UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

US CONEC LTD.,
Petitioner,

v.

SENKO ADVANCED COMPONENTS, INC.,
Patent Owner.

Case No. IPR2024-00121
U.S. Patent No. 11,181,701

DECLARATION OF WILLIAM SINGHOSE, PH.D.
IN SUPPORT OF PETITION FOR INTER PARTES REVIEW OF
U.S. PATENT NO. 11,181,701

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12. Claim 36, Element [36k] – "wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate

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13. Claim 36, Element [36l] – “wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface when the elongate front section moves rearward to depress the depressible latch arm.”.....282

N. Claim 46 – “The fiber optic connector as set forth in claim 36, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end.” 282

O. Claim 47 – “The reversible polarity fiber optic connector as set forth in claim 46, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis.” 283

P. Claim 53 – “The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules.”.....283

XIII. CONNELLY-LIN’658, IN VIEW OF NGUYEN RENDER OBVIOUS CLAIMS 16-18 AND 32-34. 284

A. Motivation to Combine 284

B. Reasonable Expectation of Success.....286

C. Claim 16 – “The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 6.25 mm.” 286

a. Connelly-Lin’658 286

b. Nguyen 287

c. Motivation to Combine 287

D. Claim 17 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 5.25 mm." 288

E. Claim 18 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less." 288

F. Claim 32 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less." 289

G. Claim 33 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch less than 5.25 mm." 289

H. Claim 34 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less." 289

XIV. CONNELLY-LIN'658-LIN'293 IN VIEW OF NGUYEN RENDER OBVIOUS CLAIMS 37-45 AND 48-52. 290

A. Motivation to Combine 290

B. Reasonable Expectation of Success.....292

C. Claim 37 – "The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less." 292

a. Connelly-Lin'658-Lin'293.....292

b. Nguyen 293

c. Motivation to Combine 293

D. Claim 38 – "The fiber optic connector as set forth in claim 37, wherein the connector housing comprises a single front body and a single back body." 294

E. Claim 39 – "The fiber optic connector as set forth in claim 38, further comprising first and second ferrule springs received on the first and second ferrules, respectively." 294

F. Claim 40 – "The fiber optic connector as set forth in claim 39, wherein each of the first and second ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges." 294

G. Claim 41 – "The fiber optic connector as set forth in claim 40, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall." 295

H. Claim 42 – "The fiber optic connector as set forth in claim 41, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end." 295

I. Claim 43 – "The fiber optic connector as set forth in claim 42, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis." 296

J. Claim 44 – "The fiber optic connector as set forth in claim 43, wherein the first and second optical ferrules have a pitch less than 5.25 mm." 297

K. Claim 45 – "The fiber optic connector as set forth in claim 44, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less." 297

L. Claim 48 – "The fiber optic connector as set forth in claim 47, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less." 298

M. Claim 49 – "The fiber optic connector as set forth in claim 48, wherein the first and second optical ferrules have a pitch less than 5.25 mm." 298

N. Claim 50 – "The fiber optic connector as set forth in claim 49, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less." 298

O. Claim 51 – "The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules have a pitch less than 5.25 mm." 299

P. Claim 52 – "The fiber optic connector as set forth in claim 51, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less." 299

XV. CONCLUSION 300

TABLE OF MATERIALS CONSIDERED

Exhibit Number	Description
1001	U.S. Patent No. 11,181,701 to Wong *et al.* ("'701 Patent")
1002	File History for U.S. Patent Application Serial No. 17/200,134 which issued as U.S. Patent No. 11,181, 701
1004	*Curriculum Vitae* of William Singhose, Ph.D.
1005	PCT App. Pub. No. WO 2017/127208 to Lee ("Lee")
1006	U.S. Patent No. 9,557,495 to Raven ("Raven")
1007	U.S. Patent App. Pub. No. 2017/0343740 to Nguyen ("Nguyen")
1008	U.S. Patent No. 6,511,230 to Connelly ("Connelly")
1009	U.S. Patent No. 9,625,658 to Lin ("Lin'658")
1010	U.S. Patent No. 8,641,293 to Lin ("Lin'293")
1011	Norton, "Machine Design: An Integrated Approach, Third Edition," Pearson Education, Inc. 2006 ("Norton")
1012	Kordz, "RJ45 CAT6 Field Termination Connector & Strain Relief," Technical Data Sheet, accessed at https://futurereadysolutions.com/wp-content/uploads/ONE-RJ45-Connectors-Datasheet-190107.0.pdf
1013	"HDI-45 connector," *Wikipedia*, accessed at https://en.wikipedia.org/wiki/HDI-45_connector
1014	U.S. Patent No. 5,915,058 to Clairardin et al. ("Clairardin")
1015	U.S. Patent No. 5,719,977 to Lampert et al. ("Lampert")
1016	"Maelstrom (ride)," Wikipedia, accessed at en.wikipedia.org/wiki/Maelstrom
1017	Google Data Centers Gallery, accessed at https://www.google.com/about/datacenters/gallery/
1018	"19-Inch Rack," Lite-On, accessed at https://liteon-cips.com/products/racks/19-inch-rack/

Exhibit Number	Description
1019	"Fiber Optic Rack Mount Enclosure, 3-Panel 1 RMS," Computer Cable Store, accessed at https://www.computercablestore.com/fiber-optic-rack-mount-enclosure-3-panel-1-rms
1020	"What Is Optical Fiber Technology, and How Does It Work?," NAI, accessed at https://www.nai-group.com/optical-fiber-technology-how-it-works/
1021	"Fiber Optic Adapter/Coupler Tutorial," FS Community, accessed at https://community.fs.com/blog/fiber-optic-adaptercoupler-tutorial.html

I, William Singhose, hereby declare:

I. INTRODUCTION

A. Scope of Engagement

1. I have been retained as an expert witness by counsel for Petitioner US Conec Ltd. ("Petitioner") in connection with the above-captioned *inter partes* review ("IPR") proceeding.

2. I submit this Declaration in the above-captioned proceeding to provide my expert opinion in support of Petitioner's Petition for *inter partes* review (IPR) of U.S. Patent No. 11,181,701 (the "'701 Patent", EX1001).

3. The opinions, and the bases of those opinions, to which I will testify, if asked, are set forth in this Declaration. My opinions in this Declaration are based upon the information that I have received to date. They may be supplemented or modified if additional information is received. They may also be supplemented to rely on additional information or opinions provided by the parties (or witnesses retained by the parties) and issues that may arise.

B. Compensation

4. I am being compensated for my time spent working on this IPR. My compensation is not in any way dependent on the statements I set forth herein or the outcome of this proceeding.

C. Professional Qualifications and Experience

5. I believe that I am well qualified to serve as a technical expert in this matter based upon my educational and work experience. A copy of my *curriculum vitae* is submitted as EX1003.

6. I am a Professor of Mechanical Engineering at the Georgia Institute of Technology ("Georgia Tech"). I received a B.S. in Mechanical Engineering from the Massachusetts Institute of Technology ("MIT") in 1990. I then received an M.S. in Mechanical Engineering from Stanford University in 1992. Finally, I received a Ph.D. in Mechanical Engineering from MIT in 1997. After receiving my Ph.D., I was a postdoctoral researcher at MIT before becoming a professor at Georgia Tech in 1998.

7. Based on my work experience, described in my *curriculum vitae* and in more detail below, I am knowledgeable about the subject matter of the '701 Patent, and the related prior art. The primary elements of the subject matter and prior art include connectors, housings, latches, couplings, springs, and flexures. I have experience working with each of these key elements, and combinations of these elements.

8. My qualifications as an expert in this subject matter stem from my industry work experience, as well as my experience as a Professor in the Woodruff

School of Mechanical Engineering at Georgia Tech performing research, teaching, and consulting.

9. In my current position at Georgia Tech, I teach courses in mechanical design, dynamics, and controls. I also lead teams of professors, post-docs, graduate students, and undergraduate students that conduct research in mechanical design, dynamics, controls, automation, robotics, spacecraft, and human-machine interfaces. During my 25 years at Georgia Tech, I have also had visiting academic appointments at MIT, Stanford, the Polytechnic University of Madrid, and the Tokyo Institute of Technology.

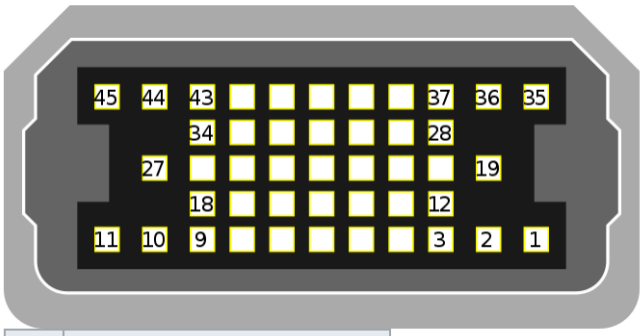
10. Before starting my teaching career at Georgia Tech, I worked as a full-time mechanical engineer for several companies, including Walt Disney World, Apple Computers, Inc., and Convolve, Inc. During my tenure at Georgia Tech I have continued to actively work for companies as either a part-time consultant or as a full-time engineer. For example, from 2017-2020 I took a leave of absence from Georgia Tech to work full-time at Google.

11. In my role at Walt Disney World, I developed connectors for securing underwater ultrasonic sensors for the Maelstromwater ride in the Norway pavilion at EPCOT. [EX1016, Wikipedia.] The sensors operated underwater to detect a fin along the bottom of the boats so that the position of each boat was known and the boats could be kept properly separated.

12. I also designed and developed a number of structures and components for other Disney Parks' attractions, including operational control procedures for the Body Wars simulators. These simulators were rooms that held about 40 people at a time. The entire rooms, and the guests seated within, were automatically moved up, down, side-to-side, and through a range of inclinations via a series of preprogrammed motions. The machines were equipped with numerous sensors that accurately measured the state of the machine and enabled accurate feedback control of the structure. One of the key elements I worked on was the door latches that automatically locked and unlocked the doors leading into the simulator rooms.

13. For Apple Computers, my primary responsibility was the design of the AudioVision 14 Display, which included the High-Density Interconnect 45 (HDI-45) connector. This connector was one of Apples' cable-to-onboard video connectors. It was a 45-pin connector that was used in the first generation Power Mac computers (the Power Macintosh 6100, 7100, and 8100) specifically for the Apple AudioVision 14 Display. A schematic diagram of the connector and the pinout is provided below.

AudioVision HDI-45 pinout[4]



Pin	Function
1	Analog audio ground
2	Audio input shield
3	Audio input (L)
4	Audio input (R)
5	Audio output (L)
6	Audio output (R)
7	Reserved
8	Monitor ID sense line 1
9	Monitor ID sense line 2
10	Video ground/shield (G)
11	Video output (G), 75Ω
12	Video input power ground
13	+5V for camera
14	Reserved
15	
16	
17	
18	Monitor ID sense line 3
19	S-video input shield
20	S-video input, luminance (Y)
21	S-video input, chroma (C)
22	Reserved
23	Not used
24	Reserved
25	
26	Video ground/shield (R)
27	Video output (R), 75Ω
28	I^2C data signal
29	I^2C clock signal
30	Reserved
31	Monitor ID
32	Monitor ID
33	Vertical sync
34	Composite sync
35	ADB power, +5V
36	ADB ground
37	ADB data
38	Keyboard switch
39	Reserved
40	
41	Monitor ID
42	Horizontal sync
43	Video sync ground
44	Video ground/shield (B)
45	Video output (B), 75Ω

EX1012, 2-3.

14. During my years at Google, I worked in both the Advanced Technology and Projects lab (ATAP), as well as the Google augmented reality

division. While working for Google, I developed prototypes of several consumer electronic products. The prototypes utilized numerous connectors that enabled the microcontrollers within the devices to both read sensors and control small actuators, such as linear resonant actuators (LRAs). After returning to Georgia Tech in 2020, Google provided approximately $750,000 to sponsor my research activities in the area of LRA dynamics and control for consumer electronics.

15. I have commercialized operator-aiding technologies developed in my Georgia Tech lab by founding two companies: CAMotion Cranes and InVekTek. CAMotion Cranes designed and installed crane control systems that decrease payload sway, automatically avoid obstacles, and improve crane safety. These improvements were achieved through sensor systems and control methods that my research group developed, patented, and deployed. The products developed by CAMotion Cranes included PLCs, drives, and communication card chassis, which utilized equipment racks with numerous connectors and cable management structures. CAMotion Cranes was acquired by PAR Systems in 2013. InVekTek develops and commercializes control systems for large robotic and industrial material-handling systems. InVekTek products include control systems that read sensor signals and accurately control machine actuators. These products also require electronic systems with numerous connectors.

16. In terms of my previous work in intellectual property law, I worked as an expert on *ITC-1197: Certain Portable Gaming Console Systems with Attachable Handheld Controllers and Components Thereof II.* That case involved portable gaming devices that used detachable connectors that allowed a user to detach the game control modules from the main console and then easily reattach them. I also analyzed the internal electronic structure of the devices, which included several compact connectors. Finally, the infringement and validity analyses also involved adjustable latching and release mechanisms of several prior art products, as well as those provided in the prior art publications.

17. On the basis of my education and the experience described above, I believe I am well qualified to give the opinions set out herein.

D. Materials Considered

18. For purposes of this Declaration, I have reviewed and, where applicable, relied upon the information and/or teachings of the documents identified in the Table of Materials Considered, above.

19. I confirm that to the best of my knowledge, the accompanying exhibits are true and accurate copies of what they purport to be, and that an expert in the field would reasonably rely on them to formulate opinions such as those set forth in this Declaration.

II. LEGAL STANDARDS FOR INVALIDITY

20. I understand that in *inter partes* review proceedings, a patent claim is construed using the same standard that would be used in a civil action, and that a claim should be construed in accordance with the ordinary and customary meaning of the claim as it would be understood by a person of ordinary skill in the art ("POSITA").

21. While I am neither a patent lawyer nor an expert in patent law, I have been informed of the applicable legal standards for invalidity. I have relied upon these legal principles, as explained to me by counsel, in forming my opinions set forth in this Declaration.

22. I understand that a petitioner in an IPR proceeding must prove unpatentability by a preponderance of the evidence. I understand that the preponderance of the evidence standard means that the petitioner must show that it is more likely than not that a patent claim is not patentable. The statements below are my understanding regarding the law as explained to me by counsel for Petitioner. I have used my understanding of these legal principles, as set forth in this section, to analyze the '701 Patent.

23. I understand that a patent may be deemed invalid based on anticipation or obviousness over the prior art.

24. I understand that in undertaking an invalidity analysis, the claims are to be interpreted from the perspective of a POSITA, at the time of the invention.

A. Obviousness

25. I have been informed that a patent claim is invalid as being obvious in view of the prior art if the differences between the patented subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art. [*See* 35 U.S.C. § 103.] In making a determination of obviousness, I understand that the following factors are analyzed: (i) the scope and content of the prior art; (ii) the differences, if any, between the prior art and the claims at issue; (iii) the level of ordinary skill in the pertinent art; and (iv) objective evidence of non-obviousness, if any exists.

26. I have been informed that any of the following rationales are some of the acceptable bases for the conclusion that a claim is obvious: (i) the claimed invention is simply a combination of prior art elements according to known methods to yield predictable results; (ii) the claimed invention is a simple substitution of one known element for another to obtain predictable results; (iii) the claimed invention uses known techniques to improve similar devices (methods, or products) in the same way; (iv) the claimed invention was "obvious to try" because it was a choice from a finite number of identified, predictable solutions, with a reasonable expectation of success; (v) there is known work in one field of endeavor

that may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces, if the variations would have been predictable to a POSITA; or (vi) there is some teaching, suggestion, or motivation in the prior art that would have led a POSITA to modify the prior art references or to combine prior art reference teachings to arrive at the claimed invention.

27. I have been informed that, in order for a patent claim to be considered obvious, at the time the invention was made, each and every limitation of the claim must be present within the prior art, or within the prior art in combination with the general knowledge held by a POSITA, and that such a person would have a reasonable expectation of success in combining these teachings to achieve the claimed invention. I also understand that the reason to select and combine features, the predictability of the results of doing so, and a reasonable expectation of success of doing so may be found in the teachings of the prior art themselves, in the nature of any need or problem in the field that was addressed by the patent, in the knowledge of a POSITA in the field at the time, as well as in common sense or the level of creativity exhibited by a POSITA. There need not be an express or explicit suggestion to combine references.

28. I understand that substituting one known element for another known element would have been obvious when it leads to reasonably predictable results.

29. I understand that a combination of elements would have been obvious when a POSITA has a good reason to pursue the combination, which is among a finite number of known options within his or her technical grasp, and leads to reasonably expected results.

30. A prior art reference can be said to teach away from the claimed invention when a POSITA would be discouraged from following the path set out in the reference or would be led in a direction divergent from the path that was taken in the claimed invention. The mere disclosure of more than one alternative does not constitute a teaching away from alternatives that are not disclosed when the prior art does not criticize, discredit, or otherwise discourage the solution claimed in the alleged invention. Similarly, a prior art reference that merely expresses a general preference for an alternative invention does not teach away.

31. I understand that objective evidence of non-obviousness includes (i) commercial success, (ii) long-felt but unresolved need, (iii) failure of others, (iv) skepticism by experts, and (v) unexpected results.

32. I have relied upon this understanding of the applicable legal standards in reaching my opinion set forth in this Declaration.

B. Miscellaneous

33. I also understand that the claims are to be construed according to the same claim construction standard that district courts use wherein claim terms are

given their ordinary and customary meaning from the perspective of a POSITA at the time of the invention.

34. The analysis in this Declaration is in accordance with the above-stated legal principles.

III. BACKGROUND OF THE TECHNOLOGY

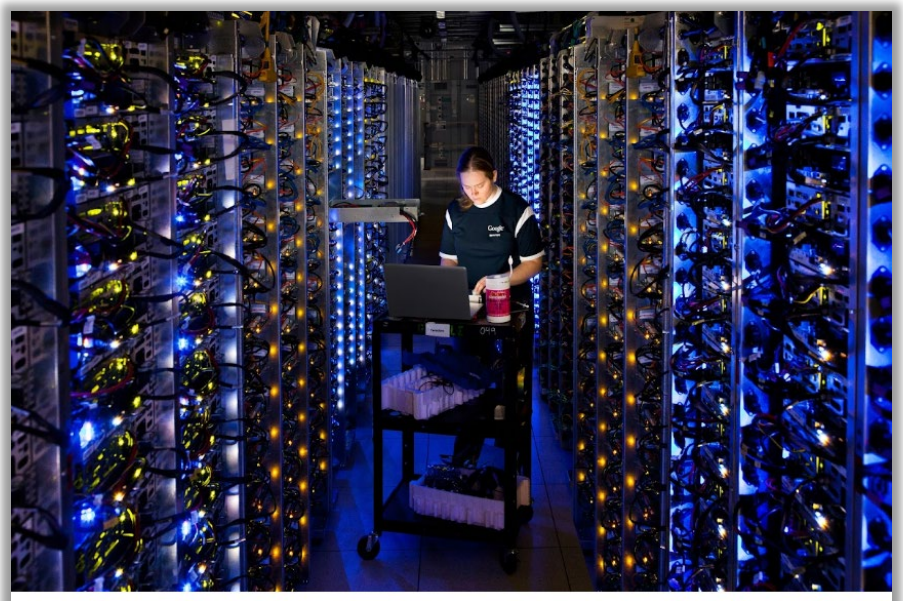
35. My discussion of the background of the technology is intended to provide some context for my later analysis of the ’701 Patent and prior art. This discussion provides a high-level overview of the structure and components used in a data center so that the environment of a typical use-case for the claimed technology can be established. This background discussion is not intended to reflect the meaning of any particular claim term in a patent, which must be assessed in view of the specification and the context of the claim language. Rather, this discussion is simply a general overview of fiber optic cables, connectors, adapters, and other components as they are commonly used.

36. The technology at issue generally relates to fiber optic connectors of the type commonly used in data centers. In general, using optical fiber provides benefits such as extremely wide bandwidth and low-noise operation. Optical fiber has been used for a variety of applications, including but not limited to, broadband voice, video, and data transmission.

A. Fiber Optic Network Equipment

37. Public and private fiber optic networks used for voice, video, and data transmission often include fiber optic equipment located in data distribution centers or central offices to support interconnections. The patent at issue here generally relates to details of the connectors, which interconnect fiber optic cables in these data distribution centers.

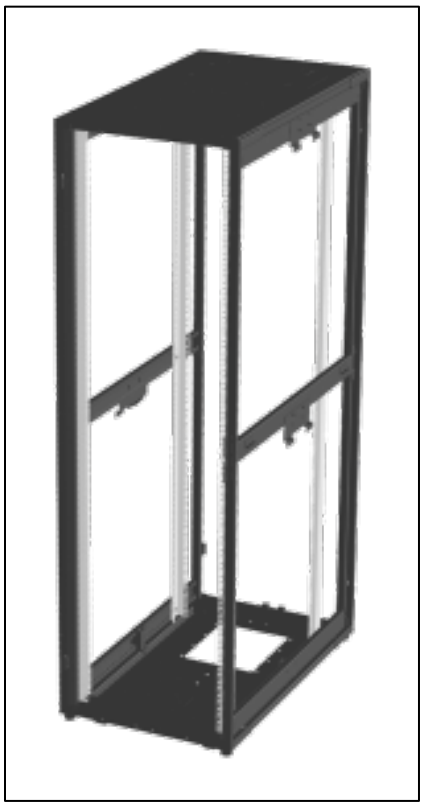
38. A data center is a facility that houses communication equipment used to provide a variety of services, including, for example, connectivity to the Internet. Some large companies (e.g., Google, Meta, and Amazon) operate their own data centers. Data centers may also house equipment for multiple companies or entities that lease or rent space or equipment in the data center. Reproduced below is a picture of the inside of a Google data center.



Denise diagnoses an overheated CPU at our data center in The Dalles, Oregon. For more than a decade, we have built some of the world's most efficient servers.

[EX1017, Google Data Centers].

39. Data centers use "racks" to mount electronic equipment. A rack is an open structure for mounting equipment such that cables can be readily attached and detached. Data centers typically contain many such racks. Equipment is typically attached to racks via mounting holes on the sides of the rack. Racks are commonly 19 inches or 23 inches in width, but other dimensions are possible. [*See, e.g.*, EX1005, Lee, ¶0068 ("an equipment rack 302, which may have conventional dimensions of 19" (482.60 mm) in width").] Reproduced below is a picture showing an example mounting rack used in a data center.



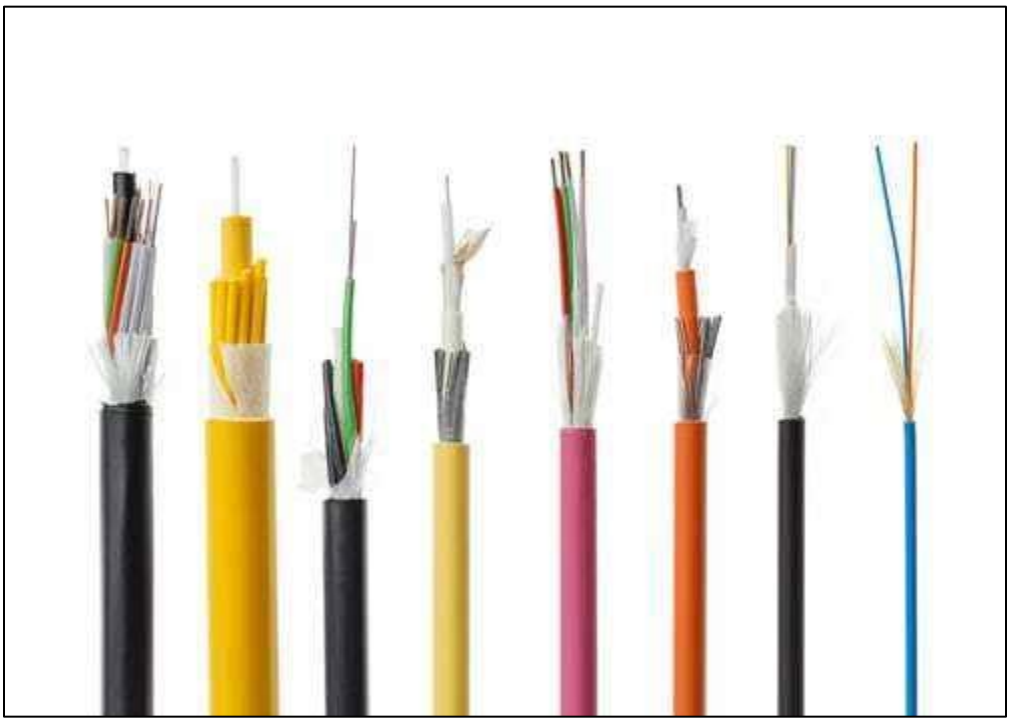
[EX1018, 19-Inch Rack].

40. An enclosure is a box-like housing, chassis, or frame that can be mounted to a rack in a data center. An enclosure can be configured to house equipment for connecting fiber optic cables. Such equipment can take various forms, including, for example, modules, cassettes, adapter plates, and patch panels. An example of an enclosure used to house equipment for connecting fiber optic cables is shown below.



[EX1019, Fiber Optic Rack Mount Enclosure].

41. In general terms, a fiber optic cable and assembly contains one or more optical fibers that are used to carry light signals. [*See* EX1005, Lee, ¶0010; EX1007, Nguyen, ¶25.] The optical fibers are made of plastic or glass. [*See* EX1015, Lampert, 1:32–34.] Different types of fiber optic cables include a different number of optical fibers. For example, a simplex fiber optic cable includes only a single optical fiber. [*See* EX1014, Clairardin, 1:12–14.] A duplex fiber optic cable includes two optical fibers. A multi-fiber fiber optic cable includes more than two optical fibers. The following are examples of fiber optic cables:



[EX1020, What Is Optic Fiber Technology (showing various examples of single and multimode fiber optic cables)].

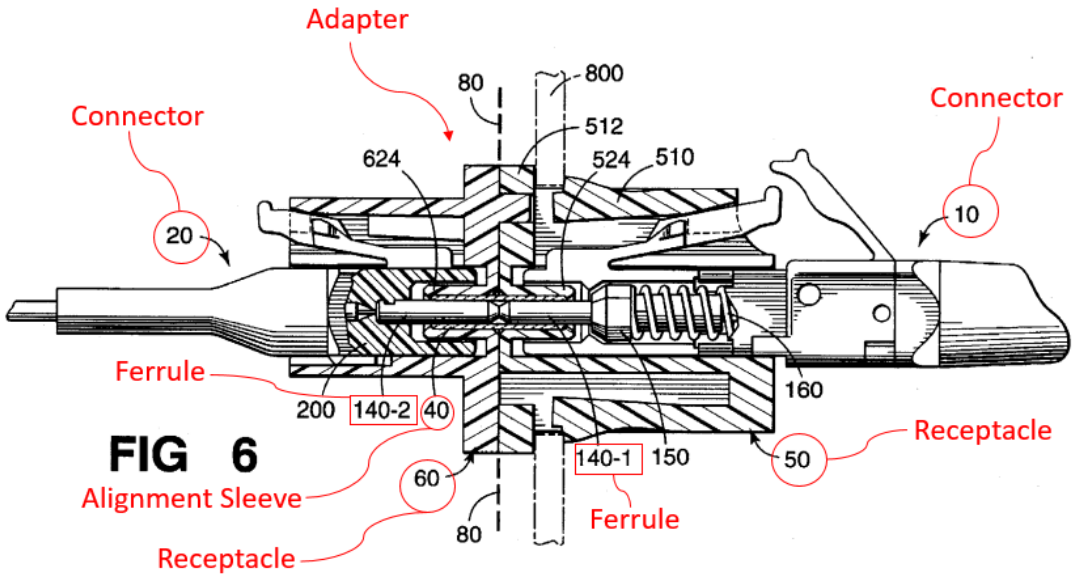
B. Fiber Optic Connectors and Adapters

42. Fiber optic connectors and adapters can be used to releasably join optical fibers together, for example, in a panel, backplane, circuit board, or the like. [*See* EX1014, Clairadin, 1:26–29; EX1005, Lee, ¶0003.] Fiber optic connectors (plugs) are standardized devices that can be attached to the terminal ends of fiber optic cables. [*See* EX1005, Lee, ¶0003; EX1014, Clairadin, 1:9–13; EX1015, Lampert, 1:11–16.] Fiber optic connectors typically include a housing receiving an optical cable, a ferrule secured to the end of the optical fiber projecting from the

other end of the housing, and a locking device, such as a latch, releasably securing the fiber connector's housing to an adaptor. [*See* EX1007, Nguyen, ¶¶37–38.]

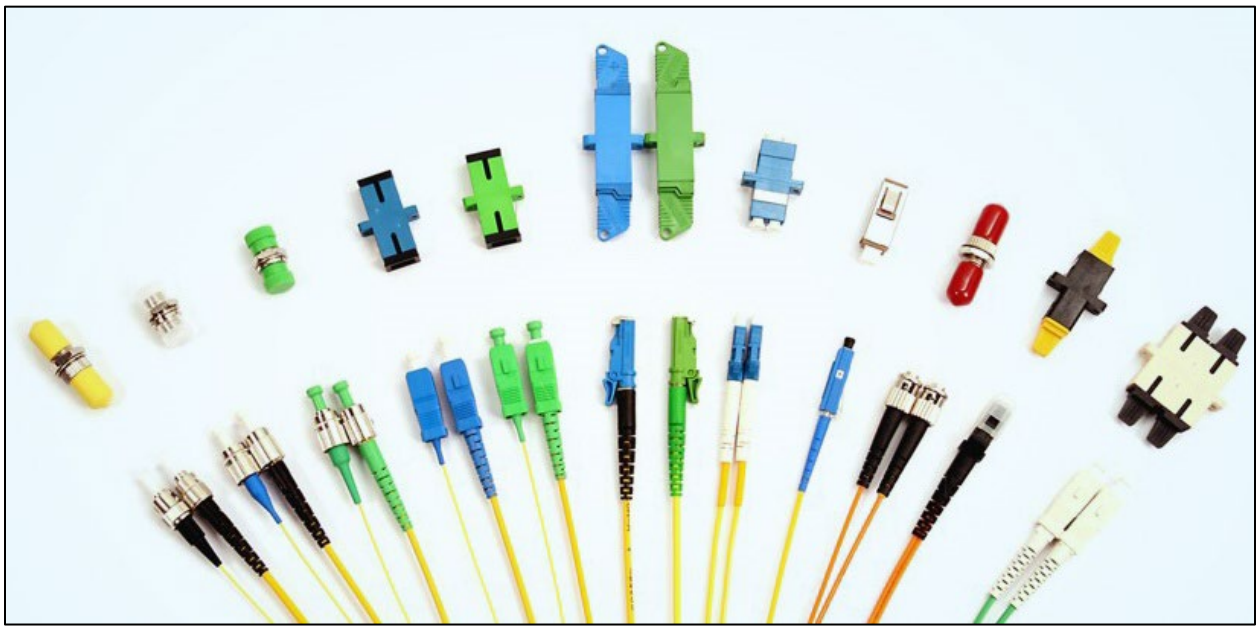
43. One or more pairs of fiber optic connectors can be mated in a fiber optic adapter. [*See* EX1014, Clairadin, 1:22-25.] Fiber optic adapters (sockets) receive and couple the fiber optic connectors together such that the encapsulated fibers within the connectors are connected end-to-end. [*See* EX1014, Clairadin, 1:25-26.] Fiber optic connectors and adapters can be a fast and efficient way to connect fiber optic cables.

44. The primary function of an adapter is maintaining a coupling arrangement between two optical fiber ends "such that the core of one of the fibers is axially aligned with the core of the other fiber." [EX1015, Lampert, 1:16–19.] In a typical connection between a pair of optical fibers, the fibers' ferrules "are butted together—end to end—and light travels from one to the other along their common central axis." [EX1015, Lampert, 1:37–39.] For example, Lampert discloses a well-known fiber optic coupling arrangement in an adapter that includes a receptacle 50 for receiving an optical fiber connector 10, a receptacle 60 for receiving an optical fiber connector 20, and an alignment sleeve 40 to coaxially align a ferrule 140-1 of optical fiber connector 10 with a ferrule 140-2 of optical fiber connector 20, as annotated in Figure 6, reproduced below. [EX1015, Lampert, 6:62–7:8.]



EX1015, Lampert, FIG. 6 (annotated).

45. A variety of standard form fiber optic connectors and adapters are known in the art to support connections of different numbers of optical fibers. [EX1015, Lampert, 1:43-48.] For example, there are several different types of standardized fiber optic connectors and adapters, including SC, FC, ST, MPO/MTP, and LC. [*See* EX1005, Lee, ¶0066; EX1007, Nguyen, ¶0020; EX1014, Lampert, 1:43-48, 2:3-8.] The following illustration shows various different adapters and connectors.



EX1021, Fiber Optic Adapter/Coupler Tutorial (showing various examples of connectors and adapters).

46. LC connectors terminate one or more optical fibers. LC connectors are described in the following industry standards: FOCIS-10, Fiber Optic Connector Intermateability Standard – Type LC, TIA/EIA-604-10-A (March 2002); IEC 61754-20 Fibre Optic Connector Interfaces – Part 20: Type LC Connector Family, Second Ed. (2012).

47. MPO (Multi-Fiber Push-On/Pull-Off) connectors typically terminate between 4 and 48 fibers, with 12 and 24 being common configurations. MPO connectors are described in the following industry standard: FOCIS-5, Fiber Optic Connector Intermateability Standard – Type MPO, TIA/EIA-604-5-A (September 2001); IEC-61754-7, Fiber Optic Connector Interfaces – Part 7: Type MPO

connector family, Third Ed. (2008). MTP® is a brand of MPO connector developed by US Conec, Ltd. (Petitioner).

C. Fiber Optic Connection Concentration

48. The data rates that can be provided by fiber optic equipment in a data center are governed by the connection bandwidth supported by the fiber optic equipment. [*See* EX1005, Lee, ¶0004.] The bandwidth is governed by the number of optical fiber ports included in the fiber optic equipment and the data rate capabilities of a transceiver connected to the optical fiber ports. [*See* EX1005, Lee, ¶0004.] Providing higher density interconnection arrangements in optic telecommunication equipment, such as the interconnection arrangement shown in Figure 11 of Lee, reproduced below, increases the network bandwidth. [EX1005, Lee, ¶¶0025, 0068; EX1015, Lampert, 1:64–66.] Therefore, there is generally a desire to design an "optical connector having reduced parts count, and which installs easily in a small space," to these achieve higher density interconnection arrangements. [EX1015, Lampert, 1:66–2:2.]

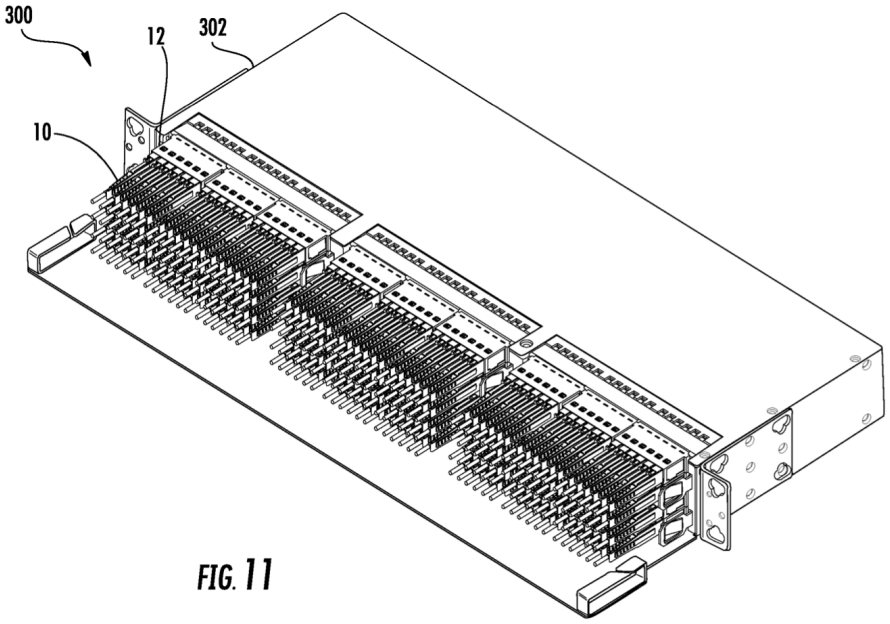


FIG. 11

EX1004, Lee, FIG. 11 (Showing a high-density interconnect).

D. Fiber Optic Polarity

49. Fiber optic equipment commonly features patch panel adapters having two-port interfaces for connecting duplex patch cords such that one port is dedicated for transmitting data and the other port is dedicated for receiving data. Each port of the patch panel is identified by its polarity, which defines the direction that the optical signal travels in the fiber. The port's polarity helps indicate whether data is being transmitted from or received at the port. A transmitter port (e.g., polarity B) of one patch panel must be connected to a receiver port (e.g., polarity A) of another patch panel.

50. Duplex optic fiber connectors are typically keyed to ensure that the polarity of each connector's ferrule properly matches the polarity of its

corresponding port in the adapter panel. For some connectors, such as LC duplex connectors, the orientation of the connector's two ferrules with respect to the connector's latch is used to indicate the polarity of the connector. For example, the connector's latch being disposed above the two ferrules—right ferrule having "A" polarity and left ferrule having "B" polarity—indicates a first polarity, whereas the connector's latch being disposed below the two ferrules—right ferrule having "A" polarity and left ferrule having "B" polarity—indicates a second polarity opposite to the first polarity. [*See, e.g.*, EX1006, Raven, 12:35–56; FIGs. 5 and 6; EX1009, Lin'658, 5:59-6:9, FIGs. 5 and 6.]

51. Typically for a network of multiple patch panels, the polarity of two ports in the connection interface needs to be switched to accommodate different types of patch cords, such as straight-through cords (A-to-B patch cords) and crossed patch cords (A-to-A patch cords). Reversing the polarity of a fiber optic connector allows the polarity of its corresponding port to be switched without having to provide another port in the patch panel or another type of fiber optic connector with the patch cord. Therefore, there is generally a desire to provide fiber optic connectors with latches that can be removably coupled to the connectors' housing to provide alterable polarity. [*See, e.g.*, EX1006, Raven, 12:35–56; FIGs. 5 and 6; EX1009, Lin'658, 5:59-6:9, FIGs. 5 and 6.]

IV. U.S. PATENT NO. 11,181,701

A. Background

52. U.S. Patent No. 11,181,701 (EX1001) (the "'701 Patent"), entitled "Optical Connectors with Reversible Polarity and Method of Use," issued on November 23, 2021, was filed as U.S. Patent Application Serial No. 17/200,134 (the "'134 Application") on March 12, 2021. The '134 Application is a continuation of the U.S. application No. 16/297,607 filed on March 9, 2019, titled "Optical Connectors with Reversible Polarity and Method of Use", which is a Continuation of PCT/US18/16049 filed on January 30, 2018, titled "Optical Connectors with Reversible Polarity", which claims benefit to U.S. Provisional Application Nos. 62/581,961 filed November 6, 2017, 62/546,920, filed August 17, 2017, 62/485,042 filed April 13, 2017, 62/463,901 filed February 27, 2017, 62/463,898 filed February 27, 2017, 62/457,150 filed February 9, 2017, 62/452,147 filed January 30, 2017. Based on the above, the earliest priority date patent owner may assert for the '701 Patent is January 30, 2017.

53. The '701 Patent purports to disclose embodiments of an optical connector that "allow for easy, quick, and safe swapping of the left and right side ferrules in a connector" to "change in polarity of the duplex connector without twisting the fibers or performing any complex disassembly of the duplex connector." [EX1001, '701 Patent, 6:27–32.] This avoids "twisting the individual

LC connector tips 180 degrees," which "can cause wear and/or damage to the delicate fibers" or "partially or completely disassembl[ing]" the duplex connector, which "requires specialized tools and preparation time to perform safely and accurately." [EX1001, '701 Patent, 6:14–26.] The optical connector can also have "a remote release mechanism" to "remove cable assembly connectors that are closely spaced together" so that the technician avoids "damaging surrounding connectors, accidentally disconnecting surrounding connectors, disrupting transmissions through surrounding connectors, and/or the like." [EX1001, '701 Patent, 5:44-49.]

54. The '701 Patent generally discloses optical connectors having reversible polarity capability. [EX1001, '701 patent, Title.] In some embodiments, the optical connector 100 has a connector housing 120, two ferrules 110a, 110b within the connector housing, a removable latch 130, and a latch coupling 122 to which the removable latch 130 can attach on each of two opposite walls of the connector housing 120. [EX1001, '701 Patent, 6:33–50, 6:47–7:1, FIGs. 1A and 1B.] The polarity of the connector can be reversed by removing the removable latch 130 from one side of the connector housing and connecting it to the other side. [EX1001, '701 Patent, 2:31–37, 5:44–51, 7:6–12, 7:57–8:3, 8:18–30, 9:25–44, 10:17–29, 10:54–65, 11:26–34, 11:65–12:12, FIGs. 2A–2D, 4A–4D, 6A–6D, 9A–9D, 10A–10D, 13A–13D, 16A–16D, 20A–20D, 22A–22D.] The annotated

versions of Figures 1A and 1B provided below show an embodiment that includes removable latch 130. Annotated Figure 1B shows the latch detached from the connector housing.

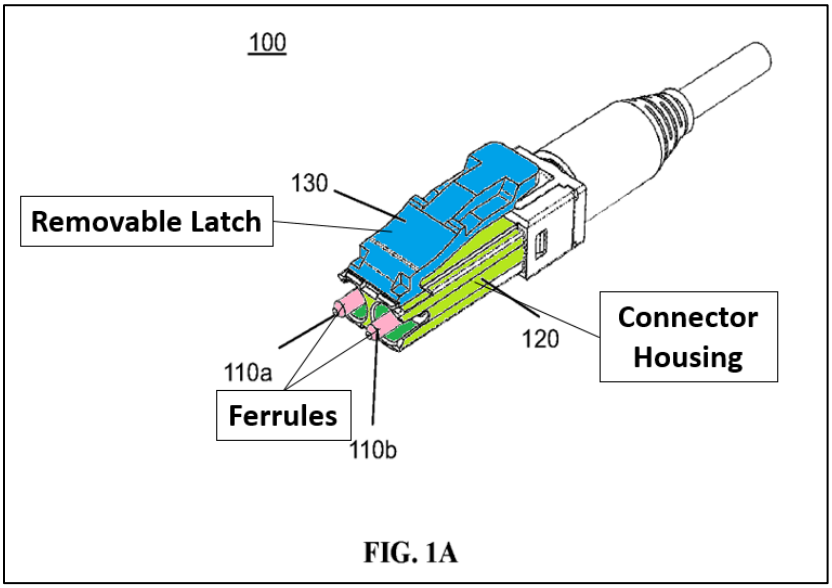


FIG. 1A

EX1001, '701 Patent, FIG. 1A (annotated).

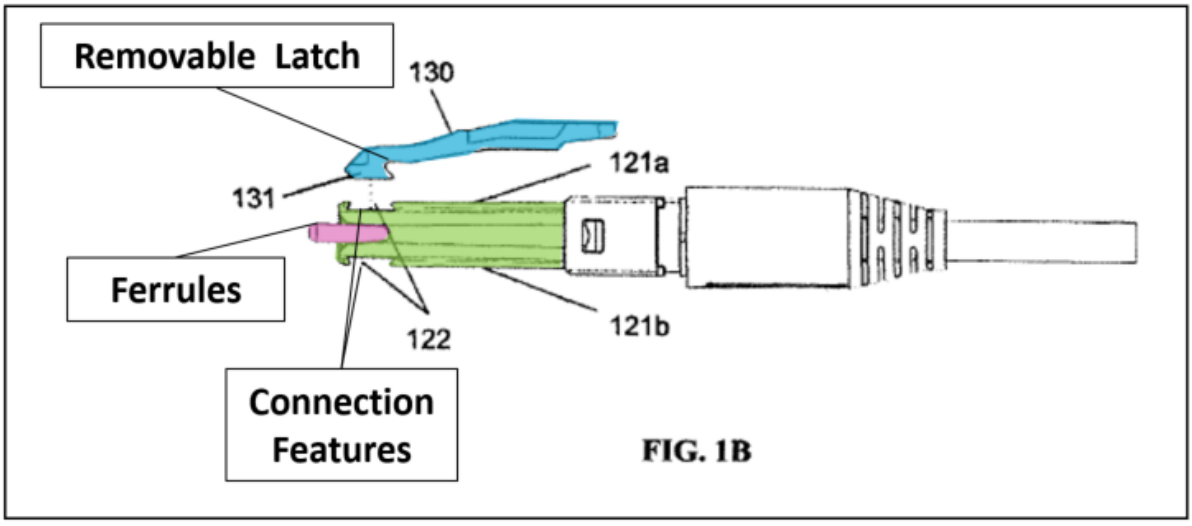
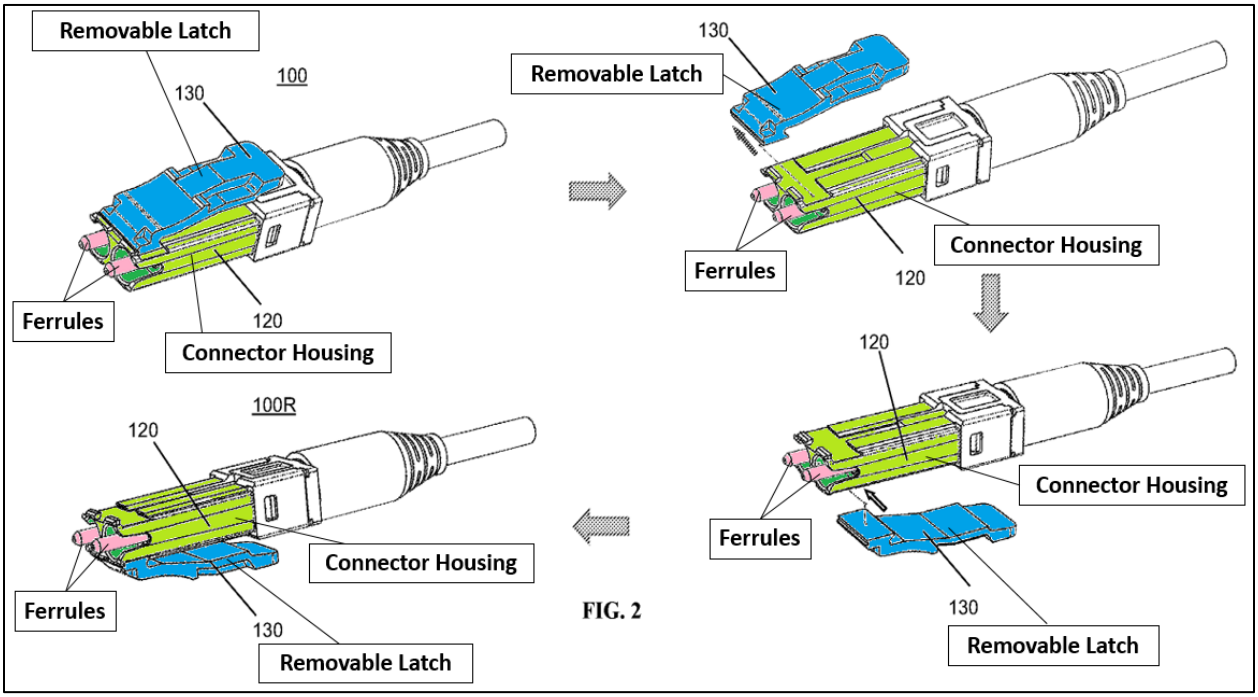


FIG. 1B

EX1001, '701 Patent, FIG. 1B (annotated).

55. After the latch is removed, it can be reattached to the underside of the connector housing. When the modified connected is inserted into an adapter, it is rotated such that the latch is, once again, on the top. This rotation reverses the polarity of the optical fiber cables. The latch-movement process is illustrated below in an annotated version of Figure 2.



EX1001, '701 Patent, FIG. 2 (annotated).

56. The '701 Patent discloses other embodiments with similar functionality. For example, there are alternatives that replace the removable latch 130 with a removable arm 730, 830 (FIGs. 8A.2 and 8B.2) or push-pull tab 1130 (FIG. 10B). Each of these alternatives can be connected and removed from opposite walls of the connector housing to reverse the connector's polarity.

[EX1001, ’701 Patent, 2:31–37, 5:44–51, 7:6–12, 7:57–8:3, 8:18–30, 9:25–44, 10:17–29, 10:54–65, 11:26–34, 11:65–12:12, FIGs. 2A–2D, 4A–4D, 6A–6D, 9A–9D, 10A–10D, 13A–13D, 16A–16D, 20A–20D, 22A–22D.]

57. The ’701 Patent discloses a remote release that allows a user to remove the connector without reaching their fingers all the way into the densely-packed connectors to depress the release latch. [EX1001, ’701 Patent, 5:44-49.] In some embodiments, the reversible polarity fiber optic connector has a pull tab 340 for engaging the removable latch by depressing the latch as the tab is pulled away from the fiber optic ferrules. [EX1001, ’701 Patent, 7:40-44, 8:7-9, FIGs. 3A-3B, 5A-5D.] In some embodiments, the additional remote release component is a separate element ([*e.g.*, EX1001, ’701 Patent, FIGs. 3A, 3B, 4A–4D, 8A.1, 8A.2, 9A–9D]) while in other embodiments, it is integrated with the remote release mechanism. [EX1001, ’701 Patent, FIGs. 5A–5B, 6A–6D, 8B.1, 8B.2, 10A–10C, 11A, 11B, 12A–12D, 13A–13D, 14A, 14B, 15A–15D, 16A–16D, 17A–17C, 18A–18D, 20A–20D, 21A–21D, 22A–22D.]

58. The ’701 Patent provides textual descriptions of certain features of the removable latch and the remote release. For example, a depressible latch arm ([*e.g.,* EX1001, ’701 Patent, 7:42-44, 8:15-17, FIGs. 3B, 5A-5B]) and an opening 341, 541 ([*e.g.,* EX1001, ’701 Patent, 7:47-51, 8:13-17, FIGs. 3B, 5B]). However, the ’701 Patent claims other features of the depressible latch arm that only appear

in the figures. For example, a free rear end portion and an outward facing longitudinal surface ([*e.g.*, EX1001, '701 Patent, FIGs. 1A-1B, 3A-3B, 5A-5B]) are not described in the text, but perhaps are disclosed in figures.

B. Summary of Relevant Prosecution History

59. I have reviewed the file history of the '701 Patent. For purposes of this Declaration, I summarize below certain parts of the file history that I reviewed. I also received input of counsel in conjunction with this review, who explained the relevant patent law.

60. U.S. Application No. 17/200,134 (the "'134 Application") was filed on March 12, 2021. As filed, the '134 Application included 20 claims, with claims 1, 19, and 20 as the only independent claims. [*See* EX1002, 0035-40.]

61. The USPTO issued the first Non-Final Office Action on June 09, 2021 rejecting claims 5-11, 17, and 20 under 35 U.S.C. § 112(b). [EX1002, 0093.] Claims 1-4, 12-16, 18, and 19 were allowed. [EX1002, 0094.] In response, Applicant amended claims 5, 17, and 20 to replace "the reversible polarity fiber optic connector" with "the fiber optic connector" to have antecedent basis support. [EX1002, 0122.] The response also added new claims 21–35 that depended from claim 19, new claims 36-52 that depended from claim 20, and new claim 52 that depended from claim 1. [EX1002, 0122.]

62. On July 23, 2021, the USPTO issued a Notice of Allowability allowing all claims 1-53. [EX1002, 0124.] A Corrected Notice of Allowability was issued on August 11, 2021, where the Examiner amended claim 51 to fix a minor error. [EX1002, 0142.] The patent issued on November 23, 2021. [EX1002, 0149.]

C. Claims of the '701 Patent

63. The '701 Patent issued with 53 claims, of which claims 1, 20, and 36 are independent claims. Independent claims 1 and 36 recite a fiber optic connector with optical ferrules, and claim 20 recites a reversible polarity fiber optic connector with optical ferrules. Claims 1-53 (the "Challenged Claims") of the '701 Patent are set forth below:

1. Independent Claim 1 of the '701 Patent

64. **Claim 1** recites:

> **[1pre]** A fiber optic connector comprising:
>
> **[1a]** at least first and second optical ferrules;
>
> **[1b]** a connector housing having a longitudinal axis and comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a

first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;

[1c] a latch coupling positioned on each of the first and second exterior walls of the connector housing;

[1d] a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling; wherein each latch coupling comprises a groove extending along the axis and having an open axial end; and wherein the removable latch comprises a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis. EX1001, 14:9–29.

2. Dependent Claims 2 - 19 of the '701 Patent

65. **Claim 2** recites:

[2pre] The fiber optic connector of claim 1,

[2a] wherein the protrusion is movable along the longitudinal axis in each groove with respect to the connector housing. EX1001, 14:30–32.

66. **Claim 3** recites:

[3] The fiber optic connector of claim 1, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion. EX1001, 14:33–35.

67. **Claim 4** recites:

[4] The fiber optic connector of claim 3, wherein the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion. EX1001, 14:36–41.

68. **Claim 5** recites:

[5] The fiber optic connector of claim 4, wherein the free end portion of the depressible latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the fiber optic connector from the receptacle. EX1001, 14:42–47.

69. **Claim 6** recites:

[6pre] The fiber optic connector of claim 5,

[6a] wherein the free rear end portion of the depressible latch arm is raised relative to the front end portion and

[6b] wherein the removable latch is bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the fiber optic connector from the receptacle.

EX1001, 14:48–54.

70. **Claim 7** recites:

[7pre] The fiber optic connector of claim 6, further comprising

[7a] a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section,

[7b] the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing.

EX1001, 14:55–64.

71. **Claim 8** recites:

[8] The fiber optic connector of claim 7, wherein the elongate front section comprises an opening configured to receive the depressible latch arm. EX1001, 14:65–67.

72. **Claim 9** recites:

[9] The fiber optic connector of claim 8, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening. EX1001, 15:1–6.

73. **Claim 10** recites:

[10] The fiber optic connector of claim 9, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening. EX1001, 15:7–11.

74. **Claim 11** recites:

[11] The fiber optic connector of claim 10, further comprising a remote release including an elongate front section configured to extend longitudinally along the connector housing

and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing. EX1001, 15:12–16.

75. **Claim 12** recites:

[12] The fiber optic connector of as set forth in claim 1, wherein the connector housing comprises a single front body and a single back body. EX1001, 15:17–19.

76. **Claim 13** recites:

[13] The fiber optic connector as set forth in claim 12, further comprising further comprising first and second ferrule springs received on the first and second optical ferrules, respectively. EX1001, 15:20–22.

77. **Claim 14** recites:

[14] The fiber optic connector as set forth in claim 13, wherein each of the first and second optical ferrules comprises a ferrule flange having a forward facing surface and the single

front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges. EX1001, 15:23–28.

78. **Claim 15** recites:

[15] The fiber optic connector as set forth in claim 14, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall. EX1001, 15:29–34.

79. **Claim 16** recites:

[16] The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 6.25 mm. EX1001, 15:35–37.

80. **Claim 17** recites:

[17] The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 5.25 mm. EX1001, 15:38–40.

81. **Claim 18** recites:

[18] The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less. EX1001, 15:41–43.

82. **Claim 19** recites:

[19] The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules. EX1001, 15:44–49.

3. Independent Claim 20 of the '701 Patent

83. **Claim 20** recites:

[20pre] A reversible polarity fiber optic connector comprising:

[20a] at least first and second optical ferrules, each of the first and second ferrules comprising a ferrule flange;

[20b] first and second ferrule springs received on the first and second optical ferrules, respectively;

[20c] a connector housing comprising an exterior portion at least partially surrounding the first and second optical

ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall,

[20d] the connector housing comprising a single front body and a single back body, the single front body comprising a transverse wall configured to simultaneously engage the ferrule flanges of the first and second optical ferrules, the single back body being configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engageable with the transverse wall;

[20e] a latch coupling positioned on each of the first and second exterior walls of the housing;

[20f] a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing;

[20g] wherein positioning the removable latch on the first exterior wall of the connector housing yields a fiber optic

connector with a first polarity and positioning the removable latch on the second exterior wall of the housing yields a fiber optic connector with a second polarity, the second polarity being opposite to the first polarity. EX1001, 15:50–16:16.

4. Dependent Claims 21–35 of the '701 Patent

84. **Claim 21** recites:

[21] The reversible polarity fiber optic connector as set forth in claim 20, wherein each latch coupling comprises a groove extending along the axis and having an open axial end. EX1001, 16:17–20.

85. **Claim 22** recites:

[22] The reversible polarity fiber optic connector as set forth in claim 21, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis. EX1001, 16:21–24.

86. **Claim 23** recites:

[23] The reversible polarity fiber optic connector of claim 20, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion. EX1001, 16:25–27.

87. **Claim 24** recites:

> **[24]** The reversible polarity fiber optic connector of claim 23, wherein the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion. EX1001, 16:28–33.

88. **Claim 25** recites:

> **[25]** The reversible polarity fiber optic connector of claim 24, wherein the free end portion of the latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the reversible polarity fiber optic connector from the receptacle. EX1001, 16:34–40.

