

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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COMMSCOPE TECHNOLOGIES LLC,  
Petitioner,

v.

BELDEN INC.,  
Patent Owner.

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Case No. IPR2023-01062  
Patent 6,570,095 B2

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**PATENT OWNER RESPONSE**

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## EXHIBIT LIST

| EXHIBIT | DESCRIPTION                                                                                                                             |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------|
| EX-1001 | U.S. Patent No. 6,570,095 (the “’095 Patent”)                                                                                           |
| EX-1002 | Excerpt of Prosecution History of U.S. Patent No. 6,570,095: Nov. 8, 2002 Notice of Allowance                                           |
| EX-1003 | Excerpt of Inter Partes Reexamination No. 95/000,474 of U.S. Patent No. 6,570,095: Sept. 20, 2011 Action Closing Prosecution            |
| EX-1004 | U.S. Patent No. 6,998,537 (the “’537 Patent”)                                                                                           |
| EX-1005 | Excerpt of Prosecution History of U.S. Patent No. 6,998,537: Nov. 2, 2004 Notice of Allowance                                           |
| EX-1006 | Excerpt of Inter Partes Reexamination No. 95/000,476 of U.S. Patent No. 6,998,537: Sept. 20, 2011 Action Closing Prosecution            |
| EX-1007 | Declaration of Kenneth Cornelison                                                                                                       |
| EX-1008 | Curriculum Vitae of Kenneth Cornelison                                                                                                  |
| EX-1009 | U.S. Patent No. 3,622,683 (“Roberts”)                                                                                                   |
| EX-1010 | English language translation of German Patent No. 297,19,866 U1 (“GmbH-866”), and attached Declaration of translator Anthea Heyes       |
| EX-1011 | German Patent No. 297,19,866 U1 (untranslated original)                                                                                 |
| EX-1012 | English language translation of Japanese Patent Publication S43015470 (“Yanagida”), and attached Declaration of translator Anthea Heyes |
| EX-1013 | U.S. Patent No. 5,670,748 (“Gingue”)                                                                                                    |
| EX-1014 | U.S. Patent No. 3,894,172 (“Jachimowicz”)                                                                                               |
| EX-1015 | U.S. Patent No. 4,755,629 (“Beggs”)                                                                                                     |
| EX-1016 | Electronic Wire & Cable - A Users’ Guide: Performance and Selection, Section 5: Multiconductor Cables, AT&T (1987)                      |
| EX-1017 | Whitham D. Reeve, Subscriber Loop Signaling and Transmission Handbook – Digital, IEEE Telecommunications Handbook Series (1995)         |
| EX-1018 | Whitham D. Reeve, Subscriber Loop Signaling and Transmission Handbook – Analog, IEEE Telecommunications Handbook Series (1992)          |
| EX-1019 | U.S. Patent No. 5,380,591                                                                                                               |
| EX-1020 | U.S. Patent No. 1,727,972                                                                                                               |
| EX-1021 | U.S. Patent No. 1,956,730                                                                                                               |
| EX-1022 | U.S. Patent No. 3,803,340 (Jachimowicz-340)                                                                                             |

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| EX-1024 | U.S. Patent No. 4,262,164                                                                                                                   |
| EX-1025 | U.S. Patent Pub. No. 2006/0169478                                                                                                           |
| EX-1026 | U.S. Patent No. 4,253,890                                                                                                                   |
| EX-1027 | U.S. Patent No. 5,283,390                                                                                                                   |
| EX-1028 | U.S. Patent No. 5,969,295                                                                                                                   |
| EX-1029 | G.F. Moore, Electric Cable Handbook, BICC Cables (3d. ed. 1997)                                                                             |
| EX-1030 | The New IEEE Standard Dictionary of Electrical and Electronics Terms (5th ed. 1993)                                                         |
| EX-1031 | Neil Sclater and John Markus, Electronics Dictionary, McGraw-Hill (6th ed. 1997)                                                            |
| EX-1032 | S. Yonechi et al., Application of Spacer Forming Technique to Communication Cables, International Wire & Cable Symposium Proceedings (1980) |
| EX-1033 | U.S. Patent No. 7,179,999                                                                                                                   |
| EX-1034 | Excerpt of Inter Partes Reexamination No. 95/000,475 of U.S. Patent No. 7,179,999: Oct. 14, 2011 Action Closing Prosecution                 |
| EX-1035 | Alcatel Cable Systems Product Catalog                                                                                                       |
| EX-1036 | U.S. Patent No. 5,789,711                                                                                                                   |
| EX-1037 | Excerpt of Prosecution History of U.S. Patent No. 6,570,095: Oct. 22, 2001 Non-Final Office Action                                          |
| EX-1038 | Excerpt of Prosecution History of U.S. Patent No. 6,570,095: April 3, 2002 Final Office Action                                              |
| EX-1039 | Excerpt of Prosecution History of U.S. Patent No. 6,998,537: March 3, 2004 Non-Final Office Action                                          |
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| EX-1042 | Excerpt of Prosecution History of U.S. Patent No. 6,998,537: June 17, 2004 Final Office Action                                              |
| EX-1043 | Excerpt of Prosecution History of U.S. Patent No. 6,998,537: September 20, 2004 Request for Continued Examination                           |
| EX-1044 | Excerpt of Prosecution History of U.S. Patent No. 6,998,537: Sept. 9, 2005 Amendment                                                        |
| EX-1045 | Excerpt of Inter Partes Reexamination No. 95/000,474 of U.S.                                                                                |

| EXHIBIT | DESCRIPTION                                                                                                                                                                     |
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|         | Patent No. 6,570,095: Feb. 24, 2012 Decision Granting Petition to Terminate Inter Partes Reexamination Proceeding                                                               |
| EX-1046 | Excerpt of Inter Partes Reexamination No. 95/000,476 of U.S. Patent No. 6,998,537: Feb. 24, 2012 Decision Granting Petition to Terminate Inter Partes Reexamination Proceedings |
| EX-1047 | Excerpt of Inter Partes Reexamination No. 95/000,475 of U.S. Patent No. 7,179,999: Feb. 24, 2012 Decision Granting Petition to Terminate Inter Partes Reexamination Proceedings |
| EX-1048 | U.S. Patent No. 5,814,768                                                                                                                                                       |
| EX-1049 | U.S. Patent No. 6,037,546                                                                                                                                                       |
| EX-1050 | Excerpt of Inter Partes Reexamination No. 95/000,474 of U.S. Patent No. 6,570,095: Jan. 11, 2010 Third Party Requester's Comments to Patent Owner's Response                    |
| EX-1051 | Excerpt of Inter Partes Reexamination No. 95/000,476 of U.S. Patent No. 6,998,537: Jan. 22, 2010 Third Party Requester's Comments to Patent Owner's Response                    |
| EX-1052 | Belden Techs. et al. v. Superior Essex Comm'cns LP et al., No. 08-63-SLR, Dkt. 215 (D. Del. Aug. 8, 2010) – Claim Construction Order                                            |
| EX-1053 | Belden Inc. v. CommScope, Inc. et al., No. 22-783-RGA, Dkt. 292 (D. Del. May 26, 2023) – Scheduling Order                                                                       |
| EX-1054 | Declaration of Sylvia D. Hall-Ellis, PhD                                                                                                                                        |
| EX-1055 | English Translation of Japanese Patent Publication No. S43-15470 used in prior reexamination of US 6,998,537                                                                    |
| EX-1056 | Japanese Patent Publication No. S43-15470 (untranslated original)                                                                                                               |
| EX-1057 | English language translation of German Patent No. 297,19,866 U1 used in prior reexamination of US 6,998,537                                                                     |
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| EX-2001 | Declaration of Dr. Charles A. Eldering in Support of Patent Owner Preliminary Response (“Eldering”)                                                                             |
| EX-2002 | Definition of “twisted pair” from Webster's New World Telecom Dictionary, 2008                                                                                                  |
| EX-2003 | U.S. Patent No. 10,170,220                                                                                                                                                      |
| EX-2004 | Deposition Transcript of Kenneth Cornelison, March 6, 2024                                                                                                                      |
| EX-2005 | U.S. Patent No. 4,800,236                                                                                                                                                       |
| EX-2006 | U.S. Patent No. 4,340,771                                                                                                                                                       |
| EX-2007 | Supplemental Declaration of Dr. Charles A. Eldering in Support of                                                                                                               |

| EXHIBIT | DESCRIPTION                        |
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|         | Patent Owner Response (“Eldering”) |

## I. INTRODUCTION

Patent Owner respectfully submits this Response to the Petition for *Inter Partes* Review (“IPR”) of claims 27-33 (“Challenged Claims”) of U.S. Patent No. 6,570,095 (“’095 Patent”) (EX-1001). The Petition is facially deficient and each of the asserted Grounds should be denied for several reasons.

*First*, Petitioner’s alleged anticipation arguments (Grounds 1, 3, and 7) invite factual and legal error because they rely on *de facto* inherency theories and fail to establish that each of the asserted references necessarily disclose or suggest each and every limitation of the Challenged Claims of the ’095 Patent (including separating “twisted pairs”), and thus cannot satisfy the requirements for anticipation. Remarkably, and as confirmed through cross-examination of Petitioner’s expert following institution, Petitioner’s primary prior art references fail to disclose (or even mention or show) the separation of “twisted pairs.”

*Second*, several of Petitioner’s obviousness grounds (Grounds 2, 4, 6, and 8) also invite factual and legal error because they merely rely on the same theories presented regarding the corresponding anticipation ground for elements in the primary reference, without relying on any secondary references or even attempting to explain why the missing claim limitations could have been obvious. Accordingly, each of these obviousness grounds must fail for the same reasons the corresponding anticipation theories must fail.

*Third*, Petitioner further invited factual and legal error by failing to provide any legitimate basis for why a person of ordinary skill in the art at the time of the claimed invention (“POSITA”)<sup>1</sup> would have been motivated to modify the primary reference to make the alleged substitution to try to support the only obviousness ground for which the Petition even tried to remedy a flawed anticipation argument (Ground 5), as confirmed through cross-examination of Petitioner’s expert.

*Fourth*, all of Petitioner’s obviousness grounds (Grounds 2, 4, 5, 6, and 8) also invite factual and legal error because they fail to establish that the alleged combinations disclose or suggest a key limitation of claims 30 and 31—a substantially flat dielectric tape formed of a foamed polymer. As confirmed through cross-examination, the opinions of Petitioner’s expert were based on an entirely incorrect understanding of the relied upon prior art at issue, thus leaving his theories without any basis in fact.

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<sup>1</sup> All references to a POSITA herein refer to a “person of ordinary skill in the art” at the time of the claimed invention. Eldering ¶¶23-27. “Eldering” refers to the Declarations of Dr. Charles A. Eldering in Support of (i) the Patent Owner Preliminary Response (EX-2001 ¶¶1-116) and (ii) the Patent Owner Response (EX-2007 ¶¶117-195). Any differences between the parties’ proposed definitions of a POSITA are insubstantial and do not impact the analysis of the issues presented.

Because the Petition's alleged anticipatory prior art references and combinations of prior art references all fail to teach or suggest the limitations of the Challenged Claims, the Board should deny Grounds 1 through 8 of the Petition.

## II. THE '095 PATENT

The '095 Patent inventions are generally directed to:

high-speed data communications cables using at least two **twisted pairs** of insulated conductors. More particularly, the invention relates to high-speed data communications cables having a light weight, configurable core-refilling isolation pair separator that provides geometrical **separation between the twisted pairs of insulated conductors.**"<sup>2</sup>

'095 Patent 1:14-21; Eldering ¶29.

The specification of the '095 Patent defines "twisted pairs" as:

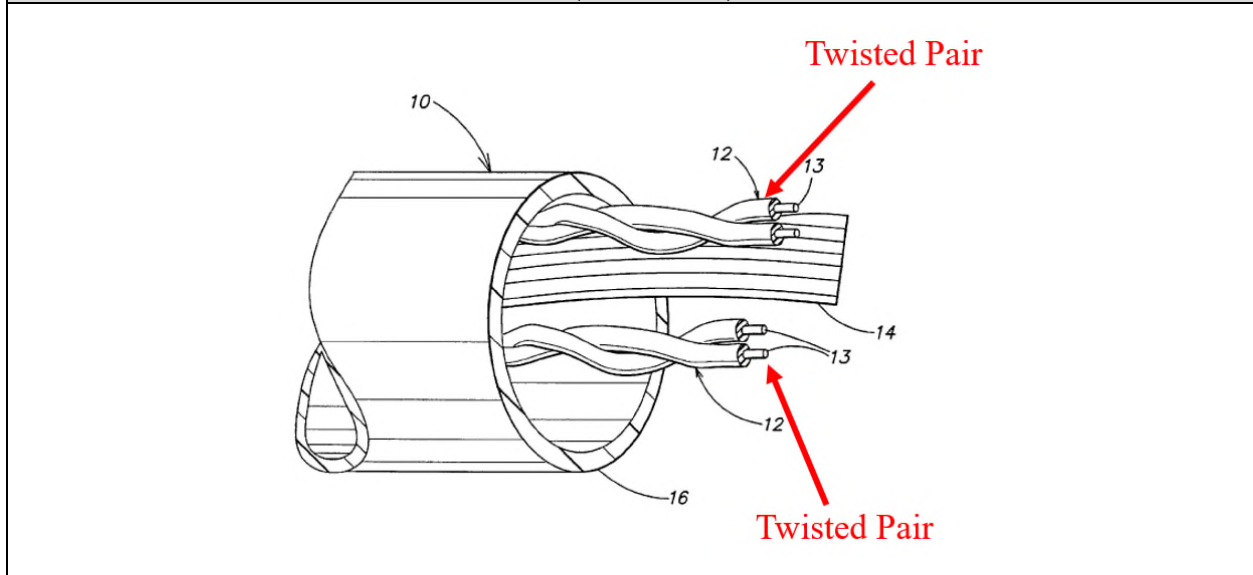
***pairs of insulated conductors twisted together to form a balanced transmission line.*** Such pairs of insulated conductors are referred to herein as '***twisted pairs.***'

'095 Patent 1:24-26. The '095 Patent depicts such "twisted pairs" in FIG. 4. '095 Patent 4:59-61 ("FIG. 4 depicts an embodiment of a data communications cable 10 according to the present invention. The cable 10 includes two twisted pairs 12 of insulated conductors 13."); Eldering ¶30.

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<sup>2</sup> All emphasis herein has been added unless otherwise noted.

'095 Patent FIG. 4 (annotated) – Twisted Pairs



Additionally, the '095 Patent relates to an improved data communications cable having “a plurality of twisted pairs of insulated conductors and a core made from a configurable, dielectric pair separator.” '095 Patent 4:43-45; Eldering ¶31.

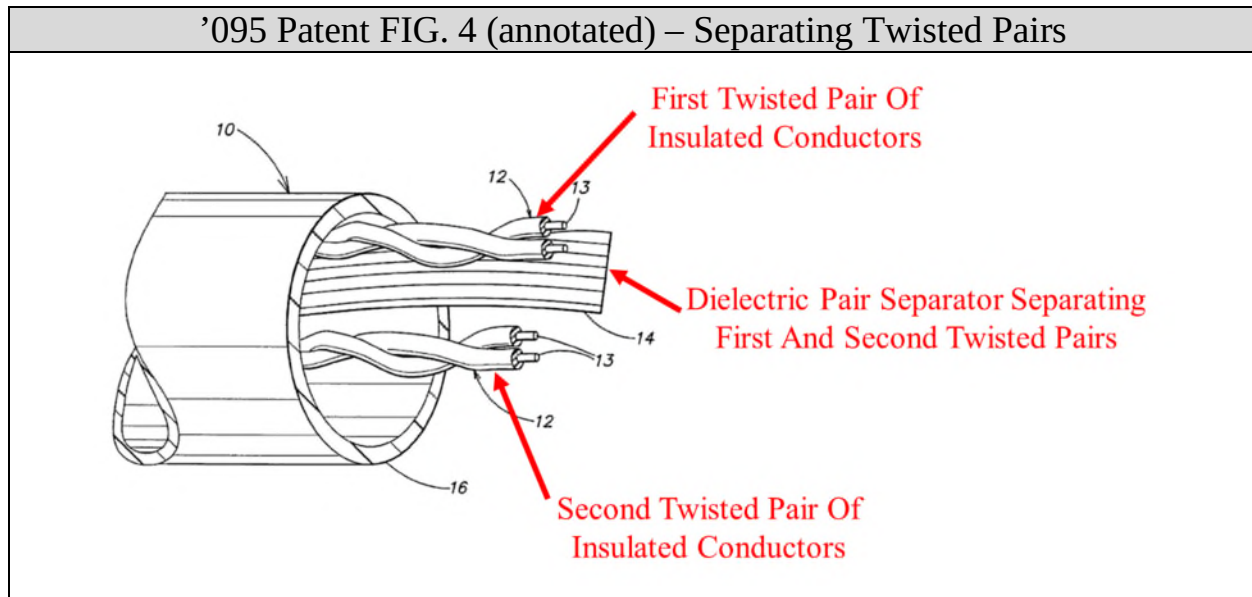
As the '095 Patent explains,

when ***twisted pairs are closely placed***, such as in a cable, electrical energy may be transferred from one twisted pair of a cable to another twisted pair. Such energy transferred ***between twisted pairs*** is referred to as crosstalk. As operating frequencies increase, improved crosstalk isolation between the twisted pairs becomes more critical.

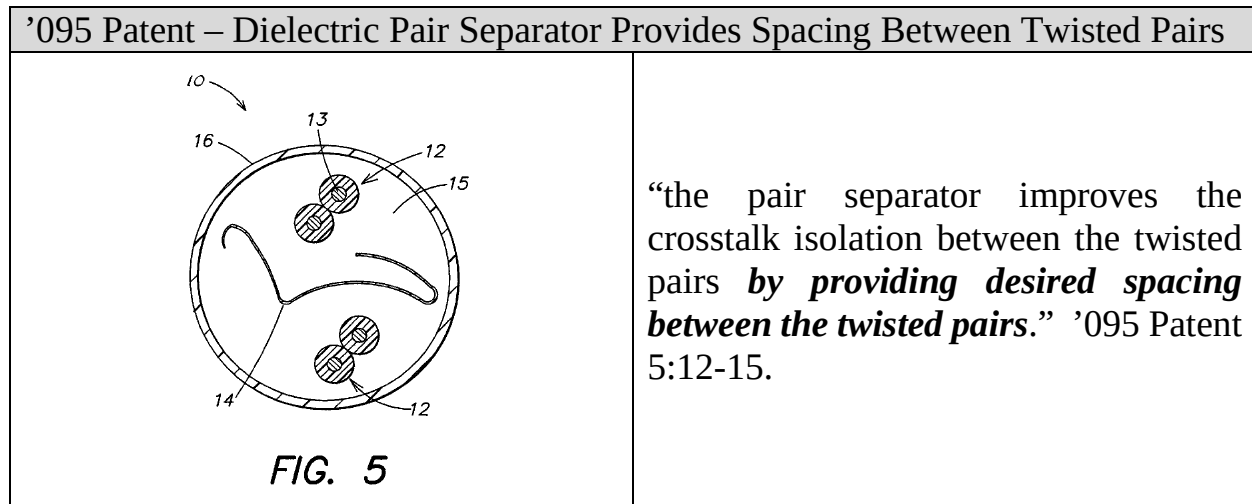
*Id.* at 1:27-33; Eldering ¶32.

