

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SENKO ADVANCED COMPONENTS
Petitioner

v.

US CONEC LTD.
Patent Owner

Case: PGR2024-00032
Patent No. 11,733,466

**PETITION FOR POST-GRANT REVIEW
OF U.S. PATENT NO. 11,733,466**

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35 U.S.C. §325(d)	225
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Other Authorities

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EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent No. 11,733,466
1002	Declaration of Edward Lurie
1003	U.S. Publication No. 2019/0018209 (“Takano’209”)
1004	U.S. Provisional Application No. 62/588,276
1005	U.S. Publication No. 2017/0205588 (“Lee”)
1006	U.S. Publication No. 2016/0161680 (“Nguyen”)
1007	U.S. Patent No. 9,684,130 (“Veatch”)
1008	U.S. Publication No. 2013/0322826 (“Henke”)
1009	U.S. Patent No. 11,307,369 (“Takano’369”)
1010	U.S. Provisional Application No. 62/532,710
1011	English Translation of Chinese Publication No. 201740886 ("Chen")
1012	U.S. Publication No. 2017/0205587 ("Chang")
1013	U.S. Publication No. 2016/0327756 ("Raven")
1014	QSFP-DD Hardware Specification (“QSFP-DD”)
1015	U.S. Publication No. 2008/0037938 (“Kiani”)
1016	English Translation of Japanese Publication No. 2012-053375 ("Toyama")
1017	U.S. Publication No. 2018/0224608
1018	U.S. Publication No. 2005/0136722

Exhibit No.	Description
1019	U.S. Publication No. 2018/0106972
1020	U.S. Patent No. 10,156,683
1021	U.S. Publication No. 2019/0243072
1022	U.S. Patent No. 7,500,790
1023	Prosecution History of U.S. Application No. 17/327,197
1024	Prosecution History of U.S. Patent No. 11,733,466
1025	Claim Listing for U.S. Patent No. 11,733,466
1026	U.S. Patent No. 5,181,267
1027	Fiber Optic Connector Intermateability Standard - Type LC
1028	CS Connector
1029	PCT Publication No. 2002/042818

Emphasis added throughout unless indicated otherwise.

I. INTRODUCTION

Senko Advanced Components, Inc. (“Petitioner” or “Senko”) requests *post-grant* review, seeking cancellation of claims 1-17 of U.S. Patent No. 11,733,466 (“the ‘466 Patent”; EX1001) assigned to US Conec Ltd. (“Patent Owner” or “US Conec”). Supporting this Petition is an expert declaration from Edward Lurie—an expert in the field of fiber optic connector design. EX1002: ¶¶1-6.

II. IDENTIFICATION OF CHALLENGE

A. Identification of Prior Art

The ‘466 Patent claims priority to Provisional Application No. 62/607,555, filed December 19, 2017.

The following documents constitute prior art under §102(a)(1):

- U.S. Publication No. 2017/0205588 (“Lee”)
- U.S. Publication No. 2016/0161680 (“Nguyen”)
- U.S. Patent No. 9,684,130 (“Veatch”)
- U.S. Publication No. 2013/0322826 (“Henke”)
- Chinese Publication No. 201740886 (“Chen”)
- U.S. Publication No. 2017/0205587 (“Chang”)
- U.S. Publication No. 2016/0327756 (“Raven”)
- QSFP-DD Hardware Specification (“QSFP-DD”)
- U.S. Publication No. 2008/0037938 (“Kiani”)

- Japanese Publication No. 2012-53375 (“Toyama”)

The following documents constitutes prior art under §102(a)(2):

- U.S. Publication No. 2019/0018209 (“Takano’209”)

Takano’209 claims priority to U.S. Provisional App. No. 62/588,276 (“the ‘276 Provisional”; EX1004), filed November 17, 2017.

- U.S. Patent No. 11,307,369 (“Takano’369”)

Takano’369 claims priority to U.S. Provisional App. No. 62/532,710 (“the ‘710 Provisional”; EX1010), filed July 14, 2017.

Takano’209 and Takano’369 are prior art to the ‘466 Patent under 35 U.S.C §102(a)(2) because these references are considered effectively filed as of their provisional filing dates, for reasons explained in Section XXVI. 35 U.S.C. §102(d)(2).

Takano’209 and Veatch were cited during examination.

B. Statutory Grounds for Challenge

Petitioner advances these unpatentability grounds. Claim 1 is independent.

Ground	References	Basis	Claims Challenged
1		§112(b)	1-17
2		§112(a)	1-17
3	Takano’209	§102	1-3, 5-7, 12-16
4	Takano’209	§103	15, 16
5	Takano’209, Lee	§103	3-5
6	Takano’209, Veatch	§103	6
7	Takano’209, Nguyen	§103	14
8	Takano’209, Henke	§103	17

9	Takano'369	§102/103	1-3, 5-14
10	Takano'369, Veatch	§103	6, 10
11	Takano'369	§103	15, 16
12	Takano'369, Henke	§103	17
13	Chen, Chang, Raven	§103	1-3, 5-7, 14
14	Chen, Chang, Raven, Lee	§103	3-5
15	Chen, Chang, Raven, Veatch	§103	6
16	Chen, Chang, Raven, QSFP-DD	§103	12
17	Chen, Chang, Raven, Takano'209/Kiani	§103	13, 15, 16
18	Chen, Chang, Raven, Henke	§103	17
19	Toyama	§102	1-7, 14-16
20	Toyama, QSFP-DD	§103	12
21	Toyama, Henke	§103	17
22	Toyama, Takano'209/Kiani	§103	15, 16
23	Toyama, Veatch	§103	6

III. BACKGROUND OF THE '466 PATENT

A. Subject Matter of the '466 Patent

The '466 Patent pertains to small footprint fiber optic connectors. EX1001: 1:28-30. The '466 Patent's first embodiment of a fiber optic connector (100) includes a housing (102), two ferrule assemblies (120), a crimp body (106), a latch component (104), and a boot (110). EX1001: 4:55-67; EX1002: ¶27.

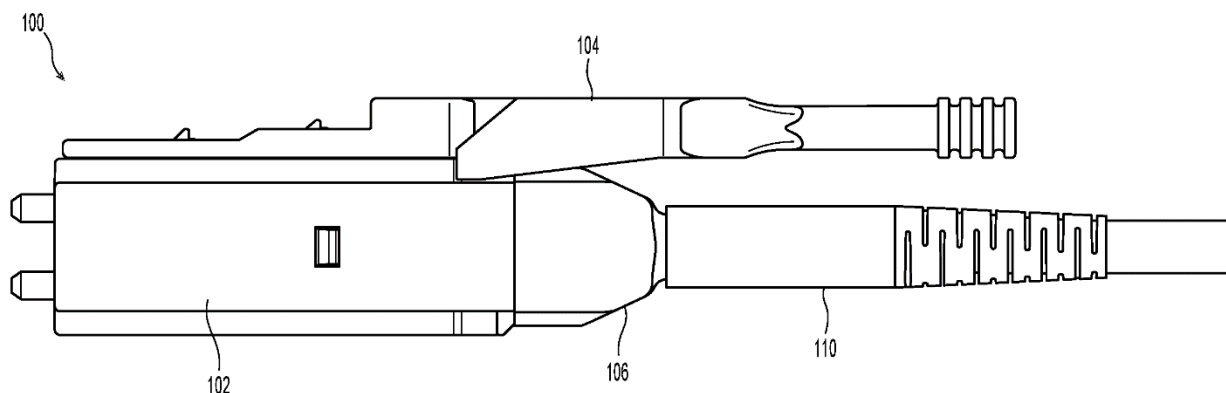
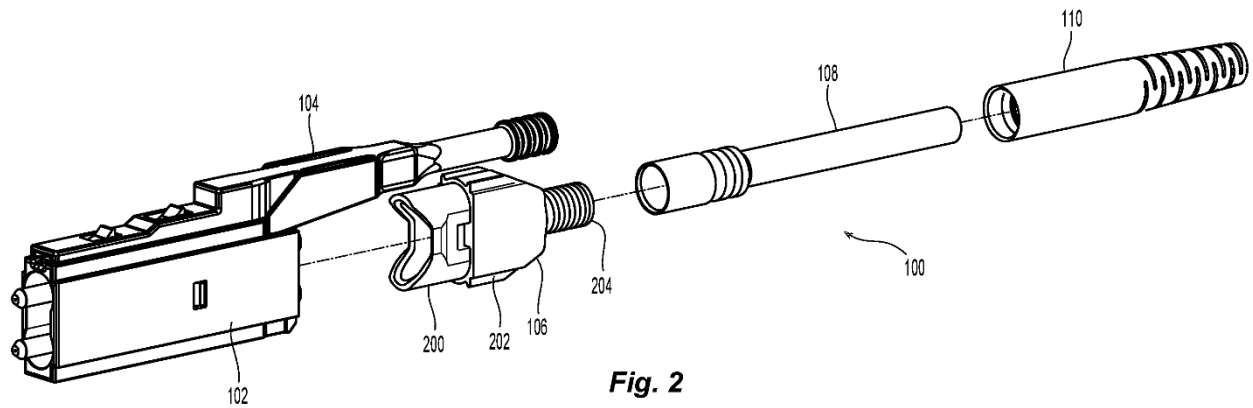


Fig. 1



EX1001: Figs. 1 and 2.

The latch component (104) facilitates insertion and removal of the connector (100) from an adapter (400) and is attachable to the top or bottom of the housing (102) to set the polarity of the connector. EX1001: 8:30-50; EX1002: ¶28.

