

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 11,181,701

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,181,701**

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PETITIONER'S EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 11,181,701
1002	File History of U.S. Patent No. 11,181,701
1003	Declaration of William Singhose, Ph.D.
1004	<i>Curriculum Vitae</i> of William Singhose, Ph.D.
1005	WO 2017/127208 A1 to Lee ("Lee")
1006	U.S. Patent No. 9,557,495 to Raven et al. ("Raven")
1007	U.S. Patent Application Publication No. 2017/0343740 A1 to Nguyen ("Nguyen")
1008	U.S. Patent No. 6,511,230 to Connelly et al. ("Connelly")
1009	U.S. Patent No. 9,625,658 to Lin ("Lin'658")
1010	U.S. Patent No. 8,641,293 to Lin et al. ("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," <i>Wikipedia</i> , 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)," <i>Wikipedia</i> , 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 No.	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. INTRODUCTION

The '701 patent alleges the need for smaller fiber optic connectors that are “reconfigurable” and proposes two well-known solutions: first, a reversible polarity connector—specifically, a removable latch to reverse polarity of the connector—and second, a remote release that removes the connector without directly depressing the release latch.

These solutions were trivial and explicitly disclosed by Lee, Raven, Connelly, Lin'658, Lin'293 and Nguyen. Petitioner respectfully requests that the Board institute trial on the Grounds set forth herein and determine that claims 1-53 of the '701 patent are unpatentable.

II. THE '701 PATENT

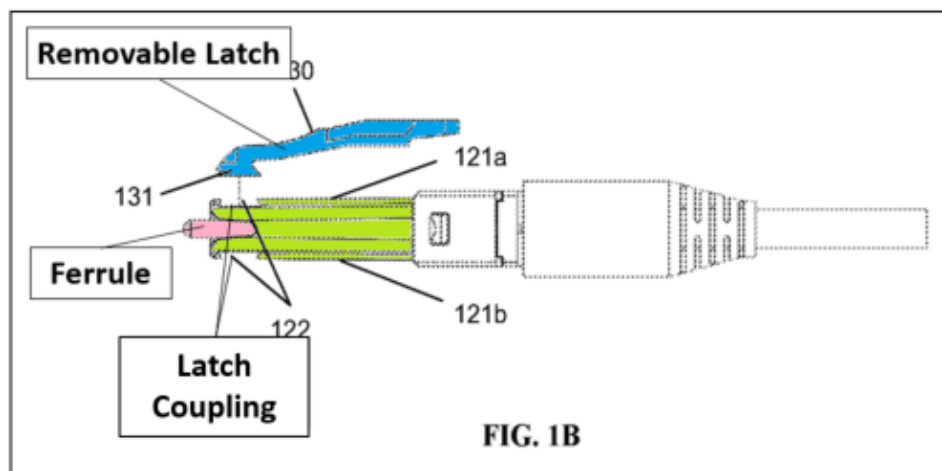
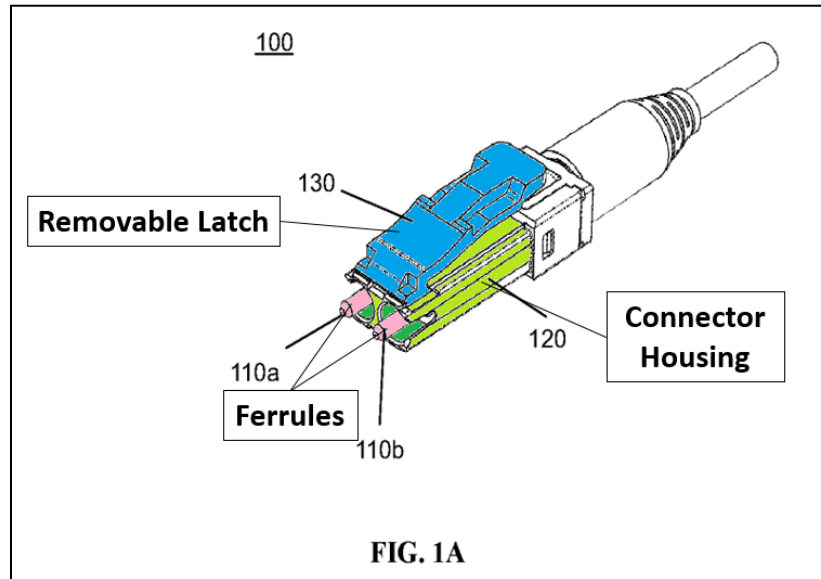
A. Overview of the '701 Patent

The '701 patent discloses reversible polarity optical connectors, EX1001, 1:24-25, and claims well-known solutions: using a removable latch to reverse polarity of a connector and using remote releases to remove connectors in close proximity. *Id.*, 2:31-37, 5:44-49; EX1003, ¶¶35-116.

1. A Removable Latch

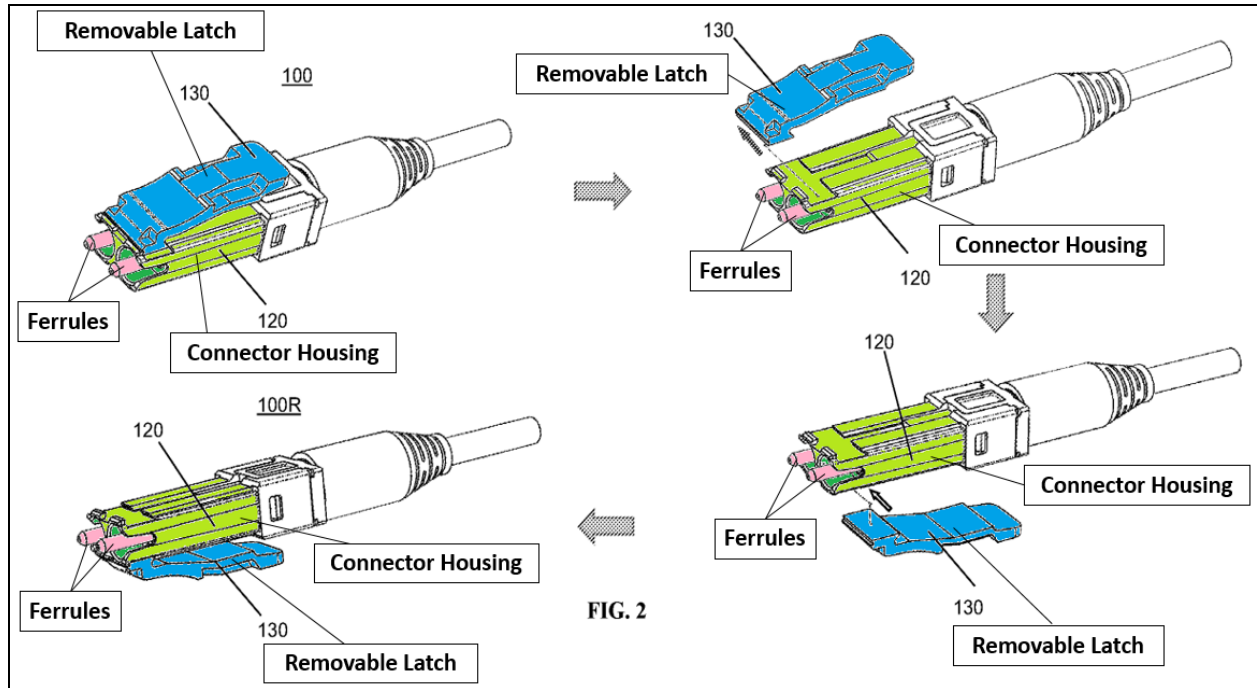
A connector 100 has a housing 120, ferrules 110a, 110b, a latch 130, and a coupling 122 with which latch 130 attaches to each of two walls of housing 120. EX1001, 6:33-50. The polarity of the connector is reversed by removing latch 130 from one side of the housing and connecting it to the other side. EX1001, 7:6-13.

Annotated Figures 1A and 1B show latch 130. Annotated Figure 1B shows latch 130 detached from housing 120. EX1003, ¶¶53-54.



EX1001, FIGs. 1A-1B (annotated).

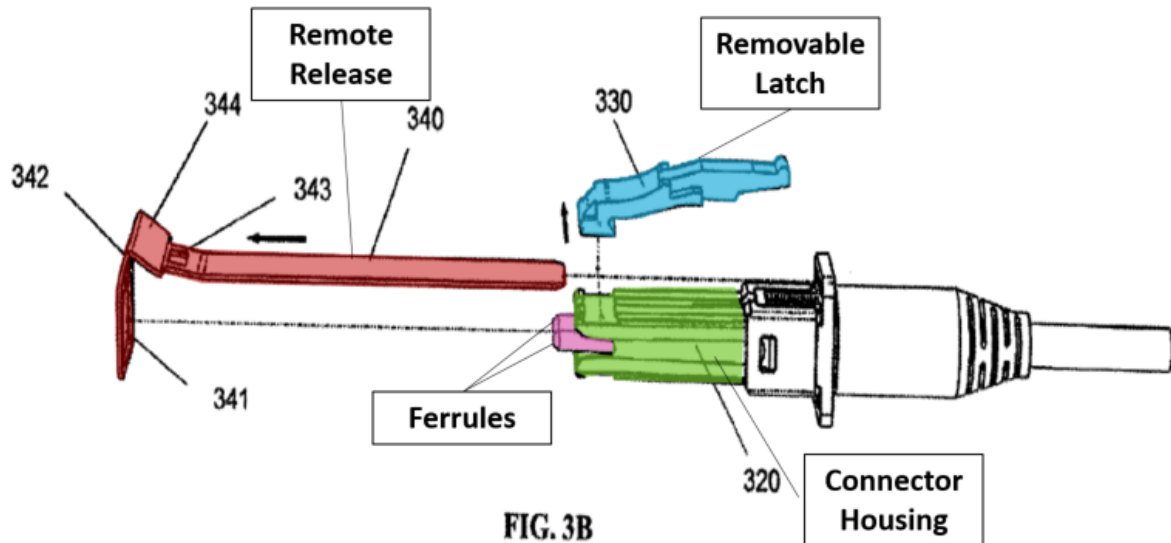
After the latch is removed, it is reattached to the underside of the housing. When the modified connector is inserted into an adapter, it is rotated so the latch is on top. This rotation reverses the polarity of the cables. EX1003, ¶55.



EX1001, FIGs. 2A-2D (annotated).

2. A Remote Release

The well-known remote release solution allows a user to remove the connector without directly depressing the release latch. EX1001, 5:44-49. The connector has a tab 340 for engaging the latch 330 by depressing the latch as the tab is pulled away from the ferrules. EX1001, 7:40-56. Figure 3B depicts a tab 340 for depressing the latch when the tab is pulled in a direction away from the ferrules. *Id.*; EX1003, ¶¶57-58.



EX1001, FIG. 3B (annotated).

III. LEVEL OF ORDINARY SKILL IN THE ART

A POSITA would have at least 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. EX1003, ¶¶117-128, 1-34.

IV. CLAIM CONSTRUCTION

This Petition affords all terms their ordinary and customary meaning. EX1003, ¶¶129-131.

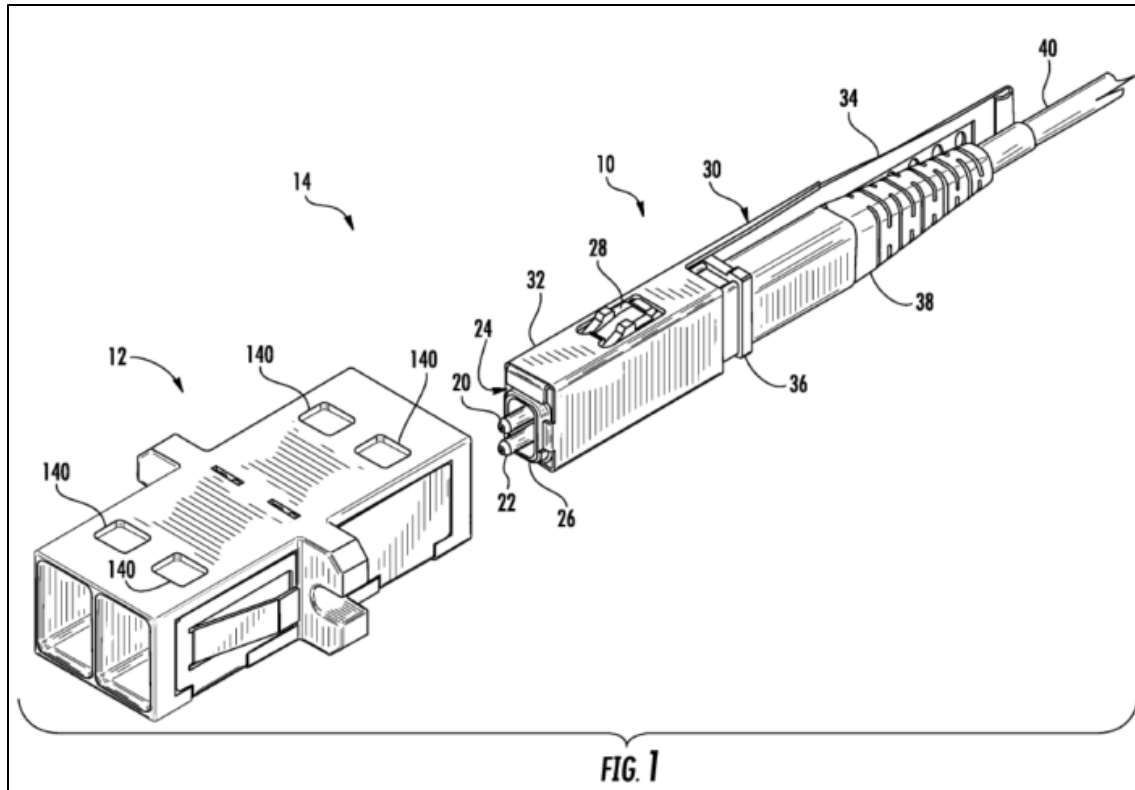
V. APPLIED REFERENCES

A. Lee

Lee is prior art under AIA 35 U.S.C. § 102(a)(2). EX1003, ¶¶132-133.

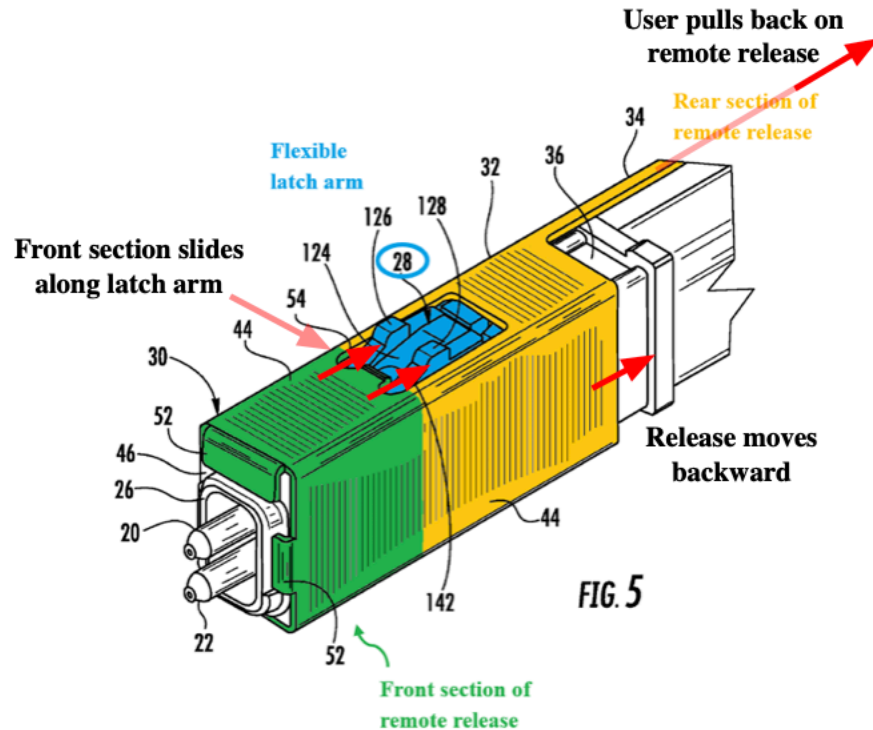
Similar to the '701 patent, Lee describes fiber optic connectors for use in data centers. EX1005, ¶0002. Lee recognizes a desire for high bandwidth tends to drive a need for a high density of interconnects. EX1005, ¶0004. Lee explains it can be challenging to design fiber optic connectors for high-density interconnects because, e.g., “[t]he fiber optic connectors often become more difficult to handle and less robust as components are made smaller.” *Id.* To solve this, Lee describes a similar solution to the one claimed in the '701 patent: a remote release. EX1003, ¶¶134-137.

FIG. 1 illustrates a fiber optic connector system that includes a fiber optic connector 10 and an adapter 12. Connector 10 includes a handle 30, which includes a housing portion 32 that houses an inner connector body 24 and a grip portion 34. EX1005, ¶0030; EX1003, ¶¶138-143.



EX1005, FIG. 1.

Figure 5 shows housing portion 32 of handle 30 includes a pushing feature 142 and an opening 54 “through which the latch arm 28 extends.” EX1005, ¶0047. When handle 30 is moved rearwardly relative to inner connector body 24, the pushing feature 142 slides along ramp 124 to cause “the latch arm 28 to flex” toward the connector body. *Id.* Therefore, handle 30 is used to “remove the connector 10” from adapter 12. EX1005, ¶0066. Accordingly, Lee discloses a remote release, e.g., handle 30, because handle 30 can press latch arm 28 to remove the connector from adapter 12 without the user directly pressing latch arm 28. EX1003, ¶¶144-145.



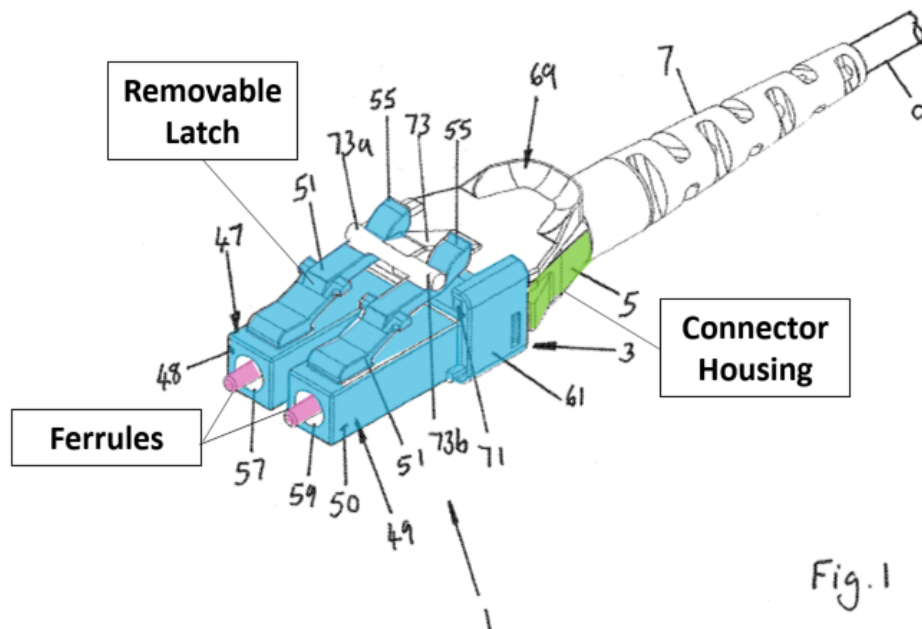
EX1005, FIG. 5 (annotated).

B. Raven

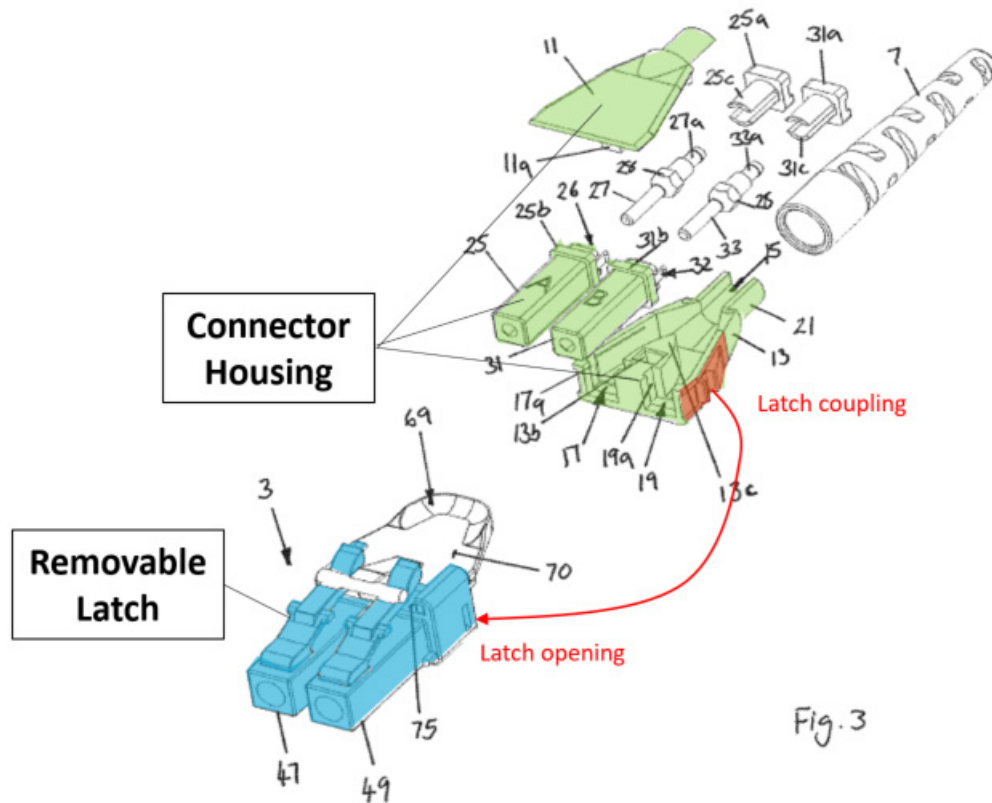
Raven is prior art under AIA 35 U.S.C. § 102(a)(1). EX1003, ¶¶146-147.

The '701 patent admits manufacturers of connectors are always looking to increase “modifiability after deployment.” EX1001, 1:42-45. Raven explains it is not uncommon for installers to get confused and connect the optical fibers with the wrong orientation. EX1006, 1:13-35. Raven discloses that it is desirable to have a reversible polarity connector so that installers do not need to “remanufacture the cable on site, which is very cumbersome and time consuming.” *Id.* Raven discloses a fiber optic connector and a method for “changing the polarity” of the fiber optic connector. EX1006, Abstract; EX1003, ¶¶148-149.

Raven's Figures 1 and 3 show a fiber optic connector comprising a housing 5 and a leading end unit 3. EX1006, 10:51-63. Figure 1 shows leading end unit 3 is attached to housing 5 via a latch and latch-opening mechanism. Figure 3 shows leading unit 3 is separated from the housing assembly. Annotated Figure 3 also shows the latch and latch-opening mechanism. EX1003, ¶150.



EX1006, FIG. 1 (annotated).



EX1006, FIG. 3 (annotated).

Raven discloses a connector part 61 of leading end unit 3 that includes a latching formation 65 and ribs 67, where the ribs are arranged to engage with mating grooves 39. EX1006, 11:13-32, FIGs. 4, 5. Connector part 61 is used for mounting onto housing 5. *Id.* Leading end unit 3 is “releasably lock[ed]” to housing 5 by sliding leading end unit 3 onto housing 5, and ribs 67 “slide along the mating grooves 39 until latching formations 65 engage with their respective latching parts 45.” *Id.*; EX1003, ¶¶152-153.

