

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMPHENOL CORP.,
Petitioner,

v.

PPC BROADBAND, INC.,
Patent Owner.

Case IPR2023-01363
Patent No. 9,008,483 B2

**DECLARATION OF DR. CHARLES A. ELDERING IN SUPPORT OF
PATENT OWNER PRELIMINARY RESPONSE**

Amphenol v. PPC
IPR2023-01363

PPC EX-2001

Table of Contents

I.	Introduction.....	1
II.	Qualifications and Background	3
III.	Materials Considered	4
IV.	Relevant Legal Standards	5
	A. Level of Ordinary Skill in the Art.....	6
V.	The '483 Patent.....	8
VI.	The Challenged Claims Are Not Obvious.....	13
	A. Holmberg Does Not Disclose Or Suggest A Storage Panel Positioned To Store Feed Break-Out Cables.	13
	B. A POSITA Would Not Replace Holmberg's Fixed Splice Tray With A Rotational Splice Tray.....	22
VII.	Battey's Hinged Shelf 54 Is Cumulative To Laporte's Hinged Transition Panel.....	35

I. INTRODUCTION

1. I, Dr. Charles A. Eldering, submit this declaration to state my opinions on the matters described below.

2. I have been retained on behalf of Patent Owner, PPC Broadband, Inc. (“PPC”), as an independent expert for the above-identified *inter partes review* (“IPR”) proceeding involving Patent 9,008,483 B2 (“’483 Patent”).

3. Petitioner, Amphenol Corp. (“Amphenol”), challenges claims 1, 2, and 10-13 (the “Challenged Claims”) of the ’483 Patent.

4. I have been asked to, and have, reviewed the Declaration of Dr. Sayfe Kiaei (“Kiaei” or “Dr. Kiaei”) in which Dr. Kiaei has asserted and offered opinions that all of the Challenged Claims are obvious in view of the following prior art references: U.S. Patent Application Publication No. 2009/0202214 to Holmberg et al. (“Holmberg”) (EX-1004), U.S. Patent Application Publication No. 2008/0112681 to Battey et al. (“Battey”) (EX-1005), U.S. Patent No. 6,721,484 to Blankenship et al. (“Blankenship”) (EX-1006), and U.S. Patent No. 8,965,168 to Cowen et al. (“Cowen”) (EX-1007) (collectively, the “Petitioner Prior Art”).

5. Petitioner sets forth five different obviousness grounds. The obviousness grounds are as follows:

- a. Ground 1 – Claims 1 and 11 are obvious in view of Holmberg and Battey

- b. Ground 2 – Claims 2, 12, and 13 are obvious in view of Holmberg, Battey, and Blankenship
- c. Ground 3 – Claims 1-2 and 11-13 are obvious in view of Holmberg, Battey, and Blankenship
- d. Ground 4 – Claim 10 is obvious in view of Holmberg, Battey, and Cowen
- e. Ground 5 – Claim 10 is obvious in view of Holmberg, Battey, Blankenship, and Cowen

6. I have been asked by PPC to prepare this Declaration setting forth my comments and opinions on whether the Challenged Claims would have been obvious to a person of ordinary skill in the art at the time of the invention of the '483 Patent (2011) in light of the Petitioner Prior Art.

7. For the reasons that follow, I respectfully disagree with Dr. Kiaei. Instead, it is my opinion that the proposed grounds do not render any of the Challenged Claims obvious. This Declaration sets forth my opinions and the bases, reasons, and evidence relied upon in forming those opinions.

8. Although I am being compensated at a rate of \$475 per hour and reimbursed for reasonable out-of-pocket expenses, no part of my compensation depends on the outcome of these proceedings, and I have no other interest in these proceedings.

II. QUALIFICATIONS AND BACKGROUND

9. I believe that I am well qualified to serve as a technical expert in this matter based upon my educational and work experience.

10. I have degrees in both physics and electrical engineering, as well as extensive experience in the telecommunications industry.

11. I gained significant experience in the telecommunications industry, and particular in fiber optic communications, as a systems engineer during my time with Alcatel in the 1990-1993 timeframe. During this time, I worked on the development of a Passive Optical Network (PON) telecommunications systems that delivered voice services to buildings over a fiber optic connection. I was also involved in research regarding the use of Digital Subscriber Line (DSL) technology to deliver high-speed digital data services from the central office or a remote access point to the subscriber over twisted wire pair cable.

12. My later experience in the cable industry was gained during my time at General Instrument Corporation from 1993–1995. General Instrument was a significant supplier of equipment to the Multiple System Operators (“MSO’s”). My work at General Instrument included development of products to put voice services over Hybrid Fiber Coaxial (HFC) networks based on fiber distribution cables and coaxial feed and drop cables. I also developed detailed cost-performance analyses of traditional twisted wire pair, HFC, and Fiber to the Curb/Home (FTTC/FTTH)

architectures for the delivery of residential voice, video, and data services.

13. Subsequent to my employment in the telecommunications industry and through my company, Technology, Patents, and Licensing, Inc., I analyzed numerous patent portfolios in the fiber optic area and examined products to determine if the claimed technology was in use.

14. A copy of curriculum vitae is attached to this declaration as Appendix A.

III. MATERIALS CONSIDERED

15. I have been asked to provide my opinions regarding whether the Challenged Claims of the '483 Patent would have been obvious to a person having ordinary skill in the art at the time of the alleged invention, in light of the Petitioner Prior Art. It is my opinion that the Challenged Claims would not have been obvious to a person having ordinary skill in the art at the earliest claimed priority date of the '483 Patent (2011).

16. In forming my opinions expressed below, in addition to my own knowledge and experience based upon my work in the field of cable technology as described below, I have considered the documents provided to me by PPC's counsel ("counsel"):

EXHIBIT	DESCRIPTION
EX-1001	U.S. Patent No. 9,008,483
EX-1002	Prosecution History for the '483 Patent

EXHIBIT	DESCRIPTION
EX-1003	Declaration of Dr. Sayfe Kiaei
EX-1004	U.S. Patent Application Publication No. 2009/0202214 to Holmberg et al. (“Holmberg”)
EX-1005	U.S. Patent Application Publication No. 2008/0112681 to Battey et al. (“Battey”)
EX-1006	U.S. Patent No. 6,721,484 to Blankenship et al. (“Blankenship”)
EX-1007	U.S. Patent No. 8,965,168 to Cowen et al. (“Cowen”)
EX-1008	U.S. Patent No. 7,346,253 to Bloodworth et al. (“Bloodworth”)
EX-1009	U.S. Patent No. 7,539,388 to Mertesdorf et al. (“Mertesdorf”)
EX-1010	U.S. Patent Application Publication No. 2005/0276562 to Battey et al. (“Battey ’562”)
EX-1011	U.S. Patent No. 8,121,458 to Barth et al. (“Barth”)
EX-1012	U.S. Patent No. 8,009,954 to Bran de Leon et al. (“Bran de Leon”)
EX-1013	U.S. Patent No. 4,792,203 to Nelson et al. (“Nelson”)
EX-1014	International Publication No. WO 2010/040256 to Castonguay et al. (“Castonguay”)
EX-1015	U.S. Patent No. 7,088,893 to Cooke et al. (“Cooke”)
EX-1016	PPC’s Preliminary Infringement Contentions (“PPC Infringement Contentions”)
EX-1017	PPC v. Times Fiber (D. Del.), Dkt. 43, Stipulation to Stay Litigation (“Stipulation”)
EX-1018	“Trending at the PTAB: When to Ask Court for Litigation Stay,” March 30, 2023 (“Stay Article”)
EX-1019	PPC v. Charles (D. Del.), Dkt. 22 (“Scheduling Order”)
EX-1020	June 2023 District Court Time to Trial Statistics (“Trial Stats”)
EX-2002	U.S. Patent Application Publication No. 2003/103750 A1 (“Laporte”)
EX-2003	U.S. Patent Application Publication No. 2004/062508 A1 (“Blankenship Publication”)

IV. RELEVANT LEGAL STANDARDS

17. In preparing this declaration and forming my opinions, I am relying on certain legal principles that counsel explained to me.

18. I have reviewed Dr. Kiaei's Overview and Legal Standards with respect to a person of ordinary skill in the art, obviousness, analogous art, and claim construction. EX-1003 ¶¶17-27. I do not disagree with those summaries of the relevant legal standards.

A. LEVEL OF ORDINARY SKILL IN THE ART

19. I understand that a person of ordinary skill in the art is determined by considering (1) the type of problems encountered in the art, (2) prior art solutions to those problems, (3) the rapidity with which innovations are made, (4) the sophistication of the technology, and (5) the educational level of active workers in the field.

20. I understand that I must evaluate the '483 Patent and the Petitioner Prior Art from the perspective of a person of ordinary skill in the art. That is, the '483 Patent and the Petitioner Prior Art must be evaluated through the eyes of a person with ordinary skill in the relevant art at the time of the invention of this patent ("POSITA").

21. I understand that the earliest application to which the '483 Patent claims priority was a provisional application (No. 61/472,008) filed on April 5, 2011. I have been asked to assume that the invention date of the Challenged Claims is April 5, 2011 (i.e., the time of the invention).

22. It is my opinion that the '483 patent relates to fiber optic cables and

drop interface boxes (“DIB’s).

23. My opinions in this Declaration are based on the perspective of a person of ordinary skill in the art in the 2011 timeframe. This is true even if the testimony is stated in the present tense.

24. Based on the field of the invention and technological aspects, it is my opinion that a person of ordinary skill in the art of the ‘483 patent would have had at least a bachelor’s degree in electrical engineering, computer engineering, or a related field, and at least one year of experience related to communication networks or the equivalent. A person with less relevant practical experience but with additional experience would also qualify as a POSITA in the field of the ‘483 patent.

25. Based on my educational background and experience in the telecommunications field, I am qualified as at least a POSITA with respect to the ‘483 Patent. Thus, I am familiar with the knowledge of the POSITA. I am able to opine on how POSITA would have understood the disclosure and claims of the ‘483 Patent, the disclosures of the Petitioner Prior Art and other patents, the motivation to combine the prior art, and what combinations would have been obvious and not have been obvious to a POSITA.

26. Although my definition of a POSITA differs slightly from that offered Dr. Kiaei, adoption of his definition would not change any of the analysis or opinions offered herein.

V. THE '483 PATENT

27. The '483 Patent discloses a drop interface box ("DIB") for "connection of an optical fiber feed or 'drop' cable from an optical fiber service provider to a distribution point at a residence, dwelling or other building, such as a multi-unit dwelling." '483 Patent 1:15-20, Title ("Optical Fiber Cable Drop Interface Box"), FIGS. 1-2-2.

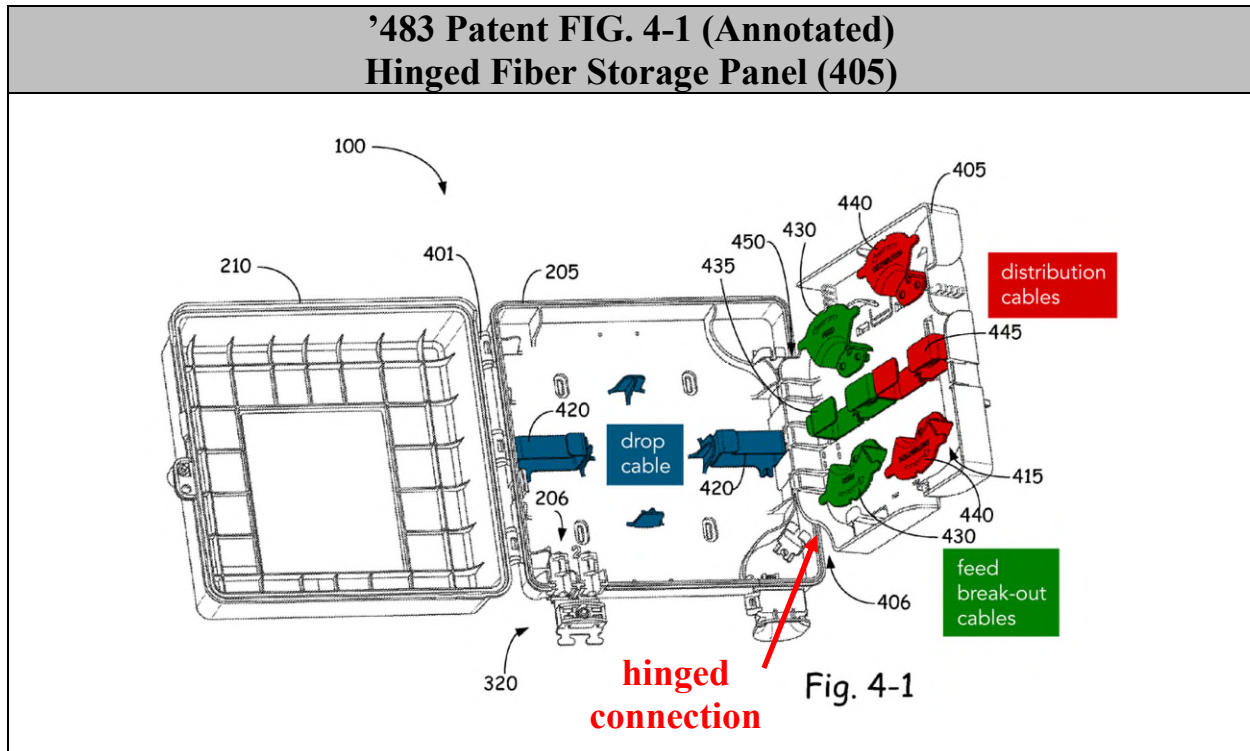
28. The problem addressed by the '483 Patent was the storage of "excess optical fiber cable length" of three different fiber optic cables: (a) a drop cable, (b) distribution cables, and (c) individual feed break-out cables. '483 Patent 1:50-59 ("Storage of the excess cable length can be problematic, as can organization of the drop optical fiber cable, the multiple individual feed optical fiber cables, and the multiple individual distribution optical fiber cables which are connected to the individual living or workplace units.").

29. The DIB of the '483 Patent "provides organized drop, feed and distribution fiber cable storage" '483 Patent Abstract, 2:6-10, 3:9-12 ("The disclosed DIB includes integrated slack storage compartments which provide ample room to store excess cable length while maintaining separation of hardened drop, feeder breakout, and distribution cables.").

30. The DIB 100 includes (i) a hinged base unit 205 for storing the excess or "slack" drop cable, where the base unit 205 has a hinged connection 401 to the

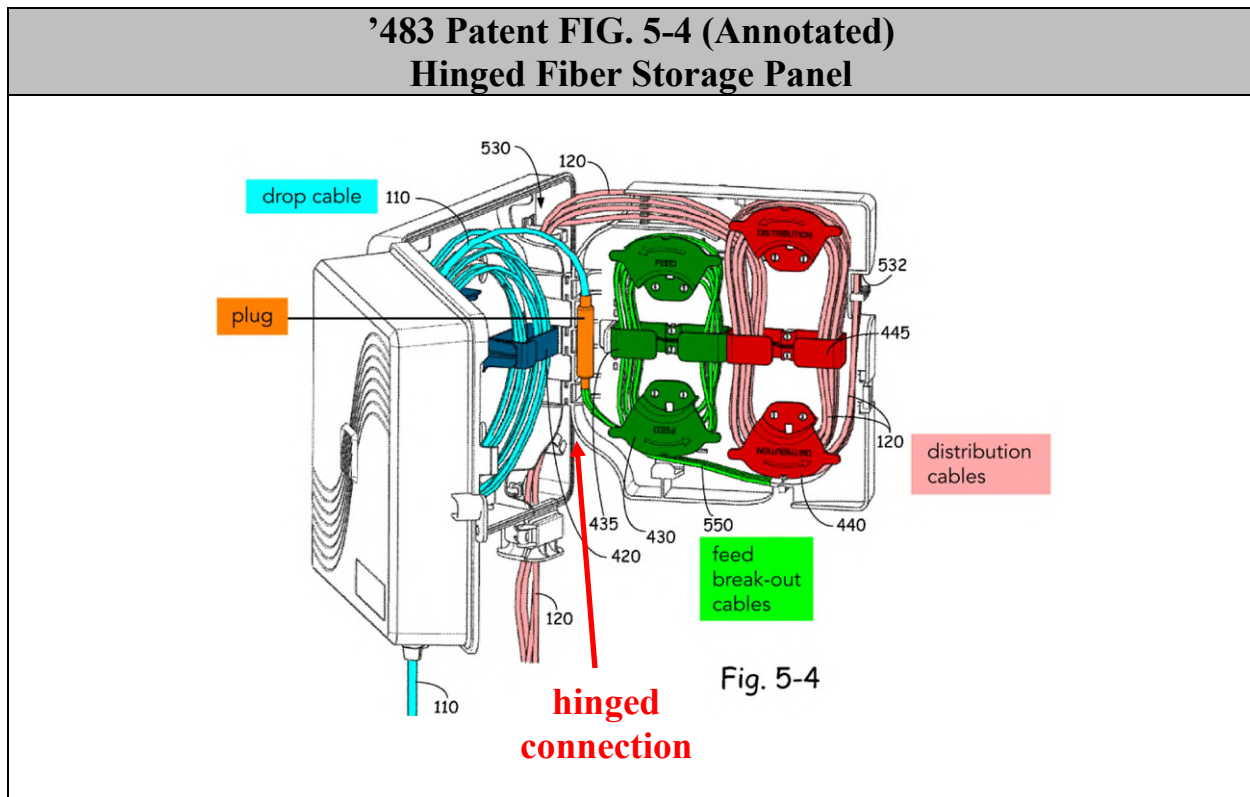
cover 210, and (ii) a hinged fiber storage panel 405 for storing the excess or “slack” feed break-out cables and distribution cables, where the fiber storage panel 405 has a hinged connection 406 to an opposing side of the base unit 205. ’483 Patent 4:49-53, 2:33-35 (“a base, cover and hinged fiber storage panel”), 2:36-38 (“drop, feed and distribution cable routing and storage”), 2:39-40 (“drop, feed and distribution cable routed and stored”), 2:42-44 (“feed and distribution cable routing to a front side of the fiber storage panel”), 2:48-51 (“feed and distribution cable routing to the front side of the fiber storage panel”), 3:35-39 (“a base unit 205 and a door or cover 210 which has a hinged connection to the base unit”), 6:19-21 (“drop cable 110, feed cables 550 and distribution cables 120 routed and stored”), FIGS. 2-1, 2-2, 4-1-5-4, 6-1, 6-4.

