

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: Wehrli *et al.*

Application number: 16/356,825

Filed: March 18, 2019

For: *Improved High Performance Data Communications Cable*

Attorney Docket No.: 096001-1249 (BEL-001USCN3)

Art Unit: 2847

Examiner: Mayo III, William H.

Conf. No.: 1328

VIA EFS WEB FILING WWW.USPTO.GOV

MS Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND RESPONSE TO NON-FINAL OFFICE ACTION

Dear Examiner Mayo:

INTRODUCTORY COMMENTS

This Amendment and Response is filed responsive to the non-final Office Action dated January 8, 2020. In view of the comments set forth below, Applicants respectfully urge reconsideration, withdrawal of the outstanding rejections and allowance of the Claims.

Amendments to the Claims are reflected in the **Listing of Claims**, which begins on page 2 of this paper.

Remarks/Arguments begin on page 13 of this paper.

Electronic Acknowledgement Receipt	
EFS ID:	39095177
Application Number:	16356825
International Application Number:	
Confirmation Number:	1328
Title of Invention:	HIGH PERFORMANCE DATA COMMUNICATIONS CABLE
First Named Inventor/Applicant Name:	Andrew John Wehrli
Customer Number:	48329
Filer:	Daniel Rose/Jennifer Davis
Filer Authorized By:	Daniel Rose
Attorney Docket Number:	096001-1249(BEL-001USCN3)
Receipt Date:	08-APR-2020
Filing Date:	18-MAR-2019
Time Stamp:	15:08:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		2020-04-08_096001-1249_Ame ndment.pdf	219662	yes	15
			63d33fc4a3cc927c9610a02a64b652e00d6 06fe5		

Multipart Description/PDF files in .zip description			
Document Description		Start	End
Applicant Arguments/Remarks Made in an Amendment		13	15
Claims		2	12
Amendment/Req. Reconsideration-After Non-Final Reject		1	1

Warnings:

Information:

Total Files Size (in bytes):	219662
-------------------------------------	--------

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

REMARKS

Claims 1-53 were presented for examination. Claim 1-9 were allowed, and Claims 10-53 were rejected. Claims 10, 17, 23, 34, 38, 47, and 52-53 are amended; and Claims 16, 33, and 46 are canceled herein. No new matter has been added. Support for the amendments may be found throughout the disclosure and in at least Claims 16, 33, and 46 as originally filed. Upon entry of the present amendment, Claims 1-15, 17-32, 34-45, and 47-53 will be pending, of which Claims 1, 10, 23, 38, and 51-53 are independent. Applicants submit that Claims 1-15, 17-32, 34-45, and 47-53 are patentable and in condition for allowance.

The following comments address all stated grounds of rejection. Applicants traverse all pending rejections and urge the Examiner to pass the Claims to allowance in view of the remarks set forth below.

ALLOWED CLAIMS

Applicants thank the Examiner for identifying Claims 1-9 as allowed.

CLAIM REJECTIONS UNDER 35 U.S.C. §102**I. Claims 10-53 Rejected under 35 U.S.C. §102**

Claims 10-53 were rejected under 35 U.S.C. §102(a)(1) as anticipated by U.S. Publication No. 2012/0222883 to Nordin *et al.* (“Nordin”). Claims 10, 23, 38, and 51 are independent Claims. Claims 16, 33, and 46 are canceled herein, rendering the rejection moot with respect to these Claims. Applicants traverse this rejection and submit that Nordin fails to teach or suggest each and every limitation of pending Claims 10-15, 17-32, 34-45, and 47-53.

A. Independent Claims 10, 23, 38, 52, and 53 Not Anticipated by Nordin

A claim is anticipated only if every limitation as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. As amended herein and in part, independent Claims 10, 23, 38, 52, and 53 recite a barrier tape that comprises “a conductive layer positioned between a first non-conductive layer and a second non-conductive layer.” This limitation previously appeared in Claims 16, 33, and 46. In rejecting those Claims, the Examiner contends that Nordin describes a “barrier tape (32) [that] comprises a conductive material (34)

contained between two outer layers of a dielectric material (35, Fig. 4).” (Page 4) Respectfully, this is incorrect, as Nordin describes the opposite.