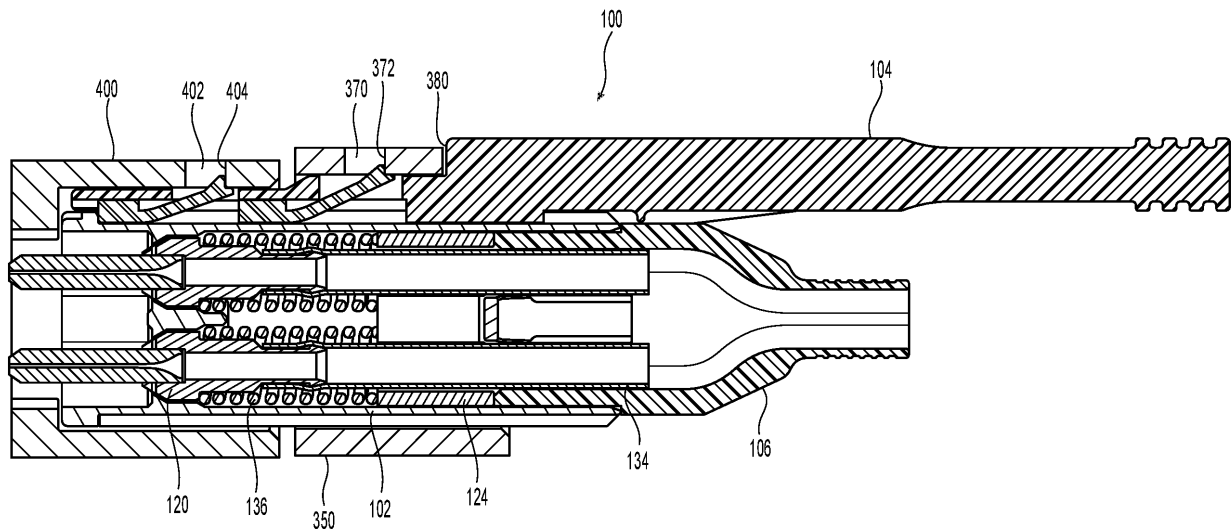


Fig. 21

EX1001: Fig. 21.

The other embodiments disclose different variations of the latch component (1104, 2104). EX1002: ¶29.

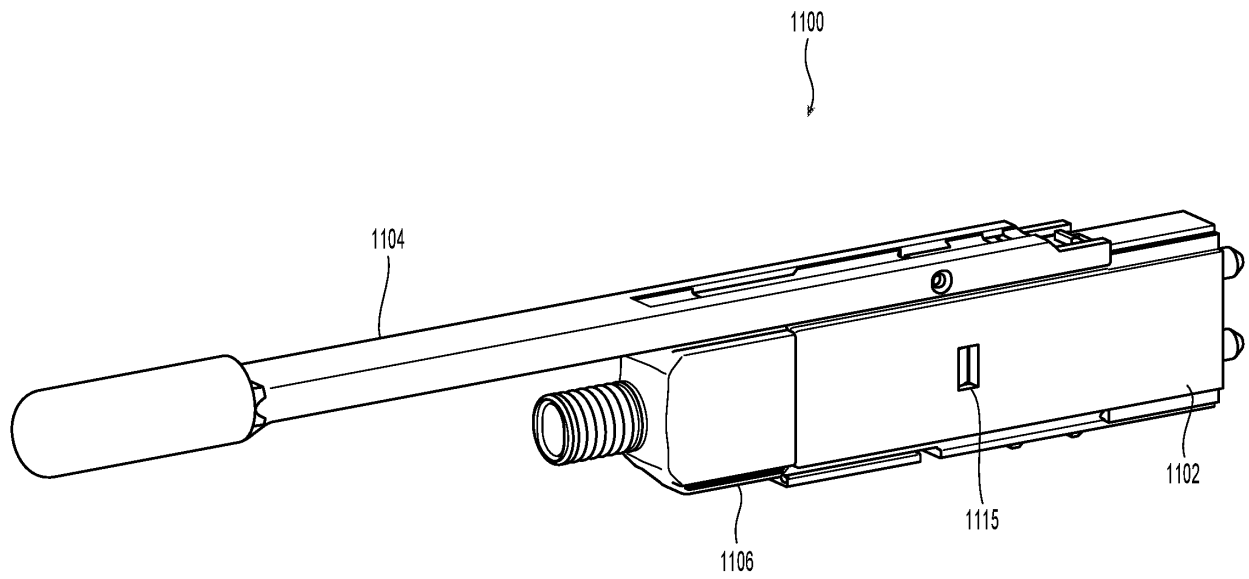


Fig. 23

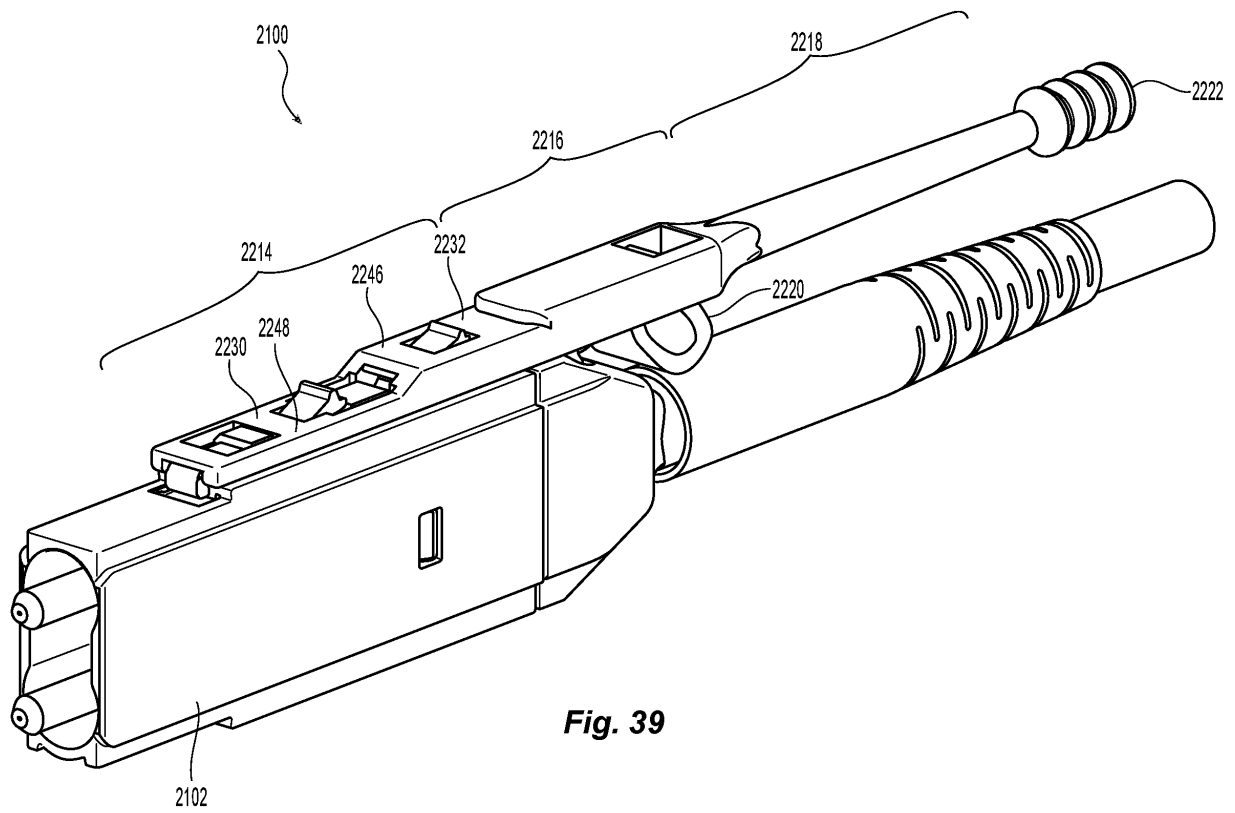


Fig. 39

EX1001: Figs. 23 and 39.

B. Background of the Art

The prior art references in this petition each pertain to fiber optic connectors and are in the same field of endeavor with each other and with the '466 Patent.

EX1001: 1:18-39; EX1003: ¶[0002]; EX1005: ¶[0002]; EX1006: ¶[0008];
EX1007: 2:6-13; EX1008: ¶[0002]; EX1009: 1:34-36; EX1011: ¶[0001]; EX1012:
¶[0002]; EX1013: ¶[0002]; EX1014: 1; EX1015: ¶[0002]; EX1016: ¶[0001];
EX1002: ¶¶30-34.

1. Takano'209

Takano'209 discloses an optical connector (2100) having an outer housing (2110), a front body (2115), two ferrule assemblies (2120), two springs (2125), a back body (2130), a back post (2135), a crimp ring (2140), and a boot (2145).

EX1003: ¶[0117]; EX1002: ¶¶35-36.

