

Petitioner CommScope's Trial Hearing Demonstratives

CommScope Technologies LLC,
Petitioner

v.

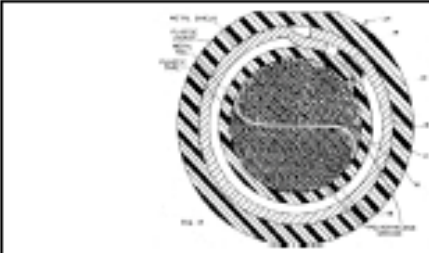
Belden, Inc.,
Patent Owner

IPR2023-01062 ('095 patent)

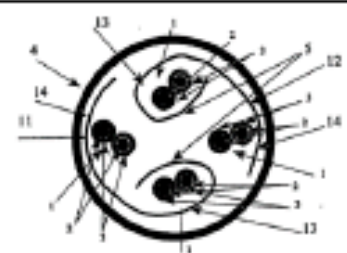
IPR2023-01061 ('537 patent)

September 23, 2024

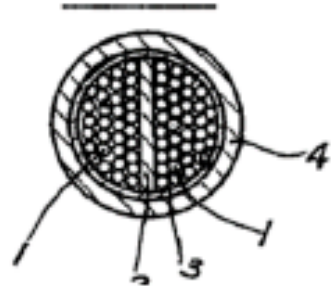
Communications cables



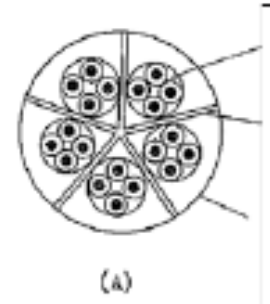
EX-1009, Fig. 17 – plastic-coated metal tape separator



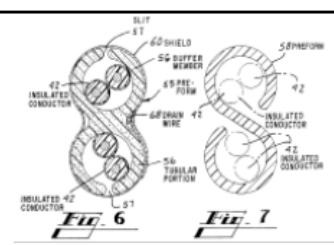
EX-1010, Fig. 1 – plastic-coated metal tape separators



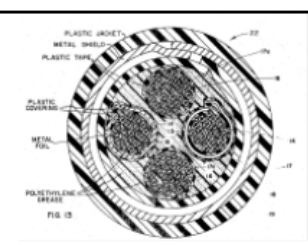
EX-1012, Fig. 1 – plastic separator



EX-1032, Fig. 3 –polyester tape separators



EX-1015, Figs. 6, 7 and 5:64-6:14, 6:52-56 – foamed polymer and/or dielectric tape separators



EX-1009, Fig. 13 – plastic tape-only separator (17a)

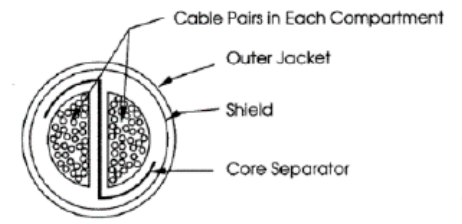
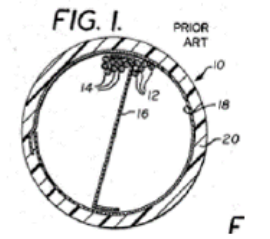


Figure 3-1 Compartmental core cable cross-section

EX-1017, Fig. 7-7 – core separator (See also EX-1018, Fig. 3-1)



EX-1022, Fig. 1 – Z-screen separator

The Instituted Grounds

'095 patent, claims 27-33
(IPR2023-01062)

	Claims	Basis for Unpatentability
Ground 1	27-29	Anticipated by Roberts
Ground 2	30-33	Obvious in view of Roberts , one or more of Jachimowicz and Gingue , and/or the knowledge of a POSITA
Ground 3	27-29	Anticipated by GmbH-866
Ground 4	30-33	Obvious in view of GmbH-866 , one or more of Jachimowicz and Gingue , and/or the knowledge of a POSITA
Ground 5	27-33	Obvious in view of Roberts , one or more of GmbH-866 , Jachimowicz , and Gingue , and/or the knowledge of a POSITA.
Ground 6	27-33	Obvious in view of GmbH-866 , one or more of Roberts , Jachimowicz , and Gingue , and/or the knowledge of a POSITA.
Ground 7	27-29	Anticipated by Yanagida
Ground 8	30-33	Obvious in view of Yanagida , one or more of Jachimowicz and Gingue , and/or the knowledge of a POSITA.

'537 patent, claims 19-20, 22
(IPR2023-01061)

	Claims	Basis for Unpatentability
Ground 1	Independent claim 19	Obvious in view of Beggs , further in view of Jachimowicz and the knowledge of a POSITA.
Ground 2	Dependent claims 20, 22	Ground 1, further in view of Gingue and the knowledge of a POSITA.
Ground 3	Independent claim 19	Obvious in view of Yanagida , further in view of Jachimowicz and the knowledge of a POSITA.
Ground 4	Dependent claims 20, 22	Ground 3, further in view of Gingue and the knowledge of a POSITA.
Ground 5	Claims 19-20, 22	Obvious in view of GmbH-866 , further in view of Roberts , Gingue , and/or Jachimowicz and the knowledge of a POSITA.

IPR2023-01062
('095 Patent IPR)

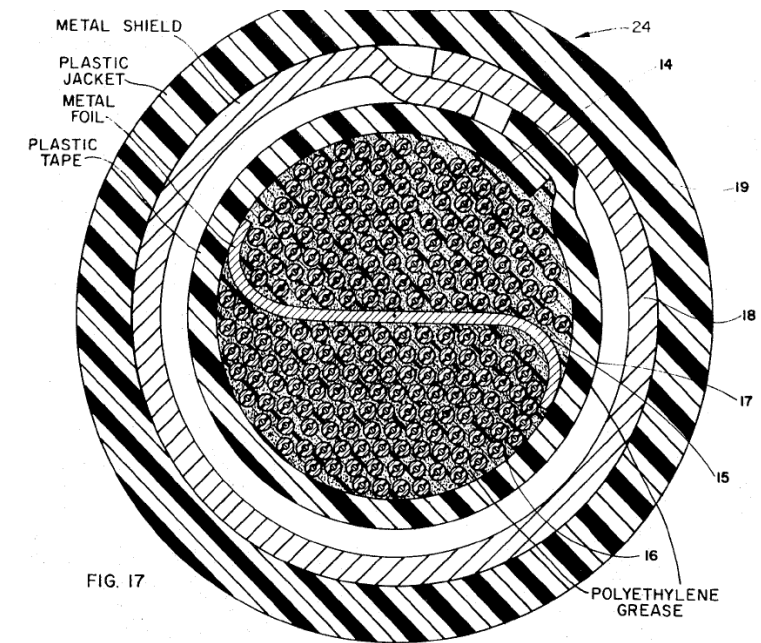
IPR2023-01062
('095 Patent IPR)

Grounds 1, 5: Roberts-based

“pairs” of a “conventional telephone cable design”

ABSTRACT: Disclosed herein is an economical telephone cable structure and method of making same, such cable structure possessing improved crosstalk properties. A plurality of insulated electrical conductors (pairs), of an otherwise conventional telephone cable design are divided into at least two portions by plastic-coated metal foil strip or tape. Measurements between pairs, divided by this plastic-coated metal foil, of 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. By dividing electrical conductor telephone pairs within a telephone cable structure with plastic-coated metal foil, the crosstalk properties are so vastly improved that a greater spacing between repeaters can be designed into a telephone cable system, as compared to a cable system employing prior art divided or undivided cable pairs.

(Ex-1009, Abstract)



(Ex-1009, Fig. 17)

“Pairs” of a “conventional telephone cable design”

- **Testimony of Ken Cornelison** (40+ years industry experience)

Ex-1007:

33. Twisted pairs were (and are) commonly referred to as simply “pairs” in the industry. See, e.g., EX-1017 at 18 (“Each cable pair consists of two twisted insulated conductors.”). Each of the conductors of a twisted pair is typically

34. Twisted pairs have been a staple of the cable industry for over a century. For example, telephone cable patents from the 1920s discuss using twisted pairs in electrical cables. See, e.g., EX-1020 at 2:55-57 (U.S. Patent No.1,727,972 filed April 18, 1924; “A plurality of copper wires insulated with paper, cotton, silk, or other suitable materials, usually twisted together in pairs”); EX-1021 at 1:43-47

118. Unless it was specified expressly that a “pair” of copper conductors in a communications cable was *untwisted*, as of late 1998/early 1999 a POSITA would have understood that it was twisted. The use of twisted pairs in data communications cables was conventional and common practice both at the time of the Roberts patent (1968) and the '095 patent priority date (1999). E.g., EX-1019 at 1:10-15 (“A typical telephone cable is constructed of twisted pairs of metal conductors . . .”); EX-1016 at 7 (“Most of the cables within the scope of AT&T’s

Ex-1081:

15. As I explained in my First Declaration, a POSITA would have known that “pairs” of conductors in a “conventional” telephone cable referred to *twisted* pairs, not to two disparate individual straight wires in physically separate groups. Ex-1007, ¶118 (“The use of twisted pairs in data communications cables was *conventional* and common practice [] at the time of the Roberts patent (1968)...”). As I also showed in my First Declaration, numerous industry publications and other references confirm this:

16. The fact that “conventional” telephone cabling of the type Roberts is directed to (many conductors bundled together without individual shielding) used twisted pairs was something anyone working in the industry would just know as common knowledge. This is confirmed by the references I cited above. A POSITA would not have had to do any analysis to know that telephone cabling of the type Roberts is directed to “conventionally” used twisted pairs.

“Pairs” of a “conventional telephone cable design”

- Testimony of Ken Cornelison (40+ years industry experience)
- **Corroborating documents**, e.g.
 - Ex-1020, 1:34-39, 2:31-34, 2:55-59 (1924)
 - Ex-1021, 1:13-17, 1:43-47 (1929)
 - Ex-1014, 1:30-32 (1973)
 - Ex-1024, 4:18-23 (1979)
 - Ex-1016, 7 (1987)
 - Ex-1023, 1:4-7 (1991)
 - Ex-1018, 3 (1992)
 - Ex-1019, 1:10-11 (1992)
 - Ex-1029, 33 (1997)
 - Ex-1072, 1, 12, 18 38-39 (ANSI 1995 standard)
 - Ex-1073, 12 13 (REA 1993 specification)

Ex-1081:

17. Not only were twisted pairs conventional for telephone cables like those shown in Roberts, there were also industry standards that *required* twisted pairs for such cables. For example, the American National Standards Institute [...]

has also optional screened compartments, like Roberts. *Id.*, 12. Based on my understanding and experience, the requirement to use twisted pairs for such telephone has been unchanged since at least the 1960s. In the course of my many years in the communications cabling industry, I became quite familiar with both the ANSI/ICEA and REA standards.

18. Roberts shows examples of what a POSITA would have referred to as a telephone trunk or exchange cable. Exchange cables were “used for exchange services such as regular subscriber or private line services.” Ex-1018, 3. Like the cables shown in Roberts, exchange cables had a high pair count with many twisted pairs bundled together, and the pairs within a group were conventionally *not* individually shielded from each other. *See* Ex-1018, 3-4, 8. And like the cables shown in Roberts, exchange cables were used between repeaters for city to city or subdivision to subdivision connections. Roberts, Abstract, 13:13-15 (explaining that the telephone cable it is describing is intended to be used “between repeaters”). Conventional telephone exchange cables of the type shown in Roberts

“Disturbing circuit” and “disturbed circuit” on “opposite sides of shield”

Roberts (Ex-1009, 3:21-38, 13:10-29):

One embodiment of the cable to be considered herein is made up of the usual cylindrical plastic or lead sheath with the conductors arranged in the usual fashion, except that they are separated into two equal or substantially equal but separate concentric groups by means of an essentially cylindrical concentric shield. When a signal is transmitted over any circuit in this cable, it is permissible to consider an electromagnetic field as spreading out from this circuit in the form of a wave motion. This wave reaches other conductors and may induce currents and electromotive forces in other circuits unless they are perfectly balanced. The first of these circuits may be called the disturbing and the other the disturbed circuit. If the disturbing and disturbed circuits are on opposite sides of a shield, it is obvious that the disturbance is reduced due to the attenuation the wave energy undergoes when passing through a shield and such reflections as may occur. This object is [...]

Electrical shielding efficiency of the cable structure disclosed by the instant invention is improved at about the same rate that crosstalk coupling would degrade normal crosstalk performance in otherwise unshielded cables. Such improvements will allow a substantial increase in amplifier (repeater) spacing in systems which employ similar frequencies for both directions of transmissions, e.g. pulse code modulator systems. For example, such pulse code modulated systems operate generally at a frequency of some 172 kHz. At such a frequency, comparing the dotted line with the solid line, there is approximately 15 db. improvement, using the cable structure of the instant invention. Such an improvement would allow a very substantial economic savings in repeater cost in pulse code modulator carrier systems and would in fact achieve about the same crosstalk performance characteristics as would be obtained using separate cables, one such cable transmitting in one direction and the other cable transmitting in an opposite direction. This improved performance is achieved at much less cost.

Jachimowicz-340 (Ex-1022, col. 1):

In the communication (telephone) cables there is always a certain degree of interference between circuits, unavoidable due to proximity of paired circuits. One form of interference called “crosstalk” is the induction of current in the “disturbed” pair by currents flowing in the “disturbing” pair. The “disturbed” pair therefore carries two currents. One, which is the information intended for transmission and the other unwanted induced by neighboring pairs, which superimpose themselves on the transmitted signal reducing the clarity and reliability of transmission. Various methods were used in the past to reduce crosstalk. One method consists of transposition of conductors by varying lays of pair twist. When this is not sufficient, shielding or screening is employed.

[...]

The advent of pulse code modulation (PCM) in the field of transmission techniques on balanced pairs (potential symmetrical to ground) imposed a particular requirement on shielding. It became necessary to divide the number of pairs in the cable core into two groups of equal number, one group carrying signals in one direction and the other in the opposite direction. The conventional method of stranding first of one-half of the cable pairs, applying shield and then stranding over it the second half of the cable pairs was not practical, since the present-day cables are made of prestranded units which could not be assembled in symmetrical concentric fashion. The earlier solution consisted therefore of S or Z shaped screen.

Cornelison (Ex-1007, ¶1115):

115. For example, Roberts discusses reducing crosstalk between a disturbing “circuit” and a disturbed “circuit.” EX-1009 at 3:21-28. Roberts’ solution is to place a shield between the disturbing circuit and the disturbed circuit that attenuates the wave energy produced by the disturbing circuit. *Id.* at 3:28-31. A POSITA would understand that this is not referring to individual wires of twisted pairs. Other references, including Jachimowicz-340, use the “disturbing” and “disturbed” language and recognize that each circuit requires a pair. *See* EX-1022 at 1:7-10 (defining crosstalk as “the induction of current in the ‘disturbed’ pair by currents flowing in the ‘disturbing’ pair.” (emphasis added)). Jachimowicz-340 is particularly informative as it discusses the solutions taught by Roberts including an S or Z shaped screen. *See* EX-1022 at 1:42-48.

Manufacturing process uses “twisted” conductors

Roberts (Ex-1009, 11:70-12:12 and Fig. 23):

Shown in FIG. 23 by element (34) is a die means adapted to be used in a somewhat similar manner as element (34) of FIG. 22. This particular die means is made up of dieplates (30) and (30a), spaced apart by two crossbar means (29). Dieplate (30) has a plurality of holes (31), (32) and (35). Holes (31) are slots which are used to fasten the dieplate (30) to a rotating cage (not shown). Holes (32) are analogous to like holes in dieplate (30) of element (34) of FIG. 22, through which insulated electrical conductors (14) and (16) are traversed. A center slot (35) in die means (30) and (30a) is used to pass foil screen or shield tape (15) through both of these plates. Thus, die (30a) has essentially two kinds of holes, slot (35) through which shield means (15) passes and holes (33) through which twisted electrical conductors (14) and (16) pass. Insert or guide means (36), made up of wear-resistant fired ceramic material, are inserted inside of holes (13) so as to permit smooth passage of the electrical conductors (14) and (16) therethrough.

FIG. 23 (manufacturing process)

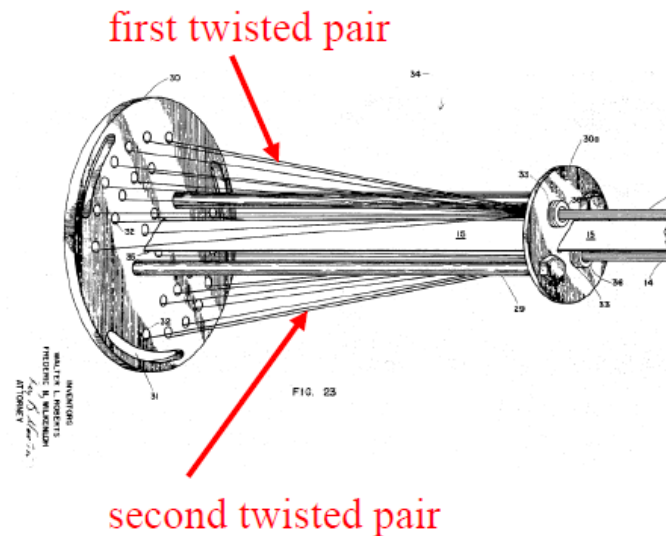
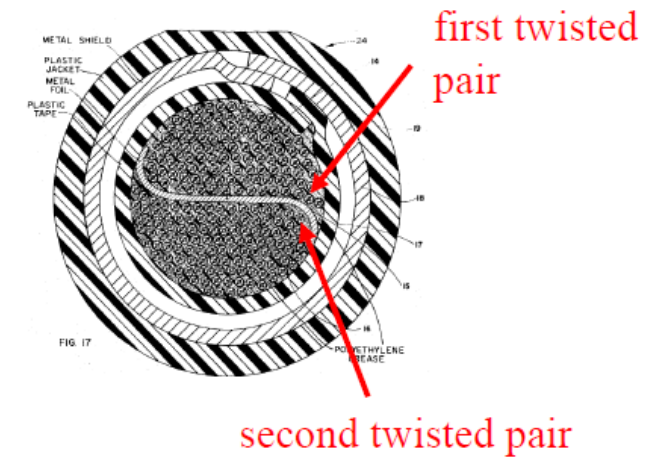
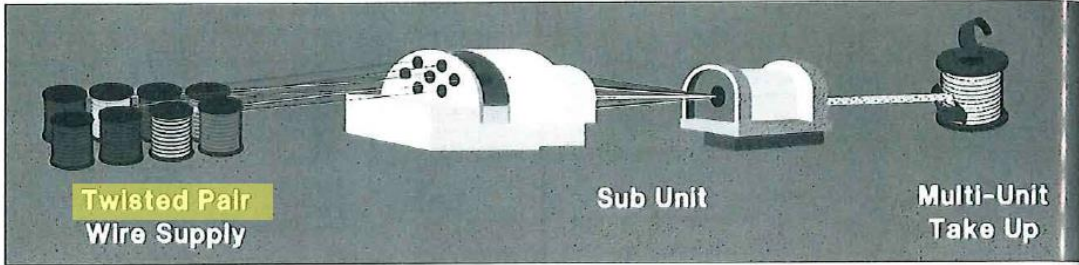
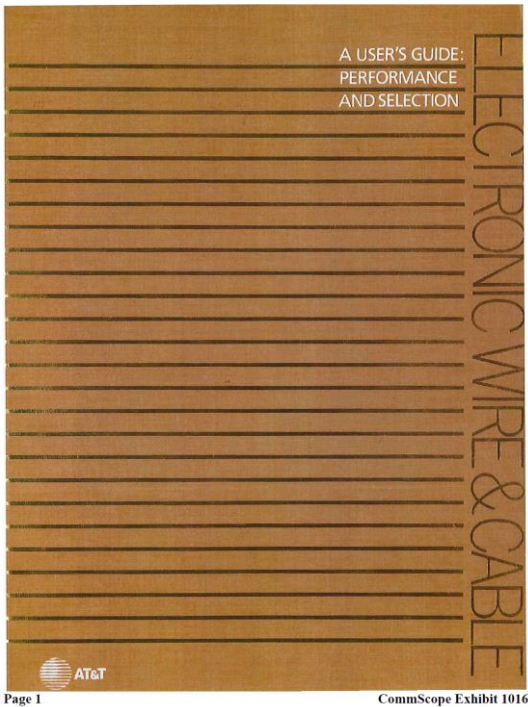


FIG. 17 (assembled cable)

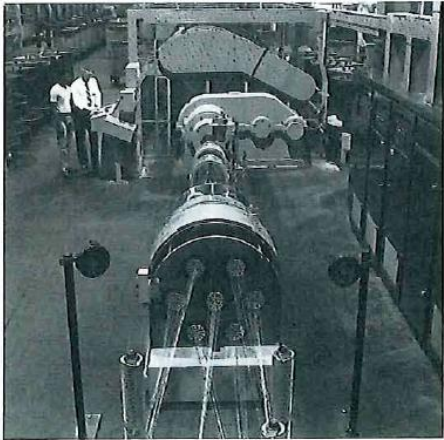


Manufacturing process uses “twisted” conductors

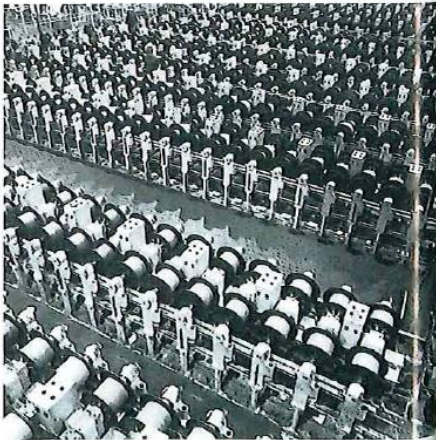
AT&T Electronic Wire and Cable
User’s Guide (Ex-1016, 9):



Simplified graphic of stranded line — pairs combine into units.