Specifically, at para. 15, Nordin describes a barrier tape (32) that includes a *non-conductive insulating substrate* (42) contained between *two outer layers of a conductive material* (34, 38). Similarly, at para. 17 describing Fig. 3, Nordin describes “patterned conductive segments *on an insulative substrate*.” Likewise, at para. 24 describing Fig. 4 (reproduced below), Nordin describes conductive segments 34 and 38 “attached to a common insulative substrate 42.”

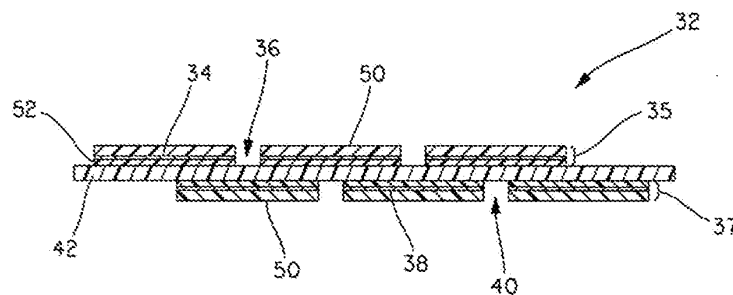


FIG. 4

Accordingly, Nordin’s barrier tape includes a non-conductive layer (42) contained between two outer layers of conductive materials (34, 38), rather than the opposite.

Nordin does describe individual segments of the conductive pattern in layers 35 and 37 at para. 23, stating that “each barrier layer includes a substrate 50 and conductive segments 34 or 38” and that “substrate 50 is an insulative material.” However, each segment includes only a single insulative portion and conductive portion, and thus do not include a conductive layer positioned between a first non-conductive layer and a second non-conductive layer.

Because Nordin fails to disclose each and every element of independent Claims 10, 23, 38, 52, and 53 as amended herein, Applicants submit that these Claims, as well as Claims 11-15, 17-22, 24-32, 34-37, 39-45, and 47-50 that depend therefrom, are patentable and in condition for allowance. Accordingly, Applicants respectfully request the Examiner to withdraw the rejection of Claims 10-15, 17-32, 34-45, 47-50, and 52-53 under 35 U.S.C. §102.

B. Independent Claim 51 Not Anticipated by Nordin

Claim 51 recites, in part, a barrier tape “including an electrically conductive layer enclosed between inner and outer dielectric layers.” As discussed above in connection with the rejection of Claims 10, 23, 38, 52, and 53, Nordin fails to disclose a barrier tape including an electrically conductive layer enclosed between inner and outer dielectric layers, and instead describes an insulating substrate positioned between discontinuous conductive segments. Accordingly, Nordin also fails to disclose at least the above limitation of Claim 51.

For at least the above-discussed reasons, Applicants respectfully request the Examiner to withdraw the rejection of Claim 51 under 35 U.S.C. §102.

CONCLUSION

In light of the aforementioned amendments and arguments, Applicants contend that each of the Examiner’s rejections have been adequately addressed and all of the pending Claims are in condition for allowance. Accordingly, Applicants respectfully request reconsideration, withdrawal of all grounds of rejection, and allowance of all of the pending Claims.

Should the Examiner feel that a telephone conference with Applicants’ attorney would expedite prosecution of this application, the Examiner is urged to contact the Applicants’ attorney at the telephone number identified below.

Respectfully submitted,

FOLEY & LARDNER LLP

Date: April 8, 2020

Foley & Lardner LLP
111 Huntington Avenue
Boston, MA 02199
Tel: (617) 342-4000

/Daniel Rose/
Daniel E. Rose
Registration No. 63,214

AMENDMENTS TO THE CLAIMS

Upon entry, the following Listing of Claims will be currently pending in this application.