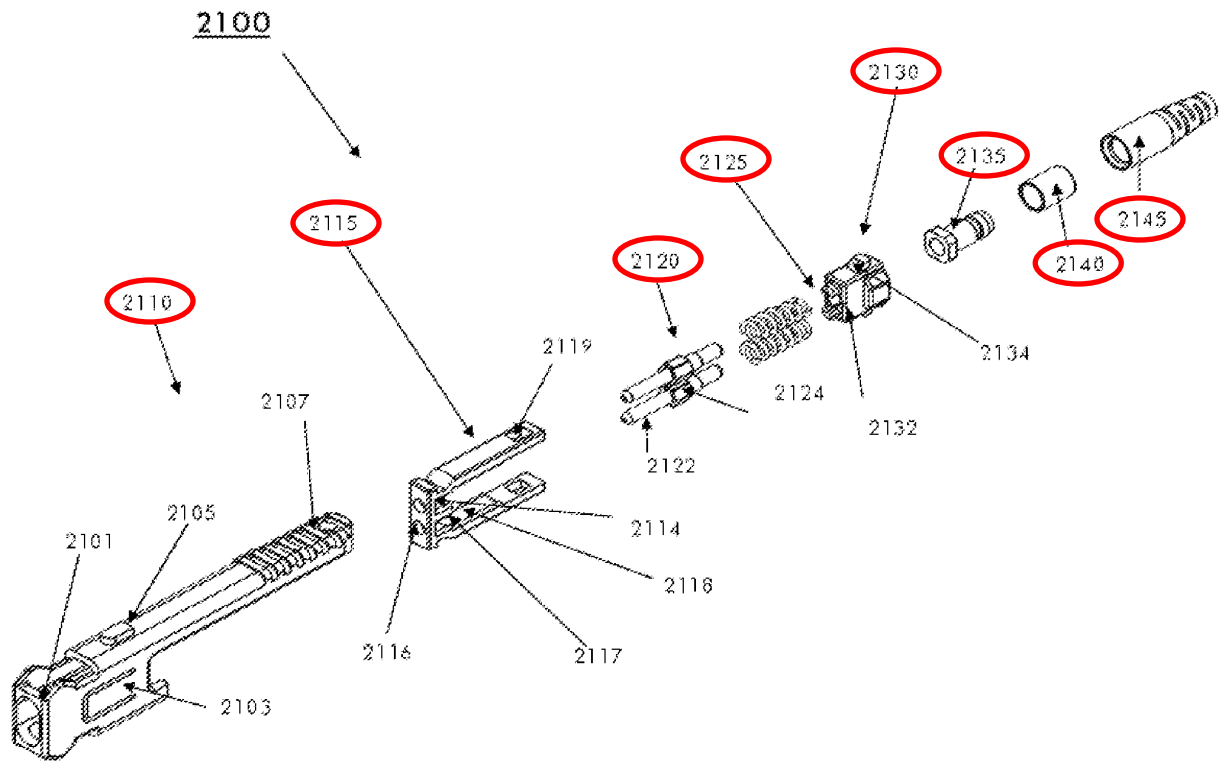


FIG. 21A

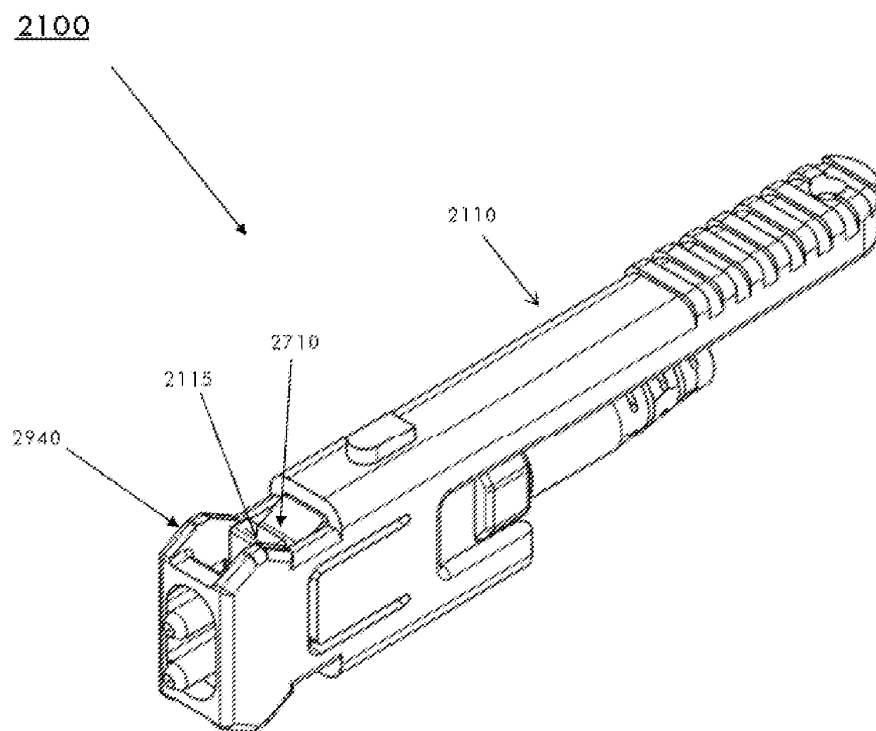


FIG. 21B

EX1003: Figs. 21A-B (annotated).

The outer housing (2110) includes a connector alignment key (2105) received in a corresponding connector alignment slot (2403) of the adapter (2400).

EX1003: ¶¶[0117], [0127]; EX1002: ¶37.

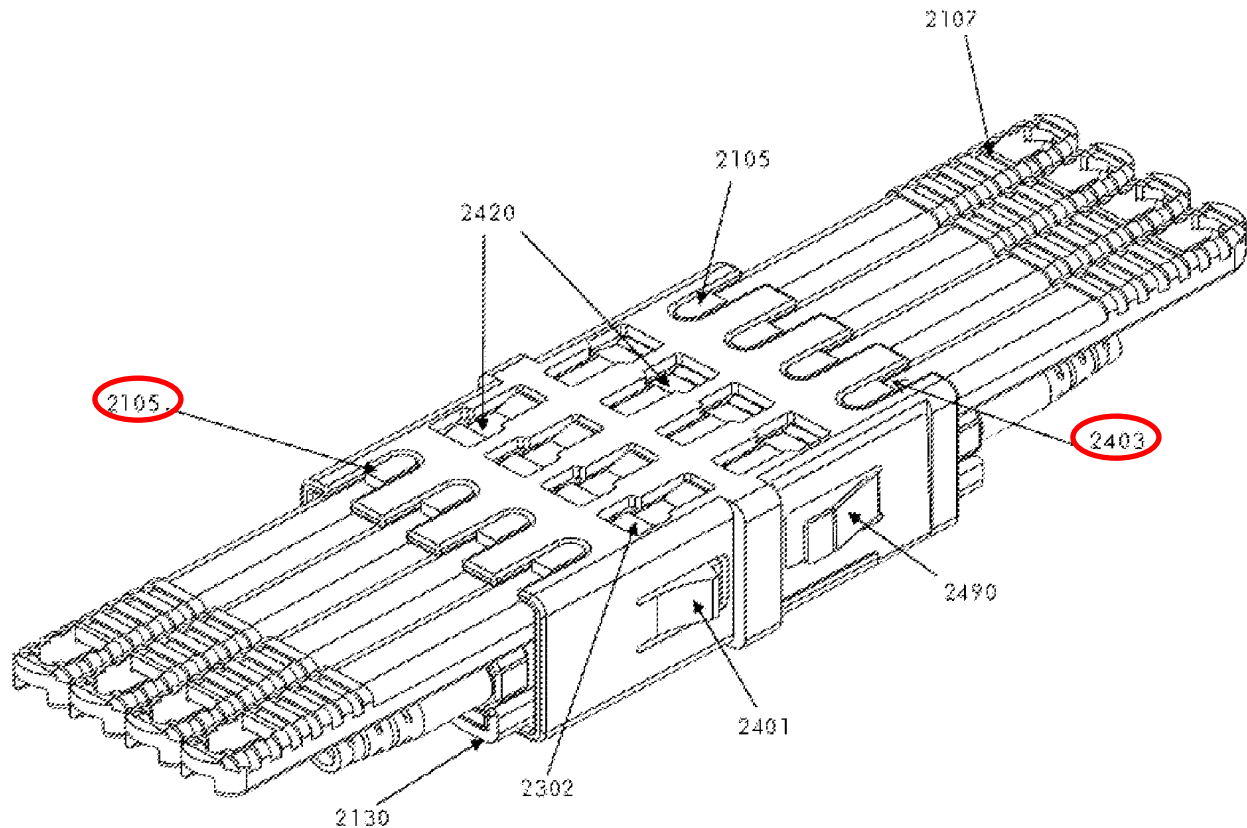


FIG. 31

EX1003: Fig. 31 (annotated).

2. Lee

Lee teaches an optical connector (10) including two ferrules (20, 22), springs (100, 102), and a spring push (104). EX1005: Figs. 2 and 3, ¶¶[0029]-[0030], [0038]; EX1002: ¶¶38-40.