31. The “hinged fiber storage panel [405] includes spools, cable clips and integrated cable channels that maintain cable radius during transitions of cables from a storage side or plane of the panel to a connector side or plane of the panel.” ’483 Patent Abstract, 2:10-14., FIG. 4-1.

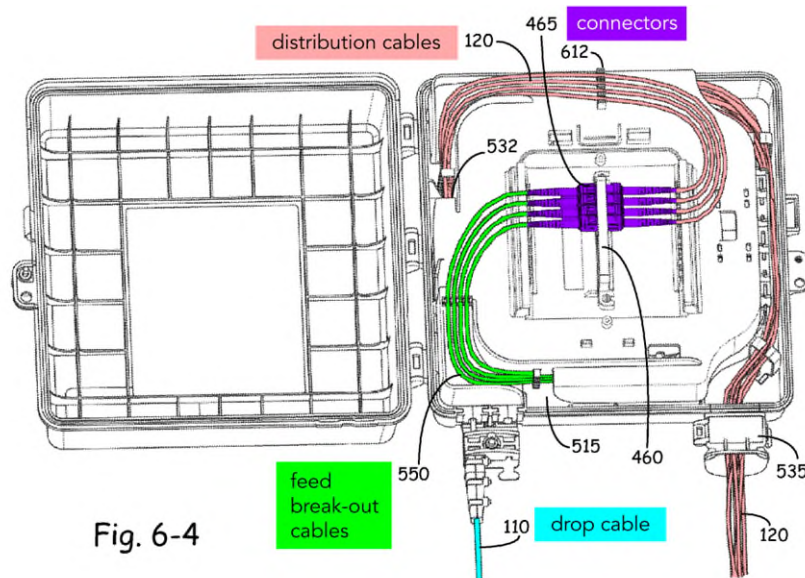


32. “[D]rop cable 110 is split into feeder breakout cables 550 (shown in FIG. 5-4) and converted into multiple distribution cables 120 which are connected in or to the individual units or locations 125 of premises 130.” ’483 Patent 3:27-31, FIG. 5-4.

33. “[O]n the rear side 415 of the hinged fiber storage panel 405, there are two sets of spools 430 and 440 and two sets of corresponding storage clips 435 and 445. Spools 430 and storage clips 435 store feed cables 550 (shown in FIG. 5-4). Spools 440 and clips 445 store distribution cables 120.” ’483 Patent 4:62-66, 5:30-43, FIGS. 5-2 & 5-4.



34. “A break-out or furcation plug 450 positioned near the upper end of hinged connection 406 divides the drop feed cable 110 into multiple (*e.g.*, typically four) individual feed cables 550.” ’483 Patent 4:66-5:2; FIGS. 4-1, 5-4. And “[o]n the front side 410 of hinged fiber storage panel 405 is an adapter bracket 460 which holds one or more connectors or adapters 465, such as four-to-eight port adapters. Adapters 465 convert between the feed cables 550 and the distribution cables 120.” ’483 Patent 5:3-7, FIGS. 4-2, 6-4 (annotated).



35. The feed break-out cables 550 are coupled to (a) the drop cable 110 through a “break-out or furcation plug 450 positioned near the upper end of hinged connection 406” on the front side of the hinged fiber storage panel, and are coupled to (b) the distribution cables 120 through the connectors or adapters 465 on the rear side of the hinged fiber storage panel 405. ’483 Patent 4:66-5:7; FIGS. 4-1, 4-2, 6-4.

36. Independent claim 1 of the ’483 Patent requires “a fiber storage panel having a hinged connection to the base unit on a side opposite the hinged connection of the cover to the base unit” (claim 1(c)) and “having first spools positioned to store a plurality of feed break-out cables coupleable to the drop cable, ... [and] further having second spools positioned to store a plurality of distribution cables coupleable to the plurality of feed break-out cables” (claim 1(d)). ’483 Patent 7:36-46.

VI. THE CHALLENGED CLAIMS ARE NOT OBVIOUS.

37. Dr. Kiaei opined that independent claim 1 of the '483 Patent is obvious based on Ground 1 (combination of Holmberg and Battey) and Ground 3 (combination of Holmberg, Battey, and Blankenship). I disagree.

38. Proposed Grounds 1 and 3 do not render obvious at least the following elements of independent claim 1:

Claim Element 1(d) — “the fiber storage panel having first spools positioned to store a plurality of feed break-out cables coupleable to the drop cable, the fiber storage panel further having second spools positioned to store a plurality of distribution cables coupleable to the plurality of feed break-out cables”

Claim Element 1(c) — “a fiber storage panel having a hinged connection to the base unit on a side opposite the hinged connection of the cover to the base unit such that the fiber storage panel is moveable relative to the base unit and configured to be stored between the base unit and the cover”

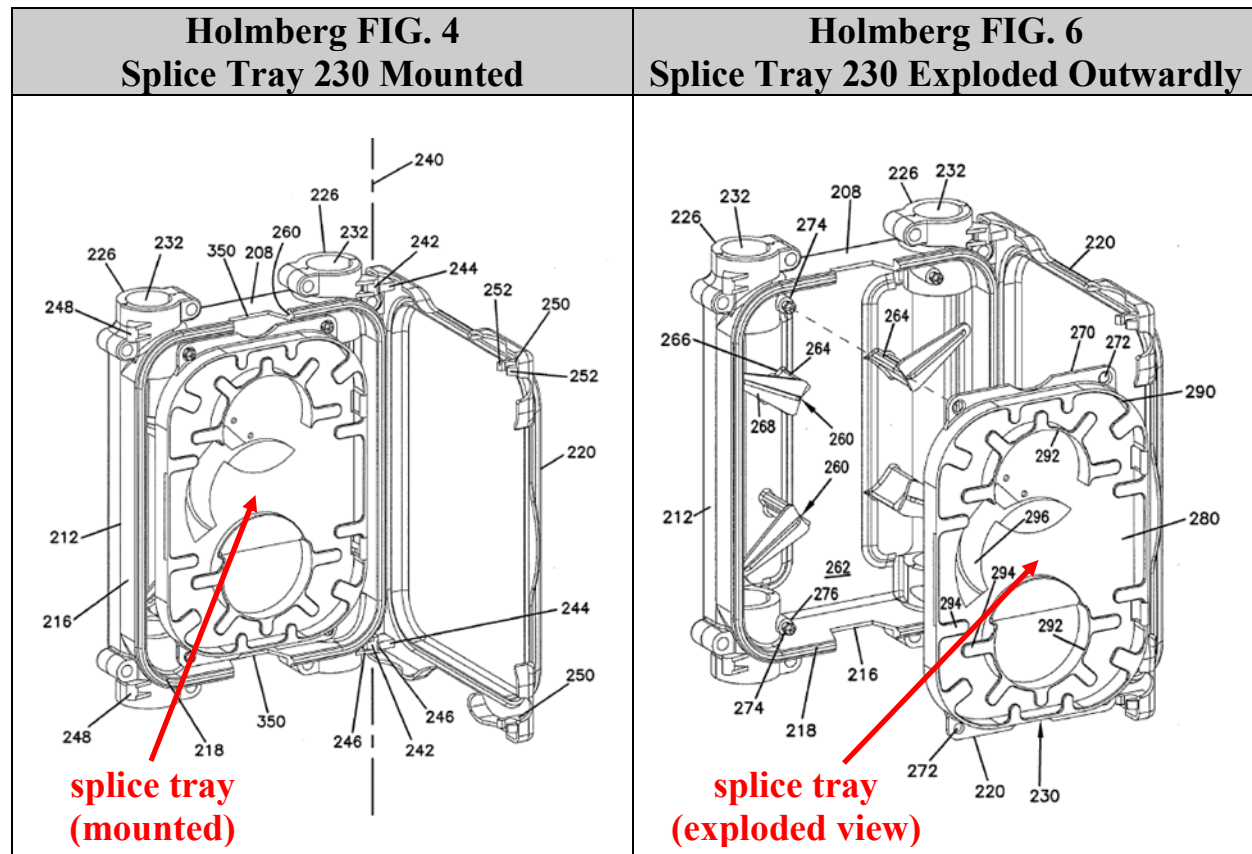
'483 Patent 7:36-46.

A. HOLMBERG DOES NOT DISCLOSE OR SUGGEST A STORAGE PANEL POSITIONED TO STORE FEED BREAK-OUT CABLES.

39. For both Grounds 1 and 3, Dr. Kiaei relied upon Holmberg's disclosure of a splice tray 230 that stores the “terminated fibers” of the drop cable, and stated that these “terminated fibers” constituted the claimed “feed break-out” cables. EX-

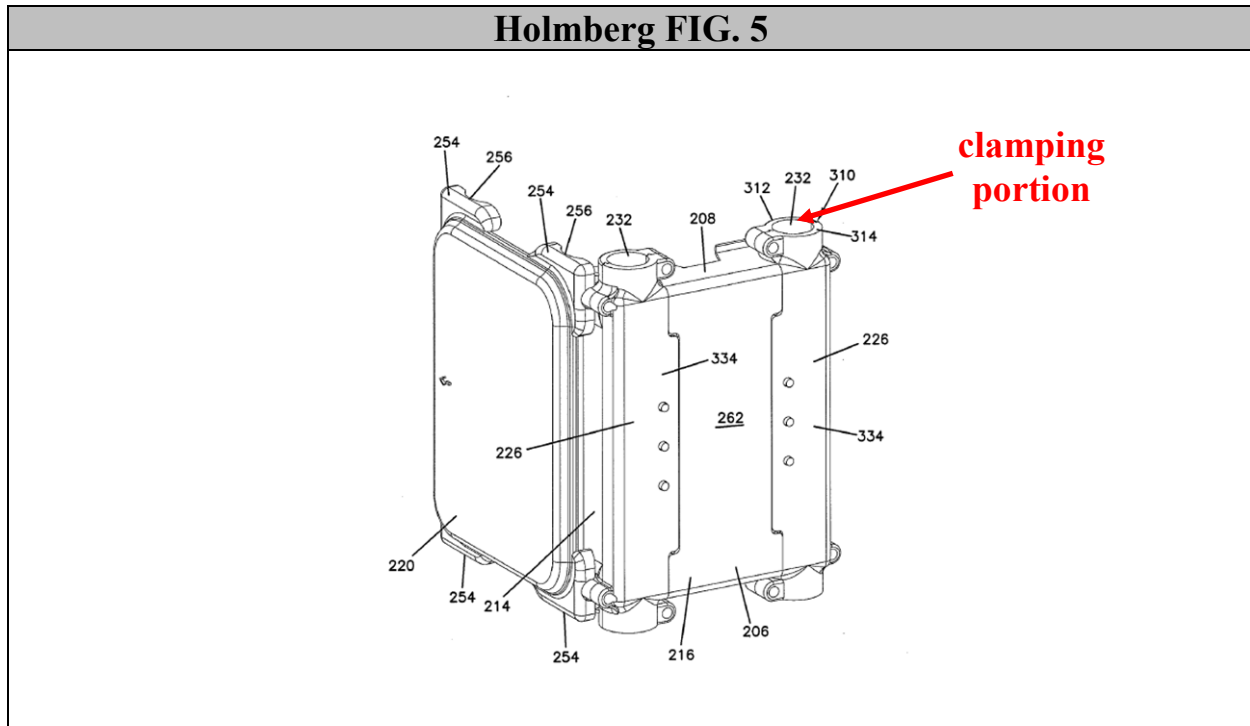
1003 ¶¶ 67-73, 94. But Holmberg does not disclose storage of any feed break-out cables. Holmberg's splice tray 230 does not and cannot disclose or suggest any spools positioned to store a plurality of the feed break-out cables being coupleable to either the drop cable or the distribution cable. Holmberg's splice tray 230 stores the terminated fibers of the drop cable, which are spliced to the distribution cables without the use or storage of any of the feed break-out cables.

40. Holmberg is directed to a "wall box for use in a fiber optic network." Holmberg ¶[0008]. The "wall box 200 [] includes a splice tray 230 that mounts in the interior of the enclosure 202 and is accessible through the open front side 218 of the main body 216 when the front cover 220 is open." Holmberg ¶[0035]. FIG. 4 shows the wall box 200 with the front door open showing the splice tray 230 mounted in the enclosure 202, while FIG. 6 shows the splice tray 230 exploded outwardly from the interior of the wall box.



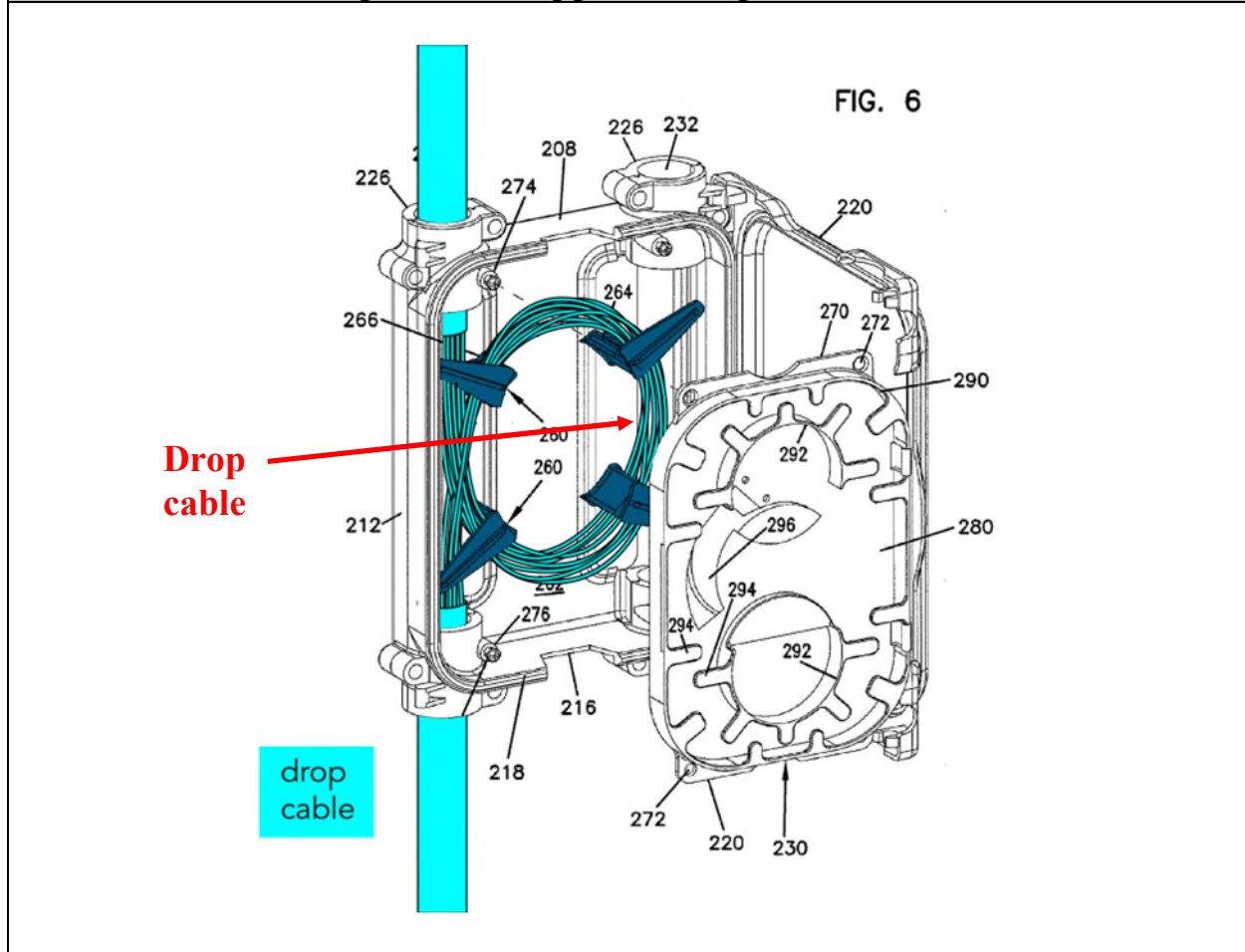
41. Holmberg discloses that, prior to insertion into the wall box 200, “the cable is initially prepared by stripping away the outer jacket of the [drop] cable for a desired length at the mid-span location. In one embodiment, about 4 feet of the outer jacket can be stripped.” Holmberg ¶[0052].

42. “With one end of the stripped region [of the drop cable] located adjacent to one of the clamping portions 310 and the other end of the stripped region positioned adjacent to the corresponding clamping portion 310 [j]acketed portions of the cable located adjacent to the stripped portion are preferably inserted within the clamping portions 310.” Holmberg ¶[0052], FIGS. 5, 6.



43. The stripped portion of the drop cable is be spooled around the bend radius limiters 264 provided within the main body 216. Holmberg ¶¶[0052], [0041], FIG. 6.