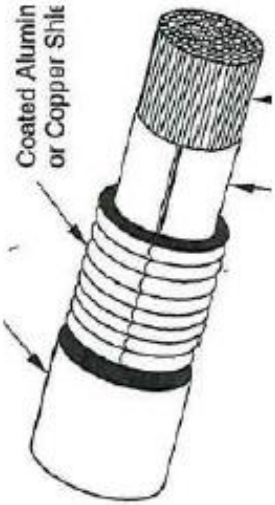
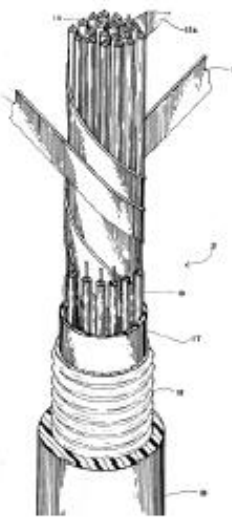
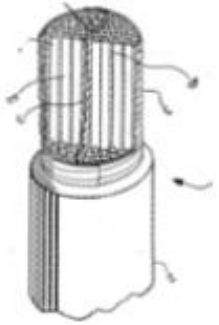
25 insulated pairs enter the stranding machine which forms them into one unit.



High volume production facilities — rows of tandem groups of 25 reels, each a twisted pair, feed into the stranding machines.

Images of twisted pair cable

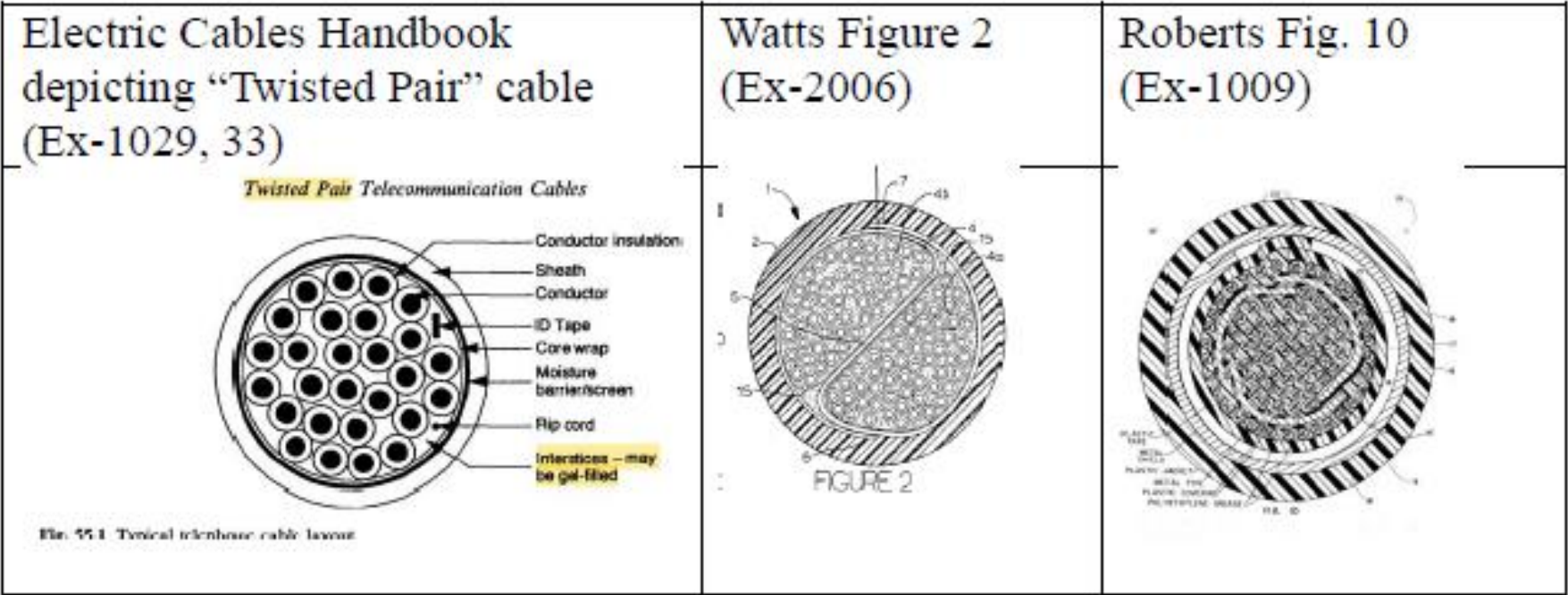
Side view:

			
Alcatel Catalogue (Ex-1035, 13, telecommunications exchange cable with "TWISTED PAIRS")	Reeve Handbook (Ex-1017, 24, "Twisted pair cable construction[]")	Roberts (Ex-1009, Fig. 3)	Watts (Ex-2006, Fig. 1)

Cornelison (Ex-1081), ¶139

Images of twisted pair cable

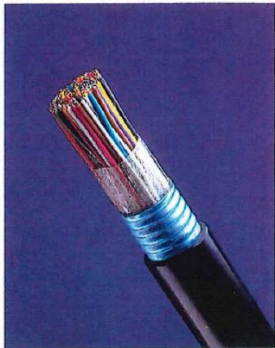
Cross-sectional view:



Cornelison (Ex-1081), ¶40

Images of twisted pair cable

117. In addition, the Roberts FIGS. 1-4 illustrations of the conductors 14/16 is consistent with cables and twisted pair conductors as shown in prior art literature, such as the catalog page below (which lack the Roberts' internal separator shield 15):



54

Page 55

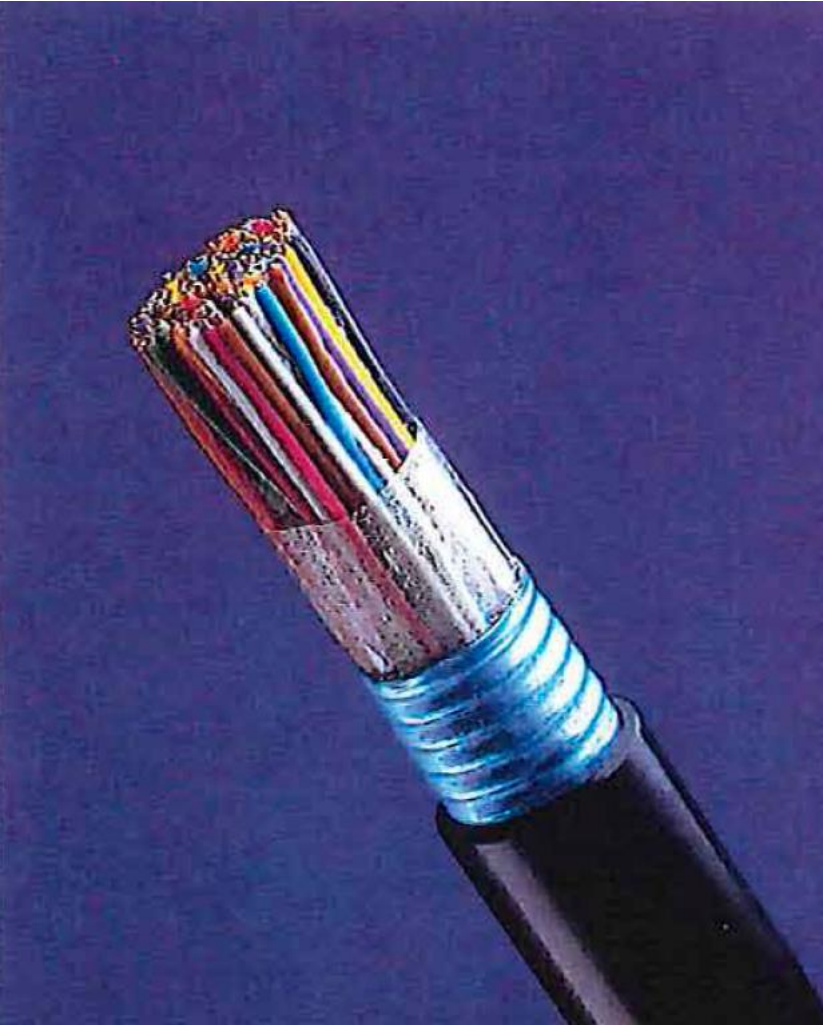
CommScope Exhibit 1007

In Support of Inter Partes Review
of U.S. Patent No. 6,570,095

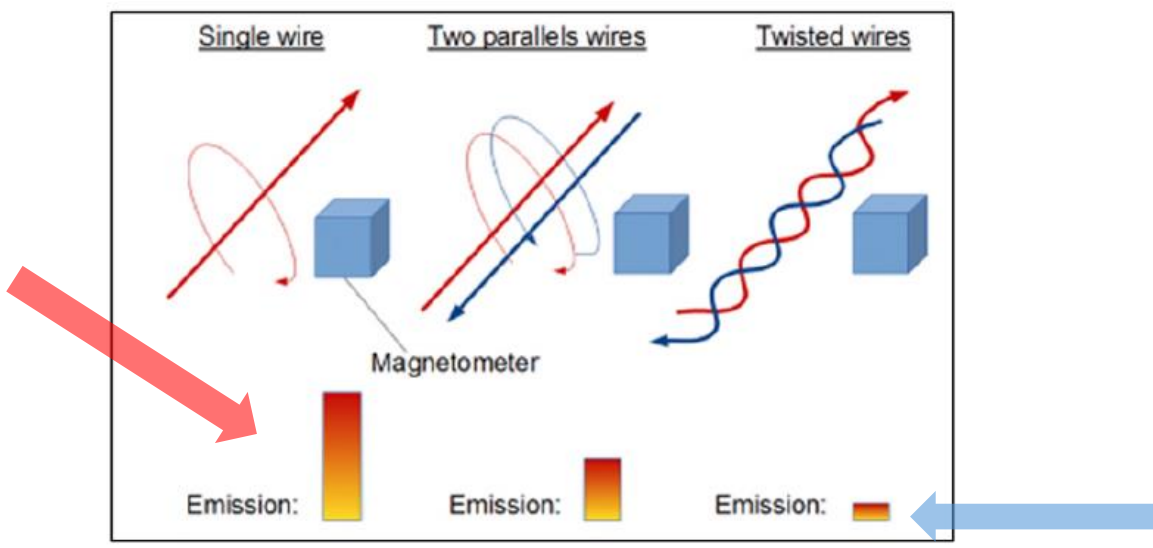
Cable Construction

CONDUCTORS: Solid bare annealed copper. Sizes 19, 22, 24 and 26 AWG (.9, .64, .5 and .4mm).
INSULATION: Individual copper conductors are insulated with a dual extruded cellular inner layer and a color coded solid outer layer of high density polyethylene or polypropylene.
TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

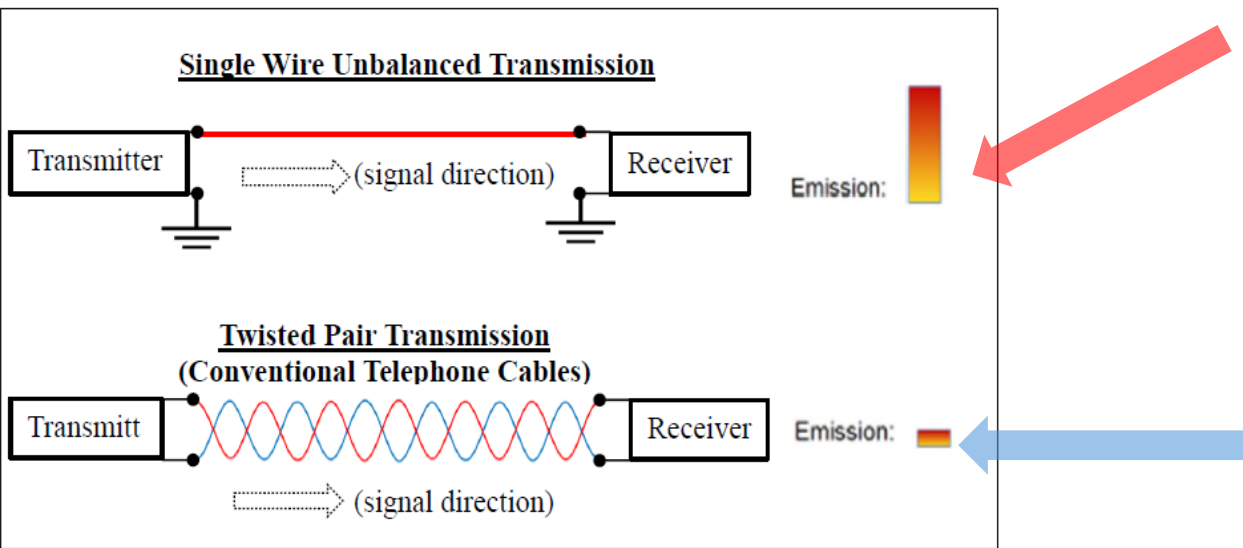
EX-1035 at 20. This cable also shows an example of a "foamed polymer"



Both experts agree: single wire = high emission
twisted pair = low emission



(Eldering (Ex-2007) ¶¶145-147)

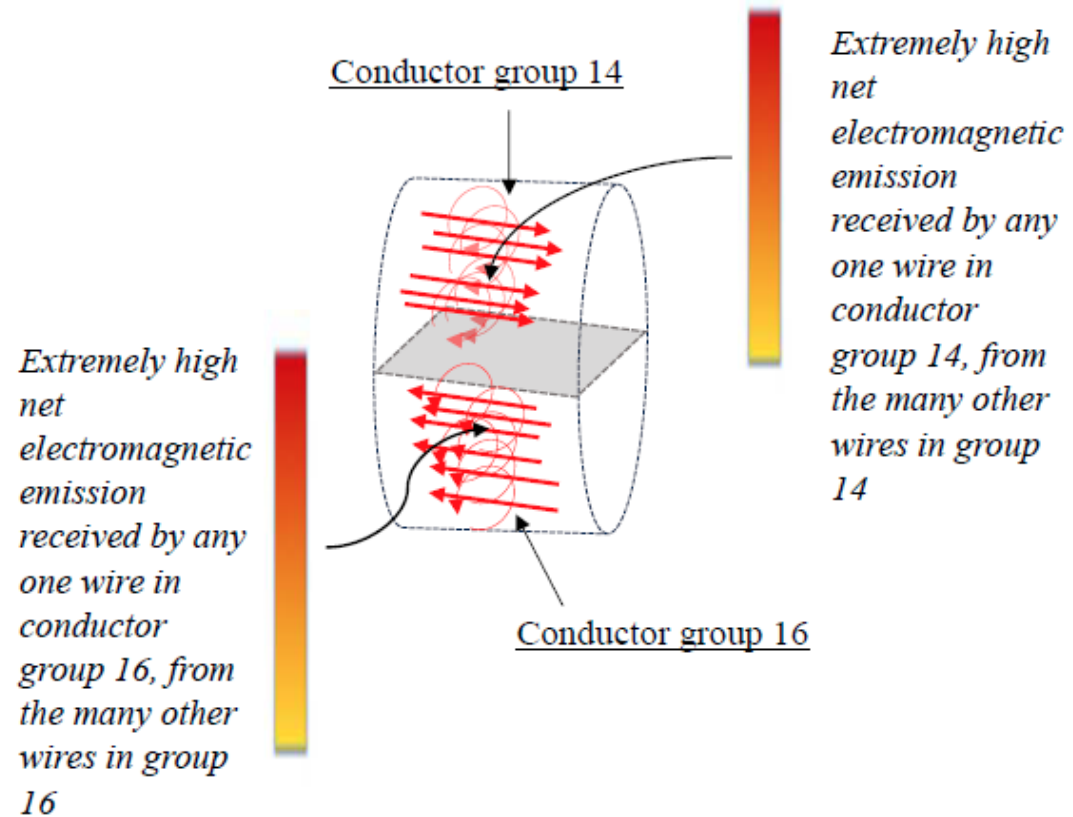


(Cornelison (Ex-1081) ¶¶27-28)

Roberts and twisted pairs (Grounds 1, 5)

-01062 IPR ('095 patent)

Eldering's interpretation of Roberts=>“effectively nonfunctional”:



(Cornelison (Ex-1081) ¶¶30-31, 70, 73)

31. The compounded effect of the collective electromagnetic emissions of all the straight wires within a conductor group (14 and 16) on any one particular wire within that same conductor group would result in extremely high levels of crosstalk, su

70. Dr. Eldering's opinion that there would be "no motivation" to use twisted pairs for Roberts' groups of conductors 14 and 16 because the crosstalk solution provided by twisted pairs would be "redundant" of the crosstalk solution provided by Roberts' shield (e.g. Ex-2001, ¶¶103-104, 106-107) is just wrong. A POSITA would have immediately recognized that using twisted pairs for Roberts' conductor groups 14 and 16 would have drastically improved the electrical performance of the cable, both by bringing within-group crosstalk (particularly far-

73. As I explained above, if Roberts were configured as Dr. Eldering contends, the crosstalk between conductors within a group would have been so high as to render the cable effectively nonfunctional. §VI.A.2. So to a POSITA the vastly improved electrical performance provided by twisted pairs would have easily outweighed a somewhat larger, less flexible cable.

Eldering testimony (Ex-1070, 138:10-16):

5 Q. Okay. But again, you sort of
6 transitioned to talking about cross talk
7 between the bundles, and I -- I'm just focused
8 on cross talk within a single bundle, okay?
9 A. Yes.
10 Q. Okay. So the shield in Roberts
11 between the bundles, that wouldn't really
12 significantly affect cross talk within a single
13 bundle, would it?
14 A. The shield of Roberts primary
15 function is to attenuate the cross talk between
16 the transmit bundle and the receive bundle.

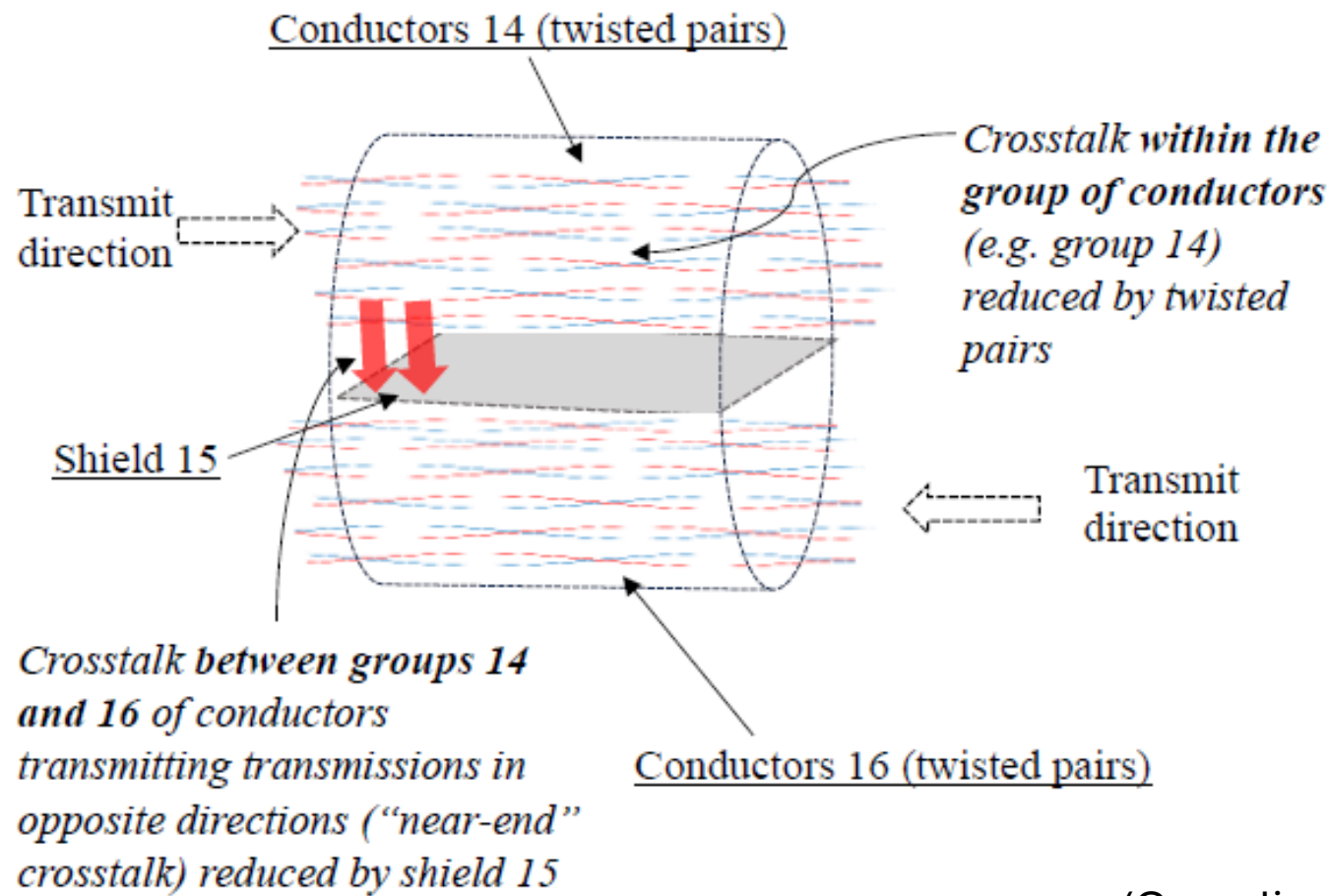
Eldering testimony (Ex-1070, 47:12-48:8):

12 Q. I'll start over. So fair to say
13 that using twisted pairs to decrease
14 electromagnetic interference due to cross talk
15 between adjacent pairs in a cable was a known
16 benefit at least as of the date of this
17 reference?
18 MR. HOEHNER: Objection to form.
19 A. Well, it was known and understood
20 that twisting two insulated conductors would
21 decrease electromagnetic interference because
22 it reduced the amount of emissions and also

48

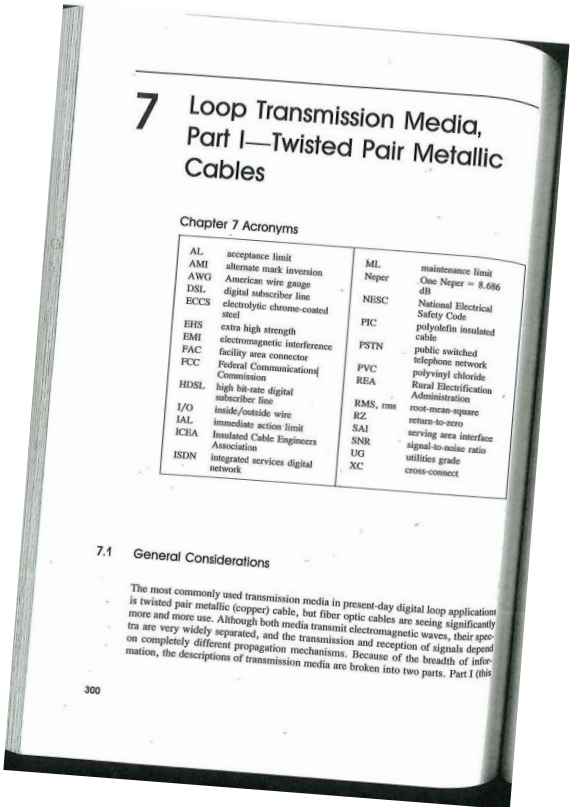
1 reduced the susceptibility to external
2 interference.
3 Q. And it was understood that that was
4 a positive thing for communications cables,
5 correct?
6 A. It was understood that that was one
7 mechanism to control electromagnetic
8 interference.