Listing of Claims

1. (Original) A cable for reducing alien cross-talk and return loss between adjacent twisted pairs

of conductors comprising:

a first twisted pair of conductors having a first side portion and a first outwardly facing portion;

a second twisted pair of conductors having a second side portion and a second outwardly facing portion;

a filler member configured to non-conductively shield the first side portion of the first twisted pair of conductors from the second side portion of the second twisted pair of conductors;

a barrier tape configured to encircle the filler member and the first and second outwardly facing portions of the first and second twisted pairs of conductors so as to non-conductively shield the first and second outwardly facing portions of the first and second twisted pairs of conductors;

a jacket configured to encircle the barrier tape;

wherein the second twisted pair of conductors is located adjacent to a portion of the filler member, and wherein the first twisted pair of conductors is located adjacent to the portion of the filler member;

wherein the barrier tape includes a non-conductive layer and a conductive layer;

wherein the filler member is made of a non-conductive material;

wherein the filler member includes a plurality of arms that are each configured to radially extend outwardly so as to form a first channel shaped to partially enclose the first twisted pair of conductors and a second channel shaped to partially enclose the second twisted pair of conductors;

wherein the first terminal portion of the filler member includes a first outwardly facing terminal surface, the second terminal portion of the filler member includes a second outwardly facing terminal surface, and the barrier tape is configured to encircle the first and second outwardly facing terminal surfaces and the first and second twisted pairs of conductors;

wherein the filler member is configured to extend along a longitudinal portion of the cable and is configured to non-conductively shield the first and second twisted pairs of conductors from being electrically coupled to each other along the longitudinal portion of the cable.

2. (Original) The cable of claim 1, wherein the filler member comprises a single unitary component of the cable, and the plurality of arms of the filler member form a cross shape.
3. (Original) The cable of claim 1, wherein the non-conductive layer of the barrier tape comprises a first non-conductive layer and the barrier tape includes a second non-conductive layer.
4. (Original) The cable of claim 3, wherein the conductive layer of the barrier tape is positioned between the first and second non-conductive layers.
5. (Original) The cable of claim 3, wherein the first non-conductive layer comprises an inner non-conductive layer and the second non-conductive layer comprises an outer non-conductive layer.

6. (Original) The cable of claim 1, wherein the filler member and the barrier tape are configured to extend along a longitudinal direction of the cable.
7. (Original) The cable of claim 1, wherein the first and second twisted pairs of conductors comprise first and second helically twisted pairs of conductors along the longitudinal portion of the cable, and the filler member and the barrier tape are configured to non-conductively shield the first and second helically twisted pairs of conductors along the longitudinal portion of the cable.
8. (Original) The cable of claim 1, wherein the first and second twisted pairs of conductors comprise first and second helically twisted pairs of conductors along the longitudinal portion of the cable, and the filler member is configured to non-conductively shield the first and second helically twisted pairs of conductors along the longitudinal portion of the cable.
9. (Original) The cable of claim 1, wherein the filler member is helically twisted at a first angle relative to a longitudinal direction of the cable, and the barrier tape is configured to be helically twisted at a second angle relative to the longitudinal direction of the cable.
10. (Currently Amended) A cable for reducing electromagnetic interference between pairs of conductors in the cable comprising:
 - a first pair of conductors;
 - a second pair of conductors;
 - a non-conductive filler member configured to non-conductively separate the first pair of conductors from the second pair of conductors so as to reduce electromagnetic interference between the first and second pairs of conductors during operation of the cable;

a multi-layer barrier tape configured to encircle the non-conductive filler member and the first and second pairs of conductors, wherein the multi-layer barrier tape comprises a conductive layer positioned between a first non-conductive layer and a second non-conductive layer;

wherein the non-conductive filler member includes a first terminal portion and a second terminal portion;

wherein the non-conductive filler member and the multi-layer barrier tape are configured to reduce electromagnetic interference between the first and second pairs of conductors of the cable by non-conductively shielding the first and second pairs of conductors from being electrically coupled to each other.

11. (Original) The cable of claim 10, wherein the first pair of conductors comprises a first twisted pair of conductors, and the second pair of conductor comprises a first twisted pair of conductors.
12. (Original) The cable of claim 10, wherein the non-conductive filler member comprises a single unitary component of the cable, and the second pair of conductors is located adjacent to the first pair of conductors.
13. (Original) The cable of claim 10, further comprising a jacket configured to encircle the multi-layer barrier tape.
14. (Original) The cable of claim 10, wherein the non-conductive filler member includes a plurality of arms that are each configured to radially extend outwardly so as to form a first channel shaped to partially enclose the first pair of conductors and a second channel shaped to partially enclose the second pair of conductors.