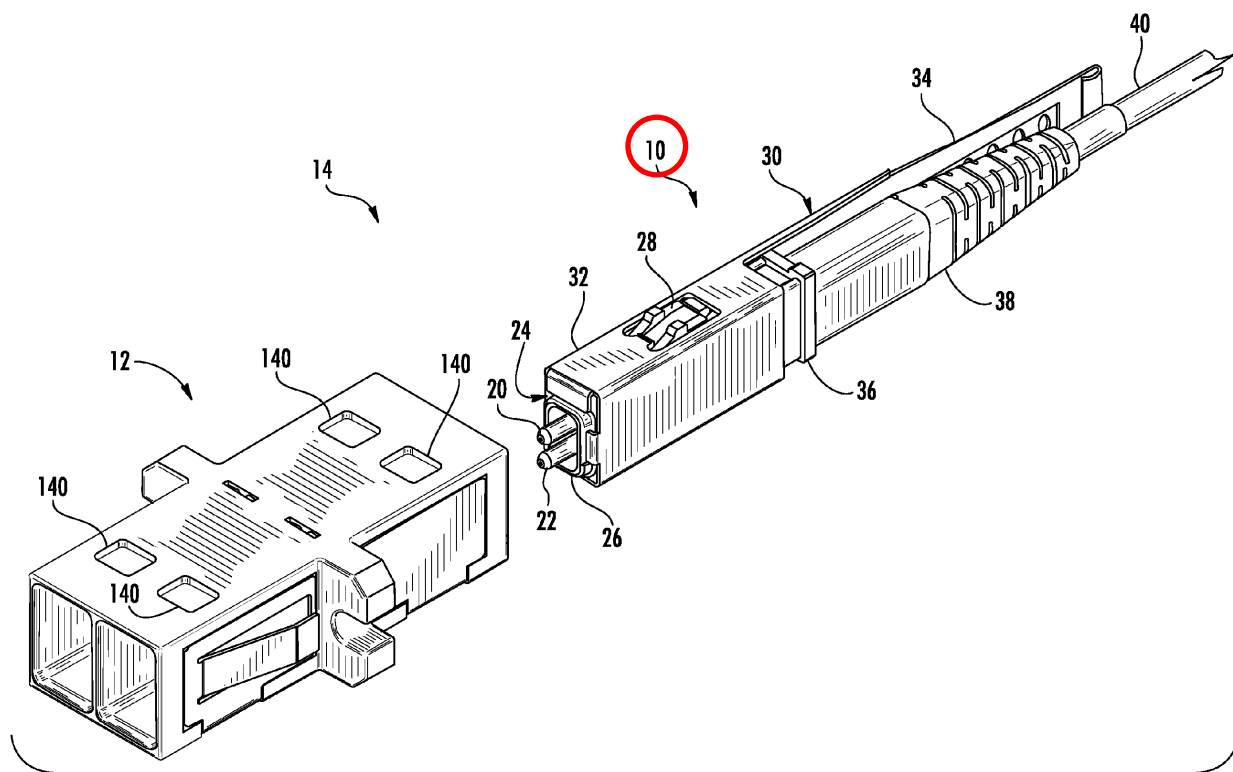


FIG. 1

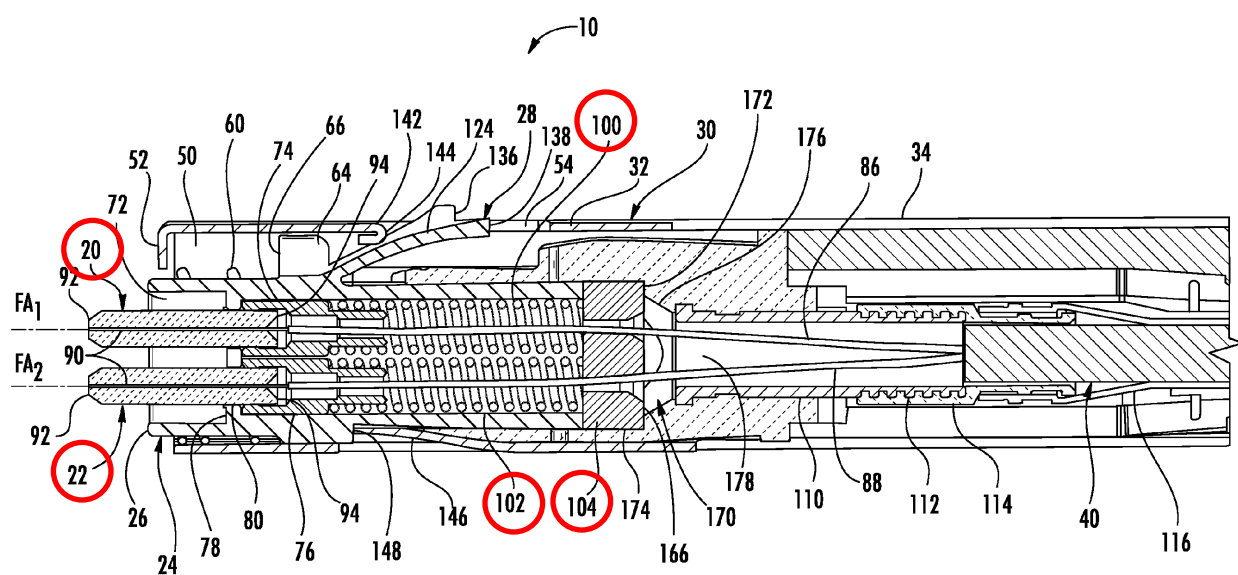
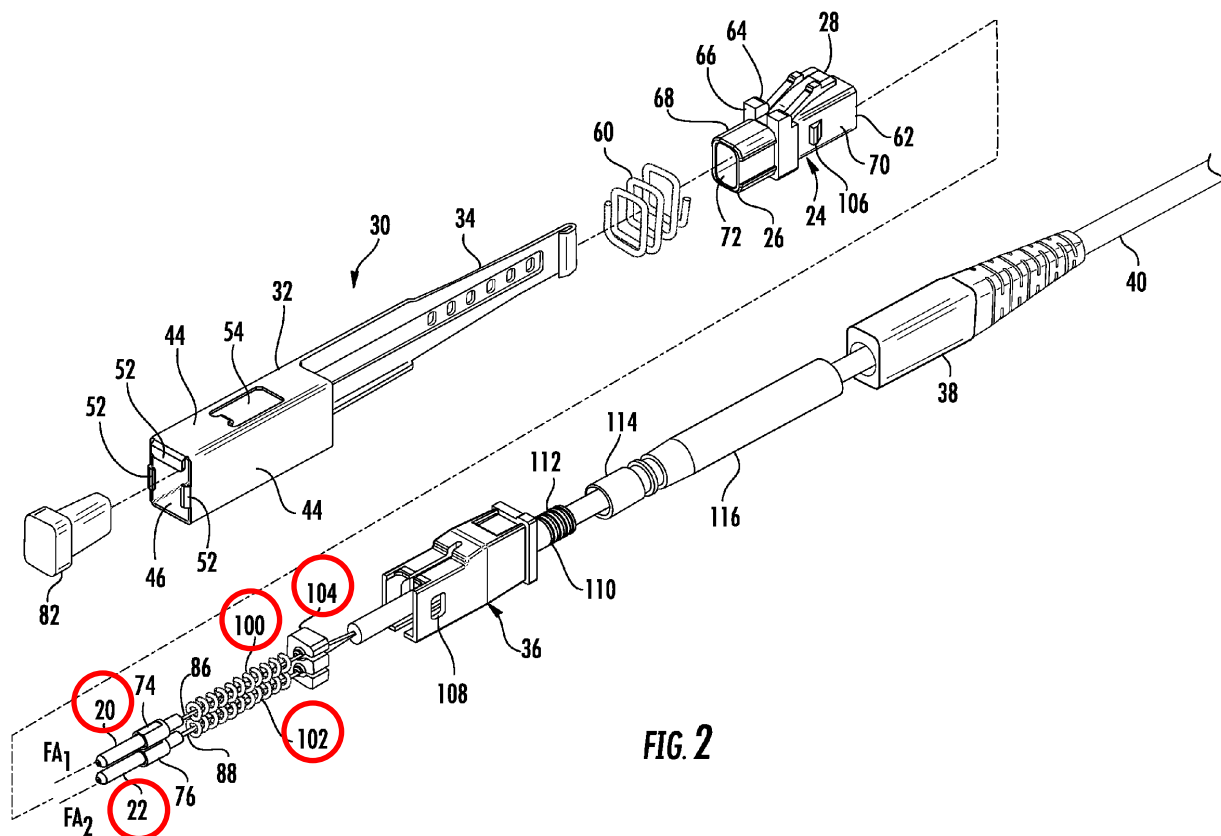
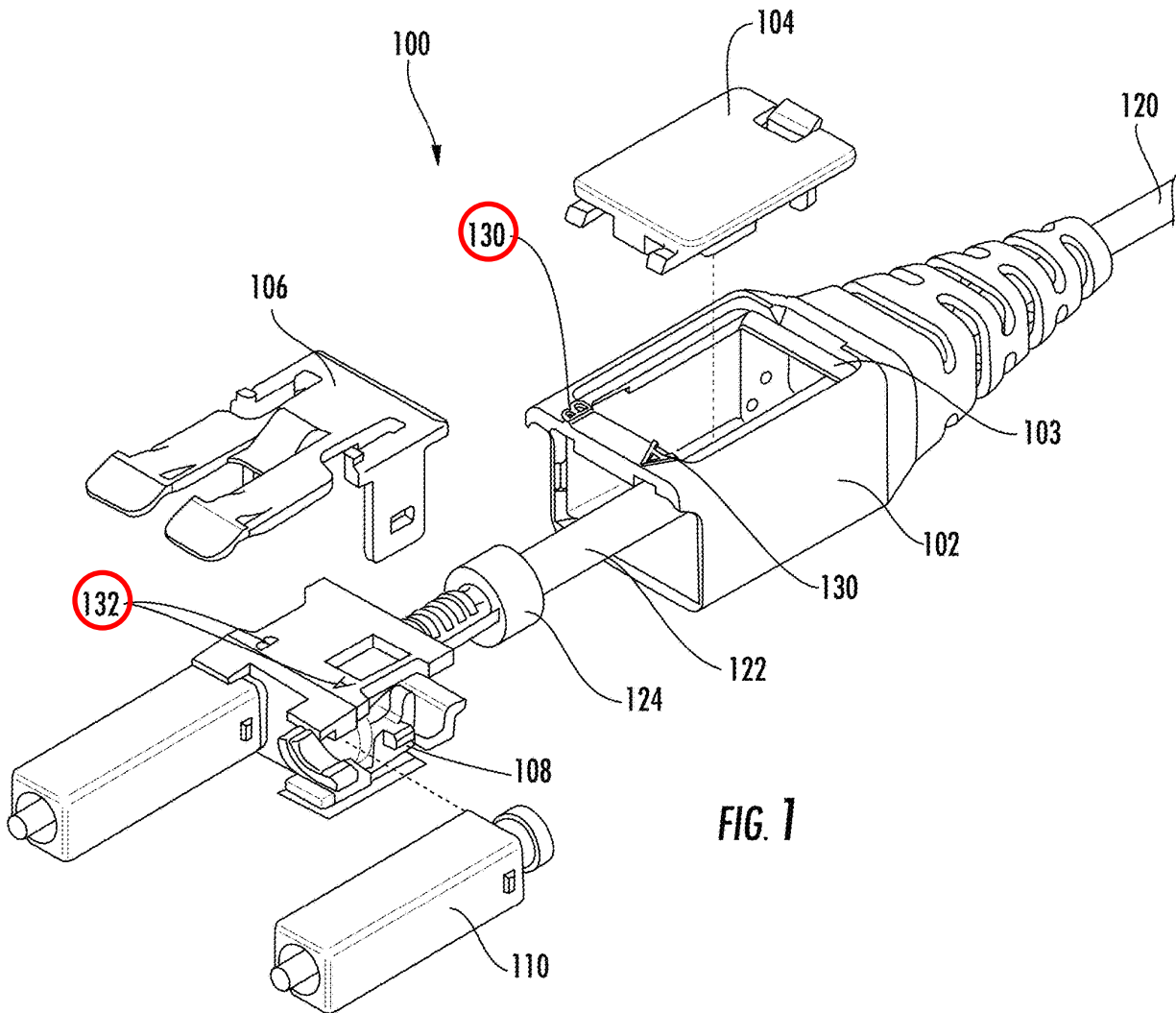