Roberts actually discloses:



(Cornelison (EX-1081) ¶36)

Reeve Telecommunications Handbook (Ex-1017),
“Compartmental core”/“screened” telephone cable:



For digital carrier applications, an additional shield may be used that separates the cable pairs into two compartments. This is called compartmental core or screened cable. “Z-Screen,” “D-Screen,” or “T-Screen” are well-known trade names. The last indicates the primary application, which is T-carrier, whereas the first two indicate the shape of the core separator. These types are interchangeable in almost all applications. Some special designs are available that are optimized for the digital rate to be carried on the cable. For example, the core separator in cables designed for T1C (DS-1C rate of 3.152 Mbps) service has more overlap, and provides more immunity to crosstalk at the higher frequencies, than cables optimized for repeatered T1 (DS-1 rate of 1.544 Mbps) service.

In a given cable, the transmit pairs are put in one compartment and the receive pairs are put in the other compartment. The separation is necessary to reduce crosstalk between the transmit and receive circuits of the transmission system.

The cross-section of a compartmental core cable is illustrated in Figure 7-7. The core separator, or screen, is made electrically continuous at all splice locations, but it is not deliberately grounded or connected to the cable shield (this is an important, but often overlooked, requirement).

(Ex-1017, 30)

To alleviate the crosstalk problem, compartmental core cables are available in cables sizes from 12 to 200 pairs. In larger, noncompartmental core cables, the transmit and receive pairs are physically separated, and crosstalk reduced, by appropriate selection of binder groups for each transmission direction. If separation is not possible, repeater spacing or loop length must be reduced.

(Ex-1017, 35)

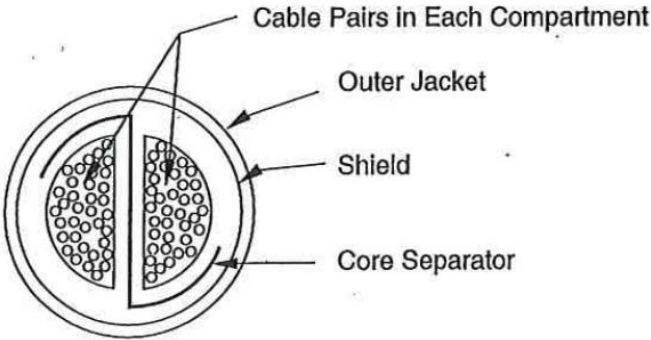
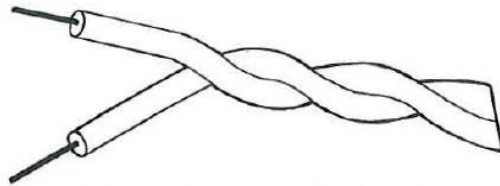


Figure 7-7 Compartmental core cable cross-section, [4]

Roberts and twisted pairs (Grounds 1, 5)

-01062 IPR ('095 patent)



A typical twisted pair (exaggerated for clarity).

The two main reasons for twisting pairs of conductors are to minimize or eliminate crosstalk and to decrease unbalanced mutual capacitance.

(Ex-1016, 7)

7.6.2.1 Twisting

Each cable pair consists of two twisted insulated conductors. The twist is used to decrease electromagnetic interference due to crosstalk between adjacent pairs in a cable. The twist also helps keep the conductors of the pair balanced with respect to the shield and other pairs.

(Ex-1017, 18)

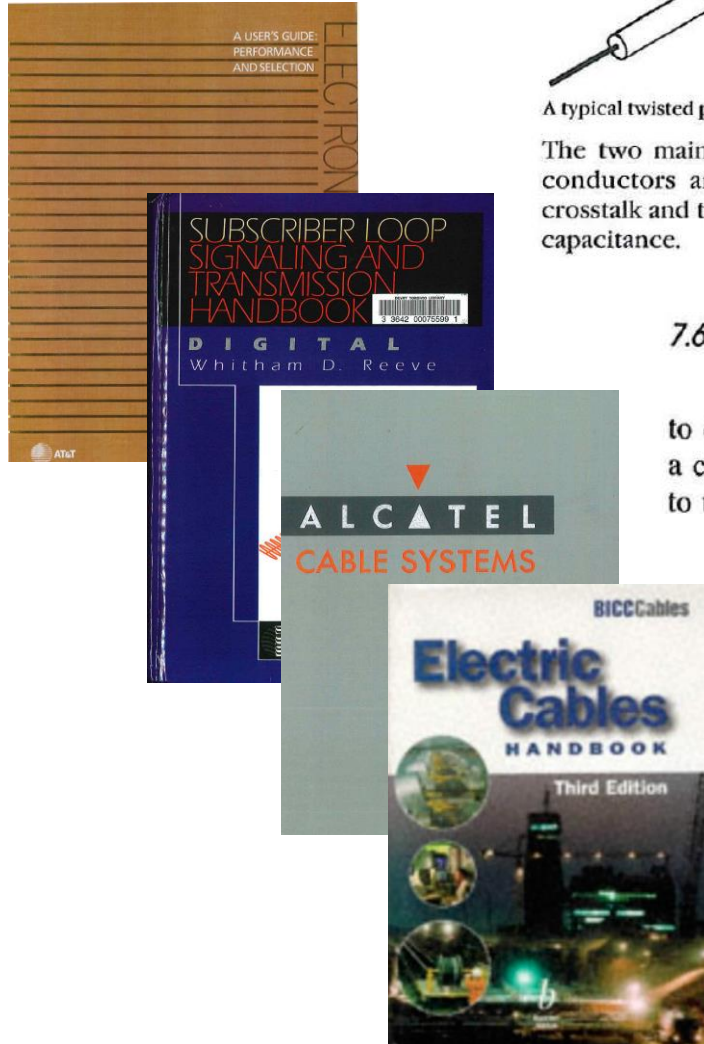
TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations.

(Ex-1035, 20)

Crosstalk

Cables with twisted pairs are used where balanced signal transmission is required, together with low crosstalk. Crosstalk refers to interference on one channel caused by a signal in another channel and occurs between cable pairs carrying separate signals. This definition embraces both near end crosstalk and far end crosstalk.

(Ex-1029, 25)



Patent Owner's evidence: Ex-2005, Ex-2006, Eldering

○ Ex-2005 (Lemke)

BACKGROUND OF THE INVENTION 10

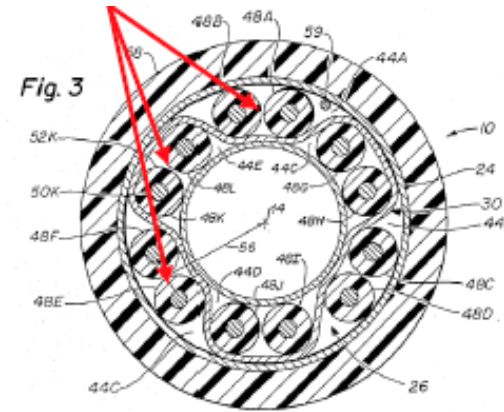
1. Field of the Invention

The present invention relates to an electrical cable for a transmission line in either round or flat form and, in particular, to an electrical cable having a plurality of conductors therein wherein each conductor or set of conductors is physically separated and electromagnetically isolated along their entire axial length by a corrugated septum. 15

2. Description of the Prior Art

Round cables are presently used for relatively high speed data transmission between various system components in data processing networks. Such cables utilize twisted pairs of conductors to achieve the necessary electrical characteristics, particularly characteristic impedance and cross-talk control. 20

One such cable arrangement is that sold by Hewlett-Packard as the HPIB cable. This cable includes concen- 25



Ex-1081 (Cornelison decl.):

23. Referring specifically to the Lemke patent Dr. Eldering discusses at ¶¶151-157 of his declaration, Lemke's data cables are also nothing like the

"conventional" telephone cables Roberts is directed to. Unlike Roberts, in Lemke each conductor or conductor pair is in an individually shielded chamber. *E.g.*, Ex-2005, Abstract, Figs. 1-9, 5:55-62. This is very different from the "conventional" telephone cables of Roberts, which had large groups of tens to hundreds of twisted pairs bundled together in a single shielded envelope or group and the pairs within that group not individually shielded from each other. *See* Ex-1009, Fig. 17. I

24. A POSITA would have known that while straight (untwisted) pairs may work in cables like twinax and Lemke, where each pair was individually shielded, they would not work in conventional telephone cables like Roberts where many pairs are bundled together without individual shielding. As I also explain in more detail below, the crosstalk between conductors in a Roberts-like telephone cable—if they were not twisted pairs—would be far too much to be a workable cable.

Patent Owner's evidence: Ex-2006, Ex-2007, Eldering

- Ex-2005 (Lemke)
- **Ex-2006 (Watts)**



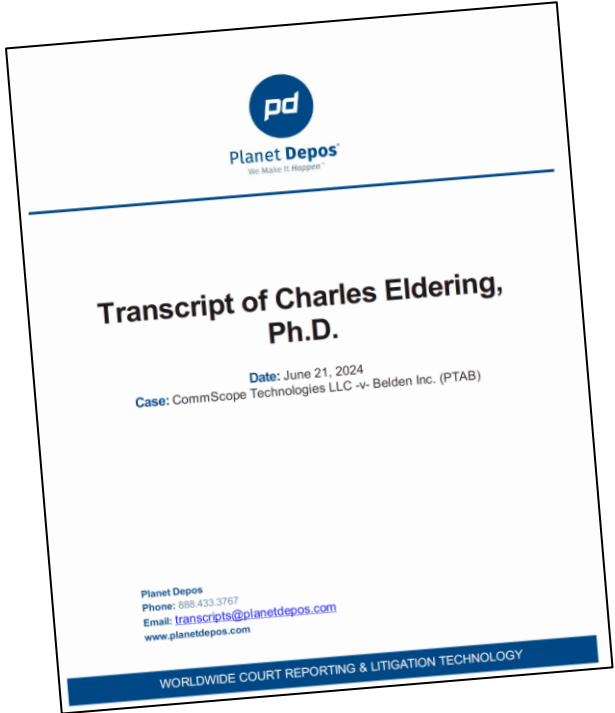
Electric Cables Handbook depicting “Twisted Pair” cable (Ex-1029, 33)	Watts Figure 2 (Ex-2006)	Roberts Fig. 10 (Ex-1009)
<i>Twisted Pair Telecommunication Cables</i> FIG. 55.1 Typical telephone cable layout		

Ex-1081 (Cornelison decl.):

38. Dr. Eldering also contends that the figures of Roberts show straight-line conductors and cites Watts¹ (Ex-2006) for support. Ex-2001, ¶48; Ex-2007, ¶¶163-164. However, neither Watts nor Roberts’ figures show a lack of twisted pairs. It would not be surprising to a POSITA that the pair twisting is not immediately visible in the limited isometric sections provided in the figures of Roberts (and Watts) because the twist length of such cables was quite long. See, for example, Ex-1014, 1:32-34 (“The length of pair twist which can be employed is

Patent Owner's evidence: Ex-2006, Ex-2007, Eldering

- Ex-2006
- Ex-2007
- Eldering



17 Q. Are you able to identify any
18 telephone trunk or distribution cables of the
19 type used in the 1960s that did not use twisted
20 pairs?
21 MR. HOEHNER: Objection to form.
22 A. Again, it was not in the scope of

1 my research to investigate which cables were
2 used in the trunk and distribution systems as
3 part of this proceeding.
(Ex-1070, 27:17-28:3)

15 Q. Okay. Do you have any independent
16 knowledge of whether twisted pair cable was the
17 most common type of telephone exchange cable?
18 A. I did not do a survey of the types
19 of exchange cables as part of this proceeding,
20 so I do not have an opinion on that.
(Ex-1070, 42:15-20)

13 Q. Have you ever seen a telephone
14 cable configured like Roberts figure 17 that is
15 used for distances of a kilometer or more?
16 THE COURT REPORTER: Of a
17 kilometer?
18 Q. Or more.
19 A. I don't recall in my experience
20 having dealt with such a cable over such a
21 distance.

(Ex-1070, 142:13-21)

14 Q. Okay. Have you personally seen or
15 come across a telecommunications cable that
16 operates an unbalanced transmission that is
17 configured like Roberts?
18 MR. HOEHNER: Objection to form.
19 A. Again, I have not personally
20 developed or worked on an unbalanced
21 communication system with the specific
22 configuration disclosed in Roberts.

1 Q. And fair to say that you are also
2 not personally specifically aware of any
3 example of an unbalanced communication system
4 with a configuration like that disclosed in
5 Roberts? Again, not asking about what's in
6 your declaration. I'm just asking about what's
7 in your head and your experience.
8 A. I have personally not constructed
9 nor did I utilize a cable with the specific
10 configuration of Roberts in my experience in
11 telecommunications.

(Ex-1070, 125:14-126:11)

Patent Owner's evidence: Ex-2006, Ex-2007, Eldering

- Ex-2006
- Ex-2007
- **Eldering**
 - twisted pairs = purported increased cable “size” and “lower flexibility”
 - twisted pairs = purportedly “more complex cable termination solution”

Cornelison (40+ years industry experience), Ex-1081, ¶¶70-77:

73. As I explained above, if Roberts were configured as Dr. Eldering contends, the crosstalk between conductors within a group would have been so high as to render the cable effectively nonfunctional. §VI.A.2. So to a POSITA the vastly improved electrical performance provided by twisted pairs would have easily outweighed

74. Further, a POSITA would have known that Roberts-type cables (e.g., those with a large number of bundled conductors, such as exchange-type cables) would have been used in applications where they were usually buried or hung. Ex-1009 (Roberts), 5:59-62 (“the cable using the polyethylene grease as disclosed can be directly buried in the ground”), 13:55-58; Ex-1018, 4 (“filled cable is normally

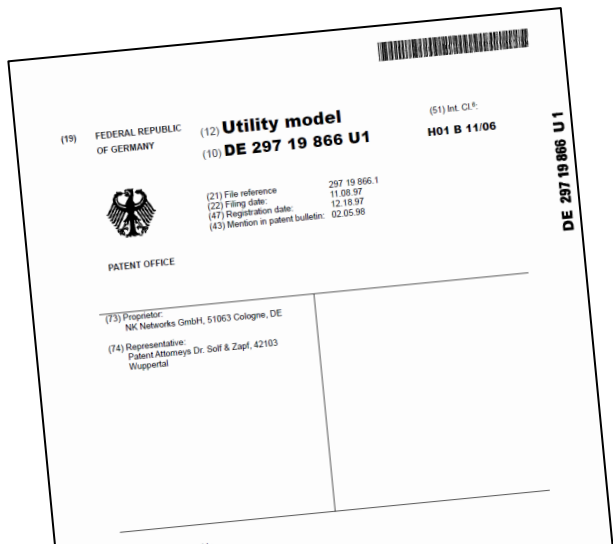
77. Also, using twisted pairs would have brought Roberts in line with standard telephone cables, and in fact simplified the cable termination solution. A POSITA would have known that the existing hardware for telephone operations that use exchange cables like Roberts were designed to work with twisted pairs, not single-wire unbalanced transmission. Ex-1018, 3; Ex-1017, 11; Ex-1073 (REA), 12; Ex-1072 (ANSI/ICEA), 18.

Patent Owner’s contention that Mr. Cornelison’s explanation of why conventional telephone cable = twisted pairs is “made-up and unsupported” (Paper 33, 4-5)

Petitioner evidence includes	Patent Owner evidence
Cornelison testimony (40+ years industry experience), Ex-1081, ¶¶25-37, Ex-1007, ¶¶35, 37-38 Eldering: twisted pair emission = “less than [] single conductor” (Ex-2007, ¶146) Ex-1016, 7: The two main reasons for twisting pairs of conductors are to minimize or eliminate crosstalk and to decrease unbalanced mutual Ex-1017, 18: Each cable pair consists of two twisted insulated conductors. The twist is used to decrease electromagnetic interference due to crosstalk between adjacent pairs in a cable. The twist also helps keep the conductors of the pair balanced with respect Ex-1035, 20: TWISTED PAIRS: Insulated conductors twisted to form pairs with varying lays to minimize crosstalk and meet capacitance unbalance limitations. Ex-1029, 25: Crosstalk Cables with twisted pairs are used where balanced signal transmission is required, together with low crosstalk. Crosstalk refers to interference on one channel caused by a signal in another channel and occurs between cable pairs carrying separate signals. This definition embraces both near end crosstalk and far end crosstalk. Ex-1014, 1:24-30: sence of near end crosstalk limitation. Far end cross-talk, cumulative with cable length, became the limiting factor, since the sum of unwanted energy, arriving into Ex-1030, at 4-5	Eldering uncorroborated testimony [No examples provided]

IPR2023-01062
('095 Patent IPR)

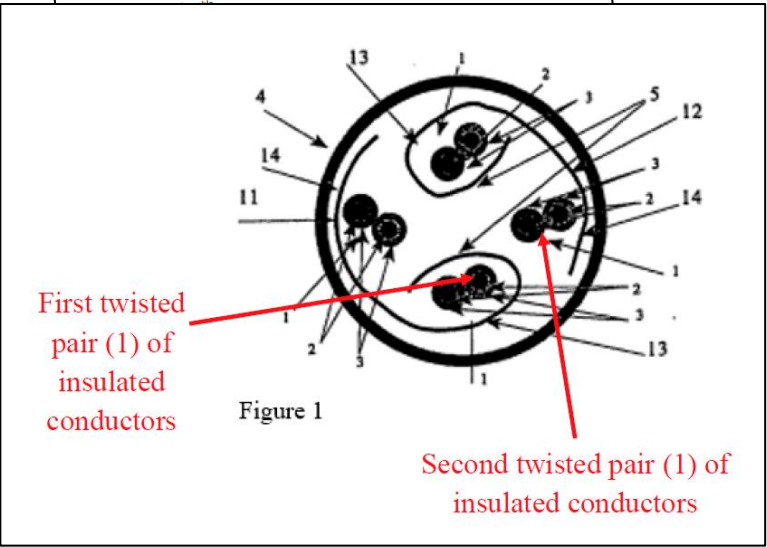
Ground 3: GmbH-866 (claims 27-29)



Data transfer cables of this kind typically consist of four pairs of two stranded isolated copper conductors or wires. These cables are used primarily in communications networks which demand optimized transfer properties, in particular, a defined wave impedance and low coupling resistance, low damping, and low crosstalk. In order to achieve these

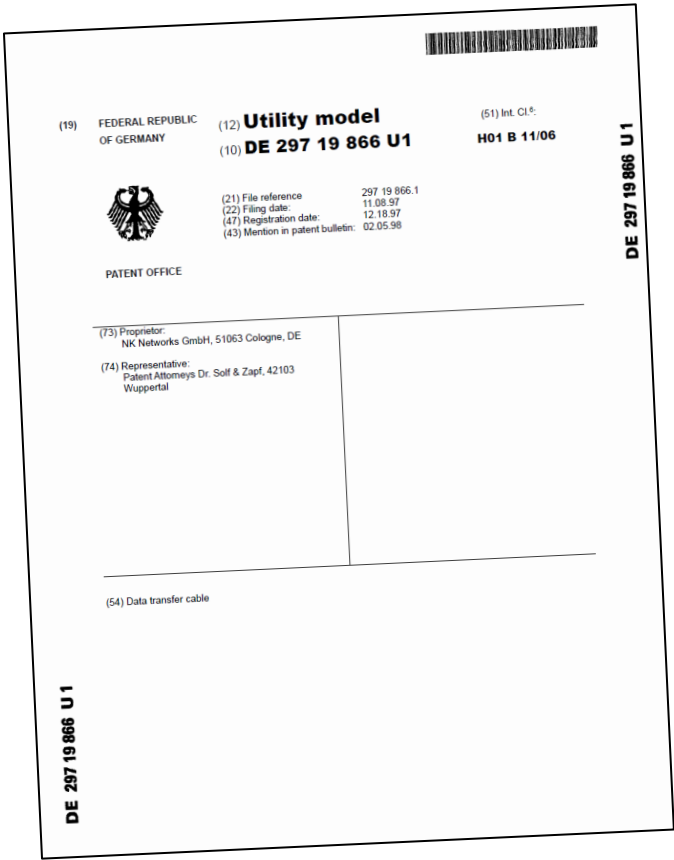
A data transfer cable according to the invention, shown in Fig. 1, comprises four pairs 1, each consisting of two isolated, stranded copper conductors 2 or wires. Optionally, these copper conductors or wires may comprise a conductor coating, for example, of tin. The effective diameter

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 and twisted pairs (Ground 3)

-01062 IPR ('095 patent)



four pairs of two **stranded isolated copper** *conductors*
or wires...

four pairs 1, each consisting of two **isolated, stranded**
copper *conductors 2 or wires...*

(Ex-1010, 2, 3)

Expert Ken Cornelison

Ex-2004, 215:15-216:7 (re-direct)

15 Q. Were four-pair data communications
16 cables common prior to 1999?

17 A. Yes, they were. For instance,
18 Category 5 and CAT3 -- Category 3 originated
19 sometime in the '90s or perhaps even a bit before,
20 but certainly by the '90s, there were category cable
21 four pairs.