89. **Claim 26** recites:

> **[26]** The reversible polarity fiber optic connector of claim 25, wherein the free rear end portion of the depressible latch arm is raised relative to the front end portion and wherein the removable latch is bendable such that the free rear end portion can be depressed toward

the base portion to remove the free rear end portion from the opening and unlatch the reversible polarity fiber optic connector from the receptacle. EX1001, 16:41–47.

90. **Claim 27** recites:

> **[27]** The reversible polarity fiber optic connector of claim 26, further comprising a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing. EX1001, 16:48–57.

91. **Claim 28** recites:

> **[28]** The reversible polarity fiber optic connector of claim 27, wherein the elongate front section comprises an opening configured to receive the depressible latch arm. EX1001, 16:58–60.

92. **Claim 29** recites:

[29] The reversible polarity fiber optic connector of claim 28, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening. EX1001, 16:61–67.

93. **Claim 30** recites:

[30] The reversible polarity fiber optic connector of claim 29, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening. EX1001, 17:1–5.

94. **Claim 31** recites:

[31] The reversible polarity fiber optic connector of claim 30, wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface when the elongate front section moves rearward to depress the depressible latch arm. EX1001, 17:6–10.

95. **Claim 32** recites:

[32] The reversible polarity fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch less than 6.25 mm. EX1001, 17:11–13.

96. **Claim 33** recites:

[33] The reversible polarity fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch less than 5.25 mm. EX1001, 17:14–16.

97. **Claim 34** recites:

[34] The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less. EX1001, 17:17–19.

98. **Claim 35** recites:

[35] The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules. EX1001, 17:20– 25.

5. Independent Claim 36 of the '701 Patent

99. **Claim 36** recites:

[36pre] A fiber optic connector comprising:

[36a] at least first and second optical ferrules;

[36b] a connector housing comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;

[36c] a removable latch configured to selectively and releasably couple to each of the first and second exterior walls of the housing,

[36d] the removable latch comprising a base portion and a depressible latch arm connected to the base portion,

[36e] the depressible latch arm having a font end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion,

[36f] the free rear end portion of the latch arm being configured to be received in an opening of a receptacle and comprising a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the fiber optic connector from the receptacle,

[36g] the free rear end portion of the depressible latch arm being raised relative to the front end portion, the removable latch being bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the fiber optic connector from the receptacle; and

[36h] a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing,

[36i] the elongate front section comprising an opening configured to receive the depressible latch arm,

[36j] the elongate front section comprising a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening;

[36k] wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening,

[36l] wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface when the elongate front section moves rearward to depress the depressible latch arm. EX1001, 17:26–18:14.

6. Dependent Claims 37-53 of the ’701 Patent

100. **Claim 37** recites:

[37] The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules have a pitch less than 6.25 mm. EX1001, 18:15–18.

101. **Claim 38** recites:

[38] The fiber optic connector as set forth in claim 37, wherein the connector housing comprises a single front body and a single back body. EX1001, 18:19–21.

102. **Claim 39** recites:

[39] The fiber optic connector as set forth in claim 38, further comprising first and second ferrule springs received on the first and second ferrules, respectively. EX1001, 18:22–24.

103. **Claim 40** recites:

[40] The fiber optic connector as set forth in claim 39, wherein each of the first and second ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges. EX1001, 18:25–30.

104. **Claim 41** recites:

[41] The fiber optic connector as set forth in claim 40, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and

second ferrule flanges engaged with the transverse wall. EX1001, 18:31–36.

105. **Claim 42** recites:

[42] The fiber optic connector as set forth in claim 41, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end.. EX1001, 18:37–41.

106. **Claim 43** recites:

[43] The fiber optic connector as set forth in claim 42, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis. EX1001, 18:42–45.

107. **Claim 44** recites:

[44] The fiber optic connector as set forth in claim 43, wherein the pitch is less than 5.25 mm. EX1001, 18:46–47.

108. **Claim 45** recites:

[45] The fiber optic connector as set forth in claim 44, wherein the pitch is 4.8 mm or less. EX1001, 18:48–49.

109. **Claim 46** recites:

[46] The fiber optic connector as set forth in claim 36, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end. EX1001, 18:50–53.

110. **Claim 47** recites:

[47] The reversible polarity fiber optic connector as set forth in claim 46, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis. EX1001, 18:54–57.

111. **Claim 48** recites:

[48] The fiber optic connector as set forth in claim 47, wherein the first and second optical ferrules have a pitch less than 6.25 mm. EX1001, 18:58–60.

112. **Claim 49** recites:

[49] The fiber optic connector as set forth in claim 48, wherein the pitch is less than 5.25 mm. EX1001, 18:61–62.

113. **Claim 50** recites:

[50] The fiber optic connector as set forth in claim 49, wherein the pitch is 4.8 mm or less. EX1001, 18:63–64.

114. **Claim 51** recites:

[51] The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules have a pitch less than 5.25 mm.

EX1001, 18:65– 67.

115. **Claim 52** recites:

[52] The fiber optic connector as set forth in claim 51, wherein the first and second optical ferrules have a pitch of 4.8 mm or less.

EX1001, 19:1–3.

116. **Claim 53** recites:

[53] The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules.

EX1001, 19:4–9.

V. LEVEL OF ORDINARY SKILL IN THE ART

117. I understand that patent claims must be analyzed from the perspective of a person of ordinary skill in the art at the time of the invention. A POSITA to which the claimed subject matter pertains would have the capability of understanding the scientific and engineering principles applicable to the pertinent art.

118. In my opinion, a person of ordinary skill in this art at the time of the effective filing dates of the claimed inventions of the ’701 Patent (circa January 30, 2017) would typically have had an undergraduate degree in mechanical engineering, industrial engineering, or a closely related field and one year of experience working with connectors. Additional relevant experience can compensate for a lack of relevant education, and vice versa.

119. In arriving at my opinion, I first considered the claims themselves, in light of the specification. Each of the independent claims (1, 20, and 36) describe a connector. More specifically, they claim a “fiber optic connector" and a “reversible polarity fiber optic connector.” Connectors are one of the most basic elements in mechanical engineering. They are used to join a massive array of objects under a wide range of operating conditions. The specific sub-type of claimed connectors are used to connect fiber optic cables to high-density panels. Given that many connectors are placed in close proximity to each other in such panels, workers have difficulty attaching and detaching connectors. The claimed connectors have mechanical features that aid a worker in detaching the connector and changing the polarity of the fiber optic cables.

120. The vast majority of the claim limitations are directed at very simple mechanical components such as housings, removable latches, remote release arms, and springs. These features are described as having exterior walls, grooves,

recesses, protrusions, and flanges. The components and their features are intended to both make the connectors easy to use and to make it possible to change the polarity with very little chance of damaging the fiber.

121. All of the claimed connector components and their features would be covered at the undergraduate level of mechanical engineering and industrial engineering. The specific arrangements of the components and the purpose for those arrangements would obviously not be taught in undergraduate classes; therefore, some industrial experience working with connectors would be beneficial for understanding the claimed subject matter.

122. I also considered several of the legal factors that I understand typically may be considered in determining the ordinary level of skill in the art: (1) the educational level of the inventors; (2) the type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) the educational level of active workers in the field.

123. Problems encountered in the field of connectors, and especially connectors used in compact and dense configurations include the challenge of making the connectors "small," while simultaneously making them "big enough" to be handled and installed by humans. Both mechanical and industrial engineers continually face these types of "ergonomic" design tradeoffs. As a result, both

mechanical and industrial engineering curriculums contain subject matter and assignments that would prepare their students to address such problems. Another problem faced in this field is the challenge of firmly securing the connector to the cable without damaging the fiber. This problem centers on the forces involved in both the initial "crimping" of the fiber within the connector and in retaining the fiber within the connector so that it does not become displaced from the connector over time. Once again, consideration of such forces during the design of connectors falls firmly within the domain of mechanical and industrial engineering.

124. The problem of reversing the polarity of fiber optical was addressed in prior art solutions using repositionable latches. For example, Raven teaches a latch that can be removed from a connector housing and then reconnected to the housing with a second orientation. [EX1006, Raven, Abstract.] Much like the claimed invention in the ’701 Patent, the prior art solutions used “latches” and “resilient arms” that have protrusions that flex outward to engage slots or grooves. These flexures can be deflected out of the grooves to release the latches and allow for their removal and repositioning. Such prior art solutions of flexible removable latches fall squarely in the fields of mechanical and industrial engineering because they utilize knowledge of how applied forces deflect structures. For example, in my introductory mechanical design class, students routinely use CAD to design, and 3D printers to manufacture, parts with components and features that have

similar complexity to those claimed in the '701 Patent. I instruct my students how to control the flexibility of the parts that they make by setting the wall thickness and the infill geometry.

125. The sophistication of the claimed technology is relatively rudimentary engineering. For example, there are no claimed features based on "high-tech" elements such as microprocessors, artificial intelligence, intelligent sensors, or even advanced materials. Rather, the claims focus on well-known mechanical structures that would be studied at the undergraduate level.

126. Therefore, I am confident that mechanical and industrial engineering degrees provide an excellent basis for understanding the claim terms. I have added a requirement of 1 year experience working with connectors to the educational component merely to ensure that a POSITA could understand the full scope of the claimed invention.

127. In 2017, and well before, I would have qualified as a person of ordinary skill in the art under this definition. My opinions in this report are made from the perspective of a person of ordinary skill in the art as I have defined above. However, if a definition of a POSITA is adopted that has higher educational or work experience requirements, my opinions, in all likelihood, would not change.

128. My analysis is intended to reflect how a POSITA would have understood the '701 Patent claims as of the priority date, even if I use the present tense.

VI. CLAIM CONSTRUCTION

129. I understand that in interpreting claims, I should consider the literal language of the claim at issue, as well as the language of other claims, the specification, and the prosecution history of the underlying claims.

130. I also understand that the words of a claim should be given their plain and ordinary meaning as understood by those of skill in the art, unless it is clear from the specification or prosecution history (or both) that a different meaning was intended.

131. I understand that Petitioner does not propose any claim constructions. I agree that no constructions are necessary to determine whether the prior art discussed below establishes the elements recited in the claims.

VII. PRIOR ART

A. Overview of Lee

132. International Publication No. WO 2017/127208 is titled "Fiber Optic Connector with Small Profile, and Cable Assemblies, Systems, and Methods Including the Same." The only named inventor is Jhih-Ping Lee, and International Publication No. WO 2017/127208 A1 (hereinafter "Lee") published on July 27,

2017. [EX1005, Lee, cover.] Lee is based on International Application No. PCT/US2016/067809, which was filed on December 21, 2016. [EX1005, Lee, cover.] Lee claims benefit to two U.S. provisional patent applications: U.S. Provisional Application No. 62/388,129 filed on January 20, 2016, and U.S. Provisional Application No. 62/398,673 filed on September 23, 2016. [EX1005, Lee, cover.]

133. I understand that Lee is prior art to the '701 Patent based on my discussion of the legal standards above and discussions with counsel. In particular, I understand that Lee has a filing date prior to the earliest possible priority date of the '701 Patent (February 9, 2017), and therefore, Lee qualifies as prior art at least for this reason.

134. Lee generally describes fiber optic connectors suitable for use in data centers. [EX1005, Lee, ¶0002.] Lee explains the disclosure "also relates to cable assemblies, systems, and methods including such fiber optic connectors." [EX1005, Lee, ¶0002.]

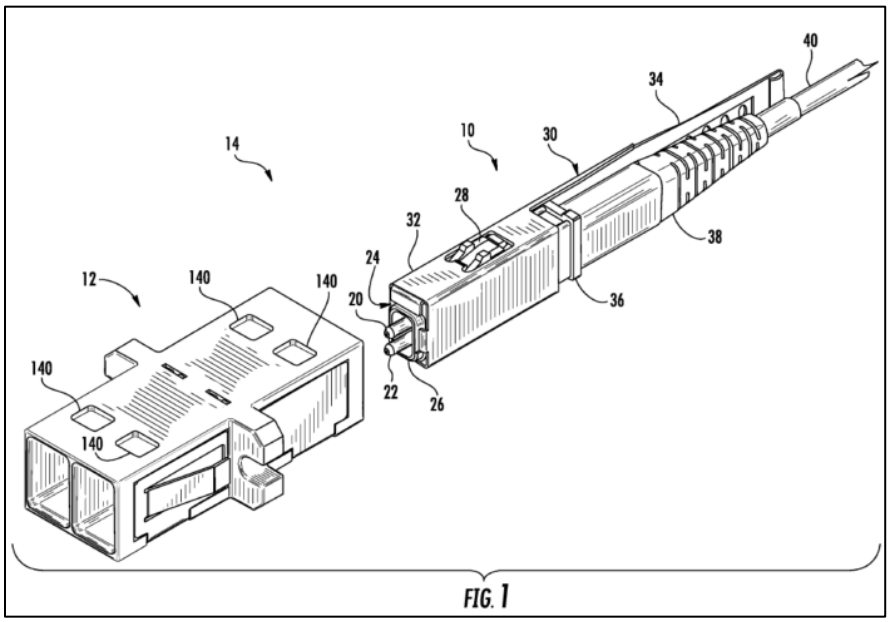
135. Lee explains that connectors are typically provided on the ends of optical fiber cables to conveniently provide connections for data transmission. [EX1005, Lee, ¶0003.] Lee further describes that "[t]he connectors are designed to be received in ports that align the optical fiber(s) carried by connectors with the

optical fiber(s) of other connectors or with equipment (e.g., transceivers) so that data can be transmitted between the components." [EX1005, Lee, ¶0003.]

136. Lee explains that a desire for high bandwidth drives the need for a high density of interconnects. [EX1005, Lee, ¶0004.] Lee identifies that it "can be a challenge, however, to design fiber optic connectors [capable] of providing high-density interconnects" because, e.g., "[t]he fiber optic connectors often become more difficult to handle and less robust as components are made smaller." [EX1005, Lee, ¶0004.]

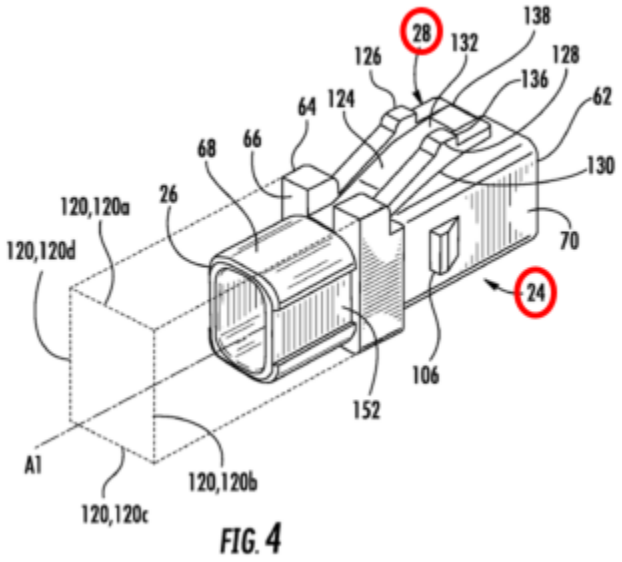
137. Therefore, I believe a POSITA would understand Lee to articulate a goal of designing small interconnects that provide sufficient robustness and ease of handling (e.g., the ability to be easily installed and removed).

138. Pertinent to my analysis below, Lee discloses a fiber optic connector 10 and an adapter 12 and illustrates this fiber optic connector system 14 in Figure 1, which is provided below for convenience.



EX1005, Lee, FIG. 1.

139. The fiber optic connector 10 "is designed to have a small profile and thereby enable high-density interconnects." [EX1005, Lee, ¶0029.] As shown in the middle of Figure 1 above, the fiber optic connector 10 includes a first ferrule 20 and a second ferrule 22 exposed at a front end 26 of the fiber optic connector 10 for mating with the adapter 12. [*See* EX1005, Lee, ¶0030.] As shown below in annotated Lee Figure 4, the fiber optic connector 10 includes an inner connector body 24 and a latch arm 28 that extends upward from the inner connector body 24.



EX1005, Lee, FIG. 4 (annotated).

140. The fiber optic connector 10 includes first and second inner springs 100 and 102, as shown below in the bottom left of Lee Figure 2, which has been reproduced below. [EX1005, Lee, ¶0038, FIGs. 2, 3.] Pertinent to my analysis in this Declaration, the housing of Lee's connector 10 has a single front body (e.g., inner connector body 24 shown in the upper right of Figure 2) and a single back body (e.g., outer connector body 36 shown near the center of Figure 2). The pair of ferrule springs (e.g., first and second inner springs 100, 102) are compressed between the front and back bodies. Lee explains that the inner springs extend "within the inner connector body 24 and outer connector body 36, biasing the first and second ferrules 20, 22 in a forward direction." [EX1005, Lee, ¶0038.] Figure 2 below shows an exploded view of an embodiment that illustrates the relationship

between the springs and the front body 24 and the back body 36. Following the assembly diection line shown in dash-dot format, it is apparent that the back body 36 compresses the springs 100 and 102 into the front body 24.

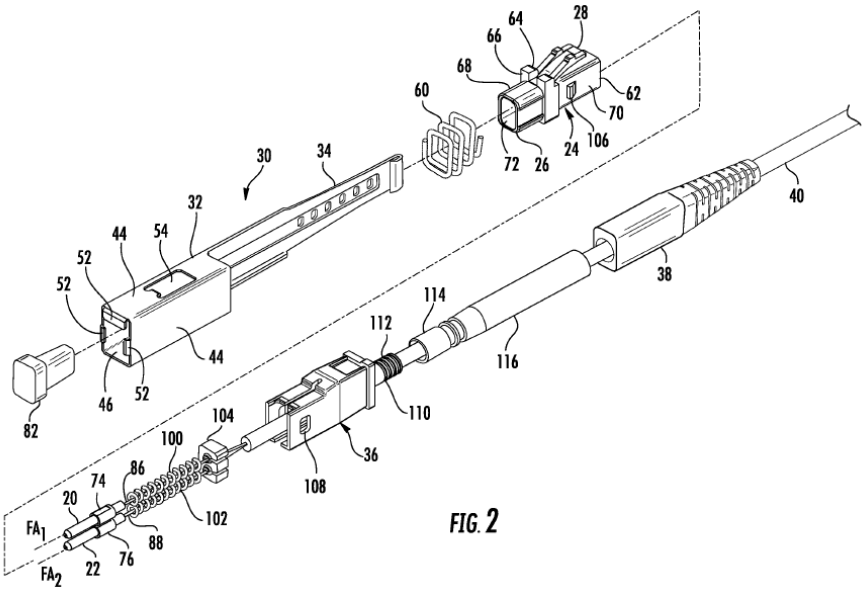


FIG. 2

EX1005, Lee, FIG. 2.

141. Figure 3, reproduced in part below, shows a cross-sectional view that further illustrates how the front and back bodies compress the springs 100 and 102.

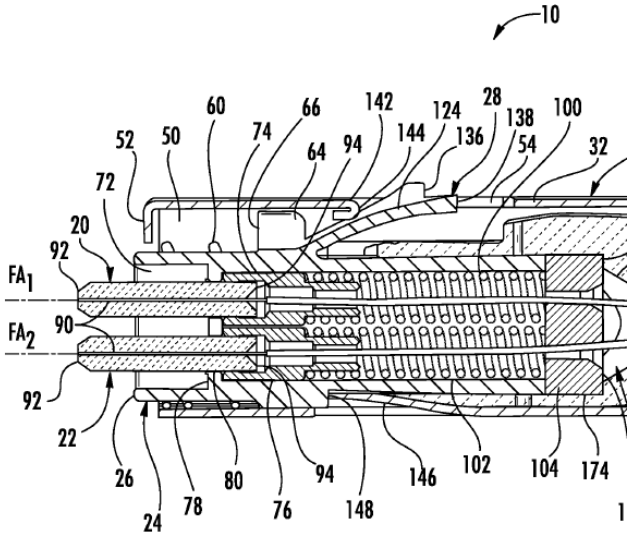


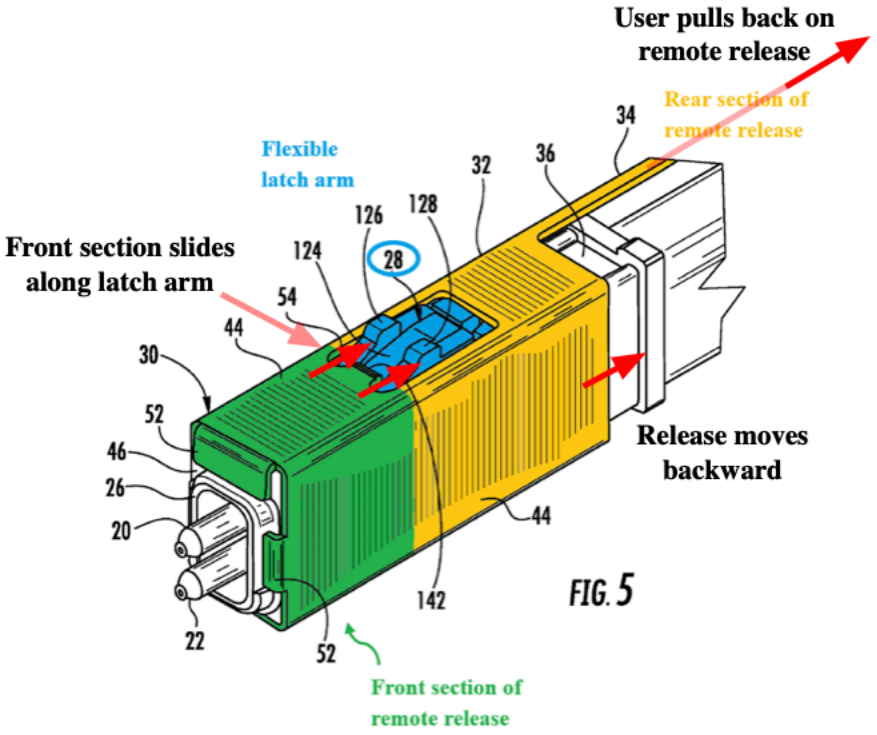
FIG. 3

EX1005, Lee, FIG. 3, Partial.

142. As can be seen above in Figures 2 and 3, the fiber optic connector 10 includes first and second ferrule holders 74 and 76 and an internal wall 78. [EX1005, Lee, ¶0035, FIGs. 2, 3.] The first and second ferrule holders receive the first and second ferrules and have larger diameters or widths than the first and second ferrules. [EX1005, Lee, ¶0035, FIGs. 2, 3.] The inner springs "extend between" the ferrule holders and a spring push 104 that is received in the outer connector body 36. [EX1005, Lee, ¶0038, FIG. 3.] Figure 3 illustrates that the internal wall 78 contacts both the first and second ferrule holders 74 and 76 simultaneously. [EX1005, Lee, ¶0035, FIG. 3.]

143. The fiber optic connector includes a handle 30, which includes a housing portion 32 that houses the inner connector body 24. [EX1005, Lee, ¶0030, FIG. 1.] The handle 30 includes "a grip portion 34 extending rearwardly from the housing portion 32." [EX1005, Lee, ¶0030, FIG. 2.] Lee explains "the handle 30 can move relative to the inner connector body 24 so that the housing portion 32 can cause the latch arm 28 to flex toward the inner connector body 24." [EX1005, Lee, ¶0030.]

144. As illustrated below in an annotated version of Lee Figure 5, the user pulls back on the rear section of the remote release. This force causes the body of the remote release to move backward, away from the adapter and away from the inner portions of the connector that are latched to the adapter via the flexible latch arm 28. This backward relative motion causes the front section of the remote release to slide along the top surface of the latch arm. Given the sloped surface of the latch arm, the backward sliding motion applies a downward force to the latch arm that bends it downward and causes it to unlatch from the latch openings.



EX1005, Lee, FIG. 5 (annotated).

145. The housing portion 32 of the handle 30 includes an opening 54 "through which the latch arm 28 extends." [EX1005, Lee, ¶0047, FIG. 5.] As shown below, Lee shows that a rounded surface 144 adjacent to the opening contacts the latch arm 24. The rounded surface 144 "contacts and slides along the ramp 124 to cause the latch arm 28 to flex toward the inner connector body 24" when the handle 30 is "moved rearwardly." [EX1005, Lee, ¶0047.]

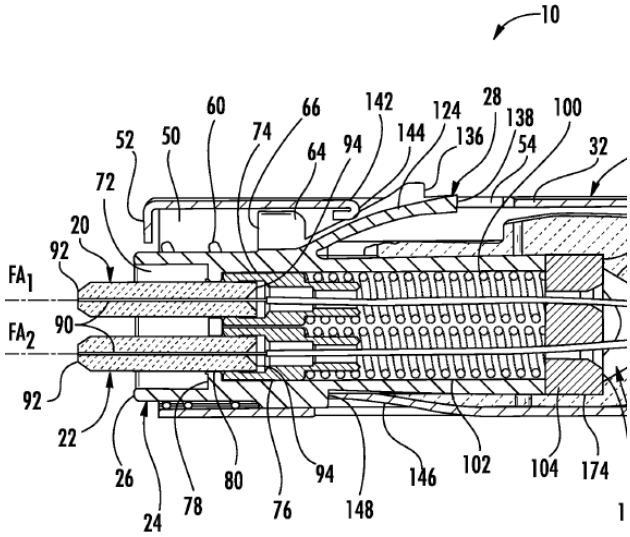


FIG. 3

EX1005, Lee, FIG. 3, Partial.

B. Overview of Raven

146. U.S. Patent No. 9,557,495 is titled "Fiber Optic Connector Device" (hereinafter "Raven"). The inventors are Asher Raven, Nicholas Blockley, and Alan Keizer. The application from which Raven issued published on October 1, 2015 as U.S. Publication No. 2015/0277059 A1. [EX1006, Raven, cover.] Raven is based on International Patent Application No. PCT/GB2013/052629, which was filed on October 9, 2013. [EX1006, Raven, cover.] Raven claims priority to GB patent applications – GB 1218194.7 filed on October 10, 2012. [EX1006, Raven, cover.]

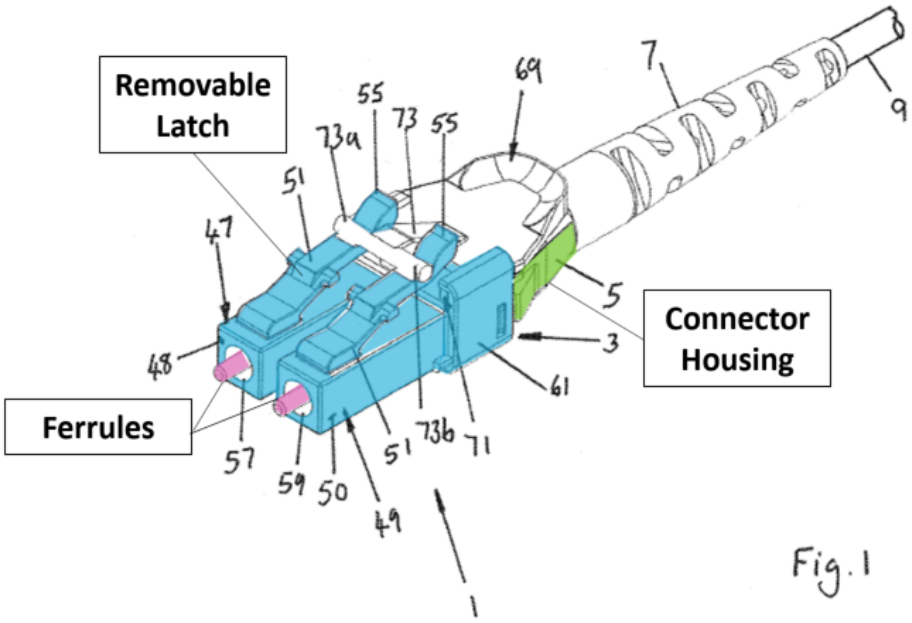
147. I understand that Raven is prior art to the '701 Patent based on my discussion of the legal standards above and discussions with counsel. In particular,

I understand that Raven has a filing date prior to the earliest possible priority date of the '701 Patent (February 9, 2017), and so Raven qualifies as prior art at least for this reason.

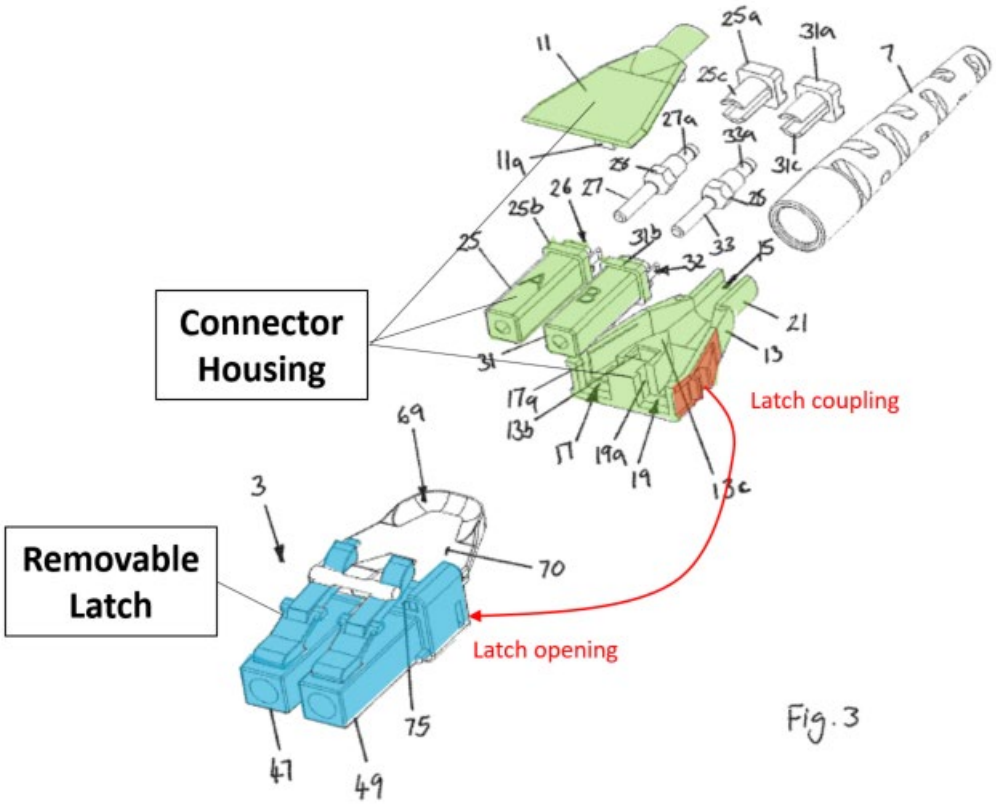
148. Raven discloses a connector device for a fiber optic cable. [EX1006, Raven, Abstract.] The connector device includes a housing assembly, a first and second fiber optic connectors, and attachment mechanism for "releasably attaching" each of the first and second fiber optic connectors. Raven discloses a method "for changing the polarity" of first and second optical fibers in a fiber optic cable assembly. [EX1006, Raven, Abstract.]

149. Raven explains that a certain orientation is required to correctly connect a pair of optical fibers, and it is not uncommon for installers to get confused and connect the optical fibers with the wrong orientation. [EX1006, Raven, 1:1-35.] Therefore, it is desirable to have a connector whose polarity can easily be changed so that installers do not need to "remanufacture the cable on site, which is very cumbersome and time consuming." [EX1006, Raven, 1:1-35.] Raven also seeks a fiber optic connector with a "simplified solution" for easier field polarity change, since Raven recognized that there were existing complex solutions using rotatably mounted connectors. [EX1006, Raven, 1:36-46.] Therefore, I believe a POSITA would understand Raven to articulate a goal of designing small fiber optic connectors that permit easy polarity reversal without rotation of fibers.

150. As shown below in Raven Figures 1 and 3, Raven's fiber optic connector comprises a housing 5 and a leading end unit 3 (i.e., a removable latch.) [EX1006, Raven, 10:51-63.] Figure 1 shows the leading end unit 3 is attached to the housing 5 and Figure 3 shows an isometric exploded view of the connector with the leading unit 3 separated from the housing assembly. As illustrated on the annotated version of Figure 3 below, the leading end unit 3 is attached to the housing 5 via a latch coupling and latch opening mechanism.



EX1006, Raven, FIG. 1 (annotated).



EX1006, Raven, FIG. 3 (annotated).

151. Raven's fiber optic connector is configured to reverse polarity by separating the leading end unit 3 from the housing 5, rotating the leading end unit 3 180 degrees and then reattaching the leading end unit 3 to the housing 5. [EX1006, Raven, 12:35-52.] Figure 6, provided below, illustrates the rotation (about the Z axis) required to reverse the polarity of the first and second optical fibers.

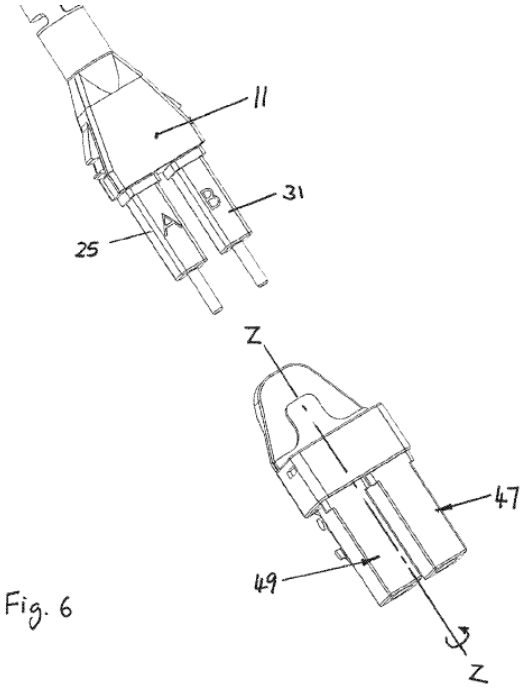


Fig. 6

EX1006, Raven, FIG. 6.

152. Raven discloses the housing 5 has side walls 35 and 37, and each of the side walls has a latch coupling to engage with the leading end unit 3, [EX1006, Raven, 10:51-63, FIG. 5, (explaining each of the side walls includes "latch 41", "groove 39", "pressing part 43", "latching part 45" "arranged to engage with a latching formation 65 on the leading end unit 3").] Figures 4 and 5 provided below for convenience, illustrate the detailed structure of the latch coupling.

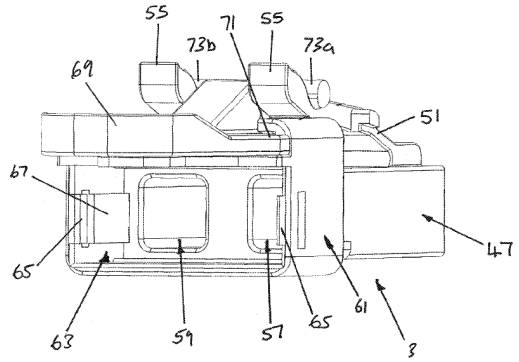


Fig. 4

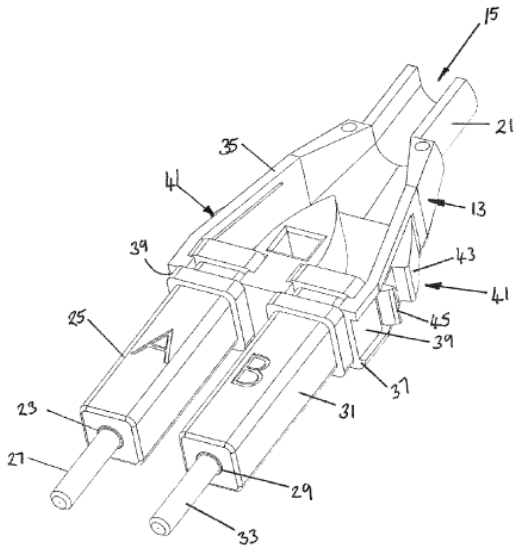


Fig. 5

EX1006, Raven, FIGs. 4 and 5.

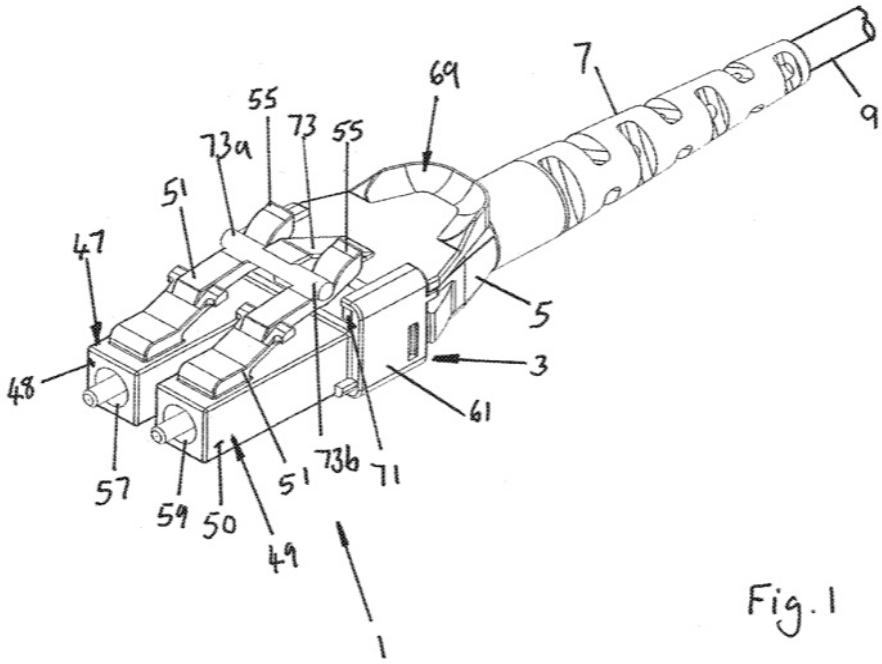
153. Raven discloses the leading end unit 3 includes a connector part 61, a latching formation 65 and ribs 67. The ribs are arranged to engage with the mating grooves 39 on the sides of the housing 5. [EX1006, Raven, 11:13-32, FIGs. 4, 5.] Raven explains that the connector part 61 "provides an open-sided docking bay 63 that is arranged to be mounted onto the leading end of the housing 5." [EX1006, Raven, 11:13-32, FIGs. 4, 5.] Raven further explains that the leading end unit 3 is "releasably lock[ed]" to the housing 5 by sliding the leading end unit 3 onto the leading end of the housing 5, and the ribs 67 "slide along the mating grooves 39 until latching formations 65 engage with their respective latching parts 45." [EX1006, Raven, 11:13-32, FIGs. 4, 5.]

154. The leading end unit 3 can be detached from the housing 5 by operating the latches 41 of the housing 5, thereby disengaging the latching part 45 from the latching formations 65. This enables the leading end unit 3 to slide off the housing 5. [EX1006, Raven, 11:38-43.]

155. Initially, the leading end unit 3 is attached to the housing 5 in a first orientation with a first polarity, e.g., the first fiber optic connector 47 is mounted over the first inner body 25 (47/25), and the second fiber optic connector 49 is mounted over the second inner body 31 (49/31). [EX1006, Raven, 12:28-34.] To switch the polarity of the connector, a user separates the leading end unit 3 from the housing 5 by actuating latches 41, rotates the leading end unit 180 degrees, then slides the leading end unit back to the housing 5 in a second orientation. [EX1006, Raven, 12:35-46, FIG. 6.] Accordingly, the first optic connector 47 is mounted over the second inner body 31 (47/31), and the second optic connector 49 is mounted over the first inner body 25 (49/25). Therefore, the polarity is changed to a second polarity.

156. A brief explanation is also warranted regarding the operation of the leading end unit 3 of Raven's fiber optic connector. The leading end unit 3 includes a first and second fiber optic connectors 47 and 49. [EX1006, Raven, 11:13-20.] As shown below in Raven Figure 1, each of the fiber optic connectors has a latching lever 51. [EX1006, Raven, 11:44-51.] The latching levers are

configured to releasably lock the fiber optic connector device to a complementary connector device. [EX1006, Raven, 11:44-51.]



EX1006, Raven, FIG. 1.

C. Overview of Nguyen

157. U.S. Patent Application Pub. No. 2017/0343740 is titled "Duplex Mini LC Connector" (hereinafter "Nguyen"). The sole inventor is Long Von Nguyen. [EX1007, Nguyen, cover.] Nguyen claims priority to Provisional Application No. 62/342,533 filed on May 27, 2016. [EX1007, Nguyen, cover.]

158. I understand that Nguyen is prior art to the '701 Patent based on my discussion of the legal standards above and discussions with counsel. In particular, I understand that Nguyen has a filing date prior to the earliest possible priority date

of the ’701 Patent (February 9, 2017), and so Nguyen qualifies as prior art at least for this reason.

159. Nguyen “relate[s] to a duplex mini lucent connector (LC) connector.” [EX1007, Nguyen, ¶0002.] Nguyen describes several embodiments of the LC connector, each forming “part of a dual duplex optical interface of an optoelectronic communication module,” such as a “Quad Small Form-factor Pluggable (QSFP) module or other suitable optoelectronic communication module.” [EX1007, Nguyen, ¶0020.]

160. Figures 3A and 3B show one embodiment of LC connectors 110 in the form of two connector bodies interconnected by a separate housing that receives two optical fibers 112. As shown below in Nguyen Figure 3A, each body of connector 110 holds an optical ferrule 302 aligned with a respective optical fiber 112. Nguyen describes that the pitch between ferrules 302 of LC connector 110 “may be about 6.25 mm.” [EX1007, Nguyen, ¶0028.]

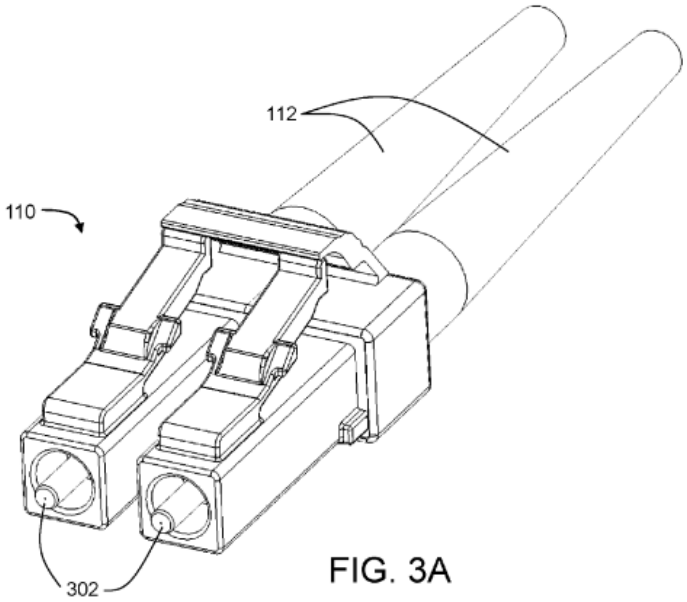
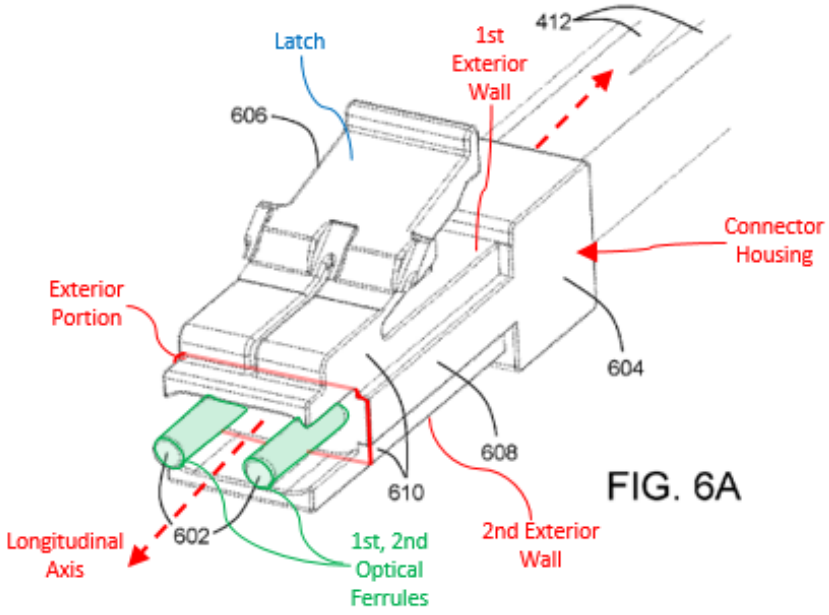


FIG. 3A

EX1007, Nguyen, FIG. 3A.

161. In another embodiment shown in Figures 6A and 6B, Nguyen describes an LC connector 410 in the form of a unitary "body (or housing) 604" containing two "ferrules 602 extend[ing] from a module-side end of the body 604" and receiving two optical fibers 412 on its opposite end. [EX1007, Nguyen, ¶¶0037–0038.] An annotated version of Nguyen Figure 6A below, shows these features.

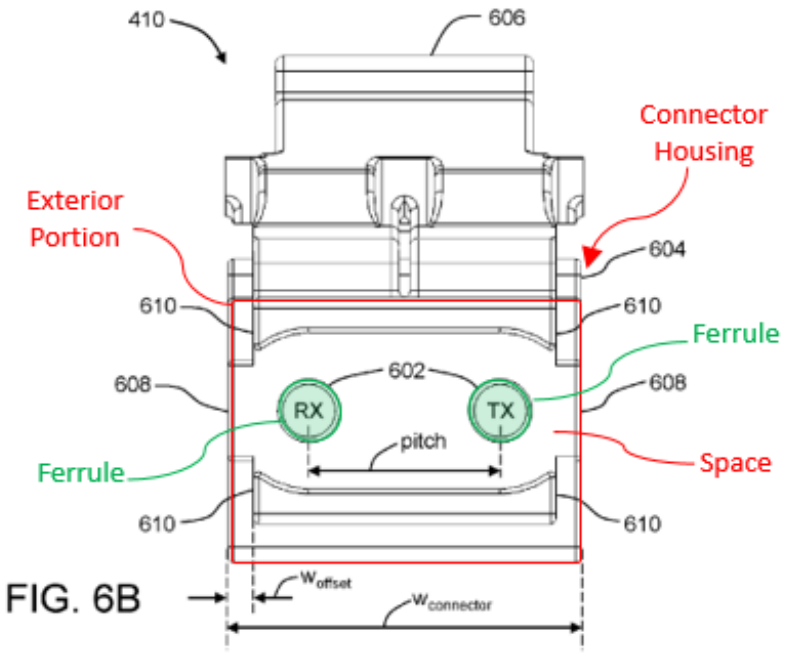


EX1007, Nguyen, FIG. 6A (annotated).

162. Nguyen describes that "connector 410 includes two coil springs … disposed within the body 604 … to bias the ferrules 602 against or at least towards the corresponding TOSA or ROSA[1]." [EX1007, Nguyen, ¶0040.] Nguyen's body 604 "include[s] two raised keys 608 or sidewall extensions formed in two opposing sidewalls 610 of the body 604" to "accommodate the coil springs." [EX1007, Nguyen, ¶0040.] Because the two ferrules 602 are held in a single housing 604, rather than in two separate bodies, the pitch between ferrules 602 may be reduced

[1] TOSA means transmitter optical sub assembly and ROSA means receiver optical sub assembly, which are components inside a fiber optics transceiver for converting between electrical signals and optical signals.

to "about 3.8 mm." [EX1007, Nguyen, ¶0040.] The ferrule pitch is shown in the annotated version of Nguyen Figure 6B, provided below.



EX1007, Nguyen, FIG. 6B (annotated).

163. Pertinent to my analysis in this Declaration is housing 604 of Nguyen's connector 410. Nguyen's housing 604 has an exterior portion—top, bottom, and sidewalls 610—that extend 360 degrees around ferrules 604. [EX1007, Nguyen, FIGs. 6A, 6B (*see* annotated above).] A POSITA would have understood that Nguyen's single unitary housing 604 for containing two ferrules allows the ferrules to be held closer together, ultimately reducing the footprint of the connector. And, given that Nguyen discloses alternative embodiments of LC connectors in the form of a dual bodies and a single housing, a POSITA would

have understood that it is well within the level of ordinary skill in the art to replace a dual body LC connector with a single unitary housing.

D. Overview of Connelly

164. U.S. Patent No. 6,511,230 is titled "Fiber Optic Connection System." The inventors are John M. Connelly, Samuel M. Marrs, and Jeffrey J. Radek. U.S. Patent No. 6,511,230 (hereinafter "Connelly") was issued on January 28, 2003. The application from which Connelly issued was filed on February 4, 2000. [EX1008, Connelly, cover.]

165. I understand that Connelly is prior art to the '701 Patent based on my discussion of the legal standards above and discussions with counsel. In particular, I understand that Connelly has an issuing date prior to the earliest possible priority date of the '701 Patent (February 9, 2017), and so Connelly qualifies as prior art at least for this reason.

166. Connelly recognizes the continued growth demands for "inexpensive, readily manufactured and quickly replacable" connection systems. [EX1008, Connelly, 1:11-15.] Accordingly, Connelly discloses a fiber optic connection system including a fiber optic plug adapted to mate and lock with another fiber optic connector. The plug includes a housing, a pair of plug pre-assemblies and an insert. [EX1008, Connelly, 1:19-29.] Connelly explains the housing and the insert

snap-lock together and cooperatively define a mechanism to secure the plug pre-assemblies. [EX1008, Connelly, 1:30-33.]

167. Therefore, I believe a POSITA would understand Connelly to articulate a goal of designing a new and improved fiber optic connection system that is inexpensive, readily produced for fiber optic cable, and is relatively simple to assemble and repair.

168. Pertinent to my analysis below, Connelly discloses a fiber optic connection system 10 that includes a fiber optic plug 34, and a fiber optic jack 36. As illustrated in Figure 1 below, the jack 36 receives the plug 34 in the interlocked state so that optical fibers 16, 18 are coupled to the optical fibers 26, 28, respectively. [EX1008, Connelly, 2:18-26.]

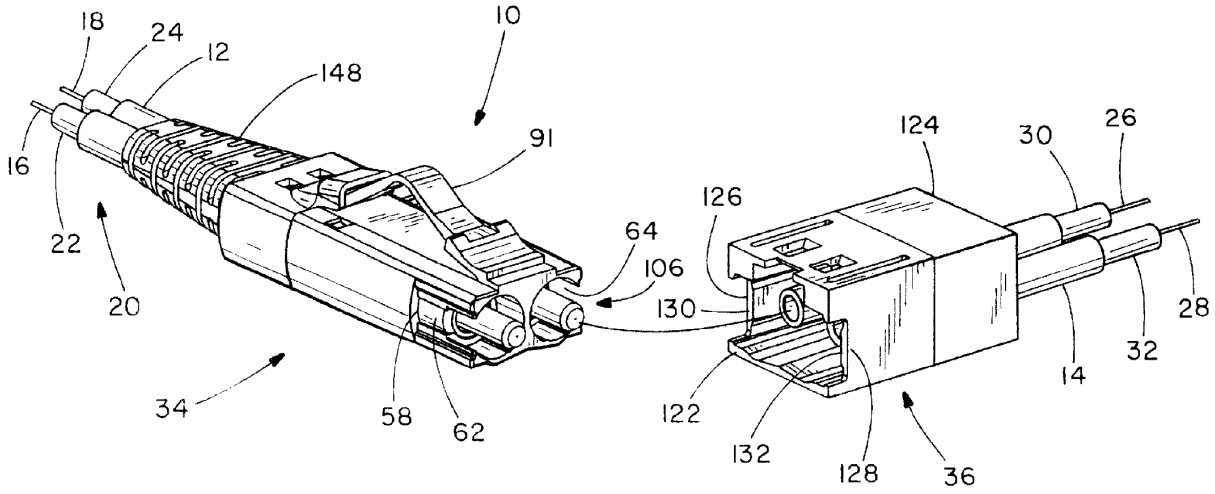


FIG. 1

EX1008, Connelly, FIG. 1.

169. In reference to Figure 2, reproduced below for convenience, Connelly discloses that the fiber optic plug 34 includes a housing 38, first and second plug pre-assemblies 40, 42 and an insert 44. The housing has a front housing end 46 and a rear housing end 48. The insert 44 is received at the rear housing end. [EX1008, Connelly, 2:27-32, FIG. 2.] The connection system 10 also include a conventional strain relief boot 148 that is snap-locked to the insert 44. [EX1008, Connelly, 4:36-39, FIG. 2.]

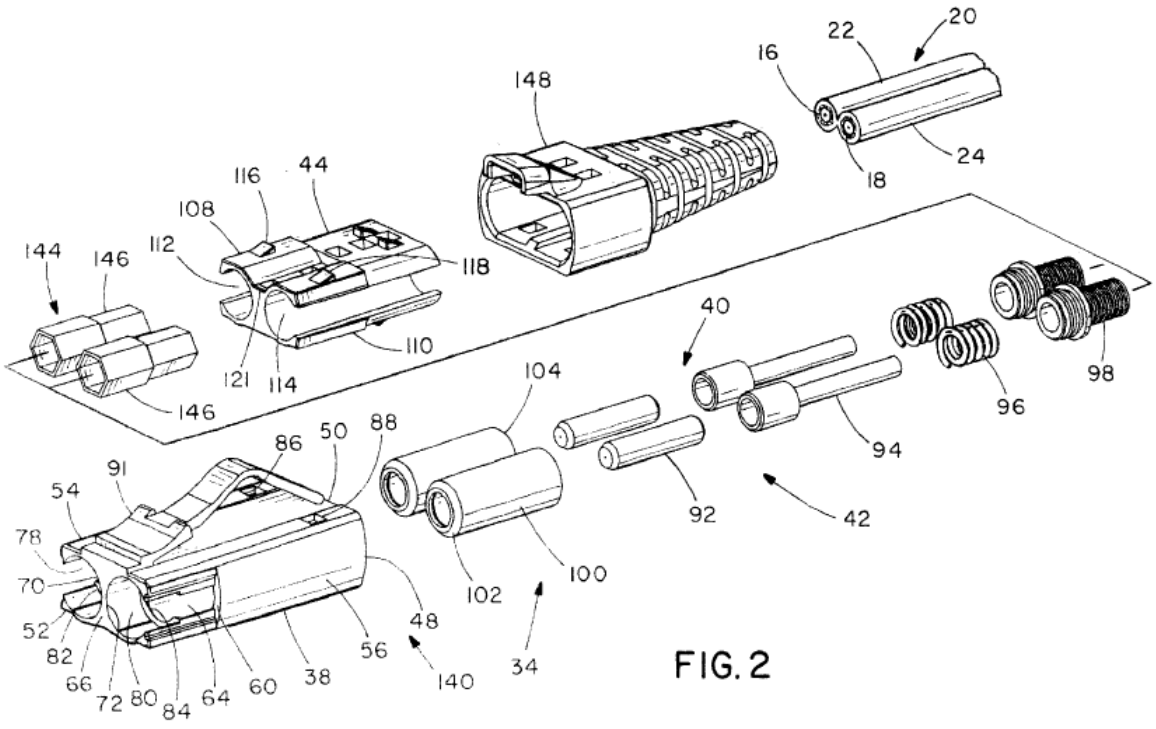


FIG. 2

EX1008, Connelly, FIG. 2.

170. The housing 38 also includes a top wall 50, a bottom wall 52 and side walls 54, 56. [EX1008, Connelly, 2:32-41, FIG. 2.] Connelly explains the side walls 54, 56 terminate a predetermined distance from the front housing end 46,

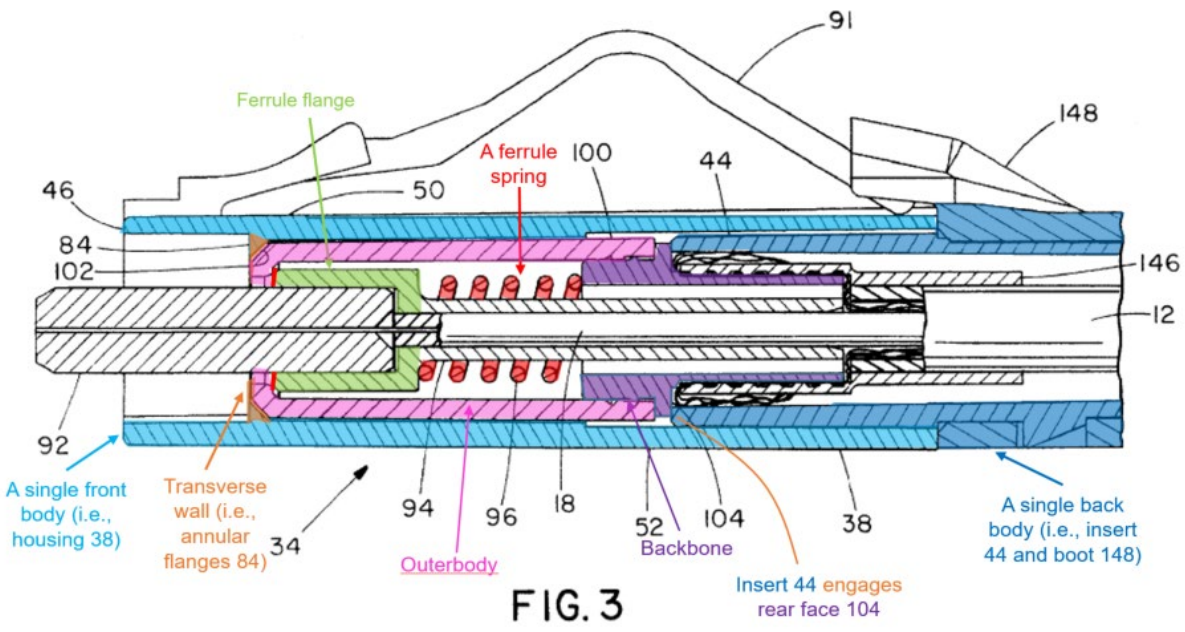
resulting in first and second side windows 62, 64. [EX1008, Connelly, 2:32-41, FIG. 2.]