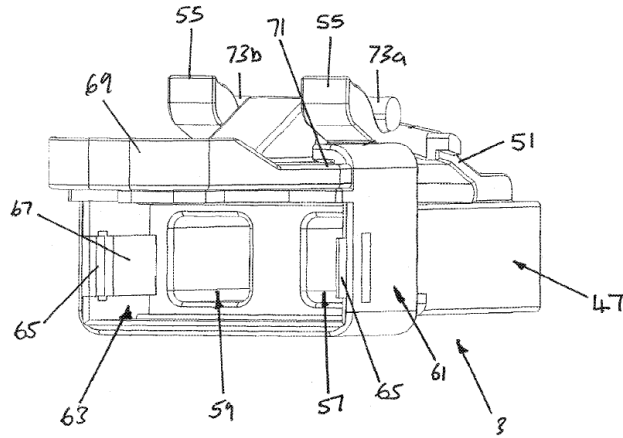


Fig. 4

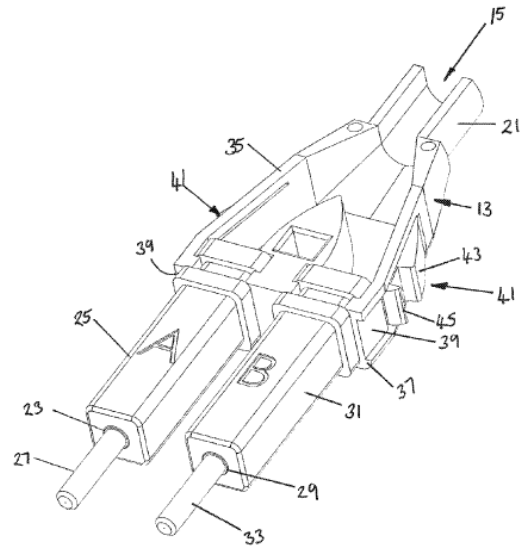
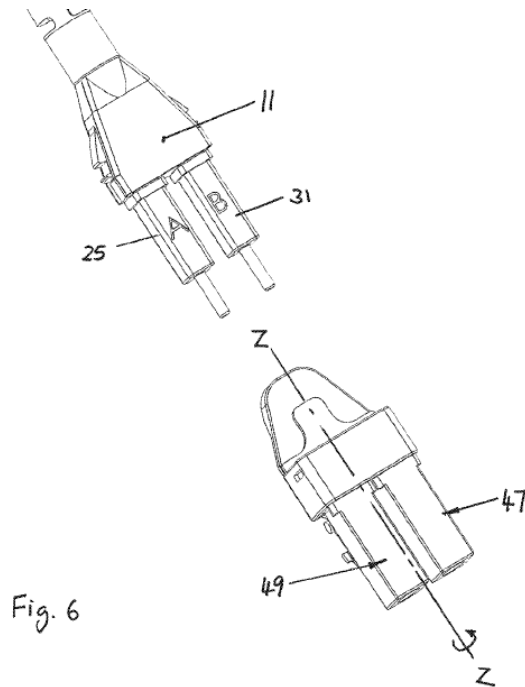


Fig. 5

EX1006, FIGs. 4, 5.

Raven's leading end unit 3 is detached from housing 5 by operating latches 41 of housing 5, thereby disengaging latching part 45 from latching formations 65 and enabling leading end unit 3 to slide off housing 5. EX1006, 11:38-43; EX1003, ¶¶154-156.

Raven's connector is configured to reverse polarity by separating leading end unit 3 from housing 5, rotating leading end unit 3 180 degrees, and then reattaching leading end unit 3 to housing 5. EX1006, 12:35-52. Figure 6 illustrates the rotation (about the Z axis) required to reverse the polarity of the connector. EX1003, ¶151.



EX1006, FIG. 6.

C. Nguyen

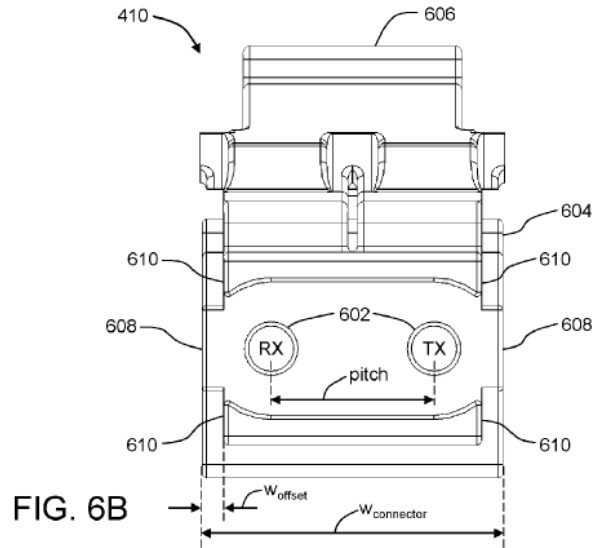
Nguyen is prior art under AIA 35 U.S.C. § 102(a)(2). EX1003, ¶¶157-158.

Nguyen “relate[s] to a duplex mini lucent connector (LC) connector.”

EX1007, ¶0002. In an embodiment shown in Figure 6B, Nguyen describes an LC connector 410 having a unitary “body (or housing) 604” containing two “ferrules 602 extend[ing] from a module-side end of the body 604.” EX1007, ¶¶0037-0038.

Because two ferrules 602 are held in a single housing 604, rather than in two separate bodies, the pitch between ferrules 602 may be reduced to “about 3.8 mm.”

EX1007, ¶¶0037, 0040; EX1003, ¶¶159-163.



EX1007, FIG. 6B.

D. Connelly

Connelly is prior art under AIA 35 U.S.C. § 102(a)(1). EX1003, ¶¶164-165.

Connelly recognizes the growing demands for “inexpensive, readily manufactured and quickly replaceable connection systems.” EX1008, 1:11-16. Connelly’s object is to design a new and improved fiber optic connection system that is inexpensive, readily produced, and is relatively simple to assemble and repair. EX1008, 1:38-47; EX1003, ¶¶166-167.

Connelly discloses a fiber optic connection system 10 that includes a fiber optic plug 34 and a fiber optic jack 36. EX1008, 2:18-25. Fiber optic plug 34 includes a housing 38, which includes a latch 91 “extending from the front housing end 46 along the top wall 50.” EX1008, 2:61-64. As illustrated in Figure 1, jack 36 receives plug 34 in the interlocked state so that optical fibers 16, 18 are coupled to

optical fibers 26, 28, respectively. EX1008, 2:18-25. Connelly explains that latch 91 is used to “snap-lock” to jack 36 when jack 36 receives plug 34. EX1008, 3:58-60. Figure 1 shows that there are two snap openings on jack 36 for snap-locking with latch 91. EX1003, ¶¶168-174.

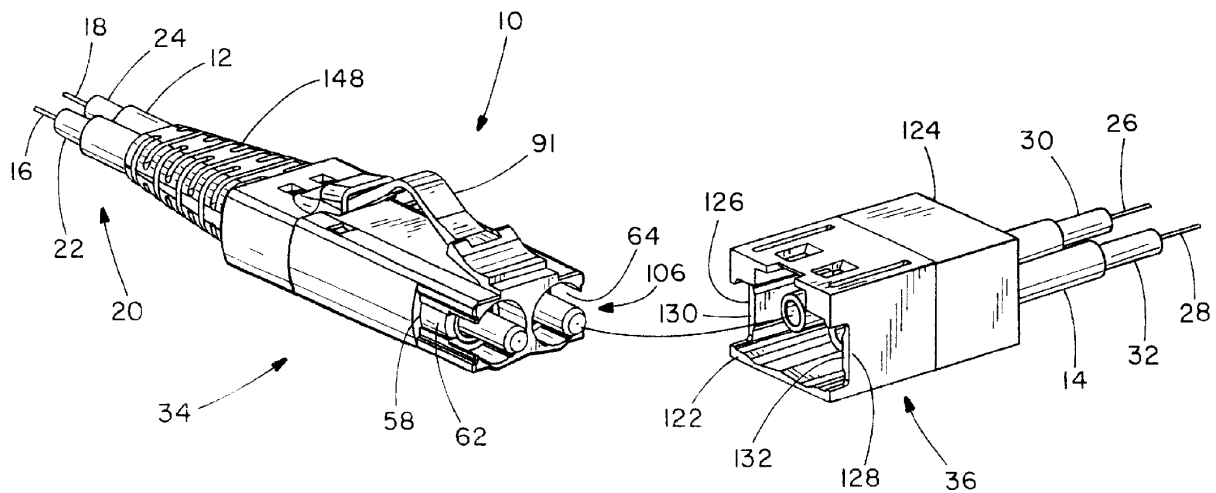


FIG. 1

EX1008, FIG. 1.

E. Lin'658

Lin'658 is prior art under AIA 35 U.S.C. § 102(a)(2). EX1003, ¶¶175-176.

Lin'658 discloses a communication connector “with alterable polarity.” EX1009, Abstract; EX1003, ¶177. Lin'658 explains that 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 the fiber optic polarity is connected wrongly. EX1009, 1:52-61. Lin'658 discloses a fiber optic connector that enables

polarity exchange in a manner that “substantially improves convenience and efficacy” during operation. EX1009, 3:5-10; EX1003, ¶178.

Figure 1 shows a connector with alterable polarity, which includes a main body 11, a pair of fiber optic plugs 12, and a casing 13. EX1009, 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, 5:15-20; EX1003, ¶¶179-180.

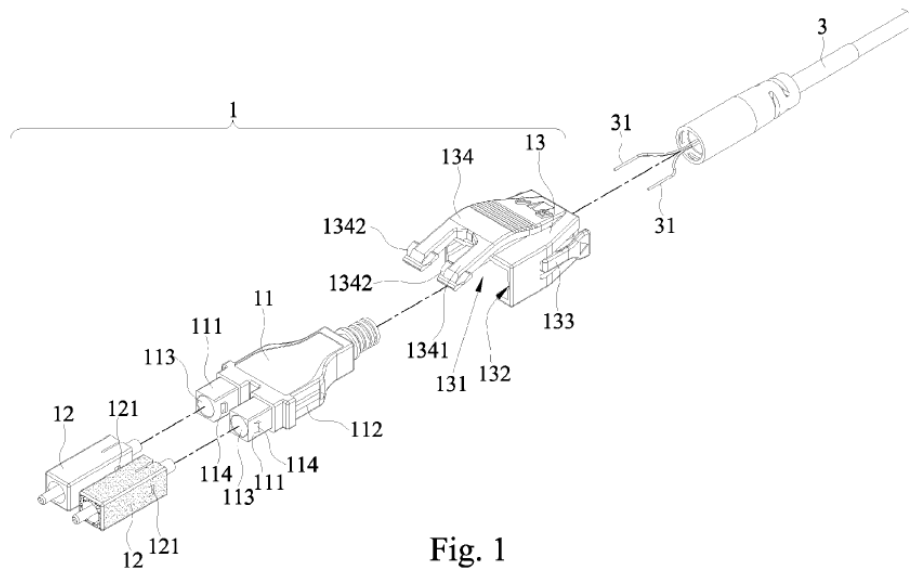


Fig. 1

EX1009, FIG. 1.

Lin’658 discloses that each side of casing 13 includes a guide groove 132 and a grab 133 corresponding to guide block 112 located on each of the two exterior walls of main body 11. EX1009, 5:25-43. The two guide grooves 132 and two guide blocks 112 cooperate to restrict and guide casing 13 in accordance with the movement direction of main body 11. *Id.*; EX1003, ¶181.

To reverse polarity of Lin'658's connector, the user separates casing 13 from main body 11 by pressing two grabs 133 and sliding casing 13 out of main body 11. EX1009, 5:59-67. Then, either main body 11 or casing 13 is rotated 180 degrees, and casing 13 is placed back on main body 11 "via sliding movement." EX1009, 5:67-6:4. Figure 5 illustrates separating casing 13 from main body 11 and Figure 6 illustrates placing casing 13 back into main body 11 after main body 11 is rotated 180 degrees. The polarity of the connector is altered. EX1003, ¶182.

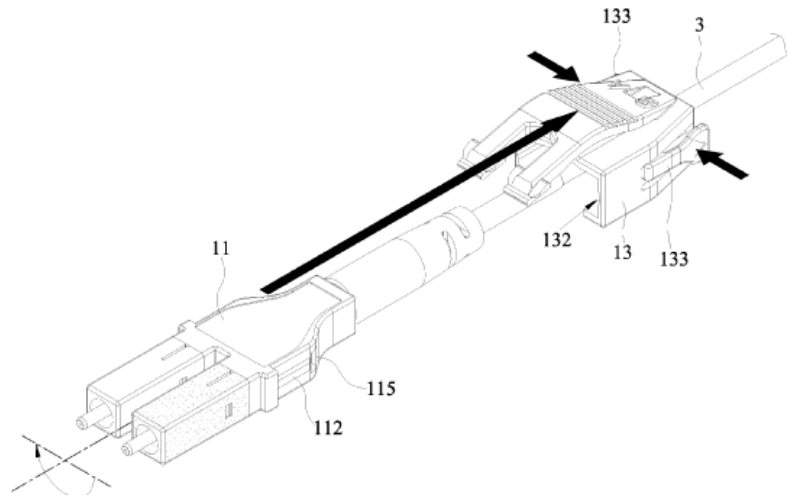


Fig. 5

EX1009, FIG. 5.



EX1009, FIG. 6.

F. Lin’293

Lin'293 is prior art under AIA 35 U.S.C. § 102(a)(1). EX1003, ¶¶183-184.

Lin'293 relates to optical fiber connectors. EX1010, 1:15-18. Lin'293 solves the problem of dense connector deployment where there is not enough space for a user's fingers to press a tab of a latch to pull out the connectors. EX1010, 2:26-29. Lin'293 discloses an apparatus 300 for facilitating pulling out of an optical fiber connector without the need to press the tab of the connector directly. EX1010, 2:35-39; EX1003, ¶¶185-186.

Apparatus 300 includes a handle member 310 and a clip member 320. EX1010, 3:64-4:1, FIGs. 3, 4. Handle member 310 is “flexible” and includes a body 319. EX1010, 4:15-29, FIG. 3. Clip member 320 has an accommodation room 323 defined by vertical portions 322 and a horizontal portion 321. EX1010,

4:1-7, FIG. 4. Lin'293 discloses that handle member 310 and clip member 320 can be assembled together to form apparatus 300. EX1010, 4:30-39, FIG. 5; EX1003, ¶¶187-188.

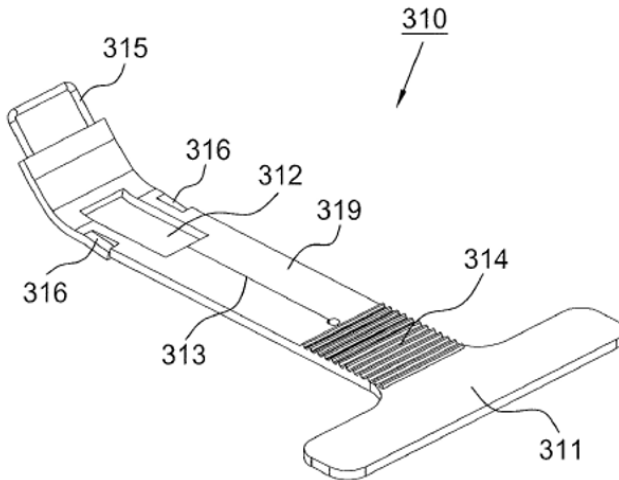


FIG. 3

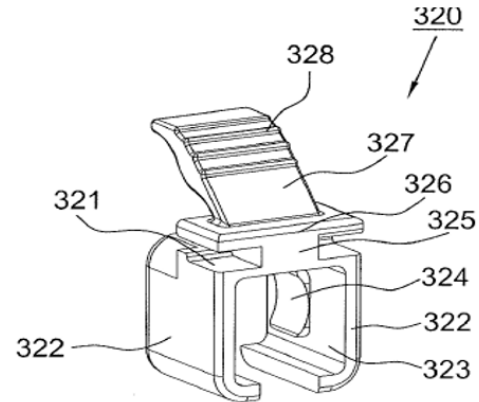


FIG. 4

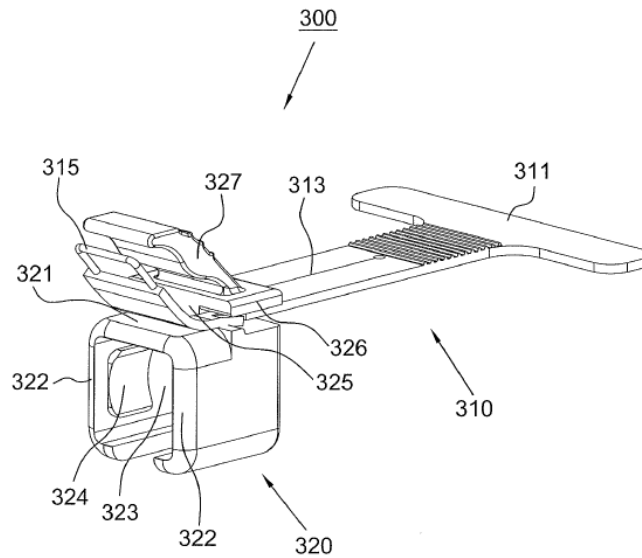


FIG. 5

EX1010, FIGs. 3-5.

Lin'293 explains that when clip member 320 clips to the connector, vertical portions 322 of clip member 320 are “in tight contact” with side-walls 113, 114 of the connector, and U-shaped ring 315 encloses tab 126 of the connector. EX1010, 4:40-56, FIG. 6. Lin'293 explains a pull of the handle member 310 will cause “the tab 126 to be pressed down” and further cause the connector to be pulled out from the adapter. EX1010, 4:66-5:16, FIG. 6; EX1003, ¶¶189-190.

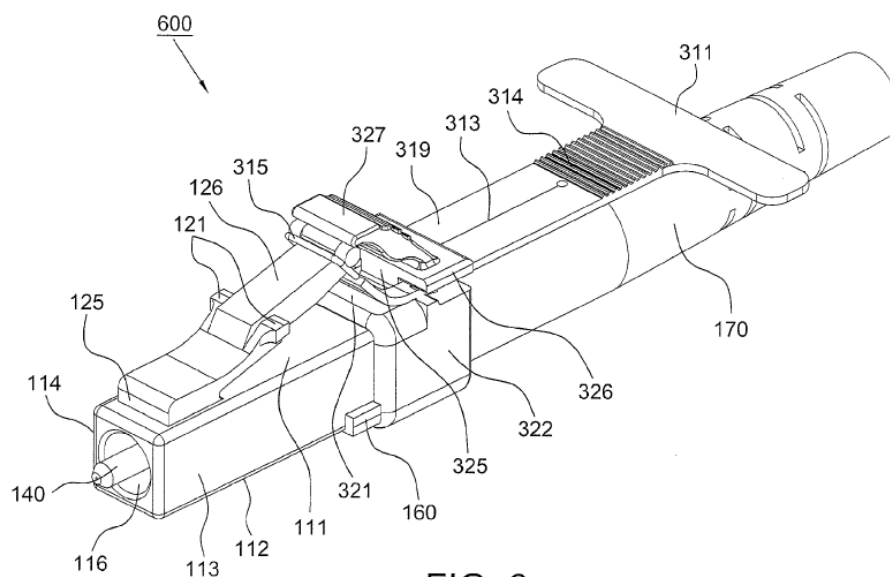


FIG. 6

EX1010, FIG. 6.

VI. GROUNDS

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

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

VII. GROUND 1: CLAIMS 1-15, 19-31, 35-36, 46-47, AND 53 ARE OBVIOUS OVER LEE IN VIEW OF RAVEN.

A POSITA would have found claims 1-15, 19-31, 35-36, 46-47, and 53 obvious over Lee (EX1005) in view of Raven (EX1006). EX1003, ¶¶191-192.

A. A POSITA would have been motivated to combine Lee and Raven with a reasonable expectation of success.

A POSITA would have been motivated to modify Lee's latch arm 28 to be removable with Raven's connector part 61 and latch coupling structures (e.g., latch 41, groove 39, etc.), thereby enabling Lee's connector to change polarity easily. EX1003, ¶¶193-200; EX1005, ¶0030; EX1006, 10:51-63, 11:13-32.

First, Lee and Raven are both directed to duplex fiber optic connectors (e.g., connectors with two ferrules) with a latch for easy removal from a receptacle such as an adapter or a complementary connector. EX1005, ¶¶0030, 0045; EX1006, 2:36-42, 11:44-51. 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. EX1003, ¶¶201-202.

Second, the prior art provides 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 two optical fibers, one for transmitting and one for receiving. EX1006, 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; as a result, installers usually need to replace the existing cable and "remanufacture the cable on site." EX1006, 1:23-35. To address this, Raven teaches a simplified solution to change polarity of the connectors. EX1006, 1:36-46. This polarity-switching motivation was used later by the '701 patent to justify its disclosure. EX1003, ¶203.

Given the problem 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, 12:47-56; EX1003, ¶204.

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. EX1003, ¶¶205-206; EX1005, ¶¶0034, 0043-45; EX1006, 10:51-63, 11:13-32.

A POSITA would have had a reasonable expectation of success combining Lee and Raven. EX1003, ¶¶207-209. Lee's latch arm 28 would perform as originally intended after being releasably locked to the exterior walls of Lee's connector housing. *Id.* 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 latch arm 28 to engage latching feature 140 on the adapter. *Id.* Indeed, it was well known to make similar latches with depressible arms releasably locked to optical connector housings, as explicitly disclosed by Raven. *Id.* Therefore, Lee's fiber optic connector continues to have the same fundamental principle of operation, and combining with Raven does not render Lee unsatisfactory for its intended purpose. *Id.*

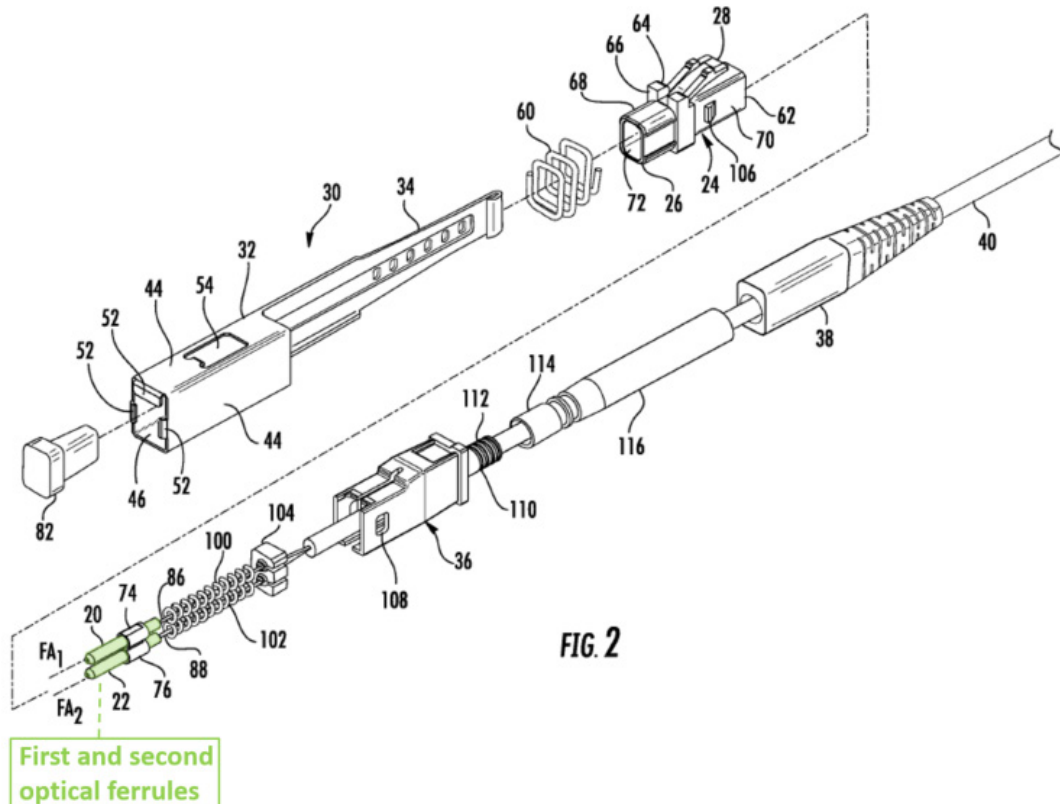
B. Claim 1

1. [1.P]

Lee discloses a fiber optic connector. EX1005, Title, ¶0002; EX1003, ¶¶210-211.

2. [1.1]

Lee’s connector “includes first and second ferrules 20, 22”. EX1005, ¶¶0030;
EX1003, ¶¶212-213.