22 Q. So in your 40-plus years of experience
1 in the cable industry, have you ever seen a
2 four-pair data communications cable of the type
3 shown by German that did not have twisted pairs?

4 A. The answer is no. All the cables I
5 have seen in that time frame and described as
6 meeting these frequency requirements were twisted
7 pairs.

Ex-1081:

49. It would also not make sense for GmbH-866 to be disclosing straight (untwisted) "pairs." As I explained at my deposition, in my 40-plus years in the industry, I have never seen a four-pair data cable of the type disclosed by GmbH-866 that did not use twisted pairs. Ex-2004, 215:15-216:7. To a POSITA, it would be implausible to read GmbH-866 as excluding cables with twisted pairs. I am not aware of any high-speed, four-pair data cables of the type GmbH-866 discloses (e.g. transfer speeds up to 100 or 600 MHz) that did not use twisted pairs. This is not surprising, because standards for four-pair data cables like those shown in GmbH-866 and within the 1-100 MHz transfer speed range described by GmbH-866 required twisted pairs or quads. E.g., Ex-1074, 15, 25, 43 (1995 ISO/IEC 11801 standard, a common data cable standard used in Europe, defining "pair" as "a twisted pair" (at 3.1.31) and stating that each cable unit have at least four "pairs"); see also *id.* at 25 (speeds up to 100 MHz); Ex-1079, 14-15, 30, 34, 54-55, 59, 78-79, 83, 89, 121 (TIA/EIA-568-A standard, a common data cable standard used in the United States). I am familiar with the ISO/IEC 11801 and TIA/EIA-568-A standards from my many years of experience in the industry.

GmbH-866 and twisted pairs

Examiner finding ('537 Patent Reexamination) (Ex-1006, 19-20)

ACTION CLOSING PROSECUTION
(37 CFR 1.949)

Control No.	Patent Under Reexamination
95/000,476	6998537
Examiner	Art Unit
MINH T. NGUYEN	3992

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

Responsive to the communication(s) filed by:
Patent Owner on 28 April, 2010
Third Party(ies) on 28 May, 2010

Patent owner may once file a submission under 37 CFR 1.951(a) within 1 month(s) from the mailing date of this Office action. Where a submission is filed, third party requester may file responsive comments under 37 CFR 1.951(b) within 30-days (not extendable- 35 U.S.C. § 314(b)(2)) from the date of service of the initial submission on the requester. **Appeal cannot be taken from this action.** Appeal can only be taken from a Right of Appeal Notice under 37 CFR 1.953.

All correspondence relating to this inter partes reexamination proceeding should be directed to the Central Reexamination Unit at the mail, FAX, or hand-carry addresses given at the end of this Office action.

PART I. THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- ☐ Notice of References Cited by Examiner, PTO-892
- ☒ Information Disclosure Citation, PTO/SB/08
- ☐

PART II. SUMMARY OF ACTION:

- ☒ Claims 1-34 are subject to reexamination.
- ☐ Claims _____ are not subject to reexamination.
- ☒ Claims 2, 3, 12-14 and 16 have been canceled.
- ☒ Claims _____ are confirmed. [Unamended patent claims]
- ☒ Claims 1, 4-11, 15, 17, 18, 23-34 are patentable. [Amended or new claims]
- ☒ Claims 19-22 are rejected.
- ☐ Claims _____ are objected to. ☐ are acceptable ☐ are not acceptable.
- ☐ The drawings filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has:
☐ been received. ☐ not been received. ☐ been filed in Application/Control No _____
- ☐ Other _____

U.S. Patent and Trademark Office
PTOL-2065 (08/06)

Page 3

CommScope Exhibit 1006

a plurality of twisted pairs of insulated conductors comprising a first twisted pair of insulated conductors and a second twisted pair of insulated conductors;

GmbH '866 discloses a plurality of twisted pairs, including a first twisted pair and a second twisted pair. Fig. 3 of GmbH shows four twisted pairs. The cable contains four twisted pairs of insulated conductors (item 1). The cable also includes two substantially flat configurable pair separators (item 5). The conductors are insulated. See '866 patent, English trans, at 3 ("The copper conductor or cants preferably have an insulation 3 consisting of a thermoplastic, especially polyethylene, cellular polyethylene, foam-skin polyethylene, skin-foam-skin polyethylene, polypropylene or cellular polypropylene.").

“vier Paaren aus zwei **verseilten** isolierten Kupferleitern oder **-litzen**”

“four pairs of two **stranded** isolated copper **conductors** or **wires**”

“vier Paare 1 aus jeweils zwei isolierten, **verseilten** Kupferleitern **2**
oder **-litzen** auf”

“four pairs 1, each consisting of two isolated, **stranded** copper **conductors 2**
or **wires**”

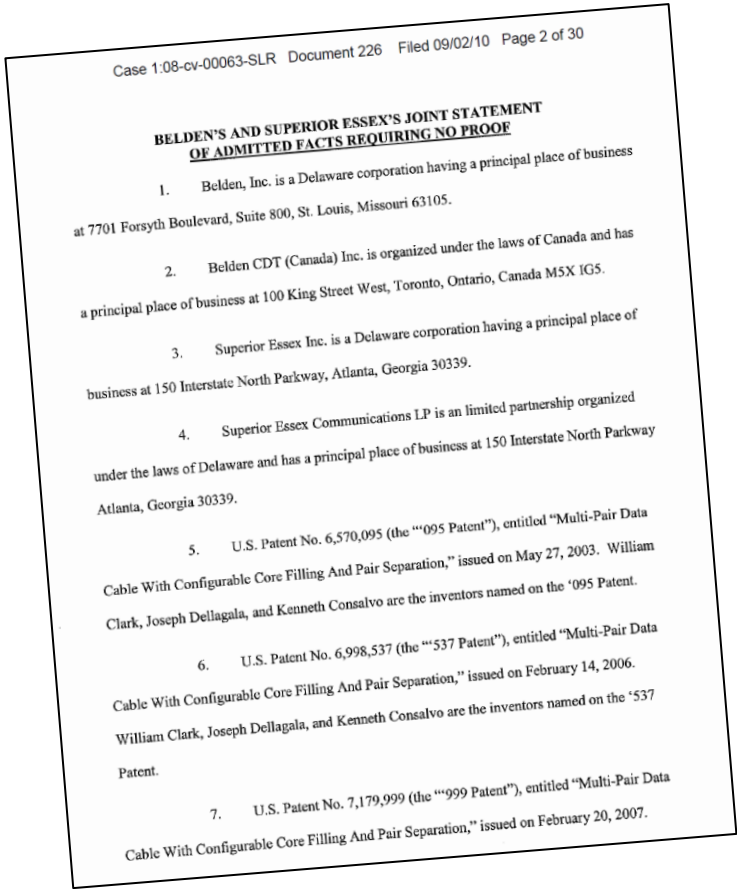
“kann auch lediglich *zwei Paare* **verseilter Leiter** aufweisen”

“can also comprise just *two pairs* of **stranded conductors**”



“verseilten”	Ex-1068, 10, e.g.: • <i>Verseilen</i>: to twist, strand, cable • <i>Verseilt</i>: stranded (cable) • <i>Verseilter Draht</i>: twisted wire Ex-1067, 9, e.g.: • <i>Verseilen</i>: <Fertig> cabling • <i>Verseilmaschine</i>: <Fertig> cabling machine
“leitern” or “litzen”	• <i>Leiter</i>: <Telekom> Conductor (Ex-1067, 9) • <i>Leiter</i>: conductor, (Ex-1068, 7) • <i>Litzendraht</i>: <Elektriz, Elektrotech> braided wire, stranded conductor (Ex-1067, 8) • <i>Litzendraht</i>: flexible, stranded wire; <i>Litzenseil</i>: rope made of strands (Ex-1068, 9)

Patent Owner's prior position (Statement of Admitted Facts) (Ex-1076, 2, 6):

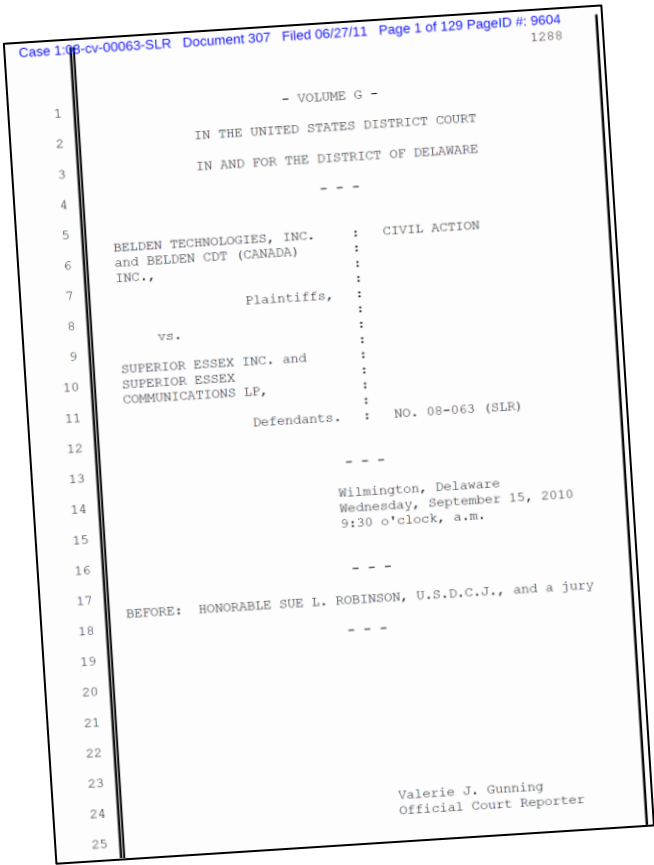


Case 1:08-cv-00063-SLR Document 226 Filed 09/02/10 Page 6 of 30

16. It is not contested that German Patent DE 297 19 866 (the '866 Patent) discloses the following limitations of Claim 27 of the '095 Patent:

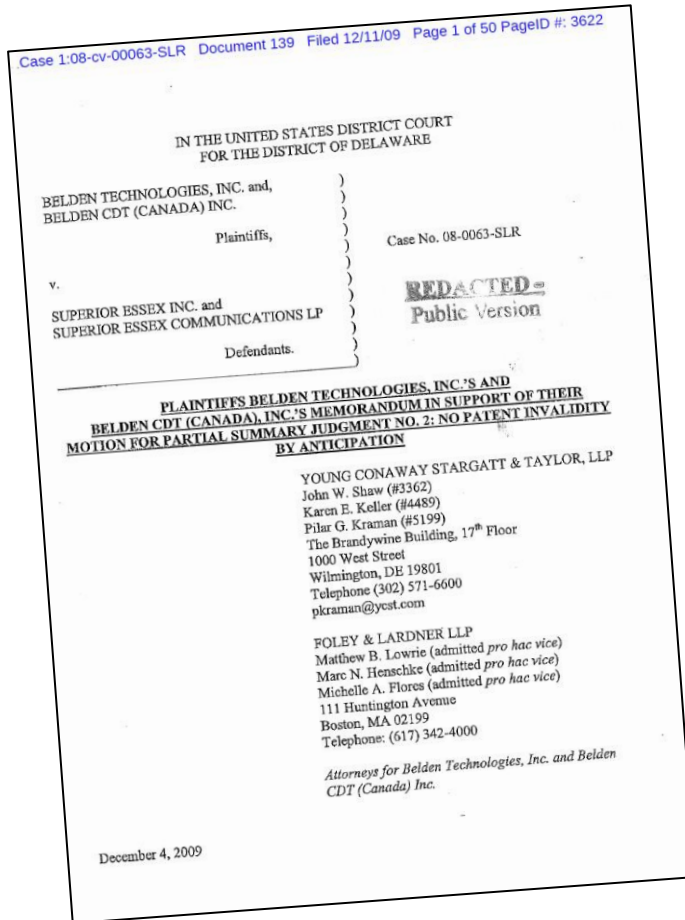
- a. "a data communications cable"
- b. "a first twisted pair of insulated conductors"
- c. "a second twisted pair of insulated conductors"
- d. "a configurable dielectric pair separator that separates the first and second twisted pairs of insulated conductors"
- e. "the configurable dielectric pair separator being substantially flat"
- f. "a jacket enclosing the first and second twisted pairs of insulated conductors and the dielectric pair separator"
- g. "wherein the configurable dielectric pair separator is arranged within the jacket to form at least two grooves"

Patent Owner's prior position (Trial transcript) (Ex-1063, 1360:19-20):



16 An invention-specific data transmission cable,
17 as described above. The defendants' expert agreed that
18 there is nothing above that that describes a cable that's
19 twisted; right? The only twisting that's described or
20 stranding that's described is of the individual pairs.
21 So if the author of this meant what they said, that it
22 is the data transmission cable as described above, they're
23 not talking about manufacturing something that has the
24 whole thing twisted, because that was never described
25 above.

Patent Owner's prior position (Motion for Summary Judgment) (Ex-1061, 11):

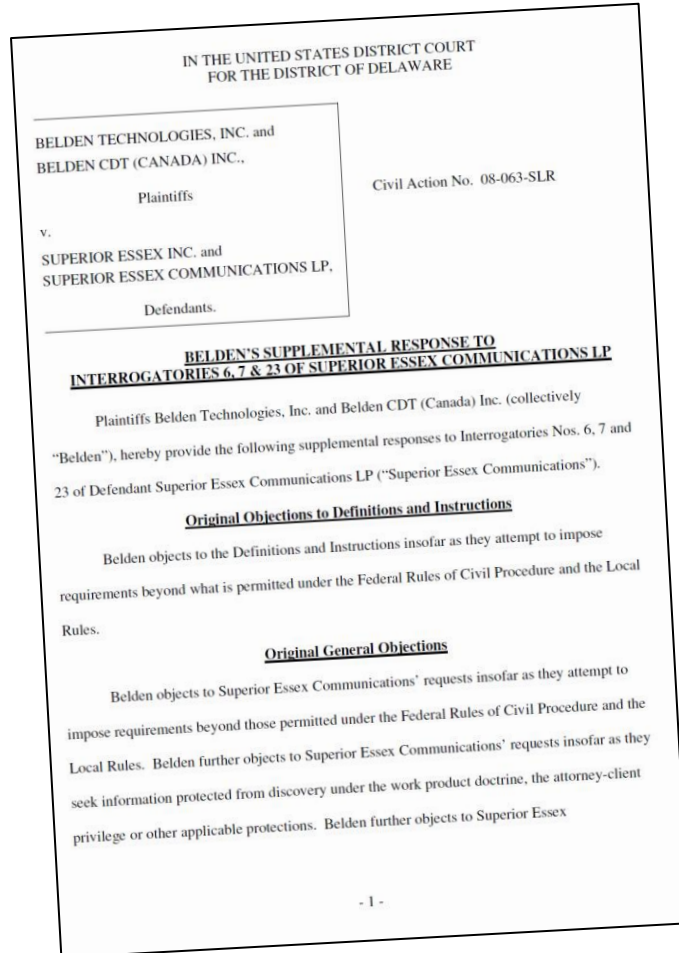


2. The Prior Art '866 Patent

In his Expert Report served on September 22, 2009, Superior Essex's expert witness on invalidity, Les Baxter ("Baxter"), opined that asserted Claim 27 of the '095 Patent-In-Suit is invalid within the meaning of 35 U.S.C. §102 because it is allegedly anticipated by prior art German patent DE 297 19 866 A1 (the "'866 patent").

The prior art '866 patent discloses a shielded data transmission cable that contains at least two twisted pairs of insulated conductors, certain shielding elements "consisting of electrically conducting material," and an overall outer cable covering. See (Flores Decl. at Exh. 2, p. 1 & Claim 1). As to the function of the shielding elements, the '866 disclosure teaches that by electrically isolating the individual twisted pairs both from each other and from the outer cable covering, "optimized transmission characteristics [are achieved], especially a defined wave resistance and a low coupling resistance, low damping, and low crosstalk." (Id. at pp. 1-2).

Patent Owner's prior position (Interrogatory response) (Ex-1077, 31-32):



Furthermore, with regard to claim 21, the '866 patent does not disclose that "the plurality of twisted pairs or insulated conductors and the dielectric pair separator are twisted together in a helical manner along the longitudinal length of the data communications cable," as recited in claim 21. The '866 patent discloses that the individual conductors making up each pair are twisted or stranded using a helix stranding or SP stranding, but does not disclose or suggest helically twisting together the plurality of twisted pairs and the dielectric pair separator along the longitudinal length of the cable.

Independent claim 27 recites "a configurable dielectric pair separator that separates the first and second twisted pairs of conductors" and "wherein the dielectric pair separator, the first twisted pair of insulated conductors and the second twisted pair of insulated conductors are twisted about a common central axis to form a twisted pair cable." As discussed above, the electrical screens disclosed in the '866 patent, which necessarily require a metal, or at least electrically conductive, portion do not constitute a dielectric pair separator. In addition, as also discussed above, the '866 patent discloses stranding the individual conductors of each pair, to form the pair, but does not disclose that the dielectric pair separator, the first twisted pair of insulated conductors and the second twisted pair of insulated conductors are twisted about a common central axis to form a twisted pair cable. Accordingly, claim 27 distinguishes over the '866 patent for at least these reasons.

Patent Owner's prior position (Inter partes Reexamination) (Ex-1059, 21):

Docket No.: M0506-702350

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No.:	6,570,095
Re-examination Control No.:	95/000,474
Re-examination Filing Date:	July 6, 2009
Re-examination Confirmation No.:	5251
Examiner:	NGUYEN, Minh T.
Art Unit:	3992

CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. §1.8(a)

The undersigned hereby certifies that this document is being electronically filed in accordance with § 1.6(a)(4), on the 10th day of December, 2009.

/Sarah M. Gates/
Sarah M. Gates

Mail Stop Inter Partes Reexam
Attn: Central Reexamination Unit
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND RESPONSE TO OFFICE ACTION IN INTER PARTES REEXAMINATION

Sir:

In response to the Office Action mailed September 10, 2009, please amend the above-identified application as follows. Changes to the Claims are shown by underlining for added matter.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

987300.3

2. No Teaching of Cabling

Claim 27 further recites that “the configurable dielectric pair separator, the first twisted pair of insulated conductors and the second twisted pair of insulated conductors are twisted about a common central axis to form a twisted pair cable.” In the Office Action, it is stated that the ’866 patent “discloses stranding the cable at page 6, para. 3, lines 4-7.” The Patent Owner respectfully disagrees. **The ’866 patent discloses stranding of the individual conductors to form each twisted pair,** and specifically discloses using “SZ” stranding to do so. The ’866 patent states that “the stranding of pair 1 can consist of a so-called helix stranding or an SZ stranding.” (See page 3, 3rd paragraph of English translation of the ’866 patent). However, the ’866 patent does not disclose or suggest cabling, i.e. twisting together the entire cable core, the plurality of twisted pairs and the configurable dielectric pair separator about a common axis to form the twisted pair cable. Rather, **the ’866 patent discloses only twisting of the conductor pairs to form helixes, not twisting/cabling of the cable as a whole.** Cabling of the cable including the shielding foils disclosed in the ’866 patent would be complex, would likely result in inoperable cables, and so would have been avoided. (*Gareis Dec. at 14-17*). Thus, the ’866 patent does not disclose or suggest a data communications cable in which the configurable dielectric pair separator, the first twisted pair of insulated conductors and the second twisted pair of insulated conductors are twisted about a common central axis to form a twisted pair cable, as recited in claim 27.

The translations:

Ex-1010, 3:	A data transfer cable according to the invention, shown in Fig. 1, comprises four pairs 1, each consisting of two <u>isolated</u> , stranded copper conductors 2 or wires. Optionally, these copper conductors or wires may
Ex-1057, 4:	An invention-specific data transmission cable depicted in figure 1 has four pairs 1 of <u>insulated</u> , stranded copper conductors 2 or cants. These copper conductors or cants may optionally have a conductor coating made of

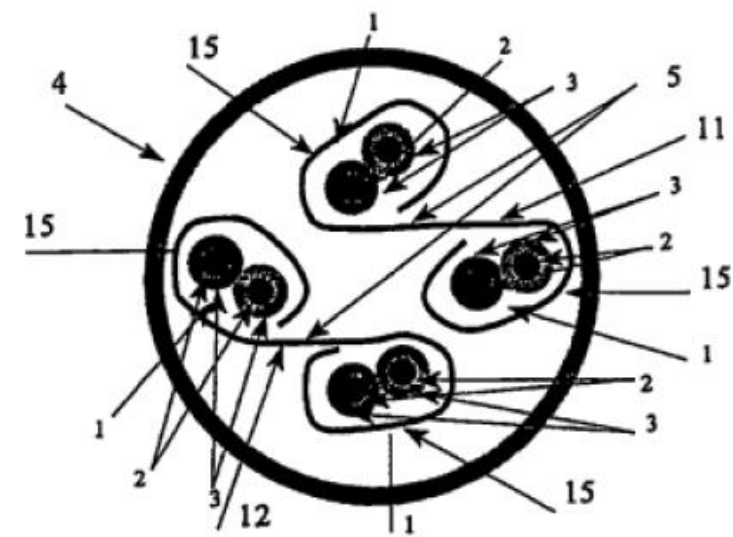


Figure 4

The translations:

Ex-1010, 3	range of from approximately 0.15 to 0.7 mm. <u>The stranding of the pairs 1</u> can consist in what is known as a helix stranding or in an SZ stranding (alternating, right-left stranding). In the case of an SZ stranding of the pairs, preferably, the spacing of the reversal points of the stranding
Ex-1057, 4	<u>The stranding of pair 1</u> can consist of a so-called helix stranding or an SZ stranding (alternating right-left stranding). With an SZ stranding of the pairs, preferably the distance of the turnaround point of the
Ex-1010, 5	17, 18 are applied together with the stranding or the conductor pairs 1 and/or the longitudinally extending deformation of the conductor pairs 1. In particular, in the case of the stranding of the conductor pairs in the
Ex-1057, 7	manufactured so that the partial shieldings 11, 12 or 17, 18 can be applied together with the stranding of conductor pairs 1 and/or longitudinal reshaping of the conductor pairs 1. Especially with stranding of the conductor pairs in the SZ stranding procedure, the existing laying
Ex-1010, 8	11. Data transfer cable according to one or more of claims 1 to 10, characterized in that the conductor pairs (1) are stranded in a helical or SZ-like manner.
Ex-1057, 10	11. Data transmission cable according to one or more of claims 1 to 10, characterized in that the conductor pairs (1) are stranded to form helixes or are SZ-like.