Holmberg FIG. 6 (Annotated)
Drop Cable Stripped And Spooled/Stored

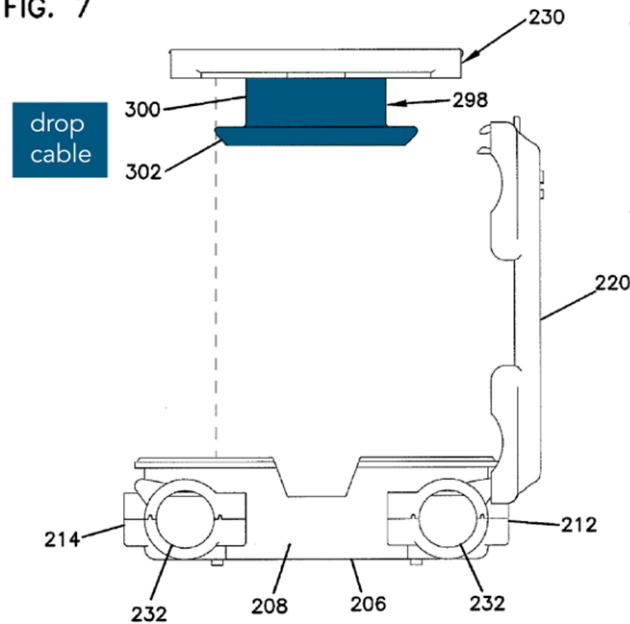


44. In order to access the drop cable, “fibers within the wall box 200, selected fibers from the cable can be terminated (*i.e.*, cut) adjacent one of the clamping portions 310 so as to provide a length of terminated fiber within the enclosure 202.” Holmberg ¶[0053], FIGS. 5-6.

45. Holmberg’s “splice tray 230 also provides cable/fiber management within the interior of the enclosure 202.” Holmberg ¶[0042]. “The length of [drop cable] terminated fiber can be spooled around the spool structure 298 of the splice

tray 230 for storage purposes.” Holmberg ¶¶[0053], [0045], FIG. 7.

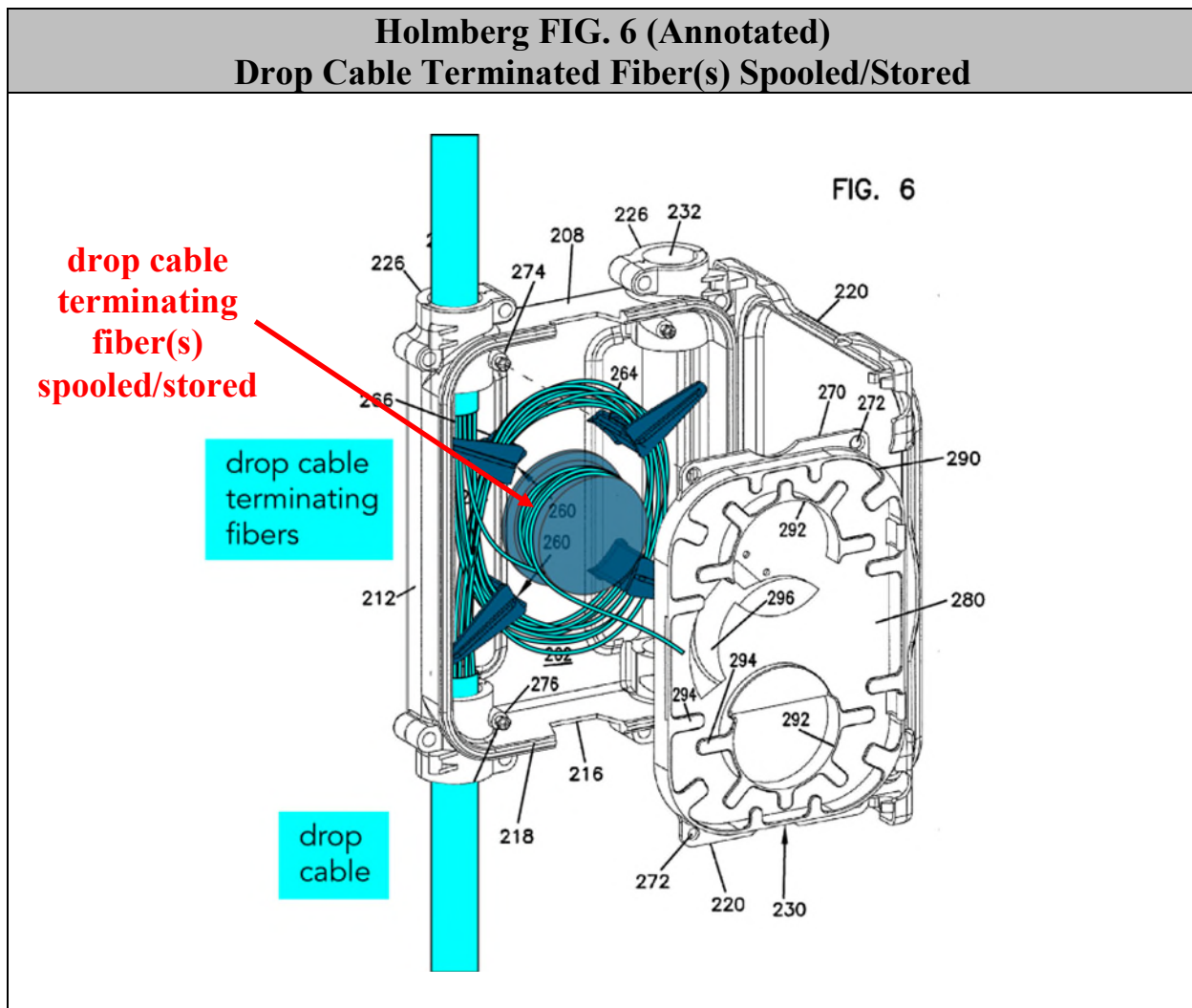
FIG. 7



46. Holmberg’s “spool structure 298 ... projects rearwardly from the back side of the main panel 288 [and] includes a cylindrical spool 300 about which excess fiber can be wrapped.” Holmberg ¶[0045], FIG. 7. “The spool structure 298 also includes an annular flange 302 located at the rear end of the spool structure 298 ... [that] is sized to nest inside the bend radius limiters 264 of the main body 216 of the enclosure 202 when the splice tray 230 is mounted within the enclosure 202.” Holmberg ¶[0045], FIGS. 4-7.

47. The terminated fibers of the drop cable are spooled around the spool structure 298 on the back side of the splice tray 230, with the spool structure 298 shown superimposed inside the remainder of the drop cable fibers that were not terminated and are spooled around the radius limiters 264. Holmberg ¶¶[0045],

[0052]-[0053], FIGS. 4-7.

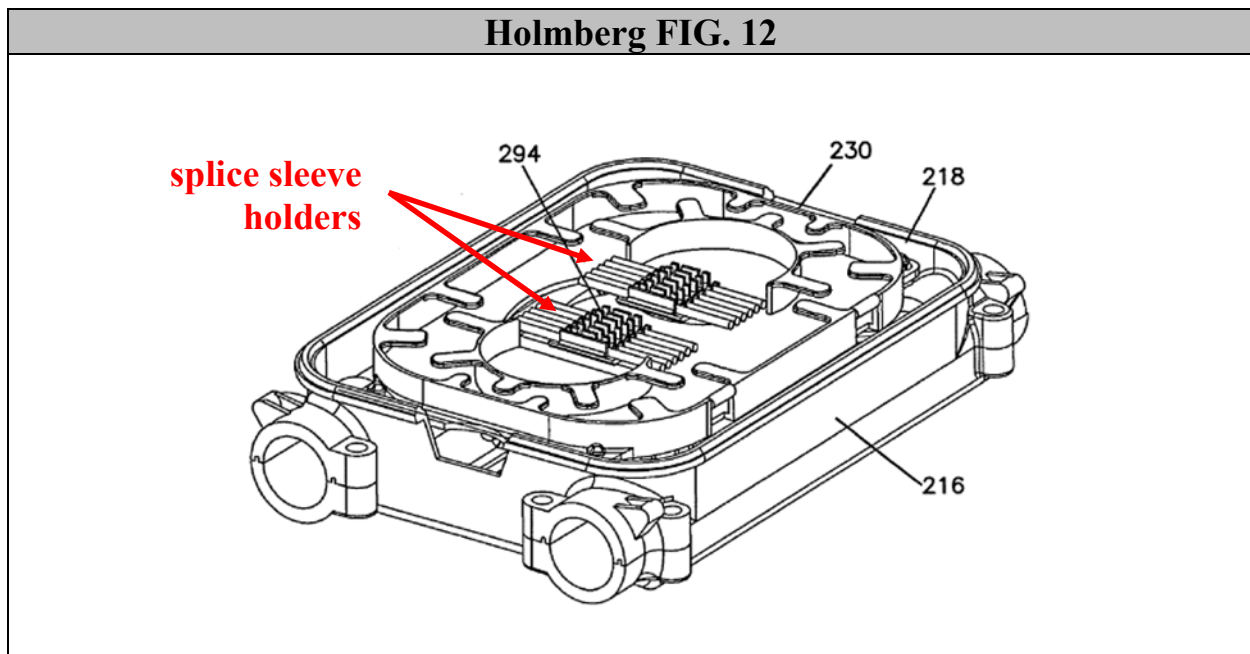


48. These “terminated” fibers are fibers from the drop cable that can be spliced to distribution cables. The terminated fibers are not a separate “plurality of feed break-out cables coupleable to the drop cable” as required by claim 1(d)). Since the terminated fibers are part of the drop cable, they cannot be considered to be coupleable to the drop cable.

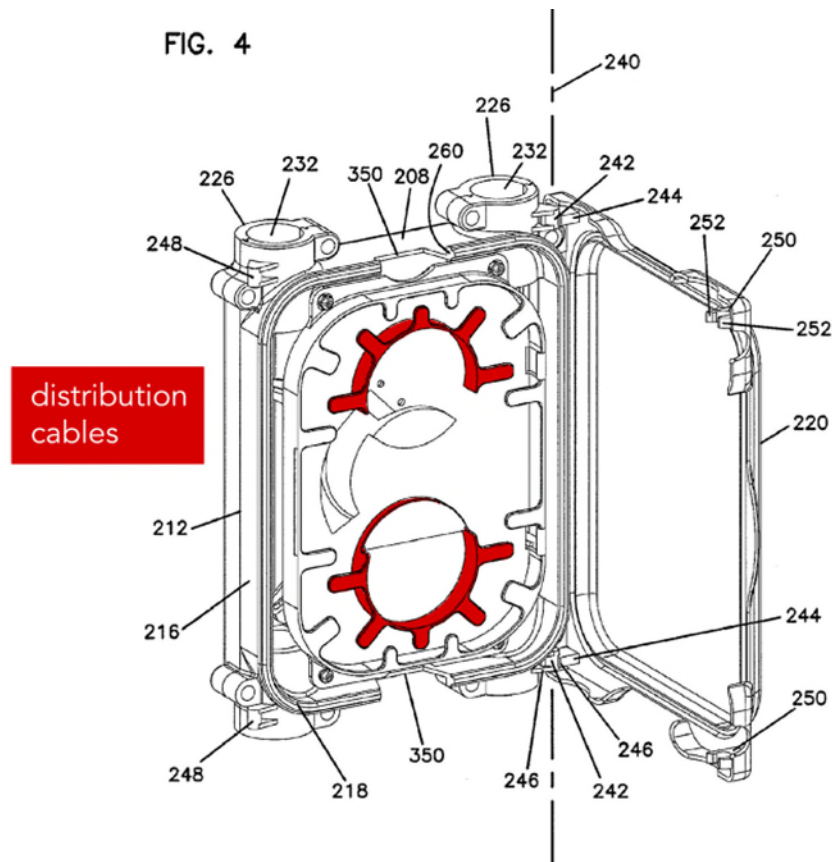
49. “When it is desired to splice one of the terminated fibers [of the drop

cable] to a distribution cable, the terminated fiber can be accessed from the spool structure 298 and routed through one of the openings 296 in the splice tray 230 to the front side of the splice tray 230.” Holmberg ¶¶[0053], [0044].

50. “At the front side of the splice tray, the terminated optical fiber can be spliced to a corresponding fiber of another cable (e.g., a distribution cable) with the splice being mounted at the splice sleeve holder 294 as shown at FIG. 12.” Holmberg ¶¶[0053], [0044], FIGS. 4, 6, 12. “The splice sleeve holders 294 are adapted for holding splice sleeves used to provide mechanical support to a fusion splice formed between two optical fibers.” Holmberg ¶[0044], FIG. 12.



51. “Excess fiber can be stored by wrapping the excess fiber around the fiber storage walls 292 at the front side of the splice tray 230.” Holmberg ¶¶[0053], [0043], FIGS. 4, 6, 12.



52. Holmberg's splice tray 230 provides storage of excess fiber optic cable for the terminated fibers of the drop cable (back side of splice tray 230), storage of excess fiber optic distribution cables (front side of splice tray 230), and mounts the splice sleeve holders 294 on the front of the splice tray 230 for the splices between the drop cable terminated fibers and the distribution cables. The splice tray 230 does not provide storage for feed break-out cables coupled to the drop cable as required by claim 1(d).

53. Dr. Kiaei admitted that the terminated fibers were part of the drop cable. EX-1003 ¶69 ("Regarding terminated fibers, Holmberg teaches the jacketed [drop]

cable encloses fibers which are cut (‘terminated fibers’) ...”), ¶73 (“Holmberg specifically teaches coupling fibers of a drop cable (e.g., terminated fibers) to a plurality of different subscriber locations, such as apartment buildings, to provide service to a plurality of subscribers.”).

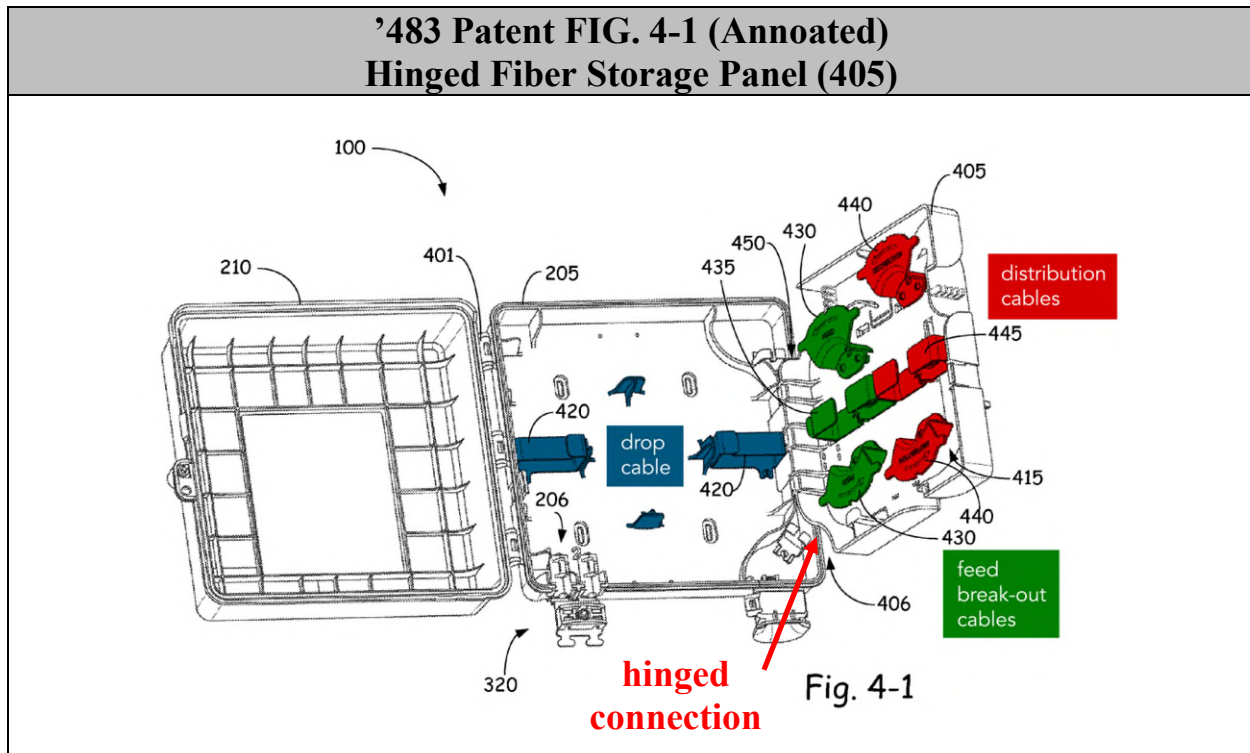
54. Since Holmberg does not disclose or suggest “a fiber storage panel having first spools positioned to store a plurality of feed break-out cables coupleable to the drop cable, ...[and] further having second spools positioned to store a plurality of distribution cables coupleable to the plurality of feed break-out cables” (claim 1(d)), neither Ground 1, nor Ground 3, render obvious independent claim 1 or any of the Challenged Claims.

B. A POSITA WOULD NOT REPLACE HOLMBERG’S FIXED SPLICE TRAY WITH A ROTATIONAL SPLICE TRAY.

55. The ’483 Patent’s DIB 100 includes a hinged fiber storage panel 405 for storing the excess or “slack” feed break-out cables and distribution cables, where the fiber storage panel 405 has a hinged connection 406 to an opposing side of the base unit 205. ’483 Patent 4:49-53, 2:33-35 (“a base, cover and hinged fiber storage panel”). FIGS. 4-1-5-4, 6-1, 6-4.