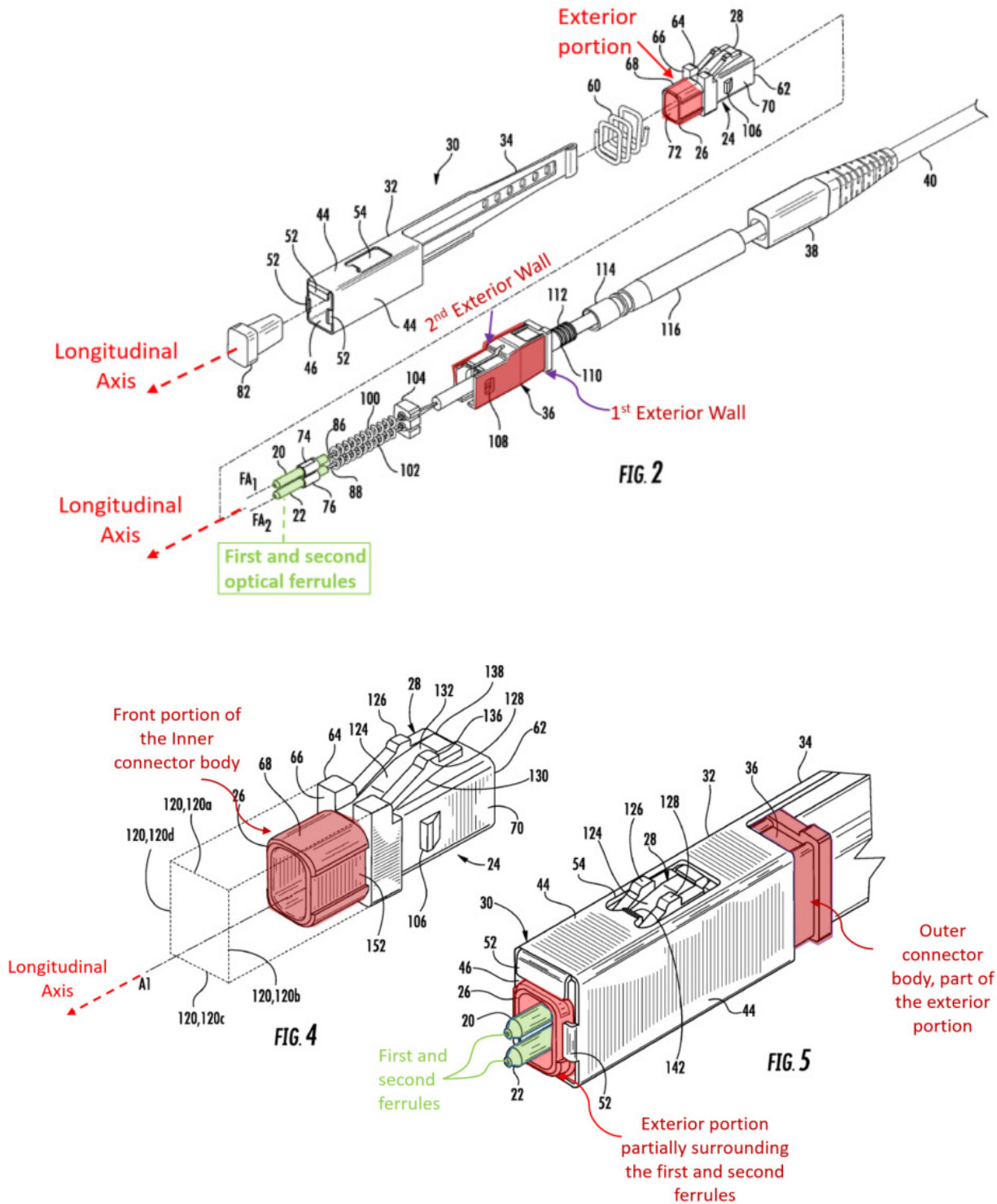


EX1005, FIG. 2 (annotated).

3. [1.2]

Lee discloses “*a connector housing having a longitudinal axis.*” EX1003, ¶214. Lee discloses a connector 10 that has “an outer connector body 36 coupled to the inner connector body 24” with “a longitudinal axis A1.” EX1005, ¶¶0030, 0039, 0044, FIG. 2; EX1003, ¶215.

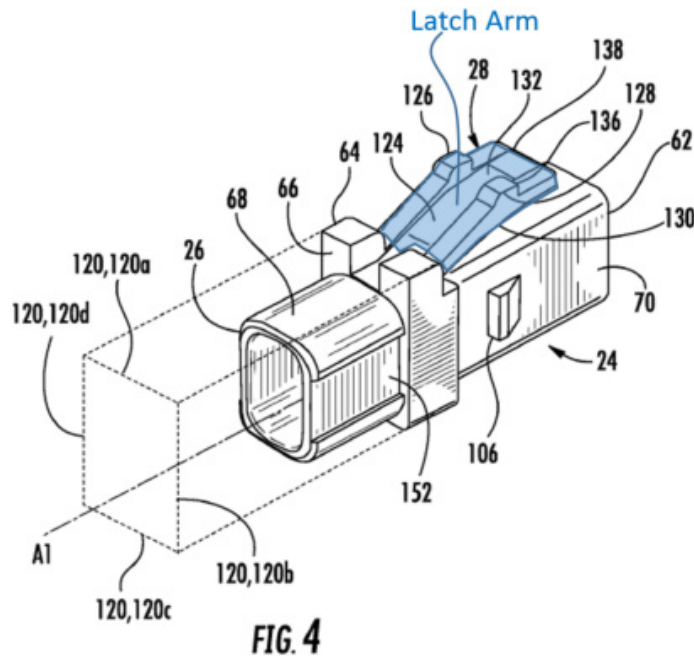
Lee also discloses the connector housing “*comprising an exterior portion at least partially surrounding the first and second optical ferrules...*” and “*a first exterior wall and a second exterior wall....*” EX1003, ¶¶216-217. Lee discloses “a front portion 68” of the inner connector body 24 and “front ends 90 of the first and second ferrules 20, 22 extend past the front end 26 of the inner connector body 24.” EX1005, ¶¶0033, 0057, FIG. 5. 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 surrounds the first and second optical ferrules 20, 22. EX1003, ¶216. Lee discloses the exterior portion of the connector housing having a first exterior wall and a second exterior wall. EX1005, FIG. 2; EX1003, ¶217. Annotated Figures 2, 4 and 5 illustrate the recited claim features.



EX1005, FIGs. 2, 4, 5 (annotated).

4. [1.3]

Lee-Raven discloses [1.3].



EX1005, FIG. 4 (annotated).

(a) Lee

Lee discloses a latch arm 28. EX1005, ¶¶0034. To the extent that PO argues that Lee does not expressly teach latch couplings positioned on each of the first and second exterior walls of the connector housing, Raven explicitly does. EX1003, ¶¶218-219.

(b) Raven

Raven discloses “housing 5 includes side walls 35, 37”; each of the side walls 35, 37 includes “a mating groove 39” and “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, 10:51-63. Each latch 41 “includes a pressing part 43 and a latching part 45” and “[e]ach latching part 45 is arranged to engage with a

with housing 5. EX1003, ¶220.



EX1006, FIG. 5 (annotated).

(c) Motivation to Combine

modify Lee's connector housing to include latch couplings on the first and second

side walls to engage a removable latch, e.g., latch arm 28, allowing the polarity of Lee's connector to be altered easily without the need to remanufacture the cable.

EX1006, 1:13-46; Section VII.A; EX1003, ¶221.

5. [1.4]

Lee-Raven discloses [1.4].

(a) Lee

Lee discloses a latch arm 28. EX1005, ¶0034. While PO 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, Raven does. EX1003, ¶¶223-224.

(b) Raven

Raven discloses “*a removable latch.*” Raven discloses a leading end unit 3 including latching levers 51 that are configured to releasably lock the fiber optic connector to a complementary connector device. EX1006, 11:44-51. Raven further discloses that the leading end unit 3 is “releasably lock[ed]” to the housing 5. EX1006, 11:22-32. A POSITA would have understood the leading end unit 3 corresponds to the recited “*removable latch.*” EX1003, ¶¶228-231.

Raven discloses that the removable latch engages “*either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling.*” EX1003, ¶¶232-233. Raven discloses *a latch coupling* that includes a groove 39, latch 41, pressing part

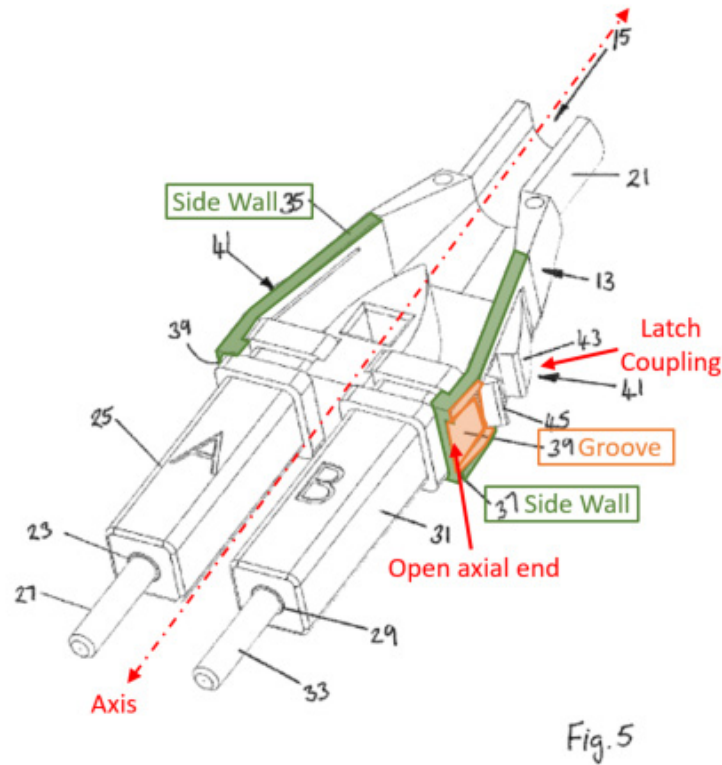
43, and latching part 45 on each side wall 35, 37 of housing 5. Section VII.B.4 ([1.3]); EX1006, 10:51-63. Raven discloses a connector part 61 of the leading end unit 3 including a latching formation 65 and ribs 67. The latching formations 65 are arranged to “engage with respective latching parts 45” and the ribs 67 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, 11:13-32; EX1003, ¶232.

A POSITA would have understood that “*engaging either of the first and second exterior wall latch couplings*” means one of the following configurations: i) engaging the first exterior wall latch coupling, ii) engaging the second exterior wall coupling, or iii) engaging both the first and the second exterior wall latch couplings. 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.*” EX1003, ¶233.

Raven discloses “*a groove extending along the axis and having an open axial end.*” EX1003, ¶¶234-235. Raven discloses each of the side walls 35, 37 includes “*a mating groove 39.*” EX1006, 10:51-55. Raven’s annotated Figure 5

shows that groove 39 “extend[s] along the axis and having an open axial end.”

EX1003, ¶235.



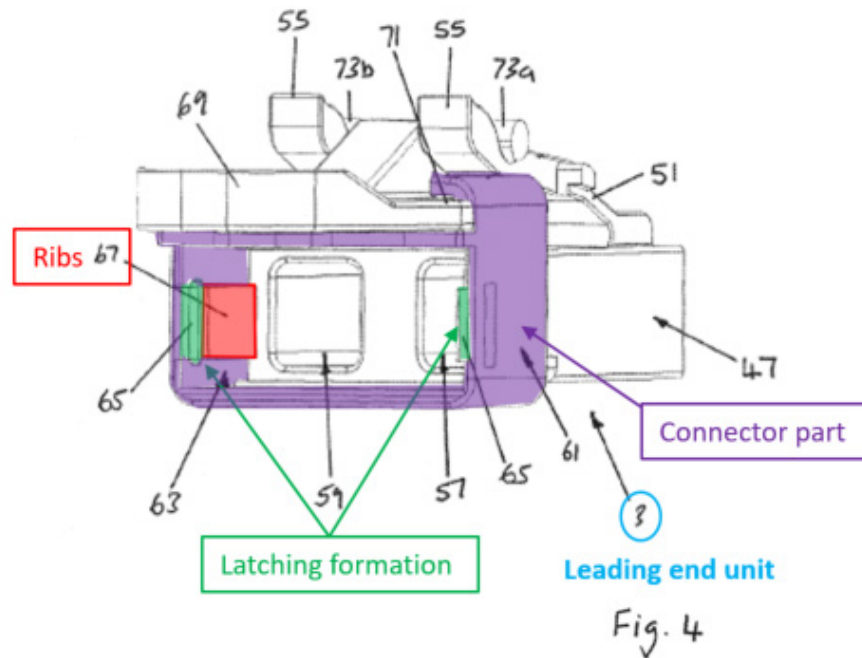
EX1006, FIG. 5 (annotated).

Raven discloses “a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis.” EX1003, ¶¶236-

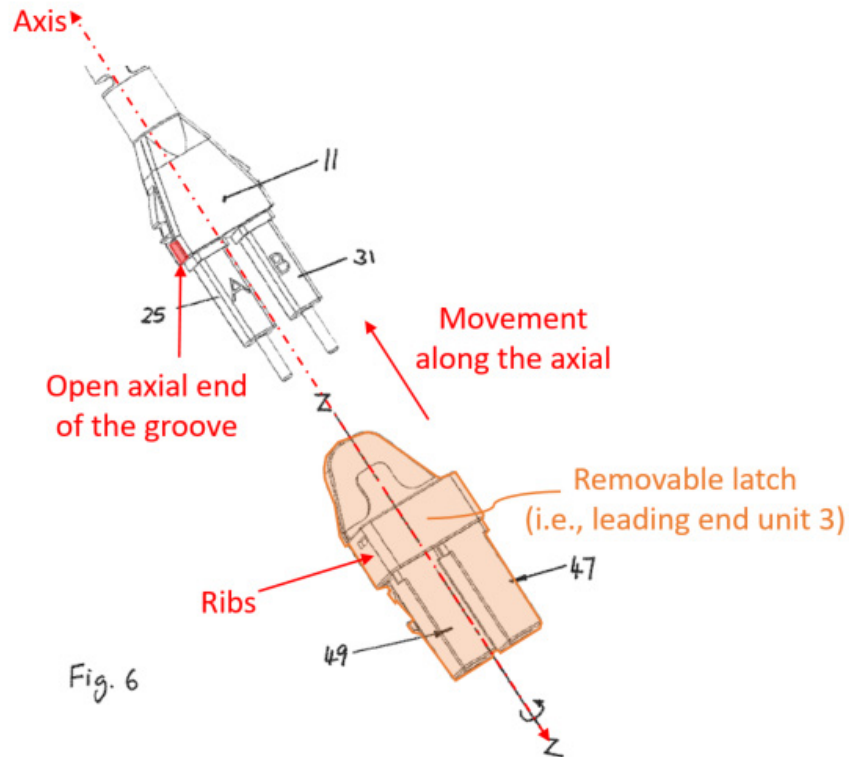
237. Raven discloses the connector part 61 of the leading end unit 3 includes “ribs 67 that are arranged to engage with the mating grooves 39 on the housing.”

EX1006, 11:13-32. The leading end unit 3 can “slide onto” the housing so that “the ribs 67 slide along the mating grooves 39.” *Id.* A POSITA would have understood

that ribs 67 correspond to the recited “*protrusion*.” Figures 4 and 6 illustrate the ribs 67 and the insertion of the protrusion into the groove by movement. EX1003, ¶¶236-237.



EX1006, FIG. 4 (annotated).



EX1006, FIG. 6 (annotated).

(c) Motivation to Combine

In combining Raven's removable latch with Lee's connector, a POSITA would have found it obvious to make Lee's latch arm 28 removable by modifying it with Raven's connector part 61, so that Lee's modified latch arm 28 engages with either of the first and second exterior wall latch couplings on the connector housing. Accordingly, Lee in view of Raven discloses [1.4]. Section VII.A; EX1003, ¶¶238-239.

C. Claim 2

Lee-Raven discloses claim 2. PO may allege Lee does not expressly disclose “the protrusion is movable along the longitudinal axis.” But Raven does. EX1003, ¶¶240-241.

Raven discloses ribs 67 “slide along the mating grooves 39.” EX1006, 11:13-32; EX1003, ¶¶242-244; Section VII.B.5 ([1.4]).

In combining Lee and Raven, a POSITA would have sought to modify Lee’s latch arm 28 to include a protrusion for the same reasons as discussed in Section VII.A. EX1003, ¶¶245-246.

D. Claim 3

Lee-Raven discloses claim 3. Lee discloses a latch arm 28 extending from the inner connector body 24. EX1005, ¶0030. The latch arm 28 is depressible because it can “flex toward” the connector body. *Id.* Lee’s Figures 3 and 4 illustrate the depressible latch arm and the base portion. EX1003, ¶247.

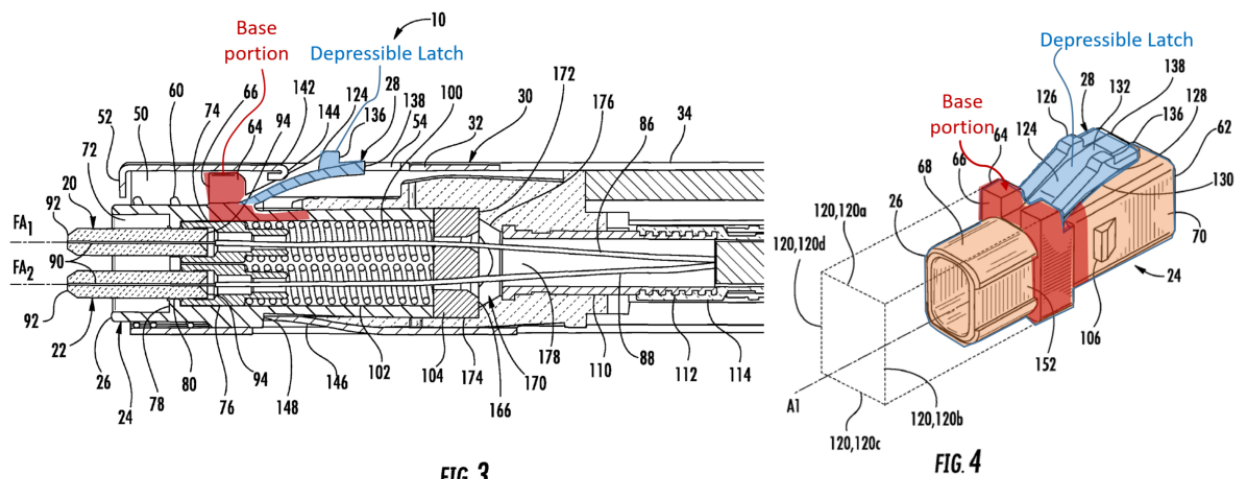
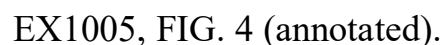


FIG. 3
EX1005, FIGs. 3, 4 (annotated).

EX1003, ¶¶250-251.

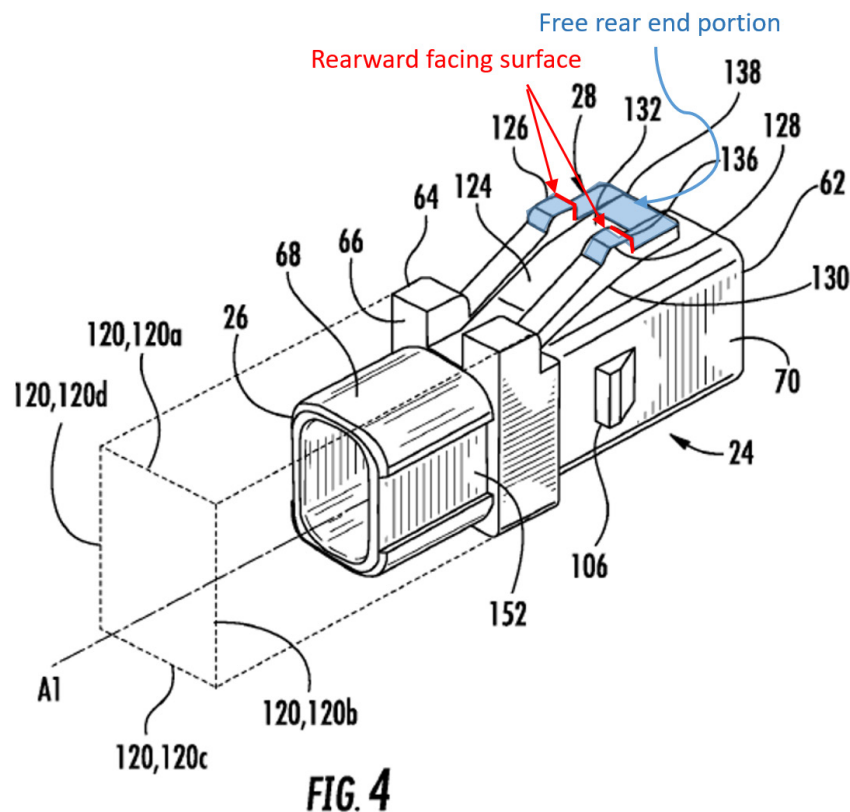
Lee-Raven discloses claim 4. Lee discloses a depressible latch arm (e.g., latch arm 28) and a base portion (e.g., part of connector body 24). Section VII.D. Lee's annotated Figure 4 illustrates that the latch arm 28 includes a front-end portion, a free rear-end portion (e.g., latching features 126 and 128 together with the terminal end 138), and an outward-facing longitudinal surface (e.g., ramp 124). EX1005, ¶¶0030, 0043; EX1003, ¶¶252-255.



A POSITA would have understood Lee discloses claim 4, therefore Lee-Raven renders this claim obvious. Section VII.A; EX1003, ¶256.

F. Claim 5

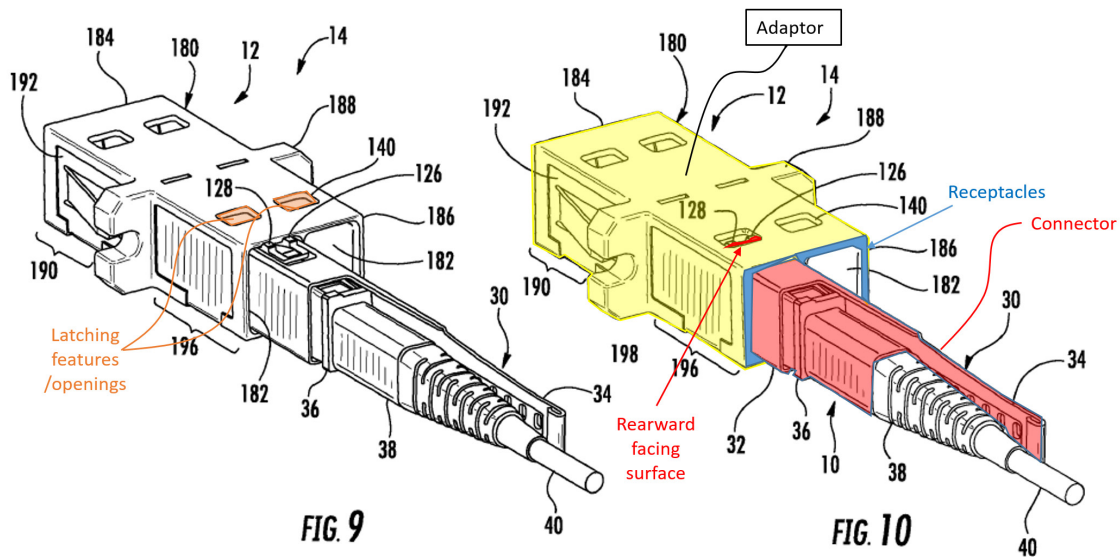
Lee-Raven discloses claim 5. Lee discloses that the free-end portion of latch arm 28 has a rearward-facing surface 136. EX1005, ¶0045, FIG. 4; EX1003, ¶¶257-259.



EX1005, FIG. 4 (annotated).

Lee discloses an adapter 12 that includes ports 182 (e.g., a receptacles) for receiving the connector 10. Each port 182 has “at least one latching feature 140 (e.g., an opening).” EX1005, ¶0059. To engage the connector 10 with the adapter

12, “latch arm 28 flexes away” from the connector body when the latching features 124, 126 (part of the free-end portion) are aligned with the opening 140, and “rearward-facing surfaces 136” are then in a position to “engage the adapter body 180 to help retain the connector 10 in the port 182.” EX1005, ¶¶0063; EX1003, ¶260.



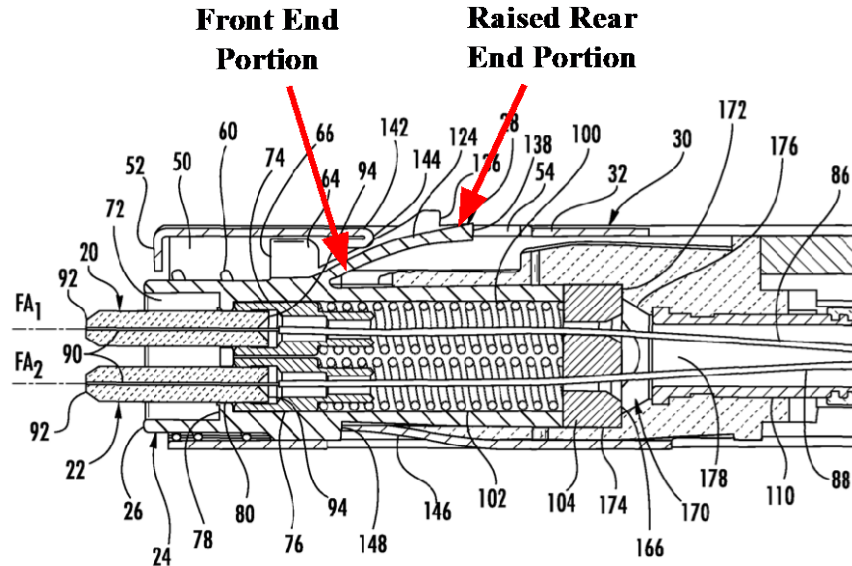
EX1005, FIGs. 9, 10 (annotated).

A POSITA would have understood that Lee discloses claim 5, therefore, Lee-Raven renders claim 5 obvious. EX1003, ¶262.