15. (Original) The cable of claim 10, wherein the multi-layer barrier tape includes a non-conductive layer and a conductive layer.
16. (Canceled).
17. (Currently Amended) The cable of claim ~~[[16]]~~ 10, wherein the first non-conductive layer comprises an inner non-conductive layer and the second non-conductive layer comprises an outer non-conductive layer.
18. (Original) The cable of claim 10, wherein the non-conductive filler member is configured to extend along a longitudinal portion of the cable so as to non-conductively shield the first and second pairs of conductors along the longitudinal portion of the cable.
19. (Original) The cable of claim 10, wherein the first and second pairs of conductors are each twisted along a longitudinal portion of the cable, and the non-conductive filler member and the multi-layer barrier tape are configured to non-conductively shield the first and second pairs of conductors twisted along the longitudinal portion of the cable.
20. (Original) The cable of claim 10, wherein the first and second pairs of conductors are each helically twisted along a longitudinal portion of the cable, and the non-conductive filler member and the multi-layer barrier tape are configured to non-conductively shield the first and second pairs of conductors each helically twisted along the longitudinal portion of the cable.
21. (Original) The cable of claim 10, wherein the first pair of conductors comprises a first twisted pair of conductors, and the second pair of conductors comprises a second twisted pair of conductors.
22. (Original) The cable of claim 10, wherein the filler member and the multi-layer barrier tape are configured to extend along a longitudinal portion of the cable and are configured to

reduce electromagnetic interference between the first and second pairs of conductors along the longitudinal portion of the cable by non-conductively shielding the first and second pairs of conductors from being electrically coupled to each other along the longitudinal portion of the cable.

23. (Currently Amended) A cable having reduced electromagnetic cross-talk between conductor pairs comprising:

a filler portion configured to electromagnetically separate a first conductor pair from a second conductor pair so as to reduce electromagnetic cross-talk between the first and second conductor pairs during operation of the cable;

a barrier portion configured to encircle the filler portion and the first and second conductor pairs so as to non-conductively shield the first and second conductor pairs and reduce electromagnetic cross-talk between the first and second conductor pairs during operation of the cable, wherein the barrier portion comprises a conductive layer positioned between a first non-conductive layer and a second non-conductive layer;

wherein the filler portion and the barrier portion are configured to reduce electromagnetic cross-talk between the first and second conductor pairs of the cable by non-conductively shielding the first and second conductor pairs from being electrically coupled to each other; and

wherein the filler portion and the barrier portion are configured to extend along a longitudinal portion of the cable so as to reduce electromagnetic cross-talk between the first and second conductor pairs along the longitudinal portion of the cable.

24. (Original) The cable of claim 23, wherein the filler portion comprises a filler member, and the barrier portion comprises a tape member.

25. (Original) The cable of claim 24, wherein the filler member comprises a single unitary filler component of the cable, and the filler member and the tape member are separate and distinct components from each other.
26. (Original) The cable of claim 23, wherein the barrier portion comprises a multi-layer barrier tape.
27. (Original) The cable of claim 23, wherein the first conductor pair comprises a first twisted conductor pair, and the second conductor pair comprises a second twisted conductor pair.
28. (Original) The cable of claim 23, wherein the first conductor pair includes a first side portion and a first outwardly facing portion, and the second conductor pair includes a second side portion and a first outwardly facing portion.
29. (Original) The cable of claim 23, wherein the second conductor pair is located adjacent to the first conductor pair.
30. (Original) The cable of claim 23, further comprising a jacket configured to encircle the barrier portion.
31. (Original) The cable of claim 23, wherein the filler portion includes a plurality of arms that are each configured to radially extend outwardly so as to form a first channel shaped to partially enclose the first conductor pair and a second channel shaped to partially enclose the second conductor pair.
32. (Original) The cable of claim 23, wherein the barrier portion includes a non-conductive layer and a conductive layer.
33. (Canceled).