56. The “hinged fiber storage panel [405] includes spools, cable clips and integrated cable channels that maintain cable radius during transitions of cables from a storage side or plane of the panel to a connector side or plane of the panel.” ’483

Patent Abstract, 2:10-14, FIG. 4-1.



57. Fiber storage “panel 405 is hinged [406] to provide convenient access to both sides of the panel.” ’483 Patent 5:32-34.

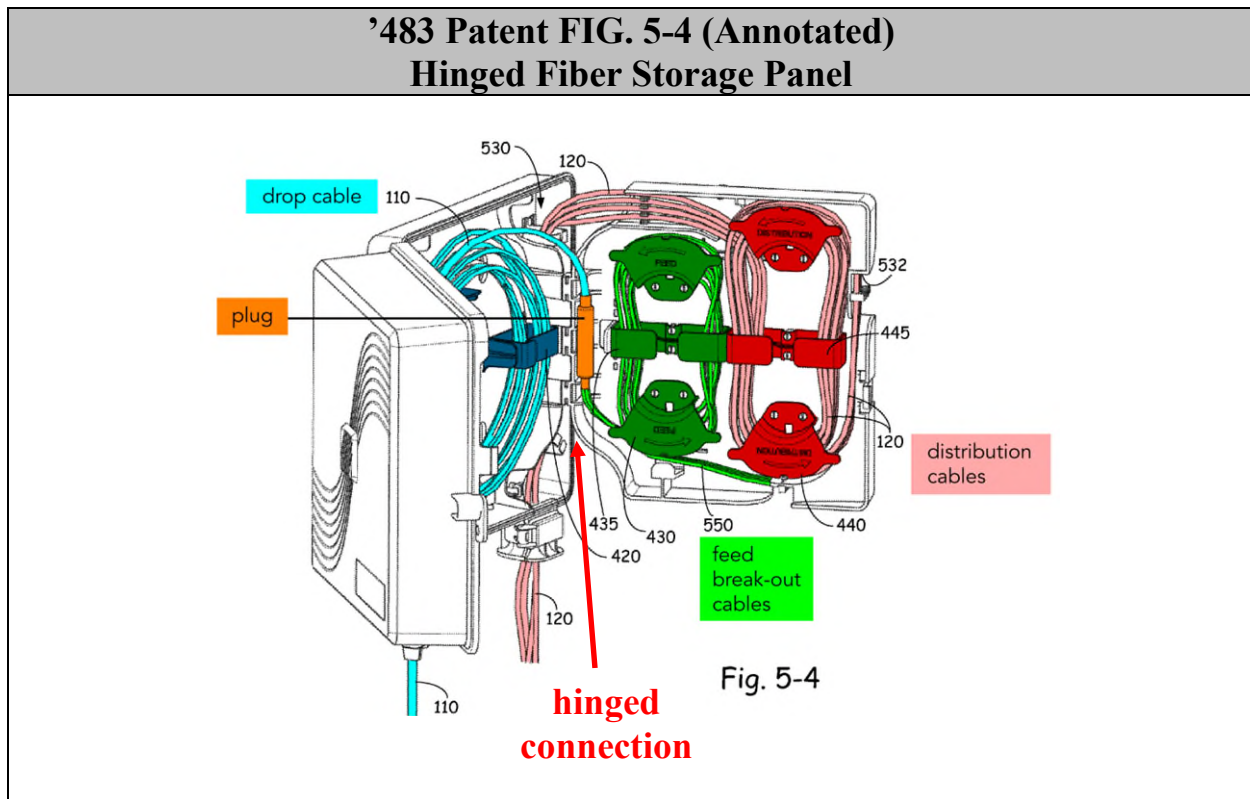
58. Independent claim 1 of the ’483 Patent requires “a fiber storage panel having a hinged connection to the base unit on a side opposite the hinged connection of the cover to the base unit such that the fiber storage panel is moveable relative to the base unit” (claim 1(c)). ’483 Patent 7:36-40.

59. For both Grounds 1 and 3, Dr. Kiaei opined that Holmberg’s fixedly mounted splice tray 230 hypothetically could be replaced with Battey’s hinged work shelf 54. But a POSITA would not have replaced Holmberg’s fixedly mounted

splice tray 230 with a hinged splice trace because that modification would render Holmberg's splice tray inoperable for its intended purpose (*i.e.*, to store cables and splices without detrimentally straining the terminated fibers of the drop cable and without severing any splices).

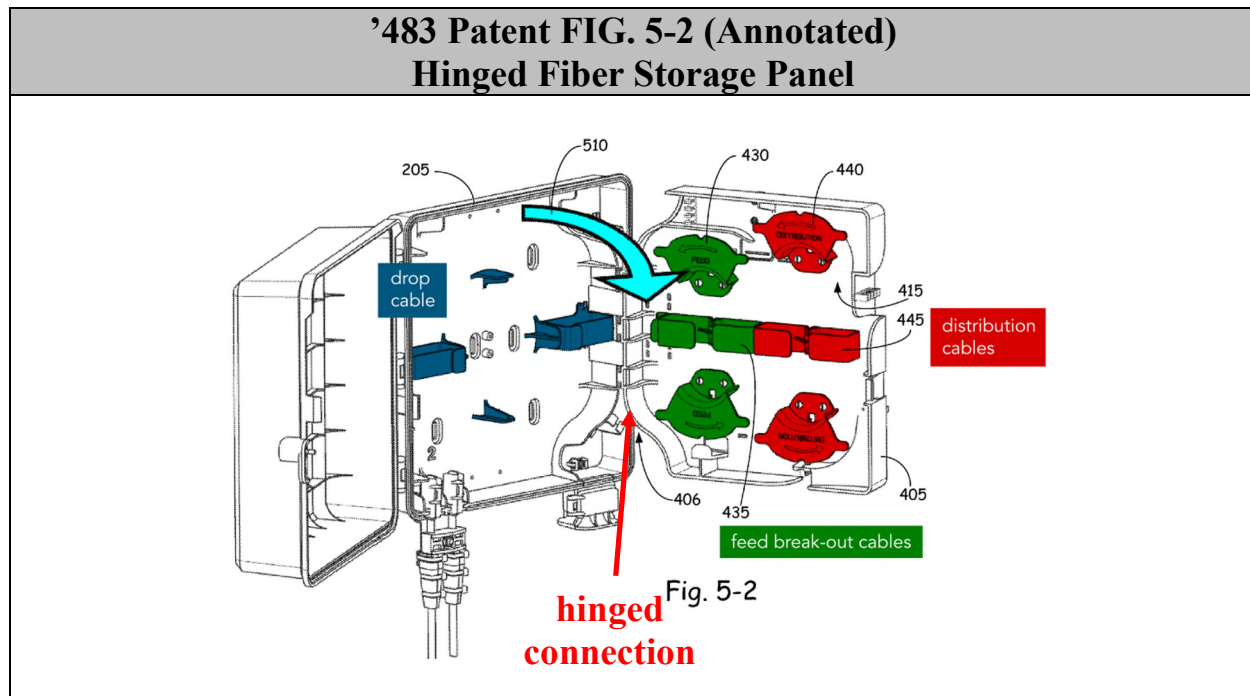
60. The '483 Patent discloses a "DIB [that] provides organized drop, feed and distribution fiber cable storage and routing in a manner which ... inhibits cable strain." '483 Patent Abstract, 2:6-10.

61. The hinged fiber storage panel 405 disclosed in the '483 Patent is configured to transition the cables from the fixed base 205 to the hinged fiber storage panel 405 adjacent to the hinge 406 of the fiber storage panel 405 to prevent cable damage by avoiding stressing the stored fiber cables (either by pulling, resulting in longitudinal stress, or twisting, resulting in torsional stress). As a POSITA would understand these unwanted stresses can result in strain and damage to the fibers. For example, "[a] break-out or furcation plug 450 positioned near the upper end of hinged connection 406 divides the drop feed cable 110 into multiple (e.g., typically four) individual feed cables 550." '483 Patent 4:66-5:2; FIGS. 4-1, 5-4.

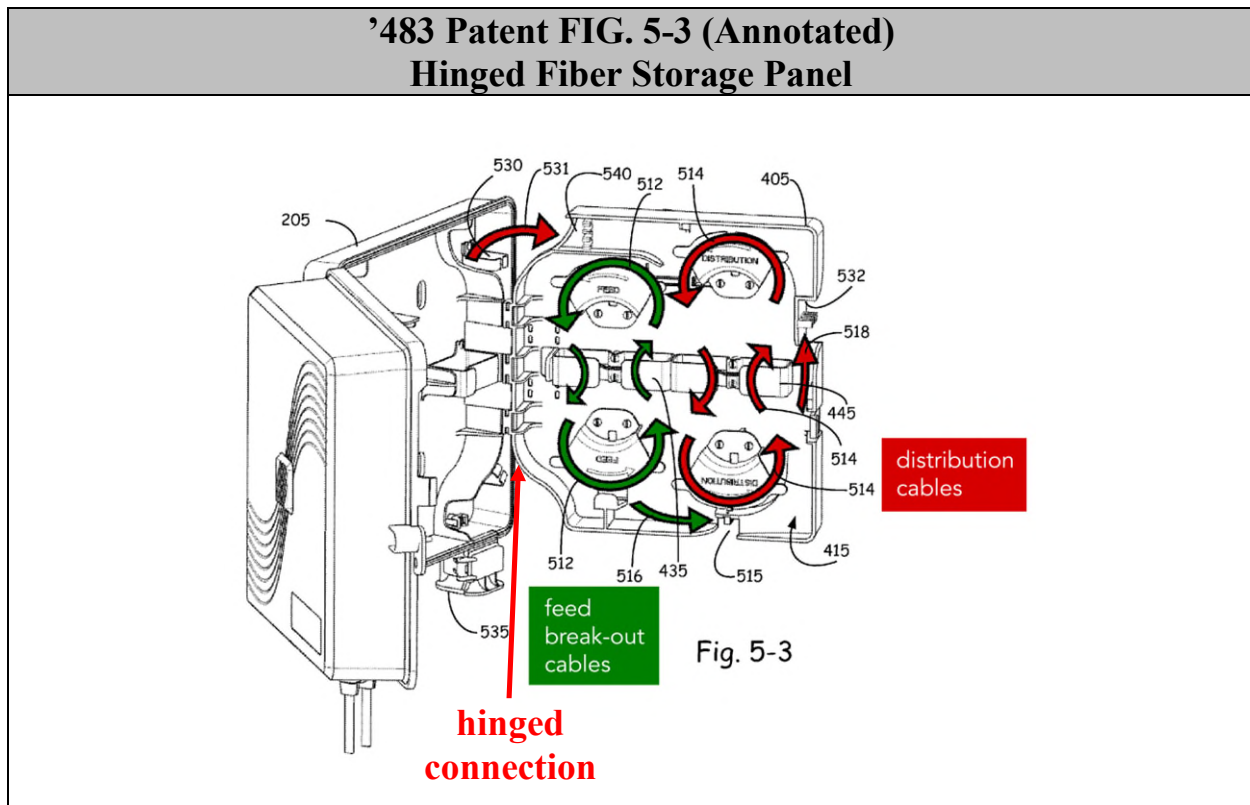


62. “The feeder cable breakout adapter storage area is located on the panel 405 nearest the hinge axis 406 and aligned with the hinge axis to allow easy transition of the drop cable 110 from the storage in the base 205 to the panel 405.” ’483 Patent 5:43-47. “The proximity and alignment to the hinge also allows the panel to be operated (open and closed) without excessive stress to the cable transition.” ’483 Patent 5:47-50, FIG. 5-2.

63. As shown in FIG. 5-2 below, “arrow 510 represent[s] the routing of cable 110 from base 205 to the rear side 415 of hinged fiber storage panel 405,” where the routing takes place proximate the hinged connection/axis 406. ’483 Patent 5:30-32, FIG. 5-2.



64. As shown in FIG. 5-3 below, “[i]ntegrated cable channel 530 is positioned parallel to the panel hinge 406 and located to the side edge of base 205 to allow the distribution cable 120 to be routed from the distribution cable entrance 535 to the top of the base and onto the panel 405 through opening 540 ... without causing unnecessary stress or bending during panel movement or operation.” ’483 Patent. ’483 Patent 5:62-6:8, 6:28-36, 7:1-7, FIGS. 5-3, 6-1, 6-4.



65. Unlike the hinged fiber storage panel 405 disclosed and claimed in the '483 Patent that can rotate relative to the base 205 of the DIB 100, Holmberg's splice tray 230 is fixedly mounted using fasteners to the main body 206 of the enclosure. Holmberg ¶¶[0035] ("a splice tray 230 that mounts in the interior of the enclosure 202"), [0042] ("[B]y positioning the splice tray 230 so that the fastener openings 272 align with the internally threaded openings of the bosses 274, and then inserting fasteners 276 through the fastener openings 272 and into the bosses 274, the splice tray 230 can easily be fastened within the interior of the enclosure 202").

66. Since Holmberg does not teach a hinged fiber storage panel, and instead teaches a fixedly mounted fiber storage panel, Dr. Kiaei opined that Battey's hinged

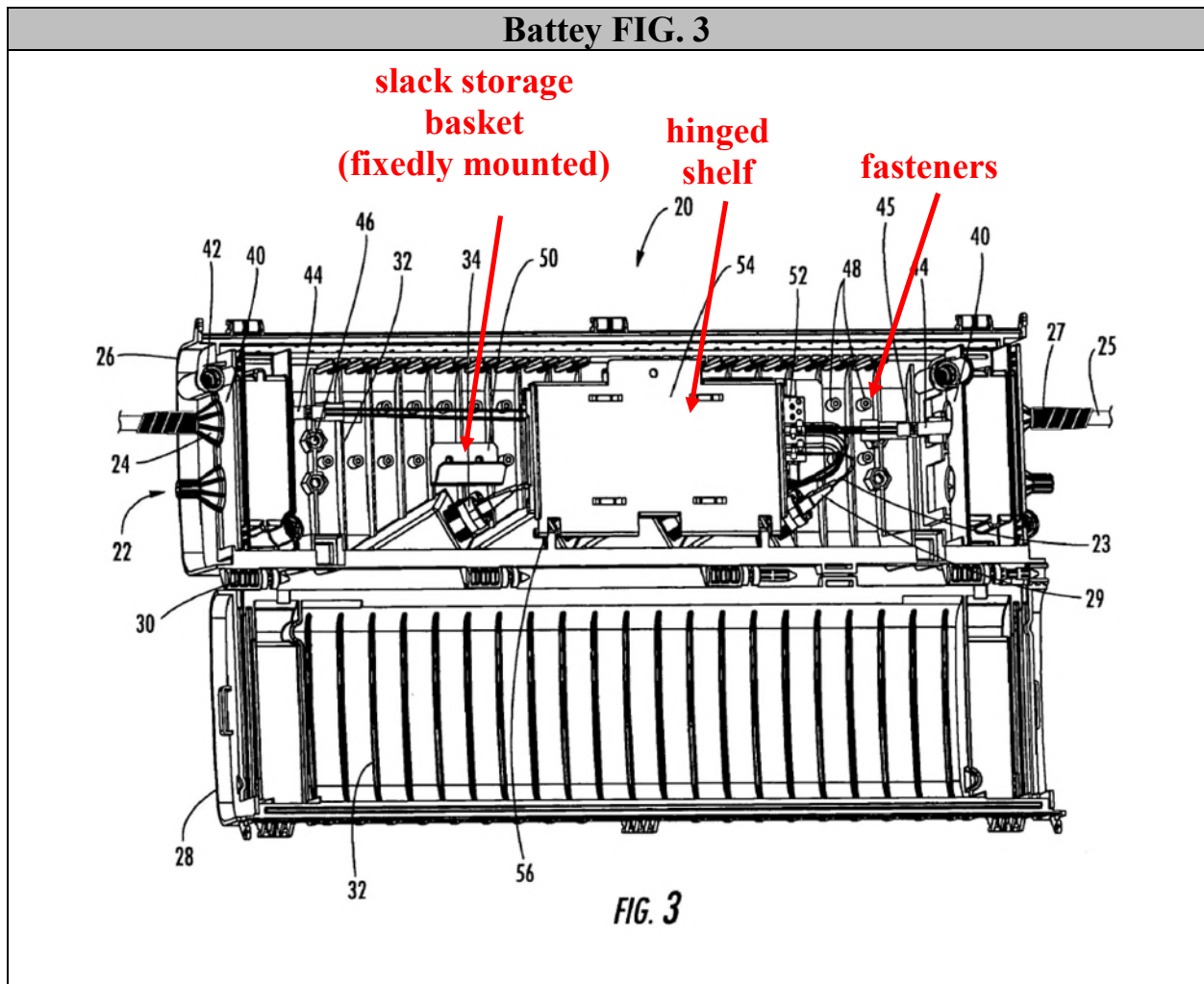
shelf 54 meets the claimed “fiber storage panel” and a POSITA would have been motivated to replace the fixedly mounted fiber storage panel 405 in Holmberg with Battey’s hinged shelf 54. EX-1003 ¶¶90-92. I disagree for several reasons.

67. Unlike either the ’483 Patent’s hinged fiber storage shelf 405, or Holmberg’s fixedly mounted splice tray 230, Battey’s shelf 54 does not store any fiber optic cables. Instead, Battey’s shelf 54 is used to mount and provide access to a splice tray, not for storing fiber optic cables. Battey ¶[0038] (“a conventional splice organizer or splice tray (obscured) is mounted to a work shelf 54”), ¶[0039] (“allowing the shelf 54 to be rotated between an opened position for providing access to the splice tray and a closed position for storing the splice tray,” “the shelf 54 is rotatable relative to the base 26 through an angle of at least about 90 degrees and as much as about 180 degrees between the opened position and the closed position, thus providing full and convenient access to the splice tray”), FIG. 3.

