact with respective said internal conductors.
24. The junction box of claim 19, wherein the conductive portions are each configured to secure a respective internal conductor against a module surface.
25. The junction box of claim 19, wherein the conductive portions of the barrier element are formed of a non-ferrous metal.
26. The junction box of claim 19, wherein conductive portions of the barrier element are formed of a polymeric material.
27. The junction box of claim 19, wherein the barrier element has an outer peripheral area for enabling ultrasonic welding of said barrier element.
28. The junction box of claim 19, wherein the barrier element has an inner peripheral area for enabling ultrasonic welding of said barrier element.
29. The junction box of claim 19, further comprising a housing overmolded to the barrier element.

30. The junction box of claim 19, further comprising a cover configured to be attached to close a cavity in said housing.

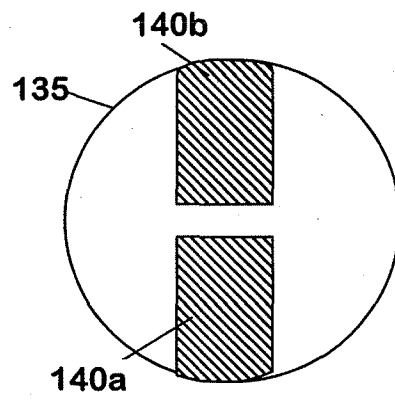
31. The junction box of claim 19, wherein each of said conductive portions has an area for electrical connection to a respective external conductor.



