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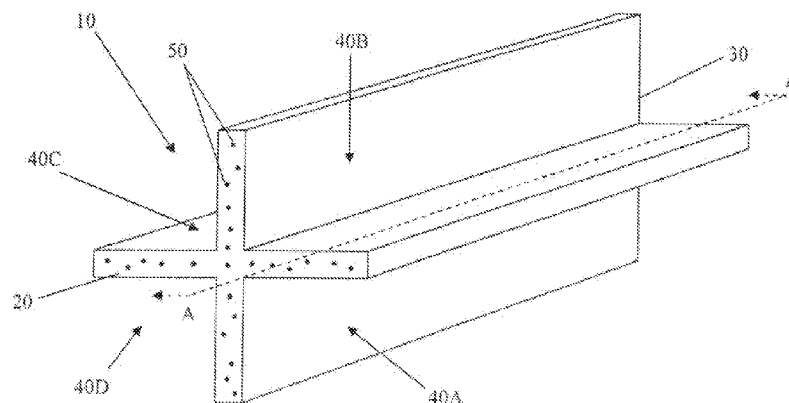
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(54) Title: COMPOSITIONS, METHODS, AND DEVICES PROVIDING SHIELDING IN COMMUNICATIONS CABLES



(57) Abstract: Compositions, devices, and methods for providing shielding communications cables are provided. In some embodiments, compositions including electrically conductive elements are disclosed. In other embodiments, cable separators, tapes, and nonwoven materials including various electrically conductive elements are disclosed.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/030395

A. CLASSIFICATION OF SUBJECT MATTER

INV. H01B11/08 C08K3/04 C08K3/08 C08K3/22 C08L23/00
C08L27/00 H01B1/20 H01B3/44 H01B9/02

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)

C08K C08L H01B

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)

EP0-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.
A	US 2003/096897 A1 (NIELSON DANIEL B [US] ET AL) 22 May 2003 (2003-05-22) examples	1-23
A	----- WO 2005/012411 A1 (UNIV AKRON [US]; MUKERREM CAKMAK [US]; YUMA KONISHI [US]) 10 February 2005 (2005-02-10) claims	1-23
A	----- GB 2 350 476 A (ASEA BROWN BOVERI [SE]; ABB AB [SE]) 29 November 2000 (2000-11-29) page 9, lines 5-24 - page 5; claim 14; figure 1	1-23
X	----- WO 98/48430 A1 (CABLE DESIGN TECHNOLOGIES INC [US]) 29 October 1998 (1998-10-29) page 4, line 29 - page 5, line 10; claims; figures; examples	1-23
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Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

"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

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"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

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INTERNATIONAL SEARCH REPORT

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007/102188 A1 (GLEW CHARLES A [US]) 10 May 2007 (2007-05-10) claims 23-29 -----	1-23
X	US 7 637 776 B2 (MCNUTT PATRICK S [US] ET AL) 29 December 2009 (2009-12-29) claims; figures -----	1-23
X	GB 2 227 033 A (KITAGAWA IND CO LTD [JP]) 18 July 1990 (1990-07-18) page 2, line 13 - page 4, line 8; claims -----	29-47
X	EP 2 034 491 A2 (HEW KABEL CDT GMBH & CO KG [DE] HEW KABEL GMBH [DE]) 11 March 2009 (2009-03-11) paragraph [0008]; claims; figures -----	29-47
X	KR 2009 0092630 A (SEOUL NAT UNIV IND FOUNDATION [KR]) 1 September 2009 (2009-09-01) the whole document -----	29-47
X	KR 100 898 587 B1 (SCC CO LTD [KR]) 20 May 2009 (2009-05-20) the whole document -----	29-47

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/030395

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.:

1-23, 29-47
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.:

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: 1-23

A separator for use in a telecommunication cable having at least one channel adapted for receiving a plurality of conductors, comprising a fluoropolymer and a plurality of electrically conductive elements distributed therein.

2. claim: 24

A separator for use in a cable having at least two channels adapted for receiving a plurality of conductors, comprising a polymeric structure and an electrically conductive element embedded in said polymeric structure.

3. claims: 25-28

A separator for use in a cable having at least two channels adapted for receiving a plurality of conductors, comprising a polymeric structure and an electrically conductive layer formed on at least a portion of an outer surface of the polymeric structure.

4. claims: 29-47

A separator for use in a telecommunications cable, comprising a plurality of electrically conductive elements distributed within a polymeric fibers assembled as a non-woven fabric.

5. claims: 48-61

A communications cable, comprising at least a pair of insulated twisted conductors, and a non-woven tape wrapped around said twisted pair of conductors, wherein said non-woven tape comprises a fluoropolymer and plurality of electrically conductive elements distributed therein.

6. claims: 66-74, 83-85(completely); 62-65, 75-82, 86-91(partially)

A pellet composition, comprising a fluoropolymer and a plurality of electrically conductive elements distributed within.

7. claims: 62-65, 75-82, 86-91(all partially)

A pellet composition, comprising a polyolefin and a

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

plurality of electrically conductive elements distributed within.

8. claims: 92-117

A foamable composition, comprising at least one base fluoropolymer having distributed within a plurality of electrically conductive elements and a chemical foaming agent.

9. claims: 118-127

A jacket for a cable, comprising a polymeric shell and an electrically conductive layer embedded in said polymeric shell.

10. claims: 128, 129

A jacket for a cable, comprising a polymeric shell and a plurality of electrically conductive elements distributed within said shell.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2013/030395

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