IPR2023-01062
('095 Patent IPR)

Ground 7: Yanagita (claims 27-29)

Prior district court case,
PO interrogatory response ('537 patent): examiner finding:

C. Rebuttal to Defendants' Contentions Regarding JP Sho43(1968)-1570

Contrary to Defendants' contentions, claims 19-22 are not rendered obvious JP Sho43(1968)-15470 (hereinafter "JP 15470") in combination with the '748 patent.

JP 15470 discloses an alternately stranded cable comprising stranded pairs and a core material of which a plate body is formed such that the facing of its surface becomes changed into a reciprocatingly twisted state, as shown in Figure 2. A cable sheath surrounds the stranded pairs and the plate body, as shown in Figure 1. JP 15470 discloses that the core material from which the plate body is formed is a rigid plastic.

JP 15470 does not disclose a "substantially flat configurable dielectric separator" as

(Ex-1077, 48)

Prior inter partes reexamination ('537 patent),
examiner finding:

Regarding 1a, JP '470 discloses a cable with a plurality of twisted pairs. See JP '470

Translation, Detailed Explanation of the Invention ("As communications cable, there is a tendency to use a plurality of either insulated element wires or else stranded pairs or stranded quad of such, or otherwise to use so-called [alternately] stranded cable with which units of the wires are stranded in a manner so that the stranding direction is reversed at points in time within a fixed cycle.") (emphasis added).

(Ex-1058, 57)

Ex-1012, 1:

Detailed Explanation of the Invention

The present invention relates to an improvement of an alternately twisted cable, and, in particular, relates to an alternately twisted cable that prevents twisting of a wire core from becoming undone. There is a trend to often using, as communication cables, so-called "alternately 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, when a tensile force is applied in the lengthwise direction of the cable core prior to application of the cable sheathing, in particular, 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.

The present invention focuses on this point, and a first

Ex-1055, 1:

Detailed Explanation of the Invention

The present invention relates to a favorable alternately stranded cable; more specifically, it relates to an alternately stranded cable that prevents the unraveling of wire twisting. As communications cable, there is a tendency to use a plurality of either insulated element wires or else stranded pairs or stranded quad of such, or otherwise to use so-called alternately stranded cable with which units of the wires are stranded in a manner so that the stranding direction is reversed at points in time within a fixed cycle.

However, with such types of cable, in particular when tensile force is applied in the longitudinal direction prior to conducting cable sheathing, a problem occurs in that the stranded cable core becomes unraveled; in order to prevent this, various contrivances have been attempted, but these have all turned out to be problematic from the standpoint of practical application.

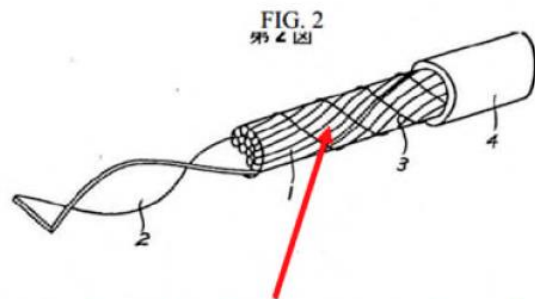
This invention has been developed in consideration of these points; its first invention

Ex-1012, 1	Ex-1055, 1
“The present invention relates to an improvement of an <u>alternatingly twisted cable</u> ... There is trend to often using, as communication cables, so-called ‘alternatingly twisted cables,’ wherein that wherein <i>a large number of strands of insulated wires or pairs thereof or quad strands</i> , or units thereof, are <u>twisted together so as to reverse the direction of twisting</u> thereof with given periodicity.”	“The present invention relates to a favorable <u>alternatedly stranded cable</u> ...As communications cable, there is a tendency to use <i>a plurality of either insulated element wires or else stranded pairs or stranded quad of such</i> , or otherwise to use so-called alternatedly stranded cable with which units of the wires <u>are stranded in a manner so that the stranding direction is reversed</u> at points in time within a fixed cycle”
“first invention thereof is an <u>alternatingly twisted cable</u> wherein <i>a large number of insulated wire strands, or that wherein the insulated wire strands are twisted together</i> , are laid, <u>while twisting along the surfaces</u> , ...”	“first invention constitutes an <u>alternatedly stranded cable</u> ...; onto both surfaces of the core material, <i>a plurality of either insulated element wire or else stranded groupings of such</i> are vertically <u>run along the surfaces while being twisted</u> ”
“1 <i>is an insulated wire or that wherein insulated wires are twisted together</i> , <u>laid divided onto both sides of a core material 2</u> ”	“reference numeral 1 <i>constitutes an insulated element wire or stranded groupings of such</i> ; <u>these are divided and longitudinally run along both surfaces of core material 2</u> ”

(Ex-1081, ¶161)

Patent Owner's incomplete quote:

Yanagita FIG. 2 (annotated) –
Twisted Cable



“insulated wires are twisted together, laid divided onto both sides of a core material 2”
Yanagita 1 (col. 1).

(PO's Paper 33 (sur-reply), 9)
(see also Paper 34 (-01061 IPR sur-reply), 14)

The full quote and context:

“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*, . . .”

“first invention thereof is an alternatingly 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..”

“1. An alternatingly twisted cable obtained through laying, while twisting along a surface of a core material, a large number of insulated wires, or that wherein insulated wires are twisted together, on both surfaces of a core material...”

(Ex-1012, 1 col. 1 and col. 2 claim 1)

Implausible to read Yanagita as only bundles of wires all twisted together

55 A plurality of copper wires insulated with
paper, cotton, silk, or other suitable material, usually twisted together in pairs, are
stranded together loosely to form a group
or bundle 5 of conductors which are held
60 together in their loosely stranded condition
by means of a suitable strand binder 3 of
cotton or other suitable material. The
binder 6 is wrapped in a helix the turns of
which are spaced widely apart as illustrated
65 in Figs. 5 and 7. The group or bundle 5

(Ex-1020, 2:55-59)

In order to minimize crosstalk, it is necessary to avoid
proximity of pairs of the same, or nearly the same, twist
(lays). The length of pair twist which can be employed
is limited, however, from the smallest (approximately
1½ inches) to the largest (approximately 5 inches).
Longer lays are impractical because in the process of
assembling pairs in the cable it is not possible to retain
accuracy of the twist. In large cables, having 50 pairs,
there is a need to employ at least 22 pair lays to avoid
proximity of pairs of the same twist length.

(Ex-1014, 1:30-32)

34. Twisted pairs have been a staple of the cable industry for over a century. For example, telephone cable patents from the 1920s discuss using twisted pairs in electrical cables. *See, e.g.*, EX-1020 at 2:55-57 (U.S. Patent No.1,727,972

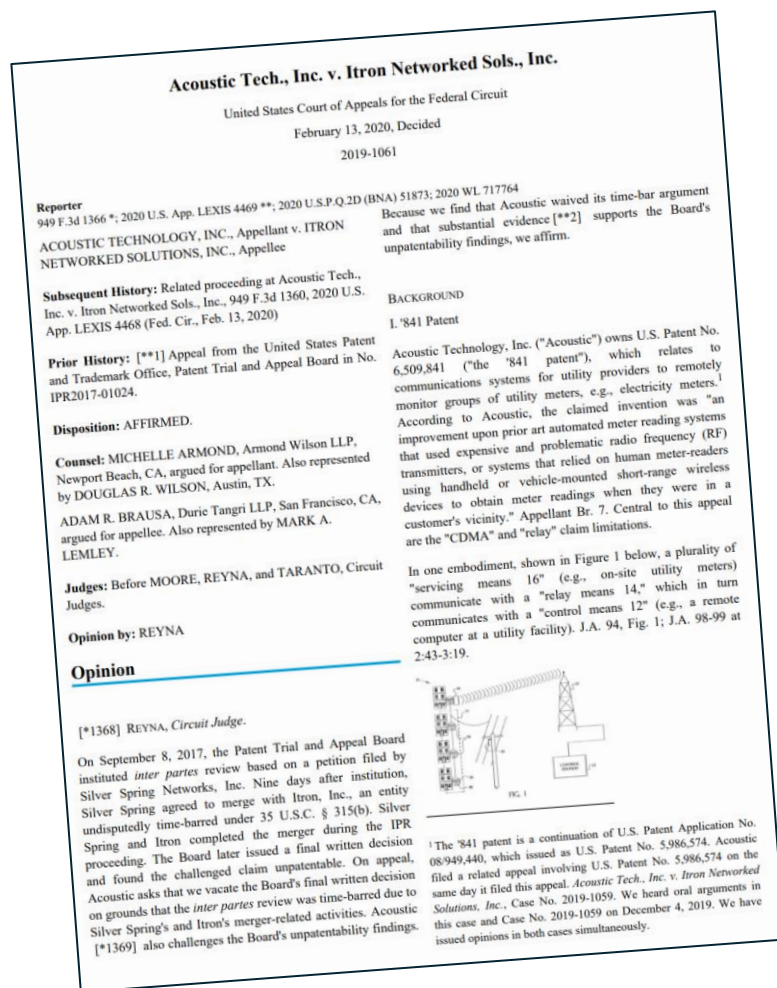
(Ex-1007, ¶134)

standard). See also my discussion above at paragraph 15. Yanagita discloses an invention for use with “communications cables.” To a POSITA, it would have been implausible to read Yanagita as limiting its invention to only bundles of straight wires, (and excluding twisted pairs). This is particularly true given that both translations of Yanagita expressly refer to stranded “pairs.” Ex-1012 (“strands of insulated wires or pairs thereof”); Ex-1055, 1 (“either insulated element wires or else stranded pairs ...of such”). As I explained above with respect to Roberts, it was common to shorthand twisted pairs to simply “pairs.” And in the context of Yanagita (a large number of “pairs” of conductors bundled together without individual shielding between each pair), a POSITA would have understood the description of the wires could be “pairs”/“stranded pairs” to refer to twisted pairs.

(Ex-1081, ¶164)

Acoustic Tech., Inc. v. Itron Networked Sols., Inc., 949 F.3d 1366, 1373 (Fed. Cir. 2020):

In an anticipation analysis, the dispositive question is whether a skilled artisan would "reasonably understand or infer" from a prior art reference that every claim limitation is disclosed in that single reference. *Akamai Techs., Inc. v. Cable & Wireless Internet Servs., Inc.*, 344 F.3d 1186, 1192 (Fed. Cir. 2003). Expert testimony may shed light on what a skilled artisan would reasonably understand or infer from a prior art reference. *Monsanto Tech. LLC v. E.I. DuPont de Nemours & Co.*, 878 F.3d 1336, 1345 (Fed. Cir. 2018). Moreover, expert testimony can constitute substantial evidence of anticipation when the expert explains in detail how each claim element is disclosed in the prior art reference. *Koito Mfg. Co. v. Turn-Key-Tech, LLC*, 381 F.3d 1142, 1152 (Fed. Cir. 2004).



IPR2023-01062
('095 Patent IPR)

**Grounds 2, 4, 8: Foamed
polymer claims**

Foamed polymer claims, 30-33 (Grounds 2, 4, 8)

-01062 IPR ('095 patent)

Prior reexaminations and foamed polymer limitations:

Reexamination of '095 (“foamed polymer tape” element):

Regarding the argument that Gingue '748 does not teach the materials for separator, requester points out that **Gingue '748 discloses the benefits of specific materials used in data cables and makes clear that electrical performance considerations are not limited to conductor insulation and extend to other cable applications.** The examiner agrees with the requester. A **person of ordinary skill in the art would consider the teaching of Gingue '748 when choosing a material for a separator** used in the cable field.

[. . .]

The data communications cable according to claim 1, wherein the dielectric pair separator is a flame-retardant, low-dielectric constant, foamed polymer tape.

GmbH '866 does not disclose the dielectric pair separator being made of a flame-retardant, low-dielectric constant, foamed polymer tape as called for in the claim. Gingue '748 discloses fluorinated ethylene propylene (FEP) polymer (among other materials) for use in data cables to achieve flame retardancy and minimize smoke. Gingue '748 is directly related to materials used for flame retardancy and smoke suppression in data communications cables. Thus, **it would have been obvious to combine for the reason and motivation discussed in claim**

2.

(Ex-1003, 17-19)

Reexamination of '537 (claims 19-22):

Claim 20:

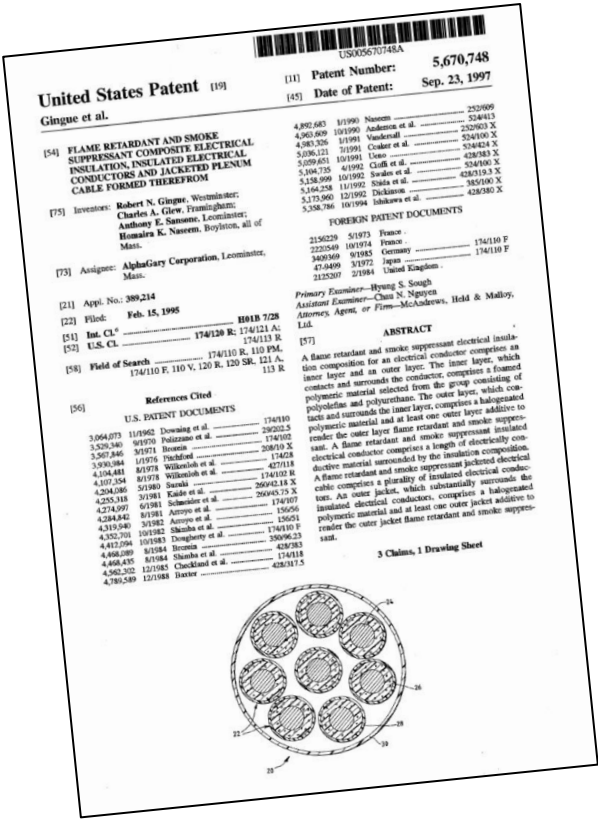
The communications cable as claimed in claim 19, wherein the substantially flat configurable dielectric separator includes a flame-retardant, low-dielectric constant, foamed polymer tape.

GmbH '866 does not disclose the dielectric pair separator being made of a flame-retardant, low-dielectric constant, foamed polymer tape as called for in the claim. Gingue '748 discloses fluorinated ethylene propylene (FEP) polymer (among other materials) for use in data cables to achieve flame retardancy and minimize smoke. Gingue '748 is directly related to materials used for flame retardancy and smoke suppression in data communications cables.

Thus, **it would have been obvious to** combine for the reason and motivation discussed in claim 19.

(Ex-1006, 21-23)

Gingue
(Ex-1013, 3:20-26, 4:5-39):



FLAME RETARDANT AND SMOKE
SUPPRESSANT COMPOSITE ELECTRICAL
INSULATION, INSULATED ELECTRICAL
CONDUCTORS AND JACKETED PLENUM
CABLE FORMED THEREFROM

FIELD OF THE INVENTION

The present invention relates to insulated electrical conductors and jacketed electrical cables. More particularly, the present invention relates to composite electrical insulation exhibiting reduced flame spread, reduced smoke evolution, and favorable electrical properties. The present invention also relates to insulated electrical conductors and jacketed plenum cable formed from the flame retardant and smoke suppressant composite insulation.

BACKGROUND OF THE INVENTION

[...]

In general, the electrical performance of an insulating material is enhanced by foaming or expanding the corresponding solid material. Foaming also decreases the amount of flammable material employed for a given volume of material. Accordingly, a foamed material is preferably employed to achieve a favorable balance of electrical properties and flame retardancy.

In addition to the requirement of low smoke evolution and flame spread for plenum applications, there is a growing need for enhanced electrical properties for the transmission of voice and data over twisted pair cables. In this regard, standards for electrical performance of twisted pair cables are set forth in Electronic Industry Association/Telecommunications Industry Association (EIA/TIA) document TSB 36 and 40. The standards include criteria for attenuation, impedance, crosstalk, and conductor resistance.

SUMMARY OF THE INVENTION

The present cable design incorporates an inner layer comprising a foamed or expanded polyolefin material and an outer layer comprising a halogenated polymeric material. This composite insulation provides a heterogeneous core that optimizes the electrical characteristics (i.e., the dielectric constant and dissipation factor) of the material of the inner layer in direct contact with the copper conductor, while

[...]

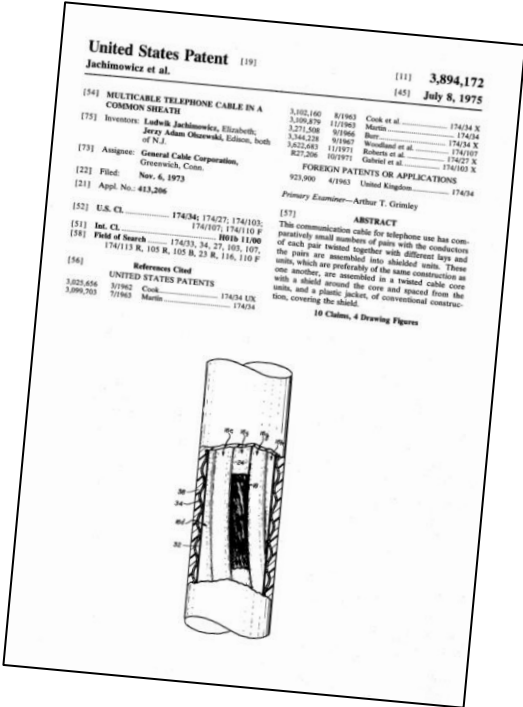
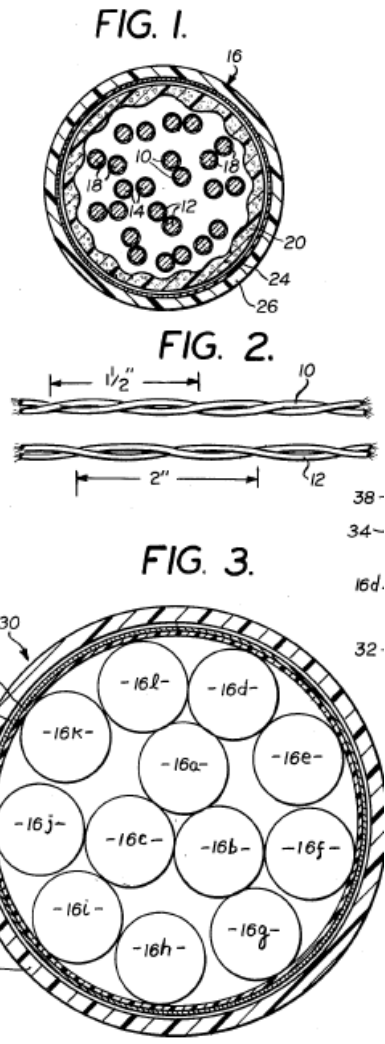
The preferred foamed inner layer polymeric material comprises foamed polyethylene or foamed polypropylene. Foamed polyurethane could also be employed, as well as silicone polymers such as hexamethyldisiloxane, octamethyltrisiloxane, deca methyltetrasiloxane.

The inner layer preferably further comprises at least one inner layer additive, the at least inner layer additive rendering the inner layer flame retardant and smoke suppressant. The at least one inner layer additive is preferably selected

Jachimowicz
(Ex-1014, 2:46-50):

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.

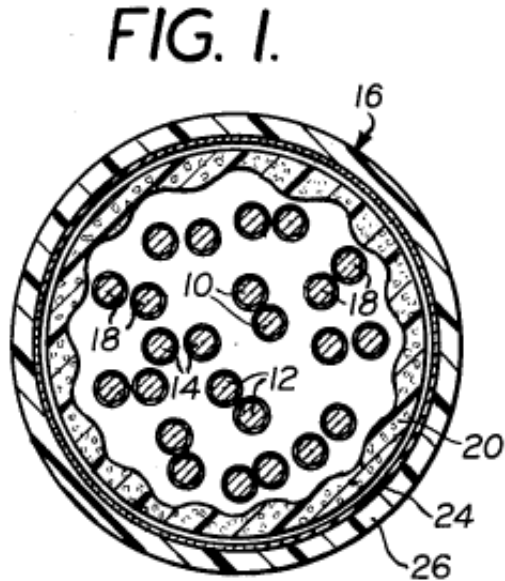
A metal shield 24 is placed over the jacket of foamed material 20. One of the advantages of the jacket or tape of foamed material 20, in addition to holding the pairs assembled in the bundle, is that the foamed material separates the pairs from proximity to the metal shield 24 which is applied over the foam.



Foamed polymer claims, 30-33 (Grounds 2, 4, 8)

-01062 IPR ('095 patent)

Jachimowicz (Ex-1014, 2:46-60, 3:50-57):



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 jacket 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.