As shown in FIG. 4, “cable 10 includes two twisted pairs 12 of insulated conductors 13. ***The twisted pairs 12 are separated by a low dielectric constant, low dissipation factor, polymer ‘pair separator’ 14.*** The twisted pairs 12 and the pair separator 14 are encased within a jacket assembly 16.” *Id.* at 4:60-65; *see also, id.*

at 1:19-20; Eldering ¶33.



Here, “the pair separator improves the crosstalk isolation between the twisted pairs by **providing desired spacing between the twisted pairs**,” as it does in each of the disclosed embodiments. ’095 Patent 5:12-15; Eldering ¶34.



See also, *Id.* at 7:29-32, 5:67-6:7, 7:55-61, 8:3-6, 8:26-28, 8:46-50.

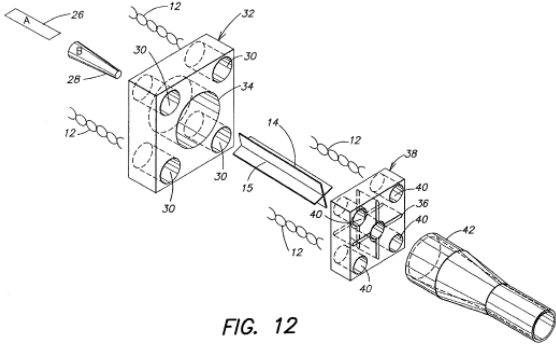
In a twisted pair cable, “each twisted pair has a specified distance between

twists along a longitudinal direction of the twisted pair, that distance being referred to as the ‘twist lay.’” ’095 Patent 1:50-53. The ’095 Patent teaches that the invention is drawn to employing a reduced number of twist lays, namely a longer distance between twists, while achieving at least the same level of crosstalk isolation:

This embodiment of the invention [shown in Fig. 8] may also be used in conjunction with ***a lessening of the twist lays requirements for the twisted pairs, to provide cable having a same amount of isolation between twisted pairs as a cable with tighter twist lays.*** Accordingly, this embodiment of the cable according to the invention allows for selective design of isolation between particular twisted pairs of the cable and lessening of the twist lay requirements for the cable.

’095 Patent 7:62-8:2. Accordingly, employing a dielectric pair separator between the various twisted pairs comprising the cable in order to physically distance them from each other provides “a high-speed data cable having multiple twisted pair wires with desired crosstalk performance, improved handling and termination capabilities, that is inexpensive, flexible and has a desired size.” ’095 Patent 2:60-64; *see also*, 9:17-38; Eldering ¶¶35-37.

In addition, the ’095 Patent teaches the use of a “***bunching***” process, where the twisted pairs and pair separator combination may be **additionally** configured by twisting all of those components together when forming the data communications cable, to improve the mechanical properties of the cable, namely keeping the components of the cable in their respective positions. Regarding FIG. 12, the ’095 Patent teaches that:

| '095 Patent FIG. 12                                                                                                          | '095 Patent 9:2-12.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p data-bbox="423 741 505 762">FIG. 12</p> | <p data-bbox="789 285 1414 919">The formed pair separator 15 is then passed through opening 36 in second die 38 and brought together with the four twisted pairs 12 which are passed through corresponding openings 40 in the second die. <b><i>The plurality of twisted pairs are then cabled with the formed pair separator by a third die 42, in an operation referred to as “<u>bunching</u>”.</i></b> The third die places the twisted pairs in the channels 15 (see FIGS. 5-10) of the formed pair separator prior to <b><i>twisting of the cable</i></b>. It is to be appreciated that the cable can be twisted with any known twisting arrangement such as a helix, or an S-Z configuration.</p> |

The “bunching” process taught by the '095 Patent is different than, and entirely separate from, the helical twisting of a given pair of conductors around one another to form a balanced transmission line. Instead, the twisting associated with “bunching” involves all of the components in the cable, including the plurality of twisted pairs and the pair separator. '095 Patent 9:2-12. Eldering ¶¶38-39.

### III. CLAIM CONSTRUCTION

In the Petition, Petitioner proposed constructions for five claim terms/phrases. Pet. 11-18.<sup>3</sup> But despite the fact that the critical term “twisted

<sup>3</sup> Construction of those five terms/phrases are not relevant to Patent Owner's

pair[s]” appears ***over twenty (20) times*** in the Challenged Claims and Petitioner’s acknowledgement that there is a dispute regarding whether “twisted pairs” are disclosed in Roberts, a prior art reference relied upon for Grounds 1, 2, 5, and 6 (Pet. 60 (“To the extent Roberts is found to not expressly teach that its “pairs” are *twisted* pairs ....”) (emphasis in original), Petitioner selectively chose ***not*** propose a construction for this key claim term, as it was required to do under 37 C.F.R. § 42.104(b)(3).

Turning to the claim construction of “twisted pair[s]” and looking first to the specification of the ’095 Patent to construe “twisted pair[s],” the specification provides the following definition of the term that Petitioner chose to disregard in its Petition:

High-speed data communications media in current usage include ***pairs of insulated conductors twisted together to form a balanced transmission line***. Such pairs of insulated conductors are referred to herein as “twisted pairs.”

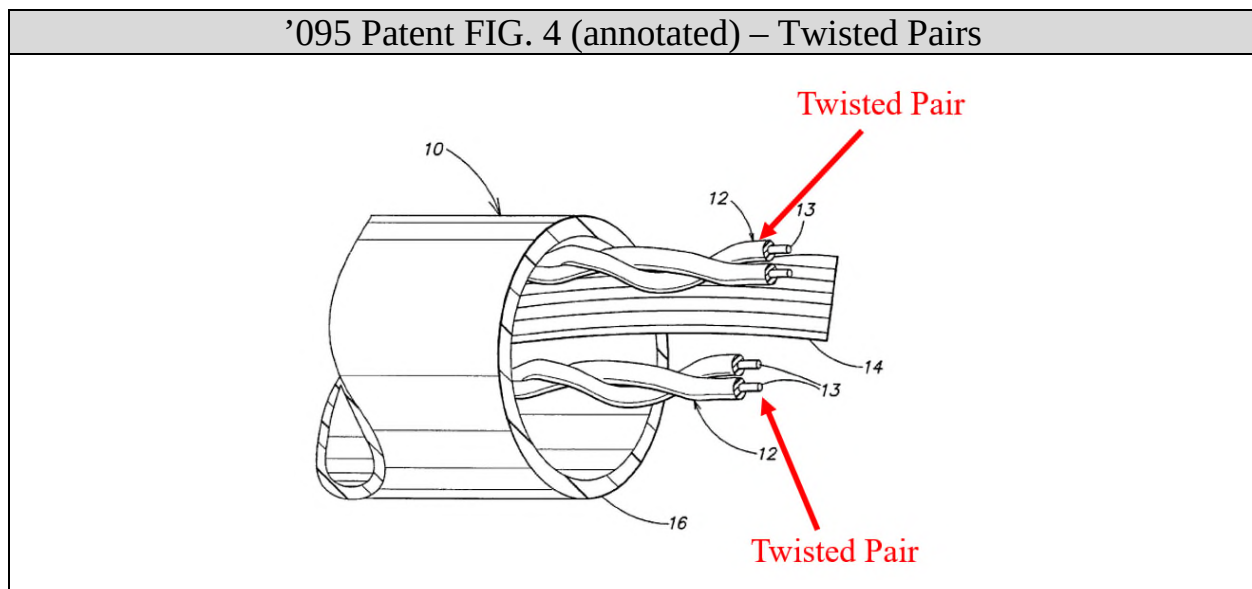
’095 Patent 1:23-26; see *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1380 (Fed. Cir. 2009) (“When a patentee explicitly defines a claim term in the

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arguments herein. See *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”).

patent specification, the patentee’s definition controls.”); Eldering ¶40.

Consistent with that definition in the intrinsic record, FIG. 4 of the ’095 Patent shows a “cable 10 includ[ing] two twisted pairs 12 of insulated conductors 13” that twist around one another to form a balanced transmission line. ’095 Patent 4:59-61; Eldering ¶¶41, 135-148.

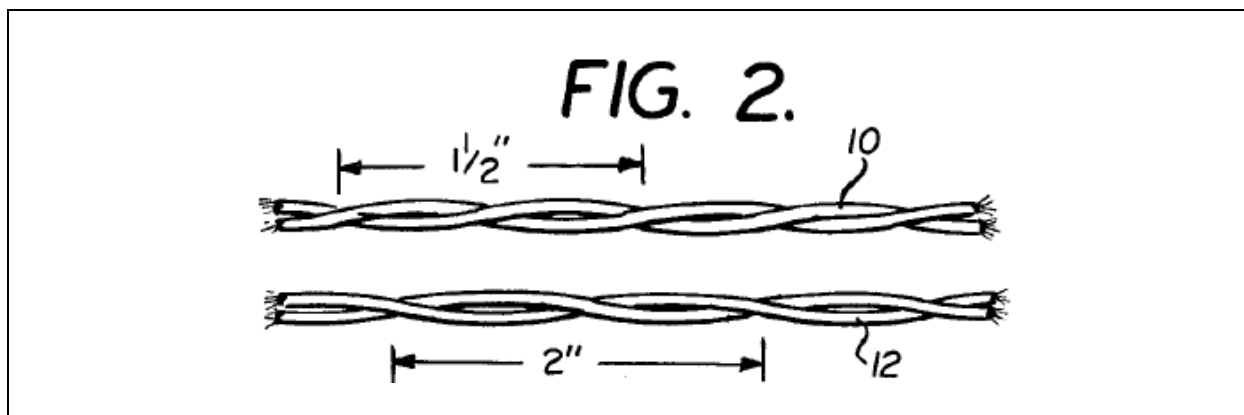


As shown in FIG. 4, which is part of the intrinsic record and instructive regarding the meaning of the “twisted pair[s]” claim term, and its associated limitations, the two, individual conductors in each pair (*i.e.*, each set of two separately insulated wires) are twisted together in a helix around one another as shown in FIG. 4 to form a balanced transmission line. Eldering ¶¶42, 135-148; *see, e.g., Autogiro Co. of Am. v. United States*, 384 F.2d 391, 398 (Ct. Cl. 1967) (“In those instances where a visual representation can flesh out words, drawings may be

used in the same manner and with the same limitations as the specification.”).

The '095 Patent's definition and depiction of twisted pairs is also consistent with the definition of “twisted pairs” provided in a technical dictionary. See EX-2002 503 (“A twisted pair comprises **two copper conductors**, separately insulated by a dielectric material and smoothly twisted in a helix with a constant pitch or distance **to make a 360° twist.**”). Eldering ¶43.

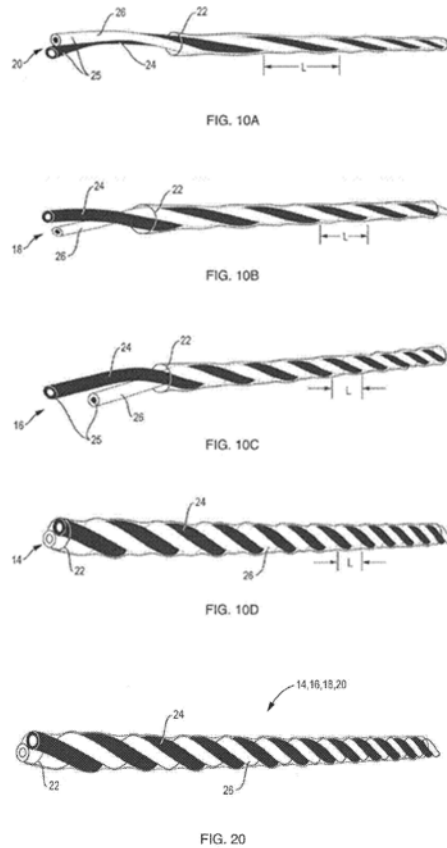
That plain and ordinary meaning of “twisted pair[s]” to a POSITA (*i.e.*, requiring “**two** insulated conductors **twisted together** around one another to form a balanced transmission line,” as shown in FIG. 4 like the '095 Patent's definition) is also confirmed in the figures and description of “twisted pair[s]” in one of Petitioner's alleged prior art references (*i.e.*, Jachimowicz (EX-1014)), which illustrates how twisted pairs constitute two insulated conductors twisted together around one another in a helix to form a balanced transmission line. Eldering ¶44, 135-148.



Jachimowicz 2:66-3:4, FIG. 2 (twisted pairs 10 and 12). FIG. 2 of Jachimowicz is “a diagrammatic view showing two pairs of conductors illustrating the difference in the twist (lay) of the pairs.” Jachimowicz 2:16-18.

Likewise, U.S. Patent No. 10,170,220 (“Cornelison ’220”) (EX-2003) to Petitioner’s expert, Kenneth E. Cornelison, teaches that “[t]he first and the second insulated conductors, of each pair, **are twisted with one another to form a twisted pair** and each of the twisted pairs has a different lay length from one another.” Cornelison ’220 Abstract, *see also* 5:54-58, 8:15-19 (FIG. 20 is “**a pair of insulated conductors twisted together** to form a twisted pair”). Cornelison ’220 elaborates that “a lay length is traditionally defined as the axial distance necessary for one pair of insulated conductors to complete a full 360 degree of rotation **when twisting about one another.**” *Id.* 2:27-29. Cornelison ’220 illustrates the following examples of twisted pairs:

Cornelison '220 (FIGS. 10A-10D, 20) - Depicting “Twisted Pairs”



Accordingly, the intrinsic and extrinsic evidence confirms that the plain and ordinary meaning of the claimed “twisted pair[s]” that are separated by a dielectric pair separator to a POSITA is “**two** insulated conductors **twisted together around one another** to form a balanced transmission line,” as shown in FIG. 4 of the '095 Patent (or any of the other references shown above). Eldering ¶¶45, 147-148.

#### IV. THE CHALLENGED CLAIMS ARE NOT ANTICIPATED OR OBVIOUS.

##### A. Petitioner's Anticipation Grounds All Failed To Disclose The Separation Of "A First Twisted Pair Of Insulated Conductors" And "A Second Twisted Pair Of Insulated Conductors," As Required By Claim Elements 27.a And 27.b Of The '095 Patent.

Independent claims 27 and 31 require the following limitations:<sup>4</sup>

| '095 Patent Claim 27                                                                                                                                                                                  | '095 Patent Claim 31                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27.a - "a first <b><i>twisted pair</i></b> of insulated conductors" and "a second <b><i>twisted pair</i></b> of insulated conductors"                                                                 | 31.a - "a <b><i>plurality of twisted pairs of insulated conductors</i></b> "                                                                                           |
| 27.b - "a configurable dielectric pair separator that <b><i>separates the first and second twisted pairs of conductors</i></b> , the configurable dielectric pair separator being substantially flat" | 31.b - "a configurable dielectric pair <b><i>separator disposed between</i></b> at least two of the <b><i>plurality of twisted pairs of insulated conductors</i></b> " |

In the Institution Decision, the Board stated that whether a POSITA would have understood Petitioner's asserted art as disclosing the separation of "twisted pairs" limitations were issues best resolved on a full record. Paper 10 17-18, 29, 40.

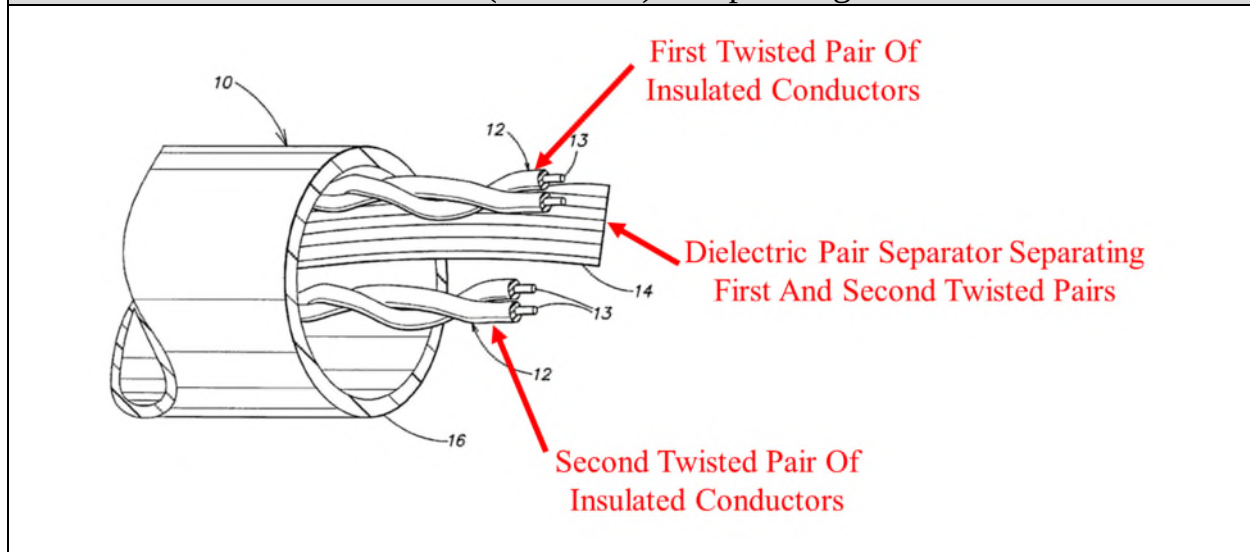
Remarkably, especially considering how Petitioner relied upon anticipation, none of Petitioner's three alleged anticipatory references (*i.e.*, Roberts (EX-1009), Yanagita (EX-1012), and GmbH-866 (EX-1010)) use the term "twisted pair[s]," or

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<sup>4</sup> For simplicity, Patent Owner adopts the same numbering for claim limitation identification as utilized in the Petition.

depict any arrangement of two wires twisted together around one another to form a balanced transmission line, as shown in FIG. 4 of the '095 Patent. Lacking express disclosure of the required “twisted pairs” forming a balanced transmission line, Petitioner instead resorted to relying upon erroneous and speculative theories regarding the meaning of certain cherry-picked snippets from the prior art at issue, such as Roberts’ use of the word “pairs” in the Abstract, Yanagita’s discussion of wires “twisted together,” and GmbH-866 disclosing “stranded copper conductors.” But on cross-examination Petitioner’s expert admitted, and the state-of-the-art confirms, that “pairs” do not necessarily refer to “twisted pairs,” and that “stranded” conductors refer to a conductor containing a number of smaller diameter wires. None of Petitioner’s anticipatory references teach or necessarily disclose two insulated conductors twisted together around one another to form a balanced transmission line as shown in FIG. 4 of the '095 Patent. Eldering ¶¶147-148. Nor do they teach the critical separation of twisted pairs of insulated conductors in the claimed configurations required by the Challenged Claims.