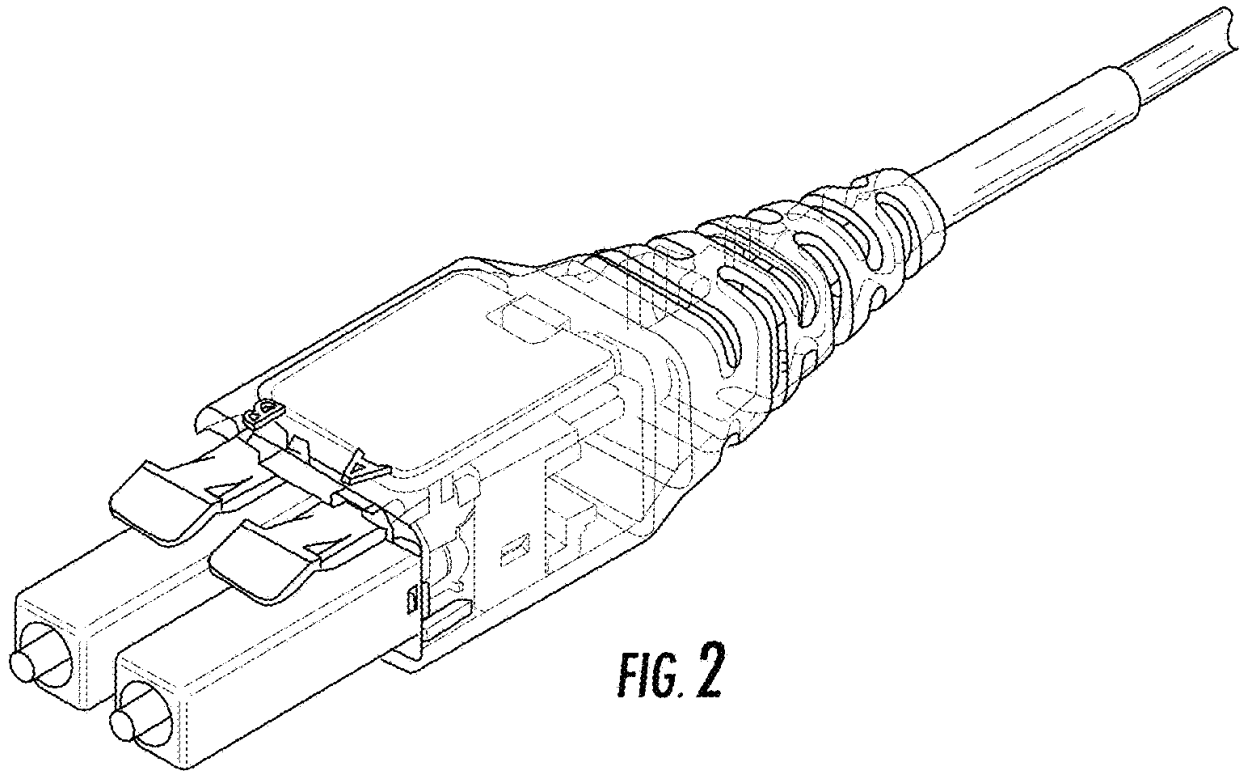
FIG. 3

EX1005: Figs. 1-3 (annotated).

3. Veatch

Veatch discloses a polarity change fiber optic connector (100) with polarity indicia (130, 132) to “indicate the polarity of the connector.” EX1007: Fig. 1, 2:26-39; EX1002: ¶¶41-42.



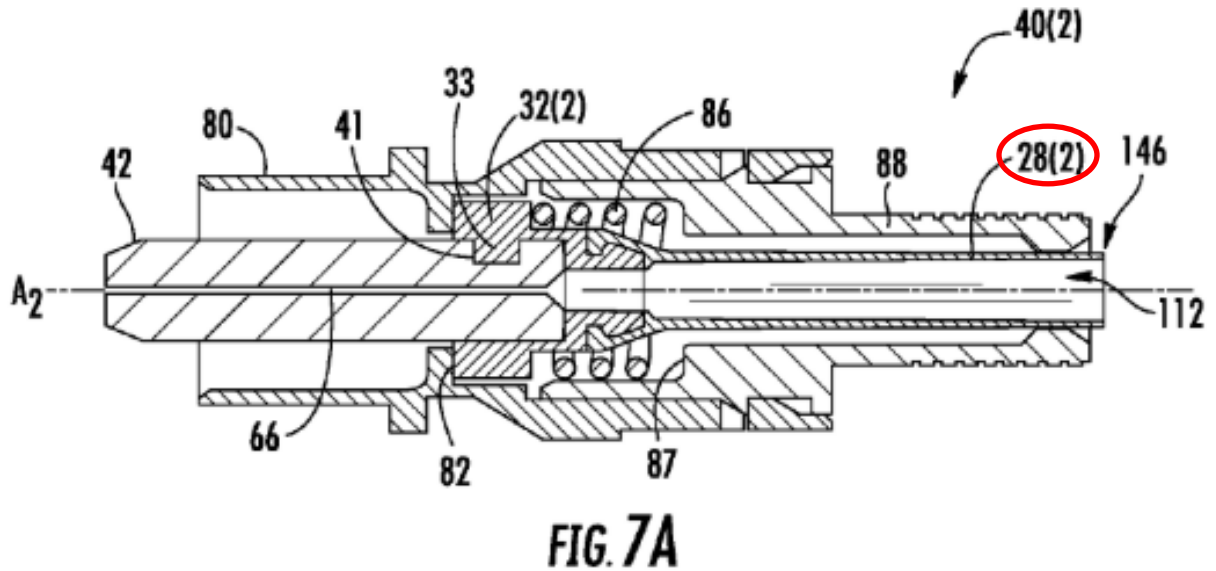


EX1007: Figs. 1 and 2 (annotated).

4. Henke

Henke discloses a fiber optic connector subassembly (40(1)) having a ferrule assembly comprising a ferrule (42), a ferrule holder (32(1)) and a lead-in tube (28(1)). EX1008: ¶[0041]; EX1002: ¶¶43-44. The lead-in tube (28(1)) has a front end (114) integrated with the rear end (30) of the ferrule holder body (32(1)).

EX1008: ¶¶[0041], [0059]; EX1002: ¶¶44-45.



EX1008: Fig. 7A (annotated).

5. Nguyen

Nguyen discloses a ferrule holder (300) having different sized first and second projections (320, 322) "to position the ferrules 12 in the adapter in the x and y directions." EX1006: ¶[0027]; EX1002: ¶¶48-49. The corresponding mating adapter (100) has three-sided grooves (140, 142) for engaging the projections (320, 322) and preforming the x and y alignment. EX1006: Fig. 7B, ¶¶[0034], [0036]; EX1002: ¶49.

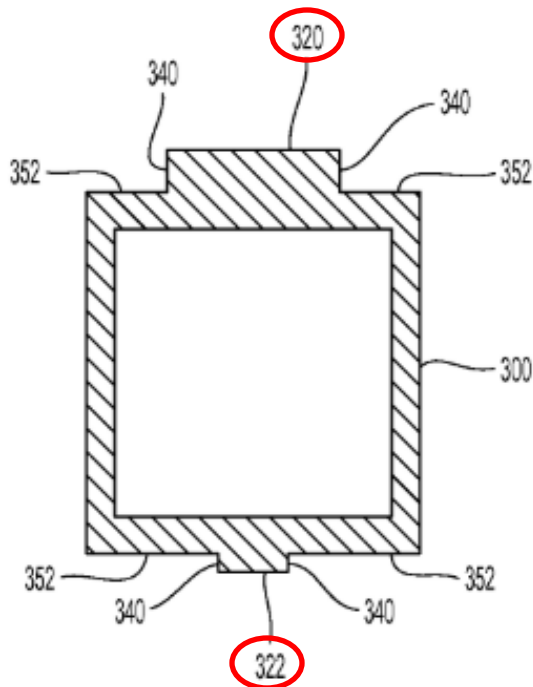


Fig. 7A

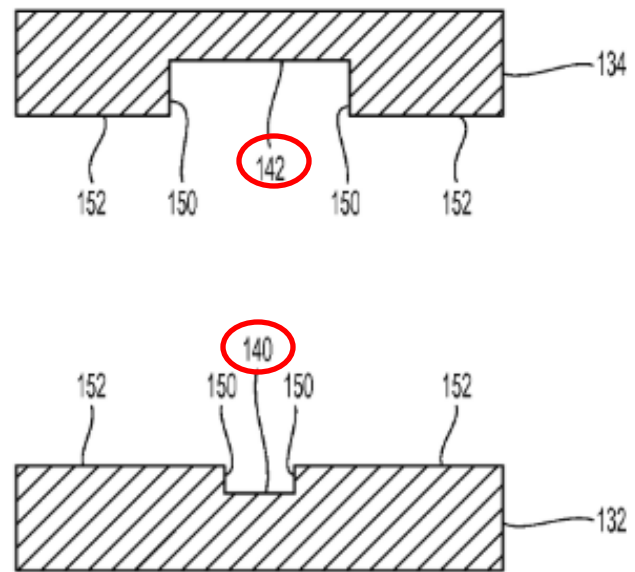


Fig. 7B

EX1006: Figs. 7A-B (annotated).