A metal shield 24 is placed over the jacket of foamed material 20. One of the advantages of the jacket or tape of foamed material 20, in addition to holding the pairs assembled in the bundle, is that the foamed material separates the pairs from proximity to the metal shield 24 which is applied over the foam.

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. It is unnecessary to use filling compound in the units 16 because these units are protected from contact with moisture in the cable 30.

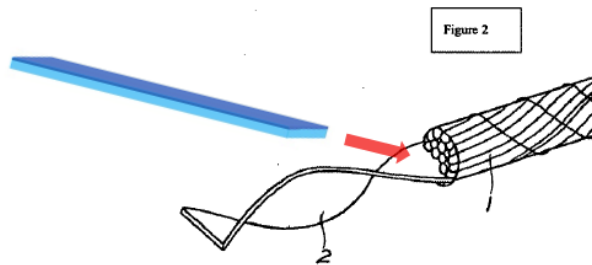
Cornelison (Ex-1081) ¶83:

reasons. First, the foamed polymer 20 shown in Figure 1 of Jachimowicz shows a cross section of Jachimowicz's embodiment using an "extruded" jacket of "foamed polyethylene 20," not the alternative option using "tape." Ex-1014, 2:46-50. Dr. Eldering points to the wrong embodiments. A POSITA would understand that Figure 1 of Jachimowicz, which shows the extruded foam jacket, shows the interior surface of the extruded foam as undulating because during the extrusion process the foam would conform to the twisted pairs it was being extruded over. A foamed tape, by contrast, would be flat to begin with (i.e. before being wrapped around the twisted pairs). While the foamed tape may compress and conform to the twisted pairs after being wrapped around them (potentially creating some indentations in the foam), it would be expected to be flat before it was applied.

Foamed polymer claims, 30-33 (Grounds 2, 4, 8) ^{-01062 IPR ('095 patent)}

Cornelison (Ex-1007) ¶280:

Foamed polymer tape



Cornelison (Ex-1081), ¶84:

84. Second, Patent Owner attempts to mischaracterize my statement at my deposition—that I did not know whether “all tapes” are substantially flat—to argue that Jachimowicz’s tape is not substantially flat. A POSITA would understand the “tape” referenced by Jachimowicz is a substantially flat tape. Ex-2004, 103:1-8 (referencing paragraph 93 of Ex-1007 from the -01061 IPR); see also Ex-1007, ¶¶144, 210, 280. During my deposition, I explained I was familiar with Mylar-backed foamed tapes like that described by Jachimowicz, due to my experience in the industry. Ex-2004, 103:4-104:16. Such tapes were substantially flat.

Cornelison (Ex-2004, 102:20-103:13):

20 Q. Correct. Is it your opinion that all
21 tapes are substantially flat?
22 A. I do not know about all tapes. What I
1 do know, though, is that I do provide an example of
2 what would be considered an element that would be
3 used in figure -- in paragraph 102 as I describe a
4 foamed polymer tape. And that is in paragraph 93 c
5 my declaration where I actually show a profile of a
6 tape that might be used. So I have the description
7 overall drawing of the kind of tape I'm thinking
8 about. I do not know about all tapes.
9 Q. So in paragraph 102, how do you know
10 that the foamed tape is thicker than the non-foamed
11 tape?
12 A. In my experience, foamed tapes are
13 consistently thicker than non-foamed tapes. I'm

Eldering (Ex-1070, 213:2-214:1):

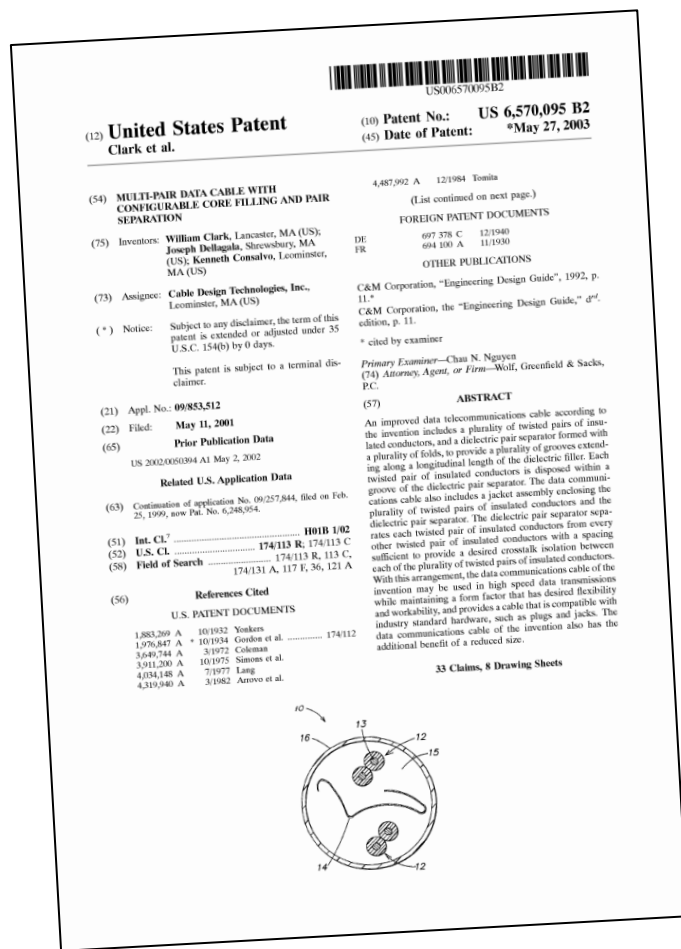
16 Q. Have you ever used a Mylar backed
17 foamed tape in communications cabling?
18 MR. HOEHNER: Objection to form.
19 Asked and answered.
20 A. I can't recall specific use. I --
21 I have used -- I recall having used Mylar. I
22 cannot recall the specifics of any tape that I

214

1 would have used with a Mylar backer -- backing.

Foamed polymer claims, 30-33 (Grounds 2, 4, 8)

-01062 IPR ('095 patent)

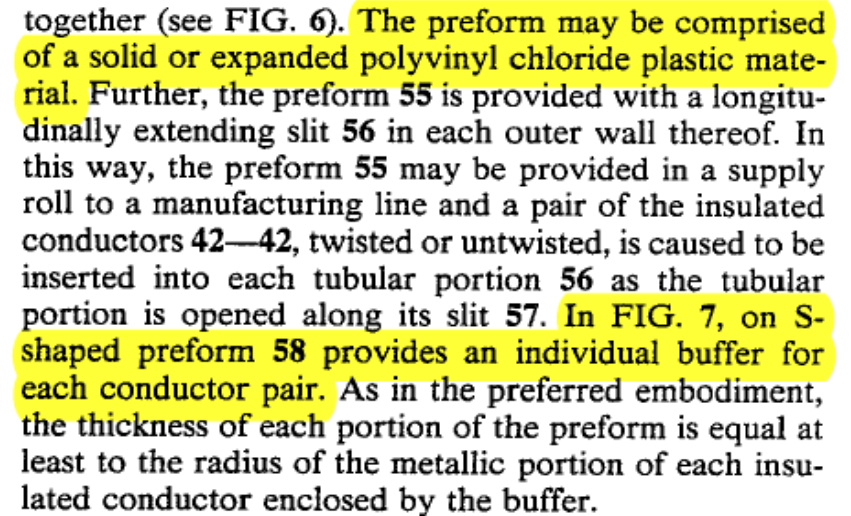


31. A data communications cable comprising:
a plurality of twisted pairs of insulated conductors;
a configurable dielectric pair separator disposed between at least two of the plurality of twisted pairs of insulated conductors, the configurable dielectric pair separator including a **substantially flat** dielectric tape formed of a foamed polymer;
a jacket enclosing the plurality of twisted pairs of insulated conductors and the configurable dielectric pair separator; and
wherein the plurality of twisted pairs of insulated conductors and the configurable dielectric pair separator are twisted about a common axis to form a twisted pair cable.

IPR2023-01061
('537 Patent IPR)

IPR2023-01061
('537 Patent IPR)

Ground 1: Beggs + Jachimowicz

[illegible]
$$[\cdot \cdot \cdot]$$

conductor. The tubular members or portions of the buffer system may take other forms as long as they comprise material having a relatively low dielectric constant. For example, each of the tubular members 51—51 may comprise material in strip form which is wrapped helically or longitudinally, for example, about its associated pair of individually insulated conductors 42—42. Also, the S-shaped preform 58 in FIG. 7 may be replaced with a tape which is made of a dielectric material and which is wrapped about the conductor pairs to cause each pair to be enclosed substantially in a dielectric portion of the buffer system.

(Ex-1015, 6:1-14, 6:52-56)

Beggs (Ex-1015)

1. A communications cable, which comprises:
 - a plurality of transmission media, each of which includes a twisted pair of individually insulated conductors with each of said insulated conductors comprising a metallic conductor and an insulation cover which encloses said metallic conductor;
 - a sheath system which includes at least a plastic jacket and which encloses said plurality of transmission media; and
 - a buffer system which comprises a dielectric material and which includes a plurality of portions each of which is associated individually with a pair of the conductors, each said portion enclosing substantially the associated pair of insulated conductors and being effective to inhibit distortion of the twist configuration of the associated pair of conductors, further each said portion having a thickness which is equal at least to the radius of the metallic conductor of an associated insulated conductor to space suitably each pair of insulated conductors from said sheath system.
2. The communications cable of claim 1, which also includes a shield comprising a metallic portion such that each buffer portion is disposed between its associated pair of insulated conductors and said shield.
3. The communications cable of claim 2, which also includes a jacket comprising a plastic material and enclosing said shield.

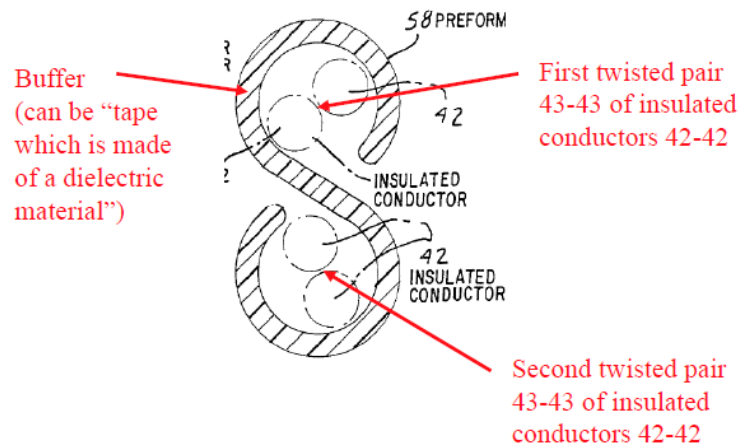
16. The communications cable of claim 3, wherein the buffer portion for one conductor pair is connected together with a buffer portion for another conductor pair.

18. The communications cable of claim 16, wherein the buffer portions are portions of a tape which has been wrapped in an S-shape to enclose substantially the pairs of conductors.

19. The communications cable of claim 3, wherein said buffer system is comprised of a cellular polyvinyl chloride material.

(Ex-1015, 6:1-14, 6:52-56)

Beggs (Ex-1015)

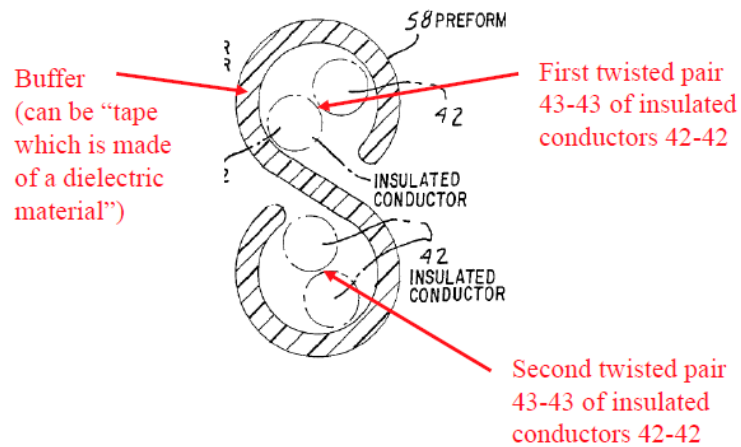


Beggs at Fig. 7 (Annotated).

88. The "tape" made of a dielectric material that provides a "buffer" between twisted pairs is a *substantially flat* and *configurable* dielectric separator. As discussed above, it is my understanding that the term "substantially flat" separator requires only a separator that is initially a substantially flat member prior to being formed into the cable; the term does not require that the separator be substantially flat in the finished cable. *Supra*, §VIII.A. A POSITA would understand that the "tape" disclosed by Beggs would be configurable and could be configured into, for example, the 'S'-shaped buffer taught by Beggs. Beggs at 6:52-56 ("the S-shaped preform 58 in FIG. 7 may be replaced with a tape which is made of a dielectric material and which is wrapped about the conductor pairs to cause each pair to be enclosed substantially in a dielectric portion of the buffer system.").

Cornelison (Ex-1007, ¶¶87-88)

Beggs (Ex-1015)



Beggs at Fig. 7 (Annotated).

91. Beggs discloses that the separator, which is referred to as a "buffer" (*substantially flat configurable dielectric separator*) may include a foamed polymer (element [19.d]). Beggs at 6:1-3 ("The preform [buffer] may be comprised of a solid or **expanded polyvinyl chloride plastic material**."), 6:52-56 ("S-shaped preform 58 in Fig. 7 may be replaced with a tape which is made of a dielectric material and which is wrapped about the conductor pairs . . ."), claim 19 ("wherein said buffer system is comprised of a cellular polyvinyl chloride material."); 5:60-63. A POSITA would have known that expanded PVC and cellular PVC are and refer to foamed polymers. Thus the specification at 5:64-6:16 indicates that the preform buffer can be either solid or expanded PVC material, discloses an alternative *shape* for the preform (an 'S' shape), and that the S-shaped preform can be replaced with a tape made of dielectric material. Nothing in Beggs limits the teaching that the buffer of dual-tubular embodiment (preform 55) can be comprised of foamed polymer to only that embodiment. Rather, Beggs would indicate to a POSITA that any of the disclosed buffer embodiments, including the 'S'-shaped "preform 58" and the embodiment where "S-shaped preform 58 [is] replaced with a tape" (Beggs at 6:52-56), can be comprised of foamed polymer, just like the dual tubular preform 55 embodiment.

92. Even if Beggs did not expressly disclose a separator that includes a foamed polymer, a POSITA would have known (based on Beggs' description) that one could make the S-shaped preform 58 as well as the tape Beggs teaches as an alternative for preform 58 of a foamed polymer, just like what is expressly taught for preform 55. The foamed S-shaped preform and tape would have the same function and benefits as the foamed buffer preform 55. It would provide separation between the twisted pairs helping with isolating the pairs. Beggs at 6:35-45. It would also provide the mechanical advantage of preventing the twisted pairs from untwisting. Beggs at 3:45-48 ("Each buffer portion encloses substantially the associated pair of insulated conductors and is effective to inhibit distortion of the twist configuration of the associated pairs of conductors"). I also note that the obvious combination of Beggs and Jachimowicz's plastic-backed foamed polymer tape (which I discuss below) also discloses this limitation.

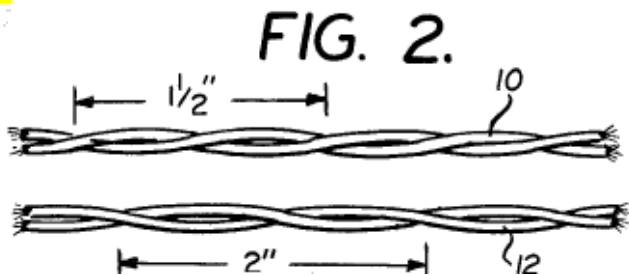
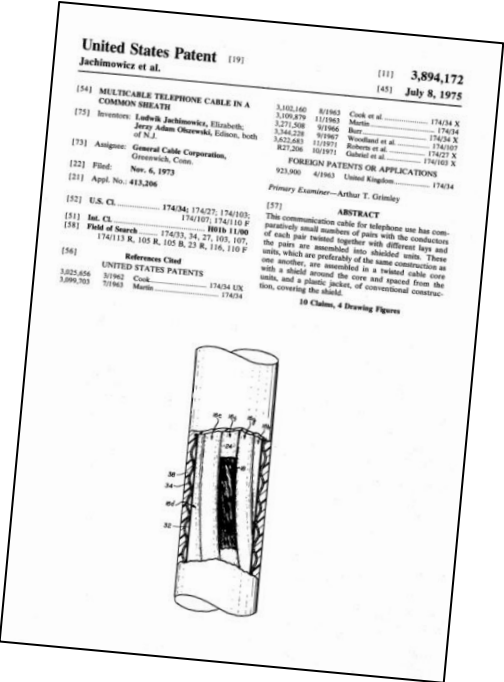
Cornelison (Ex-1007, ¶¶91-92)

Jachimowicz (Ex-1014)

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.

A metal shield 24 is placed over the jacket of foamed material 20. One of the advantages of the jacket or tape of foamed material 20, in addition to holding the pairs assembled in the bundle, is that the foamed material separates the pairs from proximity to the metal shield 24 which is applied over the foam.

(Ex-1014, 2:50-54)



Film of Mylar,
polypropylene, or other
material

Foamed thermoplastic
(foamed polymer)



Cornelison (Ex-1007, ¶81, ¶¶93-98; Ex-1080, ¶¶18-28)

Beggs + Jachimowicz, claim 19 (Ground 1)

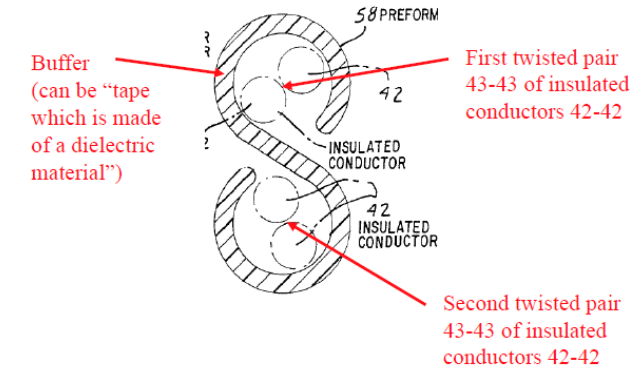
-01062 IPR ('095 patent)

Beggs: Separator can be **“S-shaped preform 58,”** that has **flat** surfaces (Ex-1015 ,6:9-11, Fig. 7)

Beggs: **S-shaped preform 58** may be replaced with a **dielectric “tape”** (*“S-shaped preform 58 in FIG. 7 may be replaced with a tape which is made of a dielectric material”*) (Ex-1015, 6:52-56)

Beggs: **Preform** can be **foamed polymer** (*“the preform may be comprised of a solid or expanded polyvinyl chloride plastic material”*) (Ex-1015, 6:1-3)

Jachimowicz: **foamed polymer tape** can consist of **two materials** (*“tape made of foamed thermoplastic supported by a film such as Mylar”*) (Ex-1014, 2:51-54)



(Ex-1007, ¶87)

Motivations

97. **First**, Beggs itself teaches that the “buffer” member can be a foamed polymer. Beggs at 6:1-3 (“The preform may be comprised of a solid or expanded

98. **Second**, providing a plastic film backing on a foamed polymer was known to improve the mechanical characteristics of the foamed polymer tape. For

99. **Third**, a POSITA would have been motivated to use a plastic-backed foamed polymer tape instead of a Mylar only, non-foamed tape in order to improve the electrical performance of the cable by reducing capacitance between twisted

103. **Fourth**, using a plastic-backed foamed polymer tape instead of a non-foamed tape would have predictably further decreased crosstalk between twisted

104. **Fifth**, foamed polymer would have been expected to predictably have less of a negative effect on the flame resistance of the cable than non-foamed polymer. This is because foaming “decreases the amount of flammable material

*Cornelison testimony
(Ex-1007, ¶¶92-107)*

Patent Owner Response “rigidity” argument (Paper 20, 29) :

suggestion that would instruct a POSITA to do so. As Beggs teaches, the dielectric tape replacing preform (58) in FIG. 7 must be capable of being “*wrapped about* the conductor pairs to cause each pair to be enclosed substantially in a dielectric portion of the buffer system.” Beggs 6:52-56, 10:61-64 (claim 18). But as Cornelison *admitted*, “the Mylar film backing [of Jachimowicz’s jacket] would provide enhanced tensile strength properties to the foamed tape, *decreasing the tendency for the foamed tape to stretch* or break.” Pet. 51; EX-1007 ¶98. This added strength and rigidity would not be suitable for the S-shaped wrapping required by Beggs, nor would a POSITA be motivated to use Jachimowicz’s jacket in this manner. In fact,

Cornelison testimony (Ex-1080, ¶¶30-31):

30. Dr. Eldering also argues that the foamed polymer jacket or tape in Jachimowicz “needs to be of sufficiently rigid composition” that the pairs are “unable to move” (i.e. “locked”) and therefore nothing in Jachimowicz teaches that the “jacket” “could or would be used for separating conductor pairs.” Ex-2001, ¶¶111-113. Dr. Eldering does not explain why the foamed polymer tape of Jachimowicz would be expected to be so “rigid” as to not work as a separator tape like that taught by Beggs. And a POSITA would not expect it to be. The term “tape” would connote to a POSITA that it would be more than sufficiently flexible, as “tapes” were known to come on rolls and to be designed to be flexible enough to be wrapped around things. Mylar-backed foamed polymer tape was not “rigid.” It was flexible, and fully capable of bending, folding, and wrapping. It came on a roll, and it was often used by feeding it out of the roll and into cable assemblies. Jachimowicz itself confirms this. As I explained in my First Declaration, Jachimowicz “indicates...that the tape is ‘appl[ied]’ to hold pairs together in a bundle...indicating that the tape was substantially flat [and] could be configured (e.g. wrapped or folded) around pairs.” Ex-1007, ¶81.

