Ground structure and electrical connector using the same

A ground structure is to be connected to a cable having a plurality of cable conductors, an outer braid for covering the cable conductors, and an outer covering for covering the outer braid. The ground structure includes a folded part of the outer braid which is folded back on the outer covering, an elastic member arranged between the folded outer braid and the outer covering and having an elasticity to push the folded outer braid outwardly, and a ground member positioned on and contacting the folded outer braid and having at least one scraping and contacting protrusion for scraping away a surface treatment layer of a shell, thereby achieving the grounding between the cable and the shell in a simple manner without requiring troublesome operations, and providing an electrical connector using such a ground structure.
**DOCUMENTS CONSIDERED TO BE RELEVANT**

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document with indication, where appropriate, of relevant passages</th>
<th>Relevant to claim</th>
<th>CLASSIFICATION OF THE APPLICATION (IPC)</th>
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<tr>
<td>X</td>
<td>US 3 435 126 A (HAMILTON DOUGLAS L P) 25 March 1969 (1969-03-25) * column 1 - column 3; figures 1-3 *</td>
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<td>A</td>
<td>GB 693 929 A (BRITISH INSULATED CALLENDERS) 8 July 1953 (1953-07-08) * the whole document *</td>
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<td>TECHNICAL FIELDS SEARCHED (IPC)</td>
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<td>A</td>
<td>US 4 854 891 A (KAMEI TAKEO [JP] ET AL) 8 August 1989 (1989-08-08) * column 2, line 31 - line 68; figures 3-6 *</td>
<td>1-3</td>
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The present search report has been drawn up for all claims.

Place of search: Munich  
Date of completion of the search: 20 April 2010  
Examiner: Durand, François

**CATEGORY OF CITED DOCUMENTS**

X: particularly relevant if taken alone  
Y: particularly relevant if combined with another document of the same category  
A: technological background  
P: intermediate document  
T: theory or principle underlying the invention  
E: earlier patent document, but published on, or after the filing date  
D: document cited in the application  
L: document cited for other reasons  
F: member of the same patent family, corresponding document
### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

- [ ] Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

- [ ] No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

- see sheet B

- [ ] All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

- [ ] As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

- [ ] Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

  1-3

- [ ] The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).
The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-3
   Invention 1 relates to a ground structure to be connected to a cable having a plurality of cable conductors
   
2. claims: 4-7
   Invention 2 relates to an electrical connector to be connected to a cable having a plurality of conductors
   
3. claims: 8, 9
   Invention 3 relates to a ground structure to be connected to a cable for use with an electrical connector including a front insert and a rear insert
   
4. claims: 10, 11
   Invention 4 relates to an electrical connector including a front insert and a rear insert formed from an insulating material
This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on 20-04-2010. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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<tr>
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For more details about this annex: see Official Journal of the European Patent Office, No. 12/82.