G. Claim 6

1. [6.1]

Lee discloses [6.1]. Lee’s Figure 3 shows the free, rear-end portion of the latch arm is raised relative to the front-end portion. EX1003, ¶¶264-265.



EX1005, FIG. 3 (partial, annotated).

2. [6.2]

Lee discloses [6.2]. Lee discloses that latch arm 28 “flexes” during operation. EX1005, ¶¶0047, 0063; EX1003, ¶¶268-269. 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 causes the first and second latching features 126, 128 (i.e., free, rear-end portion) to “disengage” the latching feature 140 (i.e., the opening), and the connector 10 to be “pulled back out” of the port 182. EX1005, ¶0065; EX1003, ¶¶270-271.

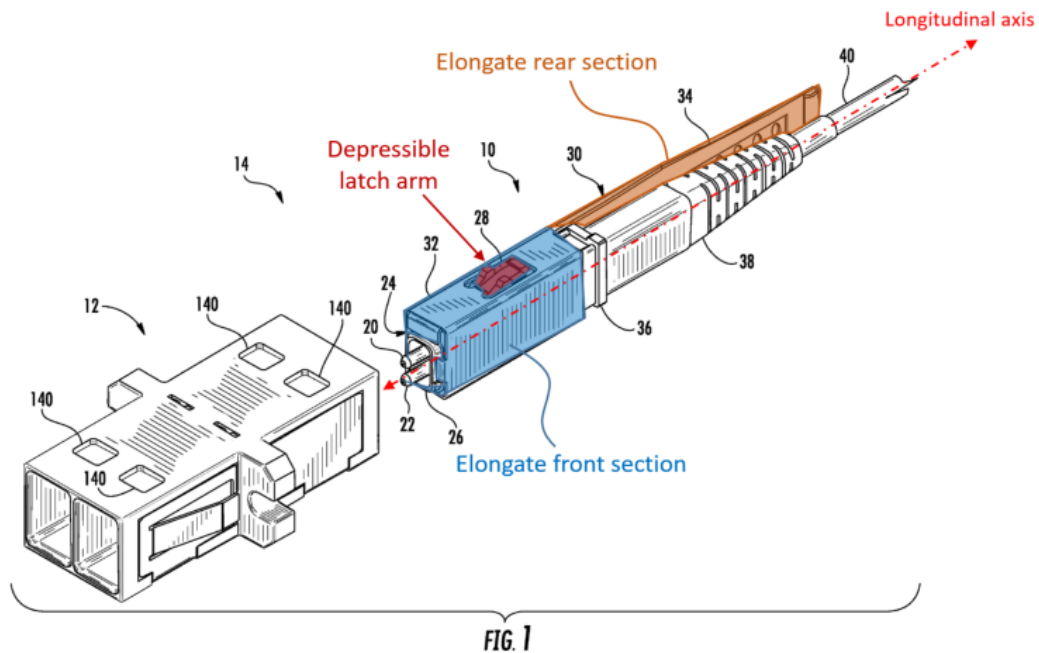
A POSITA would have understood that Lee-Raven renders [6.2] obvious. EX1003, ¶¶272-274.

H. Claim 7

1. [7.1]

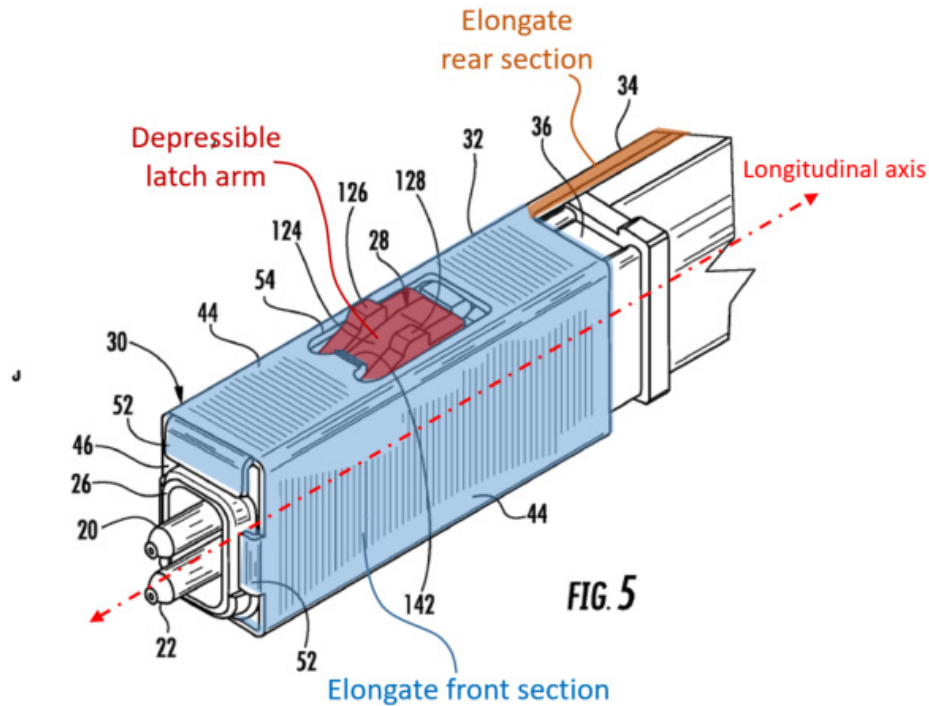
Lee teaches [7.1]. Lee discloses a remote release (e.g., handle 30) that includes an elongate front section (e.g., housing portion 32) configured to extend longitudinally along the connector housing and engage the depressible latch arm (e.g., latch arm 28), and an elongate rear section (e.g., grip portion 34) extending rearward from the elongate front section. EX1005, ¶¶0030-0031; EX1003, ¶276.

Lee's Figure 1 illustrates a handle 30 that includes "a housing portion 32" and "a grip portion 34 extending rearwardly." EX1005, ¶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 pull the connector 10 out of the port 182 of the adapter 12. EX1005, ¶¶0030, 0065. Lee discloses a remote release (e.g., handle 30). EX1003, ¶277.



EX1005, FIG. 1 (annotated).

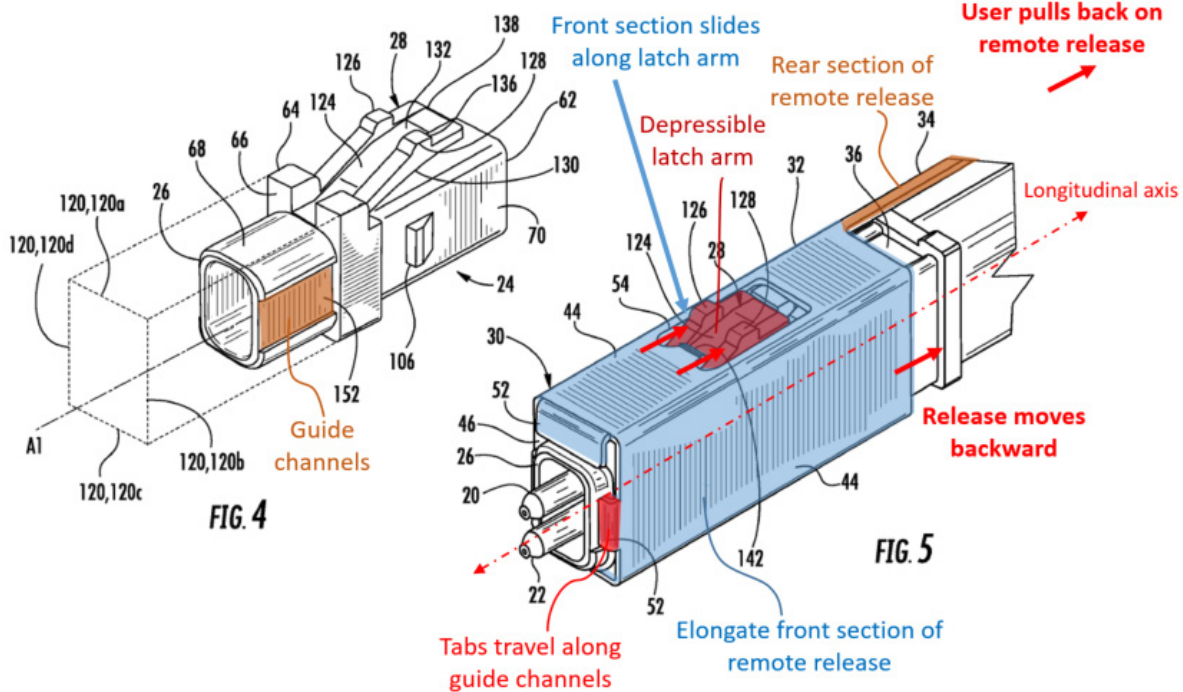
Lee's annotated Figure 5 also illustrates that "housing portion 32 ... includes an opening 54 for through which the latch arm 28 extends when the connector 10 is assembled" and "includes a pushing feature 142 adjacent the opening 54 for contacting the latch arm [28]." EX1005, ¶0047; EX1003, ¶278. Lee discloses the elongate front section engages the depressible latch arm. EX1003, ¶279. Lee discloses [7.1]. EX1003, ¶¶280-282.



EX1005, FIG. 5 (annotated.)

2. [7.2]

Lee discloses [7.2]. Lee discloses the handle 30 can move rearwardly relative to the inner connector body 24. EX1005, ¶0047. The housing portion 32 has two tabs 52 that are received by the guide channels 152 of inner connector body 24, and “[t]he tabs 52 travel along the guide channels 152” when handle 30 moves relative to inner connector body 24. EX1005, ¶0050, FIGs. 4, 5. Lee discloses [7.2]. EX1003, ¶¶283-287.



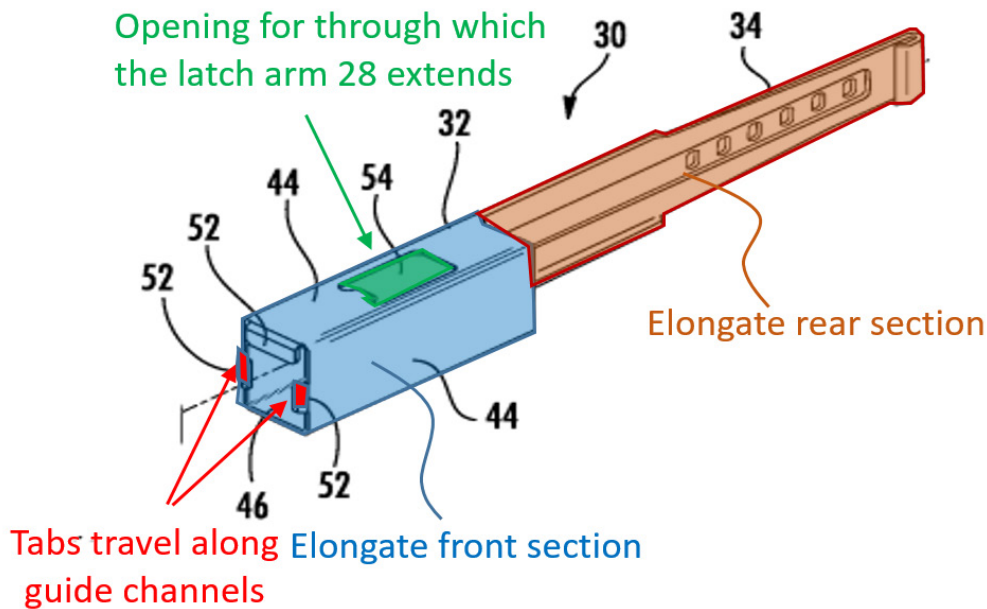
EX1005, FIGs. 4, 5 (annotated).

A POSITA would have understood that Lee-Raven renders [7.2] obvious.

EX1003, ¶¶288-290.

I. Claim 8

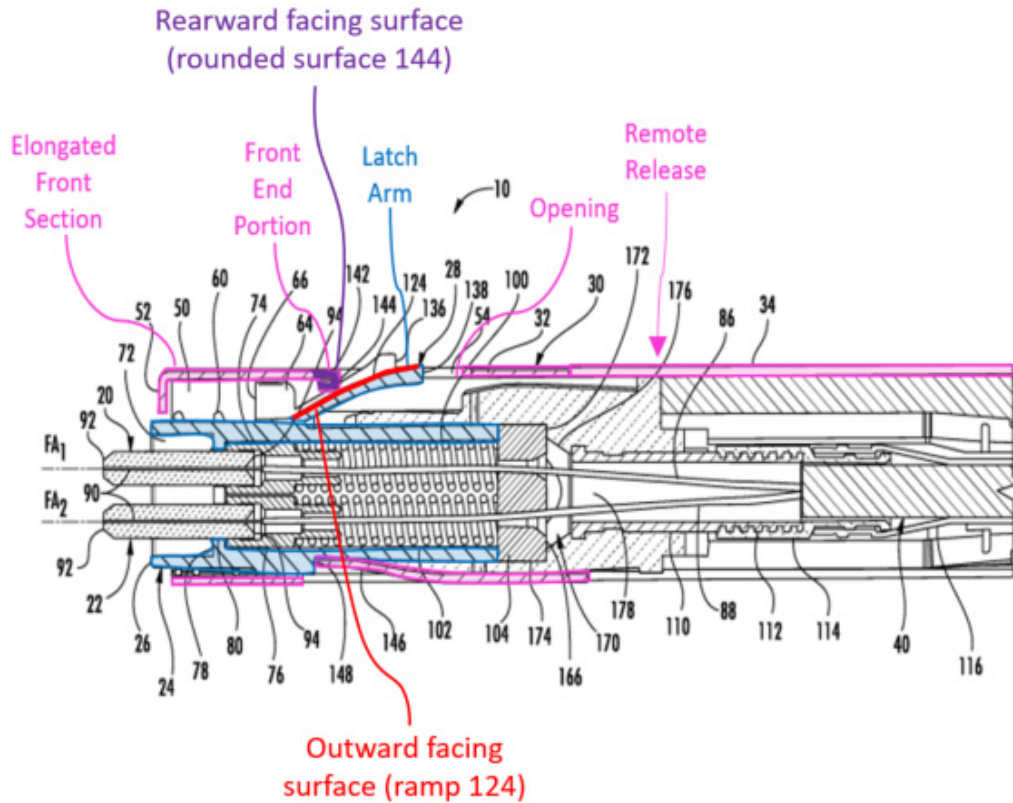
Lee discloses claim 8. Lee discloses housing portion 32 “includes an opening 54 [] though which the latch arm 28 extends” when the connector 10 is assembled. EX1005, ¶0031, FIG. 2; EX1003, ¶¶291-292.



EX1005, FIG. 2 (partial, annotated).

J. Claim 9

Lee discloses claim 9. Lee discloses the opening 54 “includes a pushing feature 142” for contacting the latch arm 24. EX1005, ¶0047, FIG. 3. “[T]he 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.” *Id.* “When 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. EX1005, ¶0065. Lee’s annotated Figure 3 illustrates claim 9. EX1003, ¶293.



EX1005, FIG. 3 (annotated).

Lee discloses a rearward-facing surface of a front-end portion (e.g., rounded surface 144 of the pushing feature 142) being configured to oppose (e.g., contacts and slides along) the outward-facing surface of the depressible latch arm (e.g., the ramp 124 of the latch arm 28). EX1003, ¶¶294-295.

K. Claim 10

Lee discloses claim 10. Lee discloses the pushing feature 142, which corresponds to “*the front end portion of the elongate front section.*” Section VII.J; EX1003, ¶298. Lee discloses the latching features 126, 128 and the terminal end 138 of the latch arm 28, which correspond to the “*free rear end portion of the*

depressible latch arm.” Section VII.E; EX1003, ¶299. Lee’s annotated Figure 3

illustrates that when the latch arm is received in the opening 54, the rear-end portion is raised in relation to the front-end portion. EX1003, ¶¶300-302.

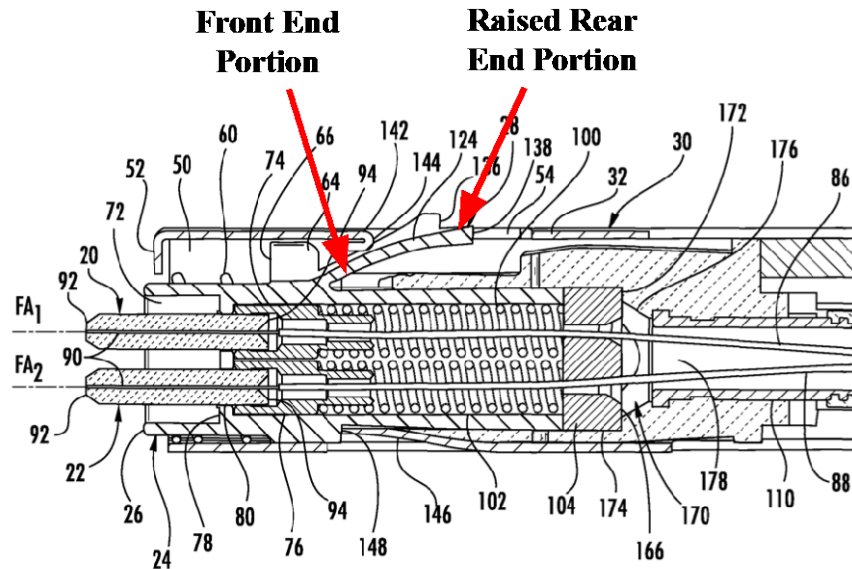
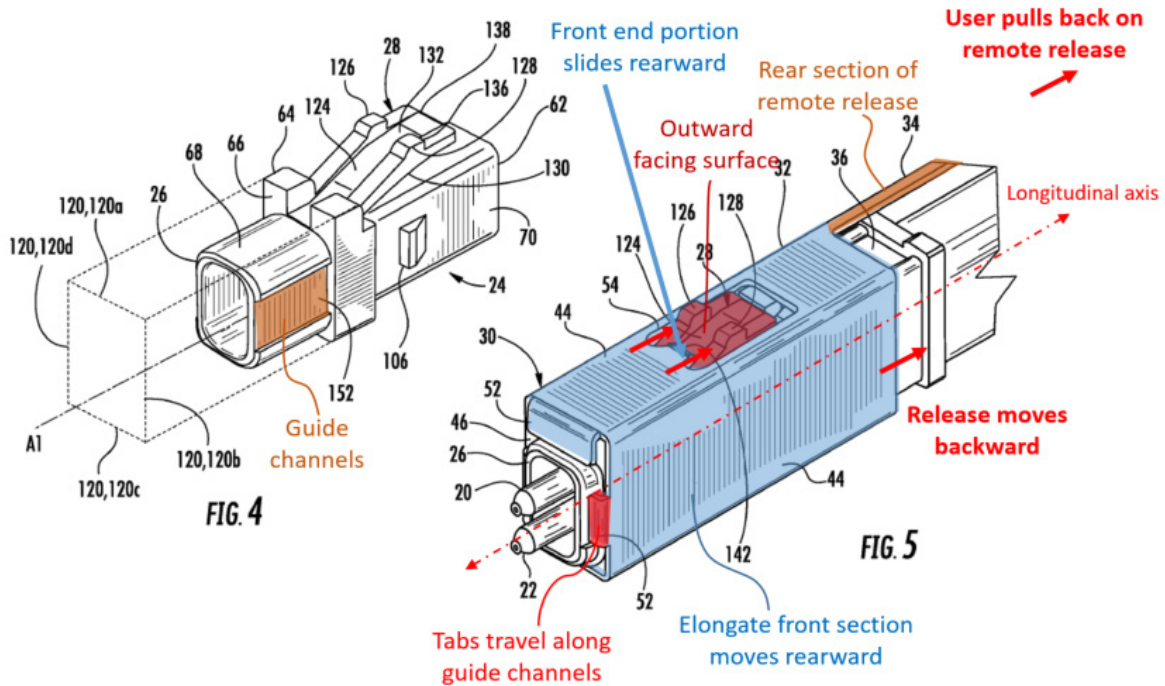


FIG. 3

EX1005, FIG. 3 (partial, annotated).

L. Claim 11

Lee discloses claim 11. Lee discloses that “[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, ¶0047. Lee’s annotated Figures 4 and 5 illustrate the claim feature. EX1003, ¶¶303-306.



EX1005, FIGs. 4, 5 (annotated).

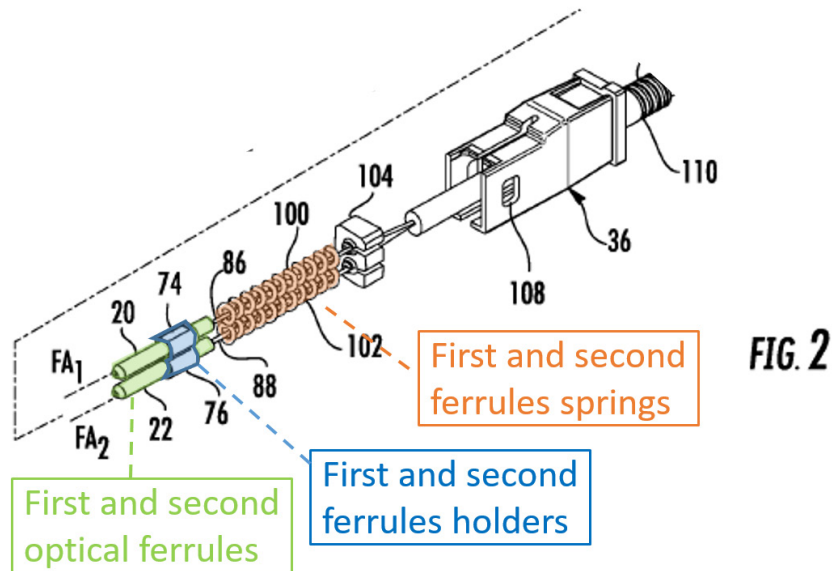
M. Claim 12

Lee discloses claim 12. Lee discloses an outer connector body 36 and an inner connector body 24 and “the outer connector body 36 is designed to be snapped onto ... the inner connector body 24.” EX1005, ¶0039; EX1003, ¶307.

A POSITA would have understood the inner connector body 24 corresponds to the recited “single front body” and the outer connector body 36 corresponds to the recited “single back body” because the outer connector body 36 is snapped onto the back portion of the inner connector body 24. Body 24 extends out in front of body 36. EX1003, ¶¶308-310.

N. Claim 13

Lee discloses claim 13. Lee 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, ¶0056, FIG. 2; EX1003, ¶¶311-313.

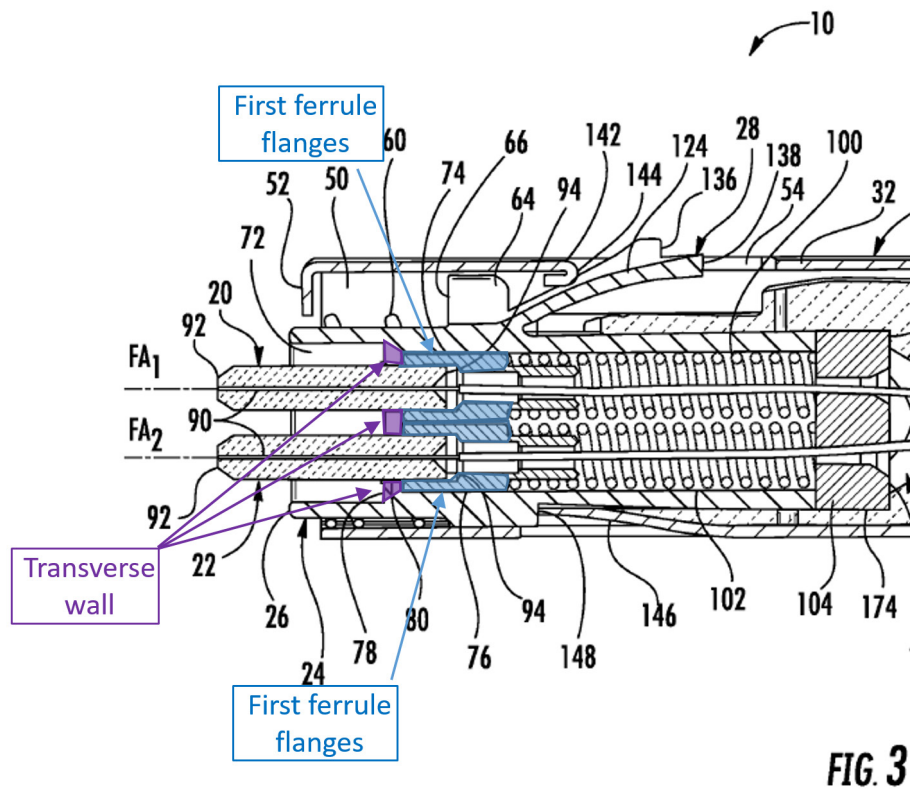


EX1005, FIG. 2 (partial, annotated).