68. Battey actually provides a different structure for storing excess or slack fiber optic cable and teaches that fiber optic cables should avoid contacting the shelf 54. For example, Battey distinguishes its “splice trays,” which are mounted to the hinged shelf 54, from “slack storage guides,” which are fixedly mounted to the connection closure 20. Battey ¶[0033] (“The base 26 is generally box-shaped and defines an interior cavity for housing the express portion of distribution cable 25, connectorized optical fibers 23 and optical hardware, such as splice trays, couplers,

adapters, optical fiber routing and slack storage guides and the like.”), FIGS. 1-3).

69. Like Holmberg, Battey teaches that a “slack basket 50 may be fastened to the hardware mounting features 48 and operable for receiving and storing slack lengths of optical fibers and/or optical fiber buffer tubes.” The hardware mounting features 48 extend along the back wall. Battey ¶[0036], FIG. 3.



70. Battey teaches the use of fixedly mounted slack baskets 50 for storing excess or slack fiber optic cables, instead of a hinged shelf for doing so.

71. In fact, Battey teaches that fiber optic cables should avoid contacting the hinged shelf 54 “so as to not interfere with the movement of the shelf 54 between the opened and closed positions.” Battey ¶[0039], FIG. 3. In other words, Battey teaches away from using the hinged shelf 54 for fiber optic cable storage.

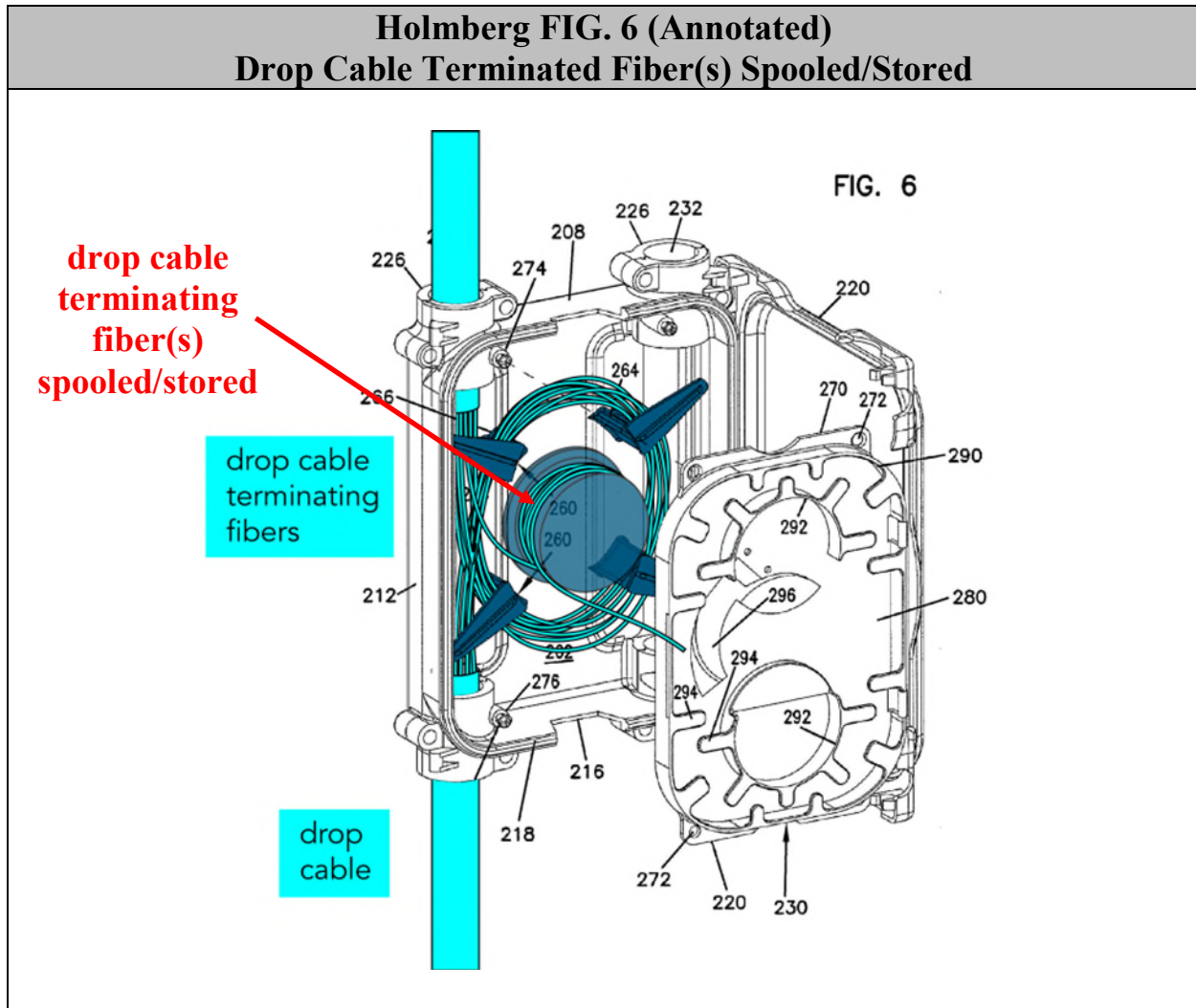
72. Furthermore, Battey teaches that “the shelf 54 may be slidably attached to the base 26 to selectively expose portions of the interior cavity of the base 26, or may be removably attached to the base 26 to provide unobstructed access to the interior cavity” (Battey ¶[0039]), which would be inconsistent with using the shelf for storage of excess lengths of fiber optic cables.

73. Battey provides no support for and in fact teaches away from Dr. Kiaei’s theory that a POSITA would be motivated to replace Holmberg’s fixedly mounted splice tray with a hinged splice tray.

74. Dr. Kiaei’s proposed modification of Holmberg to make the splice tray 230 hinged would render Holmberg inoperable for its intended purpose and/or alter its basic principle of operation. Making Holmberg’s fixedly mounted splice tray 230 hinged and rotatable would introduce stresses on the terminated fibers of the drop cable and distribution cables stored on the splice tray 230. These stresses, and the resulting strains on the fibers and splices, would compromise or even sever the delicate splices made between the fibers.

75. As shown in the annotated figure below, the terminated fibers of the

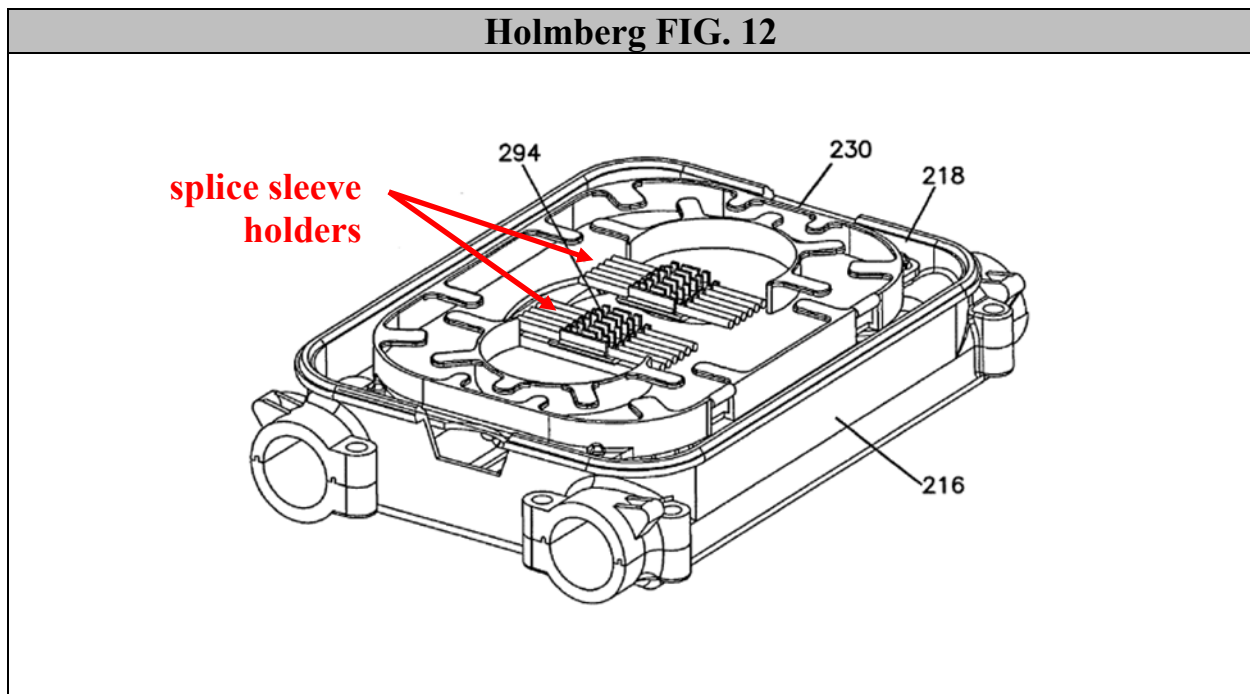
drop cable in Holmberg are spooled around the spool structure 298 on the back side of the splice tray 230, with the spool structure 298 shown superimposed inside the remainder of the drop cable fibers that were not terminated and are spooled around the radius limiters 264. Holmberg ¶¶[0045], [0052]-[0053], FIGS. 4-7.



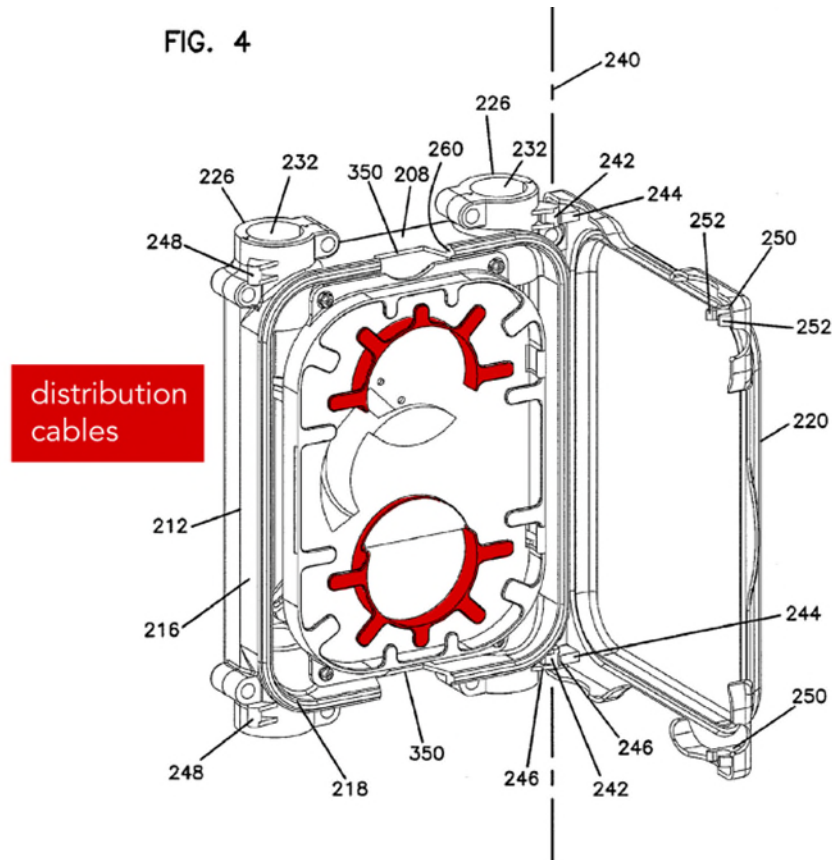
76. “When it is desired to splice one of the terminated fibers [of the drop cable] to a distribution cable, the terminated fiber can be accessed from the spool structure 298 and routed through one of the openings 296 in the splice tray 230 to

the front side of the splice tray 230.” Holmberg ¶¶[0053], [0044].

77. “At the front side of the splice tray, the terminated optical fiber can be spliced to a corresponding fiber of another cable (e.g., a distribution cable) with the splice being mounted at the splice sleeve holder 294 as shown at FIG. 12.” Holmberg ¶¶[0053], [0044], FIGS. 4, 12. “The splice sleeve holders 294 are adapted for holding splice sleeves used to provide mechanical support to a fusion splice formed between two optical fibers.” Holmberg ¶[0044], FIG. 12.

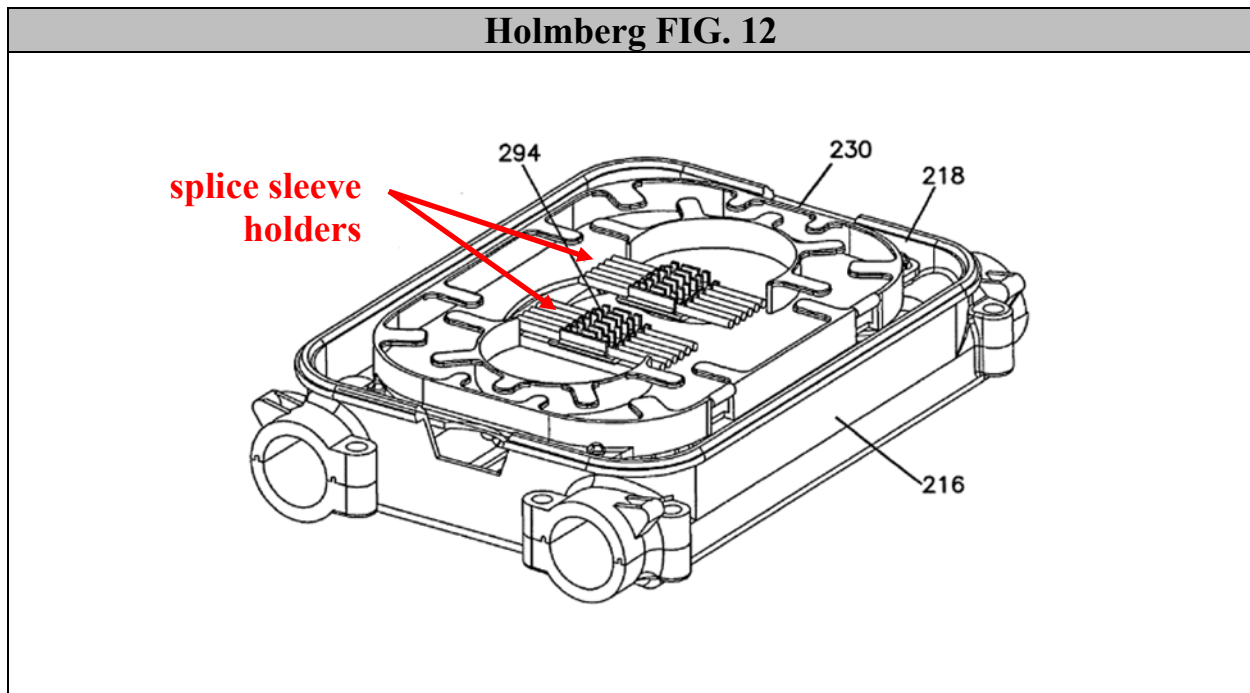


78. “Excess fiber can be stored by wrapping the excess fiber around the fiber storage walls 292 at the front side of the splice tray 230.” Holmberg ¶¶[0053], [0043], FIGS. 4 (annotated), 6, 12.



79. A POSITA would understand that rotating Holmberg's splice tray 230 away from the main body 216 as Petitioner proposed (rather than fixedly attaching the splice tray 230 to the main body as actually taught by Holmberg), would (1) detrimentally stress the terminated fibers of the drop cable, which are spooled around the spool structure 298 on the back side of the splice tray 230, and the distribution cables, which are wrapped around the fiber storage walls 292 at the front side of the splice tray 230 when the splice tray 230 rotates, and (2) adversely compromise or sever any splices made between the fibers and held in the splice sleeve holders 294 as the splice tray 230 was rotated.

80. Dr. Kiaei claims that modifying Holmberg's splice tray 230 to be hinged "would have advantageously provided convenient access to both sides of Holmberg's splice tray, which is an express advantage taught by Battey." EX-1003 ¶ 90. But Holmberg's splice sleeve holders 294 are already fully accessible since they are the front side of the splice tray 230. Holmberg ¶[0044], FIG. 12.