34. (Currently Amended) The cable of claim [[33]] 23, wherein the first non-conductive layer comprises an inner non-conductive layer and the second non-conductive layer comprises an outer non-conductive layer.
35. (Original) The cable of claim 23, wherein the first and second conductor pairs are each twisted along a longitudinal portion of the cable, and the filler portion and the barrier portion are configured to non-conductively shield the first and second conductor pairs twisted along the longitudinal portion of the cable.
36. (Original) The cable of claim 23, wherein the first and second conductor pairs are each helically twisted along a longitudinal portion of the cable, and the filler portion and the barrier portion are configured to non-conductively shield the first and second conductor pairs each helically twisted along the longitudinal portion of the cable.
37. (Original) The cable of claim 23, wherein the filler portion is helically twisted at a first angle relative to a longitudinal direction of the cable, and the barrier portion is configured to be helically twisted at a second angle relative to the longitudinal direction of the cable.
38. (Currently Amended) A cable having reduced electromagnetic cross-talk between conductor pairs comprising:
- filler means for electromagnetically separating a first conductor pair from a second conductor pair so as to reduce electromagnetic cross-talk between the first and second conductor pairs during operation of the cable;
- barrier means for encircling the filler means and the first and second conductor pairs so as to shield the first and second conductor pairs and reduce electromagnetic cross-talk between the first and second conductor pairs during operation of the cable,

wherein the barrier means comprises a conductive layer positioned between a first non-conductive layer and a second non-conductive layer;

wherein the filler means and the barrier means are configured to reduce electromagnetic cross-talk between the first and second conductor pairs of the cable by non-conductively shielding the first and second conductor pairs from being electrically coupled to each other; and

wherein the filler means and the barrier means are configured to extend along a longitudinal portion of the cable so as to reduce electromagnetic cross-talk between the first and second conductor pairs along the longitudinal portion of the cable.

39. (Original) The cable of claim 38, wherein the filler means comprises a filler member, and the barrier means comprises a tape member.
40. (Original) The cable of claim 39, wherein the filler member comprises a single unitary filler component of the cable, and the filler member and the tape member are separate and distinct components from each other.
41. (Original) The cable of claim 38, wherein the barrier means comprises a multi-layer barrier tape.
42. (Original) The cable of claim 38, wherein the second conductor pair is located adjacent to the first conductor pair.
43. (Original) The cable of claim 38, further comprising a jacket configured to encircle the barrier means.
44. (Original) The cable of claim 38, wherein the filler means includes a plurality of arms that are each configured to radially extend outwardly so as to form a first channel shaped to

- partially enclose the first conductor pair and a second channel shaped to partially enclose the second conductor pair.
45. (Original) The cable of claim 38, wherein the barrier means includes a non-conductive layer and a conductive layer.
46. (Canceled).
47. (Currently Amended) The cable of claim ~~[[46]]~~ 38, wherein the first non-conductive layer comprises an inner non-conductive layer and the second non-conductive layer comprises an outer non-conductive layer.
48. (Original) The cable of claim 38, wherein the first and second conductor pairs are each twisted along a longitudinal portion of the cable, and the filler means and the barrier means are configured to non-conductively shield the first and second conductor pairs twisted along the longitudinal portion of the cable.
49. (Original) The cable of claim 38, wherein the first and second conductor pairs are each helically twisted along a longitudinal portion of the cable, and the filler means and the barrier means are configured to non-conductively shield the first and second conductor pairs each helically twisted along the longitudinal portion of the cable.
50. (Original) The cable of claim 38, wherein the filler means is helically twisted at a first angle relative to a longitudinal direction of the cable, and the barrier means is configured to be helically twisted at a second angle relative to the longitudinal direction of the cable.
51. (Original) A cable comprising:
a plurality of twisted pair conductors;

a barrier tape that surrounds the plurality of twisted pair conductors, the barrier tape including an electrically conductive layer enclosed between inner and outer dielectric layers; and

a jacket that surrounds the barrier tape.

52. (Currently Amended) A cable comprising:

a plurality of pairs of conductors extending along a longitudinal axis;

a barrier tape surrounding the plurality of pairs of conductors, the barrier tape comprising a conductive layer positioned between a first non-conductive layer and a second non-conductive layer; and

an outer jacket surrounding the barrier tape, the outer jacket comprising a non-conductive material.

53. (Currently Amended) A method for reducing alien crosstalk between cables, the method

comprising surrounding a plurality of twisted pair conductors with a barrier tape comprising a conductive layer positioned between a first non-conductive layer and a second non-conductive layer, and extending the barrier tape within an outer jacket, .