6. Takano'369

Takano'369 discloses a fiber optic connector (10300, 10400, 10500) having outer housing (10301, 10401, 10501), ferrules (10303, 10403), ferrule holders (10304), ferrule springs (10305), a back body (10306, 10406), a back post (10307), a boot (10309, 10409, 10509), a locking tab (10411), and a push-pull tab (10310, 10410, 10510). EX1009: 18:67-19:50; EX1002: ¶¶50-51.

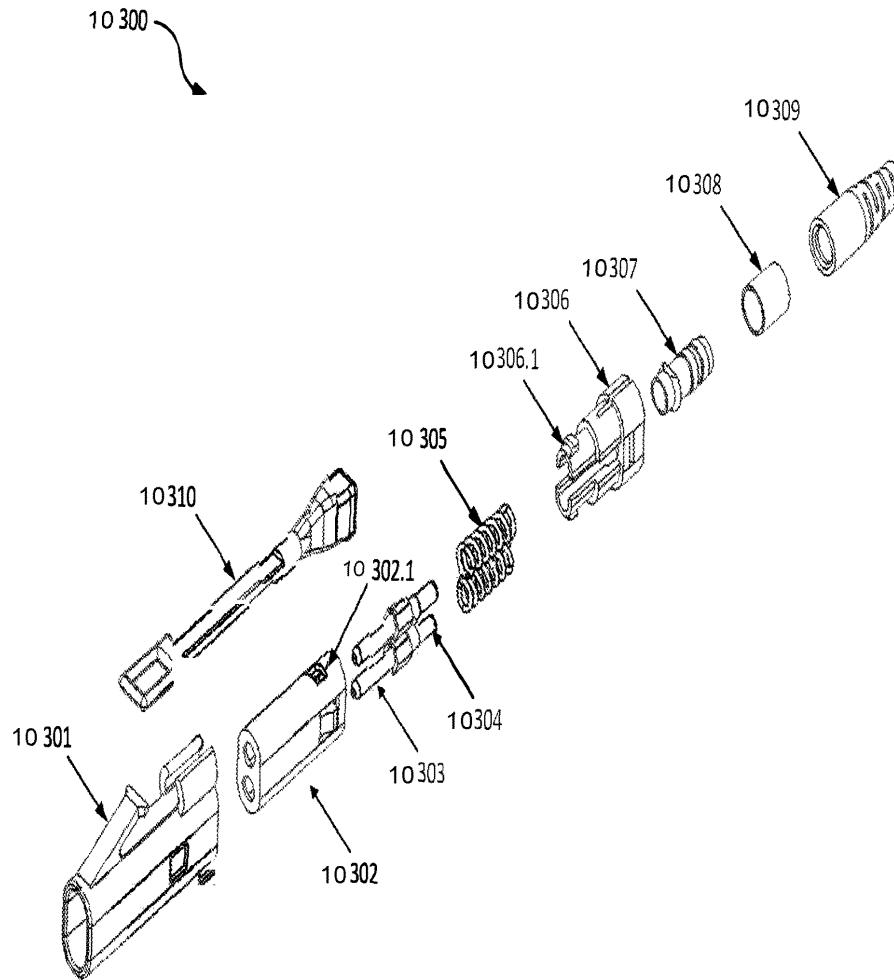


FIG. 53

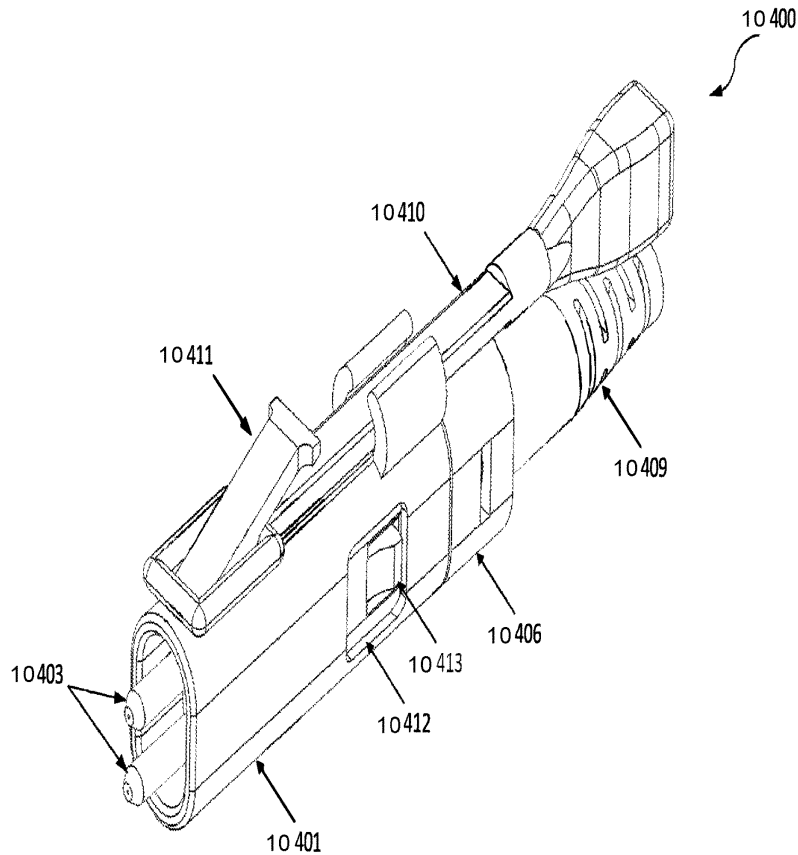


FIG. 54

EX1009: Figs. 53 and 54.

7. Chen

Chen discloses an optical fiber connector including two ceramic ferrules (1), each supported by a block piece (3), elastic elements (2), a casing (4), a sleeve body (5) with a dual-barrel back post (6), and a strain relief boot. EX1011:

¶¶[0026]-[0027]; EX1002: ¶¶52-53.

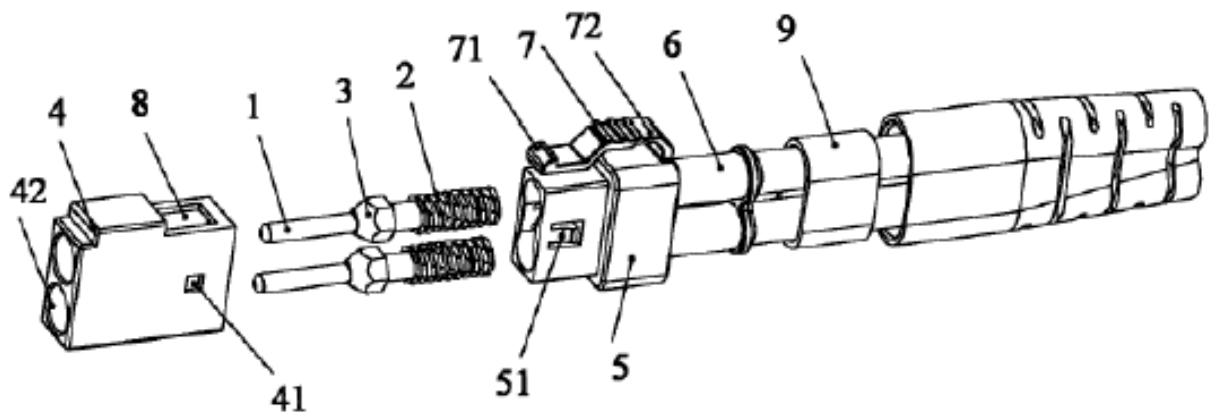


FIG. 3A

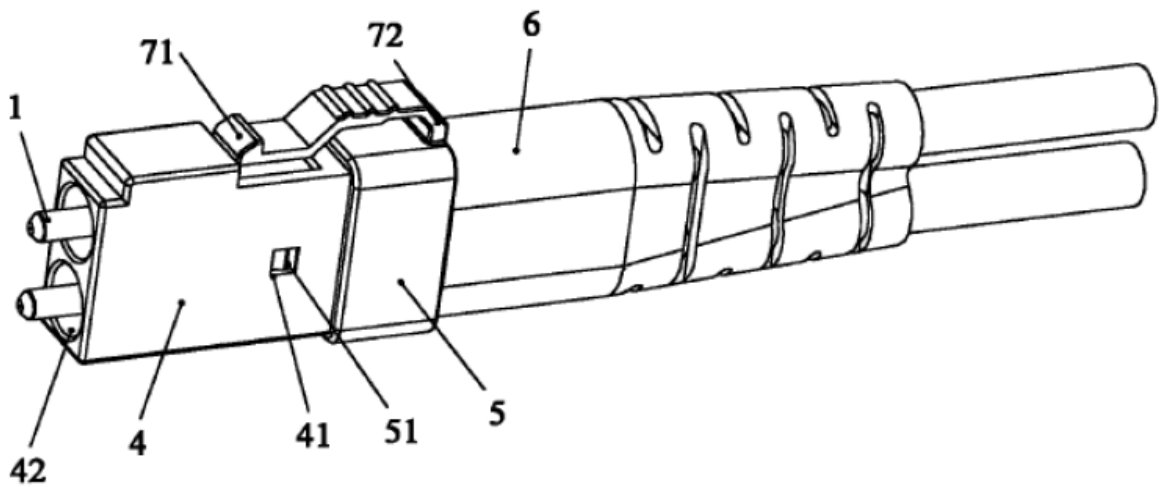


FIG. 3B

EX1011: Figs. 3A-B.