31. Dr. Eldering provides no evidence or explanation for why POSITA would expect Mylar backing to add any “rigidity” at all, much less so much rigidity that the tape would become incapable of being wrapped in an S-shaped fashion. He only cites my testimony that a Mylar-backed foamed polymer tape would “provide enhanced tensile strength properties” that would “decrease the tendency for the foamed tape to stretch or break.” Ex-2007, ¶168; Ex-2001, ¶119. It is true that a Mylar-backed foamed polymer tape would “provide enhanced tensile strength properties” that would “decreas[e] the tendency for the foamed tape to stretch or break.” But this not mean that it would also be so rigid as to be incapable of being wrapped in an S-shape around twisted pairs such as shown in Beggs. To the contrary, a POSITA would have known that Mylar-backed foamed polymer tape like that described in Jachimowicz was flexible and more than capable of being wrapped in an S-shaped fashion as shown in Beggs.

IPR2023-01061
('537 Patent IPR)

Ground 2: Ground 1 (Beggs + Jachimowicz) + Gingue

Ground 4: Ground 3 (Yanagita + Jachimowicz) + Gingue

Claims 20 and 22, Grounds 1 and 3 Further in view of Gingue (Grounds 2, 4)

Claim 20: "The communications cable as claimed in claim 19, wherein the substantially flat configurable dielectric separator includes a ***flame-retardant, low-dielectric constant***, foamed polymer tape."

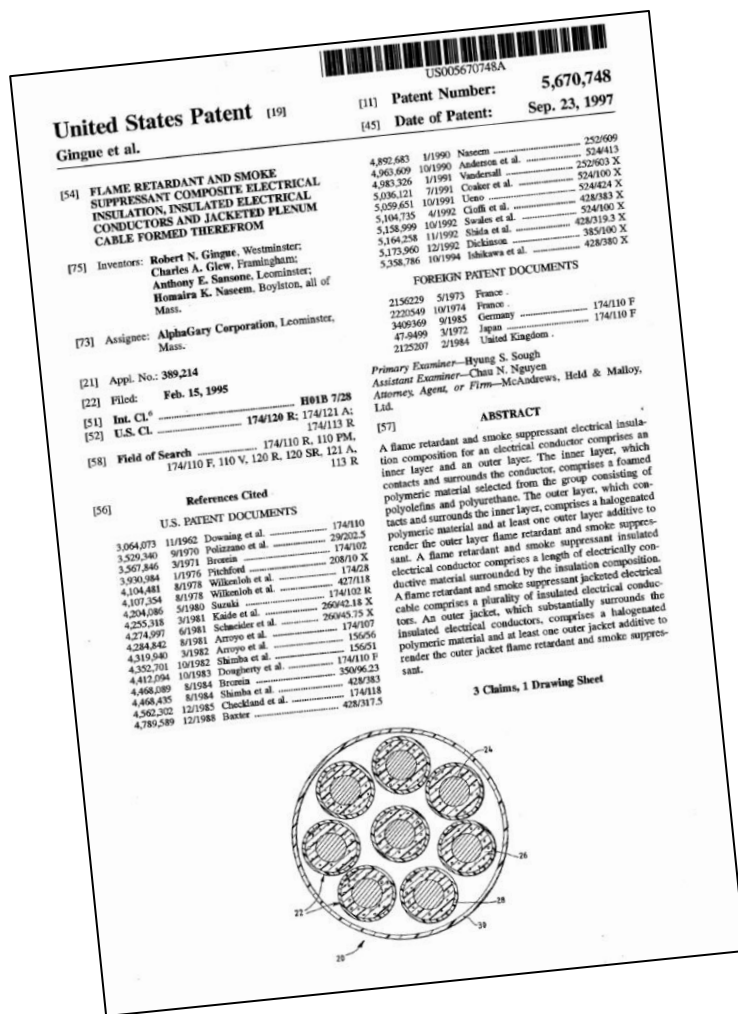
Claim 22: "The communications cable as claimed in claim 19, wherein the substantially flat configurable dielectric separator is a ***flame-retardant***, foamed polymer tape."

Claims 20 and 22, Grounds 1 and 3 Further in view of Gingue (Grounds 2, 4)

A POSITA would have been motivated to use foamed polymer tape having flame-retardant and low-dielectric constant properties taught by Gingue in the Beggs/Jachimowicz combination, to predictably improve the electrical and flame-retardant properties of the Beggs communication cable. EX-1007, ¶117, ¶121. Specifically, a POSITA would be motivated to use foam with such properties to, as Gingue teaches, achieve “a favorable balance of electrical properties and flame retardancy”. Gingue, 3:20-26; EX-1007, ¶117, ¶44, ¶46. Beggs itself confirms that it was known in the communications cable prior art that “flame retardance . . . is Important”. Beggs, 1:36-37; EX-1007, ¶117, ¶75.

Claims 20 and 22, Grounds 1 and 3 Further in view of Gingue (Grounds 2, 4)

Gingue (Ex-1013):



FLAME RETARDANT AND SMOKE SUPPRESSANT COMPOSITE ELECTRICAL INSULATION, INSULATED ELECTRICAL CONDUCTORS AND JACKETED PLENUM CABLE FORMED THEREFROM

FIELD OF THE INVENTION

The present invention relates to insulated electrical conductors and jacketed electrical cables. More particularly, the present invention relates to composite electrical insulation exhibiting reduced flame spread, reduced smoke evolution, and favorable electrical properties. The present invention also relates to insulated electrical conductors and jacketed plenum cable formed from the flame retardant and smoke suppressant composite insulation.

BACKGROUND OF THE INVENTION

[...]

In general, the electrical performance of an insulating material is enhanced by foaming or expanding the corresponding solid material. Foaming also decreases the amount of flammable material employed for a given volume of material. Accordingly, a foamed material is preferably employed to achieve a favorable balance of electrical properties and flame retardancy.

In addition to the requirement of low smoke evolution and flame spread for plenum applications, there is a growing need for enhanced electrical properties for the transmission of voice and data over twisted pair cables. In this regard, standards for electrical performance of twisted pair cables are set forth in Electronic Industry Association/Telecommunications Industry Association (EIA/TIA) document TSB 36 and 40. The standards include criteria for attenuation, impedance, crosstalk, and conductor resistance.

SUMMARY OF THE INVENTION

The present cable design incorporates an inner layer comprising a foamed or expanded polyolefin material and an outer layer comprising a halogenated polymeric material. This composite insulation provides a heterogeneous core that optimizes the electrical characteristics (i.e., the dielectric constant and dissipation factor) of the material of the inner layer in direct contact with the copper conductor, while

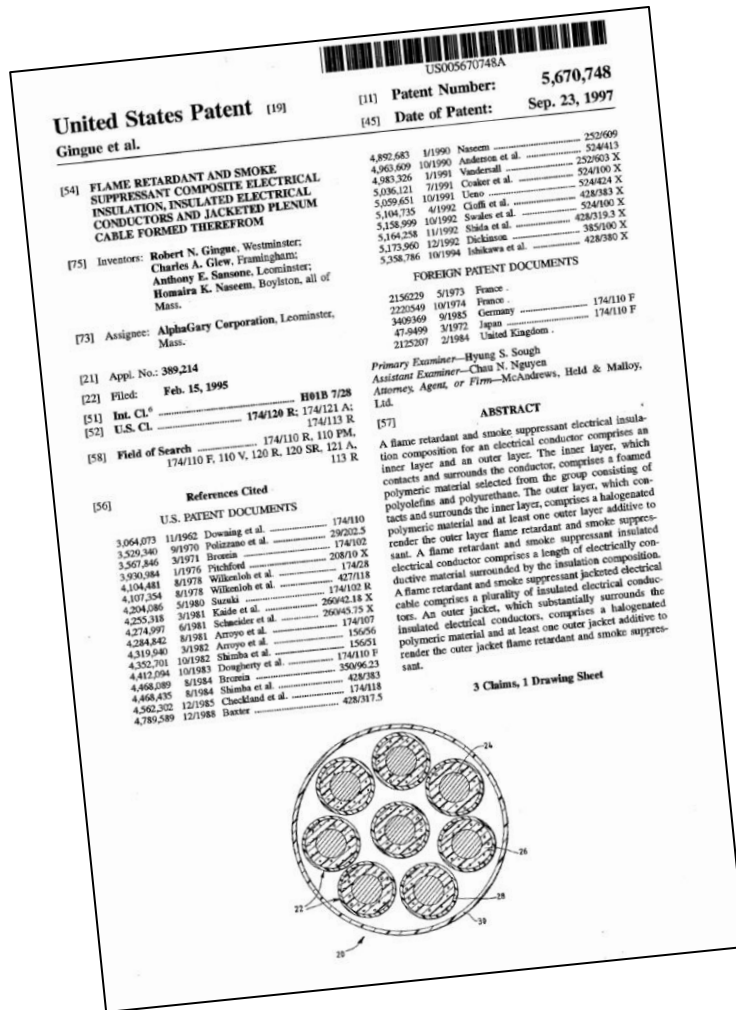
[...]

The preferred foamed inner layer polymeric material comprises foamed polyethylene or foamed polypropylene. Foamed polyurethane could also be employed, as well as silicone polymers such as hexamethyldisiloxane, octamethyltrisiloxane, deca methyltetrasiloxane.

The inner layer preferably further comprises at least one inner layer additive, the at least inner layer additive rendering the inner layer flame retardant and smoke suppressant. The at least one inner layer additive is preferably selected

Claims 20 and 22, Grounds 1 and 3 Further in view of Gingue (Grounds 2, 4)

"flame-retardant"



In plenum applications for voice and data transmission, electrical conductors and cables should exhibit low smoke evolution, low flame spread, and favorable electrical properties. Materials are generally selected for plenum applications such that they exhibit a balance of favorable and unfavorable properties. In this regard, each commonly employed material has a unique combination of desirable characteristics and practical limitations. Without regard to flame retardancy and smoke suppressant characteristics, olefin polymers, such as polyethylene and polypropylene, are melt extrudable thermoplastic materials having favorable electrical properties as manifested by their very low dielectric constant and low dissipation factor.

Gingue at 2:1-14

In general, the electrical performance of an insulating 20 material is enhanced by foaming or expanding the corresponding solid material. Foaming also decreases the amount of flammable material employed for a given volume of material. Accordingly, a foamed material is preferably employed to achieve a favorable balance of electrical properties and flame retardancy.

Gingue at 3:20-26

The preferred foamed inner layer polymeric material comprises foamed polyethylene or foamed polypropylene. Foamed polyurethane could also be employed, as well as 35 silicone polymers such as hexamethyldisiloxane, octamethyltrisiloxane, deca methyltetrasiloxane.

The inner layer preferably further comprises at least one inner layer additive, the at least inner layer additive rendering the inner layer flame retardant and smoke suppressant.

40 The at least one inner layer additive is preferably selected from the group consisting of magnesium complexes, molybdate complexes, phosphate complexes, alumina trihydrate, and zinc borate.

Gingue at 4:32-44

Claims 20 and 22, Grounds 1 and 3 Further in view of Gingue (Grounds 2, 4)

“low-dielectric constant”

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 jacket of foamed polyethylene 20 is extruded over the bundle. 50 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 at 2:46-54

44. By the late 1990s, foamed polymer was commonly used in data communications cables and was known to have beneficial properties, including good electrical properties and flame retardance. Such polymers were known to have “favorable” electrical properties, such as “very low dielectric constant and low dissipation factor.” Gingue, 2:10-14. Gingue teaches that foamed polymer “optimizes the electrical characteristics (i.e., the dielectric constant and dissipation factor) of the material....” Gingue at 4:5-9. Foaming reduces the dielectric constant of a material (thereby enhancing electrical performance) because it traps air, which has a very low dielectric constant, in the material.

Cornelison Decl., ¶44

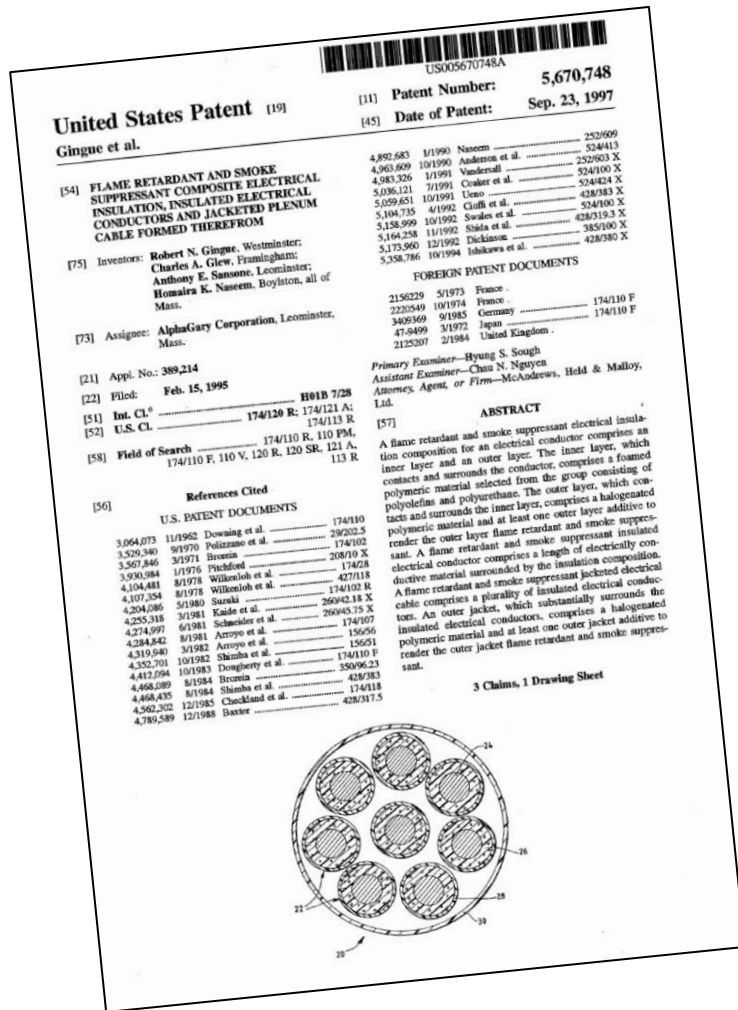
In plenum applications for voice and data transmission, electrical conductors and cables should exhibit low smoke evolution, low flame spread, and favorable electrical properties. Materials are generally selected for plenum applications such that they exhibit a balance of favorable and unfavorable properties. In this regard, each commonly employed material has a unique combination of desirable characteristics and practical limitations. Without regard to flame retardancy and smoke suppressant characteristics, olefin polymers, such as polyethylene and polypropylene, are melt extrudable thermoplastic materials having favorable electrical properties as manifested by their very low dielectric constant and low dissipation factor.

Gingue at 2:1-14

In general, the electrical performance of an insulating material is enhanced by foaming or expanding the corresponding solid material. Foaming also decreases the amount of flammable material employed for a given volume of material. Accordingly, a foamed material is preferably employed to achieve a favorable balance of electrical properties and flame retardancy.

Gingue at 3:20-26

Claims 20 and 22, Grounds 1 and 3 Further in view of Gingue (Grounds 2, 4)



In general, the electrical performance of an insulating material is enhanced by foaming or expanding the corresponding solid material. Foaming also decreases the amount of flammable material employed for a given volume of material. Accordingly, a foamed material is preferably employed to achieve a favorable balance of electrical properties and flame retardancy.

Gingue at 3:20-26

IPR2023-01061
('537 Patent IPR)

Ground 5: GmbH-866 + Roberts, Gingue, Jachimowicz

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Previous Reexamination of '537 Patent (No. 95/000,476)

ACTION CLOSING PROSECUTION
(37 CFR 1.949)

Control No.	Patent Under Reexamination
95/000,476	6998537
Examiner	Art Unit
MINH T. NGUYEN	3992

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

Responsive to the communication(s) filed by:
 Patent Owner on 28 April, 2010
 Third Party(ies) on 28 May, 2010

Patent owner may once file a submission under 37 CFR 1.951(a) within 1 month(s) from the mailing date of this Office action. Where a submission is filed, third party requester may file responsive comments under 37 CFR 1.951(b) within 30-days (not extendable- 35 U.S.C. § 314(b)(2)) from the date of service of the initial submission on the requester. **Appeal cannot be taken from this action.** Appeal can only be taken from a Right of Appeal Notice under 37 CFR 1.953.

All correspondence relating to this inter partes reexamination proceeding should be directed to the Central Reexamination Unit at the mail, FAX, or hand-carry addresses given at the end of this Office action.

PART I. THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- ☐ Notice of References Cited by Examiner, PTO-892
- ☒ Information Disclosure Citation, PTO/SB/08
- ☐

PART II. SUMMARY OF ACTION:

- ☒ Claims 1-34 are subject to reexamination.
- ☐ Claims _____ are not subject to reexamination.
- ☒ Claims 2, 3, 12-14 and 16 have been canceled.
- ☒ Claims _____ are confirmed. [Unamended patent claims]
- ☒ Claims _____ are patentable. [Amended or new claims]
- ☒ Claims 1, 4-11, 15, 17, 18, 23-34 are rejected.
- ☒ Claims 19-22 are rejected.
- ☐ Claims _____ are objected to. ☐ are acceptable ☐ are not acceptable.
- ☐ The drawings filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has: ☐ been received. ☐ not been received. ☐ been filed in Application/Control No. _____
- ☐ Other _____

U.S. Patent and Trademark Office
PTOL-2065 (08/06)

Paper No. 20110913

CommScope Exhibit 1006

Page 3

Requester's proposed rejection: Ground 14

Requester's proposed obviousness rejection of claims 19-22 under 35 USC 103(a) over

GmbH '866 in view of Roberts '683 and further in view of Gingue '748 is adopted with

modification.

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Previous Reexamination of '537 Patent (No. 95/000,476)

ACTION CLOSING PROSECUTION (37 CFR 1.949)	Control No.	Patent Under Reexamination
	95/000,476	6998537
	Examiner	Art Unit
	MINH T. NGUYEN	3992

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

Responsive to the communication(s) filed by:
 Patent Owner on 28 April, 2010
 Third Party(ies) on 28 May, 2010

Patent owner may once file a submission under 37 CFR 1.951(a) within 1 month(s) from the mailing date of this Office action. Where a submission is filed, third party requester may file responsive comments under 37 CFR 1.951(b) within 30-days (not extendable- 35 U.S.C. § 314(b)(2)) from the date of service of the initial submission on the requester. **Appeal cannot be taken from this action.** Appeal can only be taken from a Right of Appeal Notice under 37 CFR 1.953.

All correspondence relating to this inter partes reexamination proceeding should be directed to the Central Reexamination Unit at the mail, FAX, or hand-carry addresses given at the end of this Office action.

PART I. THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- ☐ Notice of References Cited by Examiner, PTO-892
- ☒ Information Disclosure Citation, PTO/SB/08
- ☐

PART II. SUMMARY OF ACTION:

- ☒ Claims 1-34 are subject to reexamination.
- ☐ Claims _____ are not subject to reexamination.
- ☒ Claims 2, 3, 12-14 and 16 have been canceled.
- ☒ Claims _____ are confirmed. [Unamended patent claims]
- ☒ Claims 1, 4-11, 15, 17, 18, 23-34 are patentable. [Amended or new claims]
- ☒ Claims 19-22 are rejected.
- ☐ Claims _____ are objected to. ☐ are acceptable ☐ are not acceptable.
- ☐ The drawings filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has: ☐ been received. ☐ not been received. ☐ been filed in Application/Control No. _____
- ☐ Other _____

U.S. Patent and Trademark Office
PTOL-2065 (08/06)

Paper No. 20110913

CommScope Exhibit 1006

Page 3

a plurality of twisted pairs of insulated conductors comprising a first twisted pair of insulated conductors and a second twisted pair of insulated conductors;

GmbH '866 discloses a plurality of twisted pairs, including a first twisted pair and a

second twisted pair. Fig. 3 of GmbH shows four twisted pairs. The cable contains four twisted pairs of insulated conductors (item 1). The cable also includes two substantially flat configurable pair separators (item 5). The conductors are insulated. See '866 patent, English trans, at 3 ("The copper conductor or cants preferably have an insulation 3 consisting of a thermoplastic, especially polyethylene, cellular polyethylene, foam-skin polyethylene, skin-foam-skin polyethylene, polypropylene or cellular polypropylene.").

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Previous Reexamination of '537 Patent (No. 95/000,476)

ACTION CLOSING PROSECUTION (37 CFR 1.949)	Control No.	Patent Under Reexamination
	95/000,476	6998537
	Examiner	Art Unit
	MINH T. NGUYEN	3992

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

Responsive to the communication(s) filed by:
 Patent Owner on 28 April, 2010
 Third Party(ies) on 28 May, 2010

Patent owner may once file a submission under 37 CFR 1.951(a) within 1 month(s) from the mailing date of this Office action. Where a submission is filed, third party requester may file responsive comments under 37 CFR 1.951(b) within 30-days (not extendable- 35 U.S.C. § 314(b)(2)) from the date of service of the initial submission on the requester. **Appeal cannot be taken from this action.** Appeal can only be taken from a Right of Appeal Notice under 37 CFR 1.953.

All correspondence relating to this inter partes reexamination proceeding should be directed to the Central Reexamination Unit at the mail, FAX, or hand-carry addresses given at the end of this Office action.