171. Additionally, the housing 38 includes a conventional latch 91 "extending from" the front housing end 46 along the top wall 50. [EX1008, Connelly, 2:61-63, FIG. 2.] The latch is used to "snap-lock" to the jack 36 in the interlock state when the jack receives the plug. [EX1008, Connelly, 3:58-60.]

172. Connelly discloses that each of the plug pre-assemblies 40, 42 is a conventional spring-biased assembly that includes ceramic ferrules 92, ferrule holders 94, springs 96, backbone 98 and outerbody 100. Each of the plug pre-assemblies 40, 42 has a front face 102 defined by the outerbody 100 and a rear face 104 defined by the backbone 98. [EX1008, Connelly, 2:65-3:6, FIG. 2.]

173. Pertinent to my analysis in this Declaration is the housing of Connelly's fiber optic plug 34 having a single front body (e.g., housing 38) and a single back body (e.g., insert 44 and boot 148 snap-locked together) to compress a pair of ferrule springs (e.g., springs 96) therebetween. [EX1008, Connelly, 2:65-3:6, FIG. 2.] Connelly explains "[t]he insert 44 snap-locks into the housing 38, driving the plug pre-assemblies 40, 42 into abutment with the annular flanges 82, 84." [EX1008, Connelly, 3:25-29.] The annular flanges are "extending circumferentially within the cylindrical passageways" in the region between the housing front end 46 and the plug stabilizing surfaces 58, 60. [EX1008, Connelly,

2:53-58.] This is further illustrated in the annotated Figure 3 below. The insert 44 compresses the rear face 104 of the backbone 98, which further compresses springs 96.



EX1008, Connelly, FIG. 3 (annotated).

174. Connelly discloses "an interior, central dividing wall 66" inside the housing 38. The wall 66 extending vertically from the top wall 50 to the bottom wall 52 and longitudinally from the front housing end 46 to a point between the rear housing end 48 and the plug stabilizing surfaces 58, 60. [EX1008, Connelly, 2:42-46.] The wall 66, the side walls 54, 56 and the top and bottom walls 50, 52 define cylindrical housing passageways 78, 80. The housing 38 further includes

"thin, substantially annular flanges 82, 84, extending circumferentially" within the passageways 78, 80. The annular flanges 82, 84 are located in the region "between the housing front end 46 and the plug stabilizing surfaces 58, 60." [EX1008, Connelly, 2:48-58, FIG. 2.]

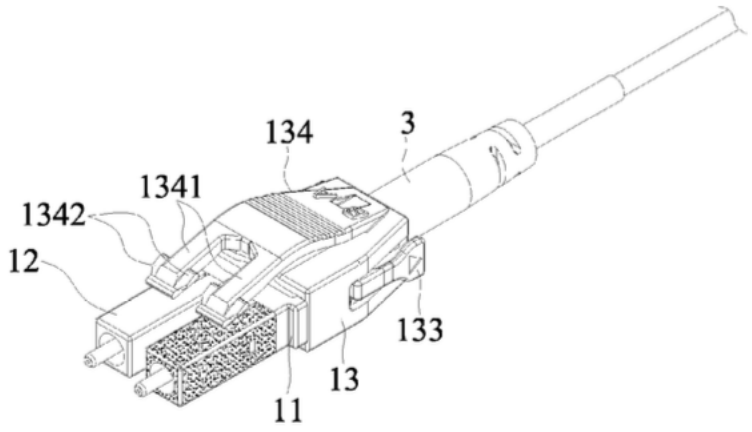
E. Overview of Lin'658

175. U.S. Patent No. 9,625,658 is titled "Communication Connector with Alterable Polarity." The only named inventor is Yen-Lin Lin. U.S. Patent No. 9,625,658 (hereinafter "Lin'658") was issued on April 18, 2017. The application from which Lin'658 issued was filed on April 12, 2016. [EX1009, Lin'658, cover.]

176. I understand that Lin'658 is prior art to the '701 Patent based on my discussion of the legal standards above and discussions with counsel. In particular, I understand that Lin'658 has a filing date prior to the earliest possible priority date of the '701 Patent (February 9, 2017). Therefore, Lin'658 qualifies as prior art at least for this reason.

177. Lin'658 discloses a communication connector "with alterable polarity." [EX1009, Lin'658, Abstract.] Therefore, as shown below in Figure 2, Lin'658's connector includes a main body 11, a pair of fiber optic plugs 12, and a casing 13. [EX1009, Lin'658, Abstract.] The casing slides onto the main body and can be separated from the main body. [EX1009, Lin'658, Abstract.] The polarity of

the connector is altered by rotating the separated casing 180 degrees and re-assembling it back onto the main body. [EX1009, Lin'658, Abstract.]



EX1009, Lin'658, FIG. 2.

178. Lin'658 explains that when transmitting signals using fiber optics, the transmission has to be made in pairs, one for transmit and the other for receive, which forms the polarity of fiber optic transmission systems. [EX1009, Lin'658, 1:40-51.] Accordingly, close attention must be paid when combining two connection heads of fiber optic connectors to avoid damaging the fiber optic transmitter/receiver, and the polarity of the connectors "has to be exchanged/altered quickly" when it is discovered that the fiber optic polarity is connected incorrectly. [EX1009, Lin'658, 1:52-61.] Thus, Lin'658 discloses a fiber optic connector that enables polarity exchange in a manner that "substantially improves convenience and efficacy" during operation. [EX1009, Lin'658, 3:5-10.] Therefore, I believe a POSITA would understand Lin'658 to articulate a goal of

designing fiber optic connectors that permit convenient and efficient polarity reversal.

179. As illustrated below in Figure 1, Lin'658's connector with alterable polarity 1 includes a main body 11, a pair of fiber optic plugs 12, and a casing 13. [EX1009, Lin'658, 4:63-67.] Each fiber optic plug 12 receives a fiber optic wire 31 to define the polarities of the fiber optic transmission system. [EX1009, Lin'658, 5:15-20.]

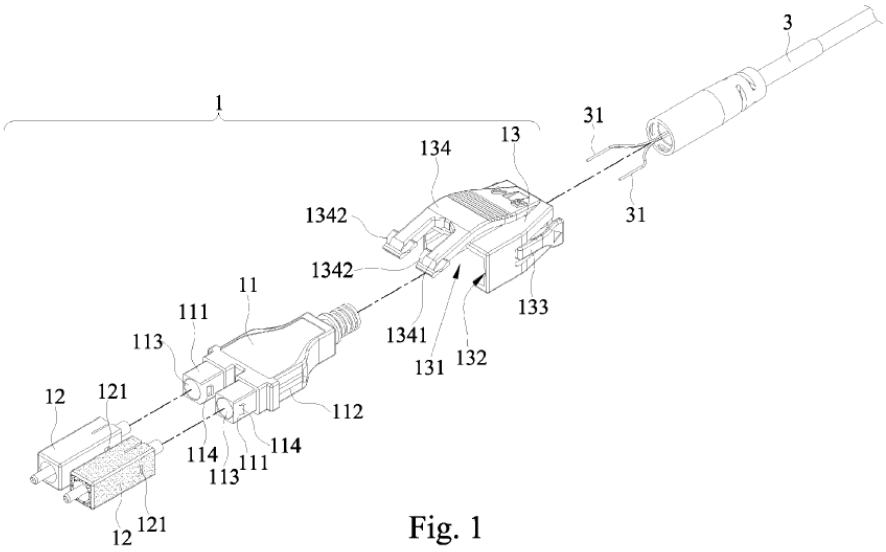


Fig. 1

EX1009, Lin'658, FIG. 1.

180. Lin'658 also discloses a clip 134 "formed integrally and positioned above the rear end of the casing 13." Lin explains the clip 134, the casing 13 and the main body 11 together "can be engaged and fixed to the corresponding jack 21" of the fiber optic socket 2 when the communication connector is "inserted"

into the fiber optic socket 2, as illustrated below in Figure 4. [EX1009, Lin'658, 5:43-52, FIG. 4.]

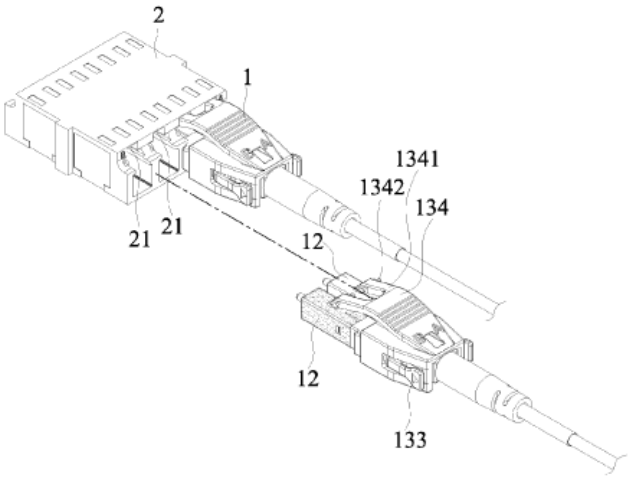


Fig. 4

EX1009, Lin'658, FIG. 4.

181. Lin'658 discloses that each of the two sides of the casing 13 includes a guide groove 132 and a grab 133 corresponding to the guide block 112 located on each of the two exterior walls of the main body 11. [EX1009, Lin'658, 5:25-43, FIG. 1.] The two guide grooves 132 and the two guide blocks 112 cooperate to restrict and guide the casing 13 in accordance with the movement direction of the main body 11. [EX1009, Lin'658, 5:25-43, FIG. 1.] A POSITA would have understood the grooves 132 and the blocks 112 are simple alignment mechanisms used during coupling, and they are interchangeable. In other words, the guide

grooves 132 can be on the exterior walls of the main body, and the guide blocks 112 can be on the two sides of the casing 13.

182. To reverse polarity of Lin'658's communication connector 1, the user separates the casing 13 from the main body 11 by pressing the two grabs 133, and slides the casing out of the main body. [EX1009, Lin'658, 5:59-67, FIG. 5.] Then, either the main body or the casing is rotated 180 degrees, and the casing is placed back on the main body "via sliding movement." [EX1009, Lin'658, 6:1-5, FIG. 6.] Lin'658 explains that such a design both "prevents the problem of losing components during adjustment" and "prevents the fiber optic cable 3 from being damaged due to excessive twisting." [EX1009, Lin'658, 6:4-9.] Figure 5 below illustrates separating the casing from the main body and Figure 6 below illustrates placing the casing back onto the main body after the main body is rotated by 180 degrees. Subsequently, the polarity of the connector is altered.

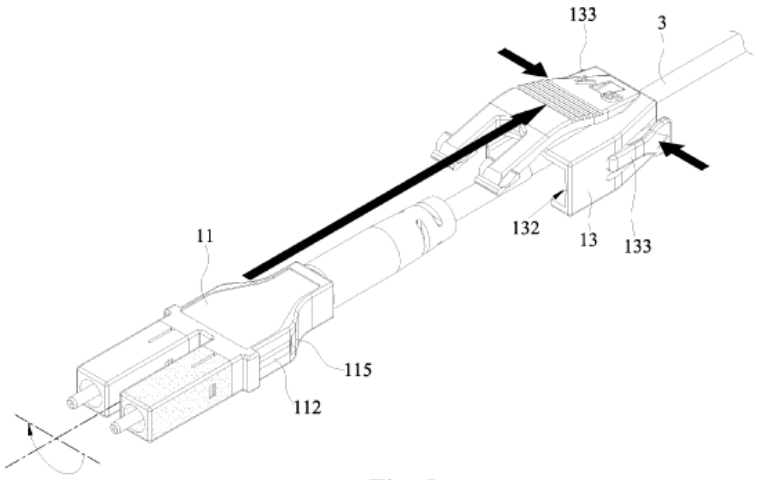


Fig. 5

EX1009, Lin'658, FIG. 5.

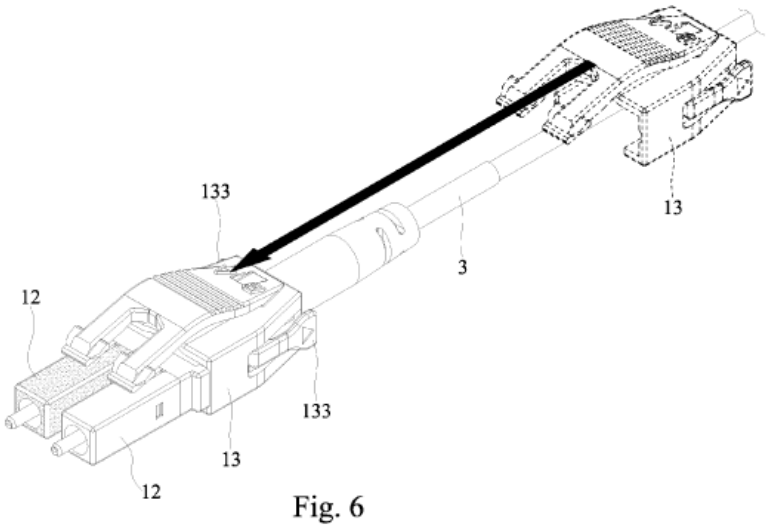


Fig. 6

EX1009, Lin'658, FIG. 6.

F. Overview of Lin'293

183. U.S. Patent No. 8,641,293 is titled "Optical Fiber Connector and Apparatus of Facilitating to Pull out Optical Fiber Connector." The named inventors are Sung An Lin and Sung Chi Lin. U.S. Patent No. 8,641,293 (hereinafter "Lin'293") was issued on February 4, 2014. The application from which Lin'293 issued was filed on April 19, 2012. [EX1010, Lin'293, cover.] It claims the priority benefit of Taiwan Patent Application No. 101105477 filed February 20, 2012. [EX1010, Lin'293, 1:8-11.]

184. I understand that Lin'293 is prior art to the '701 Patent based on my discussion of the legal standards above and discussions with counsel. In particular, I understand that Lin'293 has an issuing date prior to the earliest possible priority

date of the ’701 Patent (February 9, 2017). Therefore, Lin’293 qualifies as prior art at least for this reason.

185. Lin’293 is in the field of optical fiber connectors. [EX1010, Lin’293, 1:15-18.] Lin’293 explains that when many connectors are mounted on a panel with close spacing to each other, there is not enough space for a user’s fingers to press a tab of a latch to pull out the connectors. [EX1010, Lin’293, 2:26-29.] Accordingly, Lin’293 discloses an apparatus for pullingout an optical fiber connector without the need to press the tab on the optical fiber connector directly. [EX1010, Lin’293, 2:35-39.]

186. Lin’293 first provides an overview of a conventional LC type optical fiber connector 100 that includes a latch 120 for mating with an adapter 200. [EX1010, Lin’293, 1:40-60, 2:19-25, FIGs. 1, 2.] As illustrated below in Figures 1 and 2, Lin’293 discloses the latch includes a living hinge 125 and a tab 126 that can be “moved up and down,” so that the tab can be pressed down in order to pull the connector out from the adapter. [EX1010, Lin’293, 1:40-60, 2:19-25, FIGs. 1, 2.]

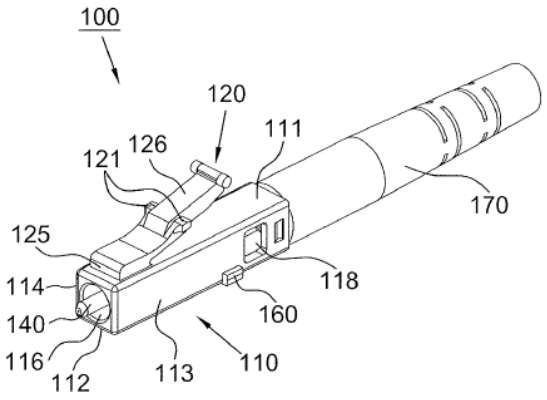


FIG. 1 (PRIOR ART)

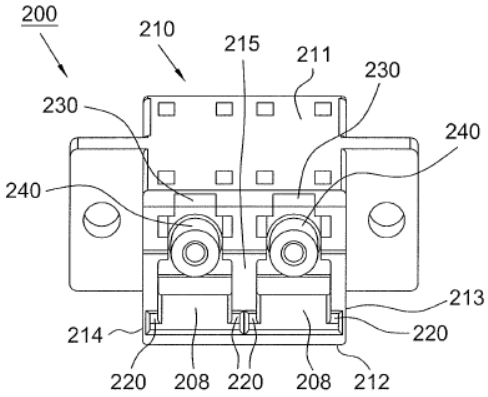


FIG. 2 (PRIOR ART)

EX1010, Lin'293, FIGs. 1, and 2.

187. Lin'293's apparatus 300 for pullingout optical fiber connectors is shown below in FIGs. 3 and 4. The apparatus 300 includes a handle member 310 and a clip member 320. [EX1010, Lin'293, 3:64-67, FIGs. 3, 4.] The handle member 310 is "flexible" and includes a body 319 and a T-shaped handle 311. The body 319 has a "U-shaped ring 315." [EX1010, Lin'293, 4:15-29, FIG. 3.] The clip member 320 has an accommodation room 323 defined by vertical portions 322 and a horizontal portion 321. [EX1010, Lin'293, 4:1-6, FIG. 4.]

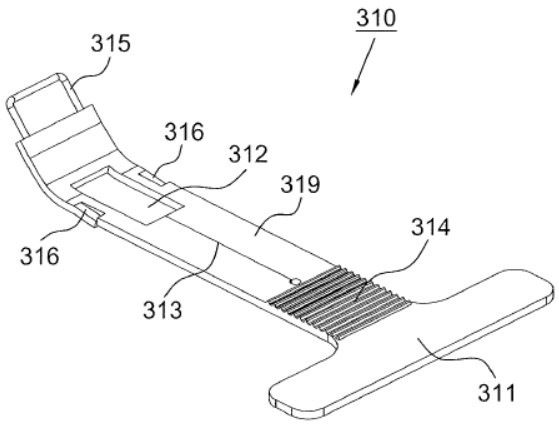


FIG. 3

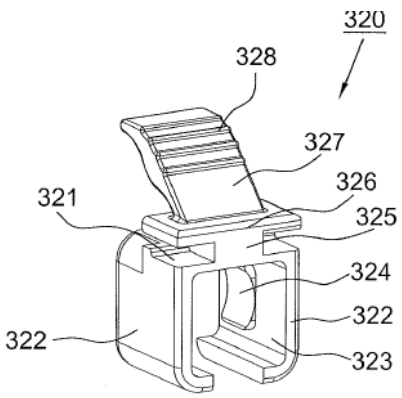


FIG. 4

EX1010, Lin'293, FIGs. 3, 4.

188. As shown below in Figure 5, Lin'293 discloses that the handle member 310 and the clip member 320 can be assembled together by inserting the clip member 320 through the opening 312 of the handle member 310, to form the pull-out apparatus 300. [EX1010, Lin'293, 4:30-39, FIG. 5.]

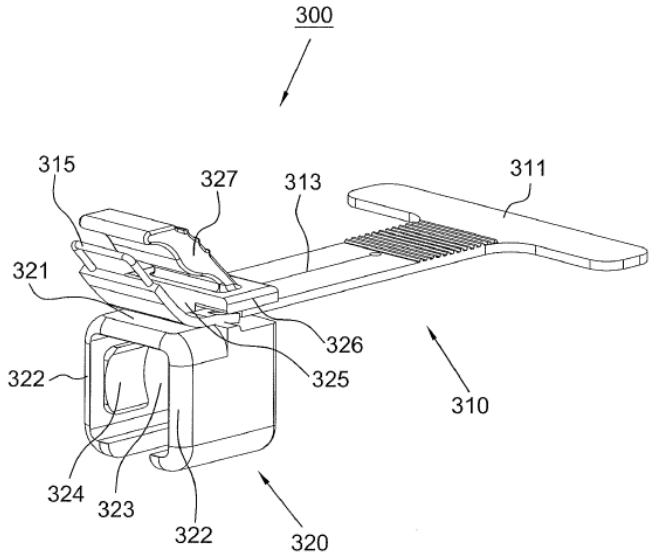


FIG. 5

EX1010, Lin'293, FIG. 5.

189. Lin'293 explains that when the clip member 320 clips to the connector 100, the vertical portions 322 of the clip member 320 are "in tight contact" with the side-walls 113, 114 of the connector 100, as illustrated below in Figure 6. Furthermore, the U-shaped ring 315 encloses the tab 126 of the connector 100. [EX1010, Lin'293, 4:40-56, FIG. 6.] Lin'293 further discloses that "a pull at the handle member 310" will cause "the tab 126 to be pressed down" and further cause the connector 100 to be pulled out from the adapter 200. [EX1010, Lin'293, 4:66-5:16, FIG. 6.]

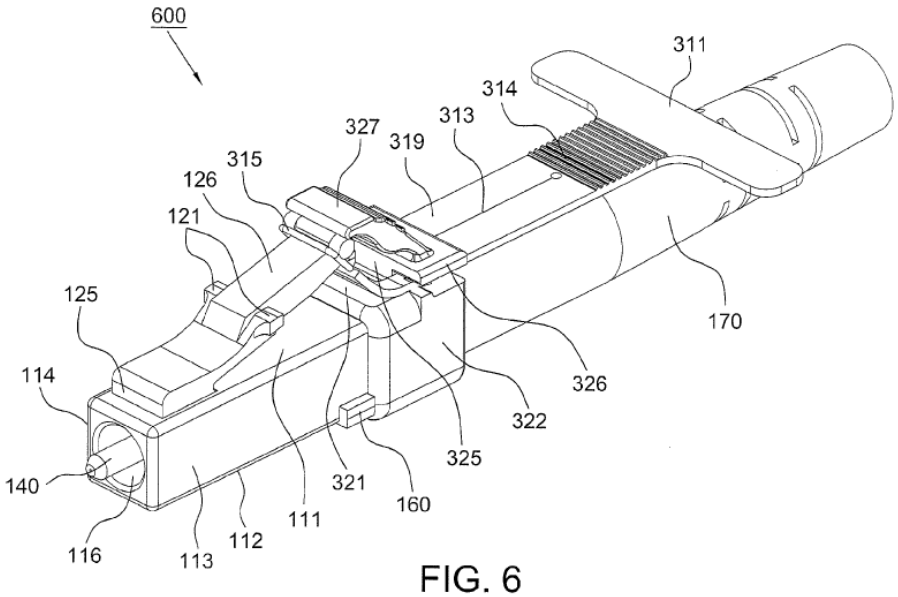


FIG. 6

EX1010, Lin'293, FIG. 6.

190. Finally, Lin'293 explains the apparatus disclosed may be mounted to a regular optical fiber connector, and that "[t]here is no need to use a special optical fiber connector at which the disclosed apparatus of the present disclosure may mount." [EX1010, Lin'293, 5:33-37.]

VIII. SUMMARY OF GROUNDS

191. In my opinion, claims 1-53 (the "Challenged Claims") are invalid as obvious in view of the prior art. The table below summarizes the grounds that are used below to show invalidity of claims 1-53:

Ground	References	Basis	Claims Challenged
1	Lee (EX1005) and Raven (EX1006)	§103	1-15, 19-31, 35-36, 46-47, and 53

Ground	References	Basis	Claims Challenged
2	Lee, Raven and Nguyen (EX1007)	§103	16-18, 32-34, 37-45, and 48-52
3	Connelly (EX1008) and Lin'658 (EX1009)	§103	1-6, 12-15, 19-26, and 35
4	Connelly, Lin'658 and Lin'293 (EX1010)	§103	7-11, 27-31, 36, 46-47, and 53
5	Connelly, Lin'658 and Nguyen	§103	16-18, and 32-34
6	Connelly, Lin'658, Lin'293 and Nguyen	§103	37-45, and 48-52

IX. LEE IN VIEW OF RAVEN RENDERS OBVIOUS CLAIMS 1-15, 19-31, 35, 36, 46-47, AND 53

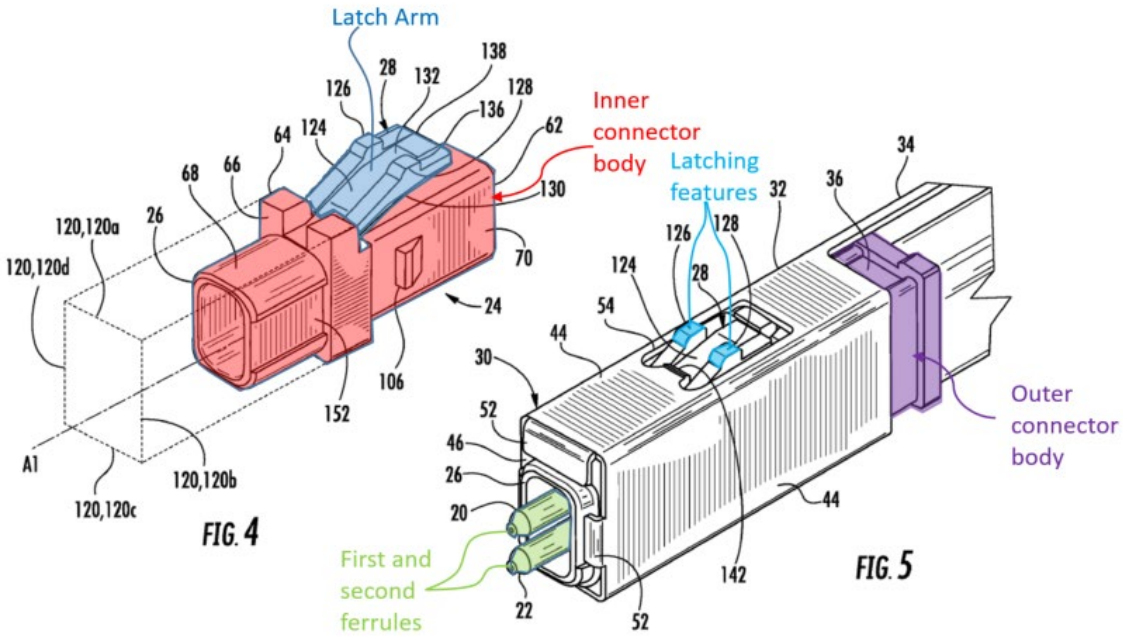
192. I believe that a POSITA would have understood that the limitations in claims 1-15, 19-31, 35, 36, 46-47, and 53 of the '701 Patent would have been obvious based on Lee in view of Raven.

A. Motivation to Combine

193. I believe a POSITA would have found it obvious to combine Lee and Raven to arrive at the subject matter of the claims addressed below prior to the filing date of the '701 Patent. In particular, a POSITA would have found it obvious to modify Lee's fixed latch arm configuration with Raven's removable latch configuration (e.g., latching formation 65 on the connector part 61 of the leading end unit 3 and a mating groove 39 and a latch 41 on each of the side walls 35 and

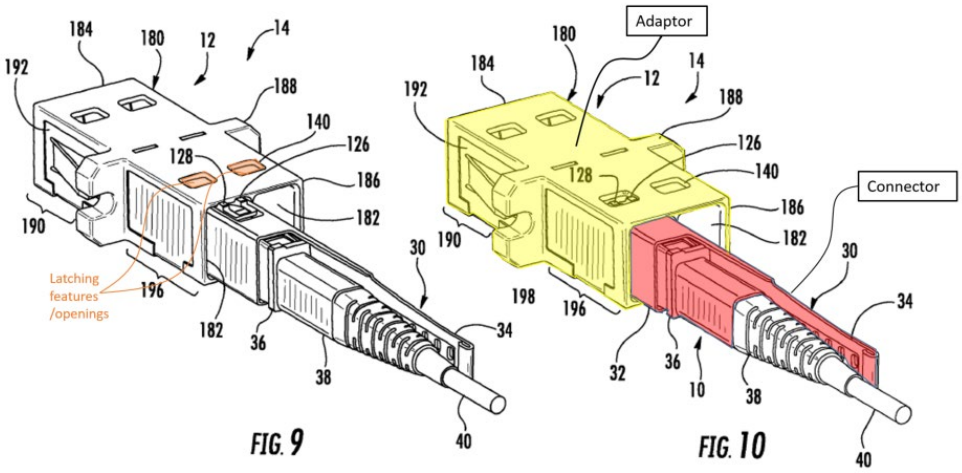
37). A POSITA would have found this modification obvious for several reasons. However, before addressing the obviousness of this combination, I summarize the relevant disclosures of Lee and Raven for context.

194. Lee discloses a fiber optic connector generally used in data centers or the like. [EX1005, Lee, ¶0002.] As shown below in annotated Figures 4 and 5, Lee's connector "includes first and second ferrules 20, 22" and "an inner connector body 24" and "an outer connector body 36" coupled to the inner connector body 24. [EX1005, Lee, ¶0030, FIGs 4, 5.] Lee discloses that a "latch arm 28 may be integrally formed with the inner connector body 24." [EX1005, Lee, ¶0034, FIG. 4.] The "latch arm 28 extending outwardly from the inner connector body 24" and "in the longitudinal direction." [EX1005, Lee, ¶¶0034, 0044, FIG. 4.] The latch arm 28 has "first and second latching features 126, 128" that are "in the form of shoulders." [EX1005, Lee, ¶¶0043, 0045, FIGs. 4, 5.]



EX1005, Lee, FIGs. 4 and 5 (annotated).

195. Lee also discloses "an adapter 12," together with the connector 10, present "a fiber optic connector system." [EX1005, Lee, ¶0029.] As shown below in annotated Figure 9, the adapter 12 has "openings 140," also referred to as "latching features 140." [EX1005, Lee, ¶¶0045, 0046, 0059, FIGs. 9, 10.] As shown below in annotated Figure 10, the connector 10 is retained in the adapter 12 by "[t]he shoulders cooperat[ing] with openings 140 in the adapter 12." [EX1005, Lee, ¶0045, FIG. 10.]

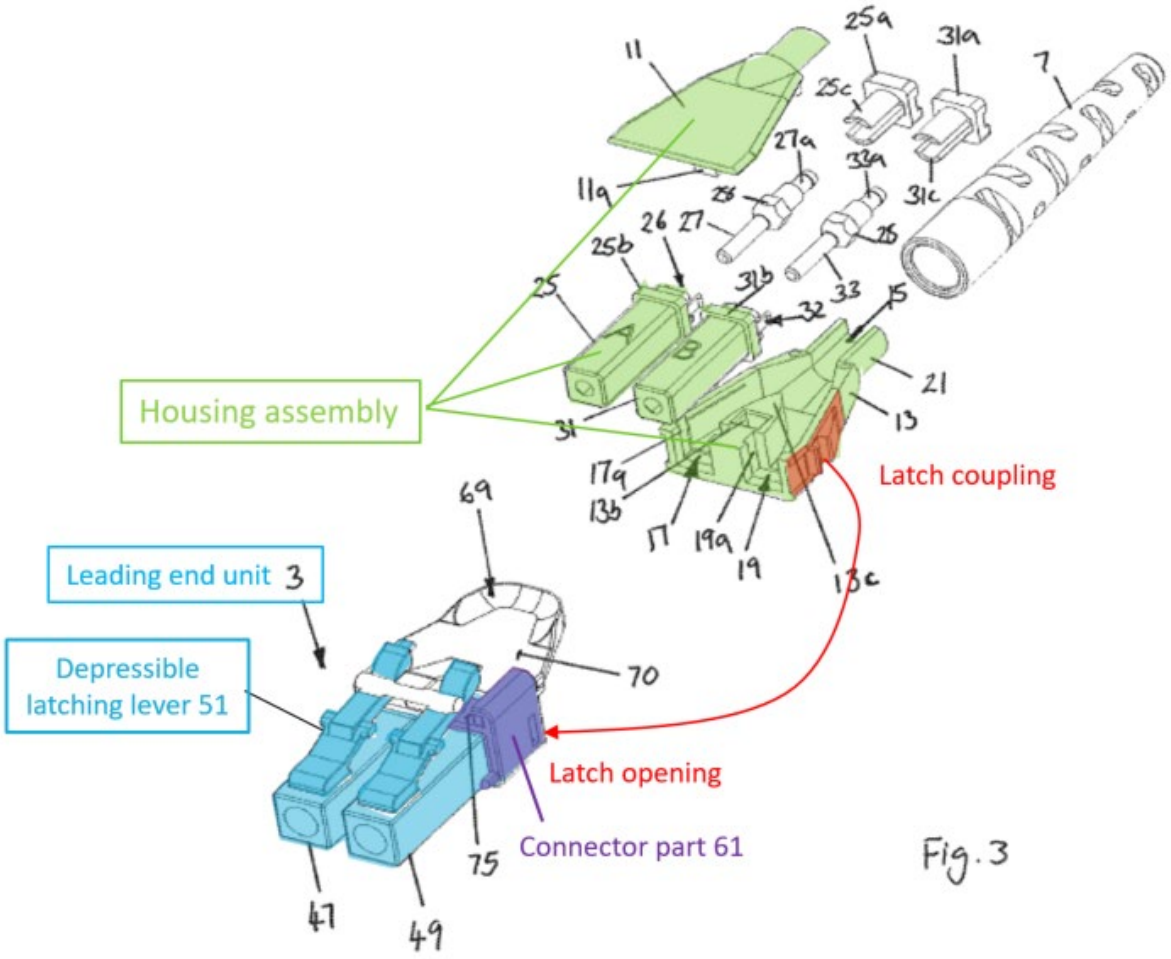


EX1005, Lee, FIGs. 9 and 10 (annotated).

196. Lee's latch arm 28 "may be integrally formed with the inner connector body 24." [EX1005, Lee, ¶0034.] However, making a latch removable in order to change an orientation of a connector was well known, as evidenced by Raven.

197. As shown below in annotated Figure 3, Raven discloses a fiber optic connector device that includes "a housing assembly," and first and second fiber optic connectors arranged to receive first and second optical fibers. [EX1006, Raven, 2:29-35, FIG. 3.] Specifically, Raven discloses "a duplex fibre optic cable assembly 1" that includes "a leading end unit 3" and "a housing 5." [EX1006, Raven, 9:51-53, FIGs. 1, 3.] Raven explains the "housing assembly" is formed by "[t]he housing 5 and first and second inner bodies 25,31." [EX1006, Raven, 10:49-50, FIG. 3.] The first inner body 25 receives "a first ferrule 27" and the second

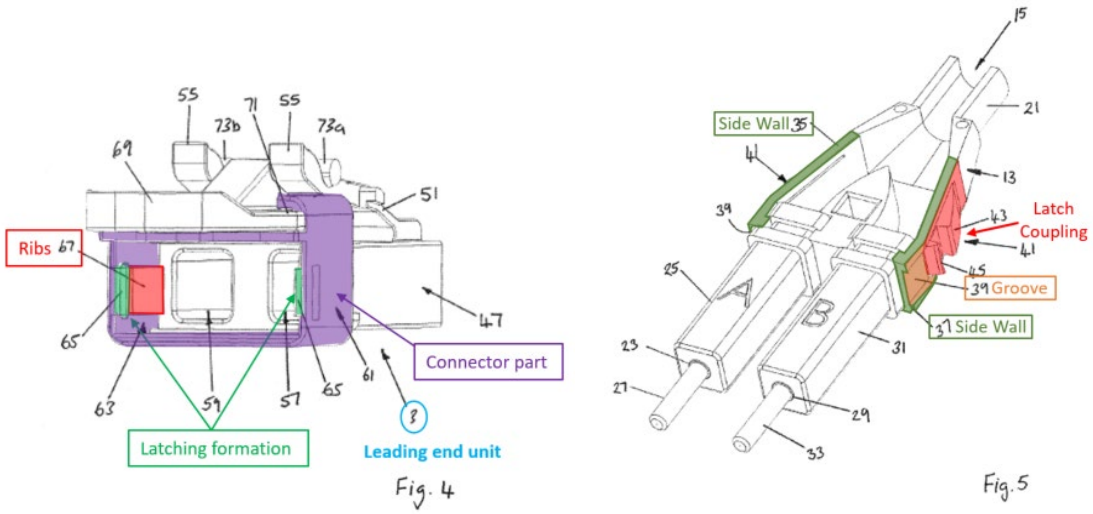
inner body 31 receives "a second ferrule 33." [EX1006, Raven, 10:3-48, FIG. 3.] Raven further discloses that "[e]ach of the first and second fibre optic connectors 47,49 includes a latching lever 51 that is arranged to releasably lock the respective fibre optic connector device to a complementary connector device." [EX1006, Raven, 11:44-51.]



EX1006, Raven, FIG. 3 (annotated).

198. Raven explains that the leading end unit 3 is "releasably locking" to the housing 5. [EX1006, Raven, 11:30-31.] Specifically, Raven discloses the

housing 5 has side walls 35 and 37, and each of the side walls has a latch coupling to engage with the leading end unit 3. [EX1006, Raven, 10:51-63, FIG. 5, (explaining each of the side walls includes a mating groove 39, a latch 41 which is comprised of a pressing part 43 and a latching part 45, that are "arranged to engage with a latching formation 65 on the leading end unit 3").] As shown in annotated verions of Raven Figure 3 above and Figures 4 and 5 below, the leading end unit 3 includes a connector part 61 that has "an open-sided docking bay 63" arranged "to be mounted onto the leading end of the housing 5." The connector part 61 includes a latching formation 65 and ribs 67. The ribs are arranged to engage with the mating grooves 39 on the housing 5 when the leading end unit 3 slides onto the housing 5. [EX1006, Raven, 11:13-32, FIGs. 3, 4.]



EX1006, Raven, FIGs. 4 and 5 (annotated).

199. To change the polarity, the leading end unit 3 is separated from the housing 5, rotated 180 degrees and is reattached to the housing 5, thereby switching the first orientation of the optical fibers to a second orientation. [EX1006, Raven, 12:47-52.]

200. A POSITA would have understood that Raven's leading end unit 3 corresponds to the recited "removable latch" because the leading end unit includes fiber optic connectors each having a latching lever configured to releasably lock the fiber optic connectors to a complementary connector device and the leading end unit is releasably locked to the housing 5. A POSITA would also have understood that Raven's removable latch configuration requires structures on both the housing 5 and the leading end unit 3, which comprises the latch coupling structures on each of the side walls 35 and 37 of the housing 5, including a latch 41 (comprised of a pressing part 43 and a latching part 45), a groove 39, and latching structures on the leading end unit 3, including the connector part 61 with the latching formation 65 and ribs 67.

201. In my opinion, a POSITA would have found it obvious to add Raven's latch coupling structures (e.g., latch 41, groove 39, etc.) on each side of the exterior walls of Lee's connector housing (e.g., combined outer connector body 36 and inner connector body 24). Furthermore, it would be obvious to modify Lee's latch arm 28 to attach to a removable base, such as Raven's connector part

61 with latching formation 65 and ribs 67, for engaging the latch couplings on the modified connector housing of Lee. This would allow the polarity of Lee's connector to be altered easily "without the need to remanufacture the cable." [*See* EX1006, Raven, 1:13-45.] A POSITA would have found this combination obvious for several reasons.

202. First, Lee and Raven are in the same field as the '701 Patent (fiber optic connectors) and are both directed to duplex fiber optic connectors (i.e., connectors with two ferrules) with a latch for easy removal from a receptacle such as an adapter or a complementary connector. [EX1005, Lee, ¶¶0030, 0045; EX1006, Raven, 2:36–42, 11:44-51.] Accordingly, a POSITA would have understood that Lee and Raven are analogous prior art to the '701 Patent and would have recognized that the teachings of Raven's connector are applicable to Lee.

203. Second, the prior art references themselves provide a motivation that would have led a POSITA to combine the teachings of Raven's removable latch with Lee. Raven explains that typical fiber optic cable assembly includes "a pair of optical fibres", one for transmitting and one for receiving. [EX1006, Raven, 1:15-23.] The net effect of the data communications cabling is to connect the transmitting cables with receiving ports and receiving cables to connect with transmitting ports. [EX1006, Raven, 1:15-23.] However, as Raven explains, field

installers often "get confused between the transmitting and receiving cables" and a "cross over" mistake is not uncommon. [EX1006, Raven, 1:23-35.] Because connectors are "uni-directional" and can "only be inserted into the complementary receiving ports in one orientation," to fix the mistake, installers usually need to replace the existing cable and "remanufacture the cable on site." [EX1006, Raven, 1:23-35.] To address this problem, Raven teaches a simplified solution to change polarity of the connectors. [EX1006, Raven 1:36-46.] Note that this polarity-switching motivation was used later by the '701 Patent to justify its disclosure.

204. Given the problem description and disclosed solution in Raven of a detachable and reversible latch, a POSITA would have been motivated to make Lee's latch arm 28 separable from the connector housing. Using Raven's teaching to improve Lee would yield a mechanism that can "easily change the polarity of the duplex fibre optic cable assembly." [EX1006, Raven, 12:47–56.]

205. Third, this modification involves applying a known technique (Raven's removable latch configuration) to a similar device (Lee's connector) in the same way (providing latch couplings on exterior walls of a connector housing to receive a removable latch). A POSITA would have understood that there are a finite number of ways of making Lee's latch arm 28 removably coupled to the exterior walls of its connector housing.

206. As one example, Raven teaches latch coupling on side walls including a mating groove 39 and a latch 41 to engage with a latching formation 65 and ribs 67 on the connector part 61 of the leading end unit 3 (i.e., the removable latch). [EX1006, Raven, 10:51-65.] A POSITA would have understood that employing the teachings of Raven's mating groove/latch interface is one example of how to modify Lee's connector to make latch arm 28 removably coupled to exterior walls of Lee's connector housing.

B. Reasonable Expectation of Success

207. A POSITA would expect the combination to be successful because Lee's latch arm 28 would perform as originally intended after being releasably locked to the exterior walls of Lee's connector housing. In particular, a POSITA would have understood that adding coupling features, such as a groove, a latch, a pressing part and a latching part to the external walls of Lee's connector housing would still allow Lee's latching features 126, 128 on the latch arm 28 to engage the latching feature 140 on the adapter. Indeed, it was well known to make similar-type latches with depressible arms releasably locking to optical connector housings, as explicitly disclosed by Raven. A POSITA would have understood that modifying Lee's connector housing (e.g., combined outer connector body 36 and inner connector body 24) with Raven's connector part 61 will not necessarily

increase the size of Lee's connector because Lee's connector body 24 has a flange that can be modified to accommodate Raven's connector part 61.

208. Therefore, Lee's fiber optic connector will continue to have the same fundamental principle of operation, and the combination with Raven will not render Lee unsatisfactory for its intended purpose.

209. Thus, a POSITA would have had a reasonable expectation of success in combining Lee and Raven.

C. Claim 1

1. Claim 1, Preamble [1pre]– "A fiber optic connector comprising:"

210. Counsel has informed me the preamble should not be considered limiting. But even if found limiting, in my opinion, Lee discloses a fiber optic connector. [EX1005, Lee, Title ("Fiber Optic Connector with Small Profile, and Cable Assemblies, Systems and Method Including the Same"). *See also* EX1005, Lee, ¶0002 ("this disclosure relates generally to fiber optic connectors, and more particularly fiber optic connectors suitable for use in data centers or the like."), ¶0010 ("Fiber optic connectors in this disclosure, including those summarized above, may be provided as part of a cable assembly."), ¶0011 ("Fiber optic connectors in this disclosure, including those summarized above, may also be provided together with an adapter as part of a system.").]

211. Accordingly, whether or not the preamble is limiting, I believe a POSITA would have understood Lee discloses a fiber optic connector.

2. Claim 1, Element [1a] – "at least first and second optical ferrules;"

212. Lee discloses at least first and second optical ferrules. Lee's connector "includes first and second ferrules 20, 22". [EX1005, Lee, ¶0030, FIGs. 1 and 2.] These ferrules are shown below in the annotated Lee Figure 2. As Lee explains, "the first and second ferrules 20, 22 are respectively received in first and second ferrule holders 74, 76." [EX1005, Lee, ¶0035; *see also* EX1005, Lee, FIGs. 1, 3, 5, 6 (showing first and second optical fiber ferrules 20, 22).]

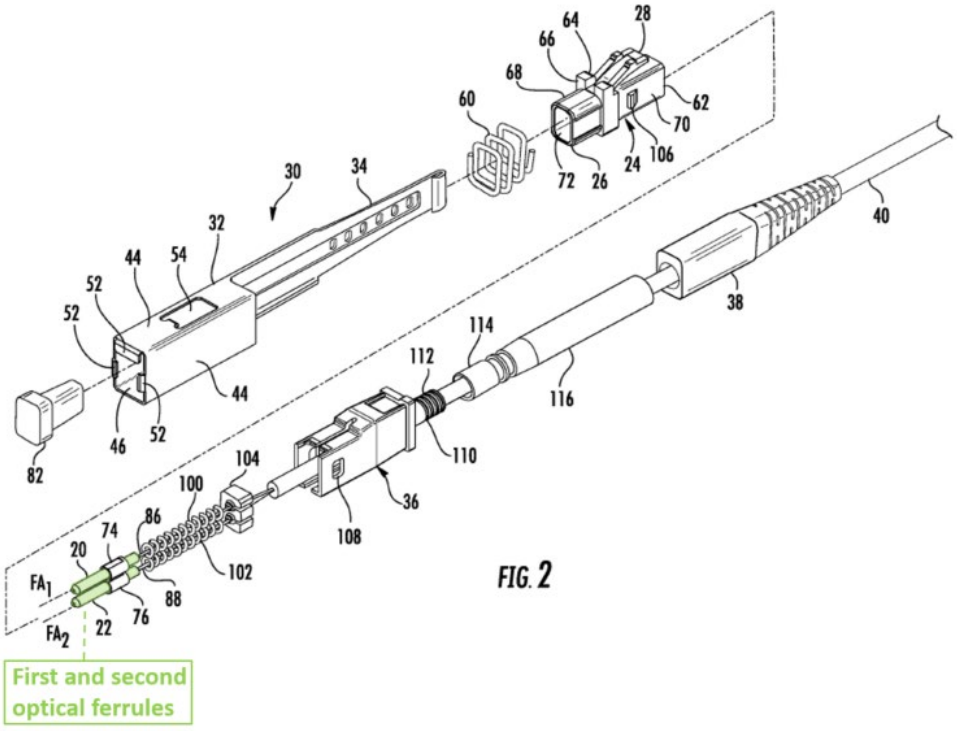


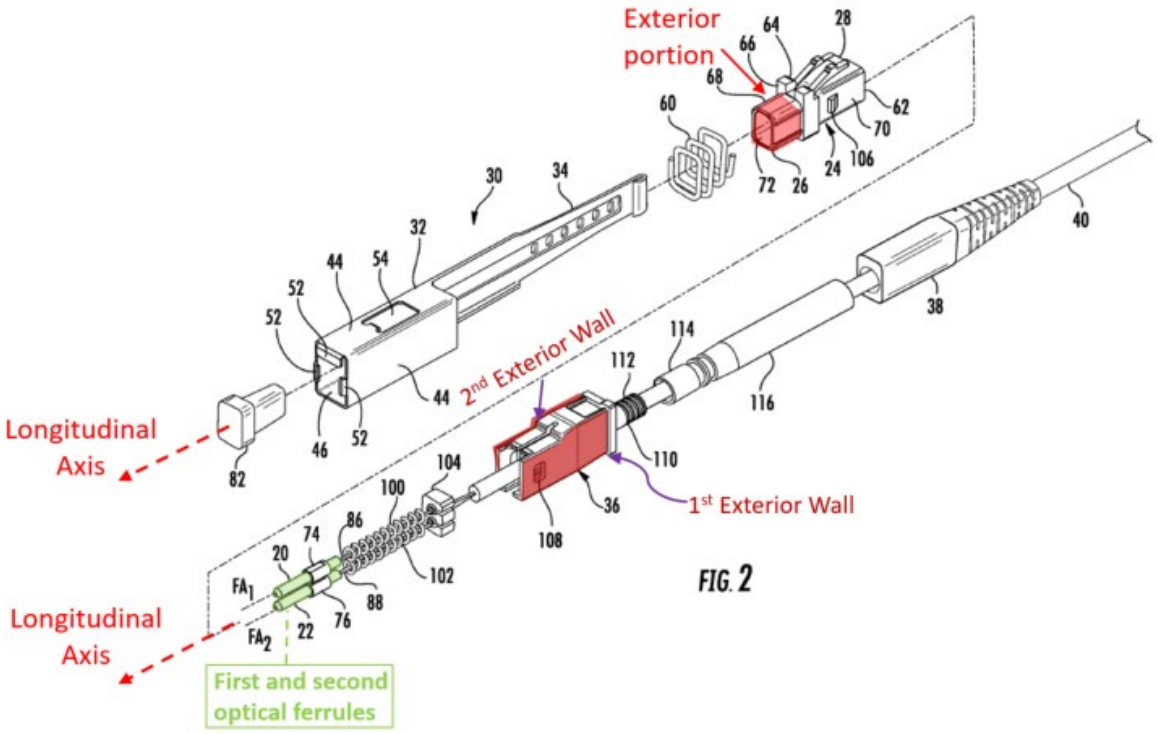
FIG. 2

EX1005, Lee, FIG. 2 (annotated).

213. Accordingly, I believe a POSITA would have understood Lee discloses element [1a].

3. Claim 1, Element [1b] – "a connector housing having a longitudinal axis and comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;"

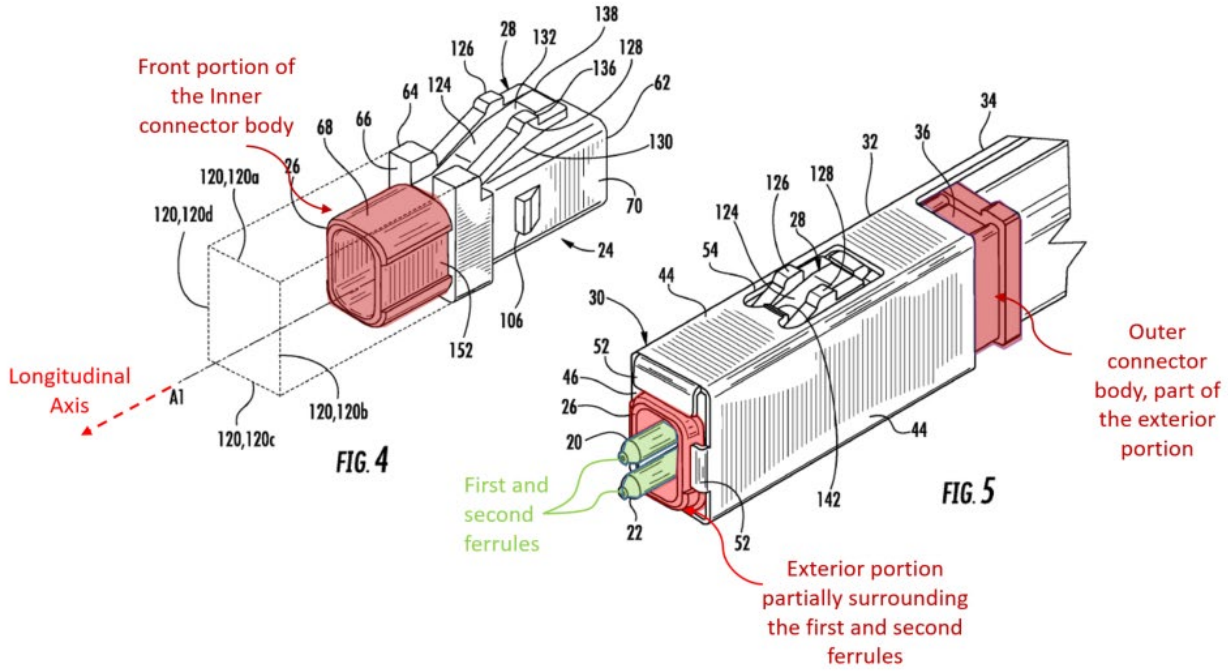
214. In my opinion, Lee discloses a connector housing (e.g., an outer connector body 36 coupled to the inner connector body 24) having a longitudinal axis and comprising an exterior portion at least partially surrounds the first and second optical ferrules (e.g., ferrules 20, 22) such that the exterior portion (e.g., exterior of the housing) circumscribes a space in which each of the first and second optical ferrules are received. [EX1005, Lee, ¶¶0030, 0038, 0039, 0044, FIGs. 2, 4, 5.] Further, Lee's exterior portion includes a first and second exterior walls positioned to the left and right of the ferrules, as shown below on an annotated version of Lee Figure 2. As this claim element is rather long, I will explain how Lee addresses each portion of this element for ease of understanding.



EX1005, Lee, FIG. 2 (annotated).

215. *"A connector housing having a longitudinal axis."* Lee discloses a connector 10 that has "an outer connector body 36 coupled to the inner connector body 24," and they may be coupled "in any suitable manner." [EX1005, Lee, ¶¶0030, 0039, FIG. 2.] Lee discloses the first and second ferrules 20, 22 are received by the inner connector body 24. [EX1005, Lee, ¶0035, FIG. 2.] A POSITA would have understood that Lee's outer connector body 36 coupled with the inner connector body 24 corresponds to the recited "connector housing." Lee also discloses "a longitudinal axis A1." [EX1005, Lee, ¶0044 ("a longitudinal direction (e.g., a direction along the longitudinal axis A1.")).] This axis was

illustrated above in the annotated Figure 2. It is also shown below in the annotated versions of Figures 4 and 5. Accordingly, Lee's connector housing has a longitudinal axis.



EX1005, Lee, FIGs. 4, 5 (annotated).

216. "… *and comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received*." A POSITA would have understood that Lee's connector housing (the outer connector body 36 coupled to the inner connector body 24) contains an inner space for receiving two optical ferrules. [EX1005, Lee, ¶0035, FIGs. 1, 5.] Lee discloses "a front portion 68" of the inner connector body 24. [EX1005, Lee, ¶0033, FIGs. 2,

4.] Lee further discloses "the front ends 90 of the first and second ferrules 20, 22 extend past the front end 26 of the inner connector body 24." [EX1005, Lee, ¶0057.] A POSITA would have understood Lee's connector housing includes an exterior portion (e.g., exterior of the outer connector body 36 coupled to the inner connector body 24, which includes front portion 68 of the inner connector body 24) and the exterior portion at least partially surrounding the first and second optical ferrules. [EX1005, Lee, ¶0057, FIG. 5.]

217. "*The exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall*." As shown above in Figure 2, Lee discloses the exterior portion of a housing having a first exterior wall (e.g., a first side wall) and a second exterior wall (e.g., a second side wall) on an opposite side of the space from the first exterior wall, as recited by this claim element. Further, I believe a POSITA would have readily understood that Lee's side walls are an exterior portion of the housing because they form an exterior boundary of the housing, as illustrated in the annotated Figure 2 above.

4. Claim 1, Element [1c] – "a latch coupling positioned on each of the first and second exterior walls of the connector housing;"

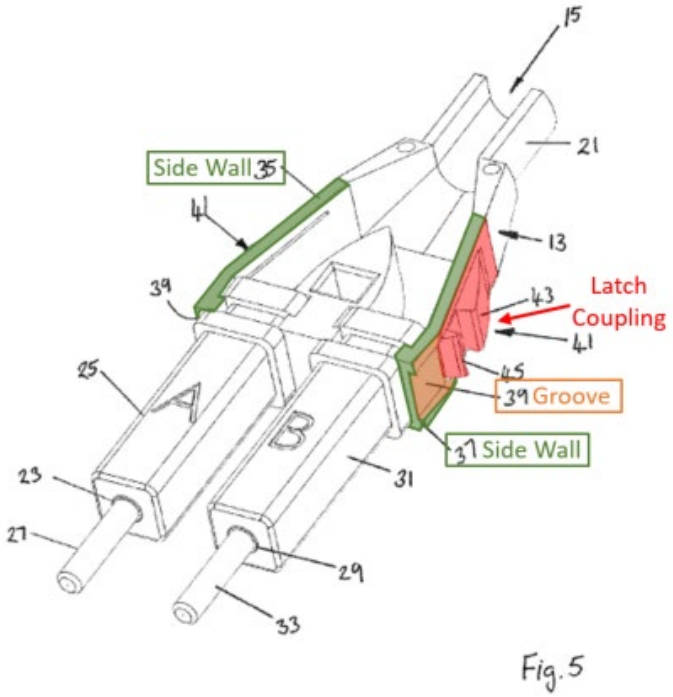
a. Lee

218. Lee discloses a latch arm 28 that "may be integrally formed with the inner connector body 24 (e.g., as a monolithic structure)." [EX1005, Lee, ¶0034.]