'095 Patent FIG. 4 (annotated) – Separating Twisted Pairs



Accordingly, Petitioner's alleged anticipation Grounds all fail.

1. *Regarding Ground 1, Petitioner's Erroneous Inherency Theories Failed To Establish That Roberts Anticipates Claims 27-29.*

Not only do the words “twisted pair[s]” never appear in Roberts, the word “pair[s]” never appears anywhere in the Roberts specification outside of the Abstract. Undeterred, Petitioner erroneously alleged that Roberts somehow anticipates claims 27-29 of the '095 Patent anyway. Pet. 18-30. But Roberts fails to disclose or suggest separating a first “twisted pair” from a second “twisted pair” under the proper claim construction of “twisted pair” discussed above (*i.e.*, “**two** insulated conductors **twisted together around one another** to form a balanced transmission line,” as shown in FIG. 4 of the '095 Patent), nor does Roberts even disclose or suggest the use of any “twisted pairs.” Lacking any such express disclosure in Roberts, Petitioner resorted to erroneous inherency speculation,

theorizing a “POSITA would have understood that these teachings **indicate** twisted pairs of insulated conductors,” because “[i]n the data communications cable field, unless specified otherwise a reference to ‘pairs’ in this context was understood as a reference to twisted pairs.” Pet. 22.

In other words, Petitioner speculated that merely because the Roberts Abstract generally referenced “pairs” of conductors in a conventional cable design, it somehow should be inherent in Roberts that the disclosed conductors are ***necessarily*** twisted pairs. “[A]nticipation by inherent disclosure is appropriate only when the reference discloses prior art that must ***necessarily*** include the unstated limitation . . . .” *Transclean Corp. v. Bridgewood Servs., Inc.*, 290 F.3d 1364, 1373 (Fed. Cir. 2002); *see also Par Pharm., Inc. v. TWi Pharms., Inc.*, 773 F.3d 1186, 1195-1196 (Fed. Cir. 2014) (“[T]o rely on inherency . . . in an obviousness analysis—the limitation at issue ***necessarily*** must be present, or the natural result of the combination of elements explicitly disclosed by the prior art.”)

But in reality, Petitioner is not only admittedly wrong about its generalization of the term “pairs” in the data communications cable context, it is also wrong that Roberts teaches “twisted pairs” for several reasons.

a. Roberts’ Use Of The Term “Pairs” In The Abstract Does Not Necessarily Disclose “Twisted Pairs.”

First, in direct contradiction of Petitioner’s argument, on cross-examination

Petitioner's expert, Kenneth Cornelison, admitted that the term "pair" in the data communications context as in Roberts does **not** always or necessarily refer to a "twisted pair":

Q. And if something refers to a pair in the data communications cable context, without specifying whether it's twisted or untwisted, is it your opinion that the intent is to mean twisted?

A. ***The answer to that question is no.*** And the reason is I mentioned earlier an example of such a product called twinax and other type of constructions where there are two wires that could be called a pair that are -- by definition of a cable construction design are ***not*** twisted.

So in the case of some cables which are intentionally not twisted and are data communications cables, then the correlation would not -- ***there can be a pair that's indeed not twisted*** by the example I gave earlier.

EX-2004 (Cornelison Tr.) 92:22-93:14; *see also* 66:21-67:16. The admitted fact that "pair" does not necessarily refer to a twisted pair is further supported by Cornelison's testimony that in his experience, at the time of invention, product and manufacturing specifications would specify whether a conductor pair was twisted or untwisted. Cornelison Tr. 93:22-94:22 ("... [Y]es, it would either lay out a lay length or say - or say not twisted together. By some means it would depict whether or not the pair ... whether that would be twisted or not."). Even Petitioner's own alleged prior art specifies whether a "pair" of conductors is twisted or untwisted. *See, e.g.*, EX-1015 6:4-9 ("... a pair of the insulated conductors 42—42, ***twisted or untwisted***, is caused

to be inserted into each tubular portion . . .”).

The fact that the term “pair” in a data communications context does not necessarily mean “twisted pair” to a POSITA is confirmed by prior art teachings that refer to “pairs” of conductors in a data communications cable that are ***not*** twisted pairs, and which in fact teach away from using twisted pairs. For example, the Background of the Invention of U.S. Patent No. 4,800,236 (“Lemke”) (EX-2005)—***the face of which cites Roberts***—teaches several known shortcomings of twisted pair communication cables that were known to a POSITA:

Twisted conductor pairs result in an overall diameter of the twisted pair cable that is significantly larger than that of standard cables. Such a twisted pair cable can range from twenty to fifty percent larger than a standard cable depending upon conductor size and the number of conductors. These factors also result in a relatively stiffer cable construction which must be carefully fabricated in order to prevent failure due to cable flexing. Twisted pair cables often do not exhibit a uniform cross-section and can thus present problems when using automatic stripping apparatus. Furthermore, providing the appropriate terminations at each end of each cable is a relatively labor intensive endeavor since before the ends of the conductors can be terminated in a suitable connector the conductors comprising each twisted pair must be untwisted.

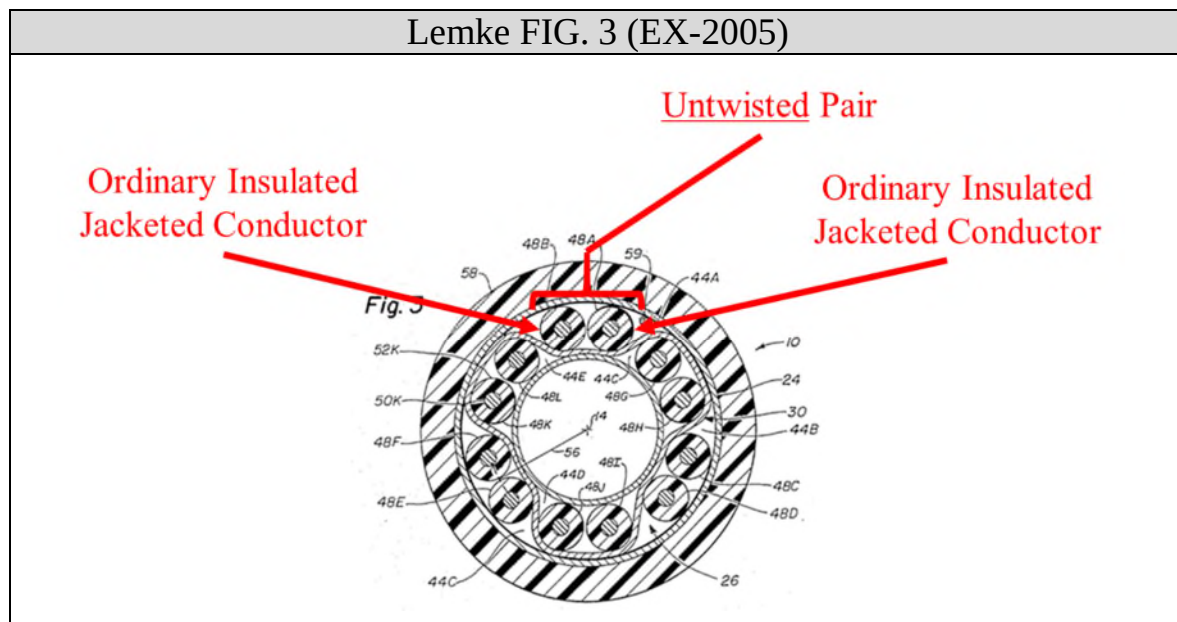
Lemke 1:47-54; Eldering ¶151. Lemke further describes a known prior art data communications cable that:

provides ***a cable assembly using ordinary individual jacketed conductors*** arranged in a form that is ***less expensive to manufacture, less bulky and more flexible*** when manufactured and yet provides substantially ***equivalent or better electrical characteristics than are available in a cable using twisted pairs***. Moreover, the relatively less

expensive material cost associated with individual jacketed conductor as compared to twisted pairs leads one to form a cable from such conductors.

Lemke 2:7-15.

Lemke then goes on to disclose “a cable structure, in either round or flat form, which utilizes *ordinary insulated jacketed conductors*.” Lemke 2:50-54; *see also* 2:38-42.



As Lemke discloses:

. . . more than one conductor 48 may be disposed in each of the envelopes 44. Thus, for example, the envelope 44A contains the conductors 48A, 48B. In such an arrangement a balanced *pair of conductors* may be defined within each of the envelopes, with one of the conductors serving as a signal carrying conductor while the second of the conductors serves as the signal return.

Lemke 5:56-62; *see also* 7:52-54. Lemke therefore teaches a data communications cable that utilizes pairs of conductors, but which specifically and intentionally does

**not** utilize twisted pairs. Accordingly, a POSITA would understand that Roberts' use of the term "pairs" in the Abstract does not mean that Roberts ***necessarily*** discloses "twisted pairs." Eldering ¶¶151-158.

b. Roberts Teaches Shielding Groups Of Straight-Line Conductors, Not Twisted Pairs.

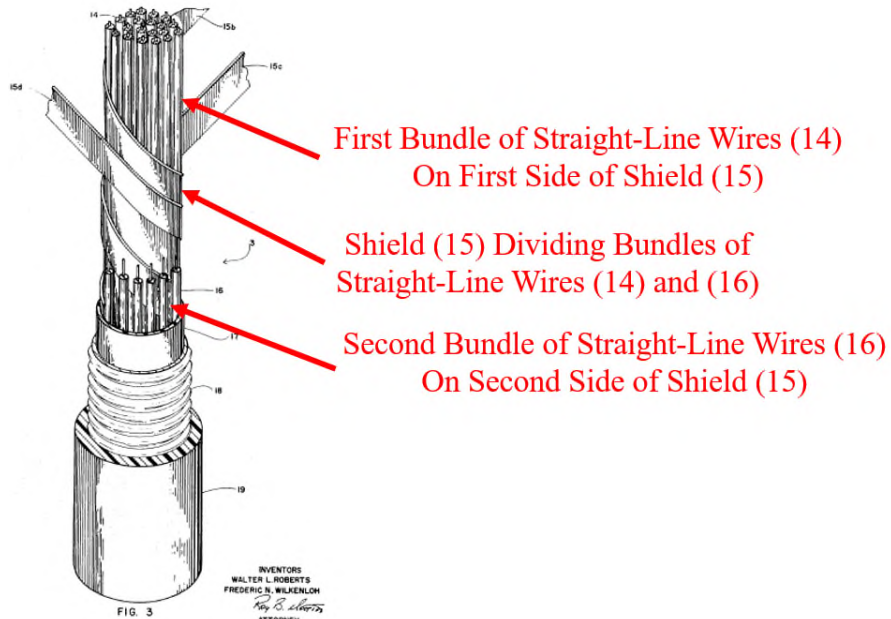
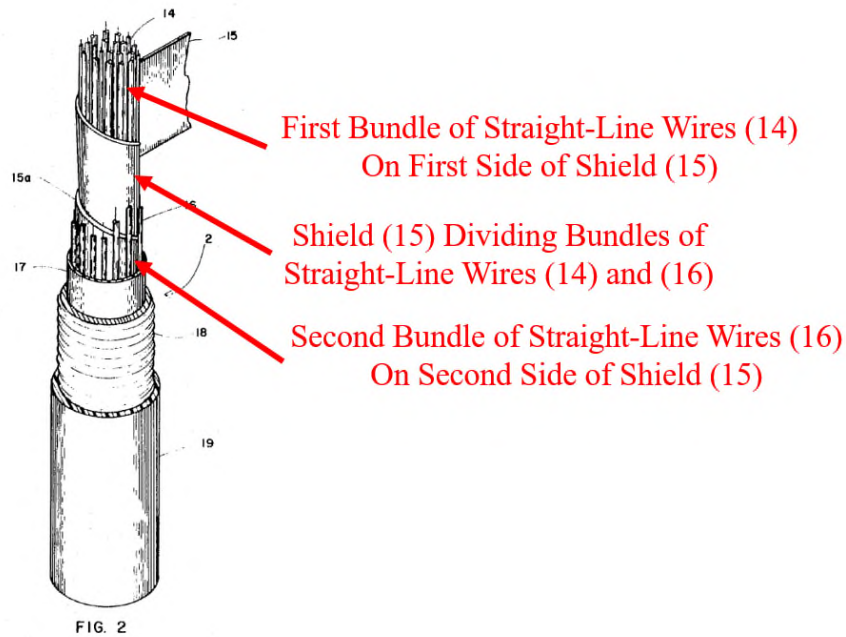
Roberts—which again is cited on the face of Lemke—similarly teaches using a metallic shield to divide a group/bundle (*i.e.*, more than a pair) of straight-line (*i.e.*, **unt**twisted) transmitting wires (14) from another group/bundle of straight-line receiving wires (16) in order to facilitate bi-directional transmission of signals of the same frequency within the same cable. Roberts 1:5-31, FIGS. 1-3 and 17.

***This invention relates to multiconductor cables*** and has particular reference to arrangements for shielding certain of the conductors of such a cable from other conductors of the cable. In order to transmit currents of the same frequency in both directions within the same cable . . . it is desirable that the ***conductors used for transmitting in one direction be shielded (electrically) from those transmitting in the opposite direction.*** Accordingly, it is the purpose of this disclosure, to show how to arrange the conductors of a cable into two concentric groups, with a shield between the two groups of conductors. In such an arrangement of a cable, ***those conductors on one side of the shield may all be used for transmitting carrier frequencies in one direction, while the returned channels for transmission in the opposite direction will be applied to the conductors on the other side of the shield.*** . . . The instant invention also envisions and incorporates the concept of ***two distinct bundles of conductors inside a cable structure, one such bundle being electrically shielded from the other bundles*** and neither one of the aforesaid bundles necessarily being concentric around the other.

Roberts 1:5-31; Eldering ¶47. A POSITA would understand that Roberts utilizes a

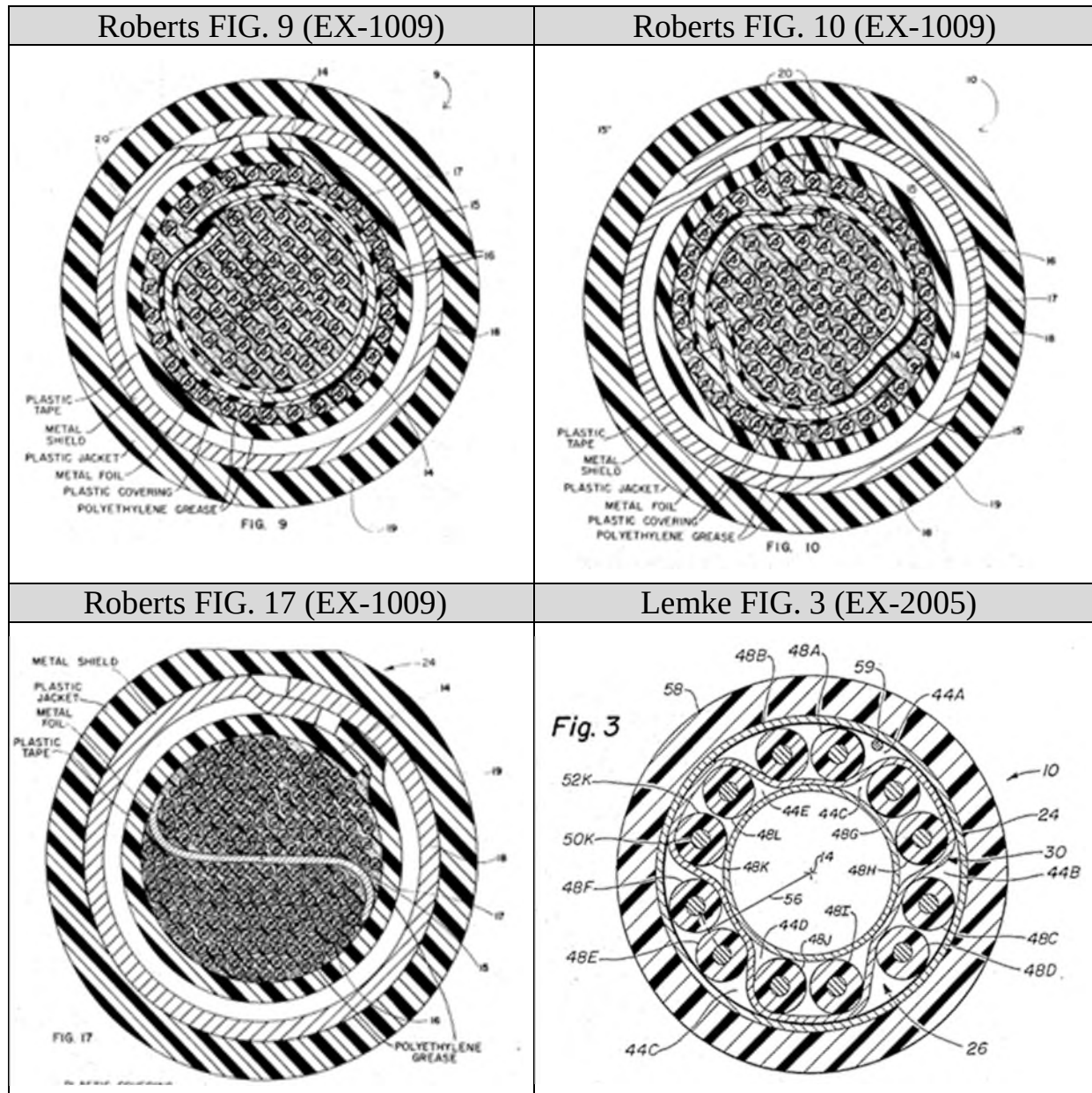


Roberts FIGS. 1, 2 and 3 (annotated)



Demonstrably, the cross-sectional view of the embodiment in FIG. 17 relied on in the Petition depicts conductors in conductor groups (14) and (16) in the same manner as the cross-sectional views of the cables shown in FIGS. 1 and 3 above, further

teaching a POSITA that the conductors in Roberts are in fact bundles of spaced-apart, straight-line, separately insulated conductors, ***not*** twisted pairs as alleged—just like Lemke. Eldering ¶¶45-49, 147-148, 159-162.

