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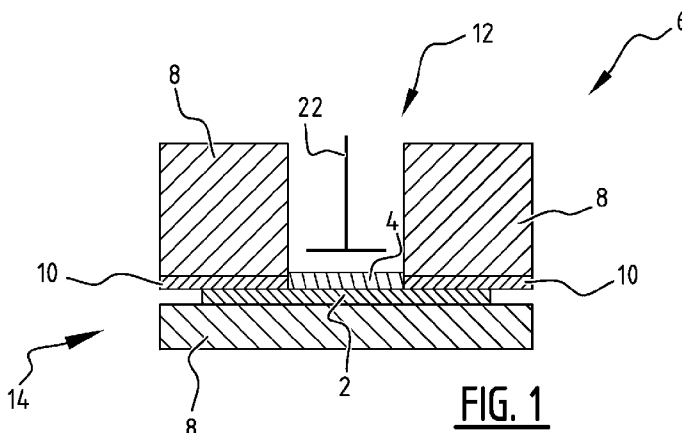
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(54) Title: METHOD TO PRODUCE ELECTRICALLY ISOLATED OR INSULATED AREAS IN A METAL, AND A PRODUCT COMPRISING SUCH AREA



**FIG. 1**

(57) Abstract: The present invention relates to a method to produce electrically isolated or insulated areas in a metal, and a product comprising such area. The method according to the invention comprising the steps of: -providing a metallic structure; -performing a plasma electrolytic oxidation and/or anodization process such that an oxide layer is achieved on an area of the metallic structure; and -electrically isolating a part of the metallic structure by removing part of the metallic structure and/or connecting a further metallic structure to the metallic structure with the oxide layer.



# INTERNATIONAL SEARCH REPORT

International application No PCT/NL2016/050372
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. C25D11/02      C25D11/20      H05K3/02 ADD.				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) C25D H05K				
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				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 2006/046485 A1 (MAENG DUCK Y [KR] ET AL) 2 March 2006 (2006-03-02) abstract figures 2a-2k paragraphs [0043] - [0054] claim 1 -----	1-7, 14-16		
X	FR 2 466 103 A1 (LEROUZIC JEAN [FR]) 27 March 1981 (1981-03-27) page 1, line 1 - line 5 page 6, paragraph 4 - page 10, line 15 claim 1 figure 2 -----	1-3, 14-16		
X	JP 2011 063887 A (ONO SACHIKO; SHOWA DENKO KK) 31 March 2011 (2011-03-31) abstract figure 1 paragraph [0042] -----	1-6,14		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
* Special categories of cited documents : <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;">                     "A" document defining the general state of the art which is not considered to be of particular relevance                      "E" earlier application or patent but published on or after the international filing date                      "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)                      "O" document referring to an oral disclosure, use, exhibition or other means                      "P" document published prior to the international filing date but later than the priority date claimed                 </td> <td style="width: 50%; border: none; vertical-align: top;">                     "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention                      "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone                      "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art                      "&amp;" document member of the same patent family                 </td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family			
Date of the actual completion of the international search	Date of mailing of the international search report			
31 October 2016	05/01/2017			
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	Authorized officer  Picard, Sybille			

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/NL2016/050372

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
3.  Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2.  As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

2(completely); 1, 3-7, 14-16(partially)

### Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

**FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210**

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 2(completely); 1, 3-7, 14-16(partially)

method to produce an electrically isolated area in a metal comprising the steps of providing a metallic structure; masking parts of the structure; performing a PEO and/or anodisation such that an oxide layer is achieved on unmasked areas; electrically isolating a part of the metallic structure by removing part of the metallic structure and the product thereby obtained

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2. claims: 8-11(completely); 1, 3-7, 14-16(partially)

method to produce an electrically isolated area in a metal comprising the steps of providing a metallic structure; performing a PEO and/or anodisation such that an oxide layer on one side is achieved; electrically isolating a part of the metallic structure by removing part of the metallic structure with an electro chemical machining (ECM) process such that grooves or openings are provided and that grooves reach the the ceramic layer and the product thereby obtained

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3. claims: 12, 13(completely); 1, 3-7, 14-16(partially)

method to produce an electrically isolated area in a metal comprising the steps of providing a metallic structure; performing a PEO and/or anodisation such that an oxide layer is achieved; electrically isolating a part of the metallic structure by connecting a further metallic structure to the metallic structure with the oxide layer and the product thereby obtained

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/NL2016/050372
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Patent document cited in search report		Publication date		Patent family member(s)	Publication date
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