O. Claim 14

Lee discloses claim 14. Lee discloses first and second ferrule holders 74, 76 receive the first and second ferrules 20, 22 and have “larger diameters or widths than the first and second ferrules 20, 22.” EX1005, ¶0035. Lee discloses ferrule flanges (e.g., ferrule holders 74, 76) and a POSITA would have understood ferrule flanges have front faces, i.e., forward-facing surfaces. EX1003, ¶¶314-315.

Lee discloses that an internal wall 78 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, ¶0035. Lee 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, ¶0057; EX1003, ¶314.



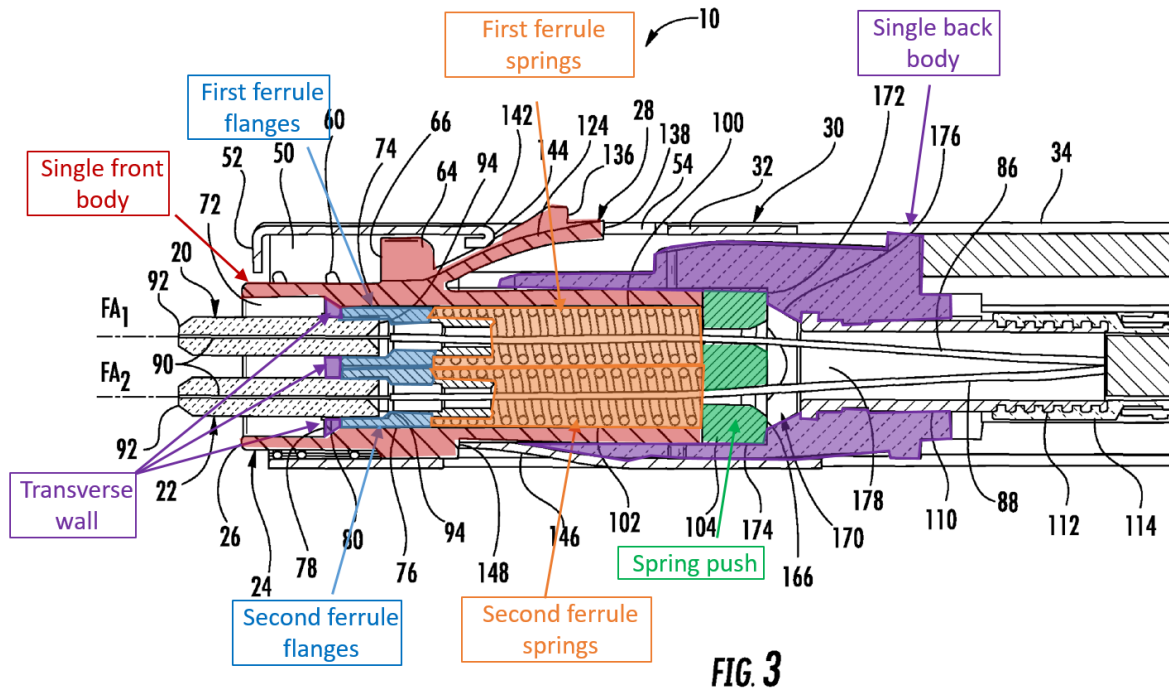
EX1005, FIG. 3 (partial, annotated).

Lee’s annotated Figure 3 illustrates the claim. Lee’s internal wall 78 corresponds to the recited “*transverse wall*,” and Lee discloses that the transverse wall simultaneously engages the forward-facing surfaces of the first and second

optical ferrule flanges because both ferrule holders 74, 76 are biased against the internal wall 78. EX1003, ¶¶316-317.

P. Claim 15

Lee discloses claim 15. Lee discloses “[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, ¶0038; EX1003, ¶319. 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, ¶0057; EX1003, ¶321.



EX1005, FIG. 3 (annotated).

Lee's annotated Figure 3 illustrates claim 15. Lee discloses that the back body (e.g., outer connector body 36) simultaneously compresses both inner springs 100, 102 through the spring push 104, and the first and second ferrule springs are between the back body and the first and second ferrule flanges engaged with the transverse wall (e.g., the internal wall 78). EX1003, ¶¶320, 322-324.

Q. Claim 19

Lee discloses claim 19. Lee discloses “[a] boot 38 is coupled to the outer connector body 36.” EX1005, ¶0030. Lee's annotated Figure 2 shows the cable 40 passes through the single boot 38 and the cable 40 includes the first and second

FIG. 2

First and second optical ferrules

A single cable boot

R. Claim 20

- 49 -

Claim 20	Claims 1, 12 - 15
[20.P]	Section VII.R.1; EX1003, ¶¶328-331.
[20.1]	Section VII.B.2 ([1.1]); EX1003, ¶¶212-213, 332.
[20.2]	Section VII.N (claim 13); EX1003, ¶¶311-313, 333.
[20.3]	Section VII.B.3 ([1.2]); EX1003, ¶¶214-217, 334.
[20.4]	Sections VII.M, VII.O, VII.P (claims 12, 14, 15); EX1003, 307-310, 314-325, 335.
[20.5]	Section VII.B.4 ([1.3]); EX1003, ¶¶218-222, 336-337.
[20.6]	Section VII.B.5 ([1.4]); EX1003, ¶¶223-239, 338-339.
[20.7]	Section VII.R.2; EX1003, ¶¶340-345.

1. [20.P]

Lee-Raven discloses “[a] *reversible polarity fiber optic connector*.” Lee discloses “a *fiber optic connector*.” Section VII.B.1; EX1003, ¶328.

PO may allege Lee does not expressly teach [20.P], but Raven explicitly does.

Raven discloses a fiber optic connector that is configured to “reverse the polarity of first and second optical fibres.” EX1006, 2:22-28; EX1003, ¶330.

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 for the same reasons as discussed in Section VII.A. EX1003, ¶331.

2. [20.7]

Lee-Raven discloses [20.7].

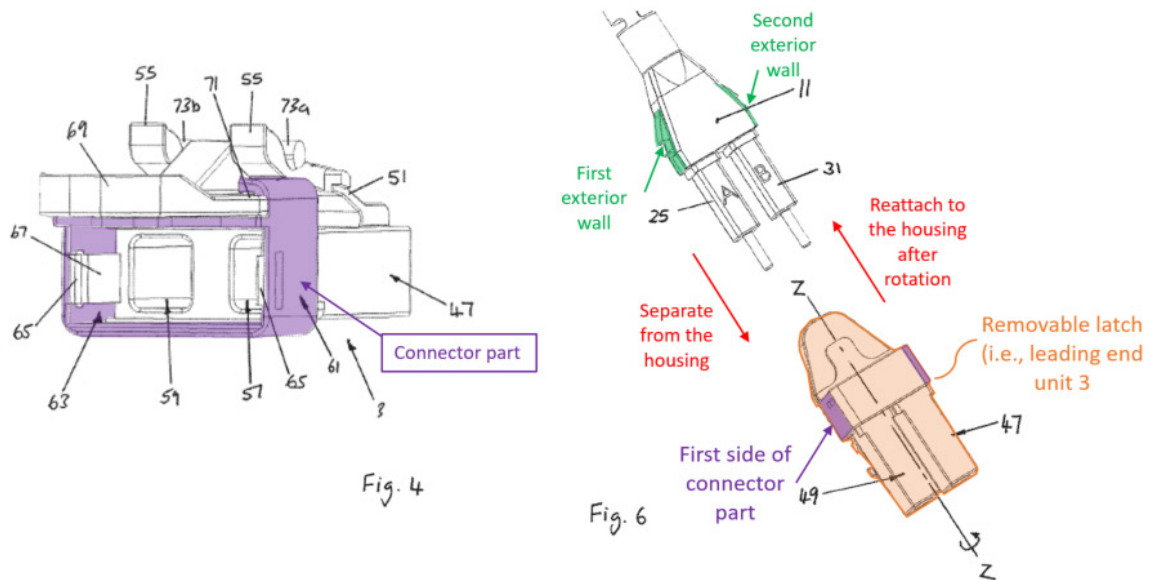
(a) Lee

PO 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 Raven does. EX1003, ¶¶340-341.

(b) Raven

Raven discloses a removable latch (e.g., a leading end unit 3) including a connector part 61, and the leading end unit 3 is “arranged to be mounted onto the leading end of the housing 5.” EX1006, 11:13-22, FIG. 4. Raven’s annotated Figure 6 shows 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 is mounted on the first exterior wall. This corresponds to the recited “*positioning the removable latch on the first exterior wall.*” EX1003, ¶¶342-343. To reverse polarity, the leading end unit 3 “is separated from the housing 5,” “rotated through 180° about a longitudinal axis Z-Z (see FIG. 6)[,] and is reattached to the housing 5 in a second orientation.” EX1006, 12:35-52. In the second orientation, the first side of the connector part is mounted on the second exterior wall. This corresponds to the recited “*positioning the removable latch on the second exterior wall.*” EX1003, ¶¶342-343. The polarity of the optical fibers is reversed in the second orientation with respect to

the initial orientation, which corresponds to the recited “*second polarity.*” EX1006, 12:35-52; EX1003, ¶¶342-343.



EX1006, FIGs. 4, 6 (annotated).

(c) Motivation to Combine

In combining 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 connector. Section VII.A. A POSITA would have understood Lee-Raven renders this element obvious. Section VII.A; EX1003, ¶¶344-345.

S. Claims 21-31, 35-36, 46-47, and 53.

Claims 21-31, 35-36, 46-47, and 53 recite substantially similar claim language to claims 1, 3-11, and 19. Claims 21-31, 35-36, 46-47, and 53 are obvious in view of Lee-Raven. Claim 36 is an independent claim. Claims 46-47

and 53 depend directly or indirectly on claim 36. The table demonstrates the overlapping elements of claims 21-31, 35-36, 46-47, and 53 with claims 1, 3-11, and 19.

Claims 21-31, 35-36, 46-47, and 53	Claims 1, 3-11, 19
Claims 21, 46	Section VII.B.5 ([1.4]); EX1003, ¶¶234-237, 346-347, 397-400.
Claims 22, 47	Section VII.B.5 ([1.4]); EX1003, ¶¶236-239, 348-349, 401-02.
[36pre]	Section VII.B.1 ([1pre]); EX1003, ¶¶210-211, 370.
[36.1]	Section VII.B.2 ([1.1]); EX1003, ¶¶212-213, 371-372.
[36.2]	Section VII.B.3 ([1.2]); EX1003, ¶¶214-217, 373-374.
[36.3]	Section VII.B.5 ([1.4]); EX1003, ¶¶228-233, 375-378.
Claim 23, [36.4]	Section VII.D (claim 3); EX1003, ¶¶247-251, 350-51, 379-380.
Claim 24, [36.5]	Section VII.E (claim 4); EX1003, ¶¶252-256, 352-353, 381-382.
Claim 25, [36.6]	Section VII.F (claim 5); EX1003, ¶¶257-262, 354-355, 383-384.
Claim 26, [36.7]	Section VII.G (claim 6); EX1003, ¶¶263-267, 356-357, 385-386.
Claim 27, [36.8]	Section VII.H (claim 7); EX1003, ¶¶275-290, 358-359, 387-388.
Claim 28, [36.9]	Section VII.I (claim 8); EX1003, ¶¶291-292, 360-361, 389-390.
Claim 29, [36.10]	Section VII.J (claim 9); EX1003, ¶¶293-296, 362-363, 391-392.
Claim 30, [36.11]	Section VII.K (claim 10); EX1003, ¶¶297-302, 364-365, 393-394.

Claims 21-31, 35-36, 46-47, and 53	Claims 1, 3-11, 19
Claim 31, [36.12]	Section VII.L (claim 11); EX1003, ¶¶303-306, 364-365, 395-396.
Claims 35, 53	Section VII.Q (claim 19); EX1003, ¶¶326-327, 368-369, 403.

VIII. GROUND 2: CLAIMS 16-18, 32-34, 37-45, AND 48-52 ARE OBVIOUS OVER LEE-RAVEN IN VIEW OF NGUYEN.

A POSITA would have found claims 16-18, 32-34, 37-45, and 48-52 obvious in view of Lee (EX1005), Raven (EX1006) and Nguyen (EX1007). EX1003, ¶404.

A. A POSITA would have been motivated to combine Lee-Raven and Nguyen with a reasonable expectation of success.

A POSITA would have been motivated 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, ¶0044; EX1003, ¶405.

First, Lee, Raven, Nguyen, and the ’701 patent claims 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. EX1005, ¶0030; EX1006, Abstract, 11:13-51; EX1007, ¶¶0002, 0004. A POSITA would have understood that Lee, Raven, and Nguyen are analogous prior art to the ’701

patent and would recognize that the teachings of Nguyen's connector are applicable to Lee-Raven. EX1003, ¶406.

Second, the prior-art references themselves provide a teaching, suggestion, and/or 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, ¶0044. Lee provides similar motivations to Nguyen and explains that a desire for a high-bandwidth optical connector tends to drive a need for a high density of interconnects. EX1005, ¶0004. 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, 1:47-54. Given each of Lee, Raven and Nguyen's focus on creating high-bandwidth optical connectors with 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, ¶0044; EX1003, ¶¶407-408.

A POSITA would have had a reasonable expectation of success in combining the teachings of Nguyen's ferrule pitch size with Lee-Raven's fiber optic connector, because the connectors are used to receive two fiber optic ferrules. EX1003, ¶¶409-410. The Lee-Raven duplex fiber optic connector would perform

as originally intended after the ferrule pitch size is modified by Nguyen's teachings. *Id.* A POSITA would have understood that modifying the ferrule pitch sizes of the Lee-Raven's connector would allow the Lee-Raven connector to work in a high port density environment. *Id.*

B. Claims 16, 32, 37, and 48

Lee-Raven in view of Nguyen teaches claims 16, 32, 37, and 48.

Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." EX1007, ¶0037.

Lee-Raven-Nguyen renders this feature obvious and are obvious to combine, as explained in Section VIII.A. EX1003, ¶¶410-414, 419, 422, 431.

C. Claims 17, 33, 44, 49, and 51

Lee-Raven in view of Nguyen teaches claims 17, 33, 44, 49, and 51.

Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." EX1007, ¶0037.

Lee-Raven-Nguyen renders this feature obvious and are obvious to combine, as explained in Section VIII.A. EX1003, ¶¶415-416, 420, 429, 432, 434.

D. Claims 18, 34, 45, 50, and 52

Lee-Raven in view of Nguyen teaches claims 18, 34, 45, 50, and 52.

Nguyen discloses that "a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm." EX1007, ¶0037.

Lee-Raven-Nguyen renders this feature obvious and are obvious to combine, as explained in Section VIII.A. EX1003, ¶¶417-418, 421, 430, 433, 435.

E. Claims 38-43

Claims 38-43 recite substantially similar claim language to claims 1 and 12-15. Claims 38-43 are obvious in view of Lee, Raven, and Nguyen for similar reasons. The table demonstrates the overlapping elements of claims 38-43 with claims 1 and 12-15.

Claims 38-43	Claims 1, 12-15
Claim 38	Section VII.M (claim 12); EX1003, ¶¶307-310, 423.
Claim 39	Section VII.N (claim 13); EX1003, ¶¶311-313, 424.
Claim 40	Section VII.O (claim 14); EX1003, ¶¶314-318, 425.
Claim 41	Section VII.P (claim 15); EX1003, ¶¶319-325, 426.
Claim 42	Section VII.B.5 ([1.4]); EX1003, ¶¶234-235, 238-239, 346-347, 397-400, 427.
Claim 43	Section VII.B.5 ([1.4]); EX1003, ¶¶236-239, 348-349, 401-402, 428.

IX. GROUND 3: CLAIMS 1-6, 12-15, 19-26, AND 35 ARE OBVIOUS OVER CONNELLY IN VIEW OF LIN'658.

A POSITA would have found claims 1-6, 12-15, 19-26, and 35 obvious over Connelly (EX1008) in view of Lin'658 (EX1009). EX1003, ¶436.

A. A POSITA would have been motivated to combine Connelly and Lin'658 with a reasonable expectation of success.

A POSITA would have found it obvious to combine Connelly and Lin'658 to arrive at the subject matter of the claims. A POSITA would have been motivated

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. EX1003, ¶¶437-445, 448; EX1008, 2:34-41, 2:61-64; EX1009, 4:63-67, 5:25-43, 5:59-6:9.

First, Connelly and Lin'658 are both directed to duplex fiber optic connectors (e.g., connectors with two ferrules) with a latch for easy engagement with a receptacle such as a jack. EX1008, 2:18-25, 3:56-60; EX1009, 4:63-67, 5:15-20, 5:43-52. A POSITA would have understood that Connelly and Lin'658 are analogous prior art to the '701 patent and would have recognized that Lin'658's teachings of removable latches are applicable to Connelly. EX1003, ¶446.

Second, the prior-art references themselves provide a teaching, suggestion, and/or motivation that would have led a POSITA to combine the teachings of Lin'658's removable latch with Connelly. Lin'658 recognizes the need to exchange/alter polarity of the connectors quickly in order to avoid damaging the fiber optic transmitter/receiver. EX1009, 1:52-61. Lin'658 discloses a fiber optic connector that enables polarity exchange in a manner that "substantially improves convenience and efficacy" during operation. EX1009, 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 3 from being damaged due to excessive twisting.” EX1009, 6:4-9. Lin’658 expressly provides a motivation to allow a user to easily change polarity. EX1003, ¶447.

Connelly is also directed to a duplex fiber optics connector and Connelly’s objective 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 assemble and repair. EX1008, 1:38-51. A POSITA would have understood Connelly’s duplex fiber optics connector has the same issue that Lin’s 658 tries to address in terms of repair and polarity change operations. EX1003, ¶448.

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 cables, as taught by Lin’658, EX1009, 3:5-10, 6:4-9, and Connelly’s goal of a connector that is inexpensive and relatively simple to assemble and repair can also be achieved. EX1008, 1:38-51; EX1003, ¶449.

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). EX1003, ¶450. 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. *Id.*

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, 5:25-43. A POSITA would have understood that employing the teachings of Lin'658's groove/block interface is one example of modifying Connelly's optic plug to make latch 91 removably coupled to the exterior walls of Connelly's housing 38. EX1003, ¶451.

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. EX1003, ¶¶452-454. A POSITA would have understood that adding coupling features such as a grab, guide groove, or guide block to the exterior walls of Connelly's connector housing would still allow Connelly's latch 91 to engage with jack 21 of fiber optic socket 2. Indeed, it was well known to make similar latches with depressible arms releasably locked to optical plug housings, as disclosed by Lin'658. *Id.* Connelly's modified fiber optic connector would have the same fundamental principle of operation, and the combination with Lin'658 will not render Connelly unsatisfactory for its intended purpose. *Id.*

B. Claim 1

1. Preamble

Connelly discloses a fiber optic connector. EX1008, 2:18-26; EX1003, ¶¶455-456.

2. [1.1]

Connelly discloses [1.1]. Connelly's fiber optic plug 34 includes first and second plug pre-assemblies 40, 42. EX1008, 2:27-29. Each of the plug pre-assemblies 40, 42 includes ceramic ferrule 92. EX1008, 2:65-3:1. Connelly's annotated Figure 1 illustrates first and second optical ferrules. EX1003, ¶¶457-458.

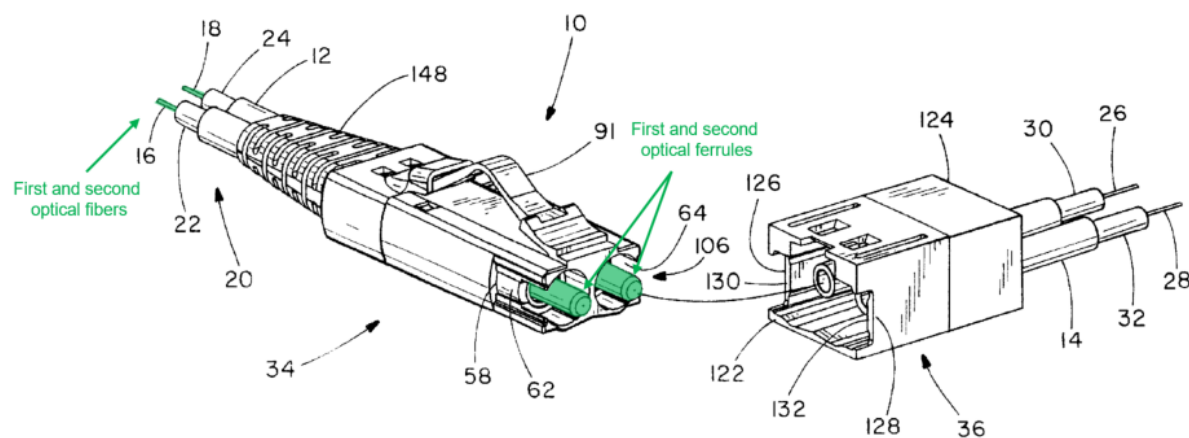


FIG. 1

EX1008, FIG. 1 (annotated).

3. [1.2]

Connelly discloses [1.2].

Connelly discloses “a connector housing having a longitudinal axis.”

EX1003, ¶461. Connelly discloses a plug 34 that “includes a housing 38 ... and an

features are depicted by Connelly's annotated Figure 2. EX1003, ¶462.



EX1008, FIG. 2

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“wall.” EX1003, ¶¶463-465. Connelly discloses housing 38 includes top wall 50, bottom wall 52, and side walls 54, 56, which define “housing passageways 78, 80.” EX1008, 2:33-44, 2:51-58.

Connelly discloses “first and second side windows 62, 64.” EX1008, 2:37-40; EX1003, ¶465. Connelly explains plug re-assembles 40, 42 include ceramic ferrule 92 and “reside within and pass through the passageways 78, 80,” “with the ceramic ferrule 92 extending beyond the front housing end 46.” EX1008, 3:8-12, FIG. 1; EX1003, ¶463. A POSITA would have understood housing 38 has an exterior portion (e.g., portions of top wall 50, bottom wall 52, and side walls 54, 56) that partially surrounds the first and second optical ferrules. EX1003, ¶464.

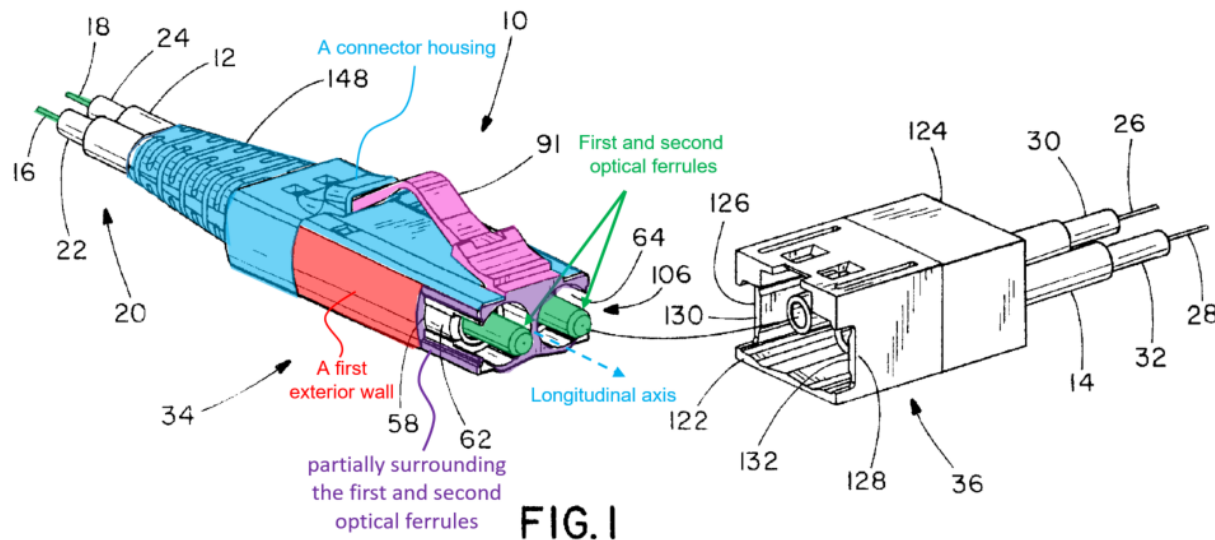


FIG. 1

EX1008, FIG. 1 (annotated).

4. [1.3]

Connelly-Lin'658 teaches [1.3].

(a) Connelly

Connelly discloses a latch 91. EX1008, 2:61-64. PO may allege Connelly does not expressly teach latch couplings positioned on each of the first and second exterior walls of the connector housing, but Lin'658 does. EX1003, ¶¶467-468.

(b) Lin'658

Lin'658 discloses a casing 13 (i.e., a latch) having a clip 134, guide blocks 112, and necks 115. EX1009, 5:6-14, 5:43-52, FIG. 5. Lin'658 describes a guide groove 132 and a grab 133 at each of the two sides of casing 13 corresponding to “two guide blocks 112” for restricting and guiding 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, 5:28-43. Lin'658's annotated Figure 5 shows the combined guide block 112 and neck 115 on each of the two sides of casing 13 correspond to the recited “*latch coupling on each of the first and second exterior walls of the connector housing.*” EX1003, ¶469.