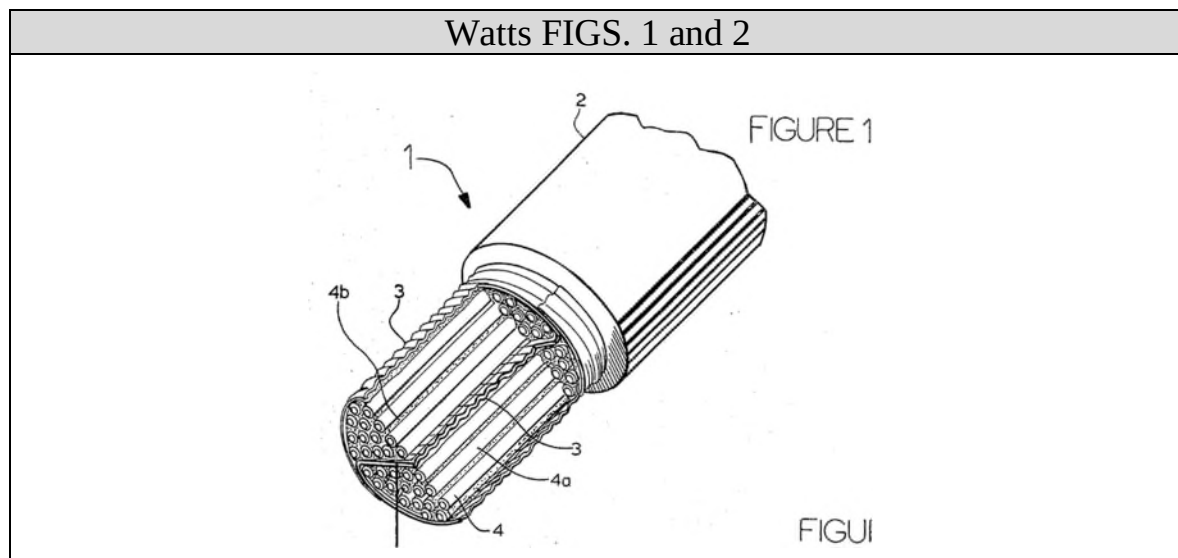


Roberts 2:39-46 and 72-75.

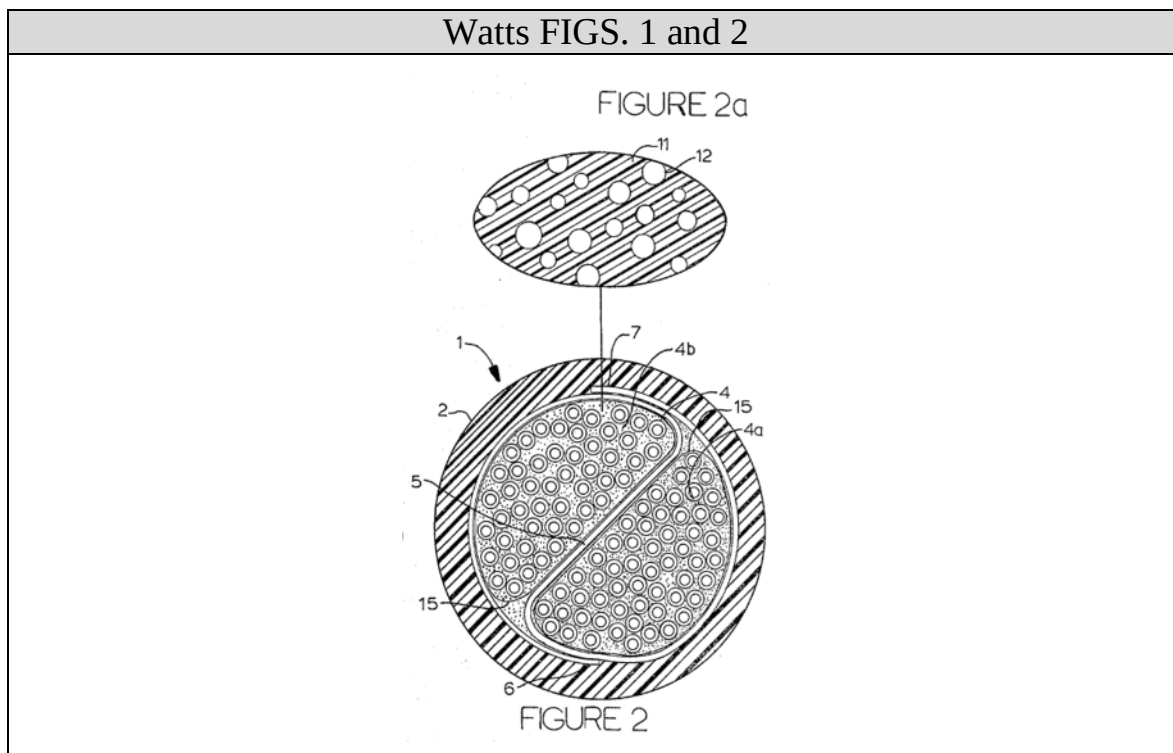
In addition, the Figures in Roberts depict individual insulated conductors with

irregular **spacing** between them, which Roberts repeatedly describes as being filled with a “polyethylene greaselike material.” See, e.g., Roberts 5:7-15; 6:5-15; 7:8-17; 8:54-65; 10:61-67.

In the Background of the Invention of U.S. Patent No. 4,340,771 (“Watts”) (EX-2006)—**which also cites Roberts on its face**—Watts summarizes Roberts in part as having “an internal radially extended shield that longitudinally divided the cable core into two groups.” Watts 1:68-2:2. Similar to Roberts, the improved shielding disclosed in Watts depicts straight-line “conductors (4)” divided into “two groups (4a) and (4b),” with spaces between conductors “filled with conventional filling compounds such a polyethylene grease, petrolatum or block copolymer rubbers 11 . . .”. Watts 3:17-30.



## Watts FIGS. 1 and 2



Like Roberts, Watts never discusses “twisted pairs,” and the conductors (4) in Watts are depicted as individual, straight-line insulated conductors. Accordingly, a POSITA would not understand Watts to teach twisted pairs to form a balanced transmission line or the separation of twisted pairs. Nor would a POSITA understand that the similarly described cable in Roberts, which has a structure much like that disclosed in Watts, discloses twisted pairs or the separation of twisted pairs. Eldering ¶¶147-148, 163-164.

Therefore, the non-twisted configuration disclosed in Roberts consists of: (1) a bundle (*i.e.*, more than a pair) of straight-line (*i.e.*, not twisted) “transmit” wires (14) that are designed to transmit signals in one direction; (2) a bundle of straight-line “receive” wires (16) that are designed to receive signals in the opposite direction

(i.e., reception); and (3) a metallic shield (15) situated between the transmit bundle of straight-line wires and the receive bundle of straight-line wires. Outside of the Abstract, the word “pair[s]” never appears in Roberts. Roberts does not disclose that any “pair” of twisted wires are located on the same side of the shield because Roberts’ teachings relate to the separation of a non-twisted bundle of transmit wires from a non-twisted bundle of receive wires, not the separation of a first twisted transmit and receive wire pair from a second twisted transmit and receive wire pair from each other. If anything, the “pairs” referred to in the Roberts Abstract relate to one straight-line conductor within conductor group (14) that is transmitting in one direction, and another straight-line conductor within conductor group (16) that is transmitting in the opposite direction. Eldering ¶¶51-52, 165.

To try and overcome these deficiencies, Petitioner and its expert also resorted to improper and unsupported hindsight reconstruction of Roberts’ teachings about the cable manufacturing processes, contrary to what Roberts actually discloses. Pet. 19-22 (“Roberts explains that the cable manufacturing process uses a die 30a shown at Fig. 23 that has ‘holes (33) through which **twisted** electrical conductors (14) and (16) pass’”) (emphasis in original). But on cross-examination, Petitioner’s expert admitted that nothing described in relation to the Roberts manufacturing processes disclosed in FIGS. 22 and 23 relate to the formation of twisted pairs. Cornelison Tr. 173:10-18; 181:22-182:5. In fact, the twisting referred to in Petitioner’s out-of-

context snippet does not refer to twisted pairs (i.e., “two insulated conductors twisted together around one another to form a balanced transmission line,” as shown in FIG. 4 of the '095 Patent). Instead, it refers to what occurs to the straight-line conductors as they move through the rotating cable manufacturing mechanism and are added to the final cable assembly as the conductors in bundle (14) and (16) exit holes 33 in die plate (30a). Neither FIG. 23, nor its corresponding disclosure, discuss or refer to “twisted pairs” of wires. Eldering ¶¶57, 147-148.

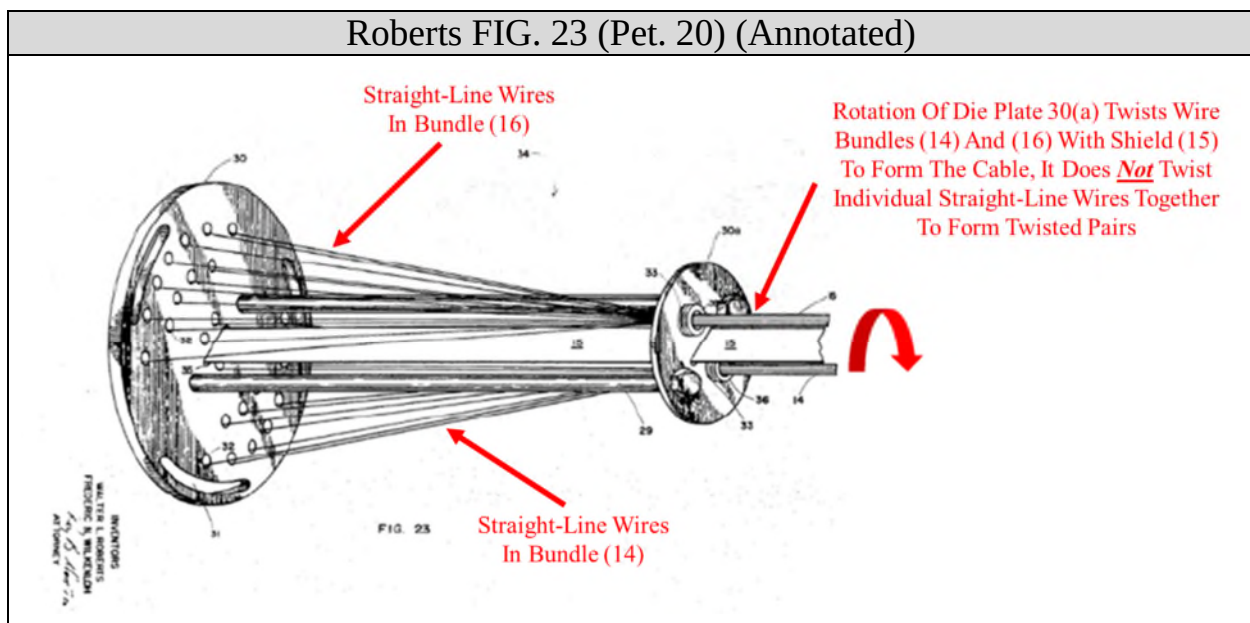
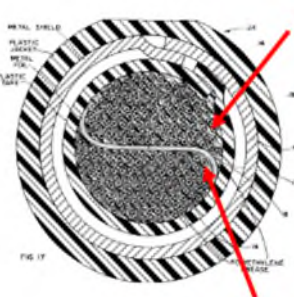
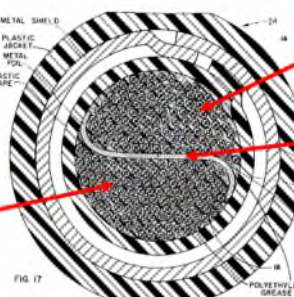


FIG. 23 “is an enlarged diagrammatic view of a rotating die member used to apply the plastic-coated metal foil shield between first and second groups of electrical conductors.” Roberts 3:11-13. “This particular die means is made up of dieplates (30) and (30a), spaced apart by two crossbar means (29).” Roberts 11:71-72. As Petitioner’s expert admitted, Roberts teaches that the composite grouping of

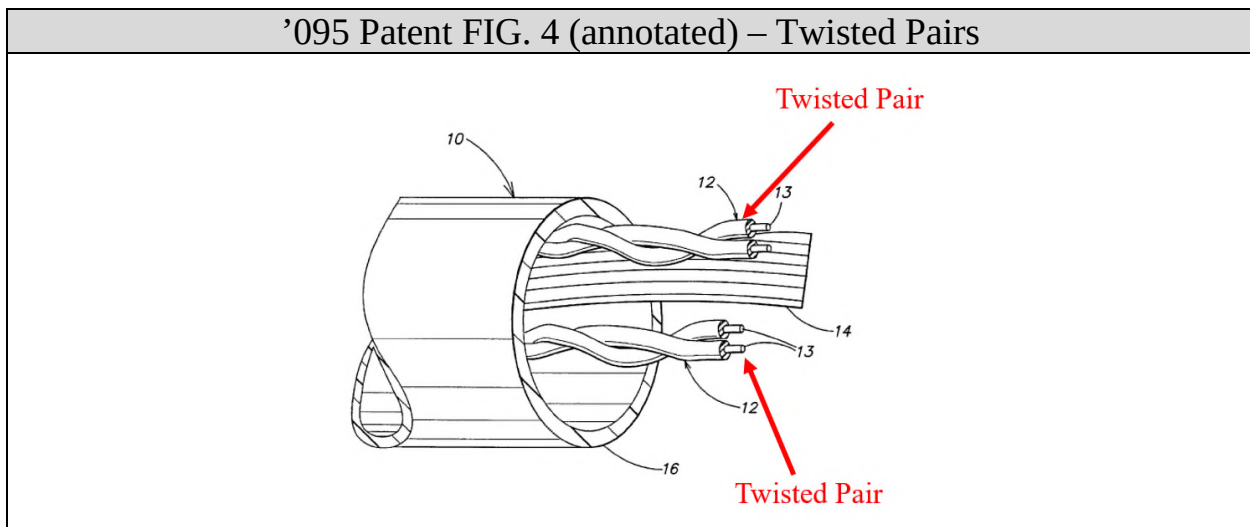
electrical conductors (14) and (16), along with shield (15), occurs as part of the cable assembly process. Roberts 12:12-26; Cornelison Tr. 181:22-182:5 (“I do not see Figure 23 creating a twisted pair. I see it creating the assembly in the – assembly that Roberts refers to as – I think it’s Figure 17.”). Accordingly, as the straight-line, individual electrical conductors exit through the **holes (33)** of die plate (30(a)), they are cabled as a direct result of the **rotation** of die plate (30(a)), and assembled together to form a bundle of transmit wires (14) separated from a bundle of receive wires (16) by metallic shield tape (15). Eldering ¶58.

The cable manufacturing process taught in Roberts, in which all of the components are cabled together to form the final cable assembly, is therefore akin to the “bunching” process taught in the ’095 Patent. But, as discussed above, this bunching process has nothing to do with twisting two insulated conductors around one another to form a twisted pair to form a balanced transmission line, as defined in the ’095 Patent. Eldering ¶¶59, 147-148.

Contrary to Roberts’ actual teachings, Petitioner and its expert resorted to improper hindsight reconstruction by arbitrarily and incorrectly labeling Roberts Figure 17 as if its bundles (*i.e.*, more than a pair) of non-twisted “transmit” wires (14) and “receive” wires (16), which are located on opposite sides of metallic shield (15), could somehow satisfy the “first twisted pair of insulated conductors” and “second twisted pair of insulated conductors” claim limitations at issue:

| Petitioner's Depiction of Roberts<br>(Pet. 21, EX-1007 ¶113)                                                                           | Roberts' Actual Disclosure<br>(Roberts 1:5-31, Eldering ¶53¶)                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>first twisted pair</p> <p>second twisted pair</p> |  <p>Transmit Wire Group/Bundle (14)</p> <p>Shield (15)</p> <p>Receive Wire Group/Bundle (16)</p> |

Pet. 19, 21-22, EX-1007 ¶¶87-94, 113. But Petitioner's labels are wrong. As shown previously, the '095 Patent defines a "twisted pair" as a "***pair[]*** of insulated conductors ***twisted together*** to form a balanced transmission line," as shown in FIG. 4 of the '095 Patent. Eldering ¶¶53-54, 147-148.



In reality, the transmit and receive conductor "pairs" disclosed in Roberts do not contact each other since they are on opposite sides of the shield (15), and therefore cannot be "twisted together around one another to form a balanced transmission

line,” as defined and claimed in the ’095 Patent. In fact, as shown above in Roberts FIG. 17, the alleged wires are not twisted at all, but rather bundled straight-line conductors. Such a non-twisted bundle of straight-line transmit wires (14) in Roberts cannot constitute the claimed “first twisted pair of insulated conductors,” and such a non-twisted bundle of straight-line receive wires (16) in Roberts also cannot constitute the claimed “second twisted pair of insulated conductors.” Eldering ¶¶55-56, 147-148.

For all these reasons, Roberts cannot ***necessarily*** disclose twisted pairs or the separation of twisted pairs, as defined and claimed in the ’095 Patent and as required to establish inherency under longstanding principles of patent law. *Personal Web Techs., LLC v. Apple, Inc.*, 917 F.3d 1376, 1382-83 (Fed. Cir. 2019) (reversing Board’s unpatentability finding because “mere possibility is not enough” for inherency, and stating “[i]nherency . . . may not be established by probabilities or possibilities.” (citation omitted)). Therefore, Roberts fails to expressly or inherently disclose that the bundles of straight-line transmitting and receiving wires (14) and (16) could somehow constitute the first and second twisted pair of insulated conductors limitations required by claims 27-29 of the ’095 Patent. Roberts thus

fails to anticipate claim 27, as well as dependent claims 28 and 29.<sup>5</sup> Eldering ¶¶61, 168.

2. *Regarding Ground 2, Petitioner’s False Inherency Theories Failed To Establish That Yanagita Anticipates Claims 27-29.*

Petitioner alleged that Yanagita (EX-1012) anticipates claims 27-29 of the ’095 Patent. Pet. 64-72. In doing so, Petitioner speculated that Yanagita, an English translation of the underlying Japanese language patent application publication, discloses the separation of “twisted pairs” of conductors.<sup>6</sup> It does not. In fact, like Roberts, the words “twisted pair[s]” never appear in Yanagita. Nor does Yanagita disclose or suggest separating a first “twisted pair” from a second “twisted pair” under the proper claim construction of “twisted pair” discussed above (*i.e.*, “**two** insulated conductors **twisted together around one another** to form a balanced transmission line,” as shown in FIG. 4 of the ’095 Patent). Lacking any such express

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<sup>5</sup> Tellingly, as discussed above in Claim Construction, Petitioner acknowledged that there is a dispute as to whether “twisted pairs” are disclosed in Roberts.

<sup>6</sup> Petitioner and its expert cite to an uncertified translation of Japanese Patent Application Publication S43-15470 (EX-1055) Pet. 64, 66; EX-1007 ¶¶100, 257. Patent Owner respectfully maintains its objection to Petitioner’s reliance on the uncertified translation under 37 C.F.R. § 42.63.

disclosure in Yanagita, Petitioner again resorted to erroneous inherency speculation, arguing that because Yanagita discloses “‘strands of insulated wires or pairs thereof’ that run along the surface of the core material,” and “insulated wires are twisted together,” Yanagita discloses first and second twisted pairs of insulated conductors. Pet. 65-66.