219. Patent Owner may allege Lee does not expressly teach latch couplings positioned on each of the first and second exterior walls of the connector housing to be coupled to Lee's latch arm 28. However, providing latch couplings on a connector housing to make the latch removably coupled to the connector housing was well known, as explicitly taught by Raven.

b. Raven

220. In my opinion, a POSITA would have understood that Raven teaches this claim limitation. Specifically, Raven discloses a "housing 5 includes side walls 35,37," each of the side walls 35,37 includes "a mating groove 39", "a latch 41 formed integrally therewith," and "[e]ach latch 41 is attached to its respective side wall 35,37 in a cantilevered manner." [EX1006, Raven, 10:51-63.] Each latch 41 "includes a pressing part 43 and a latching part 45" and "each latching part 45 is arranged to engage with a latching formation 65 on the leading end unit 3." [EX1006, Raven, 10:51-63.] As shown below in annotated Figure 5, a POSITA would have understood that the mating groove 39 and the latch 41, which includes the pressing part 43 and the latching part 45, on each of the side walls 35 and 37 are latching structures used to couple Raven's removable latch (e.g., leading end unit 3) with housing 5. Therefore, they correspond to the recited "latch coupling."



EX1006, Raven, FIG. 5 (annotated).

c. Motivation to Combine

221. In combining the teachings of Raven's latch couplings with Lee's connector, a POSITA would have found it obvious to add latch couplings on the first and second side walls of Lee's connector housing to engage a removable latch, e.g., a modified latch arm 28, thereby allowing the polarity of Lee's connector to be altered easily "without the need to remanufacture the cable," as discussed in Section IX.A. [*See* EX1006, Raven, 1:13-45.]

222. Accordingly, I believe a POSITA would have understood that Raven discloses element [1c]. Therefore, as discussed in Section IX.A., the combined

disclosures of Lee and Raven would have been obvious to combine and, once combined, they render this element obvious.

5. Claim 1, Element [1d] – "a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling; wherein each latch coupling comprises a groove extending along the axis and having an open axial end; and wherein the removable latch comprises a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis."

a. Lee

223. Lee discloses a latch arm 28. A POSITA would have understood that Lee's latch arm 28 corresponds to the recited "latch" because the latch arm 28 is configured to interlock the connector 10 in an adaptor and having a depressible arm configured to be depressed to release the connector from the adapter.

224. Patent owner may allege a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing is not expressly taught by Lee. However, providing a removable latch for engaging either of the first and second exterior wall latch couplings was well known, as explicitly taught by Raven.

b. Raven

225. It is my opinion that Raven discloses a removable latch (e.g., leading end unit 3) for engaging either of the first and second exterior wall latch couplings

on the connector housing (e.g., housing 5), and the latch coupling has a groove (e.g., groove 39) extending along the axis and having an open axial end. Further, Raven's removable latch has a protrusion (e.g., ribs 67) for being inserted into the open axial end of the groove by movement. [EX1006, Raven, 10:51-63, FIGs. 3-5.]

226. As I have explained why it would have been obvious to modify Lee to include Raven's removable latch (*see* Section IX.A., *supra*), I believe the combined disclosures of Lee and Raven render this claim obvious.

227. As this claim element is rather long, I will explain how Raven addresses each portion of this element for ease of understanding.

228. "*A removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling*." In my opinion, Raven discloses this claim element. Raven discloses a leading end unit 3 that includes a first and second fiber optic connectors 47 and 49. [EX1006, Raven, 11:13-20.] Each of the fiber optic connectors has a latching lever 51. [EX1006, Raven, 11:44-51.] The latching levers are configured to releasably lock the fiber optic connector device to a complementary connector device. [EX1006, Raven, 11:44-51.]

229. A POSITA would have understood that Raven's leading end unit 3 corresponds to the recited "latch" because the leading end unit has a latching lever 51 configured to lock the connector to the complementary connector.

230. Raven further discloses that the leading end unit 3 includes "latching formations 65 that are arranged to engage with respective latching parts 45 included in the housing 5" and the leading end unit 3 is "releasably lock[ed]" to the housing 5. [EX1006, Raven, 11:22-32.] Raven's leading end unit 3 "can be separated from the housing 5 by depressing the pressing parts 43." [EX1006, Raven, 9:51-53, 10:60-63, 11:38-43 ("The leading end unit 3 is detachable from the housing 5 by the user operating the latches 41.").]

231. A POSITA would have understood the leading end unit 3 corresponds to the recited "removable latch."

232. As explained above with respect to claim element [1c], Raven discloses "a latch coupling" on each of the exterior walls (e.g., side walls 35 and 37) of the connector housing 5. The latch coupling includes the groove 39, the latch 41, pressing part 43 and latching part 45. [*See* Section IX.C.4.] Raven explains that the leading end unit 3 includes connector part 61, and the connector part 61 has "an open-sided docking bay 63" arranged "to be mounted onto the leading end of the housing 5." [EX1006, Raven, 11:20-22.] The connector part 61 includes a latching formation 65 and ribs 67, and the ribs are arranged to engage with the mating grooves 39 on the housing 5 when the leading end unit 3 slides onto the leading end of the housing 5. [EX1006, Raven, 11:13-32, FIG. 4.] The latching formations 65 of the connector part 61 "are arranged to engage with

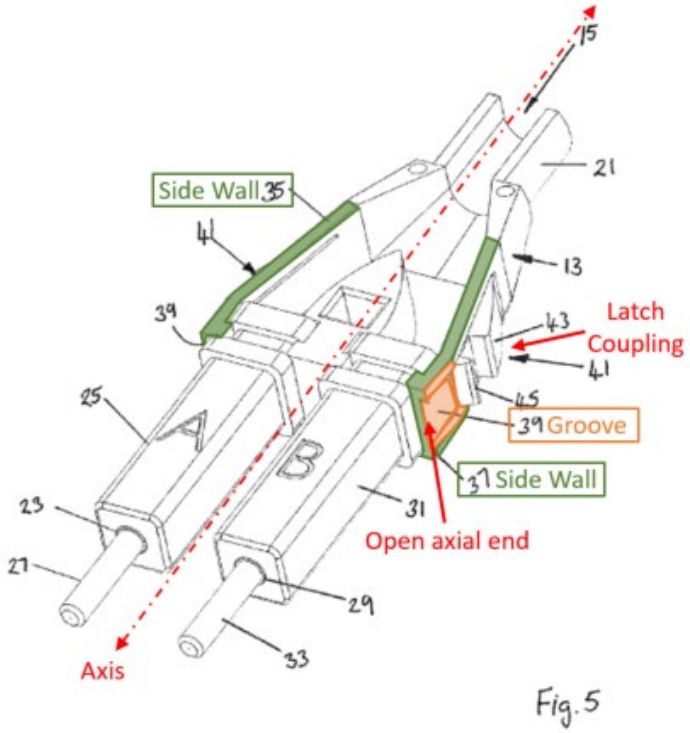
respective latching parts 45 included in the housing 5." [EX1006, Raven, 11:22-24.]

233. A POSITA would have understood "engaging either of the first and second exterior wall latch couplings" means one of the following configurations: engaging the first exterior wall latch coupling, engaging the second exterior wall coupling, or engaging both the first and the second exterior wall latch couplings. Accordingly, a POSITA would have understood that Raven's connector part 61 of the leading end unit 3 engages with respective latching parts 45 and mating grooves 39 corresponds to "a removable latch" that "engage[s] either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling."

234. "*Wherein each latch coupling comprises a groove extending along the axis and having an open axial end*." In my opinion, Raven discloses this claim element. Raven discloses each of the side walls 35 and 37 includes "a mating groove 39" and a latch 41 located adjacent to its respective groove 39. [EX1006, Raven, 10:51-55.] Raven further explains the mating grooves 39 are configured to engage with ribs 67 of the leading end unit 3, so that the ribs 67 can slide along the mating grooves 39 until latching formations 65 of the leading end unit 3 engage with their respective latching parts 45 of the housing 5, thereby "releasably locking" the leading end unit 3 to the housing 5. [EX1006, Raven, 11:22-32, FIGs.

4, 5.] A POSITA would have understood the mating grooves 39 are part of the recited "latch coupling" because they help guide the leading end unit 3 to releasably lock to the housing 5.

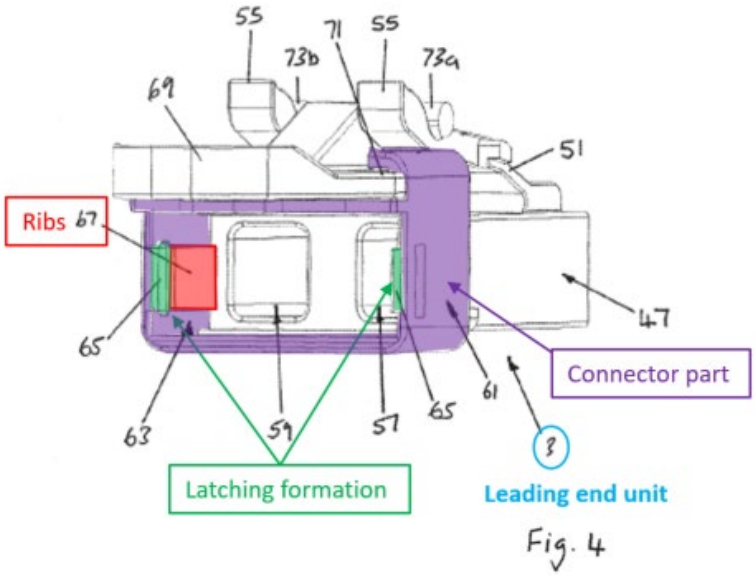
235. Annotated Figure 5 below illustrates that groove 39 is "extending along the axis and having an open axial end."



EX1006, Raven, FIG. 5 (annotated).

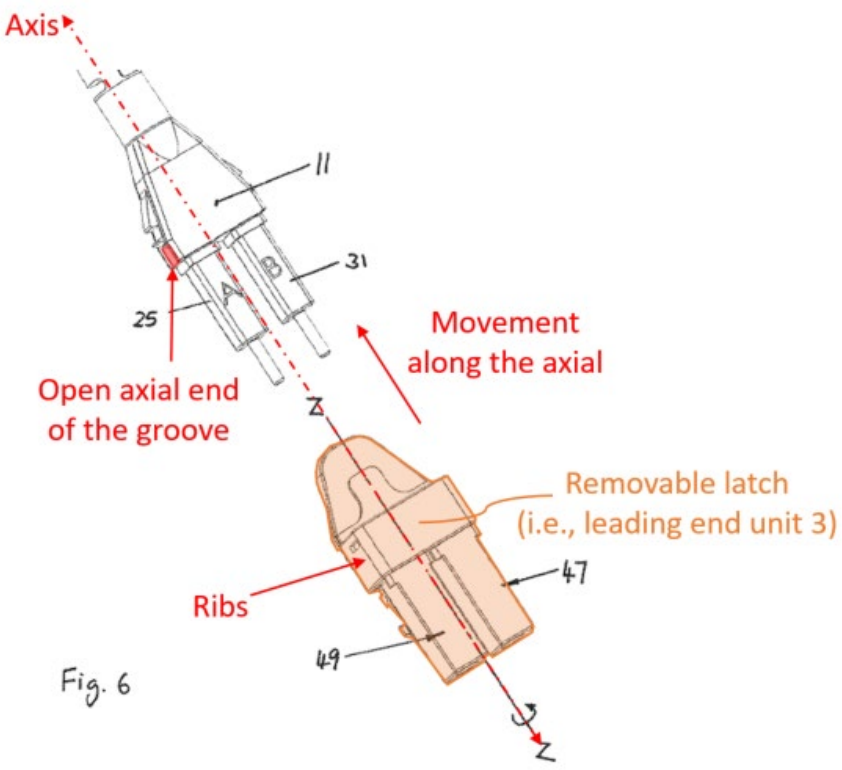
236. "*Wherein the removable latch comprises a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis*." Raven discloses the connector part 61 of the leading end unit 3 includes "ribs 67" that are "arranged to engage with the mating grooves 39 on the

housing." [EX1006, Raven, 11:13-32.] Raven explains "the arrangement is such that the leading end unit 3 can slide onto the leading end of the housing so that the ribs 67 slide along the mating grooves 39." [EX1006, Raven, 11:13-32.] Annotated Figure 4, provided below, highlights the ribs 67 on the connector part 61 of the leading end unit 3.



EX1006, Raven, FIG. 4 (annotated).

237. A POSITA would have understood that the ribs 67 of the leading end unit 3 correspond to the recited "protrusion." As shown above, annotated Figures 4 and 5 illustrate that the leading end unit 3 slides into the open axial end of the groove 39 by moving relative to the housing along the axis. This relative movement is also illustrated below in an annotated version of Figure 6.



EX1006, Raven, FIG. 6 (annotated).

c. Motivation to Combine

238. In combining the teachings of Raven's removable latch with Lee, a POSITA would have sought to make Lee's latch arm 28 removable by modifying latch arm 28 with Raven's connector part 61, so that Lee's modified latch arm 28 engages either of the first and second exterior wall latch couplings on the connector housing for the same reasons discussed in Section IX.A.

239. Accordingly, I believe a POSITA would have understood that Raven discloses element [1d], and therefore, the combined disclosures of Lee and Raven render this element obvious as discussed in Section IX.A.

D. Claim 2

6. Claim 2, Preamble [2pre] – "The fiber optic connector of claim 1, wherein"

240. Kindly refer to claim 1 above.

7. Claim 2, element [2a] – "the protrusion is movable along the longitudinal axis in each groove with respect to the connector housing;"

a. Lee

241. Lee discloses a latch arm 28. Patent Owner may argue that Lee does not expressly disclose the protrusion that is movable along the longitudinal axis in each groove with respect to the connector housing. But providing a protrusion that is movable along the longitudinal axis in each groove with respect to the connector housing was well known, as explicitly taught by Raven.

b. Raven

242. In my opinion, Raven discloses the protrusion that is movable along the longitudinal axis in each groove with respect to the connector housing.

243. Raven discloses the leading end unit 3 includes "ribs 67" that are "arranged to engage with the mating grooves 39 on the housing." [EX1006, Raven, 11:13-32.] Raven explains "the arrangement is such that the leading end unit 3 can slide onto the leading end of the housing so that the ribs 67 slide along the mating grooves 39." [EX1006, Raven, 11:13-32.] As explained above with respect to claim element [1d] and illustrated by the annotated Figures 4 and 5 provided

above, ribs 67 correspond to the recited "protrusion," and the mating grooves 39 extend along the longitudinal axis.

244. A POSITA would have understood that the ribs 67 of the leading end unit 3 are movable along the longitudinal axis in each groove with respect to the connector housing.

c. Motivation to Combine

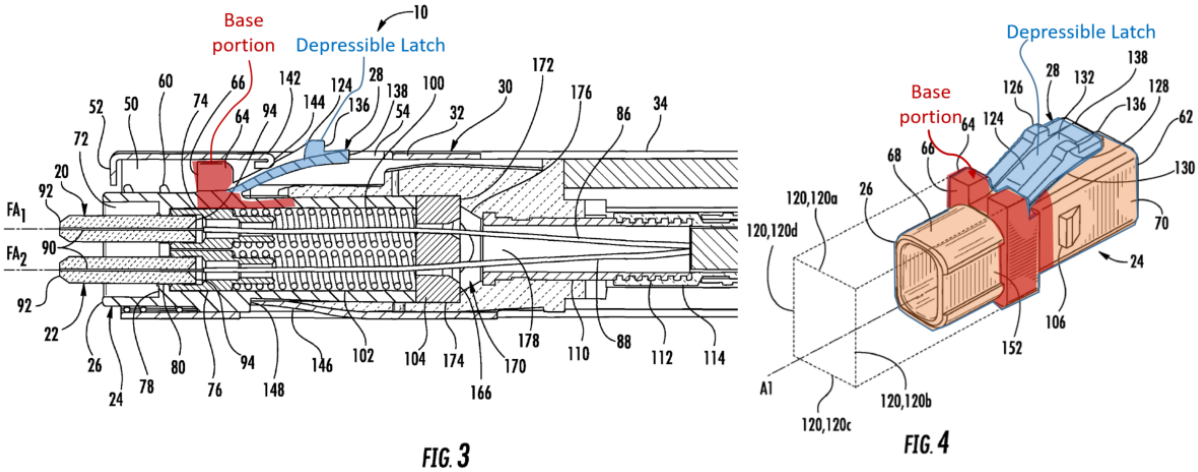
245. In combining the teachings of Raven's removable latch with Lee's latch arm 28, a POSITA would have sought to include a protrusion on Lee's latch arm 28 for the same reasons discussed in Section IX.A.

246. Thus, I believe that a POSITA would have understood Raven discloses claim element [2a], and therefore, as discussed in Sections IX.A and IX.B, the combined disclosures of Lee and Raven render this element obvious.

E. Claim 3 – "The fiber optic connector of claim 1, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion."

247. In my opinion, a POSITA would have understood that Lee discloses a latch that comprises a base portion and a depressible latch arm connected to the base portion. Specifically, Lee discloses a latch arm 28 "extending outwardly from the inner connector body 24." [EX1005, Lee, ¶¶0030, 0034, 0042 ("the latch arm 28 extends from one of the sides 120"), ¶0044 ("the latch arm 28 also extending … from the inner connector body 24").] Lee discloses that the latch arm 28 is

depressible. [*See* EX1005, Lee, ¶0030 ("cause the latch arm 28 to flex toward the inner connector body 24"), ¶¶0047, 0065 ("… cause the latch arm 28 to flex toward the inner connector body 24"), ¶0063 ("the latch arm 28 then flexes toward the inner connector body 24").] Lee explains that the latch arm 28 "may be integrally formed with the inner connector body 24 (e.g., as a monolithic structure)." [EX1005, Lee, ¶0034.] The annotated versions of Figures 3 and 4 provided below illustrates the latch, its base portion, and its depressible latch arm.



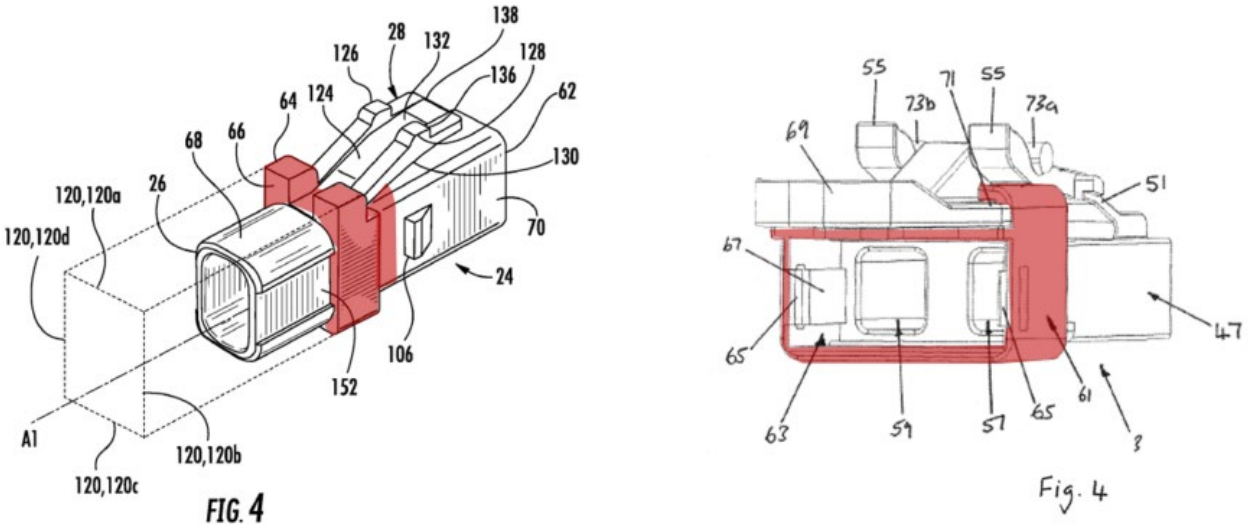
EX1005, Lee, FIGs. 3 and 4 (annotated).

248. A POSITA would have understood that part of the inner connector body 24 corresponds to the recited "base portion" and Lee's latch am 28 corresponds to "a depressible latch arm" that is "connected to the base portion."

249. Patent Owner may allege that Lee does not explicitly teach a removable latch. However, as I have explained above with respect to claim

element [1d] in Section IX.C.5, the combination of Lee and Raven teaches a removable latch.

250. In combining the teachings of Raven's releasably locking latch with Lee's connector housing, a POSITA would have understood that instead of integrally forming Lee's latch arm 28 with the inner connector body 24, Lee's latch arm 28 would be modified with Raven's connector part 61 for releasably locking to Lee's connector housing. One example of modifying the inner connector body 24 is shown in the annotated figures below, where the red annotated part of the inner connector body 24 may be modified to accommodate Raven's connector part 61, and it becomes the base portion of the modified latch arm 28, which can be releasably locked to the rest of the inner connector body 24.



EX1005, Lee, FIG. 4 (left, annotated); EX1006, Raven, FIG. 4 (right, annotated).

251. Accordingly, I believe that a POSITA would have understood that the combination of Lee and Raven renders claim 3 obvious.

F. Claim 4 - The fiber optic connector of claim 3, wherein the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion.

252. In my opinion, a POSITA would have understood that Lee discloses "the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion," in the form of its latch arm 28, as shown below in an annotated version of Lee Figure 4.

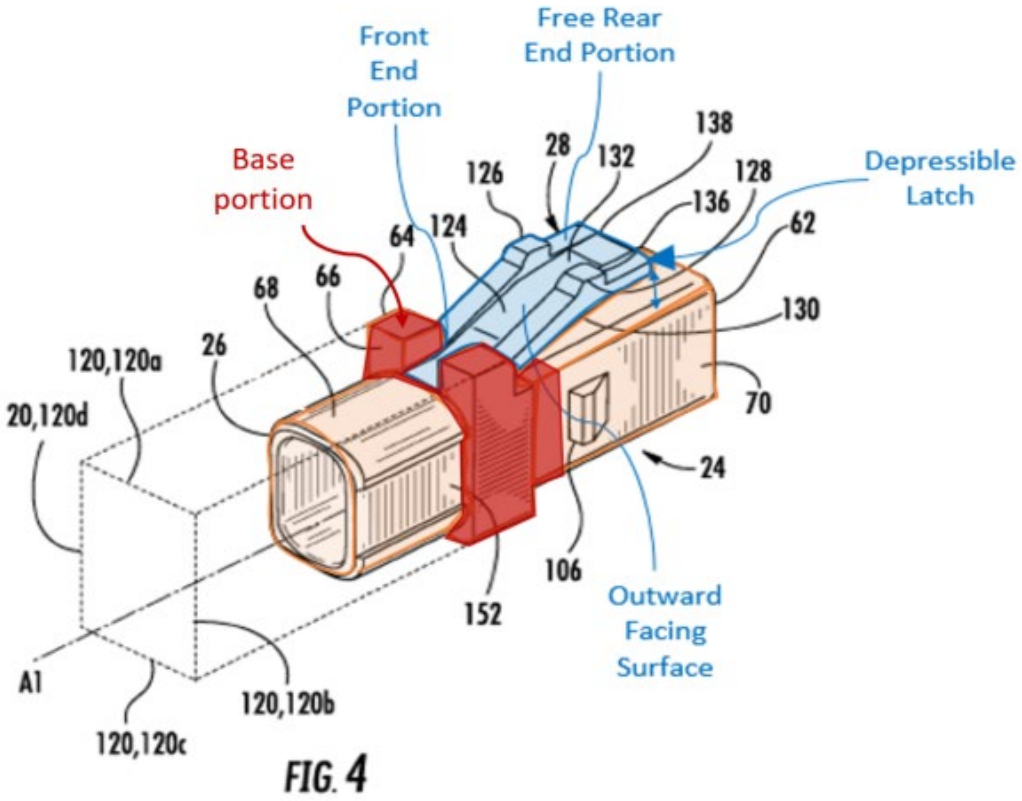


FIG. 4

EX1005, Lee, FIG. 4 (annotated).

253. Referring to Figure 4, Lee discloses that "latch arm 28 extend[s] outwardly from the inner connector body 24" and "includes a lower side 130 facing the inner connector body 24 and an upper side 132 … facing away from the inner connector body 24." [EX1005, Lee, ¶¶0030, 0043.] As shown in the annotated version of Figure 4 above, Lee's latch arm includes a "front end portion" connected to a "base portion." [EX1005, Lee, FIG. 4.] Lee further discloses that the latch arm 28 includes "first and second latching features 126, 128." [EX1005, Lee, ¶0044.] The first and second latching features 126, 128 are "in the form of shoulders that define rearward-facing surfaces 136," and "a terminal end 138

spaced from the first and second latching features 126, 128." [EX1005, Lee, ¶0045.]

254. A POSITA would have understood that the latching features 126 and 128 together with the terminal end 138 of Lee's latch arm 28 correspond to the recited "free rear end portion" because the latching features 126, 128 and the terminal end 138 are spatially separated from connector body 24 in a vertical direction. Furthermore, they are disposed further away from front end 26 of inner connector body 24 in a longitudinal direction than the other end—the front end—of Lee's latch arm 28.

255. A POSITA would have also understood that the ramp 124 on the upper side 132 of Lee's latch arm 28 corresponds to the recited "outward facing longitudinal surface" because upper side 132 faces outward and extends longitudinally from the front end of Lee's latch arm 28 to the terminal end 138 of Lee's latch arm 28.

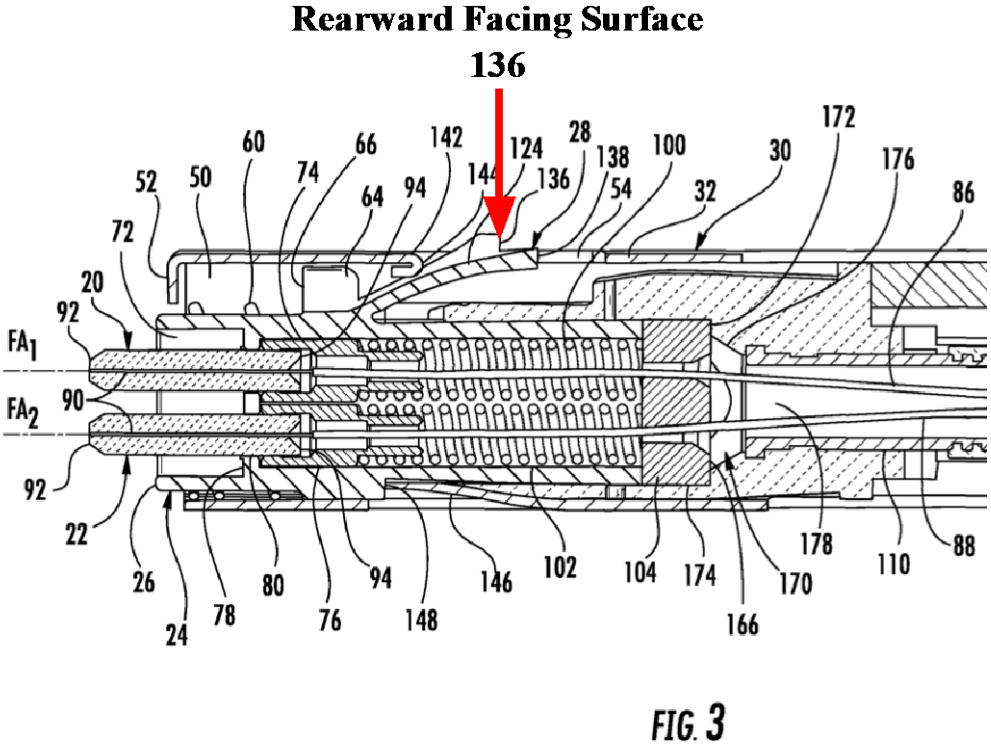
256. Accordingly, I believe a POSITA would have understood Lee discloses claim 4, and therefore, the combined disclosures of Lee and Raven render this claim obvious.

G. Claim 5 - "The fiber optic connector of claim 4, wherein the free end portion of the depressible latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when

received in the opening to inhibit removal of the fiber optic connector from the receptacle."

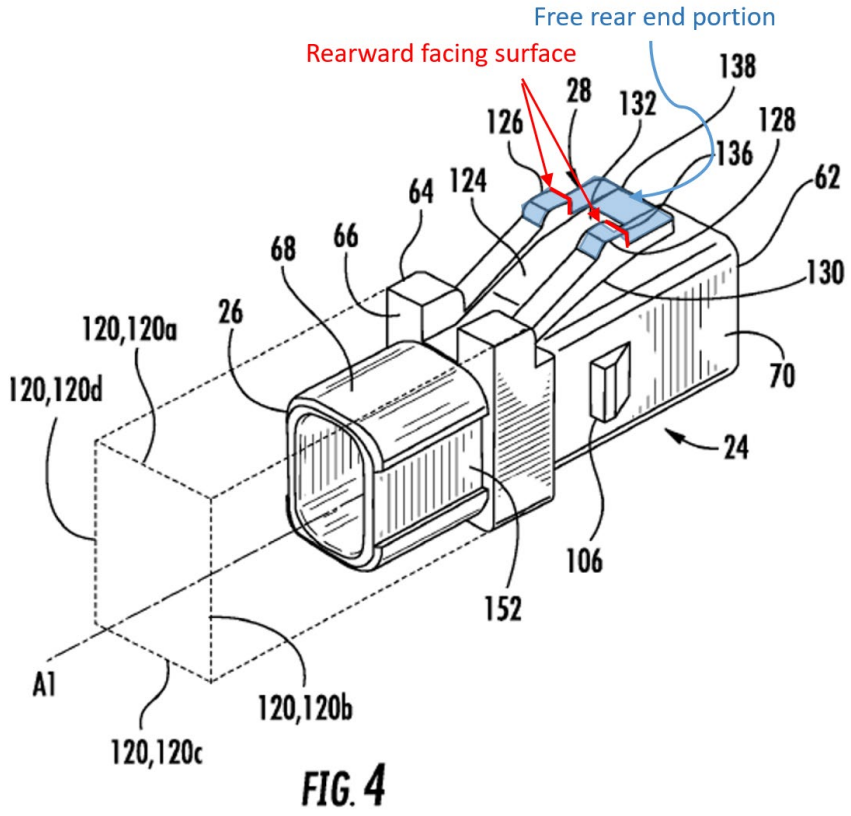
257. In my opinion, A POSITA would have understood that Lee discloses "the free end portion of the depressible latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the fiber optic connector from the receptacle."

258. As shown below in the annotated partial version of Lee Figure 3, the free end portion of the latch arm 28 has a rearward facing surface 136.



EX1005, Lee, FIG. 3 (partial, annotated).

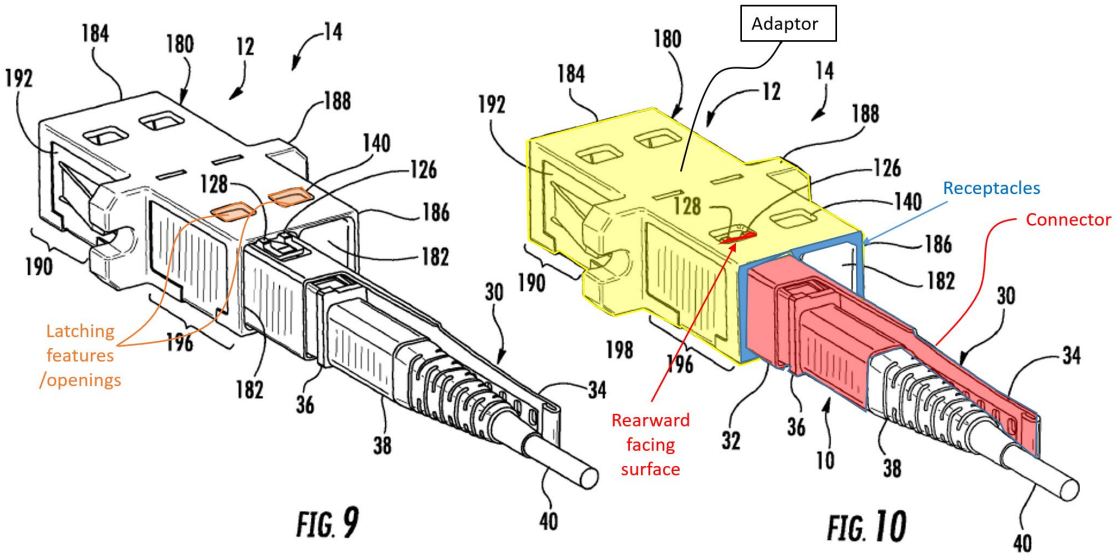
259. The depressible latch arm 28 is also shown in the annotated version of Lee Figure 4 below. As explained above in Section IX.F with respect to claim 4, the latching features 126 and 128 and the terminal end 138 of Lee's latch arm 28 correspond to the recited "free rear end portion." Lee discloses that the first and second latching features are "in the form of shoulders that define rearward-facing surfaces 136." [EX1005, Lee, ¶0045.]



EX1005, Lee, FIG. 4 (annotated).

260. Now referring to the adapter 12 in the annotated versions of Figures 9 and 10 below, Lee discloses an adapter 12 that includes ports 182, also referred to as "receptacles," for receiving the connector 10. Each port has "at least one

latching feature 140 (e.g., an opening).” [EX1005, Lee, ¶0059.] Lee explains that to engage the connector 10 with the adapter 12, the first and second latching features 126 and 128 engage the latching features 140 of the port 182, e.g., “the latch arm 28 flexes away from the inner connector body 24 when the latching features” are aligned with the opening 140, and the “rearward-facing surfaces 136” defined by the first and second latching features are then in a position to “engage the adapter body 180 to help retain the connector 10 in the port 182.” [EX1005, Lee, ¶0063.]



EX1005, Lee, FIGs. 9 and 10 (annotated).

261. A POSITA would have understood port 182 of adapter 12 corresponds to the recited “receptacle”, and the rearward-facing surfaces 136 correspond to the recited “rearward facing surface.” A POSITA would also have understood the

rearward-facing surfaces 136 of latching features 126 and 128 (as illustrated in the above annotated Figure 4 of Lee) are configured to "engage the receptacle when received in the opening to inhibit removal of the fiber optic connector from the receptacle."

262. Accordingly, I believe a POSITA would have understood that Lee discloses the additional limitation added by claim 5, and therefore, the combined disclosures of Lee and Raven render this claim obvious.

H. Claim 6,

1. Preamble [6pre] - "The fiber optic connector of claim 5, wherein"

263. Kindly refer to claim 5 above.

2. Claim 6, Element [6a] – "the free rear end portion of the depressible latch arm is raised relative to the front end portion and"

264. Lee discloses the free rear end portion of the depressible latch arm is raised relative to the front end portion. As explained above with respect to claim 4, the latching features 126 and 128 together with the terminal end 138 of latch arm 28 is the "free rear end portion."

265. As shown below in the annotated partial version of Lee Figure 3, the free rear end portion of the latch arm is raised relative to the front end portion.

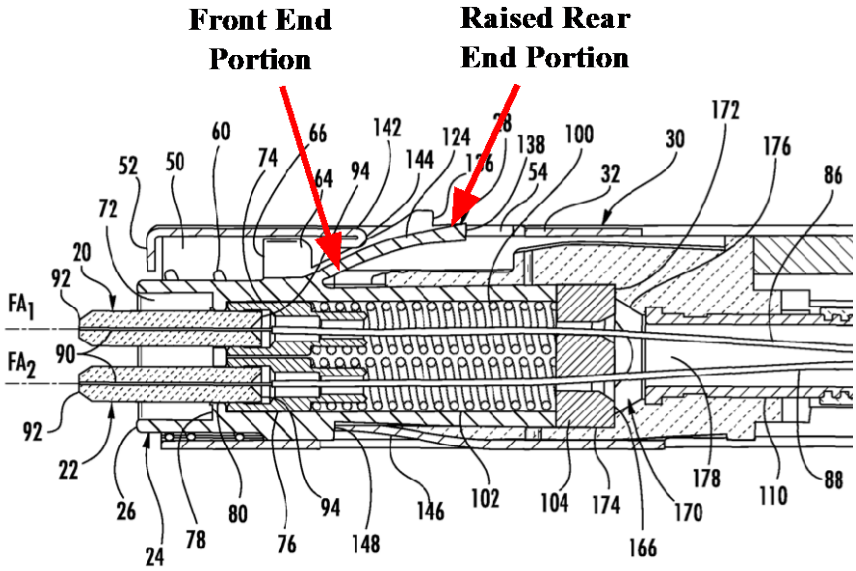


FIG. 3

EX1005, Lee, FIG. 3 (partial, annotated).

266. The raised rear end portion of the latch is also shown in the annotated version of Lee Figure 4 below.

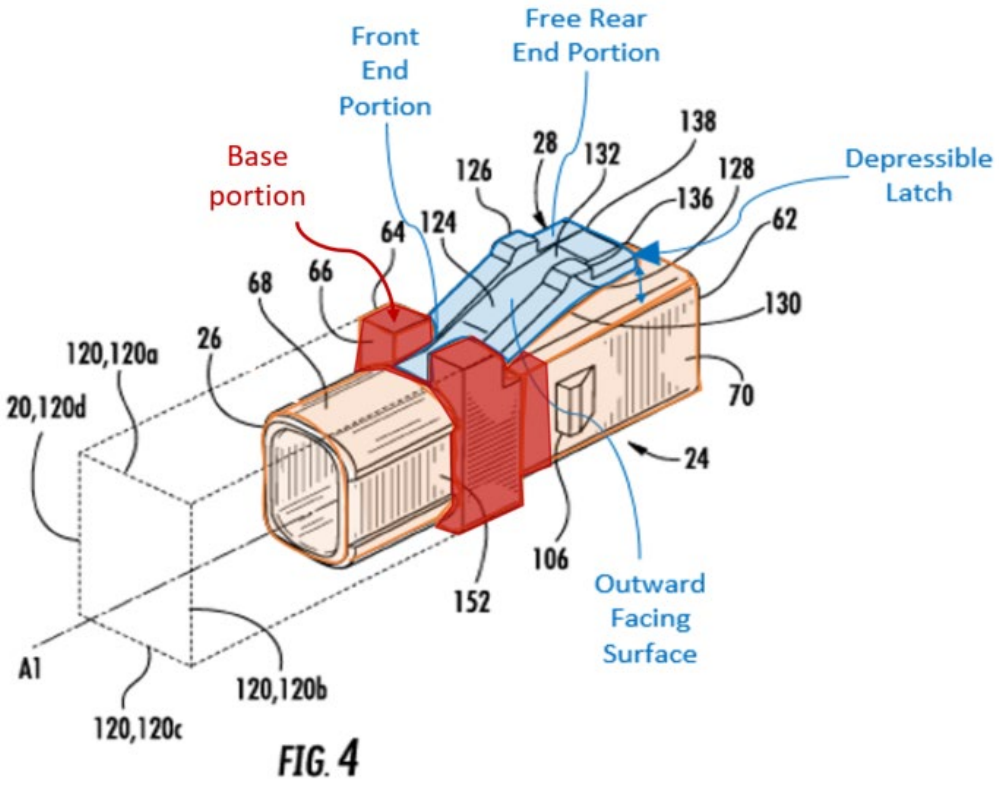


FIG. 4

EX1005, Lee, FIG. 4 (annotated).

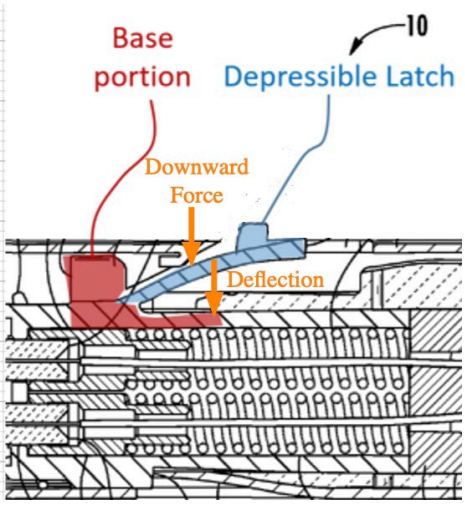
267. Referring to annotated versions of Figures 3 and 4 above, I believe that a POSITA would have understood that Lee teaches the free rear end portion of the depressible latch arm is raised relative to the front end portion.

3. Claim 6, Element [6b] – "wherein the removable latch is bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the fiber optic connector from the receptacle."

268. In my opinion, a POSITA would have understood that Lee discloses the removable latch is bendable, and the fiber optic connector can be unlatched

from the receptacle by depressing the free rear end portion toward the base portion to be removed from the opening. [*See* EX1005, Lee, ¶0065.]

269. For example, as explained in Section IX.E with respect to claim 3, Lee discloses bendable latch arm 28 that is depressible and during operation it "cause[s] the latch arm 28 to flex toward the inner connector body 24." [*See* EX1005, Lee, ¶¶0030, 0047, 0063, 0065, FIGs. 3, 4.] A POSITA would have understood the free rear end of the latch arm 28 is "depressed toward" the base portion since the base portion (e.g., part of the inner connector 24) is located below the free rear end of the latch arm 28. The annotated version of Lee Figure 3 below illustrates that when a downward force is applied to the depressible latch arm, it deflects downward toward the base portion.



EX1005, Lee, FIG. 3 (annotated).

270. Given the above teachings, a POSITA would have understood the latch arm 28 is "bendable." Lee further explains that to operate the device and

remove the connector 10 from the adapter 12, the handle 30 is pulled rearwardly "causing the latch arm 28 to flex back toward the inner connector body 24," which in turn causes the first and second latching features 126 and 128 to "disengage" the latching feature 140, (e.g., the opening). [EX1005, Lee, ¶0065.] Subsequently, the connector 10 can be "pulled back out" of the port 182. [EX1005, Lee, ¶0065.]

271. As explained above in Section IX.F with respect to claim 4, the latching features 126 and 128 together with the terminal end 138 of latch arm 28 is the "free rear end portion." Therefore, a POSITA would have understood that Lee teaches a "free rear end portion can be depressed" to "unlatch the fiber optic connector from the receptacle."

272. Patent Owner may allege Lee does not expressly teach the removable latch. But providing a removable latch for a fiber optical connector was well known, as explicitly taught by Raven.

273. In combining the teachings of Raven's releasably locking latch with Lee's connector housing, a POSITA would have understood that instead of integrally forming a latch with the inner connector body 24, Lee's latch arm 28 as modified by Raven would be releasably locking to Lee's connector housing (e.g., combination of the inner connector body 24 and the outer connector body 36).

274. Accordingly, I believe that a POSITA would have understood that the combination of Lee and Raven renders claim element [6b] obvious, and therefore,

a POSITA would have found claim 6 obvious based on the combined disclosures of Lee and Raven.

I. Claim 7

1. Claim 7, Preamble [7pre] - "The fiber optic connector of claim 6, further comprising"

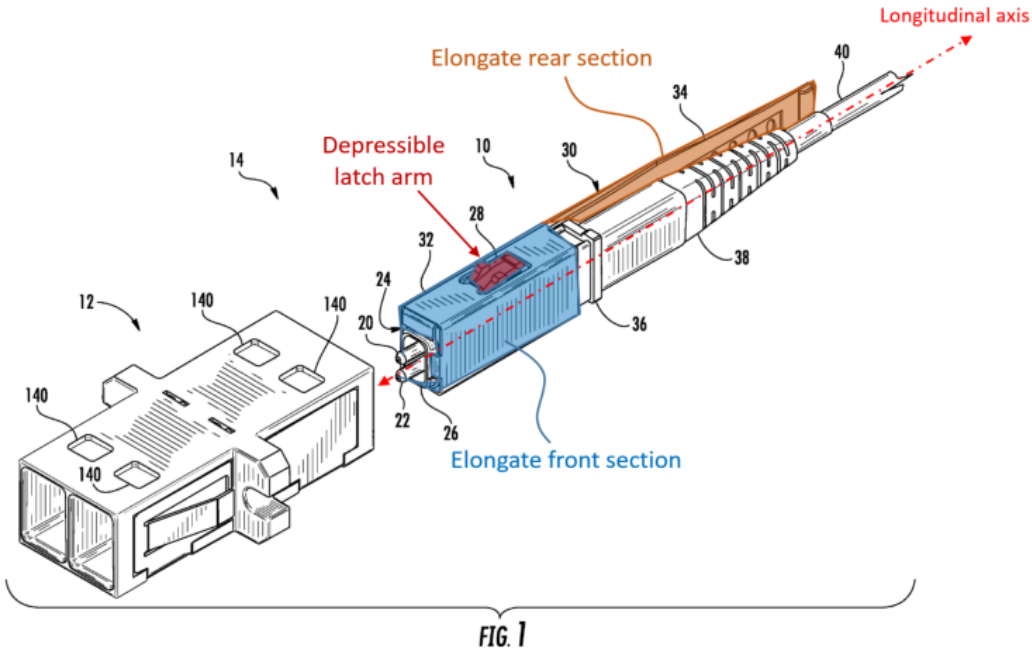
275. Kindly refer to Claim 6.

2. Claim 7, Element [7a] – "a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section,"

276. In my opinion, Lee discloses a remote release (e.g., handle 30) that includes an elongate front section (e.g., housing portion 32) configured to extend longitudinally along the connector housing and engage the depressible latch arm (e.g., latch arm 28), an elongate rear section (e.g., grip portion 34) extending rearward from the elongate front section. [*See* EX1005, Lee, ¶¶0030, 0031.]

277. Referring to annotated Figure 1 below, Lee discloses a handle 30 that includes "a housing portion 32" and "a grip portion 34 extending rearwardly from the housing portion 32." [EX1005, Lee, ¶0030.] Lee describes that "handle 30 can move relative to the inner connector body 24 so that the housing portion 32 can cause the latch arm 28 to flex toward the inner connector body 24," and subsequently pull the connector 10 out of the port 182 of the adapter 12. [EX1005, Lee, ¶¶0030, 0065.] A POSITA would have understood that Lee's handle 30

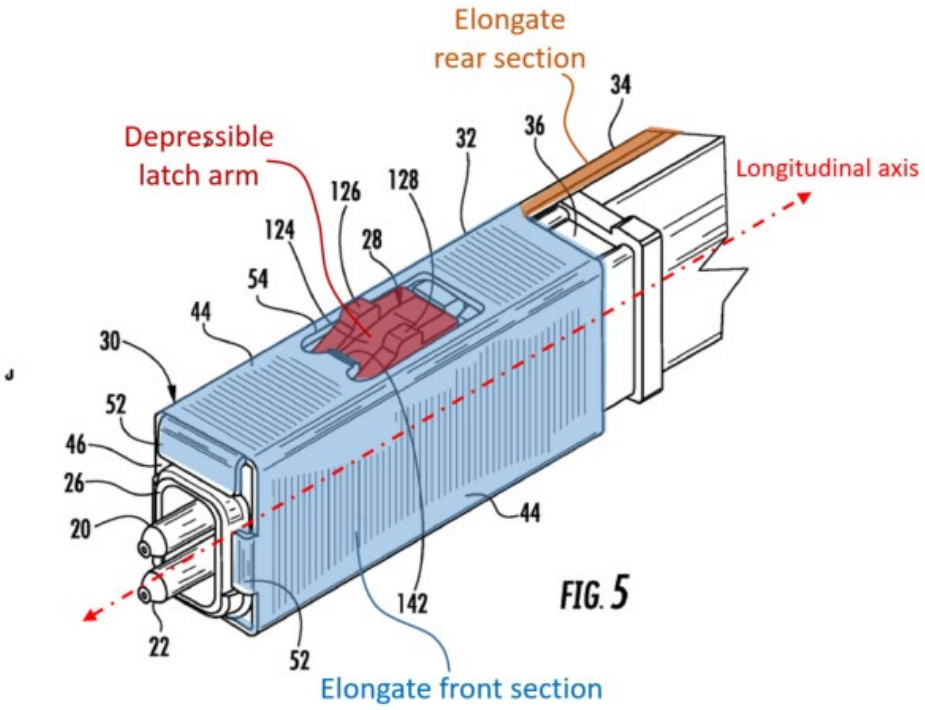
corresponds to the recited "remote release" because pulling the handle 30 can remotely cause the latch arm 28 to flex toward the inner connector body and release the connector from the adapter.



EX1005, Lee, FIG. 1 (annotated).

278. Lee describes details about his remote release in conjunction with Figure 5, which is shown below in annotated form. Lee states that "housing portion 32 of the handle 30 is in the form of a tubular body having a rectangular profile defined by sides 44 … extend[ing] from a front opening 46 to a rear opening … so that the housing portion 32 has an internal cavity 50" for receiving inner connector body 24. [EX1005, Lee, ¶0031.] Lee discloses that "housing portion 32 … includes an opening 54 for through which the latch arm 28 extends when the connector 10 is

assembled" and "includes a pushing feature 142 adjacent the opening 54 for contacting the latch arm [28]." [Lee, ¶0047.]



EX1005, Lee, FIG. 5 (annotated).

279. A POSITA would have understood that at least a section of Lee's housing portion 32 (e.g., its top side 44 defining opening 54 and pushing feature 142) corresponds to the recited "elongate front section" because the top side 44 of Lee's housing portion 32 extends longer in the longitudinal direction than its lateral direction and is configured to move along a connector housing (e.g., Lee's inner connector body 24 and outer connector body 36). A POSITA would also have understood that the "elongated front secion" (e.g., housing portion 32) of Lee's remote release engages the depressible latch arm (e.g., latch arm 28) because

the housing portion 32 includes an opening 54 for through which the latch arm 28 extends and a pushing feature 142 adjacent the opening 54 contacts the latch arm 28.

280. Lee describes "grip portion 34 of the handle 30 … in the form of a plate-like extension" and "extend[s] in a plane parallel … to one of the sides 44, effectively acting like an extension of that side in a rearward direction." [EX1005, Lee, ¶0032.]

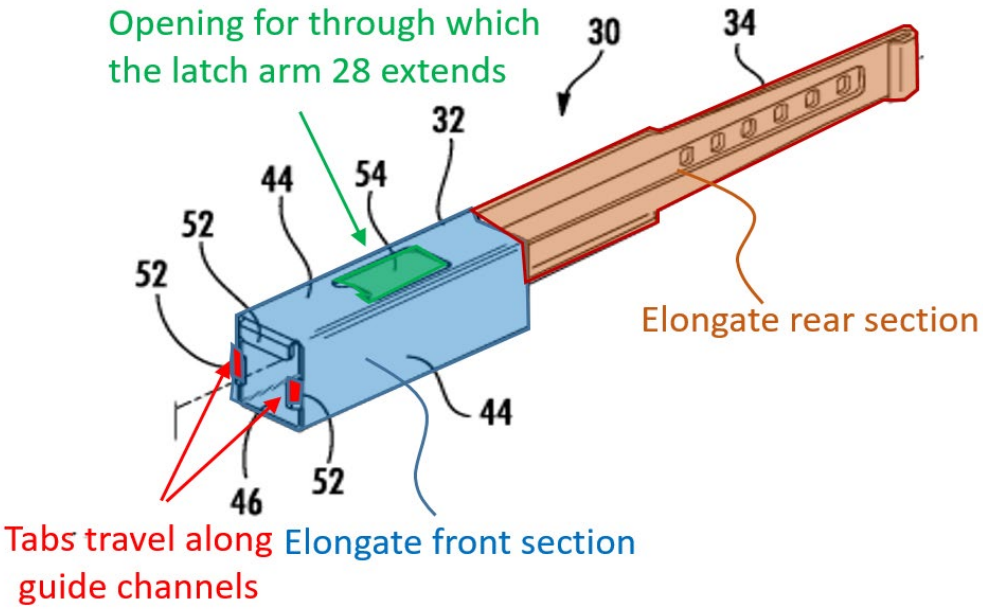
281. A POSITA would have understood that Lee's grip portion 34 corresponds to the recited "elongate rear section" because grip portion 34 extends longer in the longitudinal direction away from housing portion 32 than in its lateral direction to facilitate gripping by a user.

282. Accordingly, a POSITA would have understood that Lee discloses element [7a].

3. Claim 7, Element [7b] – "the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing."

283. In my opinion, Lee discloses the elongate front section is slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing. [*See* EX1005, Lee, ¶¶0030, 0031, 0050, 0063.]

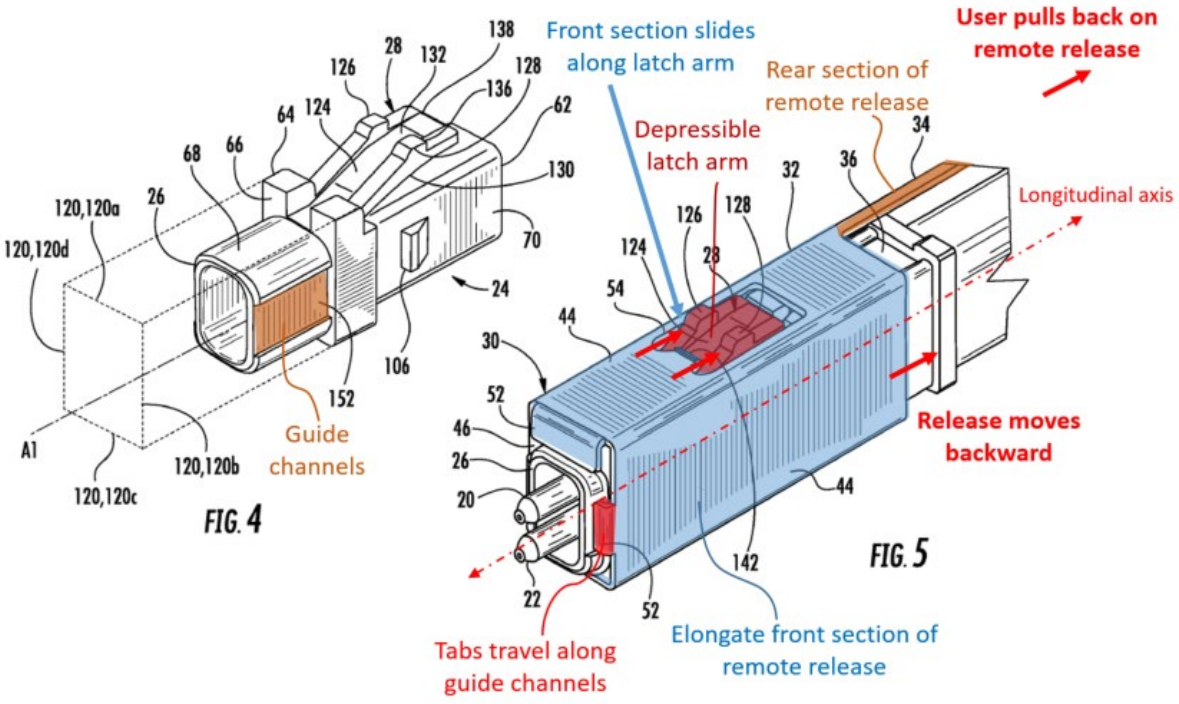
284. Referring to the annotated version of Figure 2 below, Lee discloses the housing portion 32 receives the inner connector body 24, and "an outer connector body 36 coupled to the inner connector body 24" is within the housing portion 32 of the handle 30. [EX1005, Lee, ¶0030.] Lee also discloses the housing portion 32 includes an opening 54 "through which the latch arm 28 extends." [EX1005, Lee, ¶¶0031, 0047.] Lee explains the handle 30 can move rearwardly relative to the inner connector body 24. [EX1005, Lee, ¶0047 ("When the handle 30 is moved rearwardly relative to the inner connector body 24, the rounded surface 144 contacts and slides along the ramp 124 …").]



EX1005, Lee, FIG. 2 (partial, annotated).

285. Lee provides specific details about his design when he discloses that the housing portion 32 has two tabs 52 that are received by the guide channels 152 of the inner connector body 24, and "the tabs 52 travel along the guide channels 152" when the handle 30 moves relative to the inner connector body 24. [EX1005, Lee, ¶0050.]

286. Finally, Lee discloses that when the handle 30 is pulled rearwardly, the handle 30 moves relative to the latch to cause the latch arm 28 to flex back toward the inner connector body 24 and subsequently remove the connector 10 from adapter 12. [EX1005, Lee, ¶¶0030, 0065.] This operation is illustrated on the annotated verion of Lee Figure 5 provided below.



EX1005, Lee, FIGs. 4, 5 (annotated).

287. Given the above teachings, a POSITA would have understood that the elongate front section of Lee's remote release (e.g., the housing portion 32 of the handle 30) is "slidably connected" to the removable latch (e.g., latch arm 28) and the connector housing (e.g., an outer connector body 36 coupled to the inner connector body 24), and the elongate front section "can move rearward relative to removable latch and the connector housing."

288. Patent Owner may allege Lee does not expressly teach the removable latch. However, as discussed above in Section IX.C.5, providing a removable latch for a fiber optical connector was well known, as explicitly taught by Raven.

289. In combining the teachings of Raven's releasably locking latch with Lee's connector, a POSITA would have understood that instead of integrally forming with the inner connector body 24, Lee's latch arm 28 would be releasably locked to Lee's connector housing (e.g., combination of the inner connector body 24 and the outer connector body 36). A POSITA would have also understood that Lee's remote release can be removed from Lee's connector to allow Lee's removable latch (as modified by Raven) to be released from Lee's connector for changing polarity.