PART I. THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- ☐ Notice of References Cited by Examiner, PTO-892
- ☒ Information Disclosure Citation, PTO/SB/08
- ☐

PART II. SUMMARY OF ACTION:

- ☒ Claims 1-34 are subject to reexamination.
- ☐ Claims _____ are not subject to reexamination.
- ☒ Claims 2, 3, 12-14 and 16 have been canceled.
- ☒ Claims _____ are confirmed. [Unamended patent claims]
- ☒ Claims 1, 4-11, 15, 17, 18, 23-34 are patentable. [Amended or new claims]
- ☒ Claims 19-22 are rejected.
- ☐ Claims _____ are objected to. ☐ are acceptable ☐ are not acceptable.
- ☐ The drawings filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has: ☐ been received. ☐ not been received. ☐ been filed in Application/Control No. _____
- ☐ Other _____

U.S. Patent and Trademark Office
PTOL-2065 (08/06)

Paper No. 20110913

CommScope Exhibit 1006

Page 3

a substantially flat configurable dielectric separator that consists of non-conductive, dielectric materials disposed between the plurality of twisted pairs of conductors that separates the first twisted pair of insulated conductors from the second twisted pair of insulated conductors; and

Fig. 3 of GmbH '866 patent discloses a data transmission cable that includes a substantially flat, configurable separator that divides the cable interior into at least two sectors, separating one twisted pair from another twisted pair. GmbH '866 further discloses that the pair separator may be made of a metal foil, such as aluminum, or a metal foil laminated by plastic, the second configuration indicates that the separator is dielectric." See GmbH '866, English trans. at 5 ("The shielding 5 or the partial shielding 11, 12 preferably consists of metal foils, especially aluminum foils or aluminum foils laminated by plastic.")

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Previous Reexamination of '537 Patent (No. 95/000,476)

It would have been obvious to one of ordinary skill in the art to modify the separator of the cable of GmbH '866 to consist of a dielectric layer only.

First, one of ordinary skill in the art would be under market pressure to reduce costs for the cable and eliminating the metal foil would likely reduce the cost of the cable. See KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398, 421 (2007) ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp."). See also, GmbH '866 patent, Engl. trans, at 1 (discussing the expense of prior art cables).

Second, as illustrated in Roberts '683, there are only a finite number of combinations of plastic and metal components for separators. Roberts '683 shows four of the six possible combinations in figures 5-8 - the other two being a plastic material sandwiched in metal and an all plastic material separator. Figure 13 of Roberts '683 shows separator 17a being made of plastic only, i.e., "plastic tape".

It would have been obvious for one of ordinary skill in the art to try all six of these configurations, including an all plastic separator (that is, a dielectric pair separator that "consist[s] of a dielectric layer.")

A person with ordinary skilled in the art would have been motivated to do so to reduce the cost of the cable. One of ordinary skill in the art would have a reasonable expectation of success of using a different separator configuration of the cable structure of GmbH '866 based on the teachings of Roberts '683, because of the substantial overlap of technology and the predictable result achieved by combining the relevant teachings. In fact, the modified cable would still be capable of operating in the frequency range of 1 to 100Mhz as the unmodified cable. See the test submitted in the Declaration of Mr. Niemiera at paragraph 7.

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Previous Reexamination of '537 Patent (No. 95/000,476)

ACTION CLOSING PROSECUTION
(37 CFR 1.949)

Control No.	Patent Under Reexamination
95/000,476	6998537
Examiner	Art Unit
MINH T. NGUYEN	3992

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address. --

Responsive to the communication(s) filed by:
 Patent Owner on 28 April, 2010
 Third Party(ies) on 28 May, 2010

Patent owner may once file a submission under 37 CFR 1.951(a) within 1 month(s) from the mailing date of this Office action. Where a submission is filed, third party requester may file responsive comments under 37 CFR 1.951(b) within 30-days (not extendable- 35 U.S.C. § 314(b)(2)) from the date of service of the initial submission on the requester. **Appeal cannot be taken from this action.** Appeal can only be taken from a Right of Appeal Notice under 37 CFR 1.953.

All correspondence relating to this inter partes reexamination proceeding should be directed to the Central Reexamination Unit at the mail, FAX, or hand-carry addresses given at the end of this Office action.

PART I. THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- ☐ Notice of References Cited by Examiner, PTO-892
- ☒ Information Disclosure Citation, PTO/SB/08
- ☐

PART II. SUMMARY OF ACTION:

- ☒ Claims 1-34 are subject to reexamination.
- ☐ Claims _____ are not subject to reexamination.
- ☒ Claims 2, 3, 12-14 and 16 have been canceled.
- ☒ Claims _____ are confirmed. [Unamended patent claims]
- ☒ Claims 1, 4-11, 15, 17, 18, 23-34 are patentable. [Amended or new claims]
- ☒ Claims 19-22 are rejected.
- ☐ Claims _____ are objected to. ☐ are acceptable ☐ are not acceptable.
- ☐ The drawings filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ The drawing correction request filed on _____ is: ☐ approved. ☐ disapproved.
- ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119 (a)-(d). The certified copy has: ☐ been received. ☐ not been received. ☐ been filed in Application/Control No. _____
- ☐ Other _____

U.S. Patent and Trademark Office
PTOL-2065 (08/06)

Paper No. 20110913

CommScope Exhibit 1006

Page 3

wherein the substantially flat configurable dielectric separator includes a foamed polymer.

GmbH does not disclose the separator includes a foamed polymer.

Gingue '748 discloses fluorinated ethylene propylene (FEP) polymer (among other materials) for use in data cables to achieve flame retardancy and minimize smoke. These materials are dielectrics and are non-conductive, as they are used as insulators for copper conductors. Gingue '748 is directly related to materials used for flame retardancy and smoke suppression in data communications cables. *See generally*, Gingue '748. Gingue '748 further discloses "the electrical performance of an insulating material is enhanced by foaming or expanding the corresponding solid material. Foaming also decreases the amount of flammable material employed for a given volume of material. Accordingly, a foamed material is preferably employed to achieve a favorable balance of electrical properties and flame retardancy." See Gingue '748 patent, Table 1 and col. 3, 11. 11-25. Although Gingue '748 claims are directed to a composition of materials for use to insulate a conductor, the "Background of the Invention" section discusses electrical and fire retardancy properties of materials used in cables generally. One of ordinary skill in the art would have known to combine the teaching of foamed polymer disclosed in Gingue '748 to modify the pair separator of GmbH '866, to achieve a pair separator with non-conductive, dielectric materials only, where the materials include a foamed polymer.

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Motivations

161. **First**, Roberts teaches that separators can be either a plastic-coated metal separator (like partial shieldings 11, 12 in GmbH-866) or made solely of a dielectric (i.e., Roberts' plastic tape 17a). Figure 13 of Roberts has four groups of

162. **Second**, there are a finite number of combinations of plastic and/or metal separators that can be used. Figures 5-8 of Roberts shows four different

163. **Third**, modifying the GmbH-866 laminated foil to be a foamed polymer tape, and in particular a mylar-backed foamed polymer tape, would have been expected to provide improved electrical performance by reducing current leakage resulting from capacitance within the cable. Separators with metal layers

165. **Fourth**, a POSITA would be under market pressure to reduce the costs of manufacturing cable. GmbH-866 itself teaches that there was market

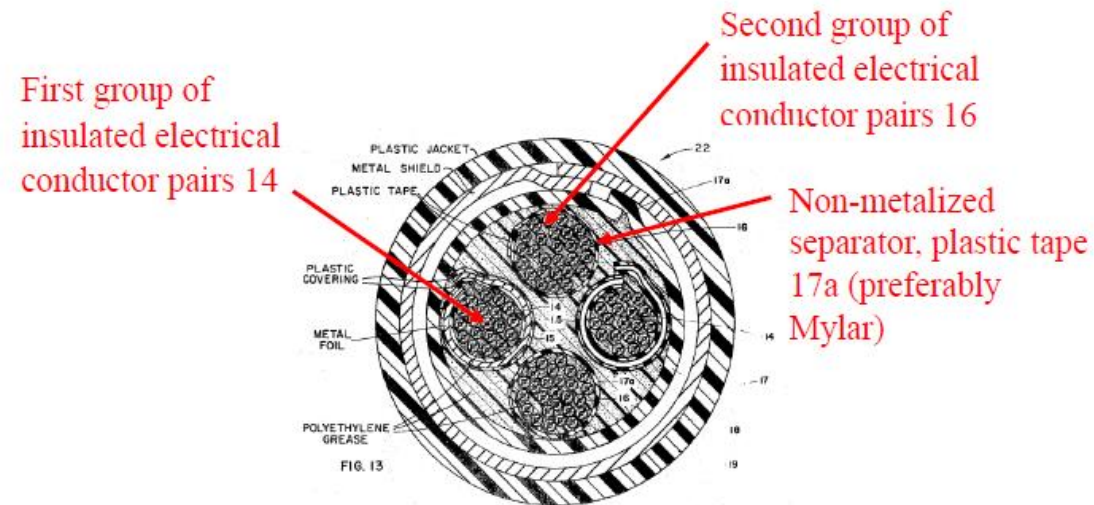
166. **Fifth**, using a foamed polymer tape would have been expected to predictably improve the flame resistance of the GmbH-866 cable. *E.g.*, Gingue at

Cornelison testimony
(Ex-1007, ¶¶161-166)

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Motivations

161. **First**, Roberts teaches that separators can be either a plastic-coated metal separator (like partial shieldings 11, 12 in GmbH-866) or made solely of a dielectric (i.e., Roberts' plastic tape 17a). Figure 13 of Roberts has four groups of



Roberts at Fig. 13, 7:26-50, Figs. 13-16.

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Motivations

161. **First**, Roberts teaches that separators can be either a plastic-coated metal separator (like partial shieldings 11, 12 in GmbH-866) or made solely of a dielectric (i.e., Roberts' plastic tape 17a). Figure 13 of Roberts has four groups of

162. **Second**, there are a finite number of combinations of plastic and/or metal separators that can be used. Figures 5-8 of Roberts shows four different

163. **Third**, modifying the GmbH-866 laminated foil to be a foamed polymer tape, and in particular a mylar-backed foamed polymer tape, would have been expected to provide improved electrical performance by reducing current leakage resulting from capacitance within the cable. Separators with metal layers

165. **Fourth**, a POSITA would be under market pressure to reduce the costs of manufacturing cable. GmbH-866 itself teaches that there was market

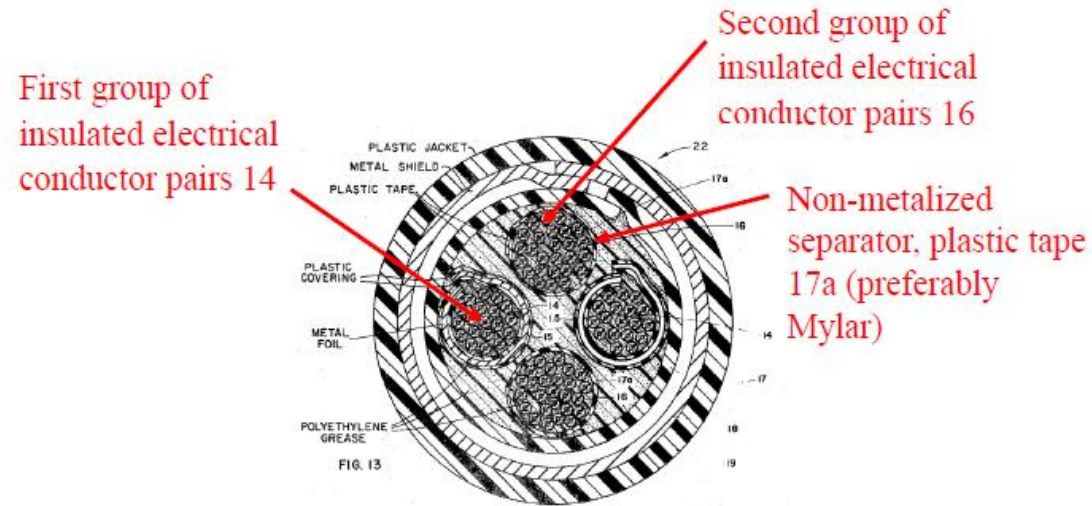
166. **Fifth**, using a foamed polymer tape would have been expected to predictably improve the flame resistance of the GmbH-866 cable. *E.g.*, Gingue at

Cornelison testimony
(Ex-1007, ¶¶161-166)

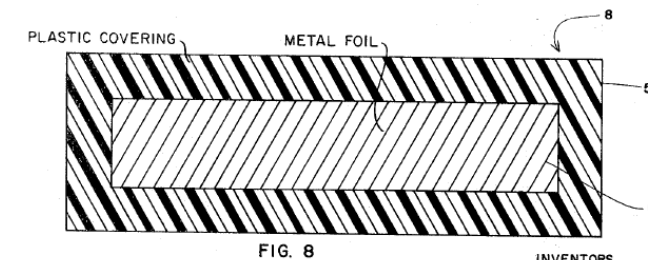
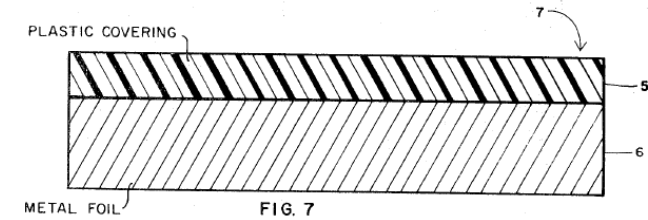
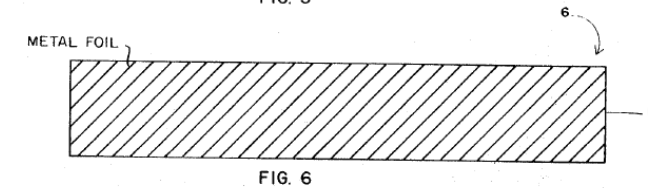
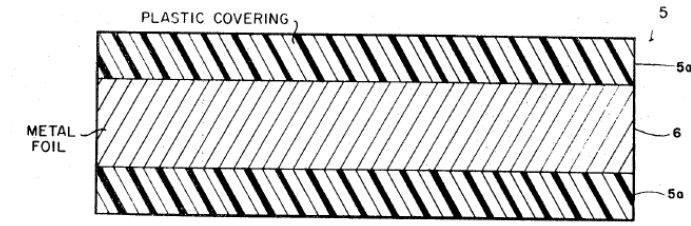
Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Motivations

162. **Second**, there are a finite number of combinations of plastic and/or metal separators that can be used. Figures 5-8 of Roberts shows four different



Roberts at Fig. 13, 7:26-50, Figs. 13-16.



INVENTORS
WALTER L. ROBERTS
FREDERIC N. WILKENLOH
By B. Morris
ATTORNEY

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

Motivations

161. **First**, Roberts teaches that separators can be either a plastic-coated metal separator (like partial shieldings 11, 12 in GmbH-866) or made solely of a dielectric (i.e., Roberts' plastic tape 17a). Figure 13 of Roberts has four groups of

162. **Second**, there are a finite number of combinations of plastic and/or metal separators that can be used. Figures 5-8 of Roberts shows four different

163. **Third**, modifying the GmbH-866 laminated foil to be a foamed polymer tape, and in particular a mylar-backed foamed polymer tape, would have been expected to provide improved electrical performance by reducing current leakage resulting from capacitance within the cable. Separators with metal layers

165. **Fourth**, a POSITA would be under market pressure to reduce the costs of manufacturing cable. GmbH-866 itself teaches that there was market

166. **Fifth**, using a foamed polymer tape would have been expected to predictably improve the flame resistance of the GmbH-866 cable. *E.g.*, Gingue at

Cornelison testimony
(Ex-1007, ¶¶161-166)

Reasonable Expectation of Success

169. **First**, GmbH-866 itself shows a cable that does not have any separator—much less a metalized separator—between two of the twisted pairs, and teaches that it works:

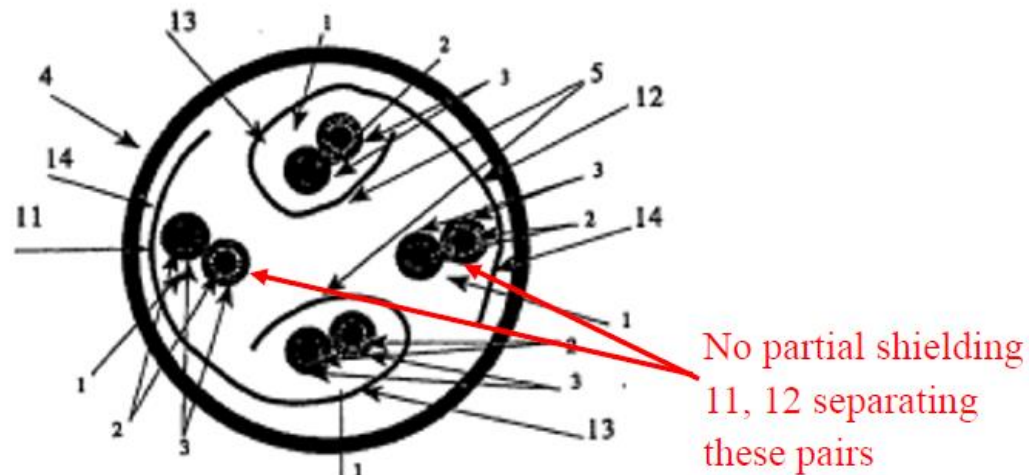
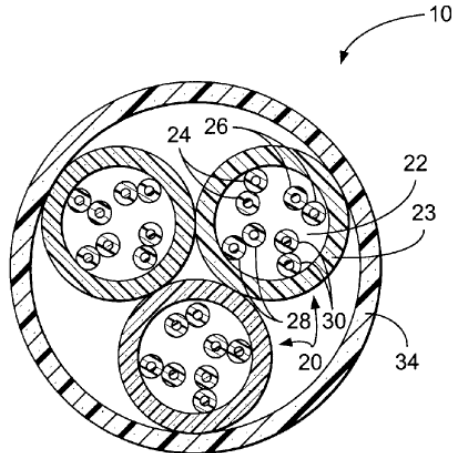
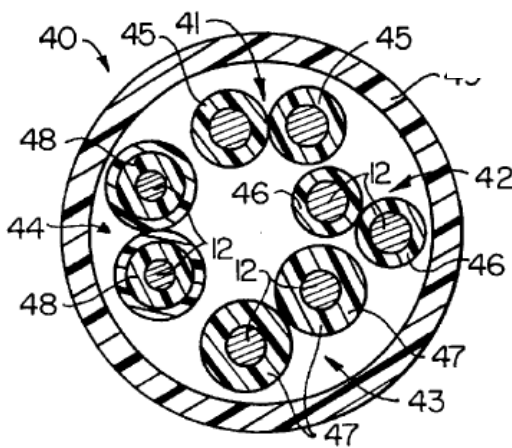
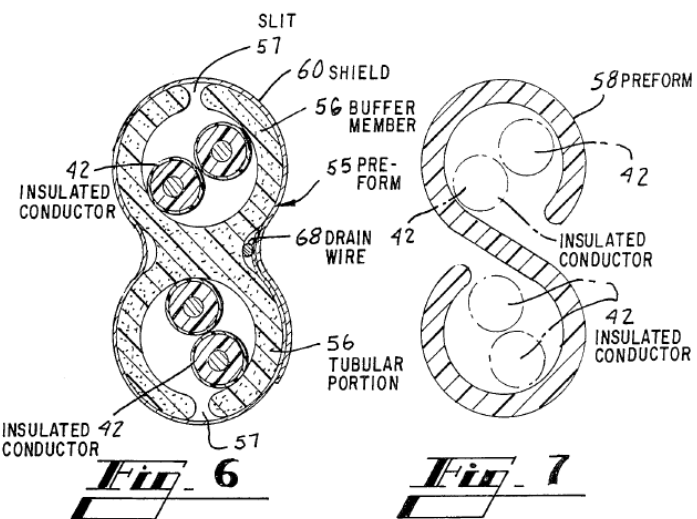
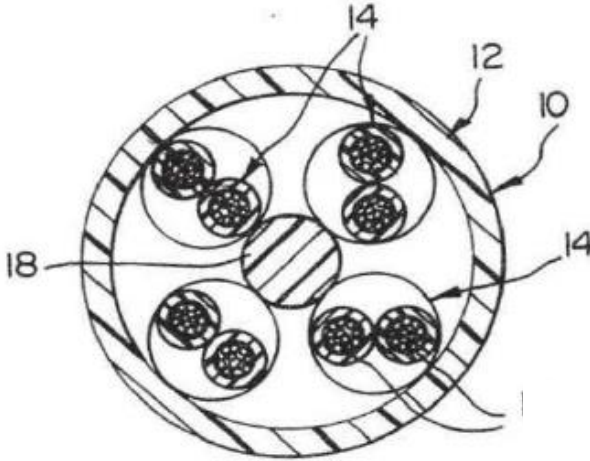


Figure 1

GmbH-866 at Figure 1 (Annotated).

Reasonable Expectation of Success

170. **Second**, the prior art shows cables with dielectric-only separators or no separators at all already worked for the intended purposes of the GmbH-866 cable. For example, Beggs (discussed in Ground 1) teaches that conductor pairs



Reasonable Expectation of Success

171. **Third**, a POSITA would have expected that the plastic-backed foamed separator tape arranged such as shown in GmbH-866 would help maintain certain minimum spacing between the pairs, further ensuring that any pair-to-pair crosstalk was within acceptable levels. *See* EX-1023 at 3:17-31; Beggs at 3:48-51, 7:52-62.

Obviousness in view of GmbH-866 + Roberts, Gingue, Jachimowicz (Ground 5)

PO Counter Argument / Pet. Reply

188. Additionally, switching from a metallic shield between conductors to a dielectric separator would fundamentally impact the electrical properties of the GmbH-866 cable, including crosstalk between conductors. And without quantitative analysis of the impacts of such a change on a specific cable design, a POSITA would not be motivated to make such a change. A POSITA would understand that the

EX-2007, ¶188

While the modification (replacing metalized partial shieldings 11, 12 with foamed polymer tape) may result in some loss of crosstalk protection, the GmbH-866 cable still would have been expected to perform as intended.

Petition, 55-57 (citing and discussing Ex-1007, ¶¶168-172; Ex-1015, 3:48-51, 7:52-62, 9:32-36, 9:41-44; Ex-1048, Figs. 1-2, 5-6; Ex-1036, 4:5-16; Ex-1023, 3:12-14, 3:17-31; Ex-1049, Figs. 1-3, 3:52-56, 2:31-34); Ex-1080, ¶57. Neither PO nor its expert responded to any of this evidence, leaving it completely unrebutted.

Paper 30, 19