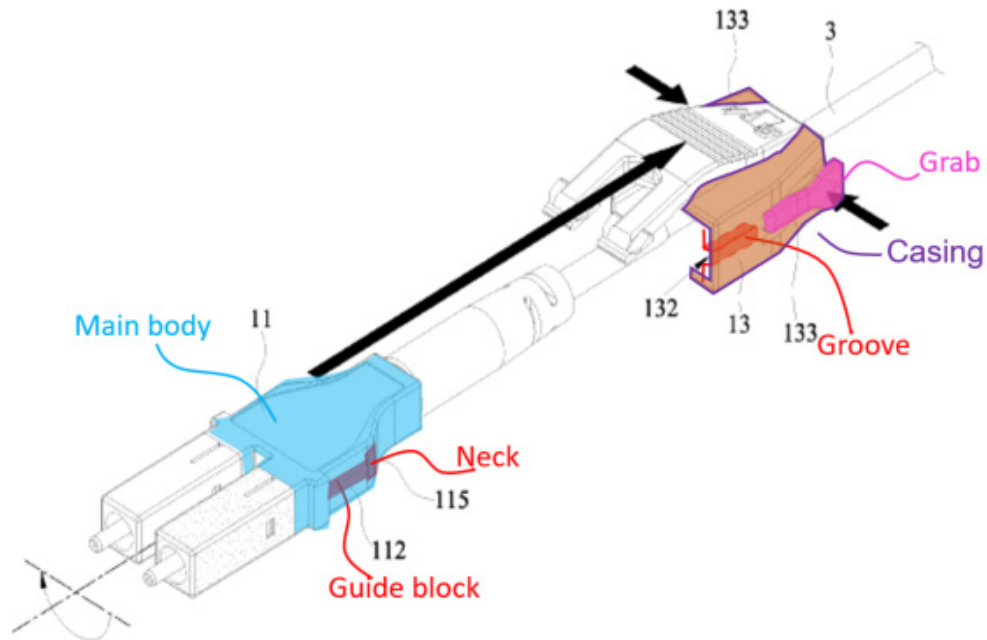


Fig. 5

EX1009, FIG. 5 (annotated).

(c) Motivation to Combine

In combining Connelly and Lin'658, a POSITA would have found it obvious to make Connelly's latch 91 removable, as taught by Lin'658's casing 13, and to add latch couplings on the first and second side walls of Connelly's housing 38 to engage the removable latch, e.g., the modified latch 91, thereby allowing the polarity of Connelly's connector to be altered in a manner that substantially improves convenience and efficacy during operation. EX1009, 3:5-10, 6:4-9; Section IX.A; EX1003, ¶470.

5. [1.4]

Connelly-Lin'658 teaches [1.4].

(a) Connelly

Connelly discloses a latch 91. EX1008, 2:61-64. PO 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 Connelly, but Lin'658 does. EX1003, ¶¶472-473.

(b) Lin'658

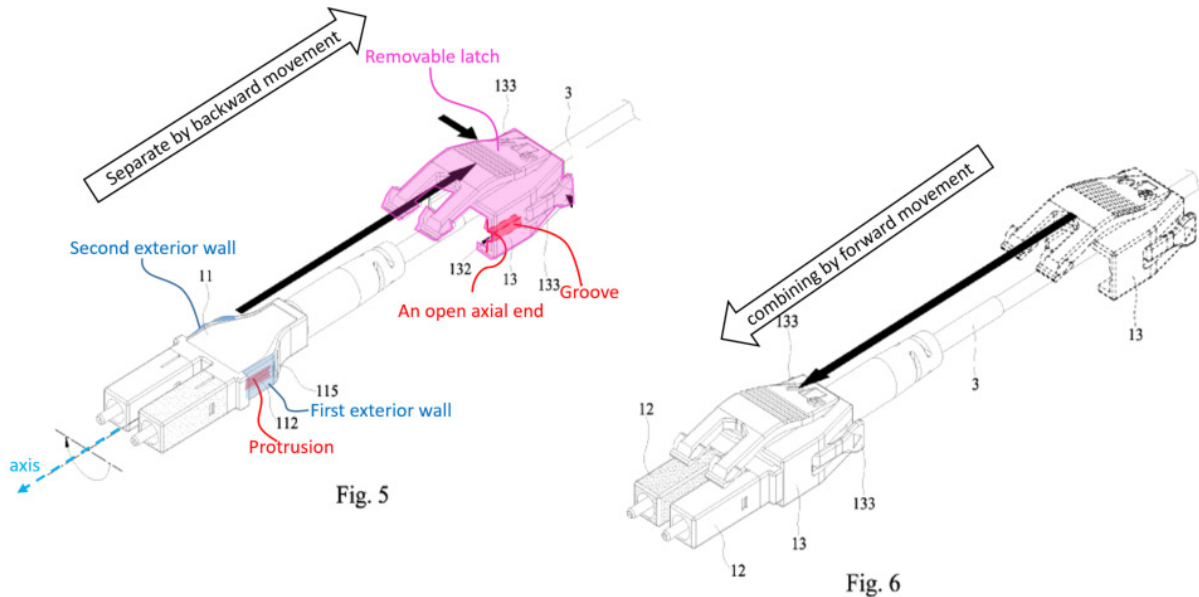
Lin'658 discloses “a removable latch.” Lin'658 discloses a casing 13 having a clip 134 positioned on the top, and clip 134 is used to engage with a jack 21 of a fiber optic socket 2. EX1009, 5:43-52. Lin'658 also discloses that casing 13 can be separated from main body 11. EX1009, 5:34-43, FIG. 5. A POSITA would have understood Lin'658's casing 13 corresponds to the recited “*removable latch*.” EX1003, ¶477.

Lin'658 discloses that the removable latch engages “*either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling*.” EX1003, ¶¶477-479.

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. Section IX.B.4 ([1.3]); EX1009, 5:6-8. At each of the two sides of casing 13, there are a guide groove 132 and a grab 133 corresponding to one of two guide blocks 112 to “restrict and guide the casing 13” in accordance with “the movement direction of the main body 11.”

EX1009, 5:28-34. Main body 11 is “fixing” with casing 13 by “combining the casing 13 with the main body 11 via a forward movement.” EX1009, 5:34-43, FIG.

6.



EX1009, FIGS. 5, 6 (annotated).

A POSITA would have understood “engaging either of the first and second exterior wall latch couplings” means one of the following configurations: i) engaging the first exterior wall latch coupling, ii) engaging the second exterior wall coupling, or iii) engaging both the first and the second exterior wall latch couplings. A POSITA would have understood that Lin’658’s guide groove 132 of 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.” EX1003, ¶479.

Lin’658 discloses that “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.” EX1003, ¶¶480-482. Lin’658 discloses at each of the two sides of casing 13, there are a guide groove 132 and a grab 133 corresponding to one of the two guide blocks 112. EX1009, 5:28-30. Lin’658’s annotated Figure 5 shows groove 132 has an open axial end and extends along the axis.

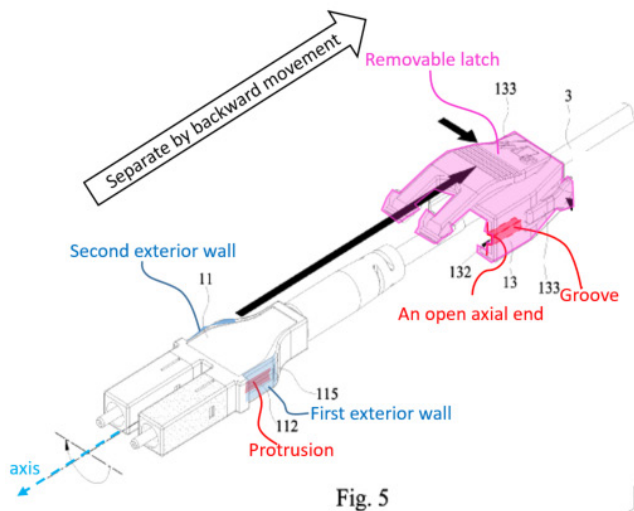


Fig. 5

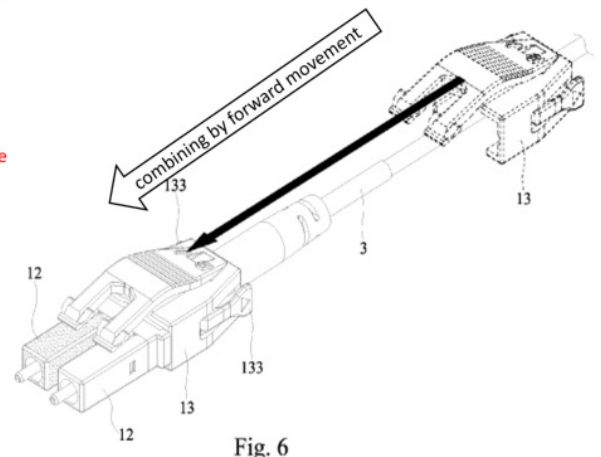


Fig. 6

EX1009, FIGs. 5, 6 (annotated).

Lin'658 discloses “a guide block 112” (i.e., a protrusion) is positioned at each of the “two sides of the main body 11 rear end outer walls.” EX1009, 5:6-8. Two guide blocks 112 “individually correspond to” two guide grooves 132 so they can “restrict and guide the casing 13.” EX1009, 5:30-34. A POSITA would have understood that in order to “restrict and guide the casing 13,” guide blocks 112 are inserted into corresponding guide grooves 132 through the open axial end by movement along the axis. *Id.*; EX1003, ¶480.

While Lin'658 discloses the guide block (i.e., protrusion) on the connector housing, and guide groove 132 on casing 13 (i.e., the removable latch), a POSITA would have understood that the positions of guide groove 132 and guide block 112 (i.e., protrusion) can be reversed. For example, guide groove 132 can be provided on the connector housing (instead of on the casing 13) and guide block 112 (i.e., protrusion) can be provided on casing 13 (i.e., removable latch), and the same functionality of “restrict[ing] and guid[ing] the casing 13” can still be achieved. EX1009, 5:30-34; EX1003, ¶481.

In fact, while the '701 patent discloses a protrusion on the removable latch, the '701 patent recognizes that “[v]arious alternatives to the protrusion” “may be used in the optical connectors of this disclosure. For example, the protrusion may be provided by the connector housing.” EX1001, 10:30-34.

(c) Motivation to Combine

In combining Lin'658's removable latch with Connelly, a POSITA would have sought to modify Connelly's connector housing 38, as taught by Lin'658, and to 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. Accordingly, Connelly-Lin'658 disclose [1.4]. Section IX.A; EX1003, ¶¶483-484.

C. Claim 2

Connelly-Lin'658 teaches claim 2. PO may allege Connelly does not expressly disclose that “*the protrusion is movable along the longitudinal axis.*” But Lin'658 does. EX1003, ¶¶485-486.

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.” Section IX.B.5; EX1009, 5:30-34; EX1003, ¶¶487-488.

In combining Connelly and Lin'658, a POSITA would have sought to attach Connelly's latch 91 to removable casing 13, as taught by Lin'658, that includes a protrusion for the same reasons discussed in Section IX.A. EX1003, ¶¶489-490.

D. Claim 3

Connelly-Lin'658 teaches claim 3.

Connelly discloses a housing 38 that includes “a conventional latch 91” that “extend[s] from the front housing end 46 along the top wall 50.” EX1008, 2:61-64.

Connelly's annotated Figure 1 illustrates a depressible latch arm and a base portion. EX1003, ¶491.

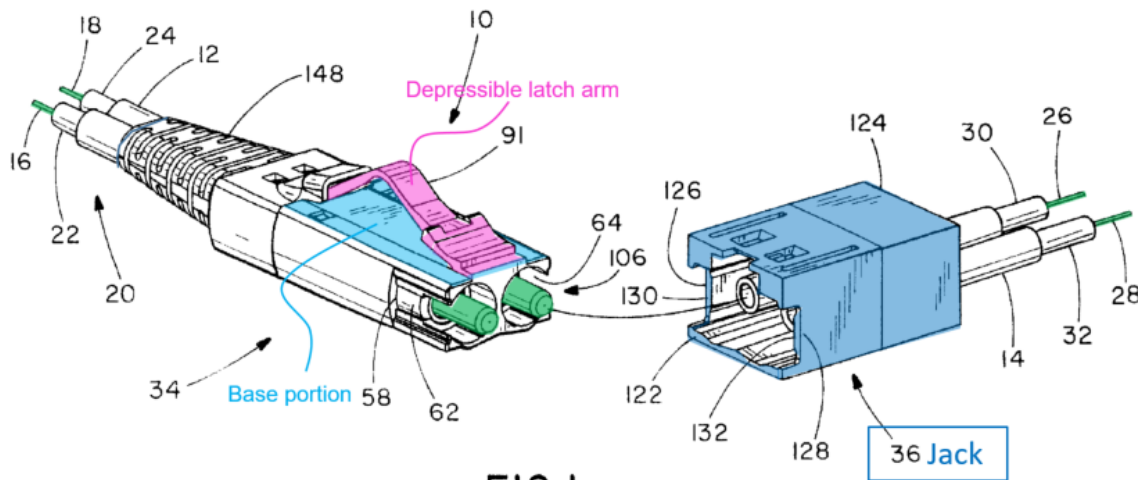


FIG. 1

EX1008, FIG. 1 (annotated).

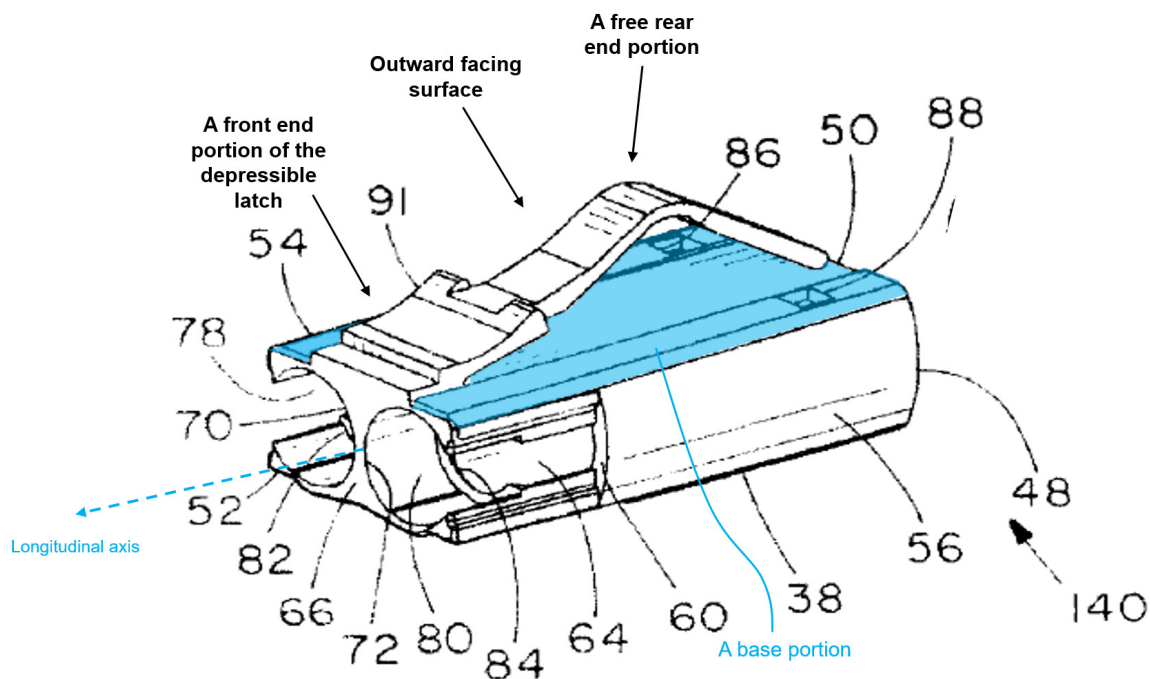
PO may allege that Connelly does not explicitly teach a removable latch. But Lin'658 does. Section IX.B.5. In combining Lin'658's removable latch (e.g., casing 13) with Connelly's housing 38 and latch 91, a POSITA would have understood that instead of integrally forming with housing 38, Connelly's latch 91 would be modified by Lin'658 to attach to the base portion of casing 13, and Connelly's housing 38 would be modified to receive casing 13 so that Connelly's latch 91 would be releasably locked to the side walls of Connelly's modified housing 38. EX1003, ¶¶494-495.

Connelly-Lin'658 renders claim 3 obvious. Section IX.A; EX1003, ¶496.

E. Claim 4

Connelly-Lin'658 teaches claim 4.

Connelly discloses a depressible latch arm (e.g., latch 91) and a base portion (e.g., top wall 50 of the housing 38). Section IX.D; EX1008, 2:61-64. Connelly's annotated Figure 2 shows latch 91 has a front-end portion, a free, rear-end portion, and an outward-facing longitudinal surface. EX1003, ¶¶498-499.

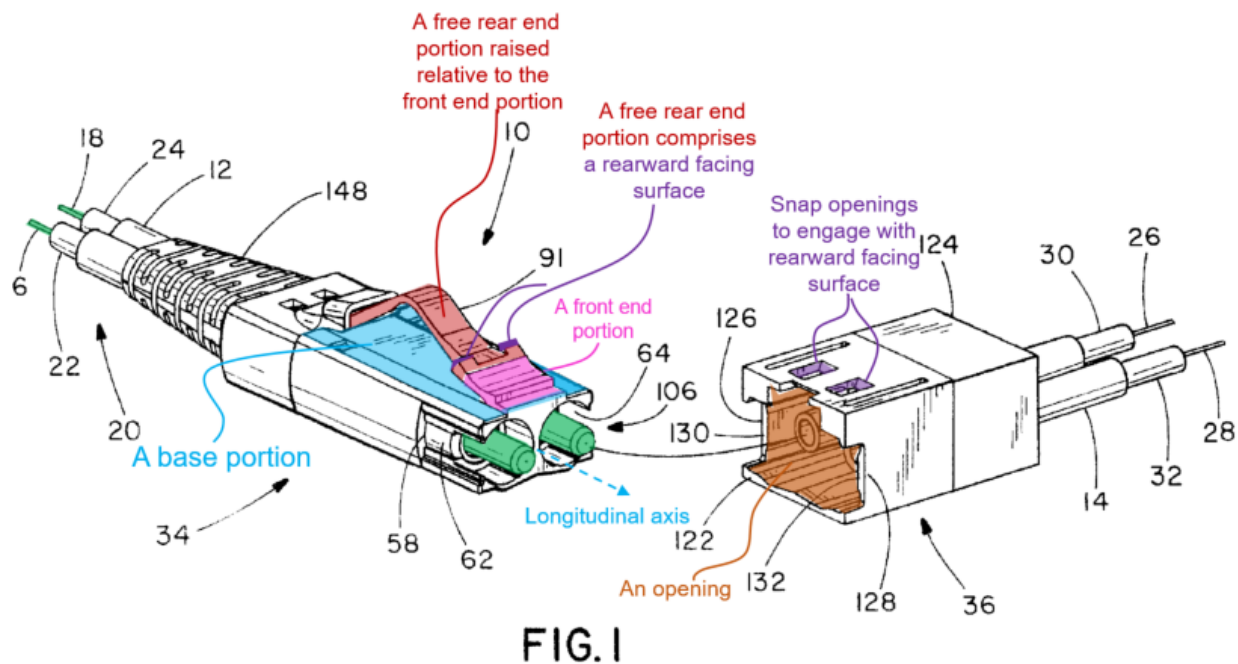


EX1008, FIG. 2 (partial, annotated).

PO may allege that Connelly does not explicitly teach a removable latch, but Connelly-Lin'658 does. Sections IX.B.5 ([1.4]), IX.D (claim 3). A POSITA would have understood Connelly-Lin'658 renders claim 4 obvious. Section IX.A; EX1003, ¶¶500-501.

F. Claim 5

Connelly-Lin'658 teach claim 5. EX1003, ¶502. Connelly discloses a jack 36 that “receives the plug 34” “through front[] jack end 122” and “the latch 91 snap-locks to the jack 36 in the interlocked state.” EX1008, 2:23-28, 3:54-60. Connelly discloses a receptacle (e.g., jack 36) with an opening (e.g., through its front jack end 122). Connelly's annotated Figure 1 illustrates latch arm 91 has rearward-facing surfaces configured to engage in the snap openings of jack 36 to inhibit the removal of plug 34 from jack 36. EX1003, ¶¶503-504.



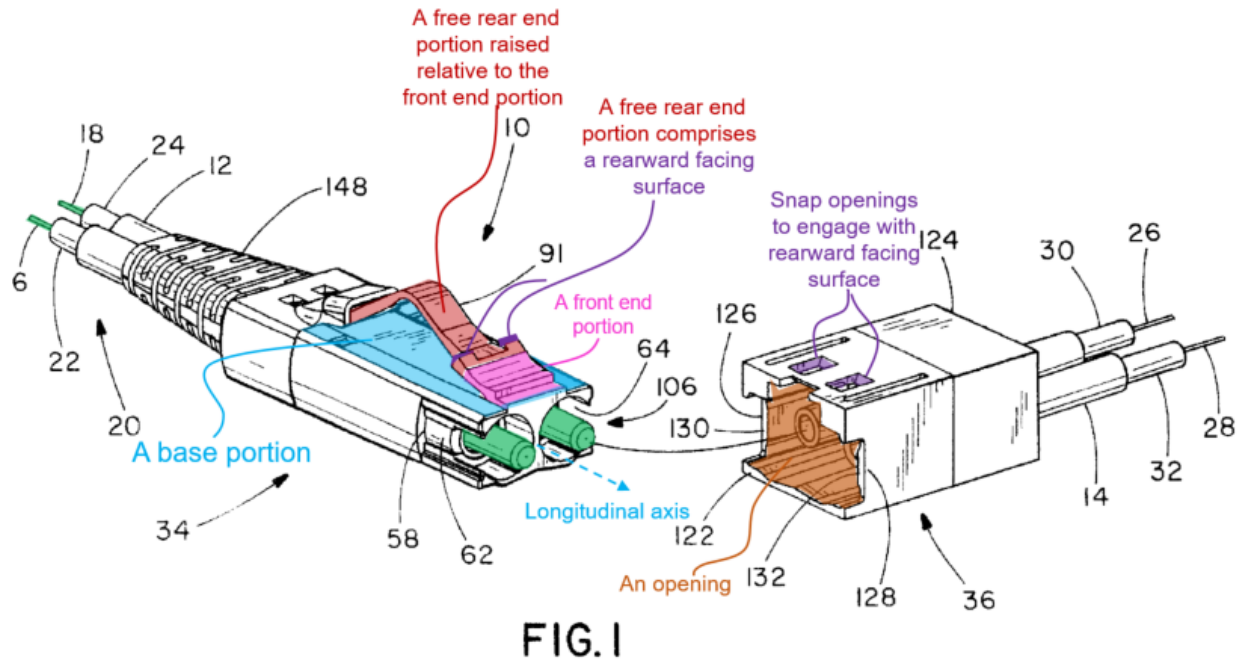
EX1008, FIG. 1 (annotated).

G. Claim 6

1. [6.1]

Connelly discloses [6.1].

Connelly's annotated Figure 1 illustrates that the free, rear-end portion of the depressible latch arm is raised relative to the front-end portion. EX1003, ¶¶507-508.



EX1008, FIG. 1 (annotated).

2. [6.2]

Connelly discloses [6.2].

Connelly discloses that latch 91 snap-locks to jack 36. Section IX.F. A POSITA would have understood the free, rear-end portion of latch 91 is depressed to cause the rearward-facing surfaces to disengage the snap from openings of jack 36 and to unlatch the fiber optic plug 34 from the jack 36. EX1003, ¶¶509-510.

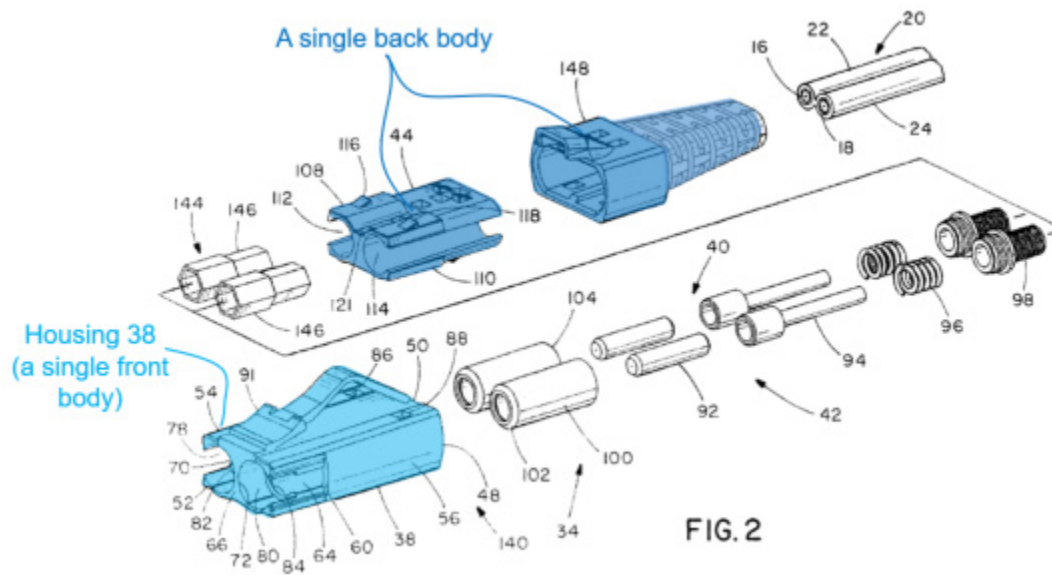
A POSITA would have understood Connelly-Lin'658 renders [6.2] obvious. Section IX.A; EX1003, ¶¶511-513.