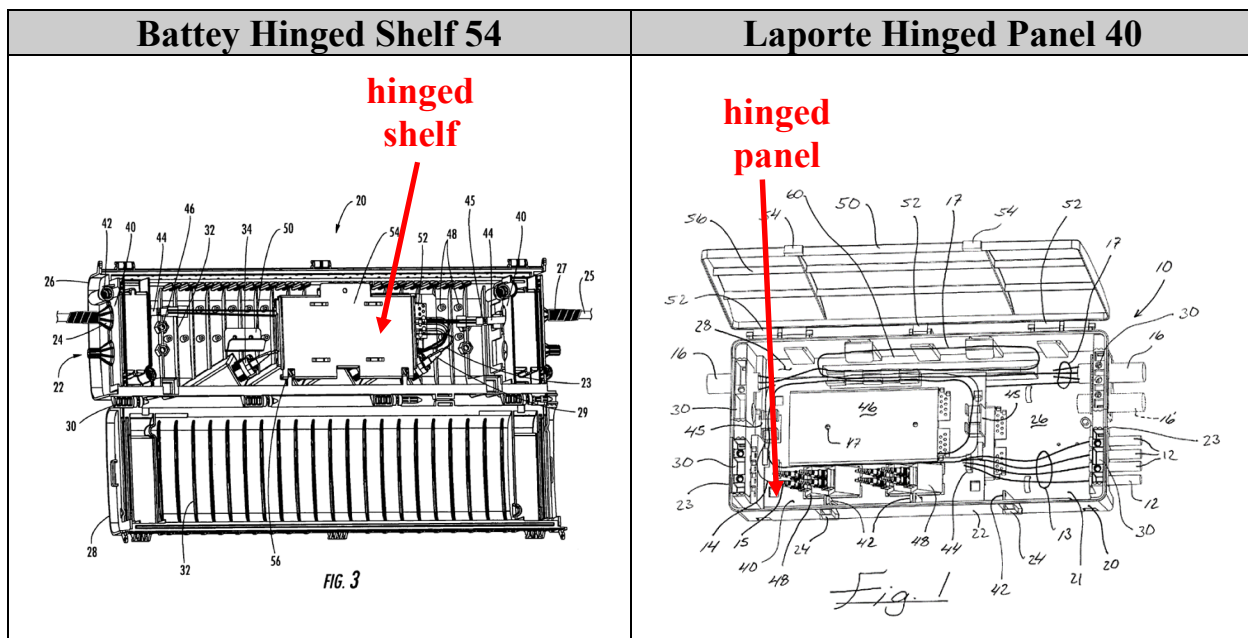
81. With respect to the rear side of the splice tray 230, the terminated fiber in Holmberg's fixedly mounted splice tray 230 can already "be accessed from the spool structure 298 and routed through one of the openings 296 in the splice tray 230 to the front side of the splice tray 230" without the disadvantages of detrimentally straining the stored cables and adversely compromising or severing any splices made between the fibers and held in the splice sleeve holders 294. Holmberg ¶¶[0053],

[0044].

VII. BATTEY’S HINGED SHELF 54 IS CUMULATIVE TO LAPORTE’S HINGED TRANSITION PANEL

82. One of the references that the Examiner considered during the prosecution of the '483 Patent was U.S. Patent Application Publication No. 2003/103750 A1 (“Laporte”) (EX-2002).

83. It is my opinion that Laporte’s disclosure of a hinged transition panel 40 is cumulative to, and substantially the same as, the disclosure of a hinged shelf 54 in Battey.



84. Laporte discloses a “distribution terminal [] provided for interconnecting one or more fiber optic drop cables with at least one fiber optic distribution cable at a convenient access point in a telecommunications network.”

Laporte Abstract, ¶¶[0014] (“The terminal 10 permits one or more fiber optic drop cables 12 to be easily and readily interconnected with at least one fiber optic distribution cable 16.”), [0015] (“The base 20 may have any of a variety of shapes that is suitable for housing telecommunications hardware and for routing and interconnecting one or more fiber optic drop cables 12 with at least one fiber optic distribution cable 16.”), FIGS. 1-2.

85. Laporte discloses a cover 50 hingedly attached to a base 20. Laporte ¶¶[0015] (“As shown, the cover 50 is generally rectangular and is hingedly affixed to the base 20 along the upper edge of one of the side walls 22 at one or more hinge locations 52.”), [0016] (“FIG. 1 shows the terminal 10 with the cover 50 hingedly affixed to the base 20 and opened thereon.”), FIGS. 1-2.

86. Similar to Battey’s hinged shelf 54 to which a splice tray is mounted, Laporte discloses splice trays 46 that are located on hinged transition panel 40. Laporte ¶¶[0020] (“Likewise, a plurality of splice trays 46, for example between one and four, are positioned in stacked relationship on transition panel 40...”), [0025] (“In particular, the drop cables are routed to telecommunications hardware, such as splice trays and transition adapters, on a movable transition panel located in the upper fiber management area.”).

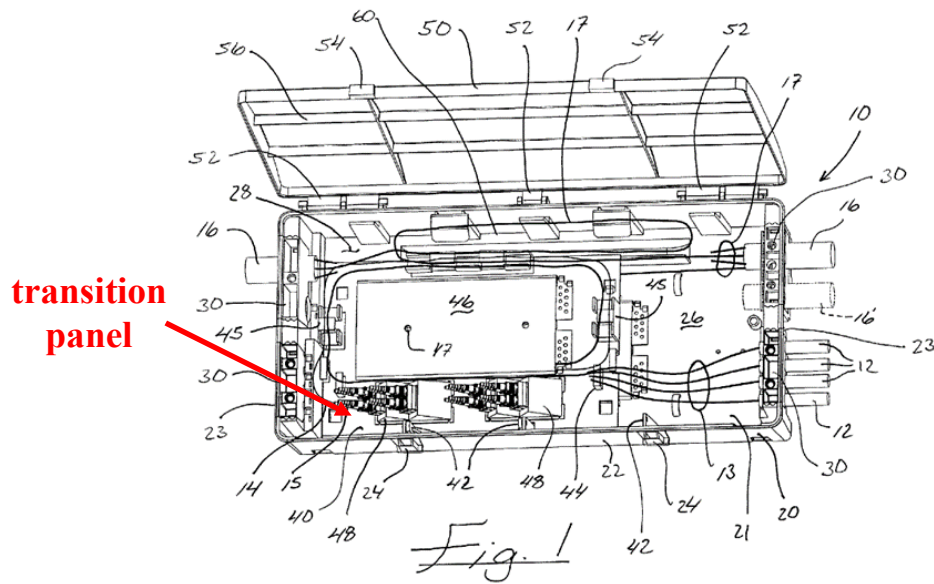
87. Laporte paragraph [0018] disclosed that the transition panel 40 is hingedly connected to the base 20 as shown in FIG. 1 (panel 40 closed/stowed) and

FIG. 2 (panel 40 opened/deployed):

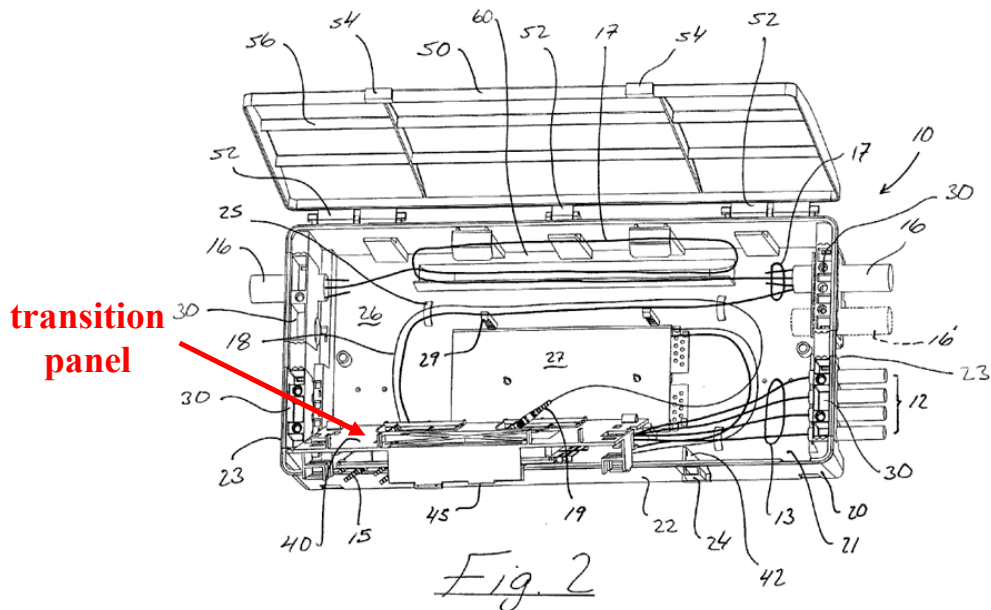
The transition panel 40 is movable relative to the base 20 to expose the lower fiber management area 26 to the field technician initially installing the terminal 10 or subsequently reconfiguring the optical fiber connections within the terminal 10 at an access point in a telecommunications network. Preferably, the transition panel 40 is hingedly attached to the base 20 and adapted to be rotated thereon between a stowed position for accessing the upper fiber management area 28 and a deployed position for accessing the lower fiber management area 26 without disturbing the drop cables 12. As shown, the transition panel 40 is rotatable relative to the base 20 through angle of about 110 degrees between the stowed position and the deployed position. The transition panel 40 is generally rectangular and is hingedly affixed to the base 20 along the upper edge of one of the side walls 22 at one or more hinge locations 42. As shown, the hinge locations 42 are located on the side wall 22 opposite the hinge locations 52 that hingedly affix the cover 50 to the base 20. However, the hinge locations 42 may be located on the same side wall 22 as the hinge locations 52. . . . The base 20 is preferably provided with at least three hinge locations 42 along the side wall 22 so that the transition panel 40 may be positioned nearer the end wall 23 opposite the end wall 23 through which the drop cables 12 enter the terminal 10.”

Laporte ¶[0018].

Laporte (EX-2002) FIG. 1
(Transition Panel 40 Closed/Stowed Position)



Laporte (EX-2002) FIG. 1
(Transition Panel 40 Open/Deployed Position)



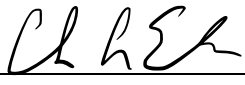
88. The teachings in Battey relied on by Dr. Kiaei are the same or substantially the same as that disclosed by Laporte.

89. For Grounds 4 and 5 asserted against dependent claim 10, Dr. Kiaei adds Cowen (EX-1007) to the combinations of Holmberg-Battey (Ground 1) and Holmberg-Blankenship-Battey (Ground 3) for Cowen's alleged disclosure of storage clips. Cowen's disclosure of storage clips 292 (Cowen 27:41-28:7, FIGS. 26B, 26C, 28) is cumulative to Laporte's disclosure of slack storage area 60 (Laporte ¶[0015], FIG. 1).

90. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

91. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: December 21, 2023

By: 

Charles A. Eldering, Ph.D.

APPENDIX

A

Curriculum Vitae
Dr. Charles A. Eldering

CAsE Analysis, Inc.
620 Wilson Ave, PMB 101
Brooklyn, NY 11207

215.913.7214
cae@caseanalysisgroup.com

AREAS OF SPECIALIZATION: Extensive technical and market expertise in the areas of telecommunications, microelectronics, consumer electronics, targeted advertising, location-based services, data mining, and bioinformatics, with over 30 years of industrial experience. Highly skilled in the management and utilization of patents including infringement analysis and documentation of use of claimed technology.

EDUCATION:

- 1989 University of California; Davis, California
 Ph.D. Electrical Engineering
- 1985 Syracuse University; Syracuse, New York
 M.S. Solid State Science and Technology
- 1981 Carnegie Mellon University; Pittsburgh, Pennsylvania
 B.S. Physics

OTHER QUALIFICATIONS:

Registered U.S. Patent Agent. Registration No. 39,180
FCC Licensed General Class Amateur Radio Operator, N3YRB

EMPLOYMENT HISTORY:

December 2013 to present:

CAsE Analysis, Inc.
Founder & President

September 2022 to present

SitNet LLC
Founder and Managing Member

May 2000 to December 2021

Expanse Networks/Expanse Bioinformatics
Founder and President

December 1997 to December 2013:

Technology, Patents & Licensing, Inc. (now TechPats)
Founder and President

October 1995 to November 1997:

Next Level Communications, Rohnert Park, CA
Director, Advanced Systems Engineering

September 1993 to September 1995:

General Instrument Corporation, Hatboro, PA
Manager, Fiber-to-the-Curb/Switched Digital Video Systems; March 1995 to September 1995
Manager, Broadband Systems Engineering; January 1994 to March 1995
Senior Project Engineer, Systems Engineering; September 1993 to December 1993

January 1990 to August 1993:

Alcatel, Madrid, Spain
Senior Engineer/Manager, Fiber in the Loop R&D; October 1990 to August 1993
Consultant; January 1990 to September 1990

June 1986 to August 1990:

University of California, Davis, CA
Researcher, Department of Electrical and Computer Engineering

October 1981 to May 1986:

United States Air Force, Rome Laboratory, Rome, NY

Officer

EXPERT WITNESSING:

1. *CommScope Technologies v. Belden Nos.*, IPR2023-01056, -01058, -01061, -01062 (PTAB)
2. *PPC v. Perfect Vision Manufacturing, Inc.*, Case No. 4:22-CV-204 (Eastern District of Arkansas)
3. *PPC v. Perfect Vision Manufacturing, Inc.*, Case No. 4:22-CV-163 (Eastern District of Arkansas)
4. *PCC v. CommScope Technologies, LLC*, Case No. 22-783-RGA (District of Delaware)
5. *PPC v. Charles Industries, LLC and Amphenol Corporation*, Case No. 1:22-CV-01517 (District of Delaware)
6. *Belden v. CommScope, Inc.*, Case No. 22-782-RGA (District of Delaware)
7. *Amphenol Corporation v. PPC Broadband, Inc.*, Nos. IPR2022-00718, -00719, -00720 and -00721 (PTAB).
8. *PPC Broadband, Inc. v. Amphenol Corporation*, Nos. IPR2022, -00830, -00831, -00946, -00947, -01087, -01088 (PTAB).
9. *Sony Corporation and Sony Electronics Inc. v. ARRIS International plc, ARRIS Group, Inc., ARRIS Technology, Inc., ARRIS Enterprises LLC, ARRIS Solutions, Inc. and ARRIS Global Ltd. (formerly Pace Ltd.)*, In the Matter of Certain Digital Cable and Satellite Products, Set-Top Boxes, Gateways, and Components Thereof, United States International Trade Commission, Washington, D.C. (Investigation No. 337-TA-1049).
10. *Unified Patents Inc. v. Harry Heslop & Sportbrain Holdings, LLC*, No. IPR2016-01464 (PTAB).
11. *Unified Patents Inc. v. Hybrid Audio, LLC*, No. IPR2016-01265 (PTAB).
12. *Unified Patents Inc. v. Qurio Holdings, Inc.*, No. IPR2015-01991 (PTAB).
13. *Unified Patents Inc. v. Rothschild Connected Devices Innovations, LLC*, No. IPR2016-00535 (PTAB).
14. *Unified Patents Inc. v. FO2GO LLC*, No. IPR2016-00454 (PTAB).
15. *Unified Patents Inc. v. Nonend Inventions, NV*, No. IPR2016-00174 (PTAB).
16. *Unified Patents Inc. v. iMTX Strategic, LLC*, No. IPR2015-01061 (PTAB).
17. *Unified Patents Inc. v. TransVideo Electronics, Ltd.*, No. IPR2015-01519 (PTAB).
18. *PPC Broadband, Inc. d/b/a PPC v. Times Fiber Communications, Inc.*, United States District Court for the Northern District of New York (Civil Action No. 5:13-cv-460-TJM-DEP)
19. *PPC Broadband, Inc. d/b/a PPC v. Corning Gilbert, Inc.*, United States District Court for the Northern District of New York (Civil Action No. 5:13-cv-00538-GLS-DEP).
20. *PPC Broadband, Inc. v. Corning Optical Communications RF, LLC, In the Matter of Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same*, United States International Trade Commission, Washington, D.C. (Investigation No. 337-TA-938).
21. *BroadSoft, Inc. v. CallWave Communications, LLC*, United States District Court for the District of Delaware (DED-1-13-cv-00711-RGA).

22. *Netflix, Inc., v. OpenTV, Inc.*, No. IPR2014-00252 (PTAB).
23. *Mediatube Corp and Northvu Inc. v. Bell Canada and Bell Aliant Regional Communications, Limited Partnership*, Canadian Federal Court (C.A. T-705-13).
24. *John Mezzalingua Associates, Inc. d/b/a PPC v. Corning Gilbert Inc.*, United States District Court for the District of Arizona (Case No. 2: 12-CV-12-02208-SMM).
25. *Corning Gilbert Inc., v. PPC Broadband, Inc.*, No. IPR2013-00345 (PTAB).
26. *Corning Gilbert Inc., v. PPC Broadband, Inc.*, No. IPR2013-00340 (PTAB).
27. *Corning Gilbert Inc., v. PPC Broadband, Inc.*, No. IPR2013-00342 (PTAB).
28. *Corning Gilbert Inc., v. PPC Broadband, Inc.*, No. IPR2013-00346 (PTAB).
29. *Corning Gilbert Inc., v. PPC Broadband, Inc.*, No. IPR2013-00347 (PTAB).
30. *PPC Broadband, Inc. v. Corning Gilbert Inc.*, United States District Court for the Northern District of New York (Civil Action No. 5:13-cv-1310).
31. *PPC Broadband, Inc. d/b/a PPC v. Corning Gilbert, Inc.*, United States District Court for the Northern District of New York (Civil Action No. 11-cv-00761-GLS-DEP).
32. *Corning Gilbert, Inc. v. The United States of America, et al.* in the United States Court of International Trade (Case No. 11-00511).
33. *Parus Holdings, Inc. v National Airtran Airways, Inc., Airtran Holdings, Inc., Airtran Holdings, LLC* in the United States District Court for the Middle District of Florida, Tampa Division (Case No. 8:11-cv-01685-EAK-TBM).
34. *John Mezzalingua Associates, Inc. d/b/a PPC v. International Communications Manufacturing Corporation, Randall A. Holliday, and Belden Inc.* in the United States District Court for the Western District of Wisconsin (Case No. 3:11-cv-00424-bbc).
35. *eTool Development, Inc., and eTool Patent Holdings Corp. v National Semiconductor Corporation* in the United States District Court for the Eastern District of Texas, Marshall Division (Case No. 2:08-cv-196).
36. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. PCT International, Inc.* in the United States District Court for the Western District of Texas, San Antonio Division (Case No. 5:09-cv-00410-RF).
37. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. PACE Electronics, Inc. (d/b/a PACE International) and Perfect 10 Antenna Company* in the United States District Court for the Western District of Minnesota (Case No. 0:10-cv-00064 MJD/JJG).
38. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. Hanjiang Fei Yu Electronics Equipment Factory, Zhongguang Electronics, Yangzhou Zhongguang Electronics Co., Ltd., and Yangzhou Zhongguang Foreign Trade Co., Ltd.* in Certain Coaxial Cable Connectors and Components Thereof and Products Containing Same, United States International Trade Commission, Washington, D.C. (Investigation No. 377-TA-650).
39. *Arrow Communication Laboratories, Inc. v. John Mezzalingua Associates, Inc.*, in the Northern District of New York (Civil Action No. 05-CV-1456 (NAM/DEP) (Lead Case); 05-CV-0703 (NAM/DEP) (Member Case).
40. *Agrizap Inc. v. Woodstream Corporation* in the United States District Court for the Eastern District of Pennsylvania (Case No. 04-CV-03925-RK).

41. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. Corning Gilbert, Inc.* in the United States District Court for the Western District of Wisconsin (Case No. 03-C-0354-S).
42. *John Mezzalingua Associates, Inc. d/b/a PPC, Inc. v. Arris International, Inc.* in the United States District Court for the Western District of Wisconsin (Case No. 03-C-0353-C).
43. *Arris International, Inc., and Randall A. Holliday, v. John Mezzalingua Associates, Inc. d/b/a PPC* in the United States District Court for the District of Colorado, Denver Division (Case No. CA 01-WM-2061).

REVIEWED PUBLICATIONS:

1. Eric E. Bensen, Charles A. Eldering, Jim Longacre, Anthony W. Shaw, Daniel H. Sherr, Matthew W. Stavish, and John M. White, "Patent Commentaries Analyzing the America Invents Act," *Lexis Nexis*, 2011.
2. Malcolm T. "Ty" Meeks and Charles A. Eldering, PhD, "Patent Valuation: Aren't We Forgetting Something? Making the Case for Claims Analysis in Patent Valuation by Proposing a Patent Valuation Method and a Patent-Specific Discount Rate Using the CAPM", *Northwestern Journal of Technology and Intellectual Property*, (Fall, 2010) Vol. 9, No. 3.
3. C.A. Eldering, "Technology and Competition: A Five-Year Outlook for the Telecommunications Marketplace," in *Communications Deregulation and FCC Reform*, J.A. Eisenach and R.J. May, eds. (Kluwer Academic Publishers, 2001).
4. S.C. Durant, E.J. Basinski, K.L. Cerrone, C.A. Eldering and M. Ishimaru, "Patent Portfolio Development," in *Electronic Software Patents: Law and Practice*, S.W. Lundberg and S.C. Durant, eds. (BNA Books, 2000).
5. C.A. Eldering, "Patents and Telecommunications", Guest Editorial in *IEEE Communications Magazine*, vol. 38, no. 7, p. 96 (July 2000).
6. C.A. Eldering, M.L. Sylla, J.A. Eisenach, "Is There a Moore's Law for Bandwidth?," in *IEEE Communications Magazine*, vol. 37, no. 10, pp. 117-121 (October 1999).
7. C.A. Eldering, "Impact and Results of Telecommunications Deregulation," Guest Editorial in *IEEE Communications Magazine*, vol. 37, no. 10, p. 98 (October 1999).
8. C.A. Eldering, "Prospects for Broadband Deployment in a Deregulated Environment", Guest Editorial in *IEEE Communications Magazine*, vol. 36, no. 7, p. 86 (July 1998).
9. S. Wang, S.T. Kowel, C.A. Eldering, "Differential Detection with Polymer-Based Etalon Modulators," *IEEE Journal of Lightwave Technology*, vol. 16, no. 3, pp. 448-452 (March 1998).
10. C.A. Eldering, J.P. Blasko, A. Brown, "Comparative Analysis of Provisional Patents Under US and UK Law," *Journal of the Patent and Trademark Office Society*, vol. 79, no. 11, pp. 791-881 (November 1997).
11. C.A. Eldering, "Customer Premises Equipment for Residential Broadband Networks," *IEEE Communications Magazine*, vol. 35, no. 6, pp. 114-121 (June 1997).
12. N. Omoigui, M. Sirbu, C.A. Eldering, and N. Himayat, "Comparing Integrated Broadband Architectures from an Economic and Public Policy Perspective," in *The Internet and Telecommunications Policy Research*, G.W. Brock and G.L. Rosston, eds. (Lawrence Erlbaum Associates, NJ, 1996).
13. C.A. Eldering, N. Himayat and F.M. Gardner, "CATV Return Path Characterization for Reliable Communications," *IEEE Communications Magazine*, vol. 33, no. 8, pp. 62-69 (August 1995).
14. D. Shen, S.T. Kowel, and C.A. Eldering, "Amorphous Silicon Thin-Film Photodetectors for Optical Interconnection," *Optical Engineering*, vol. 34, no. 3, pp. 881-886 (March 1995).
15. C.A. Eldering, F. Herrerias, R. Martín, P.J. García, "Burst Mode Clock Recovery System for Fiber Optic Receivers," *IEEE Journal of Lightwave Technology*, vol. 12, no. 2, pp. 271-279 (February 1994).
16. C.A. Eldering, "Theoretical Determination of Sensitivity Penalty for Burst Mode Fiber Optic Receivers," *IEEE Journal of Lightwave Technology*, vol. 11, no. 12, pp. 2145-2149 (December 1993).

17. C.A. Eldering and A. Martín, "An Out-of-Band Signalling Technique for Passive Optical Networks," *International Journal of Digital and Analog Communication Systems*, vol. 6, pp. 49-52 (1993).
18. C.A. Eldering, A. Dienes, and S.T. Kowel, "Time Response Limitations of Etalons as Calculated From Frequency Analysis," *Optical Engineering*, vol. 32, no. 3, pp. 464-468 (March 1993).
19. S.T. Kowel and C.A. Eldering, "Polymer Etalons and Free Space Interconnects," in *Polymers for Lightwave and Integrated Optics: Technology and Applications*, Lawrence A. Hornak, Editor (Marcel Dekker, 1992).
20. C.A. Eldering, A. Knoesen and S.T. Kowel, "Use of Fabry-Perot Devices for the Characterization of Polymeric Electro-Optic Films," *Journal of Applied Physics*, vol. 69, no. 6, pp. 3676-3686 (March 15, 1991).
21. C.A. Eldering, S.T. Kowel, M.A. Mortazavi and P. Brinkley, "Electro-Optic Polymer Materials and Devices for Global Optical Interconnects," *Applied Optics*, vol. 29, no. 8, pp. 1142-1149 (March 1990).
22. C.A. Eldering, S.T. Kowel, and A. Knoesen, "Electrically Induced Transmissivity Modulation in Polymeric Thin Film Fabry-Perot Etalons," *Applied Optics*, vol. 28, no. 20, pp. 4442-4445 (October 1989).
23. C.A. Eldering, S.T. Kowel, A. Knoesen, B.L. Anderson and B.G. Higgins, "Characterization of Modulated Spin-Coated and L/B Thin Film Etalons," *Thin Solid Films* vol. 179, pp. 535-542 (1989).
24. S.T. Kowel, R. Selfridge, C.A. Eldering, N. Matloff, P. Stroeve, B. Higgins, M.P. Srinivasan and L.B. Coleman, "Future Applications of Ordered Polymeric Thin Films," in *Thin Solid Films*, vol. 152, pp. 377-403 (1987).

PUBLICATIONS IN CONFERENCE PROCEEDINGS:

1. C.A. Eldering, "An Overview of Wired Broadband Access Systems," *Proceedings of the IEEE Sarnoff Symposium on Advances on Wired and Wireless Communications*, pp. 1-7 (Trenton, NJ, March 19, 1997).
2. R. Mason, N. Himayat, C.A. Eldering, N. Omoigui, M. Sirbu "Overview of Hybrid Fiber-Coax and Fiber-in-the-Loop Architectures," *Proceedings of the 1995 National Fiber Optic Engineers Conference*, pp. 284-291 (Boston, MA, June 18-22, 1995).
3. C.A. Eldering, F.M. Gardner, N. Himayat, "Performance Comparison of Multiple-Access Techniques in Hybrid Fiber-Coax Return Systems," *1995 Optical Fiber Conference Technical Digest* (San Diego, CA, Feb 26- Mar 3, 1995).
4. N. Himayat, C.A. Eldering, M. Kolber, E. Dickinson, "Characteristics of Hybrid Fiber-Coax Return Systems," *1995 SCTE Conference on Emerging Technologies Proceedings Manual* (Orlando, FL, Jan 4-6, 1995).
5. C.A. Eldering, M. Kauffman, D. Grubb, S. Warwick, and G. Hawley, "Engineering Requirements for Hybrid Fiber-Coax Telephony Systems," *1994 NCTA Technical Papers* (New Orleans, LA, May 23-25, 1994).
6. D.S. Shen, S.T. Kowel, and C.A. Eldering, "Amorphous Silicon Thin Film Photodetectors for Optical Interconnection", *Proceedings of the International Parallel Processing Symposium* (Cancún, Mexico, April 26-29, 1994).
7. C.A. Eldering, G. Van der Plas, and J. De Groote, "Burst and Bit Synchronization Methods for Passive Optical Networks," *Proceedings of the Fourth IEEE Workshop on Local Optical Networks* (Versailles, France, September 1992).
8. C.A. Eldering and A. Martín, "System Specification and Requirements for Fiber in the Loop Systems," *Proceedings of SPIE Symposium on Opto-Electronics/Fibers* (Boston, MA, September 1992).
9. C.A. Eldering, F. Neira and J. Rueda, "The First Generation of Fiber Provided Subscriber Services for Spain," *Proceedings, Telco 92* (Madrid, Spain, May 1992).

10. P.J. García, R. Martín, C.A. Eldering, A. Martín, "Consideraciones de Diseño de Sistemas TDM/TDMA por Fibra Optica para el Area de Distribución de Abonados," *Proceedings, TELECOM I+D* (Madrid, Spain, November 1991).
11. C.A. Eldering, S. Allaire, A. Martín, R. Martín, F. Marcel, "Transmitter and Receiver Requirements for Time Division Multiple Access Passive Optical Networks," *Proceedings of the Third IEEE Workshop on Local Optical Networks* (Tokyo, Japan, September 1991).
12. J. Rueda García and C.A. Eldering, "Subscriber Loop Optical Distribution Architecture (SODA): A Cost Effective TDM/TDMA Fiber System," *Fiber Networks for Telephony and CATV*, SPIE vol. 1578, pp. 68-78 (Boston, MA, September 1991).
13. D. Yankelevich, A. Knoesen, C.A. Eldering and S.T. Kowel, "Reflection-Mode Polymeric Interference Modulators," *Proceedings of the SPIE Symposium on Optical Applied Science and Engineering* (San Diego, CA, August 1991).
14. C.A. Eldering, A. Knoesen and S.T. Kowel, "Characterization of Polymeric Electro-Optic Films Using Metal Mirror/Electrode Fabry-Perot Etalons," *Nonlinear Optical Properties of Organic Materials III*, SPIE Vol. 1337, pp. 348-357 (San Diego, CA, July 1990).
15. M. Landgraf, C.A. Eldering, P.F. Brinkley and S.T. Kowel, "Receiver and Transmitter Designs for Optical Interconnects," *Optical Information-Processing Systems and Architectures II*, SPIE vol. 1347, pp. 580-591 (San Diego, CA, July 1990).
16. C.A. Eldering, S.T. Kowel , P. Brinkley, N. Matloff, T. Schubert, R. Gosula, "Fixed Optical Interconnects for Concurrent Computing Systems," *Optical Information Processing Systems and Architectures* , SPIE vol. 1151, pp. 72-82 (San Diego, CA, August 1989).
17. N. Matloff, T. Schubert, S. Kowel, C.A. Eldering and M. Loving, "Performance Analysis of the OPTIMUL Multiprocessor Interconnect," *Proceedings of the IEEE Phoenix International Conference on Computers and Communications* (Phoenix, AZ, 1989).
18. N. Matloff, S.T. Kowel and C.A. Eldering, "OPTIMUL: An Optical Interconnect for Multiprocessor Systems," *Proceedings of the 1988 ACM International Conference on Supercomputing*, (St- Malo, France, 1988).
19. D.J. Burns, M.T. Pronobis, C.A. Eldering and R.J. Hillman, "Reliability/Design Assessment by Internal Node Timing Margin Analysis Using Laser Photocurrent Injection," *Proceedings of the IEEE International Reliability Physics Symposium*, pp. 76-82 (Las Vegas, NV, 1984).
20. M.J. Walter, C.A. Eldering, K.M. Krevis and J.R. Haberer, "Internal Node Testing by Tester Aided Voltage Contrast," *Proceedings of the International Symposium for Testing and Failure Analysis*, pp. 156-161 (San Jose, CA, 1982).

PRESENTATIONS:

1. Eldering, C.A., Moderator, Panel on A Framework for Strategic Patenting, 8th Annual IP Dealmakers Forum (New York, 2021).
2. Eldering, C.A., Chair of Inaugural 2018 LF Dealmakers Forum (New York, NY, 2018).
3. Eldering, C.A., Moderator, Panel on Leveraging Data to Identify Valuable Patents, 5th Annual IP Dealmakers Forum (New York, NY, 2018).
4. Eldering, C.A., Moderator, Panel on Trade Secrets – What IP Investors Need to Know, 6th Annual IP Dealmakers Forum (New York, NY, 2016)
5. Eldering, C.A. and de Wit, S., IP Under the Microscope: Using Patent Valuation Wisely. Presentation to CIP Forum 2011 (Gothenburg, Sweden, 2011).
6. Eldering, C.A. What's a patent worth? Presentation to Princeton Chapter of American Society of Appraisers, Princeton, NJ (May 18, 2009).
7. Eldering, C.A. Patent Purchasing: What makes a patent transaction possible? 10th Annual Intellectual Property Institute – WSBA Continuing Legal Education, (March 11, 2005).

8. Eldering, C. A. and Paratore, B. Video Technology-Past, Present & Future. *United States Patent and Trademark Office Technology Fair*, (June 10, 2004).
9. Eldering, C.A. Testimony before the PA House Committee. *House Bill 1516*, (January 27, 2000).
10. Eisenach, J., R. May and Eldering, C.A. *Regulatory Overkill: Pennsylvania's Proposal to Breakup Bell Atlantic*, (December 16, 1999).
11. Eldering, C.A. Comments before the Federal Communications Commission. *Regulating Cable Internet Services*, (May 25, 1999).
12. Eldering, C.A. Panel participant in The ADSL Forum. *Washington DC Summit*, (March, 1999).
13. Eldering, C.A. Panel participant in Online Advertising: What It Is, Where It Is Going. *Speech in the Digital World: The First Amendment and Advertising*, sponsored by the Progress and Freedom Foundation, (November, 1998).
14. Eldering, C.A. Panel participant in Deregulating Digital Transport: The Bandwidth Crisis and the Role of Government. *Progress & Freedom Foundation's 5th Annual Cyberspace and the American Dream Aspen Summit 1998*, (August, 1998), broadcast on C-SPAN.
15. Eldering, C.A. Evolution of Broadband Access Technologies and Systems. *Networld + Interop '97; The 4th Annual Engineer Conference*, (May, 1997).
16. Eldering, C.A. An Overview of Wired Broadband Access Systems. *IEEE Sarnoff Symposium on Advances on Wired and Wireless Communications*, (March, 1997).
17. Eldering, C.A. Technology: Past and Present – The Impact of Network Competitors. Communications Media Center at New York Law School, *Seminar on Cable TV Franchise Renewals: Business as Usual or A Time for New Priorities?*, (November, 1996).
18. Eldering, C.A. Broadband Access Technologies. *The 8th Annual Digital Audio/Video Workshop*, (October, 1996).
19. Eldering, C.A. Burst Mode Receivers for Fiber Optic Networks. *1995 IEEE/LEOS Summer Topical Meetings on IC's for New Age Lightwave Communications*, (August, 1995).
20. Eldering, C.A. Performance Comparison of Multiple-Access Techniques in Hybrid Fiber-Coax Return Systems. *1995 Optical Fiber Conference*, (February, 1995).
21. Eldering, C.A. Characteristics of Hybrid Fiber-Coax Return Systems. *1995 SCTE Conference on Emerging Technologies*, (January, 1995).
22. Eldering, C.A. Engineering Requirements for Hybrid Fiber-Coax Telephony Systems. *NCTA Engineering Committees 1994 Technical Program*, (May, 1994).
23. Eldering, C.A. Burst and Bit Synchronization Methods for Passive Optical Networks. *Fourth IEEE Workshop in Local Optical Networks*, (September, 1992).
24. Eldering, C.A. Transmitter and Receiver Requirements for Time Division Multiple Access Passive Optical Networks. *Third IEEE Workshop on Local Optical Networks*, (September, 1991).
25. Eldering, C.A. Subscriber Loop Optical Distribution Architecture (SODA): A Cost Effective TDM/TDMA Fiber System. *Fiber Networks for Telephony and CATV*, (September, 1991).
26. Eldering, C.A. Fixed Optical Interconnects for Concurrent Computing Systems. *Optical Information Processing Systems and Architectures*, (August, 1989).

TEACHING APPOINTMENTS:

- University of California at Davis. Lecturer, Electronics Laboratory, (1987-88).
- State University of New York, Utica/Rome. Adjunct Professor, Electronics, (1985-86).