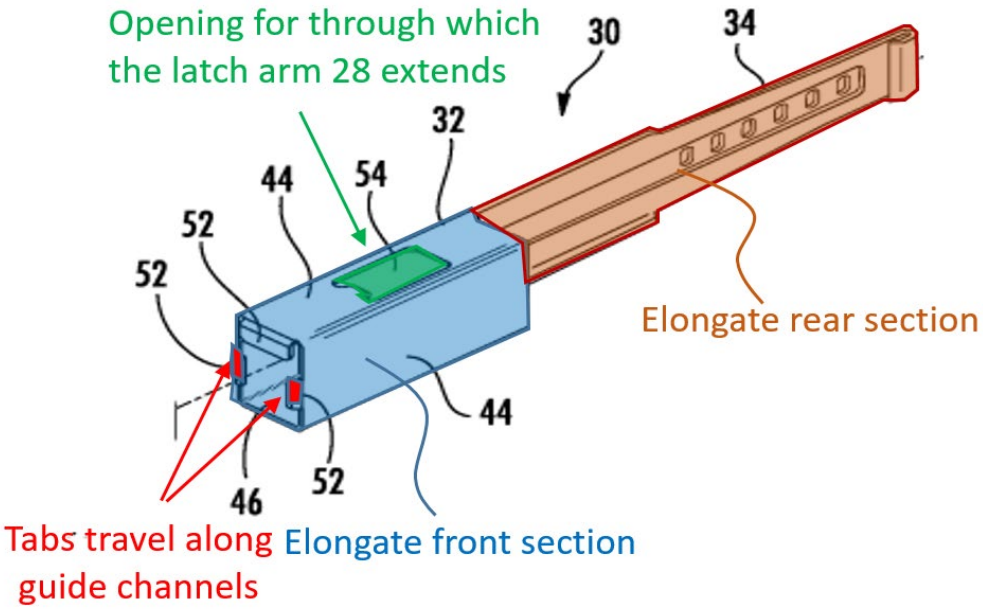
290. Accordingly, I believe that a POSITA would have understood that the combination of Lee and Raven renders claim element [7b] obvious, and therefore,

a POSITA would have found claim 7 obvious based on the combined disclosures of Lee and Raven.

J. Claim 8 – "The fiber optic connector of claim 7, wherein the elongate front section comprises an opening configured to receive the depressible latch arm."

291. In my opinion, a POSITA would have understood that Lee teaches this claim limitation. For example, Lee discloses housing portion 32 "includes an opening 54 for though which the latch arm 28 extends when the connector 10 is assembled" and "includes a pushing feature 142 adjacent the opening 54 for contacting the latch arm 28[2]." [EX1005, Lee, ¶¶0031, 0047, FIG. 2.] As explained above with respect to claim 3 in Section IX.E, Lee's latch arm 28 corresponds to the recited "depressible latch arm." The annotated version of Lee Figure 2 below shows the opening on the elongate front section.

[2] I believe in Lee, there is a typo of "latch arm 24", instead, it should be "latch arm 28."



EX1005, Lee, FIG. 2 (partial, annotated).

292. Accordingly, a POSITA would have understood that Lee discloses claim 8.

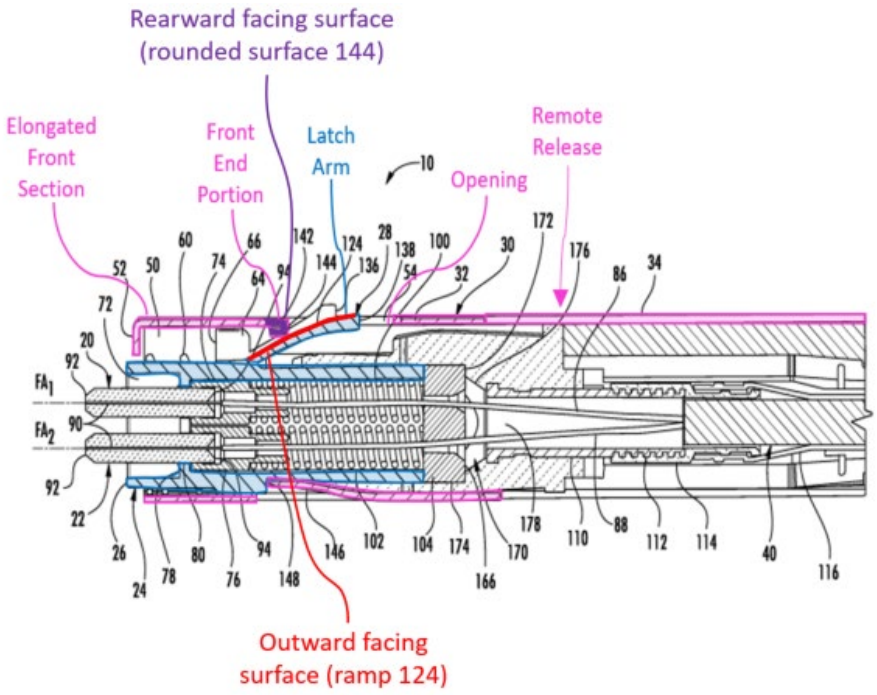
K. Claim 9 – "The fiber optic connector of claim 8, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening."

293. In my opinion, a POSITA would have understood that Lee teaches this claim limitation. For example, Lee discloses the housing portion 32 "includes an opening 54 for though which the latch arm 28 extends" and "includes a pushing

feature 142 adjacent the opening 54 for contacting the latch arm 28[3].” [EX1005, Lee, ¶¶0031, 0047, FIGs. 2, 3.] Lee further describes that “the pushing feature 142 is in the form of a finger extending into the opening 54” and “[t]he finger is bent back to define a rounded surface 144.” [EX1005, Lee, ¶0047, FIGs. 3 and 5.] Lee explains “[w]hen the handle 30 is pulled rearwardly, the pushing feature 142 on the housing portion 32 contacts and slides along the ramp 124 of the latch arm []28[4].” [EX1005, Lee, ¶0065; *see also* EX1005, Lee, ¶0047.] The annotated version of Figure 3 below illustrates the elongate front section of the remote release, the aforementioned interaction with the latching arm 28 of Lee, and indicates the location of the key features.

[3] I believe in Lee, there is a typo of “latch arm 24”, instead, it should be “latch arm 28.”

[4] I believe in Lee, there is a typo of “latch arm 128”, instead, it should be “latch arm 28.”



EX1005, Lee, FIG. 3 (annotated).

294. A POSITA would have understood that pushing feature 142 of Lee's housing portion 32 corresponds to the recited "front end portion" because pushing feature 142 defines a round surface at the front end of opening 54 to engage an outward facing surface of a latch arm.

295. A POSITA would have understood the rounded surface 144 of the pushing feature 142 corresponds to the recited "rearward facing surface" that "defines a front end of the opening." A POSITA would have understood that the rearward facing surface (e.g., the rounded surface 144) is configured to "oppose the outward facing surface of the depressible latch arm" (e.g., upper side 132 of ramp 124 of the latch arm 28) because it contacts and slides along the outward facing surface as the remote release arm is pulled backward.

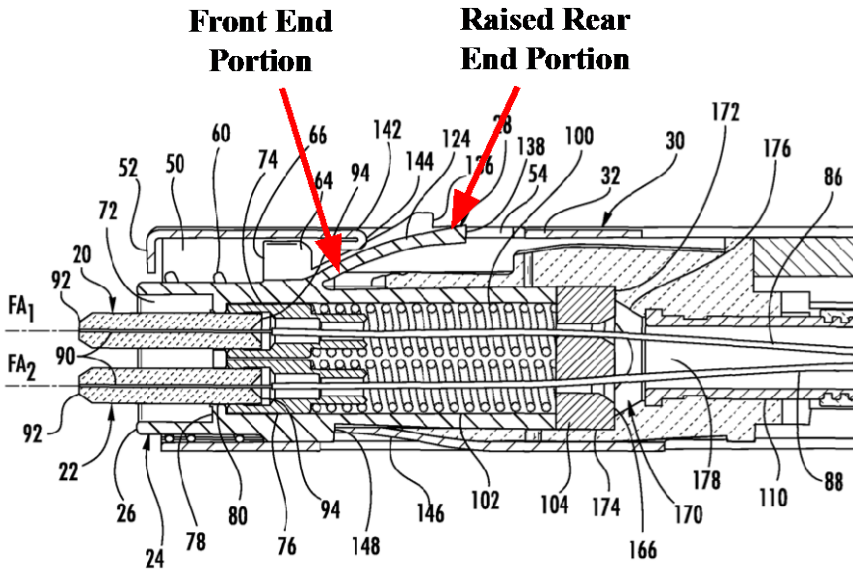
296. Accordingly, a POSITA would have understood that Lee discloses claim 9.

L. Claim 10 – "The fiber optic connector of claim 9, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening."

297. In my opinion, a POSITA would have understood that Lee teaches this claim limitation.

298. As explained above with respect to claim 9 in Section IX.K, Lee discloses the pushing feature 142, which corresponds to "the front end portion of the elongate front section."

299. As also explained above with respect to claim 4, the latching features 126 and 128 together with the terminal end 138 of latch arm 28 is the "free rear end portion." As shown below in an annotated version of Figure 3, when the latch arm is received in the opening, the rear end portion is raised in relation to the front end portion.



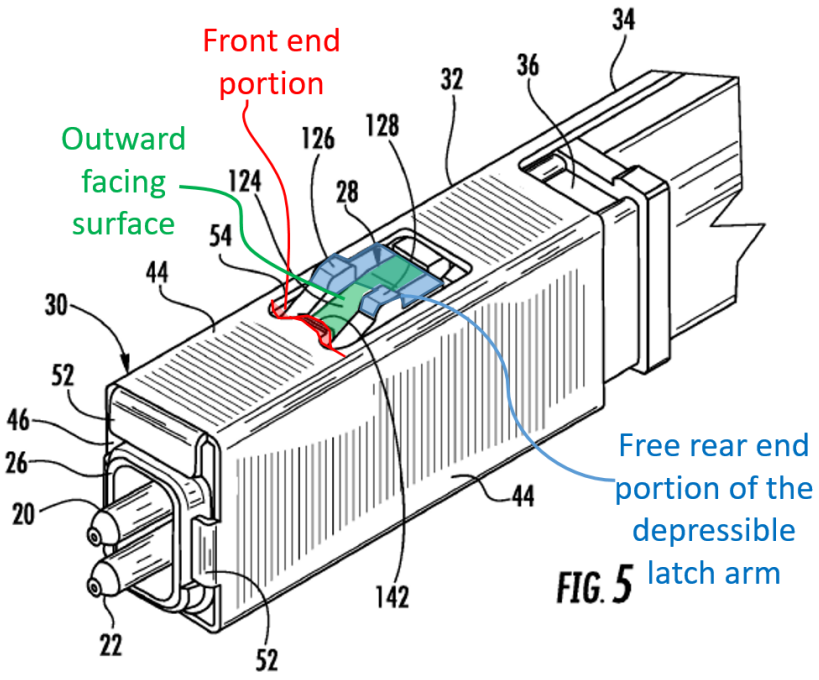
EX1005, Lee, FIG. 3 (partial, annotated).

300. Lee describes that "the first and second latching features 126, 128 are spaced further from the inner connector body 24 than at least a portion of the ramp 124." [EX1005, Lee, ¶0044.] Lee further explains "handle 30 includes an opening 54 for through which the latch arm 28 extends when the connector 10 is assembled" and "when the handle 30 is pulled rearwardly, the pushing feature 142 … contacts and slides along the ramp 124 of the latch arm 28 … causing the latch arm 28 to flex back toward the inner connector body 24." [EX1005, Lee, ¶0065.]

301. In addition to the pictorial disclosure in Figure 3, a POSITA would have understood "the free end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening" because the front end portion

(e.g., the pushing feature 142) can slide along the ramp 124 and cause the free rear end portion of the depressible latch arm (e.g., latching features 126 and 128) to flex downward.

302. Accordingly, a POSITA would have understood that Lee discloses claim 10.



EX1005, Lee, FIG. 5 (annotated).

M. Claim 11 – "The fiber optic connector of claim 10, wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface of the depressible latch arm when the elongate front section moves rearward to depress the depressible latch arm."

303. In my opinion, a POSITA would have understood that Lee teaches this claim limitation.

304. Referring to annotated Figure 5 directly above in my claim 10 analysis, Lee explains "[w]hen the handle 30 is moved rearwardly relative to the inner connector body 24, the rounded surface 144 contacts and slides along the ramp 124 to cause the latch arm 28 to flex toward the inner connector body 24." [EX1005, Lee, ¶0047; *see also* EX1005, Lee, ¶0065 ("when the handle 30 is pulled rearwardly, the pushing feature 142 … contacts and slides along the ramp 124 of the latch arm 28 … causing the latch arm 28 to flex back toward the inner connector body 24").]

305. As explained above with respect to claim 4 in Section IX.F, upper side 132 of Lee's latch arm 28 corresponds to the recited "outward facing surface of the depressible latch arm." Lee further explains "A portion of the upper side 132 extends outwardly from the inner connector body 24 … and defines the ramp 124." [EX1005, Lee, ¶0043.]

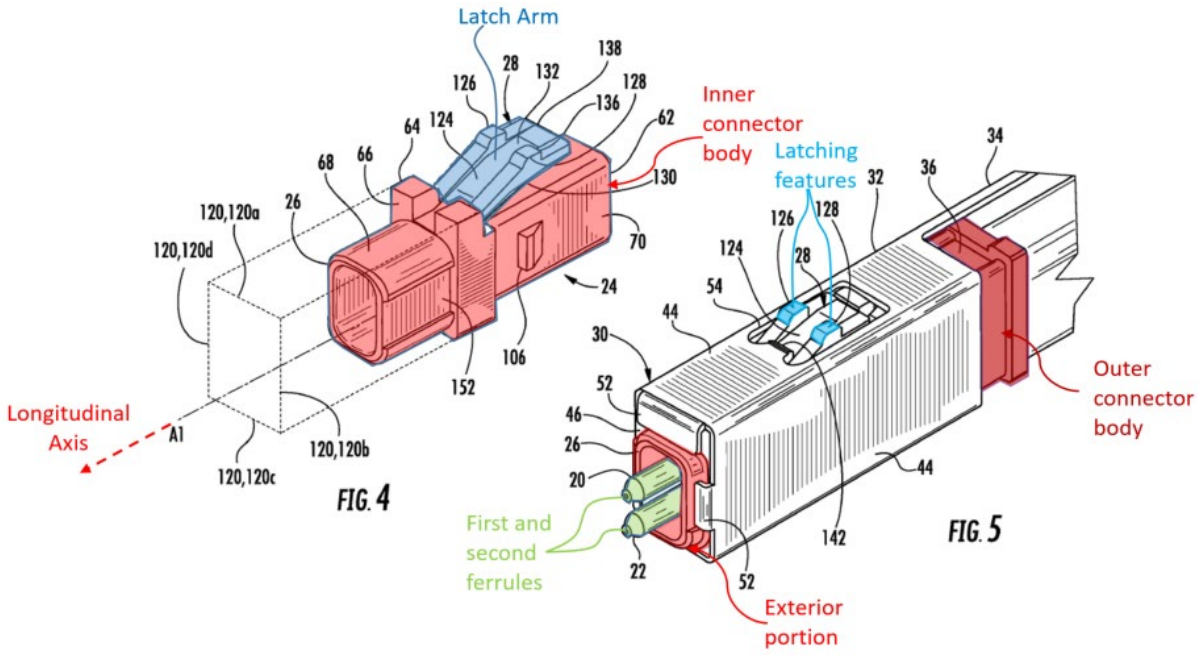
306. Accordingly, a POSITA would have understood that Lee discloses claim 11.

N. Claim 12 – "The fiber optic connector as set forth in claim 1, wherein the connector housing comprises a single front body and a single back body."

307. In my opinion, Lee teaches this claim limitation. Specifically, Lee discloses that "[t]he connector 10 also includes an outer connector body 36 coupled to the inner connector body 24 within the housing portion 32 of the handle

30." [EX1005, Lee, ¶0030; *see also* EX1005, Lee, ¶0057.] Lee also discloses that "the outer connector body 36 is designed to be snapped onto the back portion 70 of the inner connector body 24." [EX1005, Lee, ¶0039.]

308. As illustrated in the annotated versions of Figures 4 and 5 below, the outer connector body 36 couples to the inner connector body 24 to form the connector housing that receives the first and second ferrules. As shown below, the outer body is located at the back and the inner body is in front.



EX1005, Lee, FIGs. 4 and 5 (annotated).

309. A POSITA would have understood the inner connector body 24 corresponds to the recited "a single front body" and the outer connector body 36 corresponds to the recited "a single back body" because the outer connector body

36 is snapped onto the back portion of the inner connector body 24. Furthermore, body 24 extends out in front of body 36.

310. Accordingly, a POSITA would have understood that Lee discloses claim 12.

O. Claim 13 – "The fiber optic connector as set forth in claim 12, further comprising first and second ferrule springs received on the first and second ferrules, respectively."

311. In my opinion, Lee teaches this claim limitation. Referring to the annotated portion of Figure 2 below, Lee discloses "the connector 10 further includes first and second inner springs 100, 102," and "[t]he first and second inner springs 100, 102 each extend between one of the first and second ferrule holders 74, 76 and a spring push 104." [EX1005, Lee, ¶0038.] Lee explains "the first and second ferrules 20, 22 are respectively received in first and second ferrule holders 74, 76 that have larger diameters or widths than the first and second ferrules 20, 22." [EX1005, Lee, ¶0035.] Lee further discloses "the first and second inner springs 100, 102 may be placed over the first and second optical fibers 86, 88, which may then be inserted into and secured to the first and second ferrules 20, 22." [EX1005, Lee, ¶0056.]

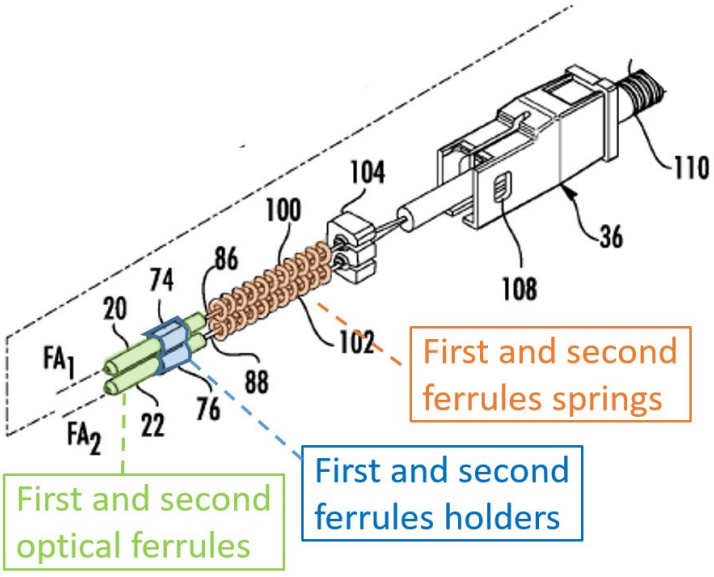


FIG. 2

EX1005, Lee, FIG. 2 (partial, annotated).

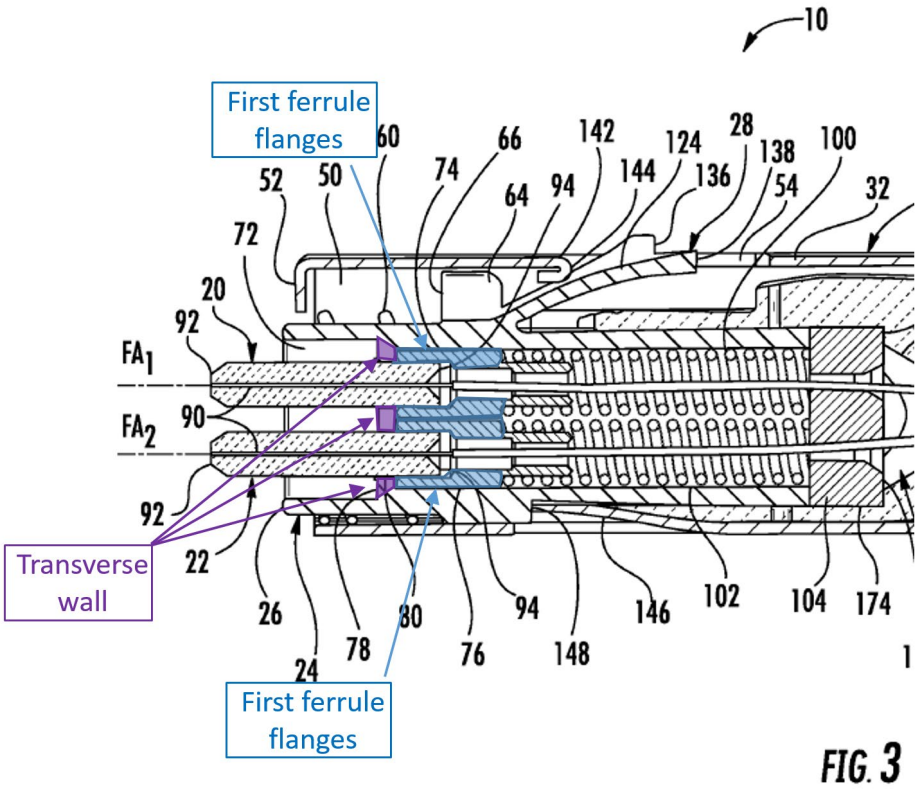
312. A POSITA would have understood first and second ferrule springs 100 and 102 are received on the first and second ferrules 20 and 22, respectively.

313. Accordingly, a POSITA would have understood that Lee discloses claim 13.

P. Claim 14 – "The fiber optic connector as set forth in claim 13, wherein each of the first and second ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges."

314. In my opinion, a POSITA would have understood that Lee teaches this claim limitation. Referring to annotated Figure 3 below, Lee discloses "the first and second ferrules 20, 22 are respectively received in first and second ferrule holders 74, 76 that have larger diameters or widths than the first and second

ferrules 20, 22." [EX1005, Lee, ¶0035.] Lee also discloses that "[a]n internal wall 78 (Fig. 3) within the inner connector body 24 includes openings 80 that accommodate the first and second ferrules 20, 22, but not the first and second ferrule holders 74, 76." [EX1005, Lee, ¶0035.] Lee explains that "the first and second ferrules 20, 22 can be inserted through the back opening of the inner connector body 24, moved forward in the internal cavity 72, and extended through the openings 80 until the first and second ferrule holders 74, 76 contact the internal wall 78." [EX1005, Lee, ¶0035.] Lee further discloses that "the first and second inner springs 100, 102 bias the first and second ferrule holders 74, 76 against the internal wall 78 of the inner connector body 24." [EX1005, Lee, ¶0057.]



EX1005, Lee, FIG. 3 (partial, annotated).

315. A POSITA would have understood the first and second ferrule holders 74 and 76 correspond to the recited "ferrule flange having a forward facing surface" because the ferrule holders receive the first and second ferrules 20 and 22 and have larger diameters. The front faces of the ferrule holders are forward facing surfaces.

316. A POSITA would have understood the internal wall 78 corresponds to the recited "transverse wall" because the internal wall 78 is inside the inner connector body 24 and forms a barrier wall that interacts with the ferrule holders (ferrule flanges) to stop the springs from pushing the ferrules too far out the front

of the connector. This is the same functionality attributed to the claimed transverse wall.

317. A POSITA would have understood the transverse wall is configured to "simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges" because both ferrule holders 74 and 76 are biased against the internal wall 78.

318. Accordingly, a POSITA would have understood that Lee discloses claim 14.

Q. Claim 15 – "The fiber optic connector as set forth in claim 14, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall."

319. In my opinion, a POSITA would have understood that Lee teaches this claim limitation. Lee discloses that "[t]he first and second inner springs 100, 102 each extend between one of the first and second ferrule holders 74, 76 and a spring push 104 that is received in the outer connector body 36 when the connector 10 is assembled." [EX1005, Lee, ¶0038.] Lee further discloses that "the outer connector body 36 being coupled to the inner connector body 24 results in the first and second inner springs 100, 102 extending within the inner connector body 24 and outer connector body 36, biasing the first and second ferrules 20, 22 in a

forward direction." [EX1005, Lee, ¶0038.] As shown below in an annotated version of Lee Figure 3, the back body compresses each of the ferrule springs.

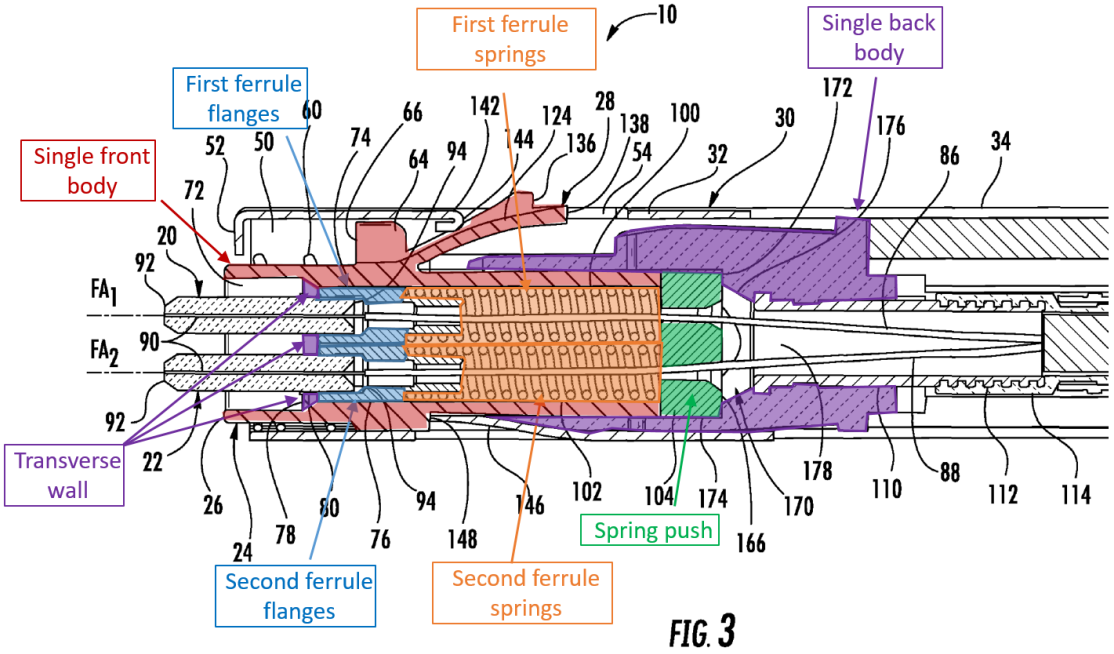


FIG. 3

EX1005, Lee, FIG. 3 (annotated).

320. A POSITA would have understood "the first and second ferrule springs" are "between the back body and the first and second ferrule flanges" because the first and second ferrule springs extend between first and second ferrule holders 74 and 76 (i.e., ferrule flanges) and a spring push 104 that is received in the outer connector body 36 (i.e., the back body).

321. Referring again to the annotated version of Figure 3 above, Lee discloses that when the outer connector body 36 is coupled to inner connector body 24, "the spring push 104 abuts the inner wall 172 of the outer connector body 36, the first and second inner springs 100, 102 bias the first and second ferrule holders

74, 76 against the internal wall 78 of the inner connector body 24." [EX1005, Lee, ¶0057.] Lee explains that "the outer connector body 36 includes an internal cavity 170 that receives the spring push 104," "the spring push 104 contacts an inner wall 172 of the outer connector body 36." [EX1005, Lee, ¶0054.] Lee describes that "[a] front side 160 of the spring push 104 defines first and second spring seats 162, 164 for positioning the respective first and second inner springs 100, 102," and "[r]espective ends of the first and second inner springs 100, 102 are received over the first and second bumps 162, 164 so that the ends are maintained in position on the spring push 104." [EX1005, Lee, ¶0053.]

322. A POSITA would have understood that the spring push 104 engages with the first and second inner springs 100 and 102 simultaneously because both inner springs are received by the first and second bumps 162 and 164 of the spring push 104. Furthermore, Lee Figure 3 illustrates simultaneous engagement of the springs.

323. A POSITA would have understood that when the outer connector body 36 is coupled to inner connector body 24, the outer connector body 36 simultaneously compresses both inner springs 100 and 102 through the spring push 104 because the outer connector body 36 coupling to the inner connector body 24 results in the spring push compressing the first and second inner springs to bias the first and second ferrule holders 74 and 76 against the internal wall 78.

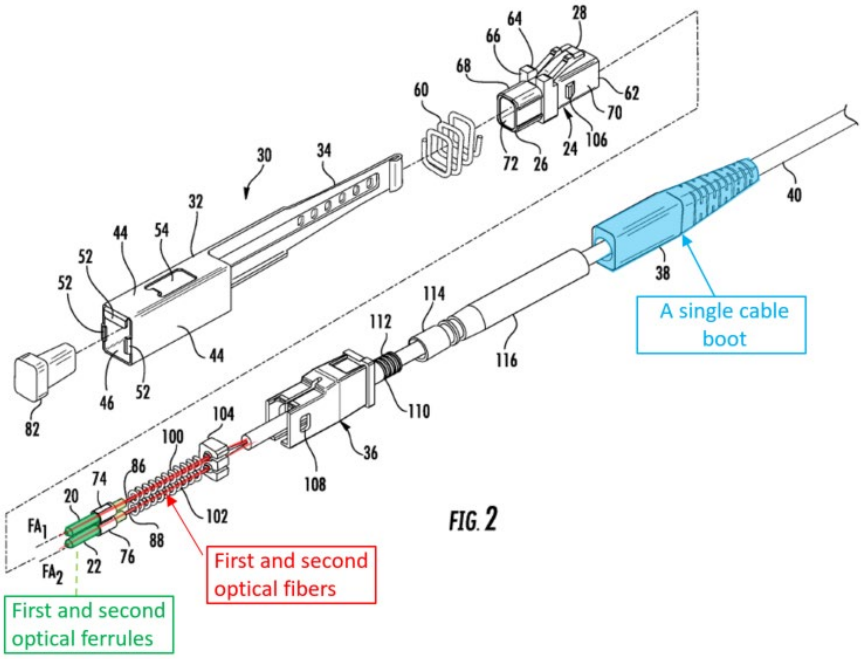
324. A POSITA would have understood that for the single back body (e.g., the outer connector body 36) to simultaneously compress each of the first and second ferrule springs does not require the single back body to directly contact the ferrule springs. Finally, as explained above with respect to claim 14, the first and second ferrule flanges are engaged with the transverse wall (e.g., the internal wall 78).

325. Accordingly, a POSITA would have understood that Lee discloses Claim 15.

R. Claim 19 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules."

326. In my opinion, a POSITA would have understood that Lee teaches this claim limitation. Specifically, Lee discloses that "the cable 40 includes first and second optical fibers 86, 88 extending into bores 90 of the respective first and second ferrules 20, 22." [EX1005, Lee, ¶0037, FIG. 3; *see also* EX1005, Lee, ¶0056 ("the first and second optical fibers 86, 88, which may then be inserted into and secured to the first and second ferrules 20, 22.").] Lee further discloses "a boot 38 is coupled to the outer connector body 36." [EX1005, Lee, ¶0030.] As

illustrated in the annotated Figure 2 below, the cable 40 passes through the single boot 38 and the cable 40 includes the first and second optical fibers 86 and 88.



EX1005, Lee, FIG. 2 (annotated).

327. A POSITA would have understood the boot 38 corresponds to the recited "a single cable boot." Accordingly, a POSITA would have understood that Lee discloses claim 19.

S. Claim 20

1. Claim 20, Preamble [20pre] - "A reversible polarity fiber optic connector comprising:"

328. Kindly refer to claim 1, Preamble above with reference to "[a] fiber optic connector." This preamble refers to "[a] reversible polatrity fiber optic

connector." To the extent this language is limiting, I believe that Lee's housing, as modified by Raven, discloses "a reversible polarity fiber optic connector."

329. Patent Owner may allege Lee does not expressly teach [20pre], but Raven explicitly discloses this feature.

330. Raven discloses a method "for changing the polarity" of first and second optical fibers in a fiber optic cable assembly. [EX1006, Raven, Abstract.] As I explained above in Section IX.C.5, Raven discloses a leading unit end 3, which corresponds to a removable latch. Raven's fiber optic connector is configured to reverse polarity by separating the leading end unit 3 from the housing 5, rotating the leading end unit 3 through 180, degrees and then reattaching the leading end unit 3 to the housing 5. [EX1006, Raven, 12:35-52.]

331. Accordingly, I believe a POSITA would have understood that Lee, as modified by Raven, renders obvious a reversible polarity fiber optic connector and that the references were obvious to combine, as I discuss in Sections IX.A and IX.B.

2. Claim 20, Element [20a] - "at least first and second optical ferrules, each of the first and second ferrules comprising a ferrule flange;"

332. As I discussed above with respect to Claim Element [1a], Lee discloses "first and second optical ferrules." [*See* Section IX.C.2.] As I have also

explained above with respect to claim 14, Lee discloses "each of the first and second ferrules comprises a ferrule flange." [*See* Section IX.P.]

3. Claim 20, Element [20b] - "first and second ferrule springs received on the first and second optical ferrules, respectively;"

333. The language of Claim Element [20b] is identical to that of claim 13. As I discussed above with respect to claim 13, Lee discloses "each of the first and second ferrules comprises a ferrule flange." [*See* Section IX.O.]

4. Claim 20, Element [20c] - "a connector housing comprising an exterior portion … on an opposite side of the space from the first exterior wall,"

334. The language of Claim Element [20c] is substantially identical to that of Claim Element [1b]. As I discussed above with respect to Claim Element [1b], Lee discloses Claim Element [20c]. [*See* Section IX.C.3.]

5. Claim 20, Element [20d] - "the connector housing comprises a single front body and a single back body, … engageable with the transverse wall;"

335. The language of Claim Element [20d] is substantially identical to that of the combined claims 12, 14, and 15. As I discussed above with respect to claims 12, 14, and 15, Lee discloses Claim Element [20d]. [*See* Sections IX.N, IX.P, and IX.Q.]

6. Claim 20, Element [20e] - "a latch coupling positioned on each of the first and second exterior walls of the housing;"

336. The language of Claim Element [20e] is identical to that of Claim Element [1c], except that Claim Element [1c] refers to "the connector housing" and Claim Element [20c] refers to "the housing." I believe "the housing" in the Claim Element [20e] refers to "the connector housing" as recited in the Claim Element [1c]. As I discussed above with respect to Claim Element [1c], Raven discloses "a latch coupling positioned on each of the first and second exterior walls of the housing." [*See* Section IX.C.4.]

337. Accordingly, the combined disclosures of Lee and Raven render claim Element [20e] obvious.

7. Claim 20, Element [20f] - "a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing;"

338. The language of Claim Element [20f] is identical to the first sentence of Claim Element [1d]. As I discussed above with respect to Claim Element [1d], Raven discloses "a removable latch" (e.g., leading end unit 3), and the removable latch is "engaging either of the first and second exterior wall latch couplings on the connector housing." [*See* Section IX.C.5.]

339. Accordingly, the combined disclosures of Lee and Raven render Claim Element [20f] obvious.

8. Claim 20, Element [20g] - "wherein positioning the removable latch on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable latch on the second exterior wall of the housing yields a fiber optic connector with a second polarity, the second polarity being opposite to the first polarity."

a. Lee

340. Lee discloses a latch arm 28. A POSITA would have understood that Lee's latch arm 28 corresponds to the recited "latch" because the latch arm 28 is configured to interlock the connector 10 in an adaptor and having a rear end configured to be depressed to release the connector from the adapter.

341. Patent Owner may allege that Lee does not explicitly disclose positioning the removable latch on the first exterior wall of the connector housing yields a first polarity and positioning the removable latch on the second exterior wall of the housing yields a different polarity. But reversing a polarity of a fiber optic connector by providing a removable latch for engaging either of the first and second exterior wall was well known, as explicitly taught by Raven.

b. Raven

342. It is my opinion that Raven discloses a removable latch (e.g., leading end unit 3) and teaches Claim Element [20g]. Specifically, Raven discloses the leading end unit 3 includes a connector part 61 "that is arranged to be mounted onto the leading end of the housing 5." [EX1006, Raven, 11:13-22, FIGs. 4] As

illustrated by annotated Figure 6 below, the leading end unit 3 is attached to the connector housing 5 in an initial orientation, e.g., a first side of the connector part 61 is mounted on the first exterior wall. To reverse polarity, the leading end unit 3 "is separated from the housing 5," and the leading end unit 3 "is rotated through 180^0 about a longitudinal axis Z-Z (*see* FIG. 6) and reattached on the housing in a second orientation." [EX1006, Raven, 12:35-52.] In the second orientation, the first side of the connector part 61 is mounted on the second exterior wall. And the polarity of the optical fibers is reversed in the second orientation with respect to the initial orientation. [EX1006, Raven, 12:35-52.]

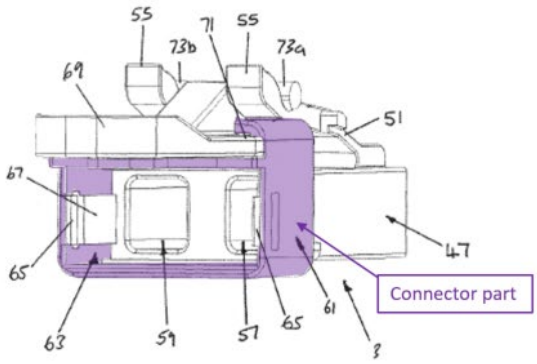


Fig. 4

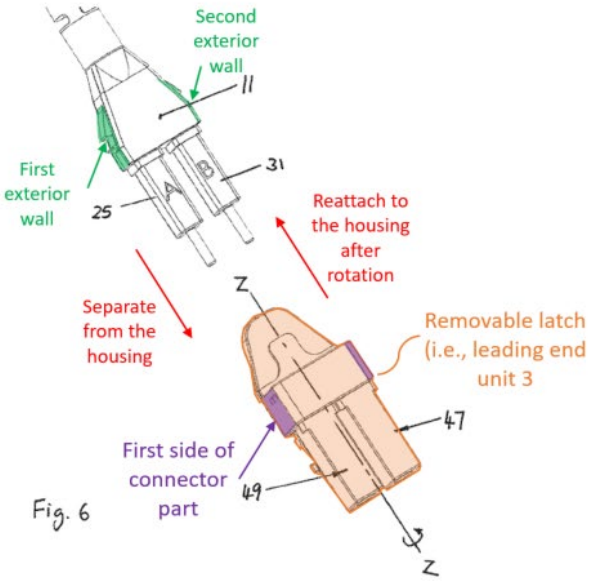


Fig. 6

EX1006, Raven, FIGs. 4, 6 (annotated).

343. A POSITA would have understood that positioning the leading end unit 3 by mounting the first side of the connector part 61 to the first exterior wall of

the housing 5 corresponds to "positioning the removable latch on the first exterior wall of the connector housing" which "yields a fiber optic connector with a first polarity." A POSITA would have also understood that separating the leading end unit 3 from the housing 5, rotating by 180^0 and reattaching it to the housing 5 is equivalent to mounting the first side of the connector part 61 to the second exterior wall of the housing 5. This corresponds to "positioning the removable latch on the second exterior wall of the housing," which "yields a fiber optic connector with a second polarity" and "the second polarity being opposite to the first polarity."

c. Motivation to Combine

344. In combining the teachings of Raven's removable latch with Lee's latch arm 28, a POSITA would have sought to make Lee's latch arm 28 removable, thereby providing the ability to easily change the polarity of Lee's optical fiber connector for the same reasons discussed in Section IX.A.

345. Thus, I believe that a POSITA would have understood Raven discloses Claim Element [20g], and therefore as discussed in Sections IX.A and IX.B, the combined disclosures of Lee and Raven render this element obvious.

T. Claim 21 – "The reversible polarity fiber optic connector as set forth in claim 20, wherein each latch coupling comprises a groove extending along the axis and having an open axial end."

346. The language of claim 21 is identical to the second sentence of Claim Element [1d]. As I discussed above with respect to Claim Element [1d], Raven

discloses "a groove extending along the axis and having an open axial end." [*See* Section IX.C.5.]

347. Accordingly, the combined disclosures of Lee and Raven render claim 21 obvious.

U. Claim 22 – "The reversible polarity fiber optic connector as set forth in claim 21, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis."

348. The language of claim 22 is identical to the third sentence of Claim Element [1d]. As I discussed above with respect to Claim Element [1d], Raven discloses "a groove extending along the axis and having an open axial end." [*See* Section IX.C.5.]

349. Accordingly, the combined disclosures of Lee and Raven render claim 22 obvious.

V. Claim 23 – "The reversible polarity fiber optic connector of claim 20, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion."

350. The language of claim 23 is identical to that of claim 3. As I discussed above with respect to claim 3, Lee discloses "a base portion" and "a depressible latch." [*See* Section IX.E.]

351. Accordingly, the combined disclosures of Lee and Raven render claim 23 obvious.

W. Claim 24 – "The reversible polarity fiber optic connector of claim 23, wherein the depressible latch arm … from the front end portion to the free rear end portion."

352. The language of claim 24 is identical to that of claim 4. As I discussed above with respect to claim 4, Lee discloses "the depressible latch arm." [*See* Section IX.F.]

353. Accordingly, the combined disclosures of Lee and Raven render claim 24 obvious.

X. Claim 25 – "The reversible polarity fiber optic connector of claim 24, wherein the free end portion of the depressible latch … to inhibit removal of the fiber optic connector from the receptacle."

354. The language of claim 25 is identical to that of claim 5. As I discussed above with respect to claim 5, Lee discloses "the free end portion of the depressible latch arm." [*See* Section IX.G.]

355. Accordingly, the combined disclosures of Lee and Raven render claim 25 obvious.

Y. Claim 26 – "The reversible polarity fiber optic connector of claim 25, wherein the free rear end portion of the depressible latch arm … unlatch the fiber optic connector from the receptacle."

356. The language of claim 26 is identical to that of claim 6. As I discussed above with respect to claim 6, Lee discloses "the free rear end portion of the depressible latch arm" as recited in the claim. [*See* Section IX.H.]

357. Accordingly, the combined disclosures of Lee and Raven render claim 26 obvious.

Z. Claim 27 – "The reversible polarity fiber optic connector of claim 26, further comprising a remote release … can move rearward relative to removable latch and the connector housing."

358. The language of claim 27 is identical to that of claim 7. As I discussed above with respect to claim 7, Lee discloses "a remote release" as recited in the claim. [*See* Sections IX.I.]

359. Accordingly, the combined disclosures of Lee and Raven render claim 27 obvious.

AA. Claim 28 – "The reversible polarity fiber optic connector of claim 27, wherein the elongate front section comprises an opening configured to receive the depressible latch arm."

360. The language of claim 28 is identical to that of claim 8. As I discussed above with respect to claim 8, Lee discloses "an opening" as recited in the claim. [*See* Section IX.J.]

361. Accordingly, the combined disclosures of Lee and Raven render claim 28 obvious.

BB. Claim 29 – "The reversible polarity fiber optic connector of claim 28, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to

oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening."

362. The language of claim 29 is identical to that of claim 9. As I discussed above with respect to claim 9, Lee discloses "a front end portion" as recited in the claim. [*See* Section IX.K.]

363. Accordingly, the combined disclosures of Lee and Raven render claim 29 obvious.

CC. Claim 30 – "The reversible polarity fiber optic connector of claim 29, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening."

364. The language of claim 30 is identical to that of claim 10. As I discussed above with respect to claim 10, Lee discloses "the free rear end portion" as recited in the claim. [*See* Section IX.L.]

365. Accordingly, the combined disclosures of Lee and Raven render claim 30 obvious.

DD. Claim 31 – "The reversible polarity fiber optic connector of claim 30, wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface of the depressible latch arm when the elongate front section moves rearward to depress the depressible latch arm."

366. The language of claim 31 is identical to that of claim 11. As I discussed above with respect to claim 11, Lee discloses "the free rear end portion" as recited in the claim. [*See* Section IX.M.]

367. Accordingly, the combined disclosures of Lee and Raven render claim 31 obvious.

EE. Claim 35 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules."

368. The language of claim 35 is identical to that of claim 19. As I discussed above with respect to claim 19, Lee discloses "a single cable boot" as recited in the claim. [*See* Section IX.R.]

369. Accordingly, the combined disclosures of Lee and Raven render claim 35 obvious.

FF. Claim 36

1. Claim 36, Preamble [36pre] – "A fiber optic connector comprising:"

370. Kindly refer to claim 1, Preamble in Section IX.C.1.

2. Claim 36, Element [36a] – "at least first and second optical ferrules;"

371. The language of Claim Element [36a] is identical to that of Claim Element [1a]. As I discussed above with respect to Claim Element [1a], Lee discloses "first and second optical ferrules." [*See* Section IX.C.2.]

372. Accordingly, Lee discloses Claim Element [36a].

3. Claim 36, Element [36b] – "a connector housing comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;"

373. The language of Claim Element [36b] is substantially identical to that of Claim Element [1b], except that Claim Element [1b] recites "a connector housing having a longitudinal axis" and Claim Element [36b] does not require "a longitudinal axis." As I discussed above with respect to Claim Element [1b], Lee discloses "an exterior portion" of "a connector housing" as recited in the Claim Element [36b]. [*See* Section IX.C.3.]

374. Accordingly, Lee discloses Claim Element [36b].

4. Claim 36, Element [36c] – "a removable latch configured to selectively and releasably couple to each of the first and second exterior walls of the housing,"

375. The language of Claim Element [36c] is substantially identical to the first sentence of Claim Element [1d], except that Claim Element [1d] refers to "engaging" either of the first and second exterior wall, and Claim Element [36c] refers to "selectively and releasably couple" to each of the first and second exterior walls.

376. I have reviewed the '701 Patent regarding the "selectively and releasably couple" limitation of this claim element. The '701 patent only uses the

term in the Claim Element [36c]. To the extent this element is supported and/or enabled by the patent specification (which I have not taken a position on), my best understanding is that this claim language means select the first exterior wall, or the second exterior wall, or both walls, which discloses the same scope as the Claim Element [1d].

377. Based on this understanding, and as I discussed above with respect to Claim Element [1d], Raven discloses this claim limitation. [*See* Section IX.C.5.]

378. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36c] obvious.

5. Claim 36, Element [36d] – "the removable latch comprising a base portion and a depressible latch arm connected to the base portion,"

379. The language of Claim Element [36d] is identical to that of claim 3. As I discussed above with respect to claim 3, Lee discloses Claim Element [36d]. [*See* Section IX.E.]

380. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36d] obvious.

6. Claim 36, Element [36e] – "the depressible latch arm having a font end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion,"

381. The language of Claim Element [36e] is identical to that of claim 4. As I discussed above with respect to claim 4, Lee discloses Claim Element [36e]. [*See* Section IX.F.]

382. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36e] obvious.

7. Claim 36, Element [36f] – "the free rear end portion of the latch arm being configured to be received in an opening of a receptacle and comprising a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the fiber optic connector from the receptacle,"

383. The language of Claim Element [36f] is substantially identical to that of claim 5. As I discussed above with respect to claim 5, Lee discloses Claim Element [36f]. [*See* Section IX.G.]

384. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36f] obvious.

8. Claim 36, Element [36g] – "the free rear end portion of the depressible latch arm being raised relative to the front end portion, the removable latch being bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the fiber optic connector from the receptacle; and"

385. The language of Claim Element [36g] is substantially identical to that of claim 6. As I discussed above with respect to claim 6, Lee discloses Claim Element [36g]. [*See* Section IX.H.]

386. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36g] obvious.

9. Claim 36, Element [36h] – "a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing,"

387. The language of Claim Element [36h] is substantially identical to that of claim 7. As I discussed above with respect to claim 7, Lee discloses Claim Element [36h]. [*See* Section IX.I.]

388. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36h] obvious.

10. Claim 36, Element [36i] – "the elongate front section comprising an opening configured to receive the depressible latch arm,"

389. The language of Claim Element [36i] is substantially identical to that of claim 8. As I discussed above with respect to claim 8, Lee discloses Claim Element [36i]. [*See* Section IX.J.]

390. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36i] obvious.

11. Claim 36, Element [36j] – "the elongate front section comprising a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening;"

391. The language of Claim Element [36j] is substantially identical to that of claim 9. As I discussed above with respect to claim 9, Lee discloses Claim Element [36j]. [*See* Section IX.K.]

392. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36j] obvious.

12. Claim 36, Element [36k] – "wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening,"

393. The language of Claim Element [36k] is identical to that of claim 10. As I discussed above with respect to claim 10, Lee discloses Claim Element [36k]. [*See* Section IX.L.]

394. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36k] obvious.

13. Claim 36, Element [36l] – "wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface when the elongate front section moves rearward to depress the depressible latch arm."

395. The language of Claim Element [36l] is identical to that of claim 11. As I discussed above with respect to claim 11, Lee discloses Claim Element [36l]. [*See* Section IX.M.]

396. Accordingly, the combined disclosures of Lee and Raven render Claim Element [36l] obvious.

GG. Claim 46 – "The fiber optic connector as set forth in claim 36, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end."

397. The language of claim 46 is substantially identical to the second sentence of Claim Element [1d], except that Claim Element [1d] refers to "each

latch coupling," and claim 46 refers to "each of the first and second exterior walls."

398. As explained in Section IX.C.4, Lee and Raven disclose "a latch coupling positioned on each of the first and second exterior walls of the connector housing." As further discussed above with respect to Claim Element [1d], Raven discloses "each latch coupling comprises a groove extending along the axis and having an open axial end." [*See* Sections IX.C.4 and IX.C.5.]

399. Therefore, each of the first and second exterior walls of the connector housing includes a latch coupling, which comprises a groove extending along the axis and having an open axial end.

400. Accordingly, the combined disclosures of Lee and Raven render claim 46 obvious.

HH. Claim 47 – "The reversible polarity fiber optic connector as set forth in claim 46, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis."

401. The language of claim 47 is identical to the third sentence of Claim Element [1d]. As I discussed above with respect to Claim Element [1d], Raven discloses "a groove extending along the axis and having an open axial end." [*See* Section IX.C.5.]

402. Accordingly, the combined disclosures of Lee and Raven render claim 47 obvious.

II. Claim 53 – "The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules."

403. The language of claim 53 is identical to that of claim 19. As I discussed above with respect to claim 19, Lee discloses claim 53. [*See* Section IX.R.]

X. LEE-RAVEN IN VIEW OF NGUYEN RENDER OBVIOUS CLAIMS 16-18, 32-34, 37-45, and 48-52 OBVIOUS

404. I believe that a POSITA would have understood that the limitations in claims 16-18, 32-34, 37-45, and 48-52 of the '701 Patent would have been obvious based on Lee-Raven in view of Nguyen.

A. Motivation to Combine

405. I believe a POSITA would have found it obvious to combine Lee, Raven, and Nguyen to arrive at the subject matter of the claims addressed below prior to the filing date of the '701 Patent. In particular, I believe a POSITA would have found it obvious to combine Lee, Raven and Nguyen—the result being a connector with a ferrule pitch size to enable "small form factor optical modules" to

"accommodate high port density optical connectors." [EX1007, Nguyen, ¶0044.] A POSITA would have found this combination obvious for several reasons.

406. First, Lee, Raven, and Nguyen are all in the same field as the '701 Patent (fiber optic connectors) and are all directed to duplex fiber optic LC connectors (e.g., connectors with two ferrules) with a latch for easy removal from a receptacle such as an adapter or transceiver. [*See* EX1005, Lee, ¶¶0002, 0003, 0030; EX1006, Raven, Abstract, 11:13-51; EX1007, Nguyen, ¶¶0002, 0020, 0028, 0040.] Accordingly, a POSITA would have understood that Lee, Raven and Nguyen are analogous prior art to the '701 Patent and recognize that the teachings of Nguyen's connector are applicable to Lee-Raven.

407. Second, the prior art references themselves provide motivation that would have led a POSITA to combine the teachings of Nguyen's ferrule pitch size with Lee-Raven's fiber optic connector. Nguyen discloses a connector design that "accommodate[s] high port density optical connectors." [EX1007, Nguyen, ¶0044.] Specifically, Nguyen discloses a "maximum connector body width" in a high density application. [EX1007, Nguyen, ¶0044.] Lee provides similar motivations to Nguyen and explains that a desire for high bandwidth optical connector tends to drive a need for a high-density of interconnects. [EX1005, Lee, ¶0004.] Lee identifies that it "can be a challenge, however, to design fiber optic connectors [capable] of providing high-density interconnects." Similar to Nguyen

and Lee, Raven tries to solve the problem of manipulating the locking levers when removing the connector from "a panel having a high density of connectors." [EX1006, Raven, 1:47-54.]

408. Thus, each of Lee, Raven and Nguyen focus on creating high bandwidth optical connectors with a high-density of interconnects. A POSITA would have been motivated to combine the teachings of Nguyen to make the Lee-Raven fiber optic connector better suited for accommodating "high port density." [EX1007, Nguyen, ¶0044.]

B. Reasonable Expectation of Success

409. A POSITA would have had a reasonable expectation of success in combining the teachings of Nguyen's design choice of a ferrule pitch size in the Lee-Raven fiber optic connector, because the connectors are used to receive two fiber optic ferrules. The Lee-Raven fiber optic connector would perform as originally intended after the ferrule pitch size is modified by Nguyen's design choice. Particularly, a POSITA would have understood that modifying the ferrule pitch sizes of the Lee-Raven connector would allow the Lee-Raven connector to work in a high port density environment.

410. Thus, a POSITA would have had a reasonable expectation of success in combining Lee, Raven, and Nguyen.

C. Claim 16 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 6.25 mm."

a. Lee-Raven

411. As I explained above in Section IX.C.5., Lee, as modified by Raven, discloses a fiber optical connector with a removable latch. As I also explained above in Section IX.C.2, Lee-Raven's fiber optical connector includes a first and second optical ferrules. Patent Owner may argue that the Lee-Raven connector fails to disclose the pitch size between the first and second optical ferrules. But that was well known in the prior art, as explicitly taught by Nguyen.

b. Nguyen

412. As discussed in Section X.A, it is my opinion that, when Lee, Raven and Nguyen are combined, the combination discloses the first and second optical ferrules have a pitch less than 6.25mm. [EX1007, Nguyen, ¶0037.] For example, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

c. Motivation to Combine

413. In combining the teachings of Nguyen's pitch size with Lee, as modified by Raven, a POSITA would have sought to design the size of the connectors to accommodate the first and second ferrules with a pitch size of about 3.8mm, as explained above in Section X.A.

414. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 16, and therefore, the combined disclosures of Lee, Raven, and Nguyen render this element obvious and would have been obvious to combine as I discussed above.

D. Claim 17 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

415. As explained above in Section X.C, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

416. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 17, and therefore, the combined disclosures of Lee, Raven, and Nguyen render this element obvious and are obvious to combine as I discussed above.

E. Claim 18 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

417. As explained above in Section X.C, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

418. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 18, and therefore, the combined disclosures of Lee, Raven, and

Nguyen render this element obvious and are obvious to combine as I discuss above.

F. Claim 32 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less."

419. The language of claim 32 is identical to that of claim 16. As I discussed above with respect to claim 16, Nguyen discloses the features of claim 32. [*See* Section X.C.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

G. Claim 33 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

420. The language of claim 33 is identical to that of claim 17. As I discussed above with respect to claim 17, Nguyen discloses the features of claim 33. [*See* Section X.D.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

H. Claim 34 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

421. The language of claim 34 is identical to that of claim 18. As I discussed above with respect to claim 18, Nguyen discloses the features of claim

34. [*See* Section X.E.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

I. Claim 37 – "The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less."

422. The language of claim 37 is identical to that of claim 16. As I discussed above with respect to claim 16, Nguyen discloses the features of claim 37. [*See* Section X.C.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

J. Claim 38 – "The fiber optic connector as set forth in claim 37, wherein the connector housing comprises a single front body and a single back body."

423. The language of claim 38 is identical to that of claim 12. As I discussed above with respect to claim 12, Lee discloses "a single front body and a single back body. [*See* Section IX.N.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

K. Claim 39 – "The fiber optic connector as set forth in claim 38, further comprising first and second ferrule springs received on the first and second ferrules, respectively."

424. The language of claim 39 is identical to that of claim 13. As I discussed above with respect to claim 13, Lee discloses "first and second ferrule springs received on the first and second ferrules." [*See* Section IX.O.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

L. Claim 40 – "The fiber optic connector as set forth in claim 39, wherein each of the first and second ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges."

425. The language of claim 40 is identical to that of claim 14. As I discussed above with respect to claim 14, Lee discloses the features of claim 40. [*See* Section IX.P.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

M. Claim 41 – "The fiber optic connector as set forth in claim 40, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall."

426. The language of claim 41 is identical to that of claim 15. As I discussed above with respect to claim 15, Lee discloses the features of claim 41.

[*See* Section IX.Q.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

N. Claim 42 – "The fiber optic connector as set forth in claim 41, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end."

427. The language of claim 42 is identical to that of claim 46. As I discussed above with respect to claim 46, Lee modified by Raven discloses features of claim 46. [*See* Section IX.FF.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

O. Claim 43 – "The fiber optic connector as set forth in claim 42, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis."

428. The language of claim 43 is identical to that of claim 47. As I discussed above with respect to claim 47, Lee modified by Raven discloses features of claim 47. [*See* Section IX.GG.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

P. Claim 44 – "The fiber optic connector as set forth in claim 43, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

429. The language of claim 44 is identical to that of claim 17. As I discussed above with respect to claim 17, Nguyen discloses claim 44. [*See* Section X.D.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

Q. Claim 45 – "The fiber optic connector as set forth in claim 44, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

430. The language of claim 45 is identical to that of claim 18. As I discussed above with respect to claim 18, Nguyen discloses claim 45. [*See* Section X.E.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

R. Claim 48 – "The fiber optic connector as set forth in claim 47, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less."