8. Chang

Chang discloses a fiber optic connector assembly (400) with two ferrules (155a, 155b) and a locking component (430). EX1012: ¶¶[0029]-[0030]. The locking component (430) has a single cylindrical back post for the crimp ring (125). EX1012: ¶[0030], Fig. 4B; EX1002: ¶¶54-55.

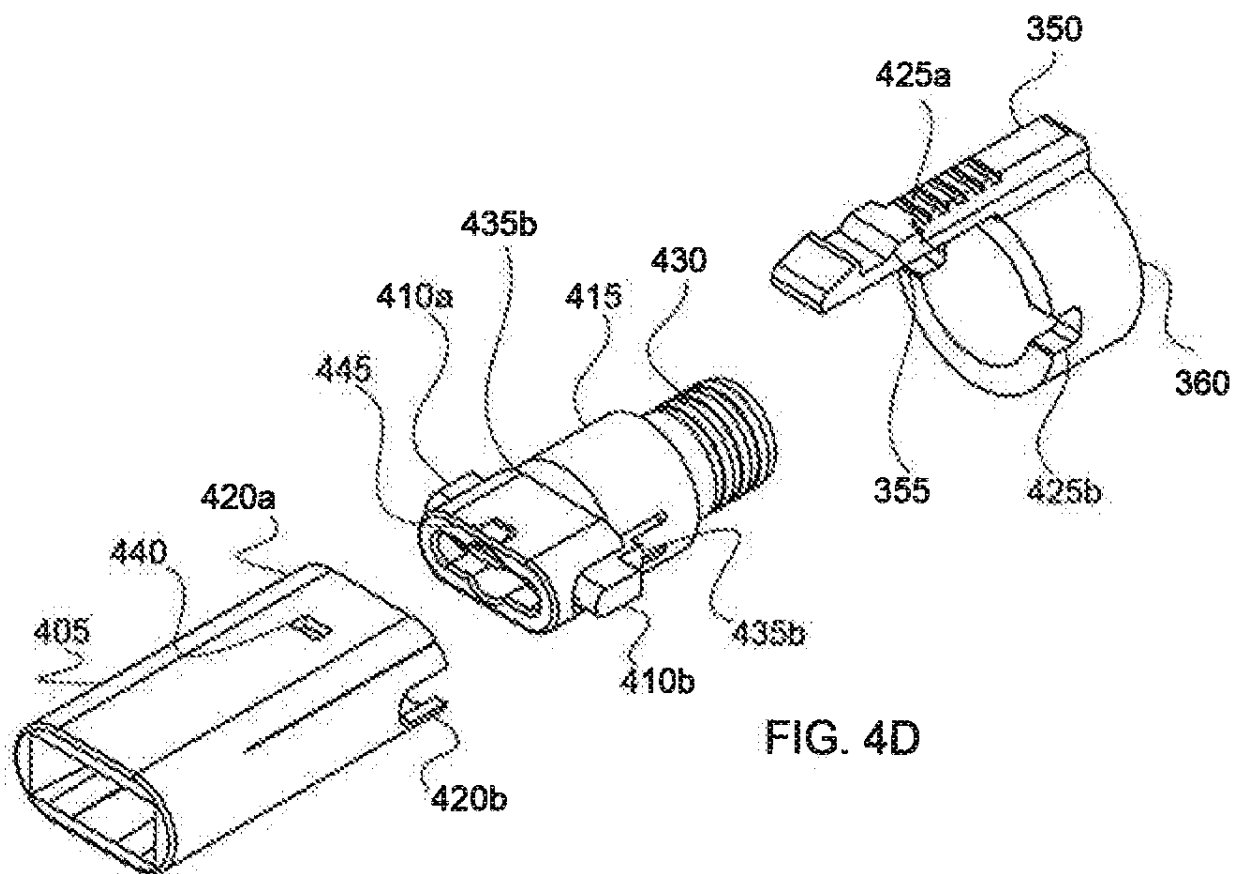


FIG. 4D

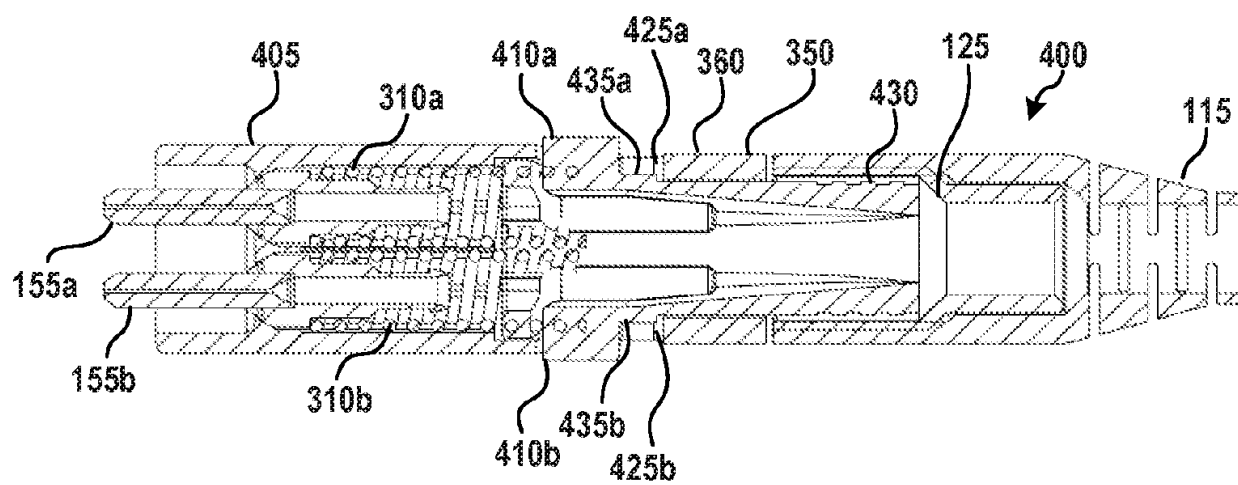


FIG. 4B

EX1012: Figs. 4B&D.

9. Raven

Raven discloses fiber optic connectors (45a, 45b) having guide elements (51a, 51b) that engage a recess in a socket to guide insertion and ensure correct orientation of the connector. EX1013: ¶¶[0039], [0098]; EX1002: ¶¶56-57.