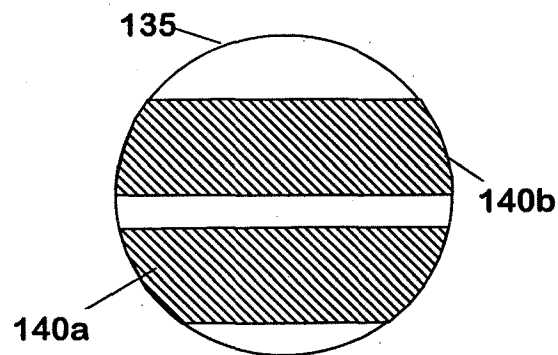
**FIG.1 A**



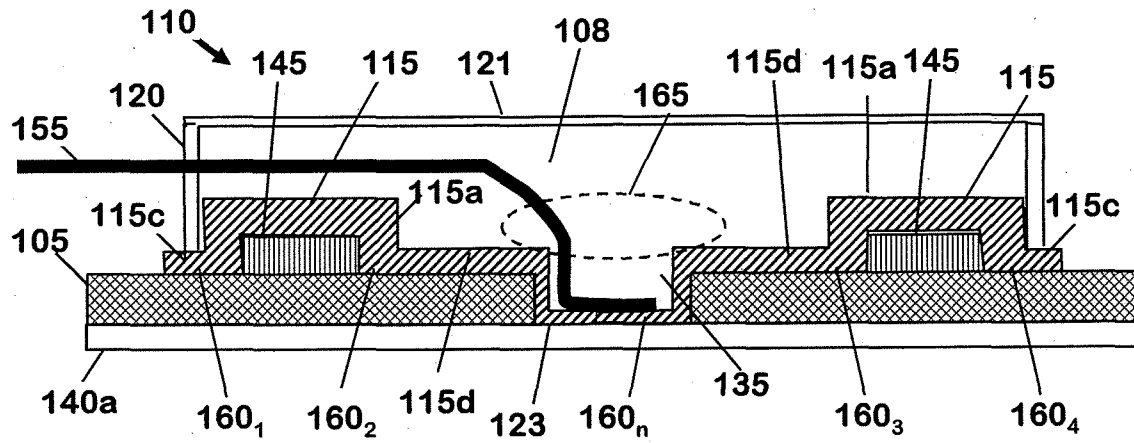
**FIG.1 B**



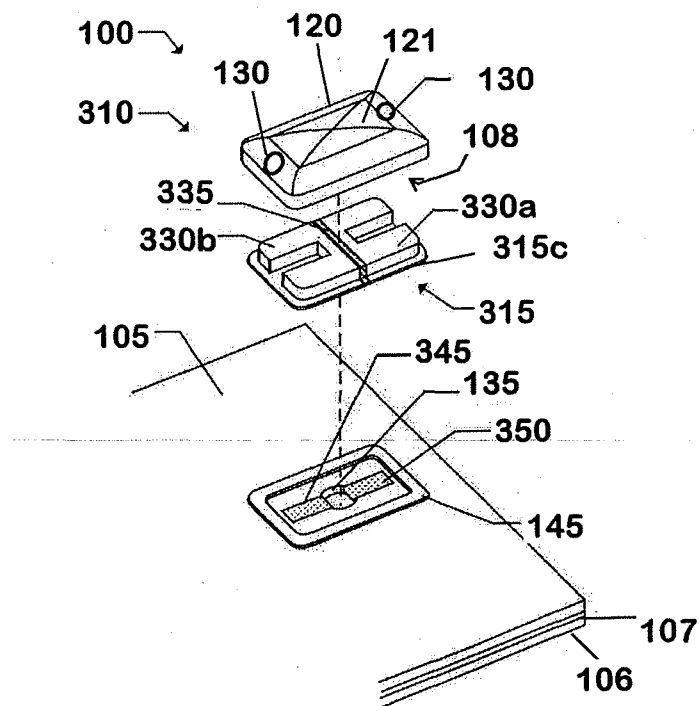
***FIG. 1 C***



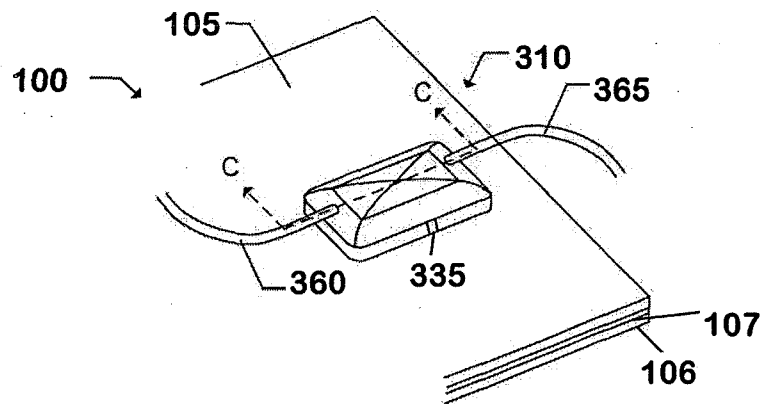
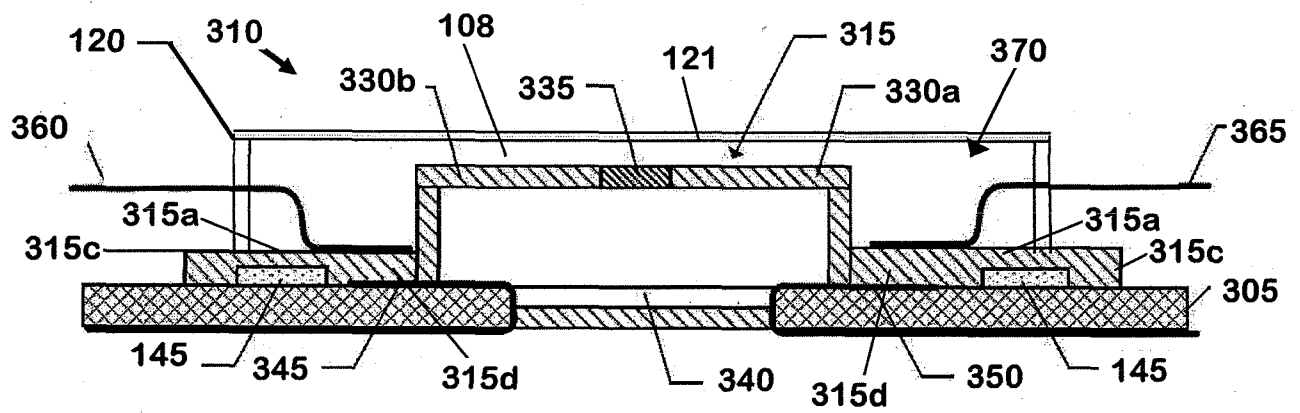
***FIG. 1 D***