REPORTS, THESES, OTHER PUBLICATIONS:

1. Charles Eldering and Juan Gisone. Claims-based patent valuation. *Intellectual Asset Management Magazine*, (Issue 50 November/December 2011).
2. Charles A. Eldering, Technology, Patents & Licensing, Inc. and Expanse Networks, Inc., Amici Curiae Supporting MercExchange L.L.C., *eBay Inc. v. MercExchange L.L.C.*, on Writ of Certiorari to the United States Court of Appeals for the Federal Circuit (2006).
3. Keeler, P. and C.A. Eldering, S. Weiswasser, A. Weixel and H. Feld. *Reply Comments of Next Level Communications*, CC Docket No. 98-147. FCC Proceedings on Deployment of Wireline Services Offering Advanced Telecommunications Capability. (October 16, 1998).
4. Eisenach, J. and C.A. Eldering. *Comments of the Progress and Freedom Foundation*, CC Docket No. 98-146. FCC Proceedings on Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996. (September 14, 1998).
5. Eames, T., C.A. Eldering and J. Bernstein. *Reply Comments of Next Level Communications*, RM no. 9244, file no. CCB/CPD 98-15. FCC Proceedings on Petition of Alliance for Public Technology Requesting Issuance of Notice of Inquiry and Notice of Proposed Rulemaking to Implement Section 706 of the 1996 Telecommunications Act. (May 4, 1998).
6. Eames, T., C.A. Eldering and J. Bernstein. *Comments of Next Level Communications*, CC Docket No. 98-11. FCC Proceedings on Petition of Bell Atlantic Corporation for Relief from Barriers to Deployment of Advanced Telecommunications Services. (April 6, 1998).
7. Bernstein, J., T. Eames and C.A. Eldering. *Comments of Next Level Communications*, CC Docket No. 98-32. FCC Proceedings on Petition of Ameritech Corporation to Remove Barriers to Invest in Advanced Telecommunications Capacity. (April 6, 1998).
8. Eldering, C.A. and J. Bernstein. *Comments of Next Level Communications*, CC Docket No. 98-26. Petition of US West Communications, Inc. for Relief from Barriers to Deployment of Advanced Telecommunications Services. (April 6, 1998).
9. Eames, T. and C.A. Eldering. Going All-Digital. *Telephony*, (August 18, 1997).
10. Blasko, J.P., C.A. Eldering and A. Brown. Provisional Applications Offer Patentees Priority. *National Law Journal*, (June 16, 1997).
11. Eames, T., B. Weeks and C.A. Eldering. A Winning Solution. *Telephony*, (June 2, 1997): 150-162.
12. Eldering, C.A. Analysis of Fiber to the Curb and Fiber to the Home Architectures. Internal Report prepared for *Telettra España*. (August, 1990).
13. Eldering, C.A. Electro-Optic Polymeric Thin Films and Device. *Ph.D. Dissertation*, University of California, Davis, (1997).
14. Eldering, C.A., B.J. Walker, S.P. Ilitzki and D.J. Holtzhauer. Temperature Measurements Using Infrared Techniques. *Internal Government Report*, Rome Air Development Center (March, 1986).
15. Eldering, C.A. Evaluation of the Use of p-n Structures as Photodetectors in Silicon Integrated Circuits. *Master's Thesis*, (June, 1985), also published as a Government technical report, RADC-TR-85-123.

ISSUED US PATENTS:

1. U.S. Patent 11,166,074 Creating customized programming content
2. U.S. Patent 11,003,694 Learning systems for pangenetic-based recommendations
3. U.S. Patent 10,667,009 Profiling and identification of television viewers

4. U.S. Patent 10,438,240 Methods and systems using a multi-platform targeted advertising system to select advertisements within a target geographic area
5. U.S. Patent 10,379,812 Treatment determination and impact analysis
6. U.S. Patent 10,231,031 Queue based advertisement scheduling and sales
7. U.S. Patent 10,206,012 Queue based head-end advertisement scheduling method and apparatus
8. U.S. Patent 10,116,983 System and method for managing advertising in program streams
9. U.S. Patent 10,182,258 Profiling and identification of television viewers
10. U.S. Patent 10,104,414 Method and system for targeted advertisement filtering and storage
11. U.S. Patent 9,918,117 System and method for managing advertising in program streams
12. U.S. Patent 9,906,819 Advertisement management system for digital video streams
13. U.S. Patent 9,888,297 Queue based advertisement scheduling and sales
14. U.S. Patent 9,602,884 Customizing programming content
15. U.S. Patent 9,582,647 Attribute combination discovery for predisposition determination
16. U.S. Patent 9,544,631 Queue-based head-end advertisement scheduling method and apparatus
17. U.S. Patent 9,524,194 Performing services on behalf of physical devices
18. U.S. Patent 9,479,803 Alternative advertising in prerecorded media
19. U.S. Patent 9,473,814 Profiling and identification of television users
20. U.S. Patent 9,426,315 Grouping advertisement subavails
21. U.S. Patent 9,432,733 Queue based advertisement scheduling and sales
22. U.S. Patent 9,390,423 Methods and systems for verifying advertisements in a multi-platform targeted advertising system
23. U.S. Patent 9,232,252 Queue-based head-end advertisement scheduling method and apparatus
24. U.S. Patent 9,170,992 Treatment determination and impact analysis
25. U.S. Patent 9,165,604 Alternative advertising in prerecorded media
26. U.S. Patent 9,147,112 Advertisement Detection
27. U.S. Patent 9,124,949 Grouping advertisement subavails
28. U.S. Patent 9,043,827 Method and system for providing conditional access to encrypted content
29. U.S. Patent 9,031,870 Pangenetic Web User Behavior Prediction System
30. U.S. Patent 8,934,843 Weighting factor adjustment in adaptive antenna arrays
31. U.S. Patent 8,930,204 Determining lifestyle recommendations using aggregated personal information
32. U.S. Patent 8,837,920 Alternative Advertising in prerecorded media
33. U.S. Patent 8,813,126 Advertisement Filtering and Storage for Targeted Advertisement Systems
34. U.S. Patent 8,789,091 Queue based advertisement scheduling and sales
35. U.S. Patent 8,788,286 Side effects prediction using co-associating bioattributes
36. U.S. Patent 8,788,283 Modifiable attribute identification
37. U.S. Patent 8,776,111 Methods and systems for generating subscriber usage profiles in a multi-platform targeted advertising system
38. U.S. Patent 8,775,287 Method and system for determining insurance needs

39. U.S. Patent 8,677,401 Grouping advertisement subavails
40. U.S. Patent 8,667,536 Profiling and identification of television viewers
41. U.S. Patent 8,655,915 Pangenetic web item recommendation system
42. U.S. Patent 8,655,908 Predisposition modification
43. U.S. Patent 8,655,899 Attribute method and system
44. U.S. Patent 8,635,087 Aggregating personal information
45. U.S. Patent 8,634,652 Video entity recognition in compressed digital video streams
46. U.S. Patent 8,606,761 Lifestyle optimization and behavior modification
47. U.S. Patent 8,581,873 Elastomeric wave tactile Interface
48. U.S. Patent 8,577,296 Weighting factor adjustment in adaptive antenna arrays
49. U.S. Patent 8,570,938 Method and system for adaptive antenna array pairing
50. U.S. Patent 8,484,677 Advertisement monitoring system
51. U.S. Patent 8,473,457 Method of distributing contact and calendar records
52. U.S. Patent 8,458,121 Predisposition prediction using attribute combinations
53. U.S. Patent 8,458,097 System, method and software for healthcare selection based on pangenetic data
54. U.S. Patent 8,452,619 Masked data record access
55. U.S. Patent 8,424,043 Method and system for detecting unscheduled events and recording programming streams
56. U.S. Patent 8,417,675 Method of distributing contact and calendar records
57. U.S. Patent 8,386,519 Pangenetic web item recommendation system
58. U.S. Patent 8,374,387 Video entity recognition in compressed digital video streams
59. U.S. Patent 8,365,216 Video stream modification to defeat detection
60. U.S. Patent 8,358,204 Dynamic tactile interface
61. U.S. Patent 8,346,307 Method of displaying contact information
62. U.S. Patent 8,335,854 Performing services on behalf of low-power devices
63. U.S. Patent 8,326,648 System for secure mobile healthcare selection
64. U.S. Patent 8,306,975 Expanded interest recommendation engine and variable personalization
65. U.S. Patent 8,290,351 Alternative advertising in prerecorded media
66. U.S. Patent 8,280,633 Weather risk estimation system and method
67. U.S. Patent 8,273,425 Nanotube assisted self-cleaning material
68. U.S. Patent 8,266,256 Virtualization for low-power networks
69. U.S. Patent 8,258,956 RFID tag filtering and monitoring
70. U.S. Patent 8,255,403 Pangenetic web satisfaction prediction system
71. U.S. Patent 8,253,703 Elastomeric wave tactile interface
72. U.S. Patent 8,234,244 Method of distributing contact and calendar records
73. U.S. Patent 8,225,347 Advertisement filtering and storage for targeted advertisement systems
74. U.S. Patent 8,224,835 Expanding attribute profiles
75. U.S. Patent 8,209,319 Compiling co-associating bioattributes

- 76. U.S. Patent 8,200,509 Masked data record access
- 77. U.S. Patent 8,185,597 Providing notifications to an individual in a multi-dimensional personal information network
- 78. U.S. Patent 8,185,461 Longevity analysis and modifiable attribute identification
- 79. U.S. Patent 8,180,675 System and method for automatically managing avail inventory data and avail pricing
- 80. U.S. Patent 8,151,295 Queue based advertisement scheduling and sales
- 81. U.S. Patent 8,150,422 Method of displaying contact information
- 82. U.S. Patent 8,126,486 Adaptive antenna weighting system for wireless local area and personal area networks
- 83. U.S. Patent 8,121,915 Generating financial plans using a personal information aggregator
- 84. U.S. Patent 8,116,616 Alternative advertising in prerecorded media
- 85. U.S. Patent 8,108,406 Pangenetic web user behavior prediction system
- 86. U.S. Patent 8,099,424 Treatment determination and impact analysis
- 87. U.S. Patent 8,087,045 Grouping advertisement subavails
- 88. U.S. Patent 8,077,021 Dynamic tactile interface
- 89. U.S. Patent 8,075,980 Diffraction grating assisted self-cleaning material
- 90. U.S. Patent 8,073,708 Aggregating personal healthcare information
- 91. U.S. Patent 8,073,194 Video entity recognition in compressed digital video streams
- 92. U.S. Patent 8,072,314 Secondary card reader
- 93. U.S. Patent 8,065,324 Weight and diet attribute combination discovery
- 94. U.S. Patent 8,055,643 Predisposition modification
- 95. U.S. Patent 8,051,033 Predisposition prediction using attribute combinations
- 96. U.S. Patent 8,046,798 Profiling and identification of television viewers
- 97. U.S. Patent 8,024,348 Expanding attribute profiles
- 98. U.S. Patent 7,984,466 Advertising management system for digital video streams
- 99. U.S. Patent 7,970,827 Providing notifications to an individual in a multi-dimensional personal information network
- 100.U.S. Patent 7,962,934 Advertising monitoring system
- 101.U.S. Patent 7,952,480 RFID tag filtering and monitoring
- 102.U.S. Patent 7,949,565 Privacy-protected advertising system
- 103.U.S. Patent 7,941,434 Efficiently compiling co-associating bioattributes
- 104.U.S. Patent 7,941,329 Insurance optimization and longevity analysis
- 105.U.S. Patent 7,933,912 Compiling co-associating bioattributes using expanded bioattribute profiles
- 106.U.S. Patent 7,930,714 Video detection and insertion
- 107.U.S. Patent 7,917,438 System for secure mobile healthcare selection
- 108.U.S. Patent 7,870,576 Targeted advertising through electronic program guide
- 109.U.S. Patent 7,844,609 Attribute combination discovery
- 110.U.S. Patent 7,818,310 Predisposition modification

111.U.S. Patent 7,810,114	Advertisement filtering and storage for targeted advertisement systems
112.U.S. Patent 7,809,154	Video entity recognition in compressed digital video streams
113.U.S. Patent 7,801,956	Providing notifications to an individual in a multi-dimensional personal information network
114.U.S. Patent 7,797,302	Compiling co-associating bioattributes
115.U.S. Patent 7,694,318	Video detection and insertion
116.U.S. Patent 7,690,013	Advertisement monitoring system
117.U.S. Patent 7,690,011	Video stream modification to defeat detection
118.U.S. Patent 7,689,682	Obtaining lists of nodes of a multi-dimensional network
119.U.S. Patent 7,500,258	Advertisement subgroups for digital streams
120.U.S. Patent 7,440,674	Alternative advertising in prerecorded media
121.U.S. Patent 7,432,811	RFID tag filtering and monitoring
122.U.S. Patent 7,420,458	Secondary card reader
123.U.S. Patent 7,331,057	Grouping advertisement subavails
124.U.S. Patent 7,328,448	Advertisement distribution system for distributing targeted advertisements in television systems
125.U.S. Patent 7,313,811	Optical conversion device
126.U.S. Patent 7,298,264	RFID tag filtering and monitoring
127.U.S. Patent 7,260,823	Profiling and identification of television viewers
128.U.S. Patent 7,240,355	Subscriber characterization system with filters
129.U.S. Patent 7,177,844	Apparatus and method for activation of a security module in a set-top retail environment
130.U.S. Patent 7,152,237	Delivering advertisements to the set-top-box
131.U.S. Patent 7,150,030	Subscriber characterization system
132.U.S. Patent 7,062,510	Consumer profiling and advertisement selection system
133.U.S. Patent 7,039,932	Queue-based head-end advertisement scheduling method and apparatus
134.U.S. Patent 6,915,530	Ingress detection and characterization by time/frequency map
135.U.S. Patent 6,882,709	Enhanced broadband telephony services
136.U.S. Patent 6,880,170	Ingress detection and attenuation
137.U.S. Patent 6,820,277	Advertising management system for digital video streams
138.U.S. Patent 6,714,917	Subscriber identification based on electronic program guide data
139.U.S. Patent 6,704,930	Advertisement insertion techniques for digital video streams
140.U.S. Patent 6,684,194	Subscriber identification system
141.U.S. Patent 6,615,039	Advertisement subgroups for digital streams
142.U.S. Patent 6,560,578	Advertisement selection system supporting discretionary target market characteristics
143.U.S. Patent 6,457,010	Client-server based subscriber characterization system
144.U.S. Patent 6,324,519	Advertisement auction system
145.U.S. Patent 6,321,384	Noise reduction in cable return paths

146.U.S. Patent 6,317,884	Video, data, and telephony gateway
147.U.S. Patent 6,298,348	Consumer profiling system
148.U.S. Patent 6,216,129	Advertisement selection system supporting discretionary target market characteristics
149.U.S. Patent 6,078,593	Method and apparatus for reliable operation of universal voice grade cards
150.U.S. Patent 5,881,362	Method of ingress noise reduction in cable return paths
151.U.S. Patent 5,742,591	Interference cancellation system for CATV return transmissions
152.U.S. Patent 5,479,451	Method and device for data recovery in burst mode systems
153.U.S. Patent 5,408,525	Diverter interface between two telecommunication lines and a station set
154.U.S. Patent 5,357,588	Opto-electronic transducer device for optical link termination equipment and application thereof to various types of optical link
155.U.S. Patent 4,813,772	Electro-optical interface
156.U.S. Patent 4,698,587	Method of characterizing critical timing paths and analyzing timing related failure modes in very large scale integrated circuits

FUNDED RESEARCH PROPOSALS:

- Raised \$3.6 million in capital (December 1999 through April 2000) for Expanse Networks, Inc. for development of systems and intellectual property in the area of targeted advertising.
- Kowel, S.T., A. Knoesen (principal investigators) and C.A. Eldering (proposal co-author), *Polymeric Ultrathin Film Multilayered Modulators*, funded by NSF Quantum Electronics, Waves and Beams Program for approximately \$300,000 over 3 years.

PROFESSIONAL ACTIVITIES AND PUBLIC RECOGNITION:

- Recognized in *IAM Strategy 250 – The World's Leading IP Strategists* published by *Intellectual Asset Management (IAM) Magazine* (2009-2011). *IAM Strategy 300* (2012-2013).
- Certified Passive Home Consultant, *Passive Home Institute*.
- Guest Editor. Feature topic: Patents and Telecommunications. *IEEE Communications Magazine* (July, 2000).
- Cited in "Who Owns the Knowledge Economy? Patent Wars." *The Economist*, (April 8-14, 2000).
- Cited in "Access: Not a Rocket Science" *Cable World*, (February, 2000).
- Cited in "Patents Considered Vital to Thrive on the Internet." *New York Times Outlook 2000*, (December, 1999).
- Guest Editor for Feature topic: Broadband Technologies and Trials. *IEEE Communications Magazine* (October, 1999).
- Guest Editor for Feature topic: Broadband Deployment in a Deregulated Environment. *IEEE Communications Magazine* (July, 1998).
- Member of *Network Reliability and Interoperability Council* and contributor to NRIC reports to FCC on interoperability and telecommunications deregulation.
- Senior Member, *IEEE*.
- Chair, *Access Subcommittee of IEEE Communications Society*.
- Member, Technical Program Committee and Session Chair, *IEEE Communications Society Broadband '96 Conference*.
- Invited speaker, 1995 *IEEE/LEOS Summer Topical Meeting*.

- Co-chair, 1991 *SPIE Fibers '91 Conference*.
- Chair, 1993 *SPIE Conference on LANs and MANS*.
- Invited participant, 1990 *Gordon Conference on Organic Thin Films*.

LANGUAGES:

- English: native language
- Spanish: speak, read, and write
- Portuguese: speak, read and write
- German: working knowledge
- Italian: working knowledge