In other words, despite ambiguities in Yanagita and its failure to disclose or suggest any “twisted pair,” Petitioner argued that because Yanagita merely discusses twisting insulated wires, the insulated wires in Yanagita are ***necessarily*** twisted ***pairs***. But as Petitioner’s expert admitted on cross-examination, Yanagita’s actual teachings fail to support Petitioner’s erroneous speculation, especially regarding how a POSITA would understand the meaning of certain translated terms like “stranding” and “twisting.”:

There are terms used, particularly ‘stranding’ and ‘twisting,’ that are, I would say in my view, ***difficult to translate consistently*** across languages with different meanings and different contexts. There may be other examples in here [in EX-1012] . . . But there are terms here used in the cable industry that would need close attention as you read the English translation.

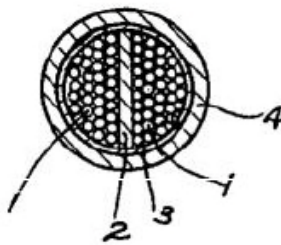
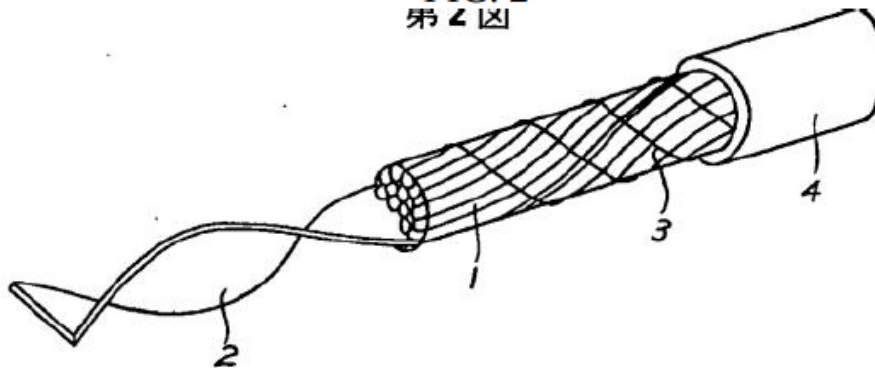
Cornelison Tr. 121:9-122:2. Speculating as to what Yanagita even discloses, Petitioner mischaracterized its teachings and failed to show that it anticipates the Challenged Claims. *Cheese Sys., Inc. v. Tetra Pak Cheese and Powder Sys., Inc.*, 725 F.3d 1341, 1351 (Fed. Cir. 2013) (finding “[w]ithout a clear and unambiguous

teaching, a jury could only speculate, hardly a compelling case for anticipation.”).

a. Yanagita Teaches A “Twisted Cable,” Not “Twisted Pairs.”

Admittedly, Yanagita also fails to teach anything about—and never even mentions—the reduction of crosstalk in a cable. Cornelison Tr. 127:14-21. According to the certified Yanagita translation relied upon in the Petition, Yanagita’s teachings relate “to an alternately ***twisted cable*** that prevents twisting of a wire core from becoming undone.” Yanagita 1 (col. 1). As illustrated in FIGS. 1 and 2, Yanagita discloses laying a “large number of insulated wire strands” consisting of parallel, straight-line wires (*i.e.*, ***untwisted*** wires) on either side of a core material that has a “***reciprocatingly twisted shape***,” such that “the twisting will not become undone even when a tensile force is applied, in the lengthwise direction, to the wire core.” Yanagita 1 (col. 2). Accordingly, the purpose of the “twisting” disclosed in Yanagita is to ensure the mechanical integrity of the cable. Eldering ¶¶63-72.

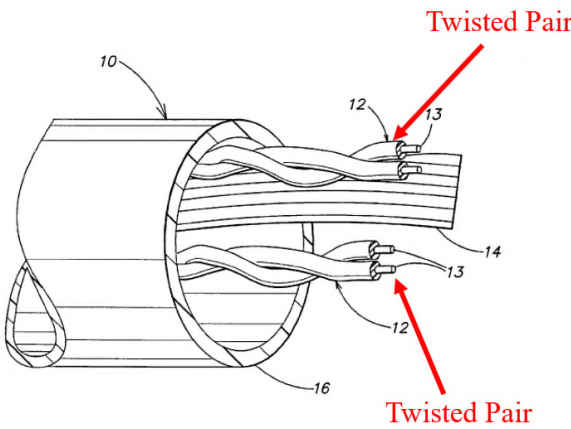
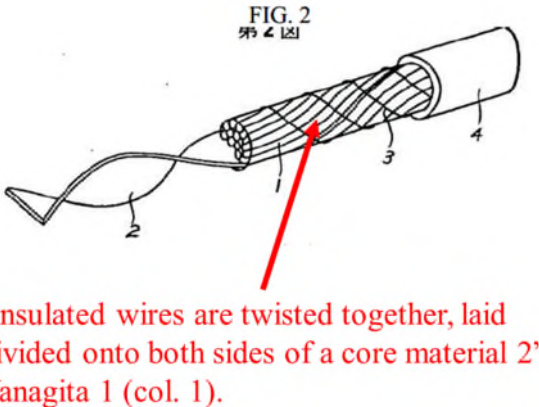
FIG. 1

FIG. 2  
第 2 図

The present invention focuses on this point, and a first invention thereof is an alternately ***twisted cable*** wherein ***a large number of insulated wire strands, or that wherein the insulated wire strands are twisted together, are laid, while twisting along the surfaces, along both surfaces of a core material*** that is made by forming a plate-shaped body so that the direction of the surface thereof gradually changes in a ***reciprocatingly twisted shape*** . . . and a second invention is an alternately ***twisted cable*** wherein a portion of the aforementioned core body is replaced with a connecting portion.

Yanagita 1 (col. 1). “Twisting” the conductors (1) along the surface of the core material (2) is the principle purpose of the invention in Yanagita, which is to provide “an alternately ***twisted cable*** that prevents twisting of a wire core from becoming undone.” Yanagita 1 (col. 1). The “insulated wire strands” (1) in Yanagita refer to individual insulated conductor wires, as FIG. 2 clearly illustrates. As Petitioner’s

expert also admitted, a stranded individual wire can consist of individual filaments of wire, with each of those filaments being referred to as a “strand.” Cornelison Tr. 161:6-162:9. And while FIG. 2 depicts the “alternatingly **twisted cable**” having individual conductor wires (*i.e.*, strands) running along the surfaces of that twisted core, the individual conductors are not “twisted together around one another to form a balanced transmission line,” as shown in FIG. 4 of the '095 Patent:

| '095 Patent FIG. 4 (annotated) – Twisted Pairs                                     | Yanagita FIG. 2 (annotated) – Twisted Cable                                         |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |

Eldering ¶¶65, 147-148, 170-171.

Yanagita further discloses that insulated wires (1) are laid along the contour of the twisted core material (2):

Explaining this for an illustrated embodiment, **1 is an insulated wire or that wherein insulated wires are twisted together, laid divided onto both sides of a core material 2**, with the outer periphery thereof wrapped with a rough wrapping yarn for applying pressure, with the outer periphery then covered with a cable sheath 4. The core material 2 is formed in a **reciprocatingly twisted shape** so that the directions of both sides gradually change along the lengthwise direction thereof, as

depicted best in FIG. 2.

Yanagita 1 (col. 1). But here again, as shown in FIGS. 1 and 2, Yanagita teaches that insulated wire(s) (1) are laid on opposite sides of the core material (2) and collectively twisted longitudinally along the surfaces of the “reciprocatingly twisted shape” core. Yanagita 1 (col. 1). As shown in FIG. 2, the resulting profile of the insulated wire(s) follows the twisting contour of the core material (2). Tellingly, this is the only “twisting” shown in Yanagita. Nowhere does Yanagita teach two conductors that are “twisted together around one another to form a balanced transmission line.” Accordingly, the groups of wires disclosed in Yanagita cannot constitute the claimed “twisted pairs” required by the ’095 Patent. Eldering ¶¶65-67, 147-148.

b. The Disclosure In Yanagita Relied On In The Petition Does Not Necessarily Disclose “Twisted Pairs”.

Despite its expert’s admission on cross-examination that Yanagita is not clear on what it means by “stranding” and “twisting,” Petitioner relied upon just two citations to the certified Yanagita translation regarding the twisted pair claim limitations at issue. Pet. 65-66; Cornelison Tr. 121:9-122:2. The first of these citations fails to necessarily disclose the “twisted pair” claim elements at issue, and paraphrases Yanagita by stating that “Yanagida discloses a plurality of ‘strands of insulated wires or pairs thereof’ that run along the surface of the core material.

Yanagida, 1[col.1].” Pet. 65. But when read in context, the cited language here is drawn to the **prior art**, not any embodiment disclosed in Yanagita or shown in FIGS 1 and 2:

There is a trend to often using, as communication cables, so-called “alternatingly twisted cables,” wherein that wherein a large number of ***strands of insulated wires or pairs thereof*** or quad strands, or units thereof, are twisted together so as to reverse the direction of twisting thereof with given periodicity. However, there is a shortcoming with this type of cable in that . . . the twisting of the cable core becomes undone, and while there has been a variety of innovations to prevent this, each has problems in practice.

Yanagita 1 (col. 1) (language cited and relied on in Petition emphasized). As Cornelison admitted, a “strand” of wire is simply an “individual filament.” Cornelison Tr. 162:1-9 (“Each individual filament could be called a strand. . . . a strand within a conductor, which is in turn an assembly of the strands.”). Indeed, a POSITA would understand that this statement in Yanagita merely describes prior art cables in which a large number of insulated, straight-line wires (individual wires, pairs of wires, or quad sets of wires) are collectively twisted longitudinally along the axis of a cable, just as the conductors are shown in Yanagita FIG. 2 above (absent the core). Eldering ¶¶68-70.

Additionally, Yanagita introduces the problem in the art of “alternatingly twisted cables” in which “the twisting of the cable core becomes undone” “when a tensile force is applied in the lengthwise direction of the cable core prior to

application of the cable sheathing.” Yanagita 1 (col. 1). Yanagita subsequently presents a solution to that problem that involves the use of core material (2) to improve the mechanical characteristics of the cable and avoid unraveling. But this teaching in Yanagita is merely drawn to an improvement to the cable assembly process disclosed in Roberts and the cable “bunching” process taught in the ’095 Patent, as discussed above. A POSITA thus would not understand this to teach twisted pairs in any way. Eldering ¶¶71-72, 147-148.

Based on erroneous hindsight reasoning, Petitioner also misleadingly comingled Yanagita’s discussion of the prior art with disparate elements of the disclosed invention regarding claim 27 of the ’095 Patent. But as the Federal Circuit has explained, “it is **not** enough that the prior art reference discloses part of the claimed invention, which an ordinary artisan might supplement to make the whole, or that it includes multiple, distinct teachings that the artisan might somehow combine to achieve the claimed invention.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008) (reversing anticipation finding based on combining parts of two separate embodiments to meet all of the claim elements, when neither embodiment alone contained all of the elements). Instead, the reference must “clearly and unequivocally disclose the claimed [invention] or direct those skilled in the art to the [invention] without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited

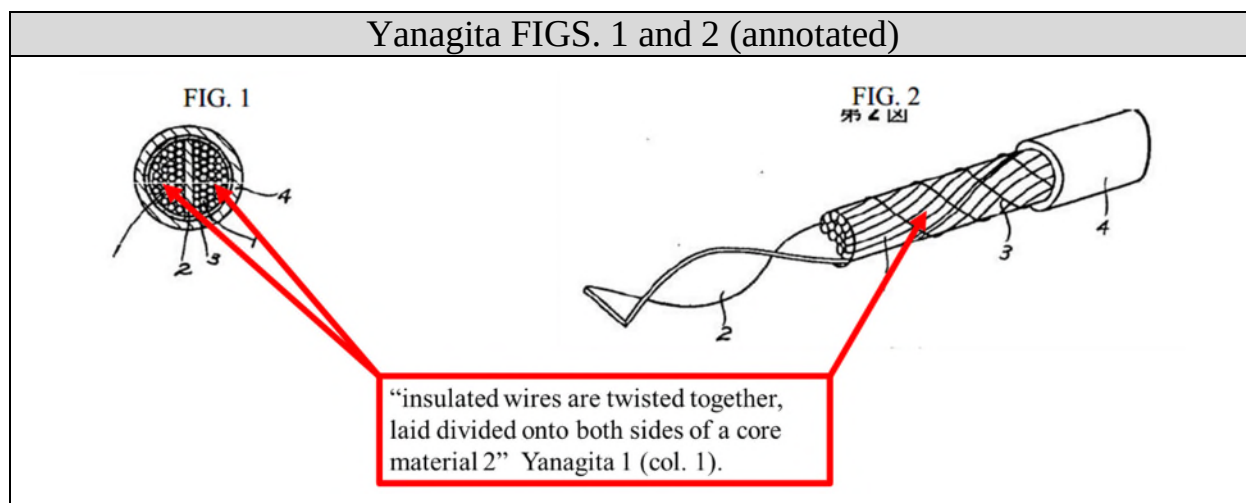
reference.” *Id.* at 1371 (quoting *In re Arkley*, 455 F.2d 586, 587 (CCPA 1972)). Petitioner’s attempt to cobble together disparate disclosure to try and show the required twisted pair limitations misrepresents Yanagita’s teaching, and nonetheless fails to disclose twisted pairs as claimed. Eldering ¶¶73, 147-148.

Likewise, Petitioner’s second citation to Yanagita, read in context, fails to necessarily disclose the “twisted pair” claim elements at issue. Pet. 65-66 (“element 1 can be where ‘insulated wires are twisted together’”). In context, the cited language reads as follows:

Explaining this for an illustrated embodiment, 1 is an insulated wire or that wherein insulated wires are twisted together, laid divided onto both sides of a core material 2, with the outer periphery thereof wrapped with a rough wrapping yarn for applying pressure, with the outer periphery then covered with a cable sheath 4.

Yanagita 1 (col. 1). But as shown above, Yanagita discloses that element 1 is an insulated wire or a group of insulated wires that are laid on opposite sides of the core material (2) and collectively twisted along the surfaces of the core material in a longitudinal direction, as plainly shown in FIGS. 1 and 2. Eldering ¶¶74-75.

# Yanagita FIGS. 1 and 2 (annotated)



Here again, there is no teaching of “twisted pairs” (*i.e.*, “**two** insulated conductors **twisted together around one another** to form a balanced transmission line,” as shown in FIG. 4 of the ’095 Patent), as required by the Challenged Claims. Petitioner arbitrarily selected individual straight-line conductors (1) on either side of the core material (2) and falsely labeled them twisted pairs. But as shown above, there is nothing in Yanagita to suggest that these individual straight-line conductors are part of a “pair” of conductors, let alone that they are “twisted together around one another to form a balanced transmission line,” as required by the Challenged Claims. Eldering ¶¶76, 147-148.

Yanagita fails to expressly or inherently teach or suggest the critical separating “a first twisted pair of insulated conductors” and “a second twisted pair of insulated conductors” limitations required by the Challenged Claims. Accordingly, Yanagita fails to anticipate claim 27 and dependent claims 28 and 29.

Eldering ¶¶77, 173.

3. *Regarding Ground 3, Petitioner’s False Inherency Theories Also Failed To Establish That GmbH-866 Anticipates Claims 27-29.*

Petitioner alleged that GmbH-866 (EX-1010) anticipates claims 27-29 of the '095 Patent. Pet. 41-52. But in doing so, Petitioner here again failed to demonstrate how GmbH-866 teaches or suggests each and every limitation of the Challenged Claims. Nowhere does GmbH-866 teach or suggest separating a first “twisted pair” from a second “twisted pair” under the proper claim construction of “twisted pair” discussed above (i.e., “**two** insulated conductors **twisted together around one another** to form a balanced transmission line,” as shown in FIG. 4 of the '095 Patent), and—for the third time, just like Roberts and Yanagita—the words “twisted pair” never even appear in the reference. Lacking any such express disclosure in GmbH-866, Petitioner resorted to erroneous, speculative, and hindsight riddled inherency theories, arguing that just two cherry-picked, out-of-context snippets in GmbH-866 **necessarily** disclose the “twisted pair” limitations in claim 27 of the '095 Patent. Pet. 43. Petitioner’s entire theory is based on GmbH-866’s mere use of the word “stranded.”

In other words, Petitioner speculated that because GmbH-866 used the term “stranded copper conductors,” it should somehow be inherent in GmbH-866 that those conductors are twisted pairs. But admittedly, Petitioner’s speculative

generalization is wrong. Read in context, GmbH-866 fails to teach or suggest either “twisted pairs,” or separating twisted pairs, as required by the Challenged Claims. Eldering ¶¶78-79, 147-148.

a. “Stranded Copper Conductors” In GmbH-866 Do Not Necessarily Teach “Twisted Pairs.”

Petitioner alleged that “[s]tranded was understood to mean ‘twisted’.” Pet.

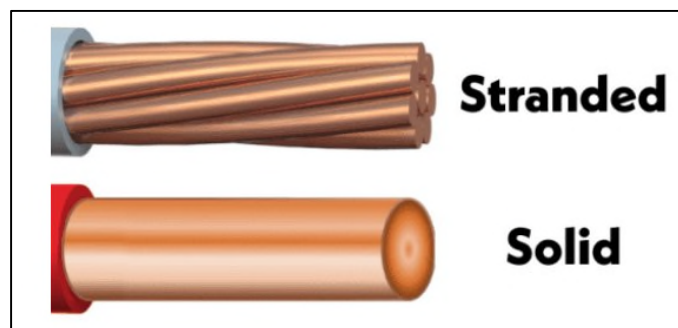
43. But on redirect by Petitioner’s own attorney, Petitioner’s expert admitted that “stranded” can mean different things in different contexts:

*I know stranding . . . as a verb, or ‘stranded,’ to mean stranded copper conductors where you have fine filaments making up an overall larger conductor. . . . So I do find ‘stranding’ and ‘twisting’ sometimes used in different ways, and you have to understand the context to understand the intended meaning of that word.*

Cornelison Tr. 213:3-214:2 The first citation on which Petitioner’s argument is based (“ . . . four pairs 1, each consisting of two isolated, stranded copper conductors 2 or wires”) is **not** referring to twisted pairs, as required by the Challenged Claims. Instead, it refers to how the conductor pairs in GmbH-866 merely consist of either ***stranded*** copper conductors, or ***solid*** wires. Pet. 43; Eldering ¶80.