431. The language of claim 48 is identical to that of claim 16. As I discussed above with respect to claim 16, Nguyen discloses claim 48. [*See* Section X.C.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

S. Claim 49 – "The fiber optic connector as set forth in claim 48, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

432. The language of claim 49 is identical to that of claim 17. As I discussed above with respect to claim 17, Nguyen discloses claim 49. [*See* Section X.D.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

T. Claim 50 – "The fiber optic connector as set forth in claim 49, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

433. The language of claim 50 is identical to that of claim 18. As I discussed above with respect to claim 18, Nguyen discloses claim 50. [*See* Section X.E.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

U. Claim 51 – "The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

434. The language of claim 51 is identical to that of claim 17. As I discussed above with respect to claim 17, Nguyen discloses claim 51. [*See* Section X.D.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

V. Claim 52 – "The fiber optic connector as set forth in claim 51, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

435. The language of claim 52 is identical to that of claim 18. As I discussed above with respect to claim 18, Nguyen discloses claim 52. [*See* Section X.E.] Therefore, the combined disclosure of Lee, Raven, and Nguyen render this claim obvious and are obvious to combine as I discussed above.

XI. CONNELLY IN VIEW OF LIN'658 RENDER OBVIOUS CLAIMS 1-6, 12-15, 19-26, and 35.

436. I believe that a POSITA would have understood that the limitations in claims 1-6, 12-15, 19-26, and 35 of the '701 Patent would have been obvious based on Connelly in view of Lin'658.

A. Motivation to Combine

437. I believe a POSITA would have found it obvious to combine Connelly and Lin'658 to arrive at the subject matter of the claims addressed below prior to the filing date of the '701 Patent. In particular, a POSITA would have found it obvious to modify Connelly's plug housing 38 and conventional latch 91 fixed to the housing 38 with Lin'658's coupling configuration (e.g., guide blocks 112, guide grooves 132, and grabs 133) and incorporate Lin'658's removable casing 13 to hold Connelly's latch 91. A POSITA would have found this modification obvious for several reasons, but before addressing these reasons, I summarize the relevant disclosures of Connelly and Lin'658 for context.

438. Connelly recognizes the continued growth demands for "inexpensive, readily manufactured and quickly replacable" connection systems. [EX1008, Connelly, 1:11-15.] Connelly's object is to design a new and improved fiber optic connection system that is inexpensive, readily produced for fiber optic cable, and is relatively simple to assembly and repair. [EX1008, Connelly, 1:38-47.]

439. Connelly discloses a fiber optic connection system 10 that includes a fiber optic plug 34 and a fiber optic jack 36. [EX1008, Connelly, 2:18-25.] A POSITA would have understood the fiber optic plug 34 is the recited "fiber optic connector." The fiber optic plug 34 includes a housing 38, and the housing 38 includes a top wall 50, a bottom wall 52 and side walls 54, 56. [EX1008, Connelly, 2:32-41.] Additionally, the housing 38 includes a conventional latch 91 "extending from" the front housing end 46 along the top wall 50. [EX008, Connelly, 2:61-63.] As illustrated in FIG. 1, the jack 36 receives the plug 34 in the interlocked state so that optical fibers 16, 18 are coupled to the optical fibers 26, 28, respectively. [EX1008, Connelly, 2:18-26, FIG. 1.] Connelly explains the latch 91 is used to "snap-lock" to the jack 36 in the interlock state when the jack 36 receives the plug 34. [EX1008, Connelly, 3:58-60, FIG. 1.] The annotated Figure 1 below shows that there are two snap openings on the jack 36 for snap-locking with the latch 91.

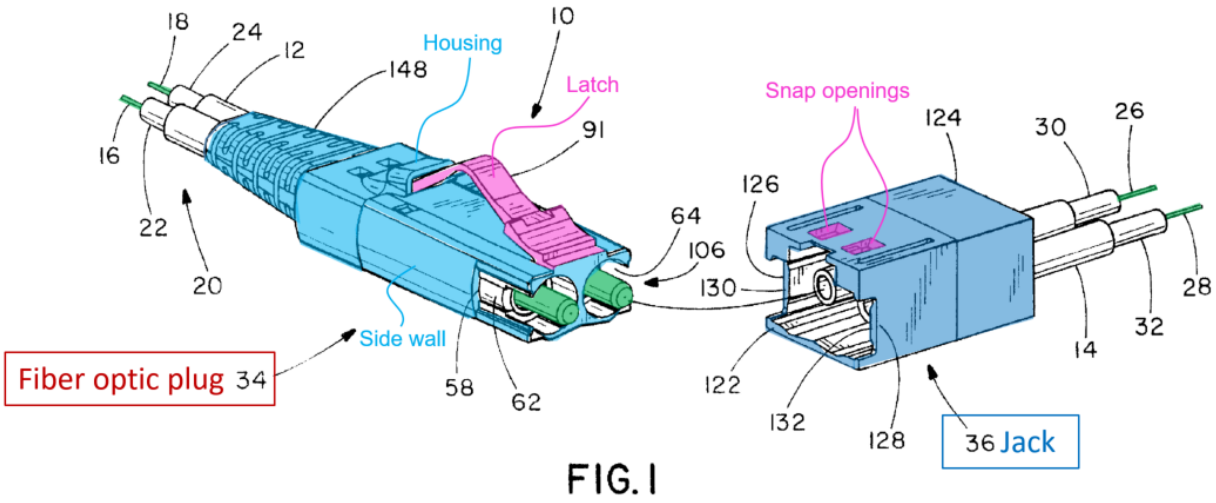


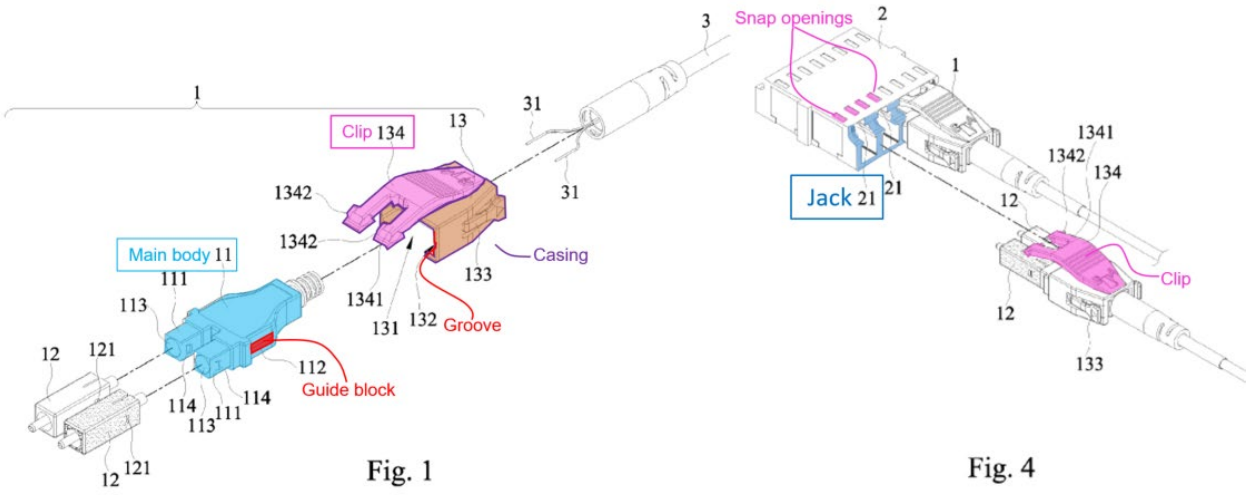
FIG. 1

EX1008, Connelly, FIG. 1 (annotated).

440. Lin'658 discloses a fiber optic connector that enables polarity exchange in a manner that "substantially improves convenience and efficacy" during operation. [EX1009, Lin'658, 3:5-10.] Lin'658's fiber optic connector design both "prevents the problem of losing components during adjustment" and "prevents the fiber optic cable from being damaged due to excessive twisting." [EX1009, Lin'658, 6:5-8.]

441. Lin'658's connector with alterable polarity includes a main body 11, a pair of fiber optic plugs 12, and a casing 13. [EX1009, Lin'658, 4:63-67.] Each fiber optic plug 12 receives a fiber optic wire 31 so that the two fiber optic plugs 12 individually become the two corresponding different polarities of the fiber optic transmission system. [EX1009, Lin'658, 5:15-20, FIG. 1.] As shown below in annotated Figures 1 and 4, Lin'658 also discloses a clip 134 "formed integrally and

positioned above the rear end of the casing 13." The clip 134 is used to engage and fix to the corresponding jack 21 of the fiber optic socket 2. [EX1009, Lin'658, 5:43-52, FIG. 4.] The clip 134 has blocking points 1342 that are used to engage with snap openings of the jacks 21, as shown below in annotated Figure 4. [EX1009, Lin'658, 5:52-58.]



EX1009, Lin'658, FIGs. 1 and 4 (annotated).

442. Lin'658 discloses that the casing 13 can be separated from the main body 11. [EX1009, Lin'658, 5:37-40.] Lin'658 explains that each of the two sides of the casing includes a guide groove 132 and a grab 133 corresponding to the guide block 112 located on each of the two exterior walls of the main body. [EX1009, Lin'658, 5:25-43, FIG. 1.] The two guide grooves 132 and the two guide blocks 112 cooperate to restrict and guide the casing in accordance with the movement direction of the main body 11. [EX1009, Lin'658, 5:25-43, FIG. 1.]

443. Lin'658 explains that to adjust polarity of the communication connector, the user first separates the casing 13 from the main body 11. [EX1009, Lin'658, 5:59:67.] The user then rotates either the main body or the casing 180 degrees and places the casing back on the main body "via sliding movement." [EX1009, Lin'658, 5:59-6:5.] Figures 5 and 6, reproduced below in annotated form, illustrate separating the casing from the main body and placing the casing back onto the main body after the main body is rotated by 180 degrees, so that the polarity of the connector system is altered.

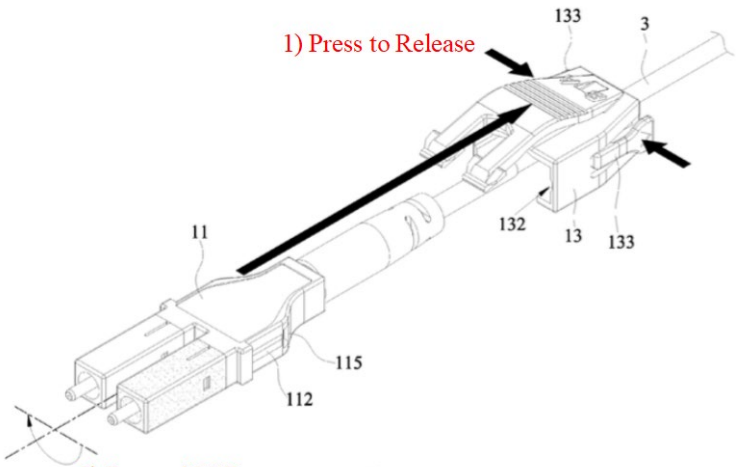


Fig. 5

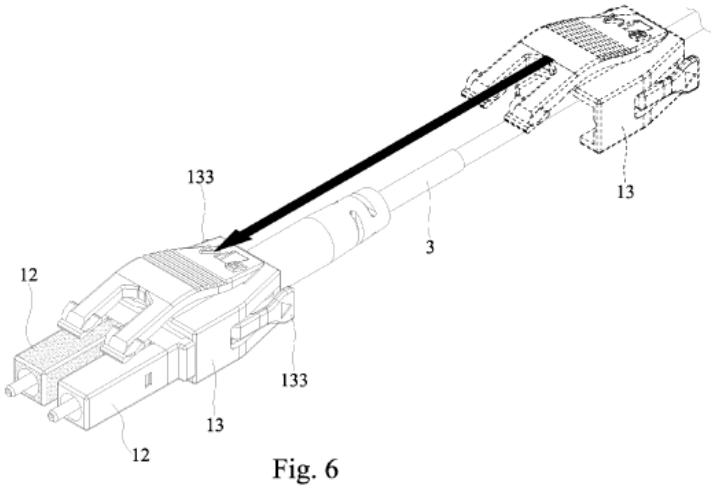


Fig. 6

EX1009, Lin'658, FIGs. 5 and 6 (annotated).

444. A POSITA would have understood that Lin'658's casing 13 corresponds to the recited "removable latch" because casing includes a clip 134 configured to engage with the corresponding jack and the casing can be separated from the main body 11. A POSITA would also have understood that Lin'658's removable latch (e.g., casing 13) has a latch coupling structure that comprises two guide blocks 112 on two exterior walls of the main body 11 and two guide grooves 132 at the two sides of the casing. A POSITA would have understood the grooves 132 and the blocks 112 of the latch coupling structure are simple, interchangeable alignment structures. In other words, the guide grooves 132 can be on the two exterior walls of the main body, and the guide blocks 112 can be at the two sides of the casing.

445. In my opinion, a POSITA would have found it obvious to add Lin'658's latch coupling structures (e.g., guide blocks or guide grooves) on each of the side walls of Connelly's housing 38, and incorporate Lin'658's removable casing with Connelly's latch 91, to releasably engage Connelly's latch 91 with the housing 38, so that the polarity of Connelly's connector can be altered in a manner that "substantially improves convenience and efficacy" during operation. [EX1009, Lin'658, 3:5-10.] A POSITA would have found this combination obvious for several reasons.

446. First, Connelly and Lin'658 are in the same field of fiber optic connectors and are both directed to duplex fiber optic connectors (i.e., connectors with two ferrules) with a latch for easy engagement with a receptacle such as a jack. [EX1008, Connelly, 2:18-26, 3:58-60, FIG. 1; EX1009, Lin'658, 4:63-67, 5:15-20, 5:43-52, FIG. 4.] Accordingly, a POSITA would have understood that Connelly and Lin'658 are analogous prior art to the '701 patent and would have recognized that the teachings of Lin'658's removable latch are applicable to Connelly.

447. Second, the prior art references themselves provide a motivation that would have led a POSITA to combine the teachings of Lin'658's removable latch with Connelly. Lin'658 explains that when using fiber optics for transmitting signals, the cables are made in pairs. One cable is for transmission and the other is

for receiving, thereby forming the polarity of the fiber optic transmission. [EX1009, Lin'658, 1:40-51.] Lin'658 recognizes the need to exchange/alter polarity of the connectors quickly in order to avoid damaging the fiber optic transmitter/receiver. [EX1009, Lin'658, 1:52-61.] Accordingly, Lin'658 discloses a fiber optic connector that enables polarity exchange in a manner that "substantially improves convenience and efficacy" during operation. [EX1009, Lin'658, 3:5-10.] Lin'658 also explains that its design both "prevents the problem of losing components during adjustment" and at the same time "prevents the fiber optic cable [] from being damaged due to excessive twisting." [EX1009, Lin'658, 6:5-9.] Therefore, Lin'658 expressly provides a motivation to allow a user to easily change polarity.

448. Connelly is also directed to a duplex fiber optics connector and Connelly's object is to design a new and improved fiber optic connection system that is inexpensive, readily produced for fiber optic cable, and is relatively simple to assembly and repair. [EX1008, Connelly, 1:38-51.] A POSITA would have understood Connelly's duplex fiber optics connector has the same issue Lin's 658 tries to address in terms of repair and polarity change operations.

449. Thus, a POSITA would have been motivated to make Connelly's latch 91 separable from the connector housing 38 to enable polarity change in a manner that "substantially improves convenience and efficacy" and prevents damaging

optic cable as taught by Lin'658, [EX1009, Lin'658, 3:5-10, 6:5-9,] so that Connelly's design goals of being inexpensive and relatively simple to assembly and repair can be better achieved. [EX1008, Connelly, 1:38-51.]

450. Third, this modification involves applying a known technique (Lin'658's removable latch configuration) to a similar device (Connelly's fiber optic plug) in the same way (providing latch couplings on exterior walls of the connector housing to receive a removable latch). A POSITA would have understood that there are a finite number of ways of making Connelly's latch 91 removably coupled to the exterior walls of its connector housing.

451. As one example, Lin'658 teaches a latch coupling structure on each of two side walls of its main body 11 that includes a grab 133 and a guide block 112 to engage with a guide groove 132 on each of the two sides of the casing 13 (i.e., the removable latch). [EX1009, Lin'658, 5:25-43.] A POSITA would have understood that employing the teachings of Lin'658's groove/block and grab interface is one example of modifying Connelly's optic plug to make latch 91 removably couple to the exterior walls of Connelly's housing 38.

B. Reasonable Expectation of Success

452. A POSITA would expect the combination of Connelly and Lin'658 to be successful because Connelly's latch 91 would perform as originally intended after being releasably locked to the exterior walls of Connelly's connector housing.

In particular, a POSITA would have understood that adding coupling features, such as a grab 133, and a guide groove or a guide block to the exterior walls of Connelly's connector housing would still allow Connelly's latch 91 to engage with the jack 21 of the fiber optic socket 2. Indeed, it was well known to make similar-type latches with depressible arms releasably locked to optical plug housings, as disclosed by Lin'658. A POSITA would have also understood that modifying Connelly's housing 38 with Lin'658's teaching of casing 13 would not necessary increase the size of the Connelly-Lin'658 connector.

453. Therefore, Connelly's modified fiber optic connector will continue to have the same fundamental principle of operation, and the combination with Lin'658 will not render Connelly unsatisfactory for its intended purpose.

454. Thus, a POSITA would have had a reasonable expectation of success in combining Connelly and Lin'658.

C. Claim 1

1. Claim 1, Preamble [1pre] – "A fiber optic connector comprising:"

455. Counsel has informed me the preamble should not be considered limiting. But even if found limiting, Connelly discloses a fiber optic connector. [EX1008, Connelly, Title ("Fiber Optic Connection System"). *See also* EX1008, Connelly, Abstract ("The present invention is a fiber optic connection system including a fiber optic plug adapted to mate and lock with a fiber optic

connector."); EX1008, Connelly, 2:18-26 ("The system 10 includes a fiber optic plug 34.")] A POSITA would have understood Connelly's fiber optic plug 34 corresponds to the recited "fiber optic connector."

456. Accordingly, whether or not the preamble is limiting, I believe a POSITA would have understood Connelly discloses a fiber optic connector.

2. Claim 1, Element [1a] – "at least first and second optical ferrules;"

457. In my opinion, Connelly discloses at least first and second optical ferrules. Connelly's fiber optic plug 34 includes first and second plug pre-assemblies 40, 42. [EX1008, Connelly, 2:26-27.] Each of the plug pre-assemblies 40, 42 includes ceramic ferrule 92. [EX1008, Connelly, 2:65-67.] The annotated Figure 1 below illustrates an assembled fiber optic plug 34 having first and second optical ferrules.

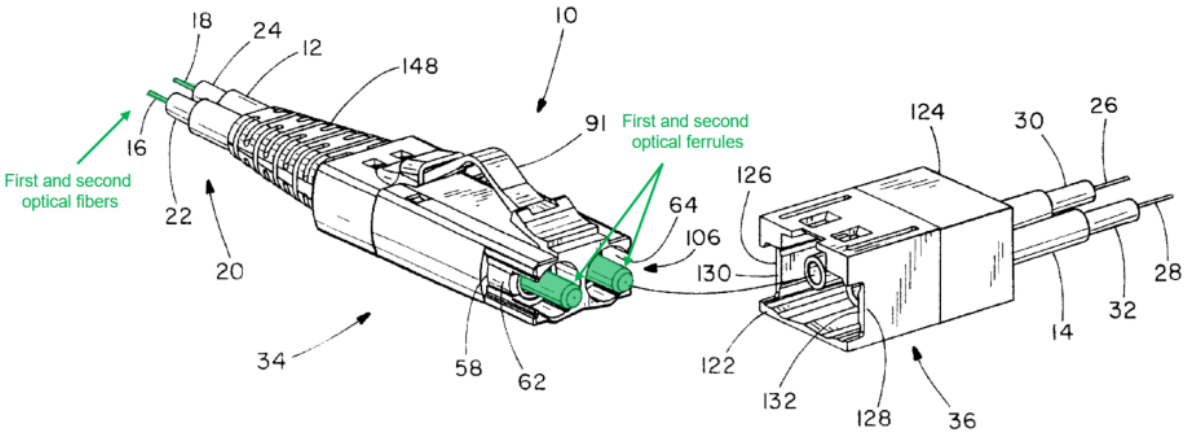


FIG. 1

EX1008, Connelly, FIG. 1 (annotated).

458. Accordingly, I believe a POSITA would have understood Connelly discloses Element [1a].

3. Claim 1, Element [1b] – "a connector housing having a longitudinal axis and comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;"

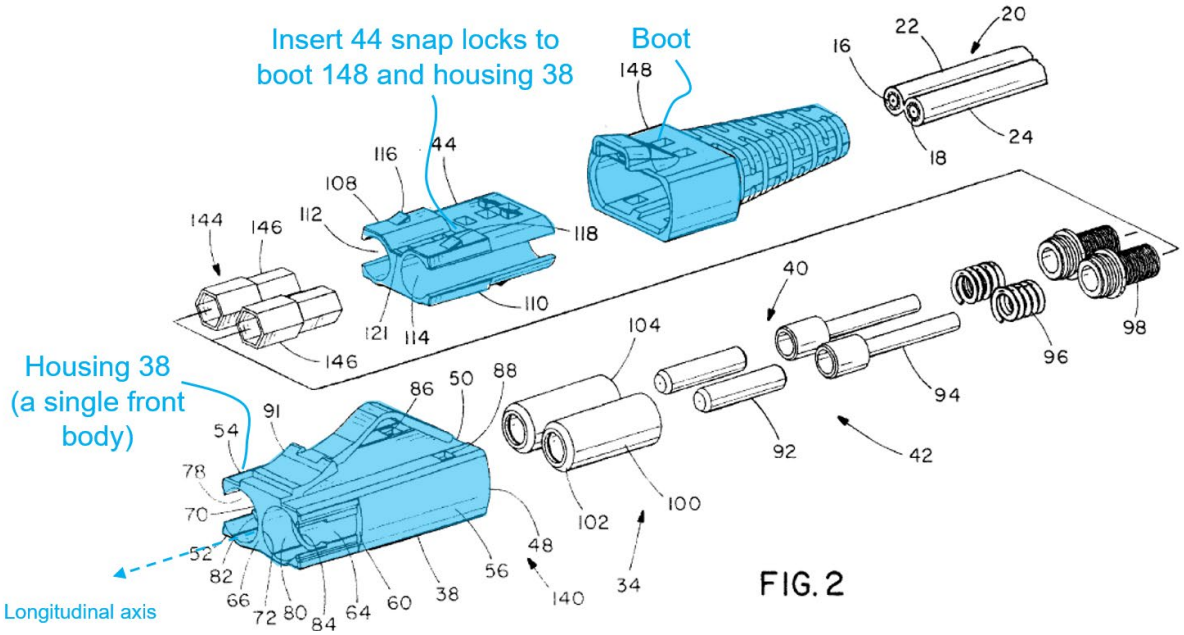
459. In my opinion, Connelly discloses a connector housing (e.g., a housing 38, an insert 44 and a boot 148 snap-locked together) having a longitudinal axis and comprising an exterior portion at least partially surrounding the first and second optical ferrules (e.g., ferrules 92) such that the exterior portion (e.g., exterior of housing 38) circumscribes a space (e.g., cylindrical housing passageways 78, 80) in which each of the first and second optical ferrules (e.g., ferrules 92) are received. [EX1008, Connelly, 1:26-37, 2:27-58, 2:65-3:12, FIGs. 1, 2.] Further, Connelly's exterior portion includes first and second exterior walls positioned to the left and right of the ferrules.

460. As this claim element is rather long, I will explain how Connelly addresses each portion of this element for ease of understanding.

461. *"A connector housing having a longitudinal axis."* Connelly discloses that the plug 34 "includes a housing 38 … and an insert 44," and the housing 38

has "a front housing end 46" and "a rear housing end 48," the housing 38 also includes "top wall 50," "bottom wall 52," and "side walls 54, 56." [EX1008, Connelly, 2:27-36, FIGs. 1, 2, 3, 4, and 5.] Connelly explains that the insert 44 is "received at the rear housing end 38" and the insert 44 "snap-locks into the housing 38." [EX1008, Connelly, 2:32-33, 3:25-26.] Connelly further explains that housing 38 and the insert 44 "cooperate to define interconnection means," and the insert 44 is "snap-locked" to a boot 148. The boot 148 is used to reduce strain upon the fiber optic cable 12. [EX1008, Connelly, 4:18-39, FIG. 2.] A POSITA would have understood that Connelly's plug 34 has a housing including the housing 38, the insert 44, and the boot 148 because they are snap-locked together and cooperate to define a structure for housing other components of the fiber optics connector.

462. Connelly discloses that a dividing wall 66 "extends longitudinally from the front housing end 46" to a point of the rear housing end 48. [EX1008, Connelly, 2: 42-46.] A POSITA would have understood that Connelly's connector housing (e.g., the housing 38, the insert 44 and the boot 148) has a longitudinal axis, as illustrated in the annotated Figure 2 below.

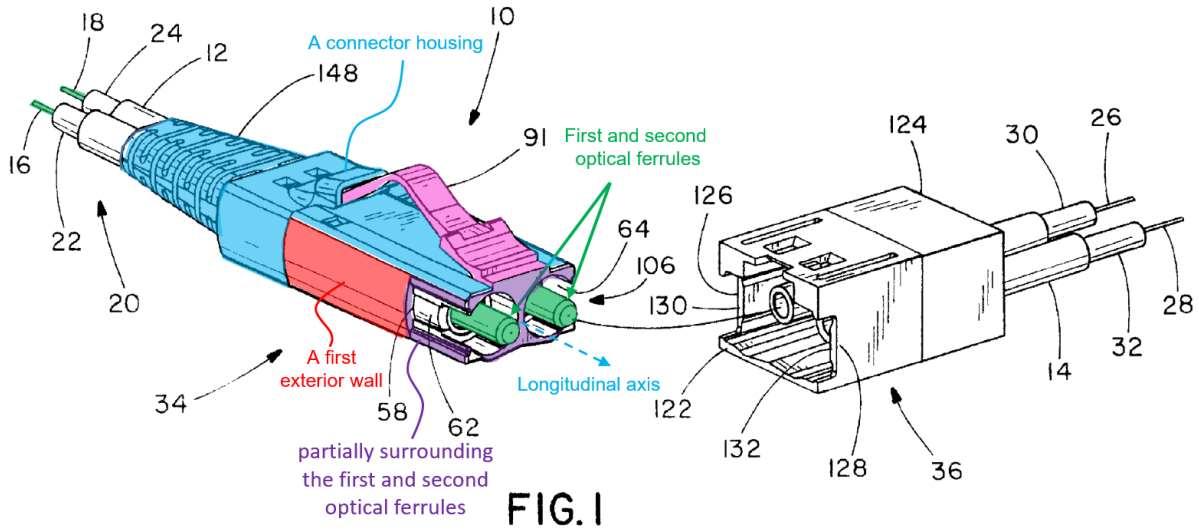


EX1008, Connelly, FIG. 2 (annotated).

463. "… *and comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received*."

Connelly discloses the housing 38 includes "a substantially planar top wall 50," "a substantially planar bottom wall 52," and "substantially arcuate side walls 54, 56." The housing 38 also "includes an interior." [EX1008, Connelly, 2:33-42.] Specifically, Connelly explains the housing 38 defines "side-by-side cylindrical housing passageways 78, 80" using portions of top and bottom walls. [EX1008, Connelly, 2:51-55.] Connelly also discloses that the side walls 54, 56 of housing have "terminating edges," that define "first and second side windows 62, 64." [EX1008, Connelly, 2:47-41.] Finally, Connelly discloses the plug 34 includes

"first and second plug pre-assemblies." [EX1008, Connelly, 2:27-28.] Each of the plug pre-assembles 40, 42 "includes ceramic ferrule 92." [EX1008, Connelly, 2:65-67.] Furthermore, the plug re-assembles 40, 42 "reside within and pass through the passageways 78, 80," "with the ceramic ferrule 92 extending beyond the front housing end 46." [EX1008, Connelly, 3:8-13, FIG. 1.] The annotated Figure 1 below illustrates the exterior portion of the connector housing partially surrounding the optical ferrules.



EX1008, Connelly, FIG. 1 (annotated).

464. A POSITA would have understood Connelly teaches that housing 38 comprises "an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received" because housing 38 defines passageways 78, 80 with side windows (e.g., circumscribes a space) and the first

and second optical ferrules reside within the passageways and extend beyond the front housing end 46 (e.g., partially surrounding the first and second optical ferrules).

465. "*The exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall*." Connelly discloses the housing 38 includes "substantially arcuate side walls 54, 56." [EX1008, Connelly, 2:33-38, FIG. 1, 2, 4, and 5.]

466. As illustrated in the annotated Figure 1 above and Figures 2, 4, and 5, a POSITA would have readily understood that Connelly's side walls of housing 38 are the first and second exterior walls on an opposite side of the space.

4. Claim 1, Element [1c] – "a latch coupling positioned on each of the first and second exterior walls of the connector housing;"

a. Connelly

467. Connelly discloses a conventional latch 91 "extending from the front housing end 46 along the top wall 50." [EX1008, Connelly, 2:61-64.]

468. Patent Owner may allege Connelly does not expressly teach latch couplings positioned on each of the first and second exterior walls of the housing 38. However, providing latch couplings on a connector housing to make the latch removably coupled to the connector housing was well known, as explicitly taught by Lin'658.

b. Lin'658

469. In my opinion, a POSITA would have understood that Lin'658 teaches this claim limitation. Specifically, Lin'658 discloses a casing 13 having a clip 134 positioned on the top that is used to engage with a jack 21 of a fiber optic socket 2. [EX1009, Lin'658, 5:43-52.] A POSITA would have understood Lin'658's casing 13 is a latch for latching the fiber optic plug to a fiber optic socket. Lin'658 also discloses "a guide block 112" positioned on the "two sides of the main body 11 rear end outer walls," and "two necks 115 are individually located at each side of the guide blocks 112." [EX1009, Lin'658, 5:6-14, FIGs. 1, 5.] Lin'658 discloses a guide groove 132 and a grab 133 on each of the two sides of the casing 13 corresponding to the "two guide blocks 112" for restricting and guiding the casing 13, and "two grabs 133 are individually engaged into the two necks 115" so "the main body 11 is fixed into the casing 13." [EX1009, Lin'658, 5:28-43.] As illustrated below in the annotated Figure 5, a POSITA would have understood the combined guide block 112 and the neck 115 corresponds to the recited "a latch coupling" since the guide block and the neck help to couple the casing 13 (i.e., a latch) with the main body 11.

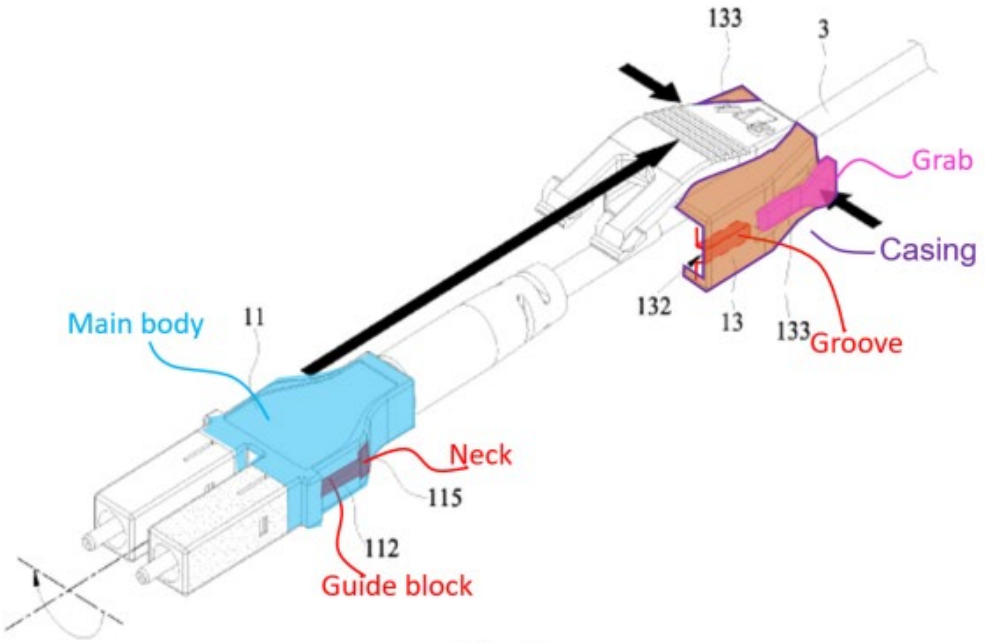


Fig. 5

EX1009, Lin'658, FIG. 5 (annotated).

c. Motivation to Combine

470. In combining the teachings of Lin'658's latch couplings with Connelly's optic plug, a POSITA would have found it obvious to make Connelly's latch 91 removable as taught by Lin'658's casing 13, and add latch couplings on the first and second side walls of Connelly's housing 38 to engage the removable latch, thereby allowing the polarity of Connelly's optic plug to be altered in a manner that "substantially improves convenience and efficacy" during operation and "prevents the fiber optic cable from being damaged due to excessive twisting," as discussed in Section XI.A. [*See* EX1009, Lin'658, 3:5-10, 6:5-9.]

471. Accordingly, I believe a POSITA would have understood that Lin'658 discloses Element [1c]. Therefore, as discussed in Section XI.A, the combined disclosures of Connelly and Lin'658 would have been obvious to combine and once combined render this element obvious.

5. Claim 1, Element [1d] – "a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling; wherein each latch coupling comprises a groove extending along the axis and having an open axial end; and wherein the removable latch comprises a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis."

a. Connelly

472. Connelly discloses a conventional latch 91 "extending from the front housing end 46 along the top wall 50." [EX1008, Connelly, 2:61-64.] Connelly also discloses that "the latch 91 snap-locks to the jack 36 in the interlocked state. [EX1008, Connelly, 3:58-60.] A POSITA would have understood that Connelly's latch 91 corresponds to the recited "latch" because the latch 91 is configured to "snap-lock" the optic plug 34 with the jack 36.

473. Patent Owner may allege that Connelly does not expressly teach "a removable latch for engaging either of the first and second exterior wall latch coupling on the connector housing." But providing a removable latch for engaging

either of the first and second exterior wall latch couplings was well known, as explicitly taught by Lin'658.

b. Lin'658

474. It is my opinion that Lin'658 discloses a removable latch (e.g., casing 13) for engaging either of the first and second exterior wall latch couplings on the connector housing (e.g., main body 11), the latch coupling has a protrusion (e.g., guide block 112), which corresponds to a guide groove 132 at each side of the casing 13. [EX1009, Lin'658, 5:25-52, FIGs. 4-6.] A POSITA would have understood the guide block 112, neck 115 of the main body 11 and the corresponding guide groove 132, and grab 133 of the casing 13 cooperates to couple the casing with the main body. A POSITA would have also understood guide grooves 132 and guide blocks 112 can be reversed, i.e., the guide grooves could be on the main body 11 and the guide blocks could be on the casing 13. In fact, the '701 Patent explicitly teaches this inverted option as it discloses that "[a]lthough the latch coupling 122 is depicted as a recess on the housing accommodating a latch protrusion, these elements may be reversed with the latch including a recess and the housing including a protrusion." [EX1001, '701 Patent, 6:53-56.]

475. As I have explained why it would have been obvious to modify Connelly to include Lin'658's removable latch (*see* Section XI.A). I believe the combined disclosures of Connelly and Lin'658 render this claim element obvious.

476. As this claim element is rather long, I will explain how Lin'658 addresses each portion of this element for ease of understanding.

477. "*A removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling*." In my opinion, Lin'658 discloses this claim element. Lin'658 discloses a casing 13 having a clip 134 positioned on the top, and the clip is used to engage with a jack 21 of a fiber optic socket 2. [EX1009, Lin'658, 5:43-52.] Lin'658 also discloses that casing 13 can be separated from the main body 11 "via a backward movement." [EX1009, Lin'658, 5:37-41, FIG. 5.] A POSITA would have understood Lin'658's casing corresponds to the recited "removable latch" since it is used for latching the fiber optic plug to a fiber optic socket and it can be removed from the main body.

478. As explained above with respect to Claim Element [1c] in Section XI.C.4, Lin'658 discloses "a latch coupling" (e.g., a guide block 112 and a neck 115) on each of the exterior walls of the main body 11 (e.g., two sides of the main body 11 rear end outer walls). [EX1009, Lin'658, 5:6-8.] Lin'658 explains that at each of the two sides of the casing 13, there are a guide groove 132 and a grab 133

corresponding to one of the two guide blocks 112. [EX1009, Lin'658, 5: 28-30.] Lin'658 further explains two guide blocks 112 "individually correspond to" two guide grooves 132 so they can "restrict and guide the casing 13" in accordance with "the movement direction of the main body 11." [EX1009, Lin'658, 5:30-34.] As illustratd below in annotated Figures 5 and 6, the main body 11 is fixed to the casing 13 by "combining the casing 13 with the main body 11 via a forward movement." [EX1009, Lin'658, 5:38-40, FIG. 6.]

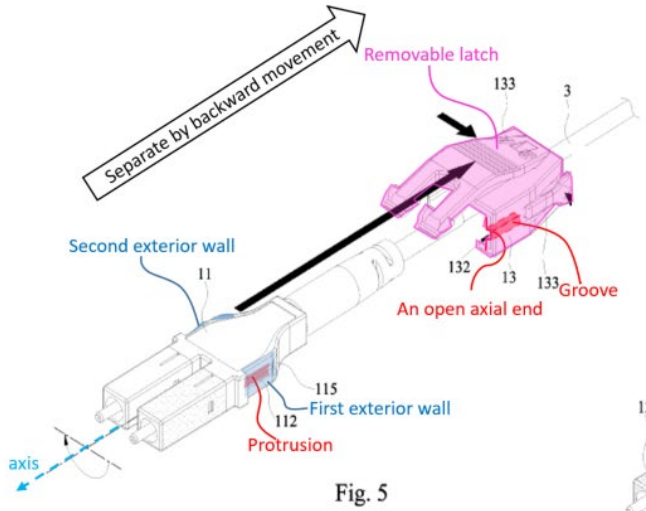


Fig. 5

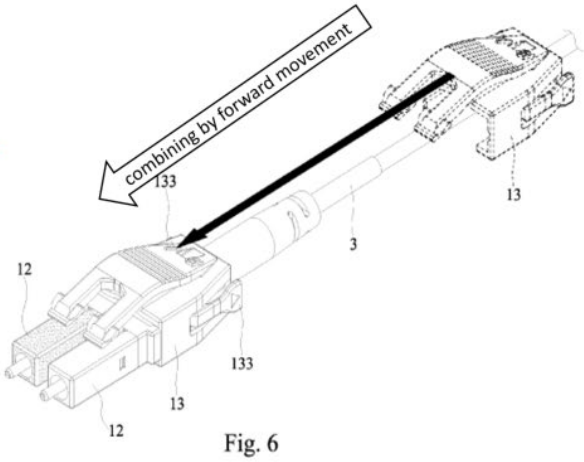


Fig. 6

EX1009, Lin'658, FIGs. 5 and 6 (annotated).

479. A POSITA would have understood "engaging either of the first and second exterior wall latch couplings" means one of the following configurations: engaging the first exterior wall latch coupling, engaging the second exterior wall coupling, or engaging both the first and the second exterior wall latch couplings.

Accordingly, a POSITA would have understood that Lin'658's guide groove 132 and grab 133 of the casing 13 engaging with respective guide bock 112 corresponds to "a removable latch" that "engage[s] either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling."

480. "*Wherein each latch coupling comprises a groove extending along the axis and having an open axial end*; *and wherein the removable latch comprises a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis*." In my opinion, Lin'658 discloses this claim element. Lin'658 discloses at each of the two sides of the casing 13, there are a guide groove 132 and a grab 133 corresponding to one of the two guide blocks 112. [EX1009, Lin'658, 5: 28-30.] As illustrated in the annotated Figure 5 below, the groove 132 has an open axial end and extends along the axis. Lin'658 also discloses "a guide block 112" is positioned at each of the "two sides of the main body 11 rear end outer walls." [EX1009, Lin'658, 5:6-8.] Lin'658 explains two guide blocks 112 "individually correspond to" two guide grooves 132 so they can "restrict and guide the casing 13" in accordance with "the movement direction of the main body 11." [EX1009, Lin'658, 5:30-34.] As also illustrated in the annotated Figures 5 and 6 below, a POSITA would have understood that in order to "restrict and guide the casing 13 in accordance with the movement direction of

the main body 11," the guide blocks 112 are inserted into corresponding guide grooves 132 through the open axial end by movement along the axis.

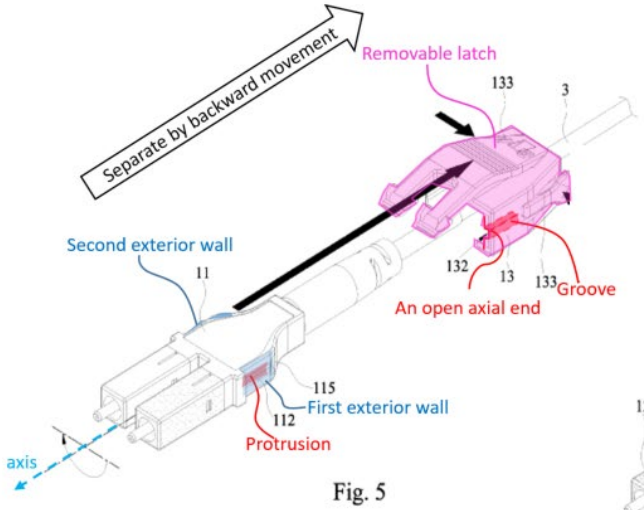


Fig. 5

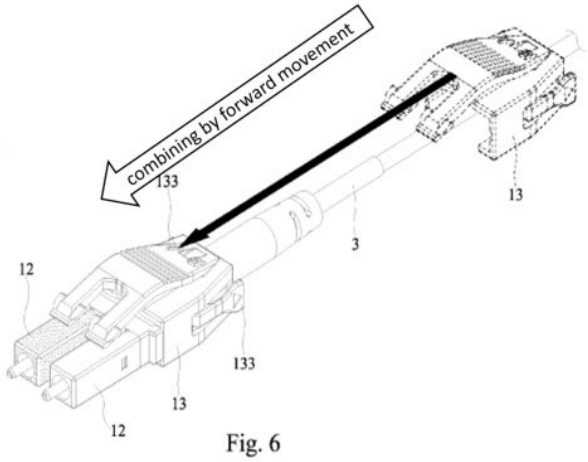


Fig. 6

EX1009, Lin'658, FIGs. 5 and 6 (annotated).

481. A POSITA would have also understood the guide groove 132 and the guide block 112 (i.e., protrusion) can be reversed, i.e., the guide groove 132 can be on the main body 11 rear end outer walls and the guide block 112 (i.e., protrusion)can be on the two sides of the casing 13. In this configuration, they provide the same functionality of "restrict[ing] and guid[ing] the casing 13."

482. Accordingly, Lin'658 discloses each latch coupling comprises a groove extending along the axis and having an open axial end, and the removable latch (e.g., casing 13) comprises a protrusion (e.g., guide block) for being inserted

into the open axial end of the groove by movement relative to the housing along the axis.

c. Motivation to Combine

483. In combining the teachings of Lin'658's removable latch with Connelly, a POSITA would have sought to modify Connelly's connector housing 38 with latch couplings as taught by Lin'658, and make Connelly's latch 91 removable for engaging either of the first and second exterior wall latch couplings on Connelly's modified connector housing 38 for the same reasons discussed in Section XI.A.

484. Accordingly, I believe a POSITA would have understood that Lin'658 discloses Element [1d], and therefore, the combined disclosures of Connelly and Lin'658 render this element and all of claim 1, obvious.

D. Claim 2

1. Claim 2, Preamble [2pre] – "The fiber optic connector of claim 1, wherein"

485. Kindly refer to claim 1 above.

2. Claim 2, element [2a] – "the protrusion is movable along the longitudinal axis in each groove with respect to the connector housing;"

a. Connelly

486. Connelly discloses a conventional latch 91, Patent Owner may argue that Connelly does not expressly disclose the protrusion that is movable along the

longitudinal axis in each groove with respect to the connector housing. But providing a protrusion that is movable along the longitudinal axis in each groove with respect to the connector housing was well known, as explicitly taught by Lin'658.

b. Lin'658

487. In my opinion, Lin'658 discloses the protrusion that is movable along the longitudinal axis in each groove with respect to the connector housing.

488. Lin'658 discloses two guide blocks 112 "individually correspond to" two guide grooves 132 so they can "restrict and guide the casing 13" in accordance with "the movement direction of the main body 11." [EX1009, Lin'658, 5:30-34.] Lin'658 explains separating the casing 13 from the main body 11 occurs via "a backward movement" and the task of combing the casing with the main body occurs "via a forward movement." [EX1009, Lin'658, 5:35-40.] As also illustrated by the annotated Figures 5 and 6 above, the movement is along the longitudinal axis. A POSITA would have understood that the guide block 112 is movable along the longitudinal axis in each groove 132 with respect to the main body 11.

c. Motivation to Combine

489. In combining the teachings of Lin'658's removable latch with Connelly's latch 91, a POSITA would have sought to attach Connelly's latch 91 to

a removable casing 13 that includes a protrusion, as taught by Lin'658, for the same reasons discussed in Section XI.A.

490. Thus, I believe that a POSITA would have understood Lin'658 discloses Claim Element [2a], and therefore, as discussed in Sections XI.A and XI.B, the combined disclosures of Connelly and Lin'658 render this claim obvious.

E. Claim 3 – "The fiber optic connector of claim 1, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion."

a. Connelly

491. In my opinion, a POSITA would have understood that Connelly discloses a latch that comprises a base portion and a depressible latch arm connected to the base portion. Specifically, Connelly discloses a housing 38 and the housing 38 has a front housing end 46 and a planar top wall 50. [EX1008, Connelly, 2:27-36, and FIG. 1.] Connelly also discloses that the housing 38 includes "a conventional latch 91" and the latch 91 is "extending from the front housing end 46 along the top wall 50." [EX1008, Connelly, 2:61-63, and FIG. 3.] Connelly explains the latch 91 "snap-locks" to the jack 36 in the interlocked state when the jack 36 receives the plug 34. [EX1008, Connelly, 3:58-60.] Connelly's depressible latch arm is shown below in annotated versions of Figures 1 and 3.

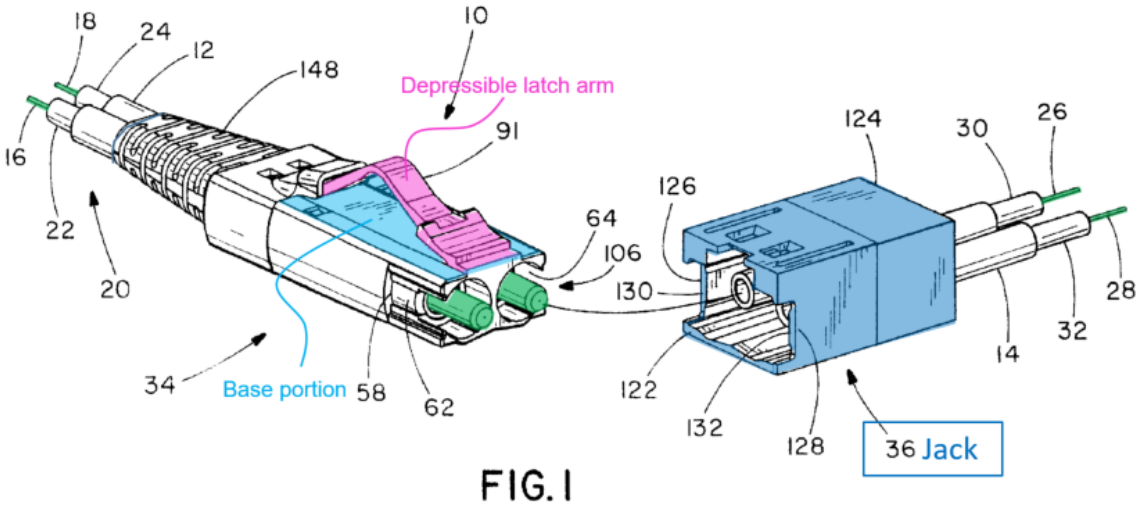


FIG. 1

EX1008, Connelly, FIG. 1 (annotated).

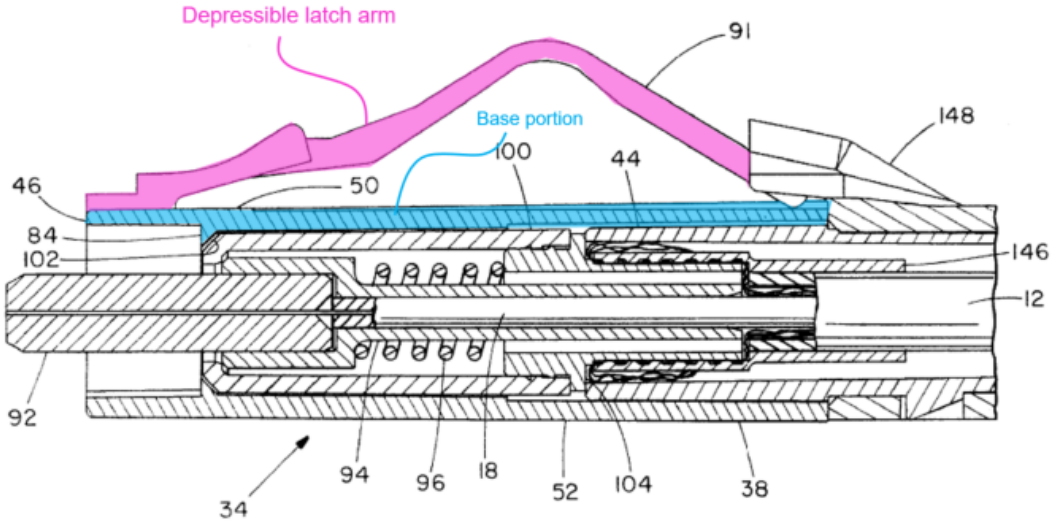


FIG. 3

EX1008, Connelly, FIG. 3 (annotated).

492. A POSITA would have understood that Connelly's front housing end 46 and the top wall 50 of the housing 38 corresponds to the recited "base portion"

and Connelly's latch 91 corresponds to "a depressible latch arm" that is "connected to the base portion."

493. Patent Owner may allege that Connelly does not explicitly teach a removable latch with a base portion. But providing a removable latch with a base portion was well known, as explicitly taught by Lin'658.

b. Lin'658

494. In my opinion, Lin'658 teaches a removable latch with a base portion. As I have explained above with respect to Claim Element [1d] in Section XI.C.5, Lin'658 teaches a removable latch, e.g., casing 13. Referring to the annotated Figure 1 below, Lin'658 discloses that a clip 134 is "formed integrally and positioned above the rear end of the casing 13." [EX1009, Lin'658, 5:43-50.] A POSITA would have understood Lin'658's casing 13 has a base portion as annotated in Figure 1 below and the clip 134 connects to the base portion of the casing 13.

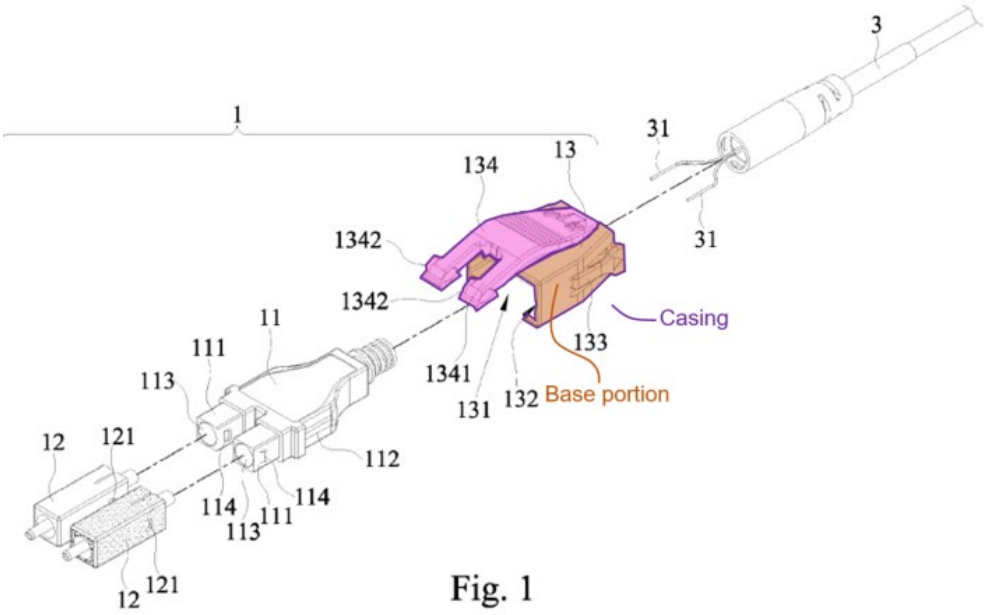


Fig. 1

EX1009, Lin'658, FIG. 1 (annotated).

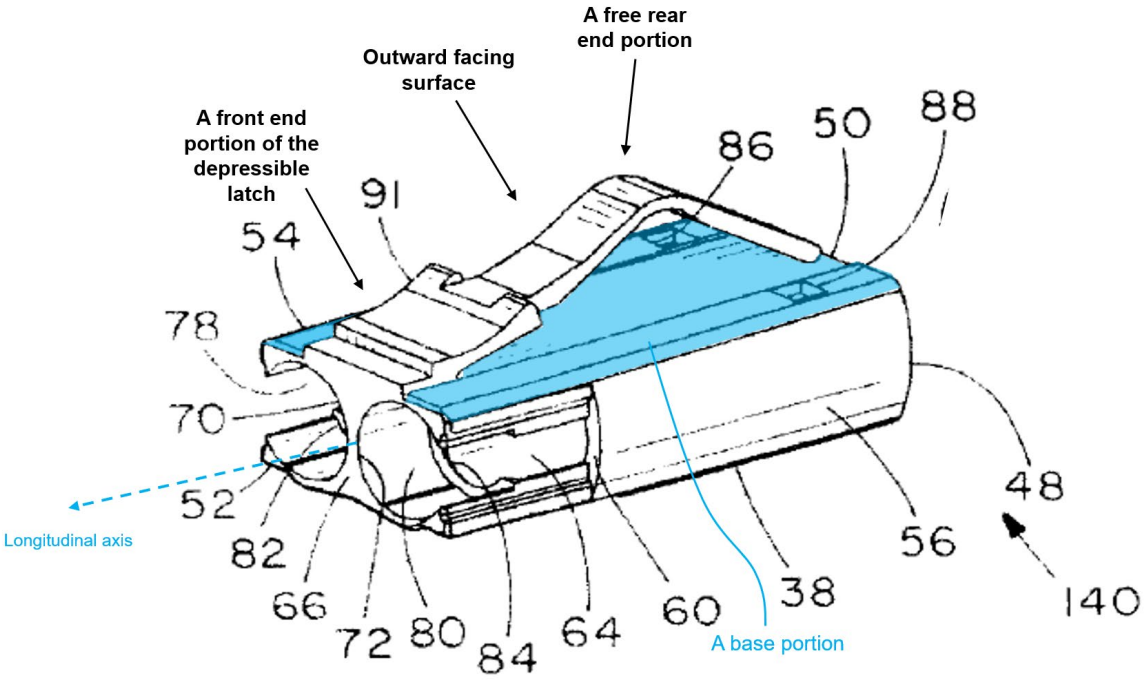
c. Motivation to Combine

495. In combining the teachings of Lin'658's removable latch (e.g., casing 13) with Connelly's housing 38 and latch 91, a POSITA would have understood that instead of integrally forming with the housing 38, Connelly's latch 91 would be modified by the teachings of Lin'658 to attach to the base portion of the casing 13, and Connelly's housing 38 would be modified to receive the casing 13 so that Connelly's latch 91 would be releasably locked to the side walls of Connelly's modified housing 38.

496. Accordingly, I believe that a POSITA would have understood that the combination of Connelly and Lin'658 renders claim 3 obvious for the same reasons as discussed in Section XI.A.

F. Claim 4 - The fiber optic connector of claim 3, wherein the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion.

497. In my opinion, a POSITA would have understood that Connelly discloses "the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion," in the form of its latch 91, as shown below by the annotated Figure 2.



EX1008, Connelly, FIG. 2 (partial, annotated).

498. Referring to annotated Figure 2 above, Connelly discloses that a conventional latch 91 "extending from the front housing end 46 along the top wall 50." [EX1008, Connelly, 2:61-63.] As I have explained above with respect to claim 3 in Section XI.E, latch 91 corresponds to the recited "depressible latch arm" and top wall 50 of the housing 38 corresponds to the recited "base portion."