H. Claim 12

Connelly discloses claim 12.

A POSITA would know that multiple components could be assembled to create a single body. EX1003, ¶¶515-516. Connelly's connector housing includes housing 38, insert 44, and boot 148. Section IX.B.3 ([1.2]); EX1003, ¶517.

Connelly's annotated Figure 2 shows the housing 38 is "*a single front body*" and insert 44 snap-locked with boot 148 is "*a single back body*." EX1003, ¶517.



EX1008, FIG. 2 (annotated).

I. Claim 13

Connelly discloses claim 13.

Connelly discloses pre-assemblies 40, 42 that include "ceramic ferrule 92, ferrule holder 94, [and] spring 96." EX1008, 2:65-3:1. Connelly's annotated Figure

3 illustrates that the ferrule springs are received by ferrule holders 94 and ceramic ferrule 92. EX1003, ¶¶519-520.

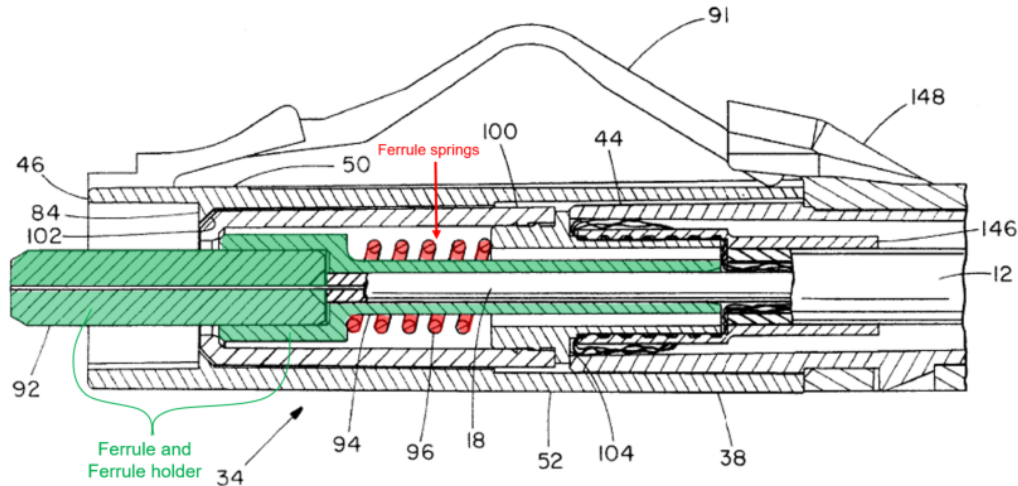
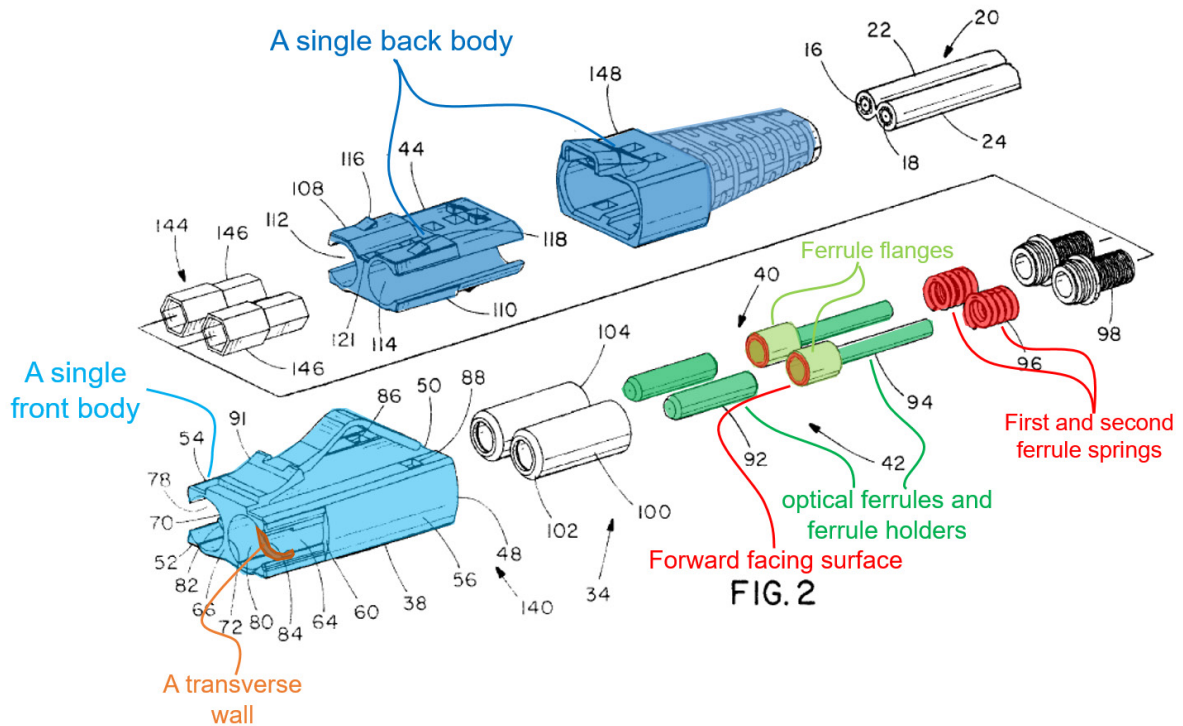


FIG. 3

EX1008, FIG. 3 (annotated).

J. Claim 14

Connelly discloses claim 14. Connelly's annotated Figure 2 discloses ferrule flanges, which are part of the ferrule holders 94. Each ferrule flange has a forward-facing surface. EX1003, ¶521.

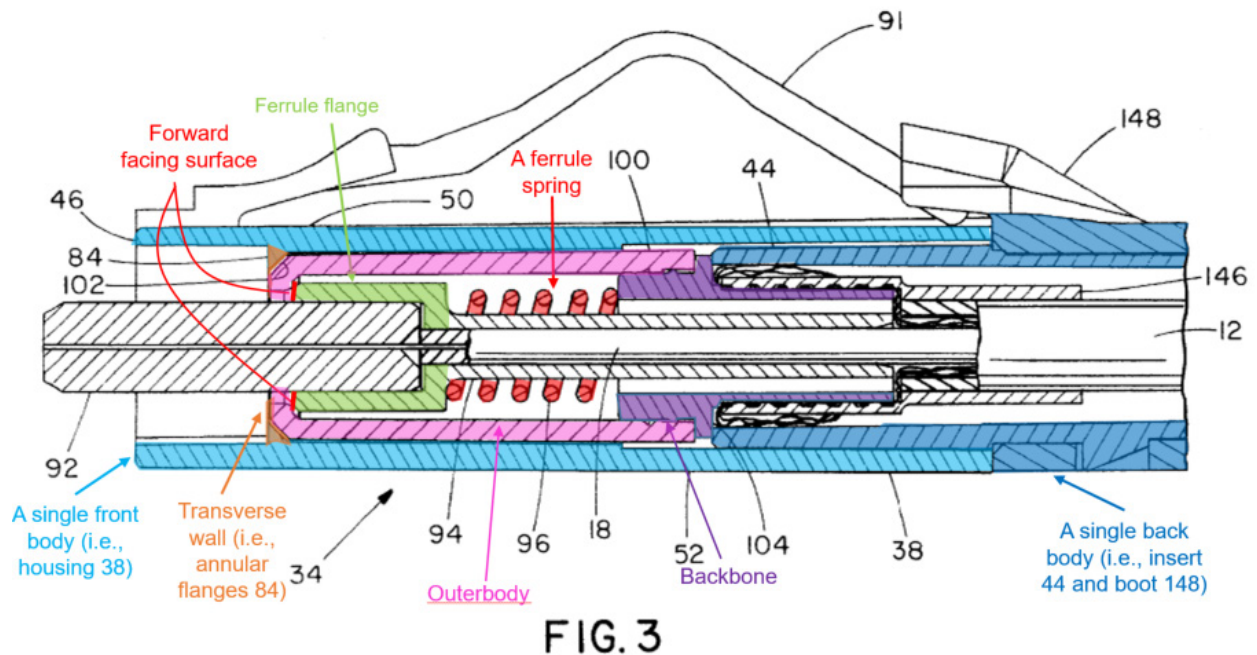


EX1008, FIG. 2 (annotated).

Connelly discloses “a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges.”

Connelly discloses “annular flanges 82, 84” within the cylindrical passageways 78, 80 of the housing 38 (e.g., single front body.) EX1008, 2:42-58, FIG. 2; EX1003, ¶522.

A POSITA would have understood that annular flanges 82, 84 correspond to the recited “*transverse wall*” located inside the single front body (e.g., housing 38). EX1003, ¶524. Connelly annotated Figure 3 illustrates that annular flanges 82, 84 indirectly and simultaneously engage with forward-facing surfaces of the first and second ferrule flanges through the outerbody 100. EX1003, ¶¶523-526.



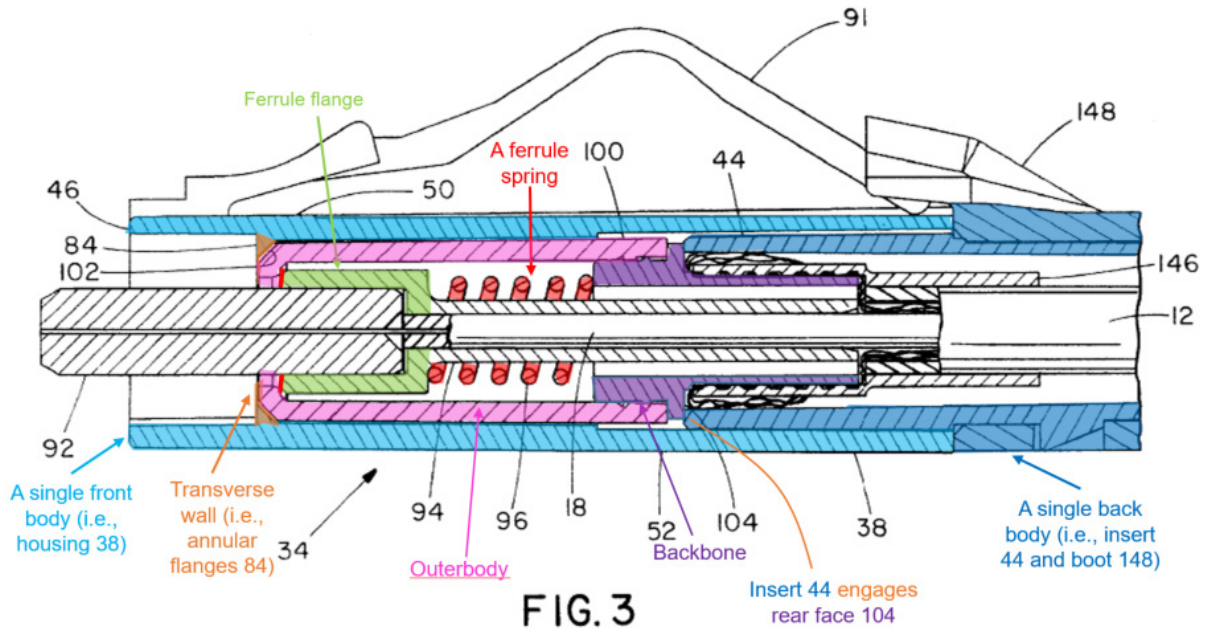
EX1008, FIG. 3 (annotated).

K. Claim 15

Connelly discloses claim 15.

Connelly discloses that insert 44 snap-locks with boot 148 (e.g., the single back body), and insert 44 snap-locks with housing 38 (e.g., the single front body). EX1008, 3:25-48; EX1003, ¶527.

Connelly's annotated Figure 3 illustrates that the first and second ferrule springs are between the back body and the first and second ferrule flanges, and the ferrule flanges engage with annular flanges 84 (e.g., the transverse wall) through the outerbody 100. EX1003, ¶¶528-530.



EX1008, FIG. 3 (annotated).

Connelly discloses that when insert 44 snap-locks into housing 38, it “driv[es] the plug pre-assemblies 40, 42 into abutment with the annular flanges 82, 84.” EX1008, 3:25-39.

A POSITA would have understood that the back body (e.g., a part of insert 44) simultaneously compress each of the first and second ferrule springs through backbones 98. EX1003, ¶¶531-535.

L. Claim 19

Connelly discloses claim 19.

Connelly discloses that optical fibers 16, 18 terminated at the ferrules 92. EX1008, 4:14-16, FIG. 1. Connelly also discloses a strain relief boot 148. EX1008, 4:35-38, FIG. 1.

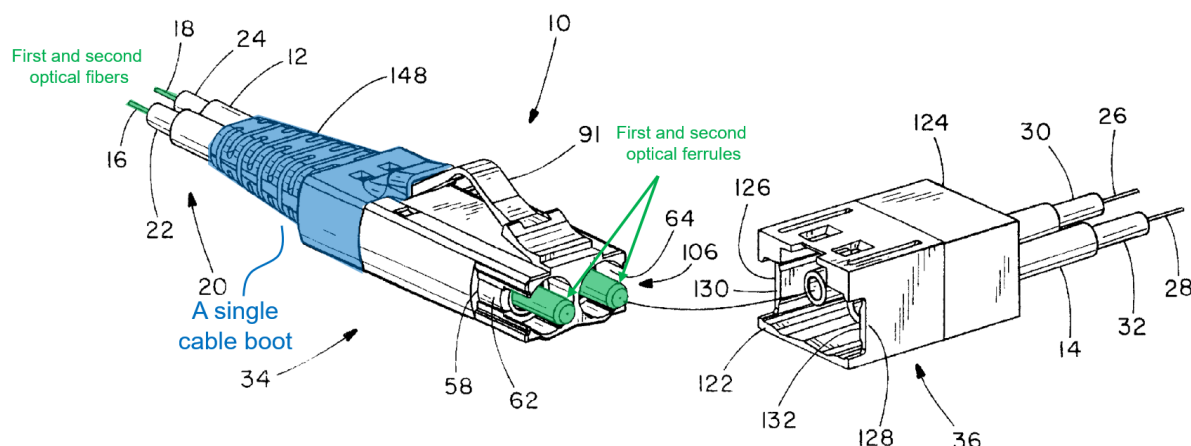


FIG. 1

EX1008, FIG. 1 (annotated).

M. Claim 20

Claim 20 recites substantially similar claim language to claims 1, 12-15.

Claim 20 is obvious in view of Connelly and Lin'658 for similar reasons. The table below demonstrates the overlapping elements of claim 20 with claims 1, 12-15.

The main difference between independent claim 20 and claim 1 is that claim 20 recites “a reversible polarity fiber optic connector” and adds a feature of changing polarity using a removable latch. Compare EX1001, 14:9-29 (claim 1), with 15:50-16:16 (claim 20).

Claim 20	Claims 1, 12 - 15
[20.P]	Section IX.M.1; EX1003, ¶¶540-544.
[20.1]	Section IX.B.2 ([1.1]); EX1003, ¶¶457-458, 545.
[20.2]	Section IX.I (claim 13); EX1003, ¶¶519-520, 546.
[20.3]	Section IX.B.3 ([1.2]); EX1003, ¶¶459-466, 547.

Claim 20	Claims 1, 12 - 15
[20.4]	Sections IX.H, IX.J, IX.K (claims 12, 14, 15); EX1003, ¶¶514-518, 521-526, 527-536, 548.
[20.5]	Section IX.B.4 ([1.3]); EX1003, ¶¶467-471, 549-550.
[20.6]	Section IX.B.5 ([1.4]); EX1003, ¶¶472-484, 551-552.
[20.7]	Section IX.M.2; EX1003, ¶¶553-560.

1. [20.P]

Connelly-Lin'658 discloses “*a reversible polarity fiber optic connector.*”

Connelly discloses “*a fiber optic connector.*” Section IX.B.1; EX1003, ¶540.

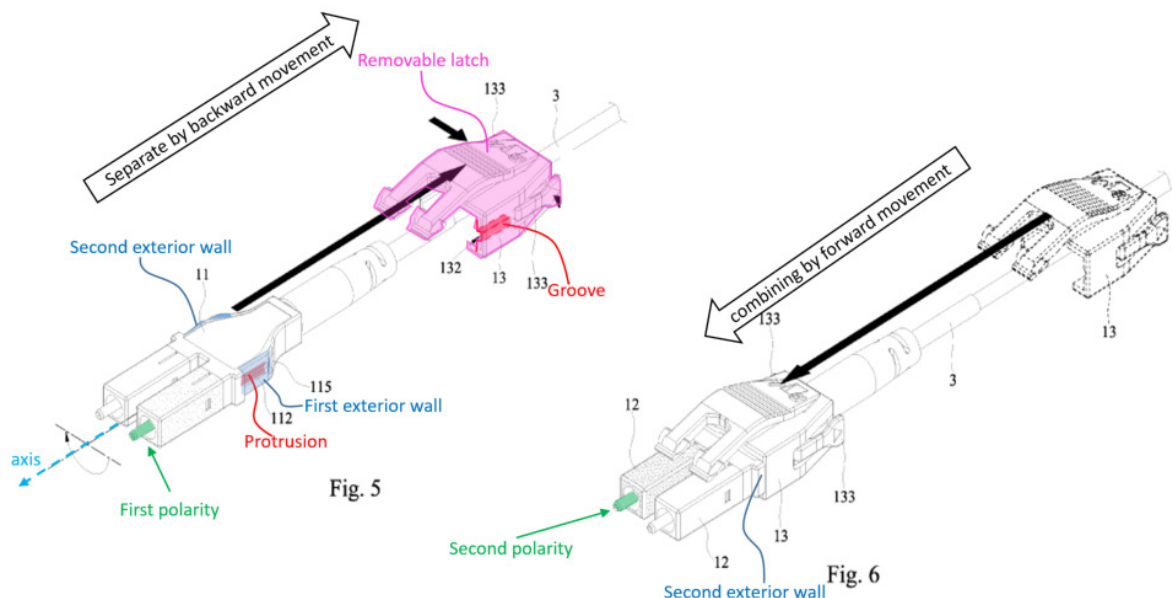
PO may allege Connelly does not expressly teach [20.P], but Lin'658 explicitly does. Lin'658 discloses a communication connector “with alterable polarity.” EX1009, Abstract; EX1003, ¶542.

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. Section IX.A; EX1003, ¶¶543-544.

2. [20.7]

Connelly-Lin'658 teaches [20.7]. PO may allege that Connelly 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 Lin'658 explicitly does. EX1003, ¶¶553-554.

Lin'658 discloses a removable latch for engaging either of the first and second exterior wall catch couplings on the connector housing. Section IX.B.5; EX1003, ¶¶472-479. To reverse polarity, the user separates casing 13 from the main body 11, rotates either main body 11 or casing 13 180 degrees, and places casing 13 back on main body 11. EX1009, 5:59-6:9. Figures 5 and 6 illustrate that the connector has a first polarity when the first side of casing 13 is mounted to the first exterior wall of main body 11, and has a second polarity when the first side of casing 13 is mounted to the second exterior wall of main body 11. EX1003, ¶¶556-558.



EX1009, FIGs. 5, 6 (annotated).

N. Claims 21-26 and 35

Claims 21-26 and 35 recite substantially similar claim language to claims 1, 3-6, and 19. Claims 21-26 and 35 are obvious in view of Connelly and Lin'658 for similar reasons. The table demonstrates the overlapping elements of claims 21-26 and 35 with claims 1, 3-6, and 19.

Claims 21-26 35	Claims 1, 3-6, 19
Claims 21	Section IX.B.5 ([1.4]); EX1003, ¶¶480-482, 561-562.
Claims 22	Section IX.B.5 ([1.4]); EX1003, ¶¶480-482, 563-564.
Claim 23	Section IX.D (claim 3); EX1003, ¶¶491-497, 565-566.
Claim 24	Section IX.E (claim 4); EX1003, ¶¶497-501, 567-568.
Claim 25	Section IX.F (claims 5); EX1003, ¶¶502-505, 569-570.
Claim 26	Section IX.G (claim 6); EX1003, ¶¶506-508, 571-572.
Claim 35	Section IX.L (claim 19); EX1003, ¶¶537-539, 573-574.

X. GROUND 4: CLAIMS 7-11, 27-31, 36, 46-47, AND 53 ARE OBVIOUS OVER CONNELLY-LIN'658 IN VIEW OF LIN'293.

A POSITA would have found claims 7-11, 27-31, 36, 46-47, and 53 obvious in view of Connelly (EX1008), Lin'658 (EX1009) and Lin'293 (EX1010). EX1003, ¶575.

A. A POSITA would have been motivated to combine Connelly-Lin'658 and Lin'293 with a reasonable expectation of success.

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. This would facilitate pulling out Connelly's

connector from a receptacle without the need to press the tab of the connector directly. EX1003, ¶576.

First, Connelly, Lin'658, and Lin'293 are all directed to fiber optic connectors with a latch for easy removal from a receptacle such as a jack or an adapter. EX1008, 2:18-26, FIG. 1; EX1009, 5:43-52, FIG. 4; EX1010, Abstract, 2:19-25. Lin'293 discloses apparatus 300 pulls out optical fiber connectors. EX1010, 5:33-37; EX1003, ¶¶577-580.

Second, the prior-art references themselves provide a teaching, suggestion, and/or motivation that would have led a POSITA to combine the teachings of Lin'293's apparatus 300 with Connelly's latch 91 and connector housing, as modified by Lin'658. EX1003, ¶581.

Lin'293 solves 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 that there is no[t] enough space for a user's fingers” to press the tab of the latch to pull out connectors. EX1010, 2:26-29. 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, 2:35-39; EX1003, ¶¶582-583.

Similarly, Connelly-Lin'658 teaches a connector with reversible polarity that “substantially improves convenience and efficacy during operation,” and teaches “an inexpensive, readily produced connection system for fiber optic cable.”

EX1009, 3:5-10; EX1008, 1:39-44. 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.

EX1003, ¶¶584-585. 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 connector would both be achieved by combining the remote release apparatus 300, as taught by Lin'293, with Connelly-Lin'658's fiber optic plug. *Id.*

A POSITA would have understood this modification involves applying a *known technique* (Lin'293's remote release apparatus 300) to a *similar device* (the Connelly-Lin'658 connector) 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). EX1003, ¶¶586-588.

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. A POSITA would have understood that adding Lin'293's remote release apparatus 300 to the Connelly-Lin'658 fiber optic plug 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. Indeed, it was well known to mount Lin'293's apparatus 300 on a regular optical fiber connector, without the need to use a special optical fiber connector. EX1010, 5:33-37; EX1003, ¶¶589-591.

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. 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. EX1003, ¶590.

B. Claim 7

Connelly-Lin'658- Lin'293 teaches claim 7.

(a) Connelly-Lin'658

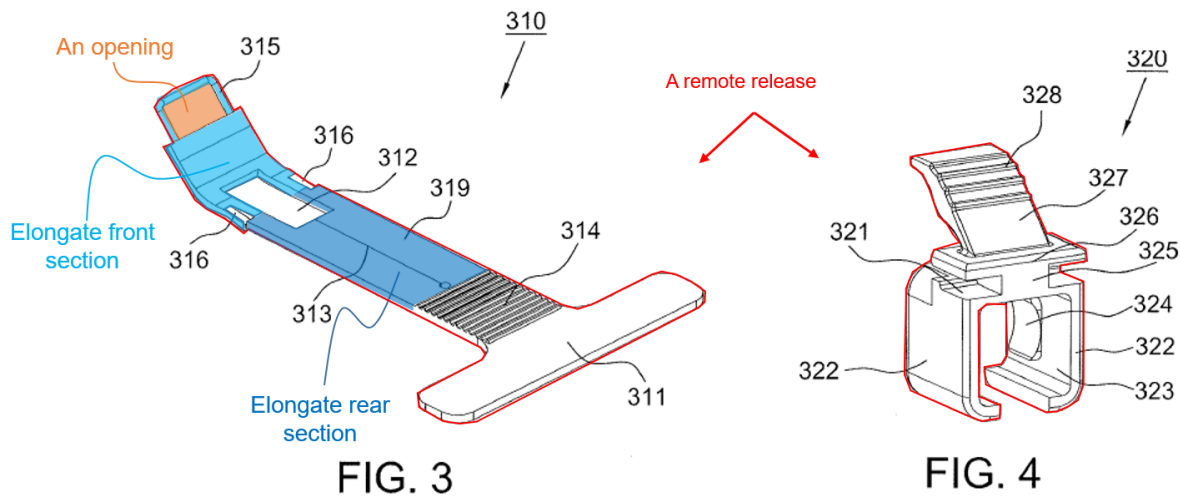
Connelly, modified by Lin'658, discloses a removable latch with a depressible latch arm, e.g., latch 91. Sections IX.B.5, IX.D.