Contrary to Petitioner’s and its expert’s unsupported allegations, a POSITA would understand that, in the context of GmbH-866, a “stranded copper conductor” merely refers to a particular **type** of wire composition. Eldering ¶80. As Petitioner’s expert admitted, it was well known that a standard individual conductive wire in a

data communications cable could be comprised of either (1) a single solid core wire containing a single, solid strand of conductive material (typically copper), or (2) stranded conductors, each conductor containing a number of smaller diameter strands of conductive material (*i.e.*, smaller diameter wires, again typically copper) that are twisted together to form the overall larger single conductor. Cornelison Tr.160:15-163:2 (“Q: What is stranded wire? A: It is a wire that is first formed of much smaller elements or rods of copper and then assembled together to form a larger composite conductor.”); *see also* Eldering ¶81.



Depending on the application, stranded conductors could have several advantages over solid core wire, including improved mechanical robustness and superior electrical characteristics. Eldering ¶82. In particular, a stranded conductor is more flexible and less subject to cracking when bent, and the use of multiple strands can have better high-frequency performance due to reduced skin effect, where high-frequency currents flow close to the surface of the conductor. *Id*; *see also*, Cornelison Tr. 162:18-164:9 (a stranded conductor “tends to be more flexible and easier to bend when it consists of filaments rather than a solid conductor”).

The asserted English translation of the German patent GmbH-866 is directed to “a data transfer cable consisting of at least n-pairs, n being an even-numbered multiple of 1, of **two isolated conductors** in each case, a shielding of the conductor pairs that consists of an electrically conductive material, and an outer cable sheath.” GmbH-866 2. A POSITA would understand that the “two isolated conductors” referred to here not only fails to teach or suggest the use of “twisted pairs,” it teaches away from twisted pairs as the two conductors in a twisted pair both physically and electromagnetically intertwined, **not isolated**. Eldering ¶83.

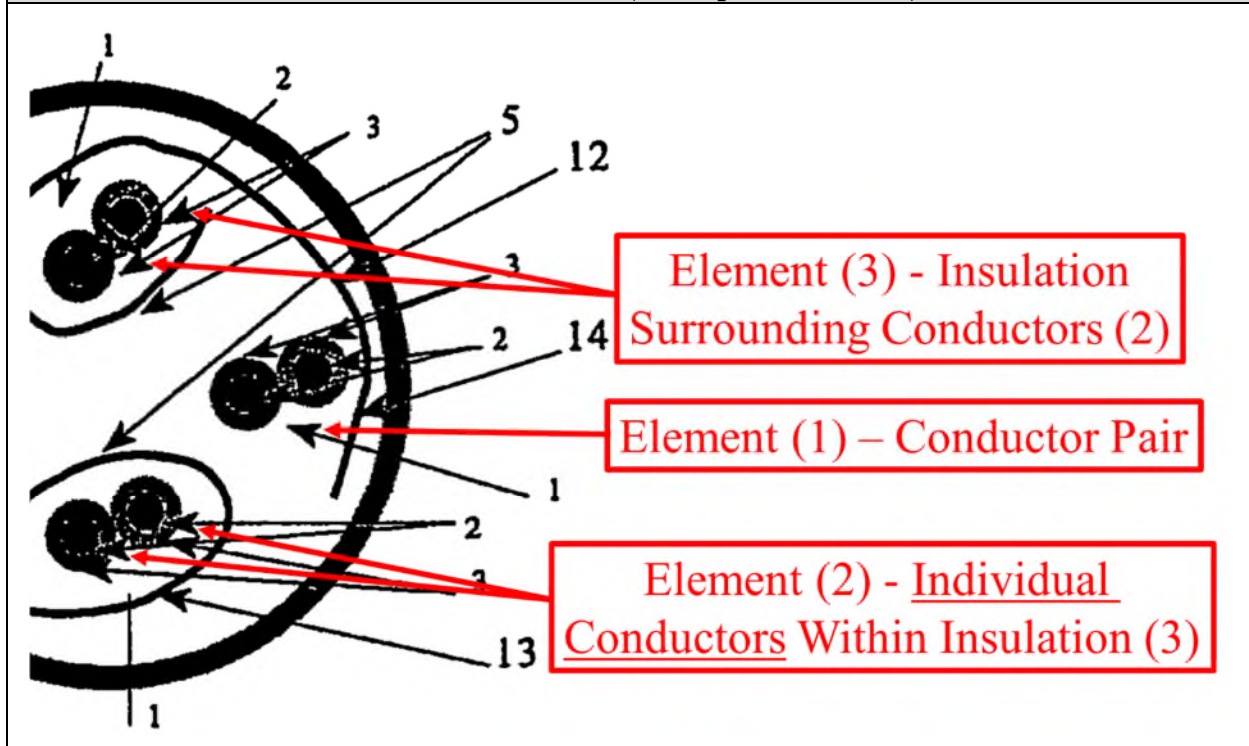
Additionally, as the plain language of the GmbH-866 translation explains, the pairs can consist of either stranded copper conductors or solid wires:

A data transfer cable according to the invention, shown in Fig. 1, comprises four pairs 1, **each consisting of two isolated, stranded copper conductors 2 or wires**. Optionally, these **copper conductors or wires** may comprise a conductor coating, for example, of tin. The effective diameter of said **copper conductors or wires** is in particular 0.4 to 0.66 mm. The **copper conductors or wires** preferably have an insulation 3 consisting of a thermoplastic polymer . . .

GmbH-866 3; Eldering ¶83.

As the figures of GmbH-866 make clear, element (1) refers to a conductor **pair**, element (2) refers to each of the **two individual conductors** within a pair, and element (3) refers to the insulation surrounding each of the individual conductors. Eldering ¶84.

GmbH-866 FIG. 1 (excerpt, annotated)



Tellingly, the description of the GmbH-866 cable fails to provide any teaching that the *pairs*—element (1)—in and of themselves are stranded. Eldering ¶85. If GmbH-866 were in fact teaching that the conductor *pairs* were themselves stranded, a POSITA would expect some teaching that the two conductors—element (2)—are twisted together within a given pair (1). Instead, GmbH-866 merely teaches that the *individual copper conductors* (2), in and of themselves, are stranded. *Id.*

Additionally, the description of the GmbH-866 cable goes on to describe the effective diameter of the individual copper conductors or wires as “0.4 to 0.66mm,” which a POSITA would understand to be typical for both stranded copper conductors or solid wires in a data transfer cable, as shown in element (2). Eldering ¶86. To

the contrary, a twisted pair is **not** typically referred to as having a “diameter” at all. *Id.*

Likewise, the stranded copper conductor or wire is described as preferably having an insulation, element (3), which, as shown above in annotated FIG. 1, surrounds each of the individual stranded copper conductors or wires. Here again, the description fails to teach or suggest that the insulation (3) along with the conductors (2) are twisted together or stranded in any way. Eldering ¶87. If GmbH-866 were teaching twisted pairs—which it is not—a POSITA would expect GmbH-866 to teach that the conductors **and** their surrounding insulation are stranded together. *Id.* But GmbH-866 contains no such teaching. *Id.*

Accordingly, a POSITA would understand GmbH-866 as teaching that each of the disclosed pairs consists of two conductors, and that those conductors can be either stranded copper conductors, or solid wires. Eldering ¶88.

- b. The Petition Mischaracterized GmbH-866’s Statement That The “Invention Can Also Comprise Just Two Pairs Of Stranded Conductors,” Which Also Fails To Necessarily Disclose “Twisted Pairs.”

The second citation from GmbH-866 that Petitioner based its speculative and false anticipation theory likewise fails to disclose the twisted pair limitations required by the Challenged Claims. Pet 43 (“invention can also comprise just two pairs of stranded conductors”) (emphasis omitted). GmbH-866 teaches that all of

the components of the cable (*i.e.*, **not** just the individual conductors (2) of a pair (1), but rather **all** of the components) can be combined together during assembly of the cable and “stranded,” much like Roberts and Yanagita disclose that groups of untwisted, straight-line wires can be collectively bundled together as part of the cable assembly process, and the cable “bunching” taught in the ’095 Patent, discussed above. In fact, Petitioner and its expert **admit** that “***GmbH-866 describes twisting all the components of a cable about a central axis in the final cable assembly (also called ‘stranding’ or ‘cabling’). EX-1007, ¶¶190-194, ¶¶51-53.)***.” Pet. 49; Eldering ¶¶89-90.

GmbH-866 teaches “stranding or cabling” the components of the data transfer cable as follows:

The ***stranding of the pairs 1 can consist in what is known as a helix stranding or in an SZ stranding (alternating, right-left stranding).*** . . . The structure described above is common to all embodiments of the data transfer cable according to the invention. However, it is possible not only, as shown, for four pairs 1 to be provided, but rather that a data transfer cable according to ***the invention can also comprise just two pairs of stranded conductors***. Any desired n-pairs can be provided, n being an even-numbered multiple of 1.

GmbH-866 3-4. Here, as Petitioner and its expert admitted, GmbH-866 teaches that the **pairs (1)** are stranded together into a helical or SZ form, **not** that the individual conductors (2) of each pair are twisted together to form a twisted pair. Eldering ¶¶91-92. In fact, on cross-examination Petitioner’s expert admitted that GmbH-866

refers to such cable assembly as “stranding” four (4) times throughout the specification, including in claim 11. Cornelison Tr. 149:2-22, 150:17-152:13, 153:8-155:2, 156:1-157:1.

Petitioner cited one out-of-context snippet from the second to last sentence to try to support its speculation that GmbH-866 teaches the “twisted pairs” limitations of the Challenged Claims. Pet. 4 But a POSITA reading that full paragraph in context would understand that there is no such disclosure here. Petitioner and its expert admitted that the language immediately preceding the relied on snippet teaches that all of the components of the cable, including all of the conductor *pairs (1)*, can be stranded into either a helical or SZ configuration. Pet. 49; EX-1007, ¶¶190-194, ¶¶51-53. Instead, a POSITA would understand GmbH-866 here as teaching that although the data transfer cable is shown having four pairs (1) of conductors that are stranded as described, it can alternatively have any even multiple number of pairs (1) of conductors, for example 2, 4, 6, 8, and so on. But nothing suggests to a POSITA that the *individual conductors (2)* are twisted together to form “twisted pairs” as claimed. Eldering ¶¶89-94.

Accordingly, GmbH-866 fails to *necessarily* disclose or suggest twisted pairs, or separating twisted pairs, as required by the Challenged Claims (*i.e.*, “**two** insulated conductors **twisted together around one another** to form a balanced transmission line,” as shown in FIG. 4 of the ’095 Patent). Eldering ¶¶95, 147-148.

Accordingly, GmbH-866 fails to expressly or inherently disclose or suggest at least the separating “a first twisted pair of insulated conductors” and “a second twisted pair of insulated conductors” limitations required by the Challenged Claims, including independent claim 27 and dependent claims 28 and 29. Eldering ¶¶96, 147-148.

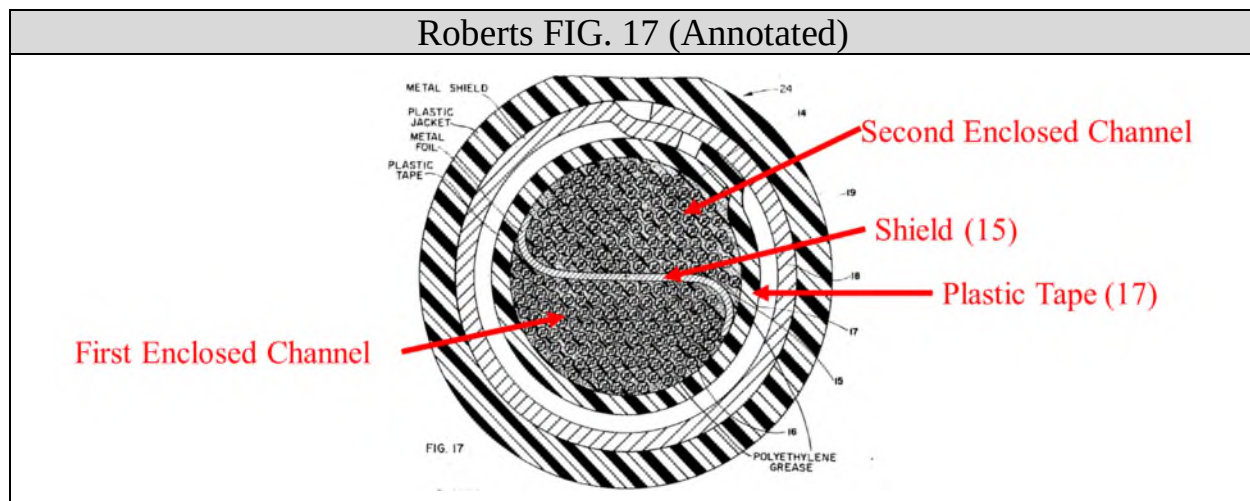
**B. Regarding Grounds 1 and 7, Petitioner’s Anticipation Theories Failed To Disclose “At Least Two Grooves Do Not Form Completely Enclosed Channels,” As Required By Claim 29.**

Claim 29 requires “[t]he data communications cable as claimed in claim 27, wherein the at least two grooves *do not form completely enclosed channels.*” ’095 Patent 12:32-34. Petitioner construed “grooves” as “[r]egions within a cable that are substantially physically separated from other regions with the cable by a pair separator; *i.e., they are formed by, but need not be part of, the separator.*” Pet. 18. Under Petitioner’s own construction, the alleged “grooves” in both Roberts and Yanagita are completely enclosed channels. As a result, Grounds 1 and 7 admittedly cannot satisfy the anticipation requirements regarding at least claim 29.

*1. Since Roberts Teaches Completely Enclosing Conductor Groups (14) and (16), It Cannot Anticipate Claim 29.*

Without explanation, Petitioner alleged that Roberts’ shield (15) somehow does not form completely enclosed channels. Pet. 30-31. But on cross-examination, Petitioner’s expert admitted that shield (15), which Petitioner alleged is the claimed

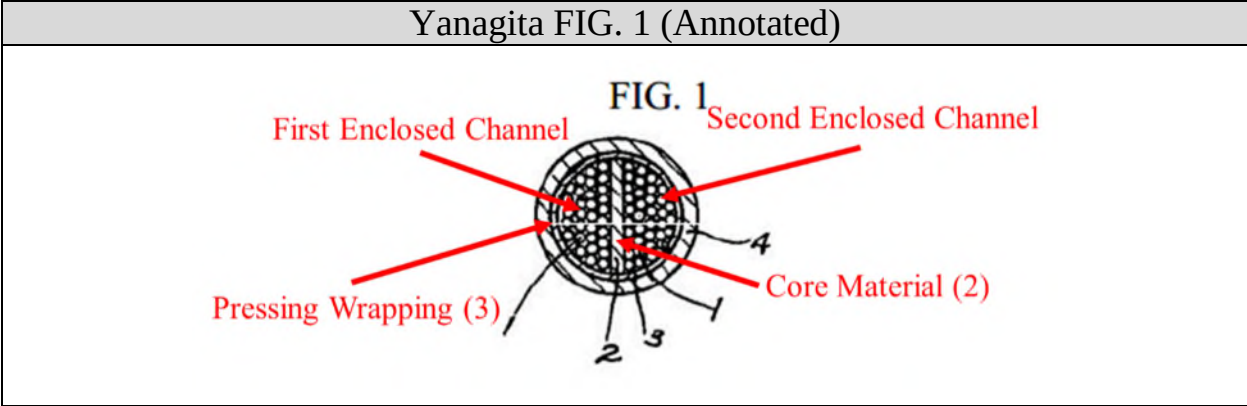
pair separator, extends entirely through the interior of the cable in Roberts FIG. 17, and that it separates entirely conductor group (14) from conductor group (16). Cornelison Tr. 189:8-14. Under Petitioner's own construction, shield (15), together with plastic tape (17), admittedly creates two grooves that form completely enclosed channels:



Roberts 10:41-52. Accordingly, Roberts cannot anticipate claim 29 for this additional reason. Eldering ¶¶166-168.

2. *Since Yanagita Teaches Completely Enclosing Conductors On Either Side Of The Core Material, It Also Cannot Anticipate Claim 29.*

On cross-examination, Petitioner's expert admitted that core material (2), which Petitioner alleges is the claimed pair separator, extends entirely through the interior of the cable in Yanagita FIGS 1 and 2. Cornelison Tr. 129:7-14. Under Petitioner's own construction, core material (2) together with pressing wrapping (3) admittedly creates two grooves that form completely enclosed channels:



Yanagita 1 (col. 1). Petitioner failed to explain why the channels formed could somehow not be completely enclosed, which is contrary to its own proposed construction by requiring that the channels be formed entirely by core material (2). Pet. 72. Accordingly, Yanagita cannot anticipate claim 29 for this additional reason. Eldering ¶¶172-173.

**C. Regarding Grounds 2, 4, 6, And 8, Petitioner’s Obviousness Theories Directed To Claim 31 Failed To Overcome The Deficiencies In Its Anticipation Theories Regarding Claim 27.**

As explained *supra* §IV.B, Patent Owner has established that the Petition failed to establish anticipation of claim elements 27.a and 27.b, which are substantively identical to claim elements 31.a and 31.b as follows:

| '095 Patent Claim 27                                                                                                    | '095 Patent Claim 31                                                  |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 27.a - “a first <i>twisted pair</i> of insulated conductors” and “a second <i>twisted pair</i> of insulated conductors” | 31.a - “a <i>plurality of twisted pairs of insulated conductors</i> ” |

| '095 Patent Claim 27                                                                                                                                                                                  | '095 Patent Claim 31                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27.b – “a configurable dielectric pair separator that <b><i>separates the first and second twisted pairs of conductors</i></b> , the configurable dielectric pair separator being substantially flat” | 31.b – “a configurable dielectric <b><i>pair separator disposed between at least two of the plurality of twisted pairs of insulated conductors</i></b> ” |

In Grounds 2, 4, 6, and 8, Petitioner relied upon the same exact disclosures in the primary references that failed to disclose or anticipate claim elements 27.a and 27.b to try and show that substantively identical claim elements 31.a and 31.b were obvious, without either relying on any of the secondary references, or explaining why those elements (*i.e.*, separating “twisted pairs”) could somehow be obvious. Nor did Petitioner suggest any further substitution of components involving the secondary references or describe why a POSITA could, let alone would, have been motivated to make a substitution in order to supplement those deficient anticipation arguments in any way. Accordingly, Petitioner’s obviousness challenges in Grounds 2, 4, 6, and 8 must fail as well.