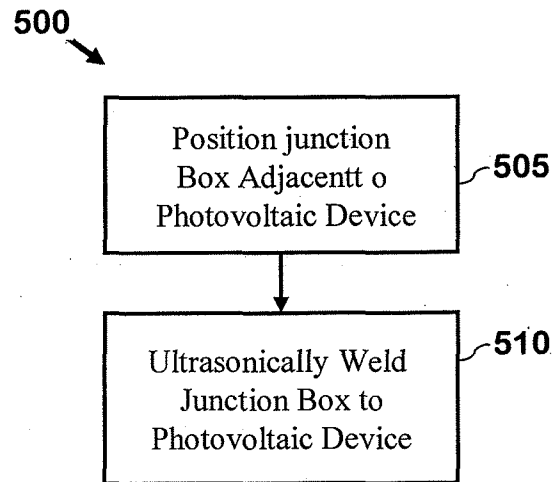
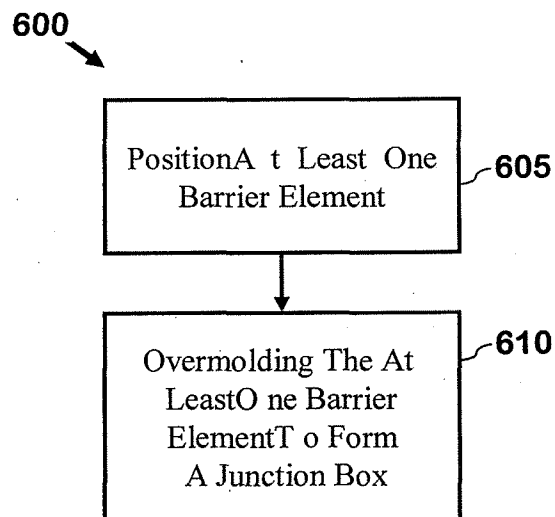


**FIG. 2**



**FIG.3 A**

**FIG. 3 B****FIG. 4**

**FIG.5****FIG.6**

## INTERNATIONAL SEARCH REPORT

International application No

PCT/US2012/061630

A. CLASSIFICATION OF SUBJECT MATTER  
INV. H01L31/048  
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                                                                                      | Relevant to claim No.                 |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| X         | DE 20 2010 005210 U1 (KUMATEC SONDERMASCHB & KUNSTST [DE]) 29 July 2010 (2010-07-29)                                                                                                                    | 1-12,14,<br>19,20,<br>23-28,<br>30,31 |
| Y         | paragraph [0046] - paragraph [0055];<br>claims 1-18; figures 1-10                                                                                                                                       | 13,<br>15-18,<br>21,22,29             |
| Y         | -----<br>US 2010/105245 A1 (GOOD ROBERT SCOTT [US]<br>ET AL) 29 April 2010 (2010-04-29)<br><br>paragraph [0017] - paragraph [0043];<br>figures 1-6                                                      | 13,<br>15-18,<br>21,22,29             |
| A         | -----<br>WO 2009/129405 A2 (MOLEX INC [US];<br>MCGREEVY SEAN [IE]; SHANAHAN MAURICE [IE];<br>COMMANE PET) 22 October 2009 (2009-10-22)<br>paragraph [0025] - paragraph [0054];<br>figures 1-14<br>----- | 1-31                                  |



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents :

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Date of the actual completion of the international search

23 January 2013

Date of mailing of the international search report

30/01/2013

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040,  
Fax: (+31-70) 340-3016

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Stirn, Jean-Pierre

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/061630

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
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