499. A POSITA would have understood Figure 2 discloses that the depressible latch arm (e.g., latch 91) has a front end portion connected to the base portion (e.g., top wall of the housing 38). A POSITA would have also understood Figure 2 discloses a free rear end portion spaced apart from the front end portion

along the axis and the there is an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion.

500. Patent Owner may allege that Connelly does not explicitly teach a removable latch. As I have explained above with respect to Claim Element [1d] in Section XI.C.5, the combination of Connelly and Lin'658 teaches a removable latch. That combination does not alter any of the features of Connelly's latch arm that are relied upon in this claim analysis.

501. Accordingly, I believe a POSITA would have understood the combined disclosures of Connelly and Lin'658 render this claim obvious.

G. Claim 5 - "The fiber optic connector of claim 4, wherein the free end portion of the depressible latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the fiber optic connector from the receptacle."

502. In my opinion, A POSITA would have understood that Connelly discloses "the free end portion of the depressible latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the fiber optic connector from the receptacle."

503. Referring to the jack 36 in the annotated Figure 1 below, Connelly discloses a jack 36 that "receives the plug 34 in the interlocked state," "through

front[]jack end 122." [EX1008, Connelly, 2:23-26, 3:54-60, FIG. 1.] Connelly also discloses "the latch 91 snap-locks to the jack 36 in the interlocked state." [EX1008, Connelly, 3:54-60.] A POSITA would have understood jack 36 corresponds to the recited "receptacle," and the receptacle (e.g., jack 36) has "an opening" through its front jack end 122. And a POSITA would have understood the free end portion of the depressible latch arm is received in the opening of the receptacle since the receptacle (e.g., jack 36) receives the plug 34 (which includes the depressible latch arm) in the interlocked state.

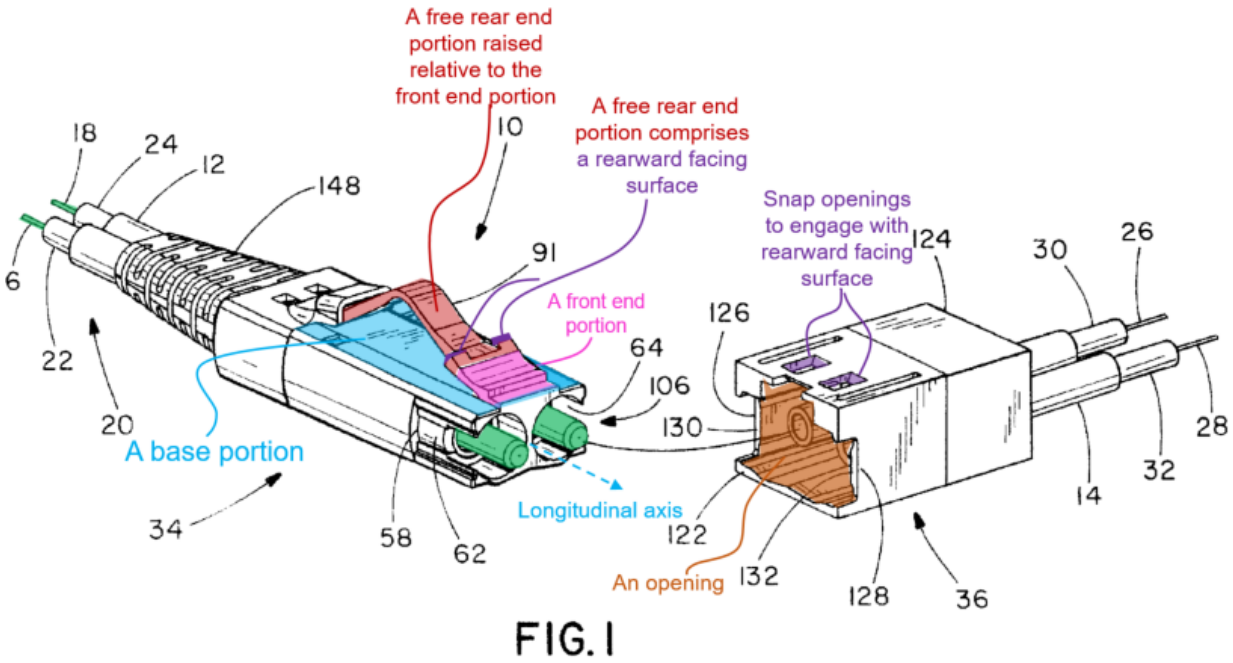


FIG. 1

EX1008, Connelly, FIG. 1 (annotated).

504. Connelly also discloses in Figure 1 that jack 36 has two snap openings on the top, and the free end portion of latch 91 comprises rearward facing surfaces. A POSITA would have understood when jack 36 receives plug 34 in the interlocked state, the rearward facing surfaces of the latch arm 91 will engage in the snap openings of the jack 36 to "snap-lock" the plug 34 into the jack 36, therefore inhibit removal of the plug 34 from the jack 36.

505. Accordingly, I believe a POSITA would have understood that Connelly discloses all the recited elements of claim 5, and therefore, the combined disclosures of Connelly and Lin'658 render this claim obvious.

H. Claim 6

1. Preamble [6pre] - "The fiber optic connector of claim 5, wherein"

506. Kindly refer to claim 5 above.

2. Claim 6, Element [6a] – "the free rear end portion of the depressible latch arm is raised relative to the front end portion and"

507. In my opinion, Connelly discloses that "the free rear end portion of the depressible latch arm is raised relative to the front end portion." As explained above with respect to claim 4 in Section XI.F, the depressible latch (e.g., latch 91) has a "free rear end portion" and a front end portion. Referring to annotated Figure 1 below, it is clear that Connelly teaches the free rear end portion of the depressible latch arm is raised relative to the front end portion.

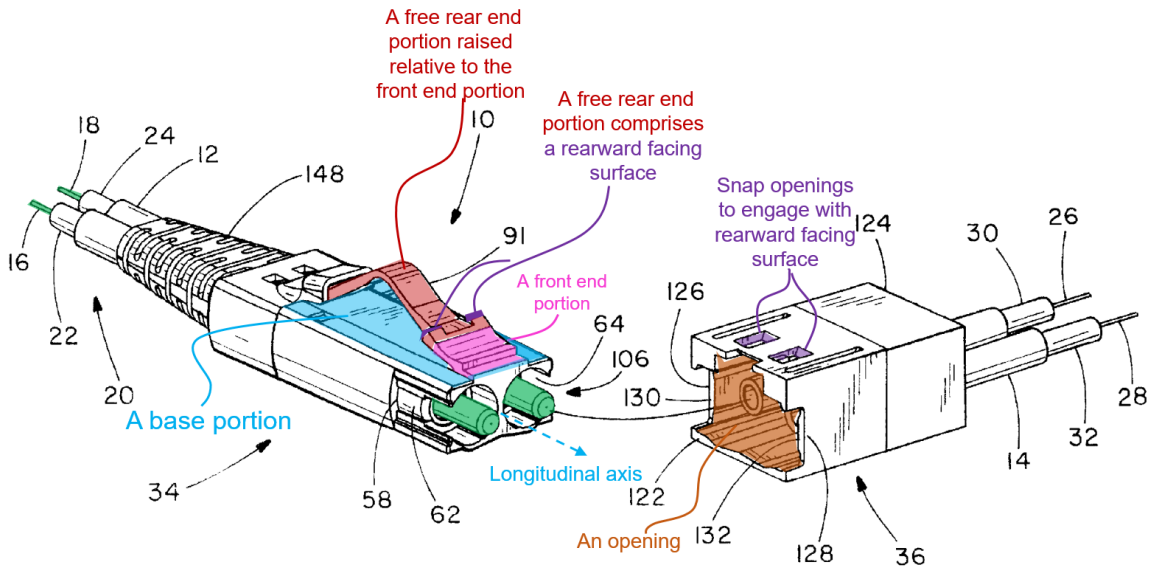


FIG. 1

EX1008, Connelly, FIG. 1 (annotated).

508. Accordingly, I believe a POSITA would have understood that Connelly discloses Claim Element [6a], and therefore, the combined disclosures of Connelly and Lin'658 render this element obvious.

3. Claim 6, Element [6b] – "wherein the removable latch is bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the fiber optic connector from the receptacle."

509. In my opinion, a POSITA would have understood that Connelly discloses "the removable latch is bendable," and "free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the fiber optic connector from the receptacle." For example, Connelly teaches that the optic plug 34 can be unlatched from the jack 36 by

depressing the free rear end portion toward the base portion to be removed from the opening. [*See* EX1008, Connelly, 3:54-60 and FIG. 1.]

510. Specifically, Connelly discloses that the latch 91 "snap-locks" to the jack 36 in the interlocked state. [EX1008, Connelly, 3:54-60.] The annotated Figure 1 above further shows the jack 36 has two snap openings and, as explained above with respect to claim 5 in Section XI.G, the latch 91 has rearward facing surfaces to engage with the snap openings of the receptacle (e.g., snap openings of the jack 36 as shown in the annotated Figure 1 above). A POSITA would have understood the free rear end portion of latch 91 can be depressed to cause the rearward facing surfaces to disengage from the openings of the jack 36 and unlatch the fiber optic plug 34 from the jack 36.

511. Patent Owner may allege Connelly does not expressly teach the removable latch. But providing a removable latch for a fiber optical connector was well known, as explicitly taught by Lin'658.

512. In combining the teachings of Lin'658's removable latch with Connelly's housing 38, a POSITA would have understood that instead of integrally forming with the housing 38, Connelly's latch 91 would be releasably locked to Connelly's housing 38 while still performing the same functionality, e.g., to "snap-lock" Connelly's optical plug 34 into the jack 36.

513. Accordingly, I believe that a POSITA would have understood that the combination of Connelly and Lin'658 renders Claim Element [6b] obvious, and therefore, a POSITA would have found claim 6 obvious based on the combined disclosures of Connelly and Lin'658.

I. Claim 12 – "The fiber optic connector as set forth in claim 1, wherein the connector housing comprises a single front body and a single back body."

514. In my opinion, Connelly teaches this claim limitation.

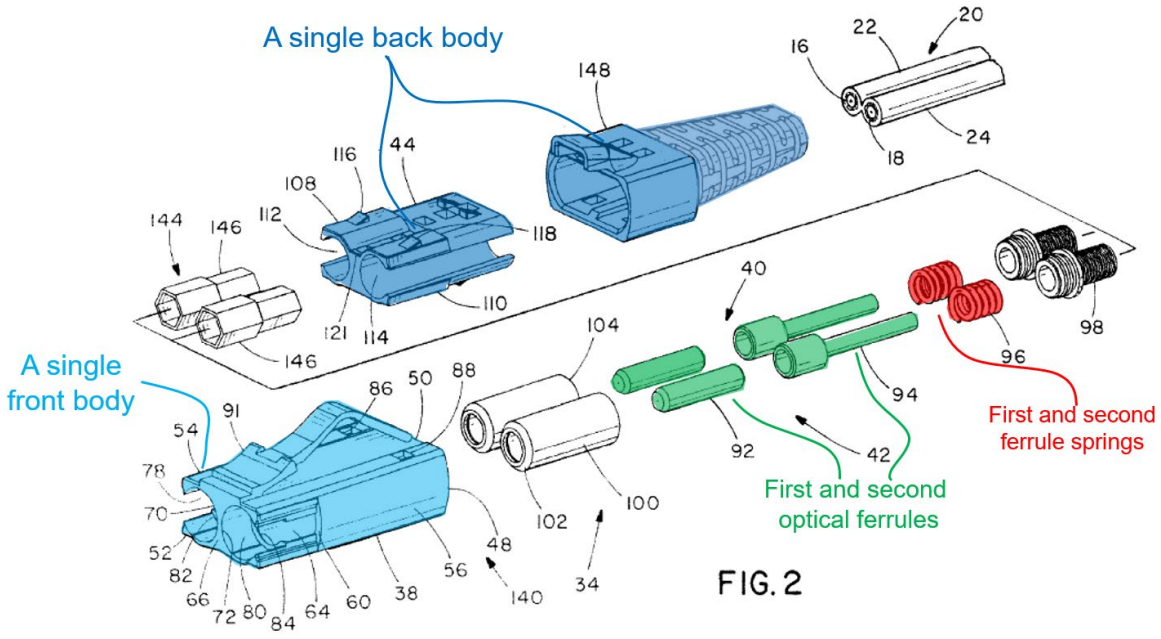
515. As an initial matter, the '701 Patent does not use the phrases "single front body" or "single back body" in the text of the specification. It only uses the phrases in the claims. However, a POSITA would know that multiple components could be assembled to create a single body. For example, the phrase "connector body" would normally refer to the assembly of parts used to create the body of a connector. The '701 Patent teaches this concept of "single" the only time that it uses the word in the specification. When providing the DETAILED DESCRIPTION of its disclosure, the '701 patent states:

> *In some embodiments, the fiber optic connector may be a narrow pitch duplex LC connector including two LC connectors. In some embodiments, such as that shown, the two LC connectors may comprise a single combined unit.*

[EX1001, '701 Patent, 5:58-61.]

516. Given the above teaching from the '701 Patent, a POSITA would recognize that a single body, front or back, could be composed of multiple components, just like the "single combined unit" formed from two LC connectors, (and all of the components used to form each of the two LC connectors.)

517. As I have explained above with respect to Claim Element [1b] in Section XI.C.3, Connelly's connector housing includes the housing 38, the insert 44, and the boot 148. More specifically, Connelly discloses that the housing 38 has "a front housing end 46 and a rear housing end 48" and "the insert 44 is received at the rear housing end 48." [EX1008, Connelly, 2:18-33.] Connelly explains the insert 44 "snap-locks" into the housing 38. [EX1008, Connelly, 3:25-26.] Connelly also discloses the relief boot 148 is snap-locked to the insert 44. [EX1008, Connelly, 4:36-38.] As further illustrated in the annotated Figure 2 below, a POSITA would have understood the housing 38 corresponds to the recited "a single front body" because the housing 38 is in the front end of the Connelly's optic fiber plug 34. And a POSITA would have understood the insert 44 snap-locked with the boot 148 (via snap projections 116) corresponds to the recited "a single back body" because the insert 44 is received at the rear housing end 48 of the housing 38.



EX1008, Connelly, FIG. 2 (annotated).

518. Accordingly, I believe a POSITA would have understood that Connelly discloses the recited element of claim 12, and therefore, the combined disclosures of Connelly and Lin'658 render this claim obvious.

J. Claim 13 – "The fiber optic connector as set forth in claim 12, further comprising first and second ferrule springs received on the first and second ferrules, respectively."

519. In my opinion, Connelly teaches this claim limitation. Referring to annotated Figure 2 above, Connelly discloses that each of the pre-assemblies 40, 42 is a conventional "spring-biased" assembly and each of the pre-assemblies 40, 42 includes "ceramic ferrule 92, ferrule holder 94, spring 96." [EX1008, Connelly, 2:65-67, FIGs. 2, 3.] Now referring to the annotated Figure 3 below, the ferrule springs are received by the ferrule holders 94 and ceramic ferrule 92. Connelly also

discloses that the optical fibers 16, 18 extend through the ferrule holder and "terminated at the ferrule 92." [EX1008, Connelly, 4:14-16.] A POSITA would have understood ceramic ferrules 92 and ferrule holders 94 together correspond to the recited "the first and second ferrules" because the ceramic ferrules 92 and the ferrule holders 94 together provide passageways for optical fibers 16 and 18. A POSITA would also have understood the first and second ferrules receive the "first and second ferrule springs" because ferrule holders 94 receives the ferrule springs 96.

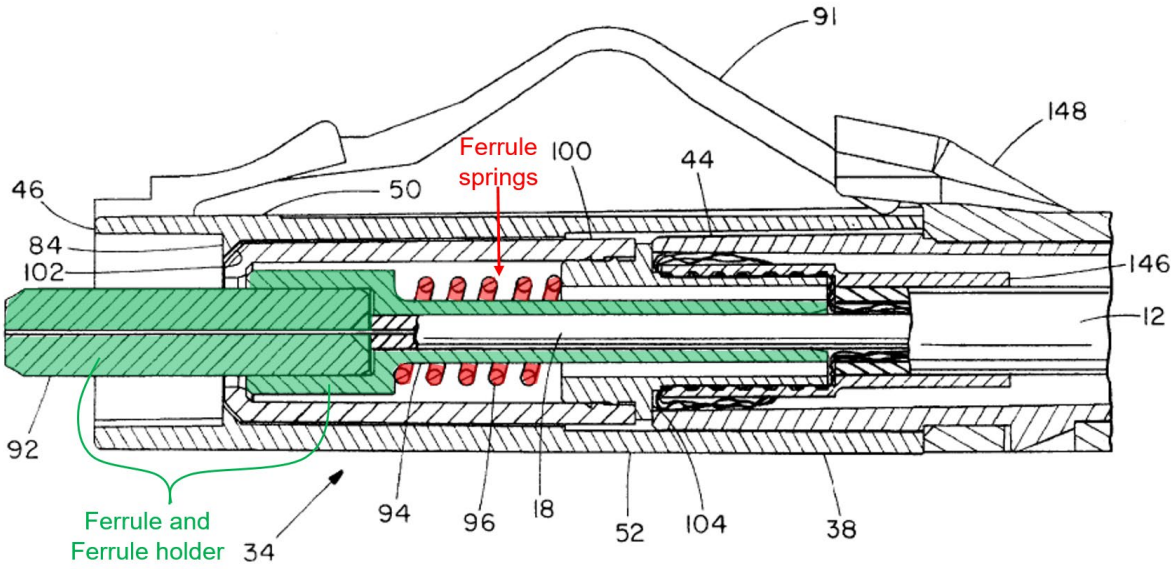


FIG. 3

EX1008, Connelly, FIG. 3 (annotated).

520. Accordingly, a POSITA would have understood that Connelly discloses all the recited elements of claim 13, and therefore, the combined disclosures of Connelly and Lin'658 render this claim obvious.

K. Claim 14 – "The fiber optic connector as set forth in claim 13, wherein each of the first and second ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges."

521. In my opinion, a POSITA would have understood that Connelly teaches this claim limitation. As explained above with respect to claim 13 in Section XI.J, Connelly discloses ceramic ferrules 92 and ferrule holders 94, which correspond to the recited "the first and second optical ferrules." Now referring to the annotated Figure 2 below, Connelly discloses that each of the first and second optical ferrules comprises a ferrule flange, which is part of the ferrule holder 94 and attaches to the ceramic ferrules 92. Annotated Figure 2 below also illustrates that each of the ferrule flanges has a forward facing surface.

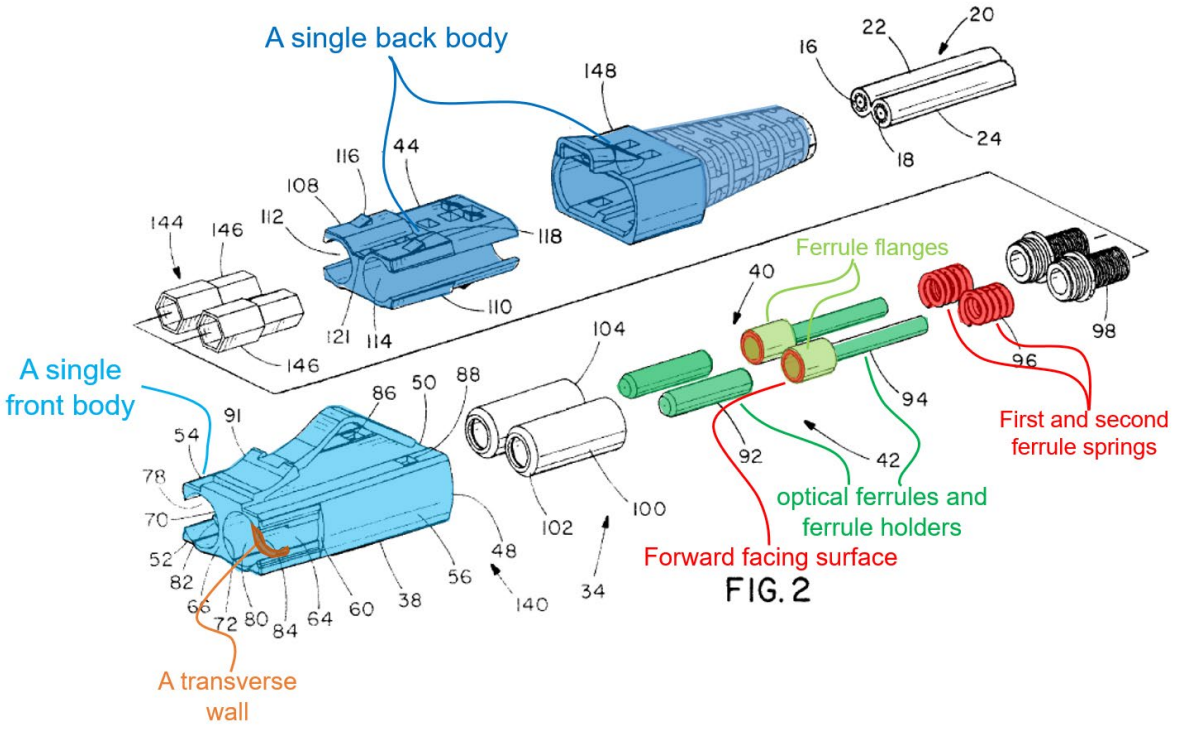


FIG. 2

EX1008, Connelly, FIG. 2 (annotated).

522. In my opinion, a POSITA would have understood that Connelly also discloses a transverse wall in the front body. Specifically, Connelly discloses that the housing 38 includes "an interior, central dividing wall 66" that is "extending vertically from the top wall 50 to the bottom wall 52." [EX1008, Connelly, 2:42-58.] Connelly explains that the dividing wall 66 and the upper portion thereof 68 have arcuate side surfaces 70, 72, and 74, 76, and together with portions of the top and bottom walls 50, 52, they define side-by-side "cylindrical housing passageways 78, 80. [EX1008, Connelly, 2:42-58.] Connelly further discloses "substantially annular flanges 82, 84" that extend "circumferentially within the cylindrical passageway 78, 80." [EX1008, Connelly, 2:42-58.] A POSITA would

have understood that the annular flanges 82, 84 correspond to the recited "transverse wall" located inside the single front body (e.g.., housing 38).

523. Referring to the annotated Figure 3 below, Connelly discloses a outerbody 100 that defines a front face 102 of the plug pre-assembly 40, 42, and the front face 102 "engages and stops against" one of the "annular flanges 82, 84 therein." [EX1008, Connelly, 3:1-12.] In annotated Figure 3 below, Connelly teaches that the forward facing surface of ferrule flange engages with the outerbody 100, and the outberbody 100 engages and stops against the annular flanges.

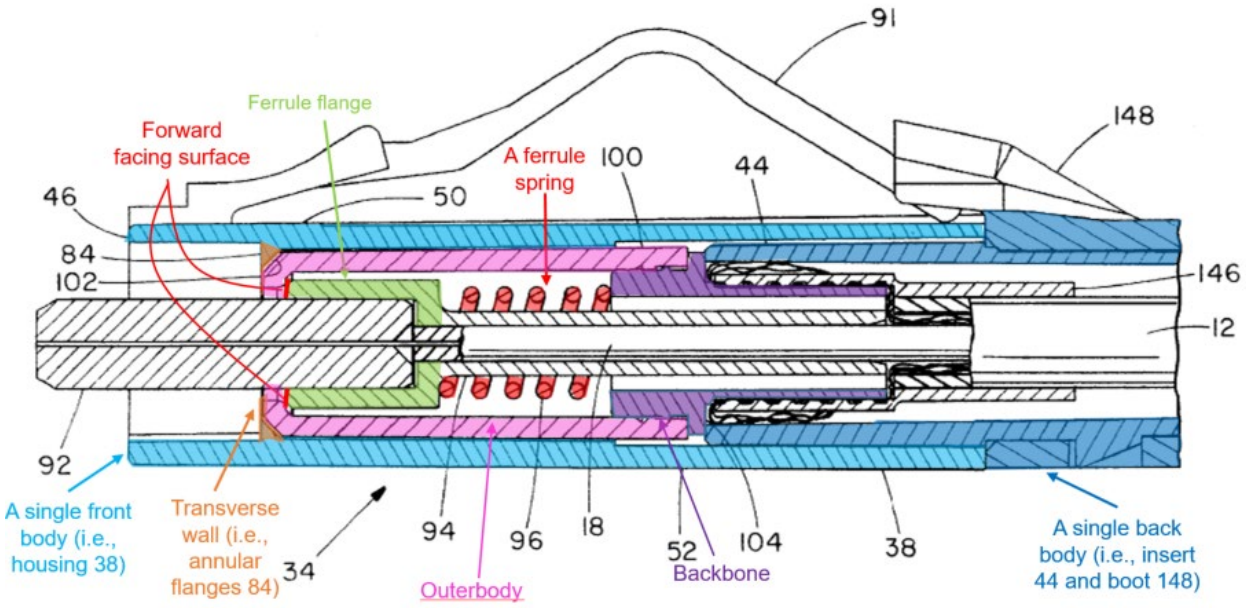


FIG. 3

EX1008, Connelly, FIG. 3 (annotated).

524. I have reviewed the '701 Patent regarding the "simultaneously engage" limitation of this claim. The '701 Patent only uses the term in claim 14. To the extent this element is supported and/or enabled by the patent specification (which I have not taken a position on), my best understanding is that this claim language means simultaneously interact.

525. A POSITA would have understood that annular flanges 82, 84 indirectly "engage with forward facing surfaces of the first and second ferrule flanges. While Figure 3 above only shows one annular flange 84 engages with one ferrule flange, the annotated version of Figure 2 above shows that annular flanges 82, and 84 are located at the same longitudinal position inside housing 38. Connelly further explains that "the insert 44 snap-locks into the housing 38, driving the plug pre-assemblies 40, 42 into abutment with the annular flanges 82, 84." [EX1008, Connelly, 3:25-27.] Therefore, a POSITA would have understood the annular flanges 82, 84 (i.e., transverse wall) simultaneously engage the forward facing surfaces of the first and second ferrule flanges indirectly through the outerbody 100.

526. Accordingly, a POSITA would have understood that Connelly discloses all the recited elements of claim 14, and therefore, the combined disclosures of Connelly and Lin'658 render this claim obvious.

L. Claim 15 – "The fiber optic connector as set forth in claim 14, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall."

527. In my opinion, a POSITA would have understood that Connelly teaches this claim limitation. As I have explained above with respect to claim 12 in Section XI.I, Connelly discloses the single back body, which is the insert 44 snap-locked with the boot 148 (via snap projections 116), and the single front body, which is the housing 38. Recall from my analysis above that the '701 Patent teaches that a "single combined unit" can be composed of multiple components. Connelly teaches that the insert 44 snap-locks into the housing 38. [EX1008, Connelly, 3:25-48.] Connelly explains the snap-lock is achieved by locking projections 116, 118, 120 of the insert 44 into the snap openings 86, 77, 90 of the housing 38. [EX1008, Connelly, 3:25-48.] A POSITA would have understood Connelly teaches that "the single back body is configured to attach to the single front body."

528. The annotated version of Figure 3 below shows that the first and second ferrule springs are between the back body (e.g., the insert 44 snap-locked with the boot 148, via snap projections 116) and the first and second ferrule flanges.

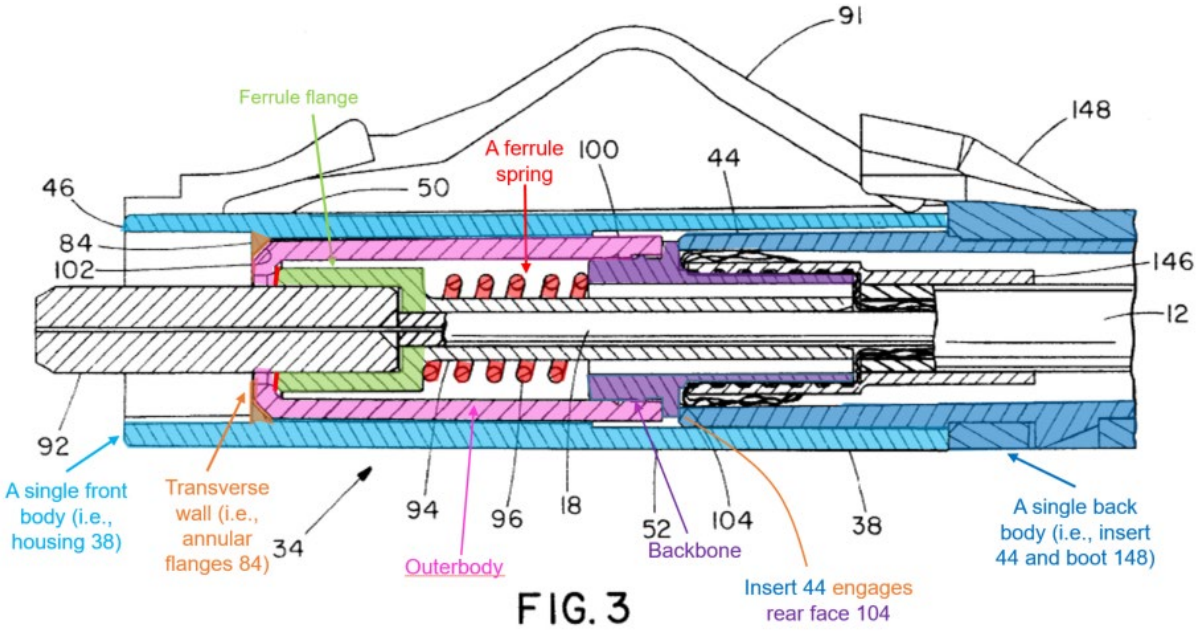


FIG. 3

EX1008, Connelly, FIG. 3 (annotated).

529. As I have explained above with respect to claim 14 in Section XI.K, the first and second ferrule flanges engage with the transverse wall through the outerbody 100.

530. Given the disclosures in Figure 3 above, a POSITA would have understood Connelly teaches that "each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall."

531. Additionally, Connelly discloses that when the insert 44 snap-locks into the housing 38, it "driv[es] the plug pre-assemblies 40, 42 into abutment with the annular flanges 82, 84." [EX1008, Connelly, 3:25-39.] Connelly explains the backbone 98 defines a radially extending rear face 104 of the plug pre-assembles

40, 42, [EX1008, Connelly, 3:4-6.] Furthermore, the insert 44 engages "the two rear faces 104" in the assembled plug state. [EX1008, Connelly, 3:25-39.] As also illustrated in the annotated Figure 3 above, a POSITA would have understood that the back body (e.g., a part of insert 44) simultaneously compresses the backbones 98 by engaging the rear faces 104. When this occurs, the backbones 98 simultaneously compress each of the first and second ferrule springs.

532. I have reviewed the '701 Patent regarding the "simultaneously compress" limitation of this claim. The '701 Patent only uses the term in the claim 15. To the extent this element is supported and/or enabled by the patent specification (which I have not taken a position on), my best understanding is that this claim language has the plain and ordinary meaning of "simultaneously compressing," wherein both springs are compressed at the same time."

533. A POSITA would have understood that "compress" does not require "direct contact."

534. Accordingly, a POSITA would have understood that for the single back body (e.g., the insert 44 snap-locked with boot 148) to simultaneously compress each of the first and second ferrule springs does not require the single back body to contact the ferrule springs directly.

535. Thus, a POSITA would have understood Connelly teaches that "the back body simultaneously compresses each of the first and second ferrule springs."

536. Accordingly, a POSITA would have understood that Connelly discloses all the recited elements of claim 15, and therefore, the combined disclosures of Connelly and Lin'658 render this claim obvious.

M. Claim 19 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules."

537. In my opinion, a POSITA would have understood that Connelly teaches this claim limitation. Specifically, Connelly discloses a fiber optic cable 12 includes side-by-side optical fibers 16, 18. [EX1008, Connelly, 2:6-16.] The fibers 16, 18 are "terminated at the ferrules 92 in a conventional fashion." [EX1008, Connelly, 4:14-16.] Connelly also discloses that to "reduce strain upon the cable 12," a strain relief boot 148 is included. [EX1008, Connelly, 4:35-39.] As illustrated in the annotated Figure 1 below, the fibers 16, 18 extend through the boot 148, the insert passageways, and terminate at the first and second optical ferrules.

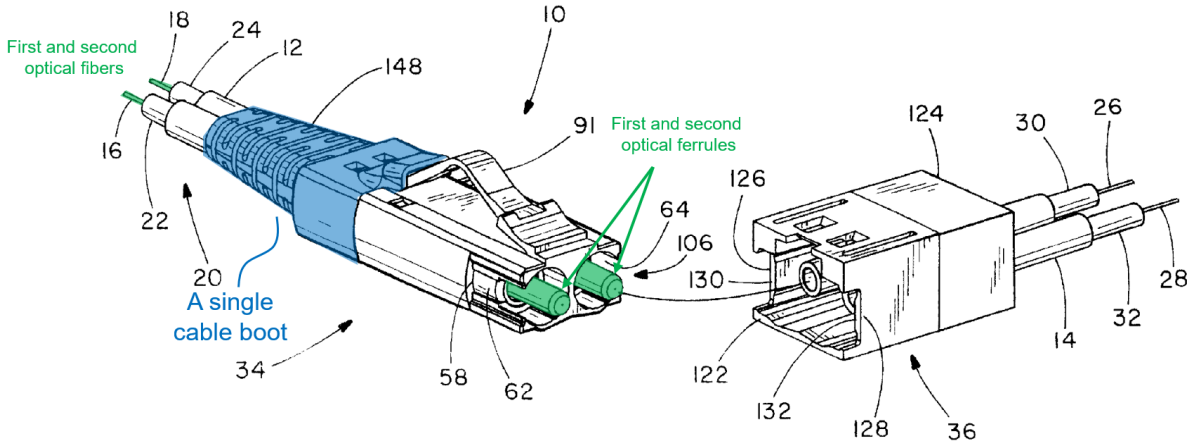


FIG. 1

EX1008, Connelly, FIG. 1 (annotated).

538. A POSITA would have understood the boot 148 corresponds to the recited "a single cable boot."

539. Accordingly, a POSITA would have understood that Connelly discloses all recited element of claim 19, and therefore, the combined disclosures of Connelly and Lin'658 render this claim obvious.

N. Claim 20

1. Claim 20, Preamble [20pre] - "A reversible polarity fiber optic connector comprising:"

540. Kindly refer to claim 1, Preamble above with reference to "[a] fiber optic connector." To the extent this language is limiting, I believe that Connelly's connector housing, as modified by Lin'658, discloses "a reversible polarity fiber optic connector."

541. Patent Owner may allege Connelly does not expressly teach [20pre], but Lin'658 explicitly discloses this feature.

542. Lin'658 discloses a communication connector "with alterable polarity." [EX1009, Lin'658, Abstract.]

543. As I explained above with respect to Claim Element [1d] in Section XI.C.5, Lin'658 discloses a casing 13, which corresponds to a removable latch. Lin'658 explains that to reverse polarity of Lin'658's communication connector, the casing is separated from the main body. [EX1009, Lin'658, 5:59:67.] Then either the main body or the casing is rotated 180 degrees, and the casing is placed back on the main body "via sliding movement." [EX1009, Lin'658, 6:1-5.]

544. Accordingly, I believe a POSITA would have understood that Connelly, as modified by Lin'658, renders obvious a reversible polarity fiber optic connector and that the references were obvious to combine as I discussed above in Sections XI.A, and XI.B.

2. Claim 20, Element [20a] - "at least first and second optical ferrules, each of the first and second ferrules comprising a ferrule flange;"

545. As I discussed above with respect to Claim Element [1a], Connelly discloses "first and second optical ferrules." [*See* Section XI.C.2.] As I have also explained above with respect to claim 14, Connelly discloses "each of the first and second ferrules comprises a ferrule flange." [*See* Section XI.K.]

3. Claim 20, Element [20b] - "first and second ferrule springs received on the first and second optical ferrules, respectively;"

546. The language of Claim Element [20b] is identical to that of claim 13. As I discussed above with respect to claim 13, Connelly discloses "each of the first and second ferrules comprises a ferrule flange." [*See* Section XI.J.]

4. Claim 20, Element [20c] - "a connector housing comprising an exterior portion … on an opposite side of the space from the first exterior wall,"

547. The language of Claim Element [20c] is substantially identical to that of Claim Element [1b]. As I discussed above with respect to Claim Element [1b], Connelly discloses Claim Element [20c]. [*See* Section XI.C.3.]

5. Claim 20, Element [20d] - "the connector housing comprises a single front body and a single back body, … engageable with the transverse wall;"

548. The language of Claim Element [20d] is substantially identical to that of the combined claims 12, 14, and 15. As I discussed above with respect to claims 12, 14, and 15, Connelly discloses Claim Element [20d]. [*See* Sections XI.I, XI.K, and IX.L.]

6. Claim 20, Element [20e] - "a latch coupling positioned on each of the first and second exterior walls of the housing;"

549. The language of Claim Element [20e] is identical to that of Claim Element [1c], except that Claim Element [1c] refers to "the connector housing" and Claim Element [20e] refers to "the housing." I believe "the housing" in the Claim

Element [20e] refers to "the connector housing" as recited in the Claim Element [1c]. As I discussed above with respect to Claim Element [1c], Lin'658 discloses "a latch coupling positioned on each of the first and second exterior walls of the housing." [*See* Section XI.C.4.]

550. Accordingly, the combined disclosures of Connelly and Lin'658 render Claim Element [20e] obvious.

7. Claim 20, Element [20f] - "a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing;"

551. The language of Claim Element [20f] is identical to the first sentence of the Claim Element [1d]. As I discussed above with respect to Claim Element [1d], Lin'658 discloses "a removable latch" (e.g., casing 13), and the removable latch is "engaging either of the first and second exterior wall latch couplings on the connector housing." [*See* Section XI.C.5.]

552. Accordingly, the combined disclosures of Connelly and Lin'658 render Claim Element [20f] obvious.

8. Claim 20, Element [20g] - "wherein positioning the removable latch on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable latch on the second exterior wall of the housing yields a fiber optic connector with a second polarity, the second polarity being opposite to the first polarity."

a. Connelly

553. Connelly discloses a latch 91. A POSITA would have understood that Connelly's latch 91 corresponds to the recited "latch" because the latch 91 is configured to "snap-lock" the optic plug 34 to the jack 36. [EX1008, Connelly, 3:59-60].

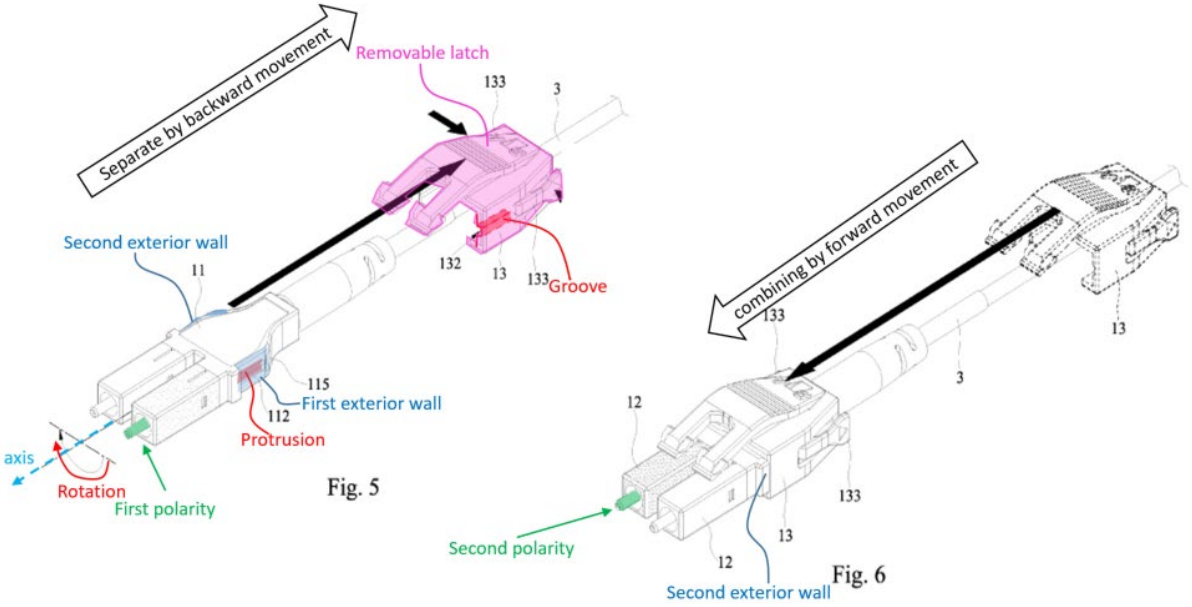
554. Patent Owner may allege that Connelly does not explicitly disclose "positioning the removable latch on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable latch on the second exterior wall of the housing yields a fiber optic connector with a second polarity, the second polarity being opposite to the first polarity." However, reversing the polarity of a fiber optic connector by providing a removable latch for engaging either of the first and second exterior wall was well known, as explicitly taught by Lin'658.

b. Lin'658

555. It is my opinion that Lin'658 discloses a removable latch (e.g., casing 13) and teaches Claim Element [20g]. Specifically, Lin'658 discloses that each of

the two sides of the casing 13 includes a guide groove 132 and a grab 133 corresponding to the guide block 112 located on each of the two exterior walls of the main body 11. [EX1009, Lin'658, 5:25-43, FIG. 1.] The two guide grooves and the two guide blocks cooperate to restrict and guide the casing in accordance with the movement direction of the main body. [EX1009, Lin'658, 5:25-43, FIG. 1.] For example, "separating" the casing from the main body is via a "backward movement" and "combining" the casing with the main body via a forward movement." [EX1009, Lin'658, 5:37-40, FIGs. 5, 6.]

556. To reverse polarity of Lin'658's communication connector, the user separates the casing from the main body, rotates either the main body or the casing 180 degrees and places the casing back on the main body "via sliding movement." [EX1009, Lin'658, 5:59-6:5.] Figure 5 illustrates separating the casing from the main body and Figure 6 illustrates placing the casing back to the main body after the main body is rotated by 180 degrees, so that the polarity of the connector system is reversed. The annotated versions of Figures 5 and 6 provided below illustrate this reversal process.



EX1009, Lin'658, FIGs. 5, and 6 (annotated).

557. A POSITA would have understood that positioning the casing 13 by mounting the first side of the casing to the first exterior wall of the main body 11 corresponds to "positioning the removable latch on the first exterior wall of the connector housing" which "yields a fiber optic connector with a first polarity."

558. A POSITA would have also understood that separating the casing 13 from the main body 11, rotating by 180^0, and then reattaching it to the main body is a process that mounts the first side of the casing to the second exterior wall of the main body. Therefore, this process corresponds to "positioning the removable latch on the second exterior wall of the housing," which "yields a fiber optic connector with a second polarity" and "the second polarity being opposite to the first polarity," as required by the claim language.

c. Motivation to Combine

559. In combining the teachings of Lin'658's removable latch with Connelly's latch 91, a POSITA would have sought to make Connelly's latch 91 removable so that the polarity of Connelly's optical fiber connector could be easily reversed for the same reasons discussed in Section XI.A.

560. Thus, I believe that a POSITA would have understood Lin'658 discloses Claim Element [20g], and therefore as discussed above in Sections XI.A and B, the combined disclosures of Connelly and Lin'658 render Claim Element [20g] obvious.

O. Claim 21 – "The reversible polarity fiber optic connector as set forth in claim 20, wherein each latch coupling comprises a groove extending along the axis and having an open axial end."

561. The language of claim 21 is identical to the second sentence of Claim Element [1d]. As I discussed above with respect to Claim Element [1d], Lin'658 discloses "a groove extending along the axis and having an open axial end." [*See* Section XI.C.5.]

562. Accordingly, the combined disclosures of Connelly and Lin'658 render claim 21 obvious.

P. Claim 22 – "The reversible polarity fiber optic connector as set forth in claim 21, wherein the removable latch is configured for

being inserted into the open axial end of each groove by movement relative to the housing along the axis."

563. The language of claim 22 is identical to the third sentence of Claim Element [1d]. As I discussed above with respect to Claim Element [1d], Lin'658 discloses "a groove extending along the axis and having an open axial end." [*See* Section XI.C.5.]

564. Accordingly, the combined disclosures of Connelly and Lin'658 render claim 22 obvious.

Q. Claim 23 – "The reversible polarity fiber optic connector of claim 20, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion."

565. The language of claim 23 is identical to that of claim 3. As I discussed above with respect to claim 3, Connelly discloses "a base portion" and "a depressible latch." [*See* Section XI.E.]

566. Accordingly, the combined disclosures of Connelly and Lin'658 render claim 23 obvious.

R. Claim 24 – "The reversible polarity fiber optic connector of claim 23, wherein the depressible latch arm … from the front end portion to the free rear end portion."

567. The language of claim 24 is identical to that of claim 4. As I discussed above with respect to claim 4, Connelly discloses "the depressible latch arm." [*See* Section XI.F.]

568. Accordingly, the combined disclosures of Connelly and Lin'658 render claim 24 obvious.

S. Claim 25 – "The reversible polarity fiber optic connector of claim 24, wherein the free end portion of the depressible latch … to inhibit removal of the fiber optic connector from the receptacle."

569. The language of claim 25 is identical to that of claim 5. As I discussed above with respect to claim 5, Connelly discloses "the free end portion of the depressible latch arm." [*See* Section XI.G.]

570. Accordingly, the combined disclosures of Connelly and Lin'658 render claim 25 obvious.

T. Claim 26 – "The reversible polarity fiber optic connector of claim 25, wherein the free rear end portion of the depressible latch arm … unlatch the fiber optic connector from the receptacle."

571. The language of claim 26 is identical to that of claim 6. As I discussed above with respect to claim 6, Connelly discloses "the free rear end portion of the depressible latch arm" as recited in the claim. [*See* Sections XI.H.]

572. Accordingly, the combined disclosures of Connelly and Lin'658 render claim 26 obvious.

U. Claim 35 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the

first and second optical fibers are passable to the first and second optical ferrules."

573. The language of claim 35 is identical to that of claim 19. As I discussed above with respect to claim 19, Connelly discloses "a single cable boot" as recited in the claim. [*See* Section XI.M.]

574. Accordingly, the combined disclosures of Connelly and Lin'658 render claim 35 obvious.

XII. CONNELLY-LIN'658, IN VIEW OF LIN'293 RENDER OBVIOUS CLAIMS 7-11, 27-31, 36, 46-47 AND 53.

575. I believe a POSITA would have understood that the limitations in claims 7-11, 27-31, 36, 46-47 and 53 of the '701 Patent would have been obvious based on Connelly-Lin'658 in view of Lin'293.

A. Motivation to Combine

576. I believe a POSITA would have found it obvious to combine Connelly, Lin'658, and Lin'293 to arrive at the subject matter of the claims addressed below prior to the filing date of the '701 Patent. In particular, I believe a POSITA would have found it obvious to modify Connelly's connector housing with the teachings of Lin'658, and incorporate aspects of Lin'293's remote release apparatus 300 (e.g., handle member 310 and a clip member 320). This would facilitate pulling out Connelly's optical fiber connector from a receptacle without

the need to directly press the release tab on the optical fiber connector directly. A POSITA would have found this combination obvious for several reasons.

577. First, Connelly, Lin'658, and Lin'293 are all in the same field of fiber optical connector and are all directed to fiber optic connectors with a latch for easy removal from a receptacle such as a jack, or an adapter. [EX1008, Connelly, 2:18-26, and FIG. 1; EX1009, Lin'658, 5:43-52, and FIG. 4; EX1010, Lin'293, Abstract, 2:35-39.] Lin'293 discloses the apparatus 300 for facilitating thepull out of optical fiber connectors. The apparatus 300 includes a handle member 310 and a clip member 320. [EX1010, Lin'293, 3:64-67.]

578. Lin'293 discloses a conventional LC type optical fiber connector 100 that includes a latch 120 for mating with an adapter 200. [EX1010, Lin'293, 1:40-60, 2:19-25, FIGs. 1, 2.] Lin'293 further discloses the latch 120 includes a living hinge 125 and a tab 126 so that the tab 126 can be "moved up and down." [EX1010, Lin'293, 1:40-60, 2:19-25, FIGs. 1, 2.] Lin'293 illustrates the latch 120, tab 126, and living hinge 125 when discussing the prior art in association with Figure 1, which has been reproduced below in annotated form.

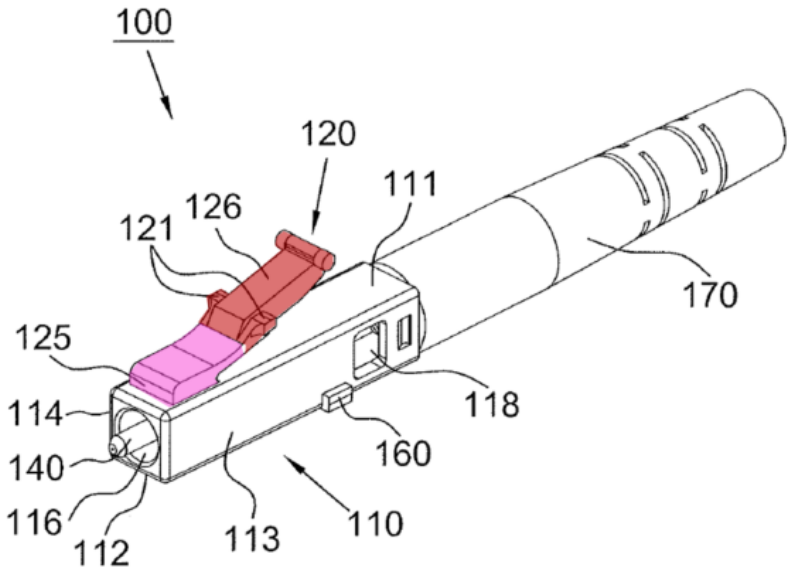


FIG. 1 (PRIOR ART)

EX1010, Lin'293, FIG. 1 (annotated).

579. Lin'293 explains that "a pull at the handle member 310" will cause "the tab 126 to be pressed down" and further cause the connector 100 to be pulled out from the adapter 200. [EX1010, Lin'293, 4:66-5:16, FIG. 6.] The remote release handle and the tab 126 are shown below in Lin'293 Figure 6. Lin'293 explains the apparatus disclosed may be mounted on a regular optical fiber connector. [EX1010, Lin'293, 5:33-37.]

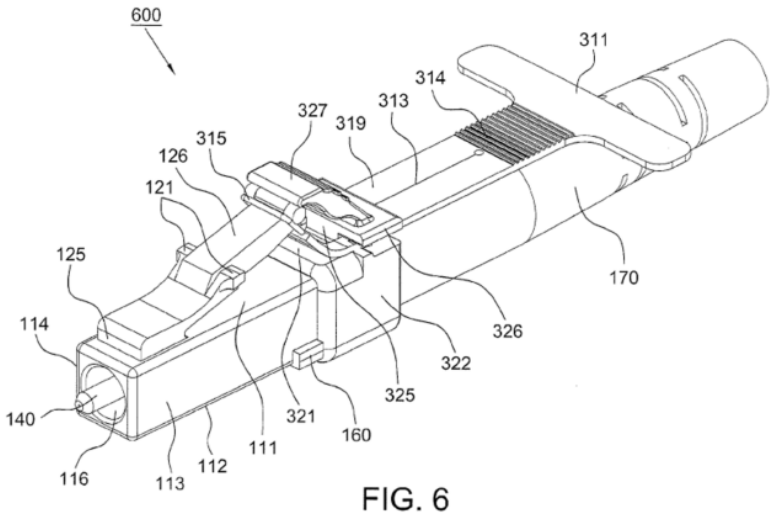


FIG. 6

EX1010, Lin'293, FIG. 6.

580. A POSITA would have recognized that Lin'293's latch 120 is analogous to Connelly's latch 91, as modified by Lin'658, due to their similar functionality of mating with an adapter or a jack. And a POSITA would have recognized that Lin'293's tab 126 is analogous to Connelly's free rear end portion of the latch 91, as modified by Lin'658, because both are depressible and both are used to remove the fiber optic connector from the adapter, or the jack. Thus, a POSITA would have understood that the teachings of Lin'293's apparatus 300 working with Lin'293's latch 120 for pulling out the connector from the adapter are also applicable to Connelly's latch 91, as modified by Lin'658, for pulling out Connelly's fiber optic plug 34 from the jack 36.

581. Second, the prior art references themselves provide a motivation that would have led a POSITA to combine the teachings of Lin'293's remote release

apparatus 300 (e.g., handle member 310 and clip member 320) with Connelly's latch 91 and connector housing, as modified by Lin'658.

582. Lin'293 tries to solve the problem of pulling out optical fiber connectors when they are "mounted on a panel with close spacing to each other" and "it is likely there is no enough space for a user's fingers" to press the tab of the latch to pull out connectors. [EX1010, Lin'293, 2:26-30.] Accordingly, Lin'293 teaches a remote release apparatus for "facilitating to pull out optical fiber connector … without need to press the tab on the optical fiber connector directly." [EX1010, Lin'293, 2:35-39.]

583. Additionally, Lin'293 teaches that the remote release apparatus 300 may be mounted on "a regular optical fiber connector," and that "[t]here is no need to use a special optical fiber connector at which the apparatus of the present disclosure may mount." [EX1010, Lin'293, 5:34-37.]

584. Similarly, Connelly-Lin'658 teaches a connector with reversible polarity that "substantially improves convenience and efficacy during operation," and "an inexpensive, readily produced connection system for fiber optic cable." [EX1009, Lin'658, 3:8-10; EX1008, Connelly, 1:39-44.]

585. Thus, a POSITA would have been motivated to combine Lin'293's remote release apparatus 300 with Connelly's fiber optic plug 34, as modified by Lin'658, for pulling out Connelly's fiber optic plug 34 from the jack 36 without the

need to directly press the latch 91 of the fiber optic plug. A POSITA would have understood that both Lin'293's benefit of pulling out optical connectors in a tight space and Connelly-Lin'658's benefit of having an inexpensive and convenient reversible polarity fiber optic connection system could be achieved by combining the remote release apparatus 300, as taught by Lin'293, with Connelly-Lin'658's fiber optic plug. A POSITA would have understood the Connelly-Lin'658-Lin'293 connector would be used similarly as the connector disclosed by the '701 Patent. For example, Lin'293's the remote release would be removed first in order to change the polarity of the Connelly-Lin'658-Lin'293 connector.

586. Furthermore, a POSITA would have understood this modification involves applying a known technique (Lin'293's remote release apparatus 300) to a similar device (Connelly-Lin'658's fiber optic plug) in the same way (a pull on the handle member 310 causes a depressible arm of a latch to be pressed down to separate the fiber optic connector from an adapter).

587. A POSITA would have understood that there are a finite number of ways of removing a fiber optic connector from an adapter by a remote release apparatus.

588. As one example, Lin'293 teaches a remote release apparatus 300 including a handle member 310 and a clip member 320. [EX1010, Lin'293, 3:64-67.] The clip member clips to the connector so that it is "in tight contact" with the

side-walls of the connector, and the U-shaped ring 315 of the handle member encloses the tab 126 of the connector. [EX1010, Lin'293, 4:40-56, FIG. 6.] A POSITA would have understood that employing the teachings of Lin'293's handle member and clip member is one example for removing Connelly-Lin'658's fiber optic plug 34 from the jack 36 without directly pressing Connelly-Lin'658's removable latch. A POSITA would also have understood that incorporating Lin'293's clip member 320 to the Connelly-Lin'658 connector without increasing the size of the connector is possible by modifying the connector housing of the Connelly-Lin'658 connector.

B. Reasonable Expectation of Success

589. A POSITA would have had a reasonable expectation of success in combining the teachings of Lin'293's remote release apparatus 300 with Connelly-Lin'658 because Connelly's latch 91 would perform as originally intended after combining it with Lin'293's remote release apparatus 300. In particular, a POSITA would have understood that adding Lin'293 remote release apparatus 300 to Connelly-Lin'658's fiber optic plug 34 would still allow Connelly-Lin'658's removable latch to change polarity of the fiber optic plug, and interlock the fiber optic plug with the jack 36, because Lin'293's remote release apparatus 300 can be removed before changing polarity of the fiber optic plug.

590. Furthermore, a POSITA would have understood that little to no modification of the Connelly-Lin'658 fiber optic plug is needed to combine with Lin'293's apparatus 300. Therefore, Connelly-Lin'658's fiber optic plug will continue to have the same fundamental principle of operation, and the combination with Lin'293 will not render Connelly-Lin'658 unsatisfactory for its intended purpose.

591. Thus, a POSITA would have had a reasonable expectation of success in combining Connelly, Lin'658 and Lin'293.

C. Claim 7 - "The fiber optic connector of claim 6, further comprising a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing."

a. Connelly-Lin'658

592. As I explained above with respect to Claim Element [1d] and claim 3, Connelly, modified by Lin'658, discloses a removable latch with a depressible latch arm, e.g., latch 91. [*See* Section XI.C.5 and XI.E.] Patent Owner may argue that Connelly-Lin'658 does not expressly disclose a "remote release" as recited in claim 7. But providing a connector with a remote release, as recited in claim 7, was well known, as evidenced by Lin'293, and would have been obvious.

b. Lin'293

593. In my opinion, Lin'293 discloses a remote release (e.g., apparatus 300 including a handle member 310 and a clip member 320) that includes an elongate front section (e.g., a front section of the body 319) configured to extend longitudinally along the connector housing, as shown in the annotated version of Figure 3 below. The elongate front section engages the depressible latch arm (e.g., tab 126). The handle member also has an elongated rear section (e.g., a rear section of the body 319) extending rearward from the elongate front section, as also shown in the annotated version of Figure 3 below. [*See* EX1010, Lin'293, 4:15-65, FIGs 3, and 6.]