PO may argue that Connelly-Lin'658 does not expressly disclose a “*remote release*,” as recited in claim 7. But Lin'293 does. EX1003, ¶592.

(b) Lin'293

Lin'293 discloses a remote release. Lin'293 discloses an apparatus 300 of “facilitating to pull out optical fiber connector” “without need to press the tab” of a connector directly. EX1010, 3:64-66, 5:17-21; EX1003, ¶595. Lin'293's Figures 3 and 4 illustrate the claim. Apparatus 300 includes a handle member 310 and a clip

member 320. Handle member 310 includes a U-shaped ring 315 and a front section of body 319, which is the *elongate front section*. And “a rear section” of body 319 is the *elongated rear section*. EX1003, ¶¶597-598.



EX1010, FIGs. 3, 4 (annotated).

Lin’293 discloses that the U-shaped ring 315 is forced to enclose the tab of the connector when apparatus 300 is assembled and mounted on the optical fiber connector. EX1010, 4:40-44. To mount apparatus 300, clip member 320 clips to connector 100. EX1010, 4:40-65. Clip member 320 may be “integrally formed with the housing 110 of the connector 100.” *Id.*; EX1003, ¶¶600, 602. A pull at handle member 310 drives the U-shaped ring 315 to “pull the tab 126 of the connector 100.” EX1010, 5:2-10. Lin’293 further discloses that the handle member 310 is “flexible.” EX1010, 4:15-16.

A POSITA would have understood that the remote release is *slidably connected to the removable latch and the connector housing*. EX1003, ¶¶602-603. The combination of handle 310 and clip 320 is shown in Lin'293's Figure 5, and the apparatus 300 mounted on a connector is shown in Lin'293's Figure 6.

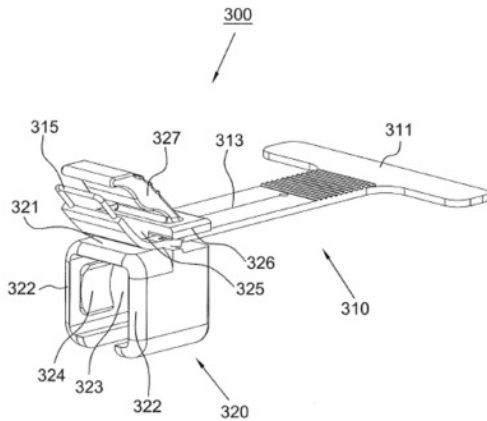


FIG. 5

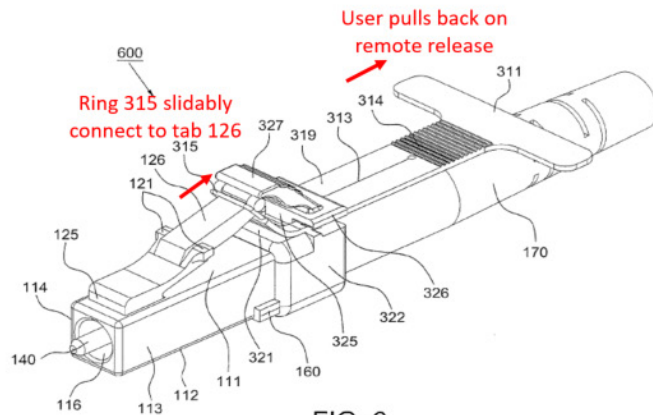


FIG. 6

EX1010, FIGs. 5, 6 (annotated).

(c) Motivation to Combine

A POSITA would have modified the Connelly-Lin'658 connector to include Lin'293's remote release to remove the connector in limited space. EX1010, 2:26-30; Section X.A; EX1003, ¶604. A POSITA would have incorporated Lin'293's remote release apparatus 300 into the Connelly-Lin'658 connector. Doing so would have merely been applying *known technique* (Lin'293's remote release) to a *similar device* (the Connelly-Lin'658 connector) in *the same way*. Section X.A; EX1003, ¶¶604-605.

C. Claim 8

Connelly-Lin'658-Lin'293 teaches claim 8.

PO may argue that Connelly-Lin'658 does not expressly disclose claim 8.

But Lin'293 does. EX1003, ¶606.

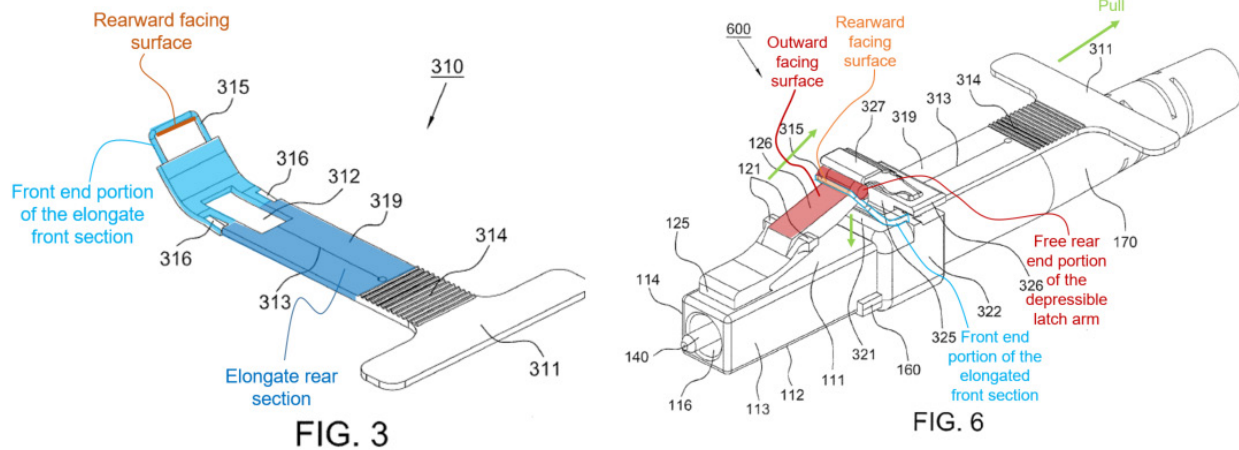
Lin'293 discloses the elongate front section of the remote release comprises an opening (*e.g.*, U-shaped ring 315) configured to receive the depressible latch arm (*e.g.*, tab 126). EX1010, 2:40-46; EX1003, ¶¶607-608.

Connelly-Lin'658-Lin'293 render this claim obvious. Section X.A; EX1003, ¶¶609-610.

D. Claim 9

Connelly-Lin'658-Lin'293 teaches claim 9. Sections IX.D, IX.E. PO may allege Connelly-Lin'658 does not expressly disclose a remote release with an elongate front section having a rearward-facing surface being configured to oppose the outward-facing surface of the depressible latch arm. But a POSITA would have been motivated to combine Connelly-Lin'658 with Lin'293, which discloses the remote release feature. EX1003, ¶¶611-613.

Lin'293 discloses the front-end portion (*e.g.*, U-shaped ring 315) having a rearward-facing surface, and the rearward-facing surface opposes the outward-facing surface of the depressible latch arm (*e.g.*, tab 126). EX1003, ¶¶614-615, FIGs. 3, 6.



EX1010, FIGs. 3, 6 (annotated).

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 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 to oppose the outward-facing surface of the latch so that Lin'293's remote release can engage Connelly's latch to allow a user to more easily disconnect Connelly's modified connector when it is used in high density applications, as explained in Section X.A. EX1003, ¶¶616-617.

E. Claim 10

Connelly-Lin'658-Lin'293 teaches claim 10. Sections IX.D, IX.E. PO may allege Connelly-Lin'658 does not expressly disclose the free rear-end portion is configured to be raised in relation to the front-end portion of the elongate front section. But a POSITA would have been motivated to combine Connelly-Lin'658

with Lin'293, which discloses this feature, as illustrated in Figure 6 of Lin'293.

EX1003, ¶¶618-622.

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 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's latch when it is pulled rearward. EX1003, ¶623.

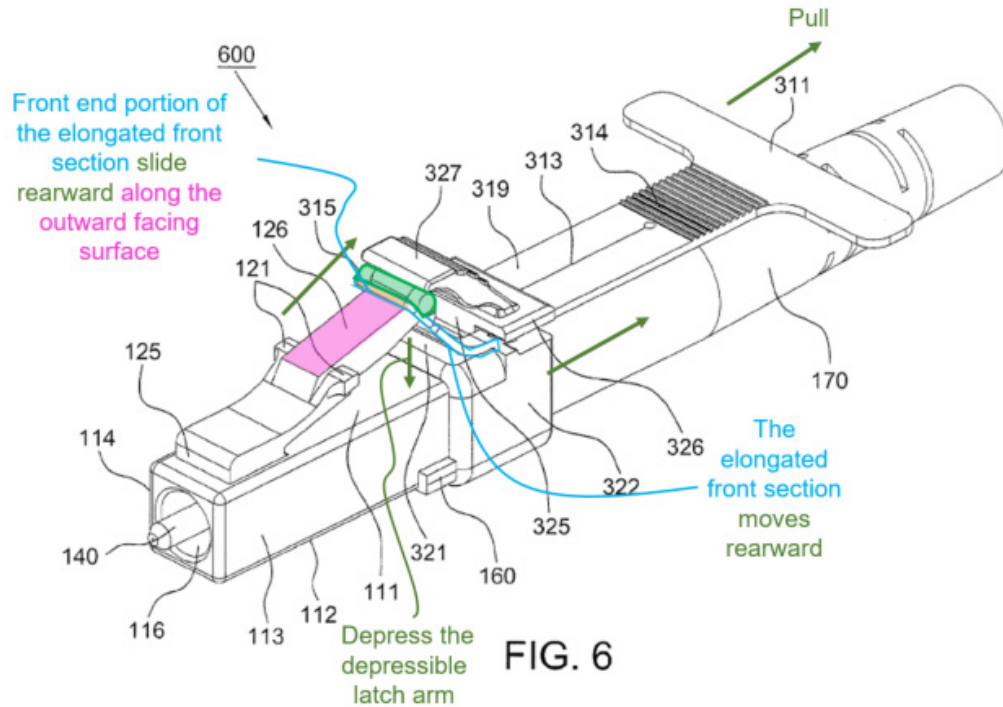
F. Claim 11

Connelly-Lin'658-Lin'293 teaches claim 11. Sections IX.D, IX.E. PO may allege Connelly-Lin'658 does not expressly disclose the front-end portion is configured to slide rearward along the outward-facing surface of the depressible latch arm. But a POSITA would have been motivated to combine Connelly-Lin'658 with Lin'293, which discloses this feature. EX1003, ¶¶625-626.

Lin'293 discloses a pull of the U-shaped ring 315 will "cause the tab 126 to be pressed down." EX1010, 5:2-6; EX1003, ¶628. A POSITA would have understood a pull of the U-shaped ring 315 will cause it to move rearward and further cause the U-shaped ring 315 (e.g., the front-end portion) to slide rearward

along the outward-facing surface of the depressible latch arm. EX1003, ¶¶631-632.

Such movement is illustrated in the annotated Figure 6.



EX1010, FIG. 6 (annotated).

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 with the elongate front section of Lin'293's remote release, *e.g.*, U-shaped ring 315, and use flexible handle body 319 to pull the U-shaped ring rearward to depress the depressible latch. This feature makes it easier to disconnect Connelly's modified connector in limited space. Section X.A; EX1003, ¶631.

G. Claims 27-31, 36, 46-47, and 53

Claims 27-31, 36, 46-47, and 53 recite substantially similar claim language to claims 1, 3-11, and 19. Claims 27-31, 36, 46-47, and 53 are obvious in view of Connelly, Lin'658 and Lin'293 for similar reasons. The table demonstrates the overlapping elements of claims 27-31, 36, 46-47, and 53 with claims 1, 3-11, and 19.

Claims 27-31, 36, 46-47, and 53	Claims 1, 3-11, and 19
[36pre]	Section IX.B.1 ([1pre]); EX1003, ¶¶455-456, 648.
[36.1]	Section IX.B.2 ([1.1]); EX1003, ¶¶457-458, 649-650.
[36.2]	Section IX.B.3 ([1.2]); EX1003, ¶¶459-466, 651-652.
[36c]	Section IX.B.5 ([1.4]); EX1003, ¶¶477-479, 653-656.
[36.4]	Section IX.D (claim 3); EX1003, ¶¶491-496, 657-658.
[36.5]	Section IX.E (claim 4); EX1003, ¶¶497-501, 659-660.
[36.6]	Section IX.F (claims 5); EX1003, ¶¶502-505, 661-662.
[36.7]	Section IX.G (claim 6); EX1003, ¶¶506-508, 663-664.
Claim 27, [36.8]	Section X.B (claim 7); EX1003, ¶¶592-603, 633-635, 665-666.
Claim 28, [36.9]	Section X.C (claim 8); EX1003, ¶¶606-610, 636-638, 667-668.
Claim 29, [36.10]	Section X.D (claim 9); EX1003, ¶¶611-615, 639-641, 669-670.
Claim 30, [36.11]	Section X.E (claim 10); EX1003, ¶¶618-624, 642-644, 671-672.
Claim 31, [36.12]	Section X.F (claim 11); EX1003, ¶¶625-632, 645-647, 673-674.
Claim 46	Section IX.B.5 ([1.4]); EX1003, ¶¶480-482, 675-678.
Claim 47	Section IX.B.5 ([1.4]); EX1003, ¶¶480-482, 679-680.

Claims 27-31, 36, 46-47, and 53	Claims 1, 3-11, and 19
Claims 53	Section IX.L (claim 19); EX1003, ¶¶537-539, 681-682.

XI. GROUND 5: CLAIMS 16-18 AND 32-34 ARE OBVIOUS OVER CONNELLY-LIN’658 IN VIEW OF NGUYEN.

A POSITA would have found claims 16-18 and 32-34 obvious in view of Connelly (EX1008), Lin’658 (EX1009), and Nguyen (EX1007). EX1003, ¶683.

A. A POSITA would have been motivated to combine Connelly-Lin’658 and Nguyen with a reasonable expectation of success.

A POSITA would have been motivated to combine Connelly, Lin’658 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, ¶0044; EX1003, ¶684.

First, Connelly, Lin’658, and Nguyen are all directed to duplex fiber optic LC connectors with a latch for easy removal from a receptacle such as an adapter or a jack. EX1008, 2:18-26, 3:58-60, FIG. 1; EX1009, 4:63-67, 5:15-20, 5:43-52, FIG. 4; EX1007, ¶¶0020, 0037-0038, FIG. 6A. 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. EX1003, ¶685.

Second, the prior-art references themselves provide a teaching, suggestion, and/or 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, ¶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, 1:38-51. A POSITA would have understood higher-density optical connectors can reduce the cost of the overall connector system. 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, ¶0044; EX1003, ¶686.

A POSITA would have had a reasonable expectation of success in combining the teachings of Nguyen's ferrule pitch size in Connelly-Lin'658's connector because both connectors are used to receive two fiber optic ferrules. EX1003, ¶¶687-688. Connelly-Lin'658's connector would perform as originally intended after the ferrule pitch size is set to by Nguyen's design choice. *Id.* A POSITA would have understood that modifying the ferrule pitch size of the Connelly-Lin'658 connector would allow the Connelly-Lin'658 connector to work in a high port density environment. *Id.*

B. Claims 16 and 32

Connelly-Lin'658-Nguyen teaches these claims.

Nguyen discloses that “a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm.” EX1007, ¶0037.

The combined disclosure of Connelly, Lin’658, and Nguyen render this feature obvious and are obvious to combine. Section XI.A; EX1003, ¶¶689-693, 698.

C. Claims 17 and 33

Connelly-Lin’658-Nguyen teaches these claims.

Nguyen discloses that “a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm.” EX1007, ¶0037.

The combined disclosure of Connelly, Lin’658, and Nguyen render this feature obvious and are obvious to combine. Section XI.A; EX1003, ¶¶694-695, 699.

D. Claims 18 and 34

Connelly-Lin’658-Nguyen teaches these claims.

Nguyen discloses that “a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm.” EX1007, ¶0037.

The combined disclosure of Connelly, Lin’658, and Nguyen render this feature obvious and are obvious to combine. Section XI.A; EX1003, ¶¶696-697, 700.

XII. GROUND 6: CLAIMS 37-45 AND 48-52 ARE OBVIOUS OVER CONNELLY-LIN'658-LIN'293 IN VIEW OF NGUYEN.

A POSITA would have found claims 37-45 and 48-52 obvious in view of Connelly (EX1008), Lin'658 (EX1009), Lin'293 (EX1010), and Nguyen (EX1007). EX1003, ¶701.

A. A POSITA would have been motivated to combine Connelly-Lin'658-Lin'293 and Nguyen with a reasonable expectation of success.

A POSITA would have been motivated to combine Connelly, Lin'658, Lin'293 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, ¶0044; EX1003, ¶702.

First, Connelly, Lin'658, Lin'293, and Nguyen are all directed to fiber optic connectors with a latch for easy removal from a receptacle such as an adapter or a jack. EX1008, 2:18-26, 3:58-60, FIG. 1; EX1009, 4:63-67, 5:15-20, 5:43-52, FIG. 4; EX1010, Abstract, 2:19-25; EX1007, ¶¶0020, 0037-0038, FIG. 6A. A POSITA would have understood that Connelly, Lin'658, Lin'293 and Nguyen are analogous prior art to the '701 patent and would recognize that the teachings of Nguyen's connector are applicable to Connelly-Lin'658-Lin'293. EX1003, ¶¶703-704.

Second, the prior art provides a teaching, suggestion, and/or motivation that would have led a POSITA to combine the teachings of Nguyen's ferrule pitch size with Connelly-Lin'658-Lin'293's connector. Nguyen discloses a design that

“accommodate high port density optical connectors.” EX1007, ¶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, 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, 2:26-30. A POSITA would have been motivated to combine the teachings of Nguyen to make Connelly-Lin’658-Lin’293’s connector accommodating “high port density.” EX1007, ¶0044; EX1003, ¶705.

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 connector, because both connectors are used to receive two fiber optic ferrules. Connelly-Lin’658-Lin’293’s connector would perform as originally intended after the ferrule pitch size is set to Nguyen’s design choice. 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. EX1003, ¶¶706-707.

B. Claims 37, 44, and 48

Connelly-Lin’658-Lin’293-Nguyen teaches these claims.

Nguyen discloses that “a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm.” EX1007, ¶0037.

The combined disclosure of Connelly, Lin'658, Lin'293 and Nguyen render this feature obvious and are obvious to combine. Section XII.A; EX1003, ¶¶708-711, 722-723, 726.

C. Claims 49 and 51

Connelly-Lin'658-Lin'293-Nguyen teaches these claims.

Nguyen discloses that “a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm.” EX1007, ¶0037.

The combined disclosure of Connelly, Lin'658, Lin'293 and Nguyen render this feature obvious and are obvious to combine. Section XII.A; EX1003, ¶¶727, 729.

D. Claims 45, 50, and 52

Connelly-Lin'658-Lin'293-Nguyen teaches these claims.

Nguyen discloses that “a pitch (e.g., center-to-center spacing) of the ferrules 602 may be about 3.8 mm.” EX1007, ¶0037.

The combined disclosure of Connelly, Lin'658, Lin'293 and Nguyen render this feature obvious and are obvious to combine. Section XII.A; EX1003, ¶¶724-725, 728, 730.

E. Claims 38-43

Claims 38-43 recite substantially similar claim language to claims 1 and 12-15. Claims 38-43 are obvious in view of Connelly, Lin'658, Lin'293, and Nguyen

for similar reasons. The table demonstrates the overlapping elements of claims 38-43 with claims 1 and 12-15.

Claims 38-43	Claims 1 and 12-15
Claim 38	Section IX.H (claim 12); EX1003, ¶¶514-518, 712-713.
Claim 39	Section IX.I (claim 13); EX1003, ¶¶519-520, 714-715.
Claim 40	Section IX.J (claim 14); EX1003, ¶¶521-526, 716-717.
Claim 41	Section IX.K (claim 15); EX1003, ¶¶527-536, 718-719.
Claim 42	Section IX.B.5 ([1.4]); EX1003, ¶¶480-482, 675-678, 720.
Claim 43	Section IX.B.5 ([1.4]); EX1003, ¶¶480-482, 679-680, 721.

XIII. DISCRETIONARY CONSIDERATIONS UNDER §§ 314(a), 325(d) STRONGLY FAVOR INSTITUTION

A. The *Fintiv* factors strongly favor institution.

The '701 patent is involved in a parallel district-court case that was filed on January 24, 2023. *Senko Advanced Components, Inc. v. US Conec Ltd.*, 1:23-cv-00083 (D. Del. Jan. 24, 2023), which was stayed until at least December 20, 2023.

The Board should not deny this Petition under *Fintiv* because the Petition sets forth a compelling unpatentability challenge to at least one claim. If instituted, Petitioner stipulates not to pursue in the district court the Grounds in the Petition or any ground that reasonably could have been raised in the Petition. *Fintiv* does not favor denial of institution.

B. *Advanced Bionics* strongly favors institution.

Advanced Bionics strongly favors institution because the IPR grounds present new art and evidence not previously presented to, or substantively considered by, the Office or any other tribunal.

XIV. MANDATORY NOTICES (37 C.F.R. § 42.8(a)(1))

Real Party In Interest (37 C.F.R. § 42.8(b)(1)): The real party-in-interest is Petitioner US Conec Ltd. Petitioner US Conec Ltd. states that the following entities each own 10% or more of its stock: Corning Optical Communications, LLC; Fujikura Ltd.; and NTT Advanced Technology Corporation. This statement should not be interpreted as an admission or concession that the above-listed parties are real parties-in-interest or in privity with US Conec Ltd.

Related Matters (37 C.F.R. § 42.8(b)(2)): The '701 patent is asserted against US Conec Ltd. in *Senko Advanced Components, Inc. v. US Conec Ltd.*, 1:23-cv-00083 (D. Del.), filed on January 24, 2023.

Lead and Back-up Counsel: Pursuant to 37 C.F.R. § 42.8(b)(3) and 42,10(a), Petitioner appoints **Jason D. Eisenberg** (Reg. No. 43,447) as its lead counsel, and **Lestin L. Kenton** (Reg. No. 72,314) and **Xiaowei Jin** (Reg. No. 81,041) as its back-up counsel, all at the address: STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C., 1101 K Street, NW, 10th Floor, Washington, D.C. 20005; phone number: (202) 371-2600; and facsimile: (202) 371-2540.

Service Information (37 C.F.R. § 42.8(b)(4)): Petitioner consents to electronic service by email at: jasone-PTAB@sternekessler.com, lkenton-PTAB@sternekessler.com, xjin-PTAB@sternekessler.com, and PTAB@sternekessler.com.

XV. CONCLUSION

The Board should institute review of claims 1-53 because the merits are strong and discretionary policy considerations are not present.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Jason D. Eisenberg/

Jason D. Eisenberg, Reg. No. 43,447

Lestin L. Kenton, Reg. No. 72,314

Xiaowei Jin, Reg. No. 81,041

Counsel for Petitioner US Conec Ltd.

Date: December 28, 2023

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**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATION,
TYPEFACE REQUIREMENTS, AND TYPE STYLE REQUIREMENTS**

1. This Petition complies with the type-volume limitation of 14,000 words, comprising 13,735 words, excluding the parts exempted by 37 C.F.R. § 42.24(a).

2. This Petition complies with the general format requirements of 37 C.F.R. § 42.6(a) and has been prepared using Microsoft® Word 2010 in 14 point Times New Roman.

Respectfully submitted,

STERNE, KESSLER, GOLDSTEIN & FOX PLLC

/Jason D. Eisenberg/

Jason D. Eisenberg

Registration No. 43,447

Lead Counsel for Petitioner US Conec Ltd.

Date: December 28, 2023

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CERTIFICATION OF SERVICE (37 C.F.R. §§ 42.6(e), 42.105(a))

The undersigned hereby certifies that on December 28, 2023, true and correct copies of the foregoing **PETITION FOR *INTER PARTES* REVIEW OF U.S. PATENT NO. 11,181,701** and all associated exhibits were served in their entirety on the following parties via FedEx Express®:

SENKO ADVANCED COMPONENTS, INC.
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Respectfully submitted,

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