1. *Regarding Grounds 2, 4, and 8, The Combinations Of Roberts Or GmbH-866 Or Yanagita And One Or More Of Jachimowicz And Gingue Failed To Render Claims 30-33 Obvious.*

Regarding independent claim 31, the **only** theories Petitioner presented as to why the alleged combinations of Roberts or GmbH-866 or Yanagita and one or more of Jachimowicz (EX-1014) and Gingue (EX-1013) render elements 31.a and 31.b obvious center on Petitioner’s flawed anticipation theories regarding claim elements

27.a and 27.b with respect to Roberts (Pet. 39), GmbH-866 (Pet. 57), and Yanagita (Pet. 76). Petitioner did **not** rely on Jachimowicz or Gingue for any of the missing twisted pair claim elements. Instead, it relied on Jachimowicz and Gingue **only** for element 31.c (“the configurable dielectric pair separator including a substantially flat dielectric tape formed of a foamed polymer”). Pet. 39 (Ground 2); Pet. 57-58 (Ground 4); Pet. 76 (Ground 8). Accordingly, Petitioner’s alleged combinations of Roberts or GmbH-866 or Yanagita with one or more of Jachimowicz or Gingue cannot render independent claim 31 obvious, nor can they render dependent claims 30, 32 and 33 obvious, which all depend from either independent claim 27 or 31. Pet. 33, 39, 40 (Ground 2); Pet. 53, 58 (Ground 4); Pet. 73, 76, 77 (Ground 8).

Additionally, Cornelison admitted that Mylar and foamed polymers are ***flammable***. Cornelison Tr. 129:15-130:1. Adding any such admittedly flammable material to a cable would ***increase*** its overall flammability, countering the alleged combinations and contradicting Cornelison’s opinions that cables somehow should be flame retardant instead. Pet. 34-35, 54-56, 74-75; EX-1007 ¶¶46, 210-214, 280-281, 286; Cornelison 129:15-130:13.

2. *Regarding Ground 6, The Combination Of GmbH-866 And One Or More Of Roberts, Jachimowicz, And Gingue Failed To Render Claims 27-33 Obvious.*

As also explained *supra* §IV.B.3, Patent Owner has established that GmbH-866 fails to anticipate claims 27-29 (Ground 3). And as further explained *supra*

§IV.D, Patent Owner also has established that GmbH-866 in combination with one or more of Jachimowicz or Gingue fails to render claims 30-33 obvious (Ground 4). And regarding the “cable twisting” claim elements 27.e and 31.d in Ground 6, Petitioner’s theories do **nothing** to remedy the deficiencies in Petitioner’s unsupported theories regarding claim elements 27.a, 27.b, 31.a, and 31.b regarding GmbH-866 and Grounds 3 and 4. Pet. 61-63.

In particular, Petitioner’s Ground 6 theory did not even attempt to establish why the alleged combination teaches or suggests missing claim elements 27.a-b or 31.a-b, other than what it argued in Grounds 3 and 4. Pet. 61. Because Ground 6 fails to substitute **any** components in the GmbH-866 cable, or explain why a POSITA would be motivated to combine those components, Ground 6 fails to establish how the combination of GmbH-866 in combination with one or more of Roberts, Jachimowicz and Gingue could possibly render claims 27-33 obvious for the same reasons explained *supra* §§IV.B.3 and IV.D regarding Grounds 3 and 4.

**D. Regarding Ground 5, The Combination Of Roberts And One Or More Of GmbH-866, Jachimowicz, And Gingue Cannot Render Claims 27-33 Obvious.**

*1. GmbH-866 Fails To Overcome Roberts’ Failure To Disclose The “Twisted Pair” Limitations.*

Tacitly admitting various fundamental deficiencies in its Roberts based anticipation theory, and attempting to hedge its bets regarding the separated “twisted

pair” limitations of claims 27.a,b and 31.a,b, Petitioner resorted to attempting to rely upon GmbH-866 and Jachimowicz to try to overcome such deficiencies. Pet. 59. But as explained *supra* §§IV.B.3 and IV.D regarding Grounds 3 and 4, GmbH-866 also fails to teach or suggest the separation of “twisted pairs” required by the Challenged Claims. As a result, any combination of Roberts and GmbH-866 likewise fails to teach or suggest the separation of twisted pairs claim limitations at issue. Eldering ¶¶97-98, 147-148.

2. *A POSITA Would Not Be Motivated To Modify Roberts Based On Jachimowicz.*

Petitioner also resorted to Jachimowicz to try to establish that twisted pairs were known in the art. But merely theorizing that certain isolated elements may have been independently known in a scattered fashion and using the claimed invention as a roadmap to try to assemble them is simply not enough to show obviousness. The Supreme Court has explained that an invention “composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.” *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007); *see also Virtek Vision Int’l ULC v. Assembly Guidance Sys., Inc.*, No. 2022-1998, 2024 U.S. App. LEXIS 7185, at \*9 (Fed. Cir. March 27, 2024) (“In short, this case involves nothing other than an assertion that because two coordinate systems were disclosed in a prior art reference and were therefore

‘known,’ that satisfies the motivation to combine analysis. That is an error as a matter of law. It does not suffice to simply be known. A reason for combining must exist.”); *Metalcraft of Mayville, Inc. v. Toro Co.*, 848 F.3d 1358, 1367 (Fed. Cir. 2017). (“[I]t is not enough for Toro to merely demonstrate that elements of the claimed invention were independently known in the prior art.”) (citation omitted).

Instead, it is “necessary . . . to determine whether there was an apparent **reason to combine the known elements in the fashion claimed** by the patent at issue.” *KSR Int’l Co.*, 550 U.S. at 418. Here, Petitioner failed to establish any rational basis or motivation for why a POSITA would have modified Roberts to “use twisted pairs” (Pet. 60), let alone provide any teaching or suggestion in Roberts or Jachimowicz regarding why a POSITA could, let alone **would**, have had an apparent reason or motivation to do so.<sup>7</sup> Pet. 60; Eldering ¶101.

In reality, Roberts teaches a single cable that—using a metallic shield—

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<sup>7</sup> Petitioner’s Ground 5 challenge also should be rejected for failing to explain what components are involved in its alleged substitution or how Roberts would actually “use twisted pairs” (Pet. 60). And even if Petitioner is suggesting that each of the individual straight-line conductors in Roberts’ conductor groups (14) and (16) would be substituted with a twisted pair, as alleged in Petitioner’s rebutted anticipation arguments with respect to Ground 1, Ground 5 should be rejected.

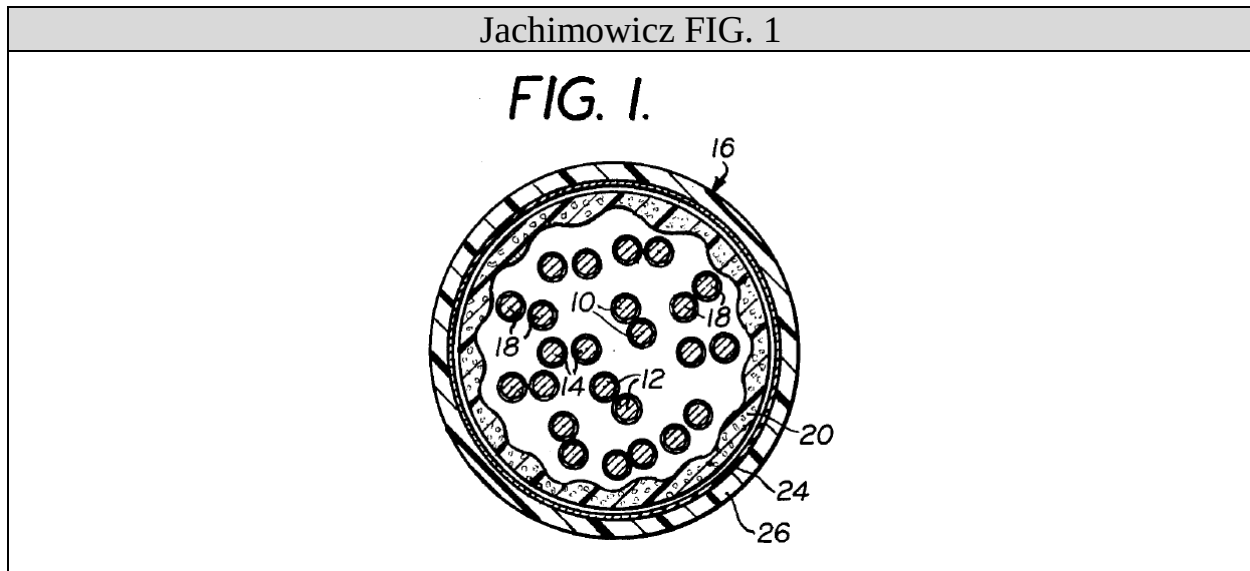
reduces crosstalk between a group of wires transmitting in one direction from another group of wires transmitting in the opposite direction:

In such an arrangement of a cable, ***those conductors on one side of the shield may all be used for transmitting carrier frequencies in one direction, while the returned channels for transmission in the opposite direction will be applied to the conductors on the other side of the shield. The shield has the effect of reducing so called ‘near end’ crosstalk*** since the weak attenuated currents coming in at a repeater point are in a compartment of the cable ***electrically shielded*** from a large amplified current entering the conductors in the other compartment of the cable.

Roberts 1:13-31, *see also* 13:10-36 (“This improved performance is achieved at much less cost. . . . By screening or shielding one transmitting group of insulated electrical conductors, improved nearend crosstalk properties are realized.”).

Accordingly, Roberts already solved the problem of near-end crosstalk between groups of bi-directional conductors in a communications cable. Eldering ¶¶102-103. When a primary prior art reference already provides a solution to the problem at issue, there would be no apparent reason or motivation to modify that primary reference to include an additional or redundant solution. *See, e.g., In re Anova Hearing Labs, Inc.*, 809 Fed. Appx. 840, 843 (Fed. Cir. 2020) (“The Board also does not explain why a person of ordinary skill in the art would be motivated to modify Brown, which already includes vents, to address occlusion effect.”); *South-Tek Sys. v. Engineered Corrosion Sols., LLC*, 748 Fed. Appx. 1003, 1007 (Fed. Cir. 2018).

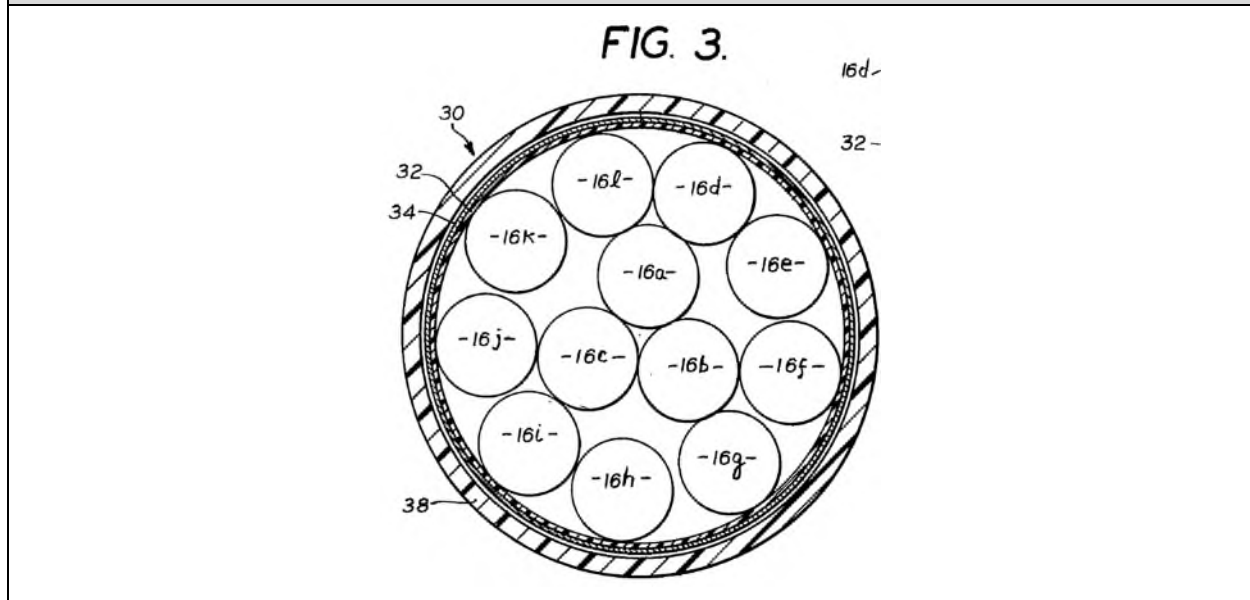
Jachimowicz discloses multiple twisted pairs (10, 12, 14, and 18) “locked” together a single cable unit (16) by a “jacket or tape of foamed material” (20), and surrounded by “metal shield” (24). Jachimowicz 2:28-53; 3:50-52.



“A metal shield 24 is placed over the jacket of foamed material 20. . . . The shield 24 is preferably a longitudinally applied folded aluminum or copper tape held around the unit 16.” Jachimowicz 2:54-65. Jachimowicz further teaches “[t]he cable of this invention consists of a multitude of identical small cables [unit 16] twisted together to form one cable core.” Jachimowicz 1:54-56.

FIG. 3 shows a communication cable with approximately 144 pairs. This communication cable, designated by the reference character 30 is made up of 12 units 16 and in FIG. 2 these units are indicated by the reference character 16 with a different letter a through p appended.

Jachimowicz 3:12-17.



“All of the units 16 are preferably of the same construction, as previously explained, **but because of the shielding around each unit the pairs in one unit do not disturb the pairs in the next unit.**” Jachimowicz 3:45-49. Accordingly, the **shielding** around each of the conductor units (16) in Jachimowicz prevents crosstalk between the different conductor units (16). Eldering ¶¶175-176.

Since Roberts already provided a solution to the near-end crosstalk problem in which groups of conductors are shielded from one another in the same cable, there would be no apparent reason to or motivation for a POSITA to modify Roberts to incorporate the twisted pairs of Jachimowicz that play no part in its proposed solution to reduce crosstalk between different conductor units (16). Eldering ¶¶175-176; see *In re Anova Hearing Labs*, 809 Fed. Appx. at 843; *South-Tek Sys.*, 748 Fed. Appx. at 1007.

3. *Petitioner Failed To Provide An Apparent Reason or Motivation To Modify Roberts To Use “Twisted Pairs.”*

As discussed *supra*, twisted pairs were known in the art before the priority date of any of the asserted prior art references, including Roberts. Yet despite twisted pairs being known, Roberts still chose a different solution to the crosstalk problem—one that did not utilize twisted pairs. And Petitioner failed to provide any support or any teaching or suggestion regarding why a POSITA would have had an apparent reason to, or been motivated to, dramatically modify the Roberts crosstalk solution by wholesale replacing individual straight-line conductors separated by a metallic shield with twisted pairs of conductors separated by a shield. Eldering ¶104.

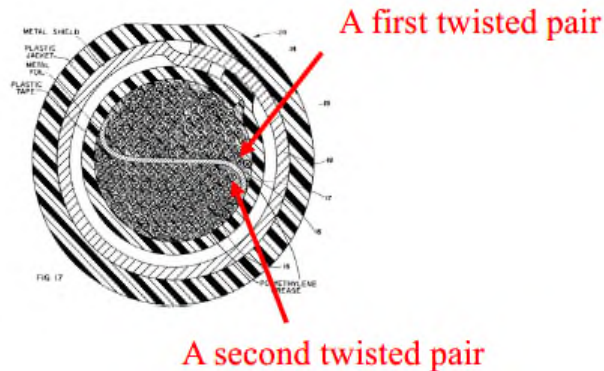
Instead, Petitioner merely relied upon a conclusory and boilerplate theory that twisted pairs were “common and conventional,” and that it would have been “an obvious and routine modification” to use them in Roberts that “would have had a reasonable expectation of success.” Pet. 60-61. Petitioner’s generic, superficial, and hypothetical speculation that a POSITA could somehow have used twisted pairs in combination with Roberts based on improper hindsight reasoning failed to provide any reason why a POSITA would have been motivated to make such combination at the time. The Federal Circuit has long explained how such mere capability rationales are insufficient. *See, e.g., Ex parte Gerlach*, 212 U.S.P.Q. 471 at 471 (P.T.A.B. 1980) (“There is nothing in the statutes or the case law which makes ‘that which is

within the capabilities of one skilled in the art’ synonymous with obviousness.”); *Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1068-69 (Fed. Cir. 2018) (vacating Board’s obviousness determination since “the Board focused on what a skilled artisan would have been *able* to do, rather than what a skilled artisan would have been *motivated* to do at the time of the invention.”) (emphasis in original). In any event, a POSITA would not have been so motivated. Eldering ¶105.

a. Petitioner’s Speculative “Mechanical Benefits” Theory Of Twisted Pairs Fail To Provide An Apparent Reason or Motivation To Modify Roberts.

Petitioner’s hypothetical and speculative “mechanical benefits” of “ensuring the individual wires in a pair stay together” theory also makes no sense, especially since the crosstalk solution in Roberts is diametrically opposed to and is antithetical to the use of twisted pairs in this regard. Pet. 60. As shown *supra* §IV.B.1.b, Roberts **divides** the conductors of a given transmit and receive pair. Petitioner’s alleged Roberts combination would require that the transmit and receive wire pairs (14, 16), which Roberts teaches are two straight-line conductors on opposite sides of the metallic shield, be antithetically substituted with two twisted pairs of conductors that are instead located on opposite sides of the shield, as Petitioner alleged in Ground 1. Eldering ¶108.

FIG. 17



Rather than “ensuring the individual wires in a pair stay together” as Petitioner alleged, Roberts teaches dividing the wires in a pair, which again is the antithesis of Petitioner’s speculative modification theory of Roberts. Accordingly, Petitioner’s erroneous and speculative apparent reason or motivation to combine by “ensuring the individual wires in a pair stay together” makes no sense whatsoever in the Roberts solution itself. Aside from this nonsensical argument, Petitioner failed to explain how or why substituting individual straight-line conductors in Roberts with twisted pairs would provide any additional “mechanical benefit” or improvement over the crosstalk solution Roberts already provided. Eldering ¶109.

b. The Alleged “Electrical Benefits” Of Twisted Pairs Fail To Provide A Motivation To Modify Roberts.

Petitioner also theorized that a POSITA would have had an apparent reason or be motivated to use twisted pairs in Roberts because “[t]wisted pairs were known

to provide the electrical benefits of lower crosstalk and decreased unbalanced mutual capacitance.” Pet. 60; *see also* EX-1007 ¶238. But regarding such alleged “electrical benefits,” lowering crosstalk and decreasing unbalanced mutual capacitance is **precisely** the problem already addressed in the solution provided by Roberts, which is dividing groups of straight-line conductor pairs with a metallic shield to achieve those exact improvements. Roberts Abstract (“ . . . ***unwanted energy transferred from one conductor to another by means of mutual inductive, capacity, or conductive coupling (crosstalk), shows greatly improved properties*** over undivided cable pairs or divided cable pairs of prior art.”). At the time of the Roberts’ invention, twisted pairs were known, and yet Roberts chose to solve the crosstalk problem in an antithetical way to Petitioner’s speculative modification theory without using twisted pairs. Eldering ¶106.

Petitioner also failed to provide any additional apparent reason or motivation regarding why a POSITA **would**, instead of merely could, have modified the Roberts near-end crosstalk solution by replacing each of its straight-line conductors with twisted pairs of conductors. Nor did Petitioner explain how or why substituting individual straight-line conductors in Roberts with twisted pairs would provide any “electrical benefit” or improvement over the near-end crosstalk solution Roberts already provided, which again is the antithesis of Petitioner’s speculative modification theory. Eldering ¶107.