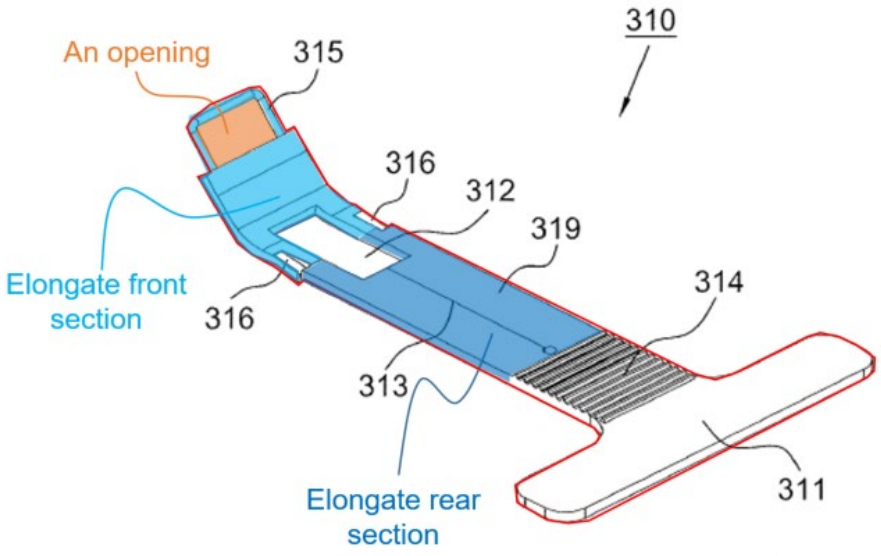


FIG. 3

EX1010, Lin'293, FIG. 3 (annotated).

594. As this claim element is rather long, I will explain how Lin'293 addresses each portion of this element for ease of understanding.

595. "*A remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section*." Lin'293 discloses apparatus 300 for "facilitating to pull out optical fiber connector" includes "a handle member 310" and "a clip member 320." [EX1010, Lin'293, 3:64-66.] Lin'293 explains when the apparatus is mounted to the connector 100, "a pull at the handle 311 of the handle member [] may pull out the connector 100 from the optical fiber adapter 200" "without need to press the tab 126 directly." [EX1010, Lin'293, 4:66-5:2, 5:17-21.] A POSITA would have understood that Lin'293's apparatus corresponds to the recited "remote release" because pulling the handle member of the apparatus can pull the connector out from the optical fiber adapter without the user directly pressing the tab 126.

596. Referring to annotated Figures 3 and 4 below, Lin'293 discloses that the handle member 310 includes "a generally rectangular body 319" and the body 319 has "an upwarping front section" and "a rear section connecting with a T-shaped handle 311." [EX1010, Lin'293, 4:15-19.] The front section of the body 319 provides "a U-shaped ring 315." [EX1010, Lin'293, 4:26-27.] Lin'293 explains when the apparatus 300 is assembled and mounted on the optical fiber

connector 100, "the U-shaped ring 315 of the handle member 310 is forced to enclose the tab 126 of the connector 100." [EX1010, Lin'293, 4:40-44, 2:40-46.]

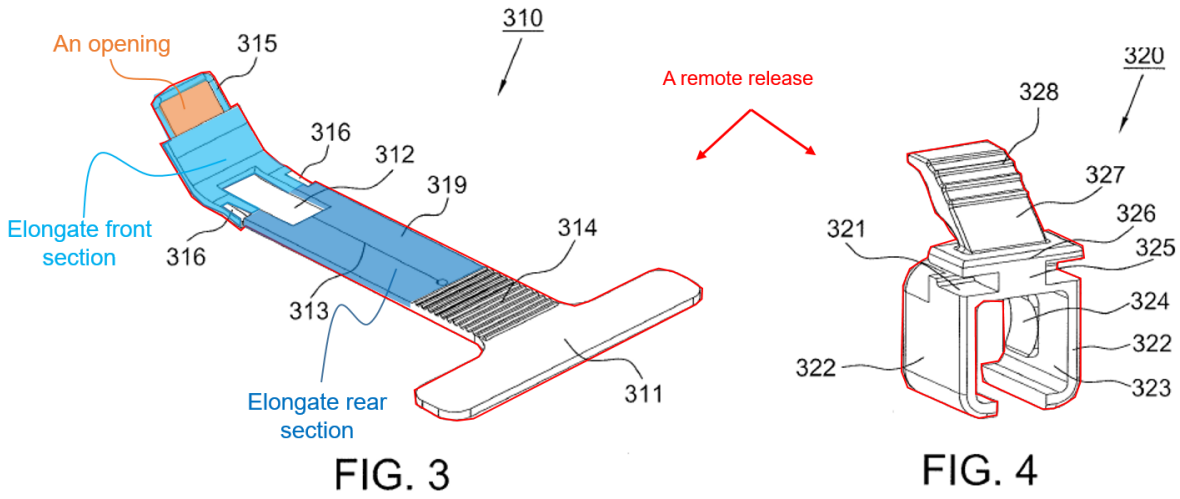


FIG. 3 FIG. 4

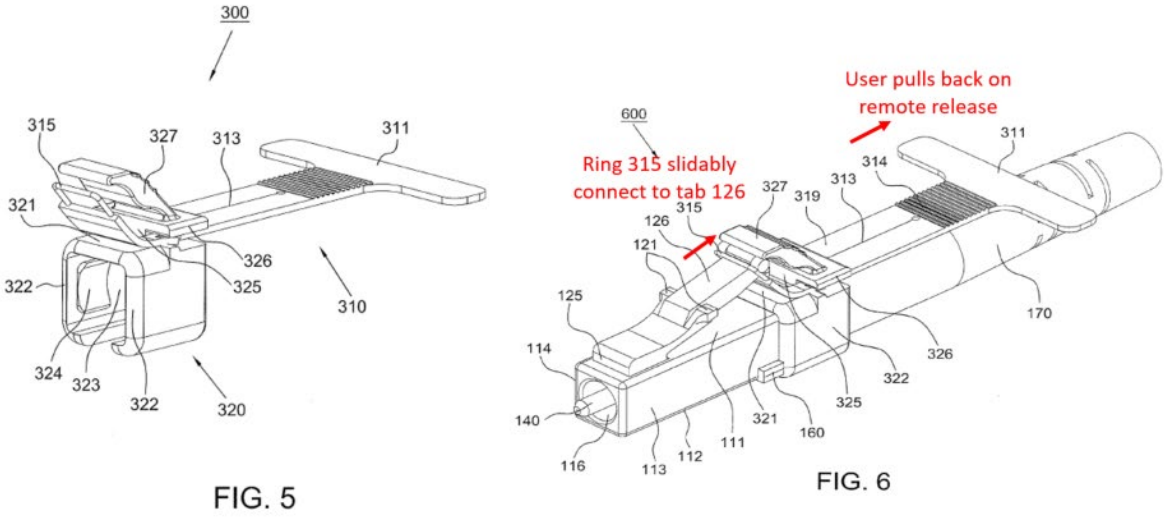
EX1010, Lin'293, FIGs. 3 and 4 (annotated).

597. A POSITA would have understood that the front section of the body 319 including the U-shaped ring 315 correspond to the recited "elongated front section" because it extends longer in the longitudinal direction than its lateral direction. A POSITA would have also understood that the "elongated front section configured to" "engage the depressible latch arm" because the U-shaped ring 315 encloses the tab 126 of the connector and contacts the tab when it is pulled backward to release the connector.

598. Lin'293 discloses the body 319 has "a rear section" connecting with a T-shaped handle 311. [EX1010, Lin'293, 4:16-20.] A POSITA would have understood that Lin'293's rear section of the body 319 corresponds to the recited

"elongated rear section" because the rear section extends longer in the longitudinal direction away from the front section than in its lateral direction.

599. *"The elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing*." Lin'293 discloses that the body 319 of the handle member 310 has an opening 312 and a slit 313 in communication with the opening 312. [Ex1010, Lin'293, 4:20-26; FIG. 3.] Lin'293 explains that to assemble the handle member 310 and the clip member 320 together, the horizontal portion 326 of the clip member 320 is inserted into the opening 312. [EX1010, Lin'293, 4:30-36.] The clip member 320 was shown above in the annotated version of Figure 4. The combination of handle 310 and clip 320 is shown in Lin'293 Figure 5 and the apparatus 300 mounted on a connector is shown in Lin'203 Figure 6, which have both been reproduced below for convenience.



EX1010, Lin'293, FIGs. 5, 6 (annotated).

600. Lin'293 explains that to mount the apparatus 300 (formed by assembling the handle member 310 and the clip member 320), the clip member 320 clips to the connector 100. [EX1010, Lin'293, 4:40-56.] Lin'293 discloses that a pull on the handle member 310 drives the U-shaped ring 315 to "pull the tab 126 of the connector 100." [EX1010, Lin'293, 5:2-10.] Lin'293 further discloses that the handle member 310 is "flexible." [EX1010, Lin'293, 4:15-16.]

601. A POSITA would have understood the elongate front section of the remote release (e.g., the front section of the body 319 of the handle member 310) slidably connects to the latch 120 and the clip member 320.

602. Lin'293 further explains when the clip member 320 clips to the connector 100, it is "in tight contact" with the walls of the connector 100. Lin'293 also discloses an alternative wherein the clip member 320 may be "integrally

formed with the housing 110 of the connector 100." [EX1010, Lin'293, 4:40-65.] That is, it does not need to be a separate piece that is clipped on, rather is can be, for example, molded into the same piece of plastic as the connector housing.

603. A POSITA would have understood the elongate front section of the remote release (e.g., the front section of the body 319 of the handle member 310) slidably connects to the connector housing because the elongated front section slidably connects to the clip member 320 and the clip member 320 tightly clips to the connector housing, or is integrally formed with the connector housing.

c. Motivation to Combine

604. In combining the teachings of Lin'293's remote release with Connelly, as modified by Lin'658, a POSITA would have sought to add an elongated front section with an opening to receive Connelly-Lin'658's removable latch 91 therethrough and an elongated rear section to allow a user to pull the remote release to remove the connector, as taught by Lin'293. This structure enables more effective handling of Connelly's modified connector in limited space, as explained in Section XII.A. A POSITA would also have understood that incorporating Lin'293's remote release with Connelly's connector, as modified by Lin'658, would not have increased the height of the modified connector because Lin'293's remote release would be modified to match the height of Connelly's latch 91.

605. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 7, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

D. Claim 8 – "The fiber optic connector of claim 7, wherein the elongate front section comprises an opening configured to receive the depressible latch arm."

a. Connelly-Lin'658

606. As I explained above with respect to claim 3, Connelly, modified by Lin'658, discloses a depressible latch arm, e.g., latch 91. [*See* Section XI.E.] Patent Owner may argue that Connelly-Lin'658 does not expressly disclose "the elongate front section" as recited in claim 8. However, providing a remote release with an elongate front section, as recited in claim 8, was well known, as evidenced by Lin'293, and using the remote release of Lin'293 would have been obvious.

b. Lin'293

607. In my opinion, Lin'293 discloses the elongate front section of the remote release comprises an opening (e.g., U-shaped ring 315) configured to receive the depressible latch arm (e.g., tab 126).

608. As I explained with respect to claim 7 in Section XII.C, the elongate front section of the remote release is the front section of the body 319 and the U-shaped ring 315. A POSITA would have understood the U-shaped ring corresponds to the recited "opening." Lin'293 discloses that the ring "is positioned

to enclose the tab of the optical fiber connector." [EX1010, Lin'293, 2:40-46.] Lin'293 further explains when the apparatus 300 is assembled and mounted on the optical fiber connector 100, "the U-shaped ring 315 of the handle member 310 is forced to enclose the tab 126 of the connector 100." [EX1010, Lin'293, 4:40-44.] A POSITA would have understood the opening (e.g., U-shaped ring 315) is configured to receive the depressible latch arm (e.g., tab 126).

c. Motivation to Combine

609. In combining the teachings of Lin'293's remote release apparatus 300 with Connelly, as modified by Lin'658, a POSITA would have sought to include Lin'293's remote release apparatus 300 with elongate front section having an opening to receive the Connelly-Lin'658 latch to promote more effective handling of the Connelly-Lin'658 fiber optic plug in limited space, as explained above in Section XII.A.

610. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 8, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

E. Claim 9 – "The fiber optic connector of claim 8, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward

facing surface of the depressible latch arm when the depressible latch arm is received in the opening."

a. Connelly-Lin'658

611. As I explained above with respect to claims 3 and 4, Connelly, modified by Lin'658, discloses a depressible latch arm, e.g., latch 91, and the depressible latch arm has an outward facing longitudinal surface. *See* Sections XI.E, XI.F. As illustrated in the annotated Figure 1 below, the depressible latch arm 91 has an outward facing surface.

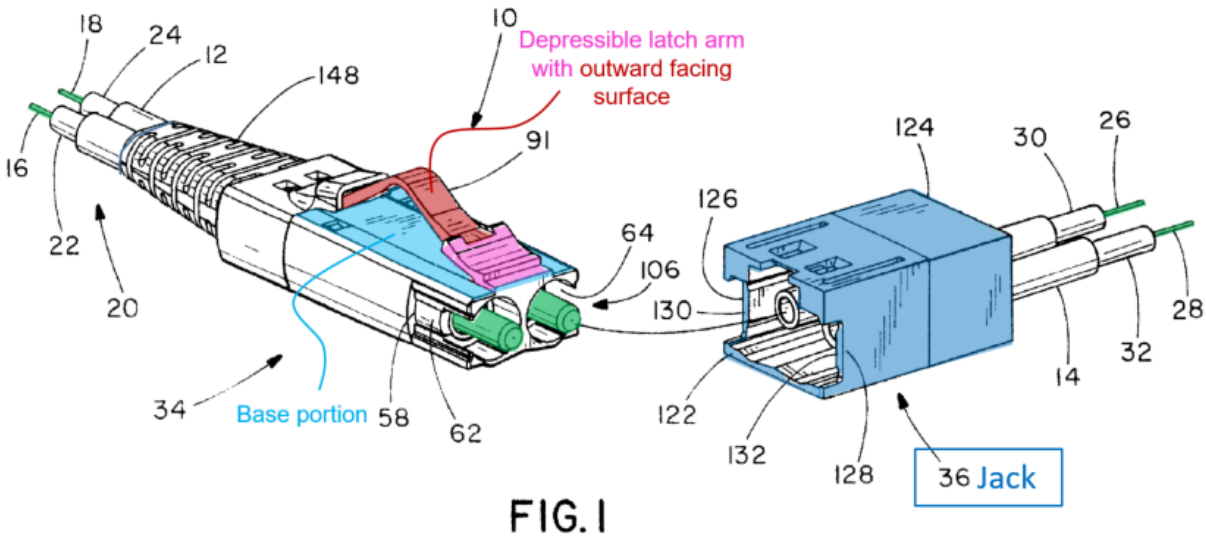


FIG. 1

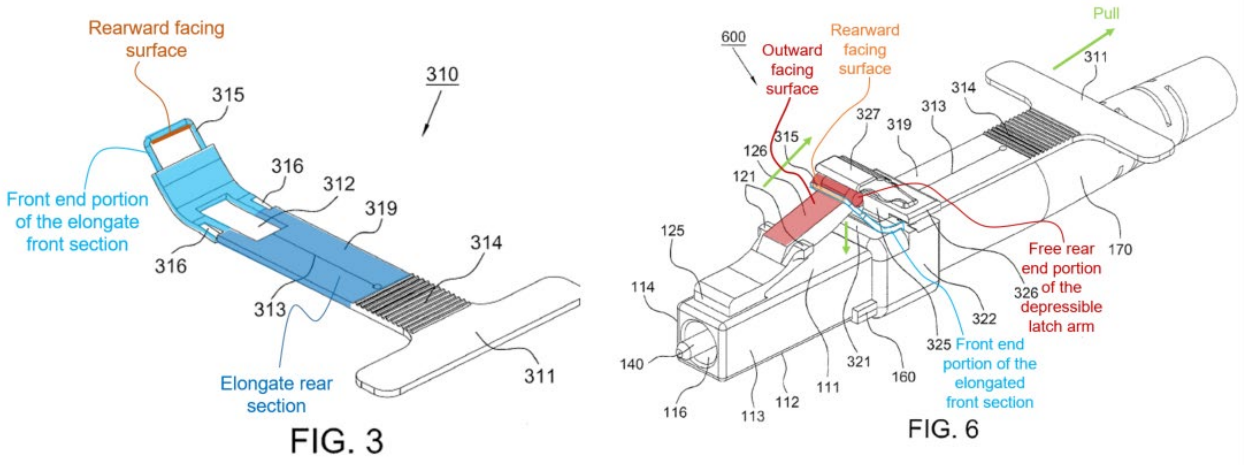
EX1008, Connelly, FIG. 1 (annotated).

612. Patent Owner may argue that Connelly-Lin'658 does not expressly disclose "the elongate front section" as recited in claim 9. But providing a remote release with an elongate front section, as recited in claim 9, was well known, as evidenced by Lin'293, and would have been obvious.

b. Lin'293

613. In my opinion, combining the teachings of Lin'293's remote release apparatus 300 with Connelly's fiber optic plug 34, as modified by Lin'658, would have rendered obvious the "elongated front section compris[ing] a front end portion having a rearward facing surface defining a front end of the opening" and "the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening."

614. Specifically, Lin'293 discloses that a U-shaped ring 315 is provided at the front section of the body 319. [EX1010, Lin'293, 4:26-29.] As I explained above with respect to claim 7 in Section XII.C, the front section of the body 319 including the U-shaped ring 315 corresponds to the recited "elongated front section." Referring to the annotated Figure 3 below, a POSITA would have understood the U-shaped ring 315 corresponds to the recited "front end portion" of the elongate front section and the U-shaped ring 315 has "a rearward facing surface defining a front end of the opening."



EX1010, Lin'293, FIGs. 3 and 6 (annotated).

615. Referring to the annotated Figure 6 above, Lin'293 discloses that the U-shaped ring 315 encloses the tab 126 of the optical fiber connector 100. [EX1010, Lin'293, 2:40-46, 4:40-45, and FIG. 6.] A POSITA would have understood the rearward facing surface of the U-shaped ring 315 opposes the outward facing surface of the depressible latch arm (e.g., tab 126) when the depressible latch arm is received in the opening (e.g., U-shaped ring 315).

c. Motivation to Combine

616. In combining the teachings of Lin'293's remote release apparatus 300 with Connelly, as modified by Lin'658, a POSITA would have sought to enclose Connelly-Lin'658's latch 91 with the front end portion of Lin'293's remote release, e.g., U-shaped ring, and configure the rearward facing surface of the U-shaped ring 315 to oppose the outward facing surface of the latch so that Lin'293's

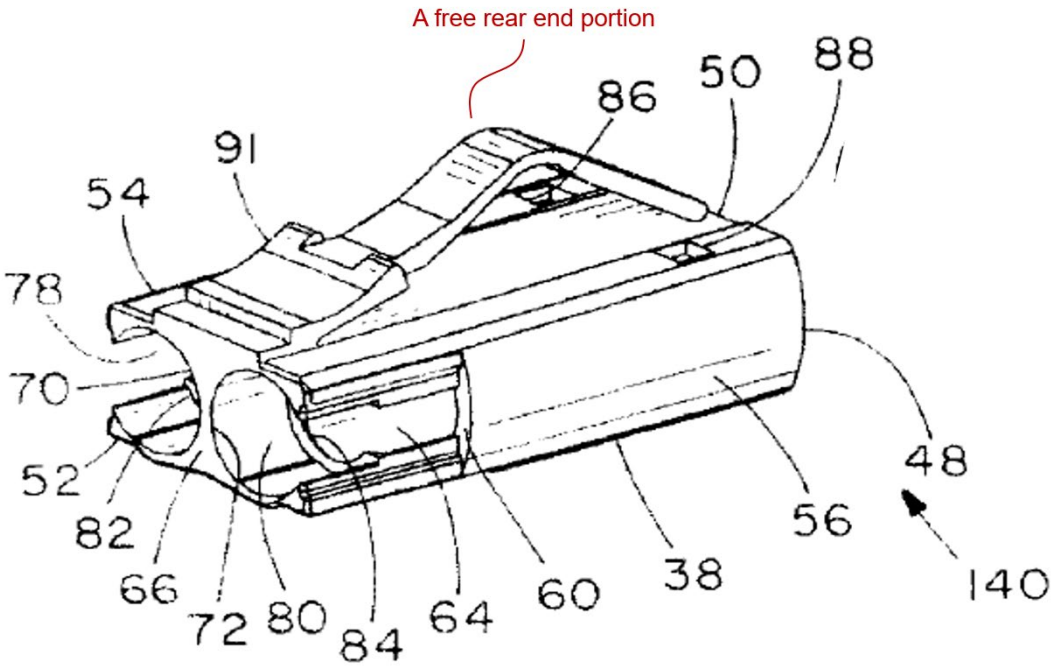
remote release can engage Connelly-Lin'658's latch to allow a user to more easily disconnect Connelly-Lin'658's connector when it is used in high density applications, as explained above in Section XII.A.

617. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 9, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

F. Claim 10 – "The fiber optic connector of claim 9, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening."

a. Connelly-Lin'658

618. As I explained above with respect to claims 3 and 4, Connelly, modified by Lin'658, discloses a depressible latch arm, e.g., latch 91, and the depressible latch arm has a free rear end portion, as illustrated in the annotated Figure 2 below. [*See* Sections XI.E and XI.F.]



EX1008, Connelly, FIG. 2 (partial, annotated).

619. Patent Owner may argue that Connelly-Lin'658 does not expressly disclose the "elongate front section" as recited in claim 10. However, providing a remote release with an elongate front section, as recited in claim 10, was well known, as evidenced by Lin'293, and would have been obvious.

b. Lin'293

620. In my opinion, combining the teachings of Lin'293's remote release apparatus 300 with Connelly's optic plug 34, as modified by Lin'658, would have rendered obvious that "the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening."

621. Specifically, Lin'293 discloses that the U-shaped ring 315 "enclose[s] the tab 126 of the connector 100." [EX1010, Lin'293, 4:40-44.] Lin'293 also discloses that when the U-shaped ring is pulled backward, it will "cause the tab 126 to be pressed down." [EX1010, Lin'293, 5:2-6.] As I have explained above with respect to claim 9, when the U-shaped ring receives the depressible latch arm (e.g., the tab 126), the front end portion of the elongate front section is configured to oppose the outward facing surface of the depressible latch arm. [*See* Section XII.E.]

622. A POSITA would have understood "the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section" so that the front end portion of the elongate front section can press the depressible latch arm down. This is also illustrated in the annotated Figure 6 below.

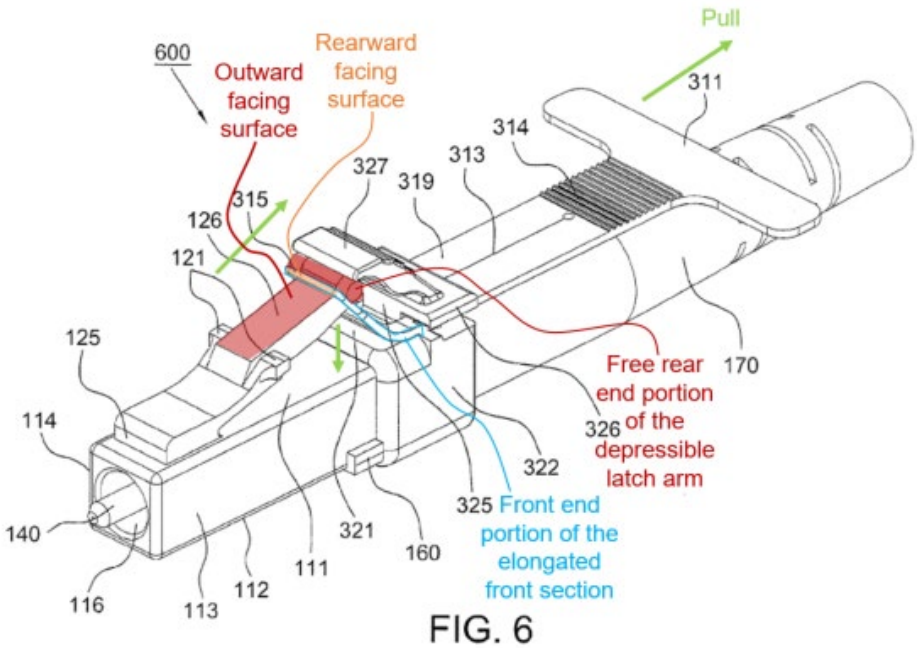


FIG. 6

EX1010, Lin'293, FIG. 6 (annotated).

c. Motivation to Combine

623. In combining the teachings of Lin'293's remote release apparatus 300 with Connelly, as modified by Lin'658, a POSITA would have sought to enclose Connelly's latch 91 (as modified by Lin'658) with the elongate front section of Lin'293's remote release, e.g., the U-shaped ring 315, and configure the free rear end portion of the Connelly's latch to be raised in relation to the U-shaped ring. In this configuration, Lin'293's U-shaped ring can press down on Connelly-Lin'658's latch when it is pulled rearward. This provides the known benefit of making Connelly-Lin'658's connector easier to release in applications with densely packed connectors, as explained above in Section XII.A.

624. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 10, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

G. Claim 11 – "The fiber optic connector of claim 10, wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface of the depressible latch arm when the elongate front section moves rearward to depress the depressible latch arm."

a. Connelly-Lin'658

625. As I explained above with respect to claims 3 and 4, Connelly, modified by Lin'658, discloses a depressible latch arm, e.g., latch 91, and the depressible latch arm has an outward facing longitudinal surface. [*See* Sections XI.E, XI.F.]

626. Patent Owner may argue that Connelly-Lin'658 does not expressly disclose "the elongate front section" as recited in claim 11. But providing a remote release with elongate front section, as recited in claim 11, was well known, as evidenced by Lin'293, and would have been obvious.

b. Lin'293

627. In my opinion, combining the teachings of Lin'293's remote release apparatus 300 with Connelly's optic plug 34, as modified by Lin'658, would have rendered obvious that "the front end portion of the elongate front section is configured to slide rearward along the outward facing surface of the depressible

latch arm when the elongate front section moves rearward to depress the depressible latch arm."

628. Specifically, Lin'293 discloses that the U-shaped ring 315 "encloses the tab 126 of the connector 100." [EX1010, Lin'293, 4:40-44.] Lin'293 also discloses that "when a pull is exerted at the handle 311, the U-shaped ring 315 is driven to pull the tab 126." [EX1010, Lin'293, 5:2-6.] Lin'293 further explains that a pull of the U-shaped ring 315 will "cause the tab 126 to be pressed down." [EX1010, Lin'293, 5:2-6.]

629. As I have explained above with respect to claims 9 and 10, when the U-shaped ring 315 receives the depressible latch arm (e.g., the tab 126), the front end portion of the elongate front section (e.g., front of the U-shaped ring 315) is configured to oppose the outward facing surface of the depressible latch arm, and the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section (e.g., front of the U-shaped ring 315). [*See* Sections XII.E, XII.F.]

630. A POSITA would have understood that when the handle 311 is pulled rearward, the motion causes the front end portion of the body 319 to move rearward, which of course causes the U-shaped ring 315 to move rearward. And a POSITA would have understood the U-shaped ring moving rearward would cause the front end portion of the U-shaped ring (e.g., the front end portion of the

elongate front section) to slide rearward along the outward facing surface of the depressible latch arm due to the configuration between the U-shaped ring and the depressible latch arm. This rearward motion would apply a downward force on the depressible latch arm, thereby releasing the connector. Such movement and forces are illustrated in the annotated Figure 6 below.

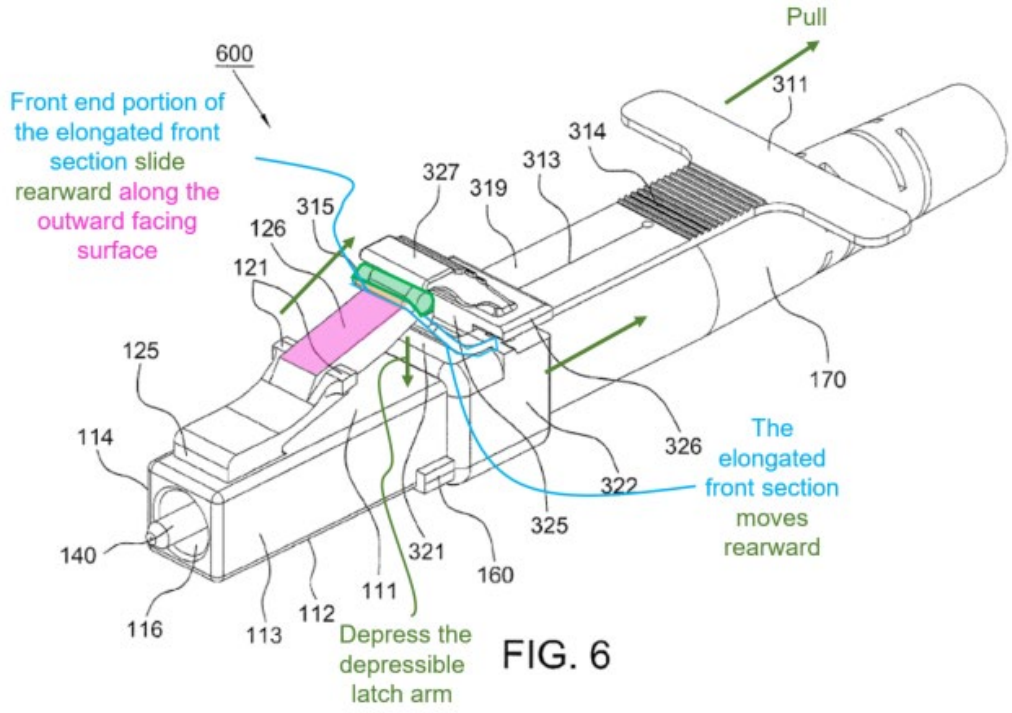


FIG. 6

EX1010, Lin'293, FIG. 6 (annotated).

c. Motivation to Combine

631. In combining the teachings of Lin'293's remote release apparatus 300 with Connelly, as modified by Lin'658, a POSITA would have sought to enclose Connelly's latch 91 (as modified by Lin'658) with the elongate front section of

Lin'293's remote release, e.g., the U-shaped ring 315, and use the flexible handle body 319 to pull the U-shaped ring 315 rearward to depress the depressible latch. This feature makes it easier to disconnect Connelly-Lin'658's connector in limited space, as explained above in Section XII.A.

632. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 11, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

H. Claim 27 – "The reversible polarity fiber optic connector of claim 26, further comprising a remote release … can move rearward relative to removable latch and the connector housing."

633. The language of claim 27 is identical to that of claim 7. Therefore, for the same reasons discussed above with respect to claim 7, when Connelly, Lin'658, and Lin'293 are combined, Lin'293 discloses "a remote release" as recited in the claim. [*See* Section XII.C.]

634. In combining the teachings of Lin'293's remote release with Connelly, as modified by Lin'658, a POSITA would have sought to add an elongated front section with an opening to receive Connelly-Lin'658's removable latch 91 therethrough and an elongated rear section to allow a user to pull the remote release to remove Connelly's modified connector from a jack, as taught by Lin'293. This feature makes it easier to disconnect Connelly's modified connector in limited space, as explained above in Section XII.A.

635. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 27, and therefore, the combined disclosures of Connelly, Lin'658 and Lin'293 render this claim obvious.

I. Claim 28 – "The reversible polarity fiber optic connector of claim 27, wherein the elongate front section comprises an opening configured to receive the depressible latch arm."

636. The language of claim 28 is identical to that of claim 8. Therefore, for the same reasons discussed above with respect to claim 8, when Connelly, Lin'658, and Lin'293 are combined, Lin'293 discloses "the elongate front section" as recited in the claim. [*See* Section XII.D.]

637. In combining the teachings of Lin'293's remote release with Connelly, as modified by Lin'658, a POSITA would have sought to include Lin'293's remote release apparatus 300 with elongate front section having an opening to engage with the depressible latch 91 of Connelly's modified connector for the same reasons discussed above in Section XII.A.

638. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 28, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

J. Claim 29 – "The reversible polarity fiber optic connector of claim 28, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to

oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening."

639. The language of claim 29 is identical to that of claim 9. Therefore, for the same reasons discussed above with respect to claim 9, when Connelly, Lin'658, and Lin'293 are combined, Lin'293 discloses "the elongate front section" as recited in the claim. [*See* Section XII.E.]

640. In combining the teachings of Lin'293's remote release with Connelly, as modified by Lin'658, a POSITA would have sought to enclose Connelly's latch 91 with the front end portion of Lin'293's remote release, e.g., U-shaped ring 315, and configure the rearward facing surface of the U-shaped ring 315 to oppose the outward facing surface of the latch 91 so that Lin'293's remote release can engage Connelly's latch. This feature makes it easier to disconnect Connelly's modified connector in limited space, as explained above in Section XII.A.

641. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 29, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

K. Claim 30 – "The reversible polarity fiber optic connector of claim 29, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of

the elongate front section when the depressible latch arm is received in the opening."

642. The language of claim 30 is identical to that of claim 10. Therefore, for the same reasons discussed above with respect to claim 10, when Connelly, Lin'658, and Lin'293 are combined, Lin'293 discloses "the elongate front section" as recited in the claim. [*See* Section XII.F.]

643. In combining the teachings of Lin'293's remote release with Connelly, as modified by Lin'658, a POSITA would have sought to enclose Connelly's latch 91 with the elongate front section of Lin'293's remote release, e.g., the U-shaped ring 315, and configure the free rear end portion of the Connelly's latch 91 to be raised in relation to the U-shaped ring 315 so that Lin'293's U-shaped ring 315 can press down Connelly's latch. This feature makes it easier to disconnect Connelly's modified connector in limited space, as explained above in Section XII.A.

644. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 10, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

L. Claim 31 – "The reversible polarity fiber optic connector of claim 30, wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface of

the depressible latch arm when the elongate front section moves rearward to depress the depressible latch arm."

645. The language of claim 31 is identical to that of claim 11. Therefore, for the same reasons discussed above with respect to claim 11, when Connelly, Lin'658, and Lin'293 are combined, Lin'293 discloses "the elongate front section" as recited in the claim. [*See* Section XII.G.]

646. In combining the teachings of Lin'293's remote release with Connelly, as modified by Lin'658, a POSITA would have sought to enclose Connelly's latch 91 with the elongate front section of Lin'293's remote release, e.g., the U-shaped ring 315, and use the flexible handle body 319 to pull the U-shaped ring 315 rearward to depress the depressible latch. This feature makes it easier to disconnect Connelly's modified connector in limited space, as explained above in Section XII.A.

647. Accordingly, I believe that a POSITA would have understood that Lin'293 discloses all the recited elements of claim 31, and therefore, the combined disclosures of Connelly, Lin'658, and Lin'293 render this claim obvious.

M. Claim 36

1. Claim 36, Preamble [36pre] – "A fiber optic connector comprising:"

648. Kindly refer to claim 1, Preamble in Section XI.C.1.

2. Claim 36, Element [36a] – "at least first and second optical ferrules:"

649. The language of Claim Element [36a] is identical to that of Claim Element [1a]. As I discussed above with respect to Claim Element [1a], Connelly discloses "first and second optical ferrules." [*See* Section XI.C.2.]

650. Accordingly, Connelly discloses Claim Element [36a].

3. Claim 36, Element [36b] – "a connector housing comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;"

651. The language of Claim Element [36b] is substantially identical to that of Claim Element [1b], except that Claim Element [1b] recites "a connector housing having a longitudinal axis" and Claim Element [36b] does not require "a longitudinal axis." As I discussed above with respect to Claim Element [1b], Connelly discloses "an exterior portion" of "a connector housing" as recited in the Claim Element [36b]. [*See* Section XI.C.3.]

652. Accordingly, Connelly discloses Claim Element [36b].

4. Claim 36, Element [36c] – "a removable latch configured to selectively and releasably couple to each of the first and second exterior walls of the housing,"

653. The language of Claim Element [36c] is substantially identical to the first sentence of Claim Element [1d], except that Claim Element [1d] refers to "engaging" either of the first and second exterior wall, and Claim Element [36c] refers to "selectively and releasably couple" to each of the first and second exterior walls.

654. I have reviewed the '701 Patent regarding the "selectively and releasably couple" limitation of this claim element. The '701 Patent only uses the term in the Claim Element [36c]. To the extent this element is supported and/or enabled by the patent specification (which I have not taken a position on), my best understanding is that this claim language means select the first exterior wall, or the second exterior wall, or both walls, which discloses the same scope as the Claim Element [1d].

655. Based on this understanding, and as I discussed above with respect to Claim Element [1d], Lin'658 discloses this claim limitation. [*See* Section XI.C.5.]

656. Accordingly, the combined disclosures of Connelly and Lin'658 render Claim Element [36c] obvious.

5. Claim 36, Element [36d] – "the removable latch comprising a base portion and a depressible latch arm connected to the base portion,"

657. The language of Claim Element [36d] is identical to that of claim 3. As I discussed above with respect to claim 3, combined teaching of Connelly and Lin'658 discloses Claim Element [36d]. [*See* Section XI.E.]

658. Accordingly, the combined disclosures of Connelly and Lin'658 render Claim Element [36d] obvious.

6. Claim 36, Element [36e] – "the depressible latch arm having a font end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion,"

659. The language of Claim Element [36e] is identical to that of claim 4. As I discussed above with respect to claim 4, Connelly discloses Claim Element [36e]. [*See* Section XI.F.]

660. Accordingly, the combined disclosures of Connelly and Lin'658 render Claim Element [36e] obvious.

7. Claim 36, Element [36f] – "the free rear end portion of the latch arm being configured to be received in an opening of a receptacle and comprising a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the fiber optic connector from the receptacle,"

661. The language of Claim Element [36f] is substantially identical to that of claim 5. As I discussed above with respect to claim 5, Connelly discloses Claim Element [36f]. [*See* Section XI.G.]

662. Accordingly, the combined disclosures of Connelly and Lin'658 render Claim Element [36f] obvious.

8. Claim 36, Element [36g] – "the free rear end portion of the depressible latch arm being raised relative to the front end portion, the removable latch being bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the fiber optic connector from the receptacle; and"

663. The language of Claim Element [36g] is substantially identical to that of claim 6. As I discussed above with respect to claim 6, Connelly in view of Lin'658 discloses Claim Element [36g]. [*See* Section XI.H.]

664. Accordingly, the combined disclosures of Connelly and Lin'658 render Claim Element [36g] obvious.

9. Claim 36, Element [36h] – "a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing,"

665. The language of Claim Element [36h] is substantially identical to that of claim 7. As I discussed above with respect to claim 7, Lin'293 discloses Claim Element [36h]. [*See* Section XII.C.]

666. Accordingly, the combined disclosures of Connelly, Lin'658, and Lin'293 render this element obvious.

10. Claim 36, Element [36i] – "the elongate front section comprising an opening configured to receive the depressible latch arm,"

667. The language of Claim Element [36i] is substantially identical to that of claim 8. As I discussed above with respect to claim 8, Lin'293 discloses Claim Element [36i]. [*See* Section XII.D.]

668. Accordingly, the combined disclosures of Connelly, Lin'658, and Lin'293 render this element obvious.

11. Claim 36, Element [36j] – "the elongate front section comprising a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening;"

669. The language of Claim Element [36j] is substantially identical to that of claim 9. As I discussed above with respect to claim 9, Lin'293 discloses Claim Element [36j]. [*See* Section XII.E.]

670. Accordingly, the combined disclosures of Connelly, Lin'658, and Lin'293 render this element obvious.

12. Claim 36, Element [36k] – "wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening,"

671. The language of Claim Element [36k] is identical to that of claim 10. As I discussed above with respect to claim 10, Lin'293 discloses Claim Element [36k]. [*See* Section XII.F.]

672. Accordingly, the combined disclosures of Connelly, Lin'658, and Lin'293 render this element obvious.

13. Claim 36, Element [36l] – "wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface when the elongate front section moves rearward to depress the depressible latch arm."

673. The language of Claim Element [36l] is identical to that of claim 11. As I discussed above with respect to claim 11, Lin'293 discloses Claim Element [36l]. [*See* Section XII.G.]

674. Accordingly, the combined disclosures of Connelly, Lin'658, and Lin'293 render this element, and the entirety of claim 36, obvious.

N. Claim 46 – "The fiber optic connector as set forth in claim 36, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end."

675. The language of claim 46 is substantially identical to the second sentence of Claim Element [1d], except that Claim Element [1d] refers to "each latch coupling," and claim 46 refers to "each of the first and second exterior walls."

676. As explained in Section XI.C.4, Connelly and Lin'658 disclose "a latch coupling positioned on each of the first and second exterior walls of the connector housing." As further discussed above with respect to Claim Element [1d], Lin'658 discloses "each latch coupling comprises a groove extending along the axis and having an open axial end." [*See* Sections XI.C.4 and XI.C.5.]

677. Therefore, each of the first and second exterior walls of the connector housing includes a latch coupling, which comprises a groove extending along the axis and having an open axial end.

678. Accordingly, the combined disclosures of Connelly, Lin'658, and Lin'293 render claim 46 obvious.

O. Claim 47 – "The reversible polarity fiber optic connector as set forth in claim 46, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis."

679. The language of claim 47 is identical to the third sentence of Claim Element [1d]. As I discussed above with respect to Claim Element [1d], Lin'658 discloses "a groove extending along the axis and having an open axial end." [*See* Section XI.C.5.]

680. Accordingly, the combined disclosures of Connelly, Lin'658, and Lin'293 render claim 47 obvious.

P. Claim 53 – "The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules."

681. The language of claim 53 is identical to that of claim 19. As I discussed above with respect to claim 19, Connelly discloses claim 53. [*See* Section XI.M.]

682. Accordingly, the combined disclosures of Connelly, Lin'658, and Lin'293 render claim 53 obvious.

XIII. CONNELLY-LIN'658, IN VIEW OF NGUYEN RENDER OBVIOUS CLAIMS 16-18 AND 32-34.

683. I believe that a POSITA would have understood that the limitations in claims 16-18 and 32-34 of the '701 Patent would have been obvious based on Connelly-Lin'658 in view of Nguyen.

A. Motivation to Combine

684. I believe a POSITA would have found it obvious to combine Connelly, Lin'658, and Nguyen to arrive at the subject matter of the claims addressed below prior to the filing date of the '701 Patent. In particular, I believe a POSITA would have found it obvious to modify Connelly's connector housing by using the removable latch of Lin'658. Then given the Connelly-Lin'658 connector, it would be obvious to incorporate Nguyen's ferrule pitch size to enable "small form factor optical modules" to "accommodate high port density optical connectors." [EX1007, Nguyen, ¶0044.] A POSITA would have found this combination obvious for several reasons.

685. First, Connelly, Lin'658, and Nguyen are all in the same field as the '701 Patent (fiber optic connectors) and are all directed to duplex fiber optic connectors (i.e., connectors with two ferrules) with a latch for easy removal from a receptacle such as an adapter or a jack. [EX1008, Connelly, 2:18-26, 3:58-60, FIG.

1; EX1009, Lin'658, 4:63-67, 5:15-20, 5:43-52, FIG. 4; EX1007, Nguyen, ¶0020, 0037-0038, FIG. 6A.] Accordingly, a POSITA would have understood that Connelly, Lin'658 and Nguyen are analogous prior art to the '701 Patent and recognize that the teachings of Nguyen's connector are applicable to Connelly-Lin'658.

686. Second, the prior art references themselves provide a motivation that would have led a POSITA to combine the teachings of Nguyen's ferrule pitch size with Connelly-Lin'658's fiber optic connector. Nguyen discloses a design that "accommodate[s] high port density optical connectors." [EX1007, Nguyen, ¶0044.] Specifically, Nguyen discloses a "maximum connector body width" in a high density application. [EX1007, Nguyen, ¶0044.] Connelly's object is to design a new and improved fiber optic connection system that is inexpensive, readily produced for fiber optic cable, and is relatively simple to assembly and repair. [EX1008, Connelly, 1:38-51.] A POSITA would have understood higher density optical connectors can reduce the cost of the overall connector system. Thus, a POSITA would have been motivated to combine the teachings of Nguyen to make Connelly-Lin'658's fiber optic connector better suited to "high port density." [EX1007, Nguyen, ¶0044.]

B. Reasonable Expectation of Success

687. A POSITA would have had a reasonable expectation of success in using the teachings of Nguyen's ferrule pitch size in Connelly-Lin'658's fiber optic connector, because both connectors are used to receive two fiber optic ferrules. Connelly-Lin'658's fiber optic connector would perform as originally intended after the ferrule pitch size is set to Nguyen's design choice. In particular, a POSITA would have understood that modifying the ferrule pitch size of the Connelly-Lin'658's connector would allow the Connelly-Lin'658 connector to work in a high port density environment.

688. Thus, a POSITA would have had a reasonable expectation of success in combining Connelly, Lin'658, and Nguyen.

C. Claim 16 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 6.25 mm."

a. Connelly-Lin'658

689. As I explained above with respect to Claim Element [1d] in Section XI.C.5., Connelly, as modified by Lin'658, discloses a fiber optical connector with a removable latch. As I also explained above with respective to Claim Element [1a] in Section XI.C.2, Connelly-Lin'658's fiber optical connector includes a first and second optical ferrules.

690. Patent Owner may argue that the Connelly-Lin'658 connector fails to disclose the required pitch size between the first and second optical ferrules. But that is a simple design choice that was well known in the prior art, as explicitly taught by Nguyen.

b. Nguyen

691. As discussed in Section XIII.A, it is my opinion that, when Connelly, Lin'658 and Nguyen are combined, Nguyen discloses the first and second optical ferrules have a pitch less than 6.25mm. [EX1007, Nguyen, ¶0037.] Specifically, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

c. Motivation to Combine

692. In combining the teachings of Nguyen's pitch size with Connelly, as modified by Lin'658, a POSITA would have sought to design the size of Connelly's modified connector to accommodate the first and second ferrules with a pitch size of about 3.8mm (which is less than 6.25mm), as explained above in Section XIII.A.

693. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 16, and therefore, the combined disclosures of Connelly, Lin'658, and Nguyen render this element obvious and the teachings are obvious to combine for the same reasons as I discussed above in Section XIII.A.

D. Claim 17 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

694. As explained above with respect to claim 16 in Section XI.C, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

695. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 17, and therefore, the combined disclosures of Connelly, Lin'658, and Nguyen render this element obvious and are obvious to combine for the same reasons as I discussed above in Section XIII.A.

E. Claim 18 – "The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

696. As explained above in with respect to claim 16 in Section XI.C, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

697. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 18, and therefore, the combined disclosures of Connelly, Lin'658, and Nguyen render this element obvious and are obvious to combine for the same reasons as I discussed above in Section XIII.A.

F. Claim 32 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less."

698. The language of claim 32 is identical to that of claim 16. Therefore, as I discussed above with respect to claim 16 in Section XIII.C. Nguyen discloses the features of claim 32. Furthermore, the combined disclosures of Connelly, Lin'658, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIII.A.

G. Claim 33 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

699. The language of claim 33 is identical to that of claim 17. Therefore, as I discussed above with respect to claim 17 in Section XIII.D, Nguyen discloses the features of claim 33. Furthermore, the combined disclosures of Connelly, Lin'658, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIII.A.

H. Claim 34 – "The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

700. The language of claim 34 is identical to that of claim 18. Therefore as I discussed above with respect to claim 18 in Section XIII.E, Nguyen discloses the features of claim 34. Furthermore, the combined disclosures of Connelly, Lin'658,

and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIII.A.

XIV. CONNELLY-LIN'658-LIN'293 IN VIEW OF NGUYEN RENDER OBVIOUS CLAIMS 37-45 AND 48-52.

701. I believe that a POSITA would have understood that the limitations in claims 37-45 and 48-52 of the '701 Patent would have been obvious based on Connelly-Lin'658-Lin'293 in view of Nguyen.

A. Motivation to Combine

702. I believe a POSITA would have found it obvious to combine Connelly, Lin'658, Lin'293, and Nguyen to arrive at the subject matter of the claims addressed below prior to the filing date of the '701 Patent. As discussed above in Sections XII.A and B, I believe a POSITA would have found it obvious to modify Connelly's connector housing using Lin'658's removable latch and Lin'293's remote release. The resulting Connelly-Lin'658-Lin'293 connector would then simply use Nguyen's explicitly-stated design choice for its ferrule pitch size to enable "small form factor optical modules" to "accommodate high port density optical connectors." [EX1007, Nguyen, ¶0044.] A POSITA would have found this combination obvious for several reasons.

703. First, Connelly, Lin'658, Lin'293, and Nguyen are all in the same field as the '701 Patent (fiber optic connectors) and are all directed to fiber optic connectors with a latch for easy removal from a receptacle such as an adapter or a

jack. [EX1008, Connelly, 2:18-26, 3:58-60, FIG. 1; EX1009, Lin'658, 4:63-67, 5:15-20, 5:43-52, FIG. 4; EX1010, Lin'293, Abstract, 2:19-25; EX1007, Nguyen, ¶0020, 0037-0038, FIG. 6A.]

704. Accordingly, a POSITA would have understood that Connelly, Lin'658, Lin'293, and Nguyen are analogous prior art to the '701 Patent and recognize that the teachings of Nguyen's connector are applicable to Connelly-Lin'658-Lin'293.

705. Second, the prior art references themselves provide motivations that would have led a POSITA to combine the teachings of Nguyen's ferrule pitch size with Connelly-Lin'658-Lin'293's fiber optic connector. Nguyen discloses a design that "accommodate high port density optical connectors." [EX1007, Nguyen, ¶0044.] Specifically, Nguyen discloses a "maximum connector body width" in a high density application. [EX1007, Nguyen, ¶0044.] Connelly's object is to design a new and improved fiber optic connection system that is inexpensive, readily produced for fiber optic cable, and is relatively simple to assembly and repair. [EX1008, Connelly, 1:38-51.] Lin'293 tries to solve the problem of pulling out optical fiber connectors when they are "mounted on a panel with close spacing to each other." [EX1010, Lin'293, 2:26-30.] A POSITA would have understood that modifying the ferrule pitch sizes of the Connelly-Lin'658-Lin'293 connector would allow the Connelly-Lin'658-Lin'293 connector to work in a high port

density environment. Thus, a POSITA would have been motivated to combine the teachings of Nguyen to make Connelly-Lin'658-Lin'293's fiber optic connector accommodate "high port density." [EX1007, Nguyen, ¶0044.]

B. Reasonable Expectation of Success

706. A POSITA would have had a reasonable expectation of success in combining the teachings of Nguyen's ferrule pitch size in the Connelly-Lin'658-Lin'293 fiber optic connector, because Nguyen's ferrule pitch size is a simple design choice for the distance between optical fibers. Furthermore, both connectors are used to receive two fiber optic ferrules. Connelly-Lin'658-Lin'293's fiber optic connector would perform as originally intended after the ferrule pitch size is set to Nguyen's design choice.

707. Thus, a POSITA would have had a reasonable expectation of success in combining Connelly, Lin'658, Lin'293, and Nguyen.

C. Claim 37 – "The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less."

a. Connelly-Lin'658-Lin'293

708. As I explained above with respect to claim 36 in Section XII.M, Connelly, as modified by Lin'658, and further modified by Lin'293, discloses a fiber optical connector with a removable latch and a remote release. As I also explained above with respect to Claim Element [36b] in Section XII.M.3,

Connelly-Lin'658-Lin'293's fiber optical connector includes a first and second optical ferrules. Patent Owner may argue that the Connelly-Lin'658-Lin'293 connector fails to disclose the required pitch size between the first and second optical ferrules. However, that design choice was well known in the prior art, as explicitly taught by Nguyen.

b. Nguyen

709. As discussed in Section XIV.A, it is my opinion that, when Connelly, Lin'658, Lin'293, and Nguyen are combined, Nguyen discloses the first and second optical ferrules have a pitch less than 6.25mm. [EX1007, Nguyen, ¶0037.] Specifically, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

c. Motivation to Combine

710. In combining the teachings of Nguyen's pitch size with Connelly, as modified by Lin'658 and further modified by Lin'293, a POSITA would have sought to design the size of Connelly-Lin'658-Lin'293's connector to accommodate the first and second ferrules with a pitch size of about 3.8mm, as explained above in Section XIV.A.

711. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 37, and therefore, the combined disclosures of Connelly, Lin'658,

Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

D. Claim 38 – "The fiber optic connector as set forth in claim 37, wherein the connector housing comprises a single front body and a single back body."

712. The language of claim 38 is identical to that of claim 12. As I discussed above with respect to claim 12 in Section XI.I, Connelly discloses "a single front body and a single back body.

713. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

E. Claim 39 – "The fiber optic connector as set forth in claim 38, further comprising first and second ferrule springs received on the first and second ferrules, respectively."

714. The language of claim 39 is identical to that of claim 13. As I discussed above with respect to claim 13 in Section XI.J, Connelly discloses "first and second ferrule springs received on the first and second ferrules."

715. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

F. Claim 40 – "The fiber optic connector as set forth in claim 39, wherein each of the first and second ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage

the forward facing surfaces of the first and second optical ferrule flanges."

716. The language of claim 40 is identical to that of claim 14. As I discussed above with respect to claim 14 in Section XI.K, Connelly discloses the features of claim 40.

717. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

G. Claim 41 – "The fiber optic connector as set forth in claim 40, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall."

718. The language of claim 41 is identical to that of claim 15. As I discussed above with respect to claim 15 in Section XI.L, Connelly discloses the features of claim 41.

719. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

H. Claim 42 – "The fiber optic connector as set forth in claim 41, wherein each of the first and second exterior walls of the

connector housing includes a groove extending along the axis and having an open axial end."

720. The language of claim 42 is identical to that of claim 46. As I discussed above with respect to claim 46 in Section XII.N, Connelly modified by Lin'658 and Lin'293 discloses features of claim 46. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

I. Claim 43 – "The fiber optic connector as set forth in claim 42, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis."

721. The language of claim 43 is identical to that of claim 47. As I discussed above with respect to claim 47 in Section XII.O, Connelly modified by Lin'658 and Lin'293 discloses features of claim 47. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

J. Claim 44 – "The fiber optic connector as set forth in claim 43, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

722. As explained above with respect to claim 37 in Section XIV.C, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

723. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 44, and therefore, the combined disclosures of Connelly, Lin'658, Lin'293, and Nguyen render this element obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

K. Claim 45 – "The fiber optic connector as set forth in claim 44, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

724. As explained above with respect to claim 37 in Section XIV.C, Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." [EX1007, Nguyen, ¶0037.]

725. Accordingly, I believe a POSITA would have understood that Nguyen discloses claim 45, and therefore, the combined disclosures of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

L. Claim 48 – "The fiber optic connector as set forth in claim 47, wherein the first and second optical ferrules have a pitch of about 6.25 mm or less."

726. The language of claim 48 is identical to that of claim 37. As I discussed above with respect to claim 37 in Section XIV.C, Nguyen discloses claim 48. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

M. Claim 49 – "The fiber optic connector as set forth in claim 48, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

727. The language of claim 49 is identical to that of claim 44. As I discussed above with respect to claim 44 in Section XIV.J, Nguyen discloses claim 49. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

N. Claim 50 – "The fiber optic connector as set forth in claim 49, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

728. The language of claim 50 is identical to that of claim 45. As I discussed above with respect to claim 45 in Section XIV.K, Nguyen discloses claim 50. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and

Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

O. Claim 51 – "The fiber optic connector as set forth in claim 36, wherein the first and second optical ferrules have a pitch less than 5.25 mm."

729. The language of claim 51 is identical to that of claim 44. As I discussed above with respect to claim 44 in Section XIV.J, Nguyen discloses claim 51. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed above in Section XIV.A.

P. Claim 52 – "The fiber optic connector as set forth in claim 51, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less."

730. The language of claim 52 is identical to that of claim 45. As I discussed above with respect to claim 45 in Section XIV.K, Nguyen discloses claim 52. Therefore, the combined disclosure of Connelly, Lin'658, Lin'293, and Nguyen render this claim obvious and are obvious to combine for the same reasons as I discussed in above Section XIV.A.

XV. CONCLUSION

731. For at least the reasons set forth above, I am of the opinion the Challenged Claims would have been obvious to a POSITA at the time of invention of the ’701 Patent based at least on the discussed prior art.

* * *

I understand that this Declaration is to be filed as evidence in a contested IPR proceeding before the Patent Trial and Appeal Board. I acknowledge that I may be subject to cross-examination in the 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.

I hereby declare under penalty of perjury that the foregoing is true and correct, 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 are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and may jeopardize the validity of the application or any patent issuing thereon. If called to testify as to the truth of the matters stated herein, I could and would testify competently.

Date: 12/27/23

William Singhose, Ph.D.

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