4. *Petitioner Ignored The Many Drawbacks Of Using Twisted Pairs, Which Would Have Discouraged A POSITA From Antithetically Modifying Roberts Based on Petitioner's Speculative Theory.*

As discussed *supra* Section IV.b.1.a regarding Roberts, it was known in the art at the time of invention that using twisted pairs in a data communications cable presented numerous drawbacks. EX-2005 1:47-54; 2:3-15. But Petitioner and its expert failed to even acknowledge these known drawbacks regarding the use of twisted pairs. Because of these drawbacks, rather than antithetically modifying Roberts by replacing each of its individual, straight-line conductors with twisted pairs of conductors, a POSITA would have been discouraged from undermining the teachings of Robert to do so, especially since Roberts already provided a satisfactory solution to crosstalk issues involving straight-line conductors. Eldering ¶152.

5. *A POSITA Would Have Been Discouraged From Antithetically Replacing The Straight-Line Conductors In Roberts With Twisted Pairs Because It Would Alter The Principle Of Operation In Roberts.*

In addition to the issues already addressed above regarding the alleged combination of Roberts with the twisted pairs of Jachimowicz (and alleged, but nonexistent twisted pairs of GmbH-866), a POSITA would be further discouraged from antithetically combining twisted pairs with Roberts, as Petitioner proposed, because the alleged substitution would, for instance, alter the principle of operation in Roberts. Eldering ¶110; *Plas-Pak Indus. v. Sulzer Mixpac AG*, 600 Fed. Appx.

755, 758 (Fed. Cir. Jan. 27, 2015) (“[C]ombinations that change the ‘basic principles under which the [prior art] was designed to operate’ ... may fail to support a conclusion of obviousness.”) (quoting *In re Ratti*, 270 F.2d 810, 813 (CCPA 1959)).

For example, replacing the individual straight-line conductors with twisted pairs would double the number of wires in the Roberts cable. This alone would increase the overall cross sectional area of the cable to nearly double that of the original Roberts cable. Doubling the number of wires and the overall cable cross section would significantly increase the amount of materials needed to construct a cable of a given length, thereby increasing the cost of the modified cable over the original Roberts cable. This would eviscerate the advantages that the Roberts cable already offered, namely a space-saving, economical cable for two-way transmission which utilized a single wire in each transmit direction for a given transmit-receive pair, and a metallic shield between them to control crosstalk. Eldering ¶111.

Additionally, the increased cable cross section and resulting increase in diameter would lower the flexibility of the overall cable, reducing the number of applications it could be utilized in, either because of space or turn radius requirements. Eldering ¶112.

Furthermore, switching from a single wire transmitting in each direction to a twisted pair transmitting in each direction would require a far more complex cable termination solution involving double the number of wire terminations. Again, this

would increase the cost and complexity associated with using such a cable solution, which would discourage a POSITA from designing such a cable in the first instance. Eldering ¶113.

For all of these reasons, and for the reasons established *supra* §§IV.B and IV.D regarding Grounds 1-4, Petitioner failed to establish how Roberts in combination with one or more of GmbH-866, Jachimowicz or Gingue could render claims 27-33 obvious. Eldering ¶¶114, 177.

**E. Regarding Grounds 2, 4, 5, 6, and 8, The Proposed Combinations Failed To Establish That The Required Pair Separator Is A Substantially Flat Foamed Polymer Tape, And Cannot Render Claims 30-33 Obvious.**

Independent claim 27 requires “the configurable dielectric pair separator being substantially flat,” while claim 30, which depends from claim 27, requires “wherein the configurable dielectric pair separator comprises a foamed polymer tape.” Similarly, independent claim 31 requires “the configurable dielectric pair separator including a substantially flat dielectric tape formed of a foamed polymer.” ’095 Patent 12:12-37. Relying on the disclosure of Gingue (EX-1013) and Jachimowicz in each instance, Petitioner theorized the following regarding claims 30 and 31:

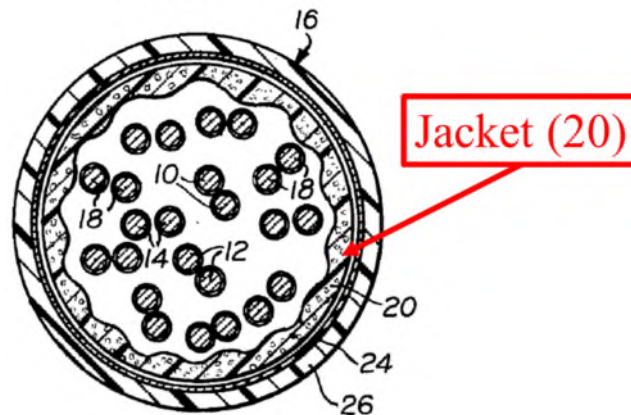
| Ground | Petition’s Theories                                                                                                                                                                                                 |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2      | Modify Roberts “to include a substantially flat dielectric foamed polymer tape in view of Gingue and/or Jachimowicz, either instead or in addition to the non-foamed plastic coating on shield 15, on either one or |

|   |                                                                                                                                                                                                                                                               |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | both sides of the shield.” Pet. 34, 39.                                                                                                                                                                                                                       |
| 4 | Modify GmbH-866 “[i]n view of the further teachings of Jachimowicz and/or Gingue . . . to include a substantially flat dielectric foamed polymer tape, either instead or in addition to the non-foamed plastic coating on shieldings 11, 12.” Pet. 53, 57-58. |
| 5 | Relies on Ground 2. Pet. 59.                                                                                                                                                                                                                                  |
| 6 | Relies on Ground 4. Pet. 61.                                                                                                                                                                                                                                  |
| 8 | Modify Yanagita “[i]n view of the further teachings of Jachimowicz and/or Gingue . . . by laying substantially flat dielectric foamed polymer tape alongside Yanagida’s core material 2 along with the laying of the twisted pairs.” Pet. 73, 76.             |

But neither Gingue, nor Jachimowicz, disclose a substantially flat foamed polymer tape. First, while Gingue discusses the use of foamed polymers as *insulation* to surround bare metal conductors, it fails to disclose or suggest anything about the use or existence of a foamed polymer *tape*. Eldering ¶¶180-181; Gingue 1:8-15; 5:24-29.

Petitioner also relied upon Jachimowicz and its disclosure of a foamed polymer *“jacket”* to try to support its speculative theory. But the *jacket* disclosed in Jachimowicz neither serves as a pair separator, nor is substantially flat. Cornelison Tr. 117:17-118:5 (“No, Jachimowicz does not disclose separating pairs within a group from each other . . .”). First, instead of separating twisted pairs, Jachimowicz discloses a jacket that does the exact *opposite* or *antithesis* of separating—instead, it surrounds multiple sets of twisted pairs to firmly *lock them together*, as described in relation to FIG. 1:

FIG. 1.



*To lock the pairs 10, 11, 14 and 18 together and prevent lay distortion when the bundle is handled in manufacturing processes or at installation, a thin jacketed [sic] of foamed polyethylene 20 is extruded over the bundle. The pairs can be held together in the bundle in other ways, if desired, as by applying a tape made of foamed thermoplastic supported by a film such as Mylar or polypropylene, or other material.*

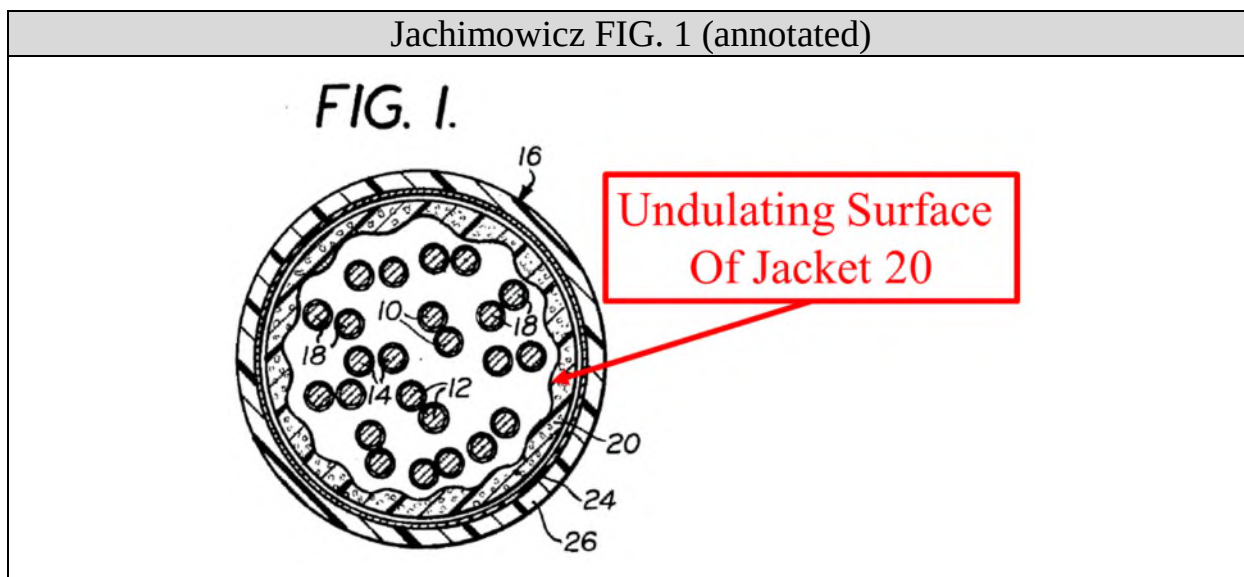
Jachimowicz 2:46-53.

*The pairs 10, 12, 14 and 18 are locked in reference to each other by means of the foamed jacket 20 or foamed tape, previously described. The interstices between the pairs in the unit 16 are preferably left with only air within them.*

Jachimowicz 3:50-56. A POSITA would thus understand that the jacket, whether it be extruded foam polymer or a tape, needs to be of sufficiently rigid composition that the pairs of conductors are bundled firmly together and unable to move (*i.e.*, “locked”). And nothing in Jachimowicz teaches or suggests that the jacket, which was designed to “lock” the twisted pairs together (Jachimowicz 2:46-53, 3:50-56) (*i.e.*, the exact opposite or antithesis of a separator) could or would be used for

separating conductor pairs. Eldering ¶¶182-185.

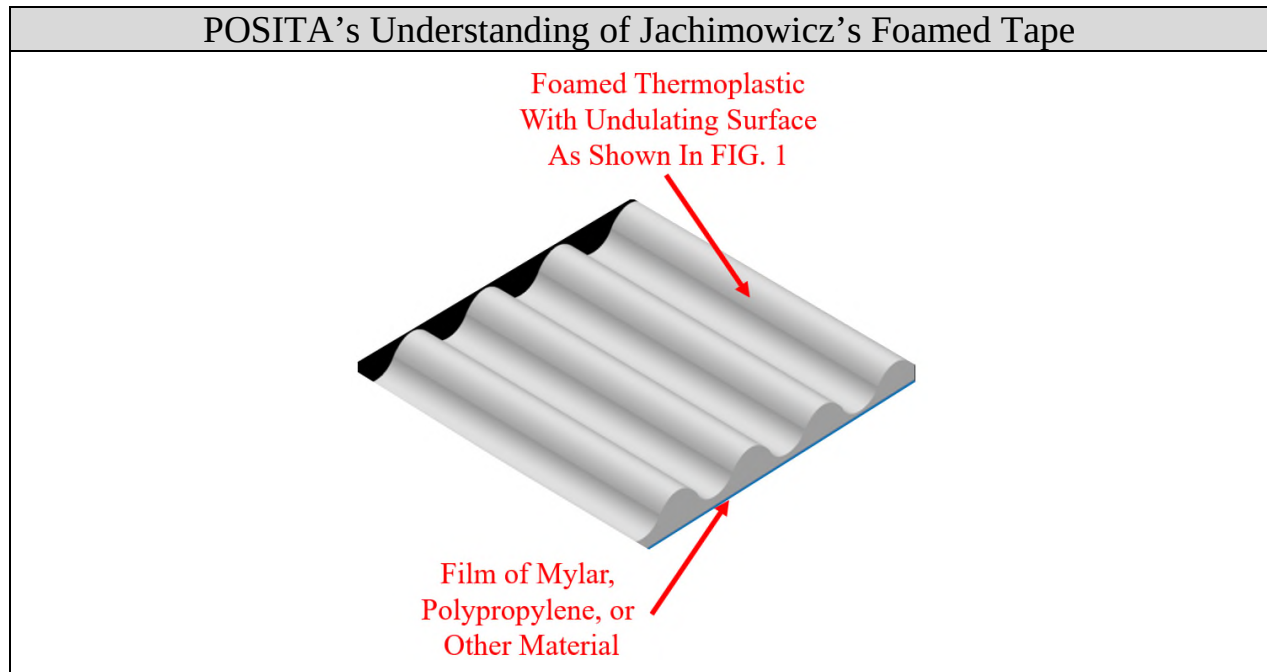
Second, Petitioner’s own proposed construction for “substantially flat” is “a substantially flat member prior to being formed into the cable assembly; the term does not require that the separator be substantially flat (i.e., free of any bends or folds) in the finished cable.” Pet. 13. But the jacket in Jachimowicz that Petitioner relied on is not shown in FIG. 1 as being substantially flat, nor has Petitioner provided any evidence that the jacket is substantially flat before being formed in the cable assembly. To the contrary, a POSITA would understand the foamed jacket or tape to have an **undulating surface**—exactly as it is depicted in FIG. 1.



Eldering ¶186.

Undeterred, Petitioner and its expert merely speculated that the foamed tape disclosed in Jachimowicz could somehow be substantially flat after all, for no reason other than because it is a “tape.” Pet. 34, 53, 73. But when cross-examined regarding

whether all tapes are substantially flat, Petitioner's expert admitted that he does not know. Cornelison Tr. 102:13-103:8. In context, Petitioner's made up and false description is not what a POSITA would understand Jachimowicz's tape to be:



In fact, ***nothing*** in Jachimowicz teaches that the “tape made of foamed thermoplastic supported by a film such as Mylar or polypropylene, or other material” is flat before it is installed within the Jachimowicz cable. Cornelison Tr. 116:8-117:15 (admitting “. . . ***Jachimowicz does not describe any other particular characteristics of the tape*** . . .”). To the contrary, a POSITA would understand that the tape is **not** substantially flat prior to being formed in the final cable assembly, given the only depiction of the jacket 20 in FIG. 1. Eldering ¶¶187-188.

Moreover, Petitioner's expert based his opinion on an erroneous

understanding of the function performed by the tape in Jachimowicz. When cross-examined whether the purpose of the Jachimowicz tape was to “lock” the conductor pairs together, Petitioner’s expert repeatedly testified that his opinions were based on the opposite, stating that “to perform the function of lock, he’s [Jachimowicz is] describing the *extruded thin jacket of foamed polyethylene*,” and that “to lock the pairs means to deliberately limit the movement of the pairs within the core” and “to perform a more solid mechanical capture in the cable than with tape.” Cornelison Tr. 106:16-112:1. Cornelison further testified that the *different* function performed by the disclosed *tape* in Jachimowicz was to merely keep the pairs “held together,” which “could allow conductors, pairs within the cable to move about.” *Id.* But Cornelison is unquestionably wrong, as Jachimowicz makes it perfectly clear that “[t]he pairs 10, 12, 14 and 18 are locked in reference to each other *by means of the foamed jacket 20 or foamed tape*, previously described.” Jachimowicz 3:50-56; Cornelison’s entire understanding of the function of the foamed tape in Jachimowicz is incorrect, thereby rendering his perceived and incorrect description of its shape without any basis in fact and entirely unreliable. To the contrary, the evidence shows that a POSITA would understand that the foamed tape in Jachimowicz is not substantially flat in order to serve its intended purpose of locking the conductor pairs together. Eldering ¶¶189-191.

Therefore, Petitioner failed to provide any evidence that the alleged foam tape

in Jachimowicz, or the nonexistent “tape” in Gingue, in various combinations with Roberts, GmbH-866 and Yanagita, is “substantially flat” under Petitioner’s own proposed construction. Accordingly, the combinations alleged in Grounds 2, 4, 5, 6, and 8 cannot disclose each and every element of claims 30 and 31-33, and therefore cannot render claims 30 and 31-33 obvious. Eldering ¶¶192-193.

Date: April 1, 2024

Respectfully submitted,

/ Thomas Hoehner /

Denis J. Sullivan (Reg. No. 47,980)

Thomas Hoehner (Reg. No. 73,474)

BARCLAY DAMON, LLP

Email: dsullivan@barclaydamon.com

Email: thoehner@barclaydamon.com

Email: pkatti@barclaydamon.com

Cory C. Bell (Reg. No. 75,096)

FINNEGAN, HENDERSON, FARABOW,

GARRETT, & DUNNER LLP

Email: cory.bell@finnegan.com

*Attorneys for Patent Owner Belden Inc.*

## **CERTIFICATION OF COMPLIANCE WITH WORD COUNT**

The undersigned hereby certifies that the foregoing Patent Owner Response complies with the requirements of 37 C.F.R. § 42.24 and contains less than 14,000 words (13,988 words), excluding those contained in the following: Table of Contents, Table of Authorities, Certification of Compliance with Word Count, Certificate of Service, and the Exhibit List.

/ Thomas Hoehner /

Denis J. Sullivan (Reg. No. 47,980)  
Thomas Hoehner (Reg. No. 73,474)  
BARCLAY DAMON, LLP

Cory C. Bell (Reg. No. 75,096)  
FINNEGAN, HENDERSON, FARABOW,  
GARRETT, & DUNNER LLP

*Attorneys for Patent Owner Belden Inc.*

## CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing **PATENT OWNER RESPONSE** was served pursuant to 37 C.F.R. § 42.6(e) via electronic mail on April 1, 2024, on the following:

Timothy A. Lindquist (tlindquist@carlsoncaspers.com)  
Dennis C. Bremer (dbremer@carlsoncaspers.com)  
Peter M. Kohlhepp (pkohlhepp@carlsoncaspers.com)  
Ryan D. Rypka (rrypka@carlsoncaspers.com)

CARLSON, CASPERS, VANDENBURGH & LINDQUIST P.A.

/ Thomas Hoehner /

Denis J. Sullivan (Reg. No. 47,980)  
Thomas Hoehner (Reg. No. 73,474)  
BARCLAY DAMON, LLP  
Email: dsullivan@barclaydamon.com  
Email: thoehner@barclaydamon.com  
Email: pkatti@barclaydamon.com

Cory C. Bell (Reg. No. 75,096)  
FINNEGAN, HENDERSON, FARABOW,  
GARRETT, & DUNNER LLP  
Email: cory.bell@finnegan.com

*Attorneys for Patent Owner Belden Inc.*