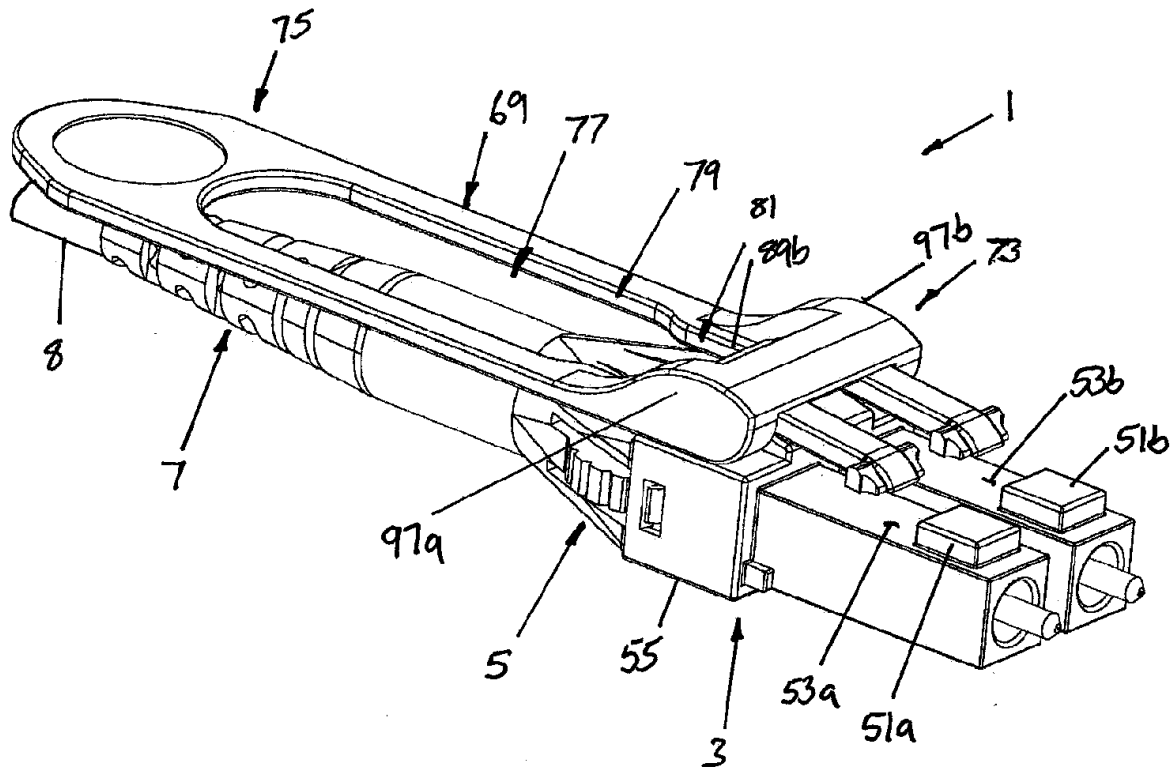


Fig. 1

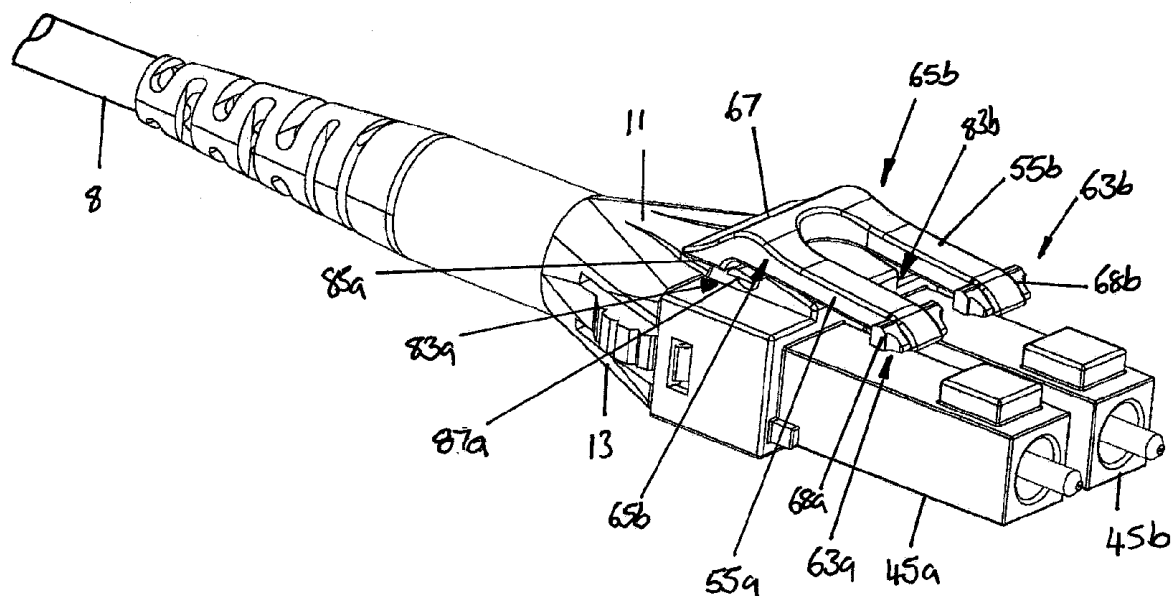


Fig. 2

EX1013: Figs. 1 and 2.

10. QSFP-DD

QSFP-DD is a technical speciation delineating the “requirements of the pluggable QSFP Double Density (QSFP-DD) module, connector and cage system.”

EX1014: 1. In particular, QSFP-DD sets forth the requirements for a QSFP-DD optical port for standard types of optical connectors, as shown below: EX1014:

59; EX1002: ¶¶58-59.

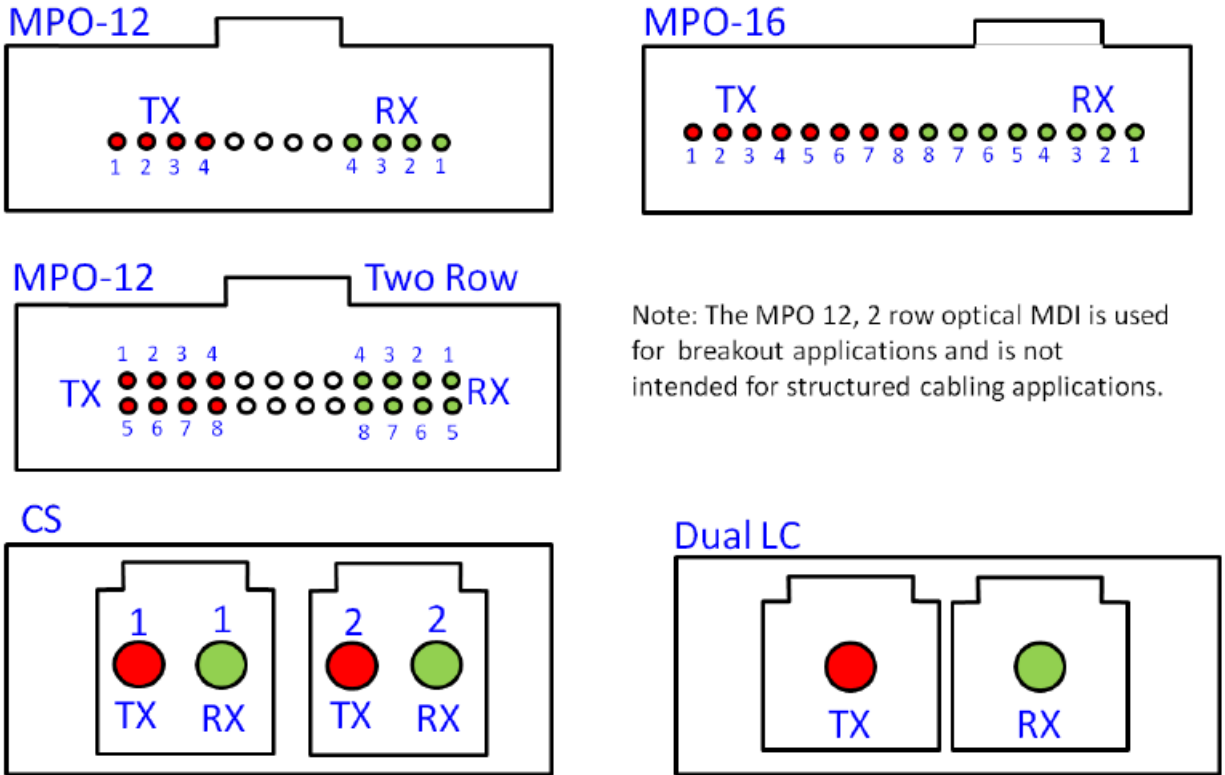


Figure 33: Optical Media Dependent Interface port assignments

EX1014: Fig. 33.

11. Kiani

Kiani teaches ferrule carrier (810) with a rib (924) separating two springs (954). EX1015: ¶¶[0059], [0074]; EX1002: ¶¶60-61.

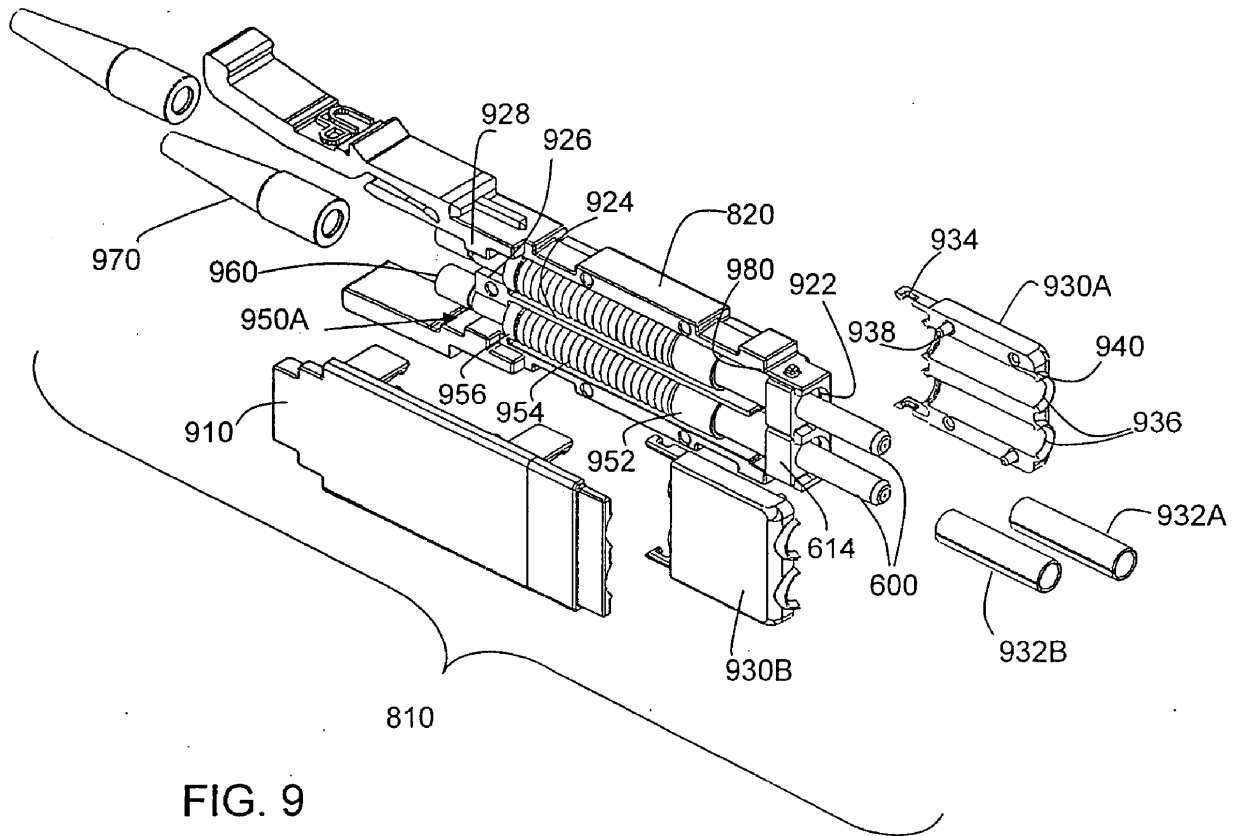


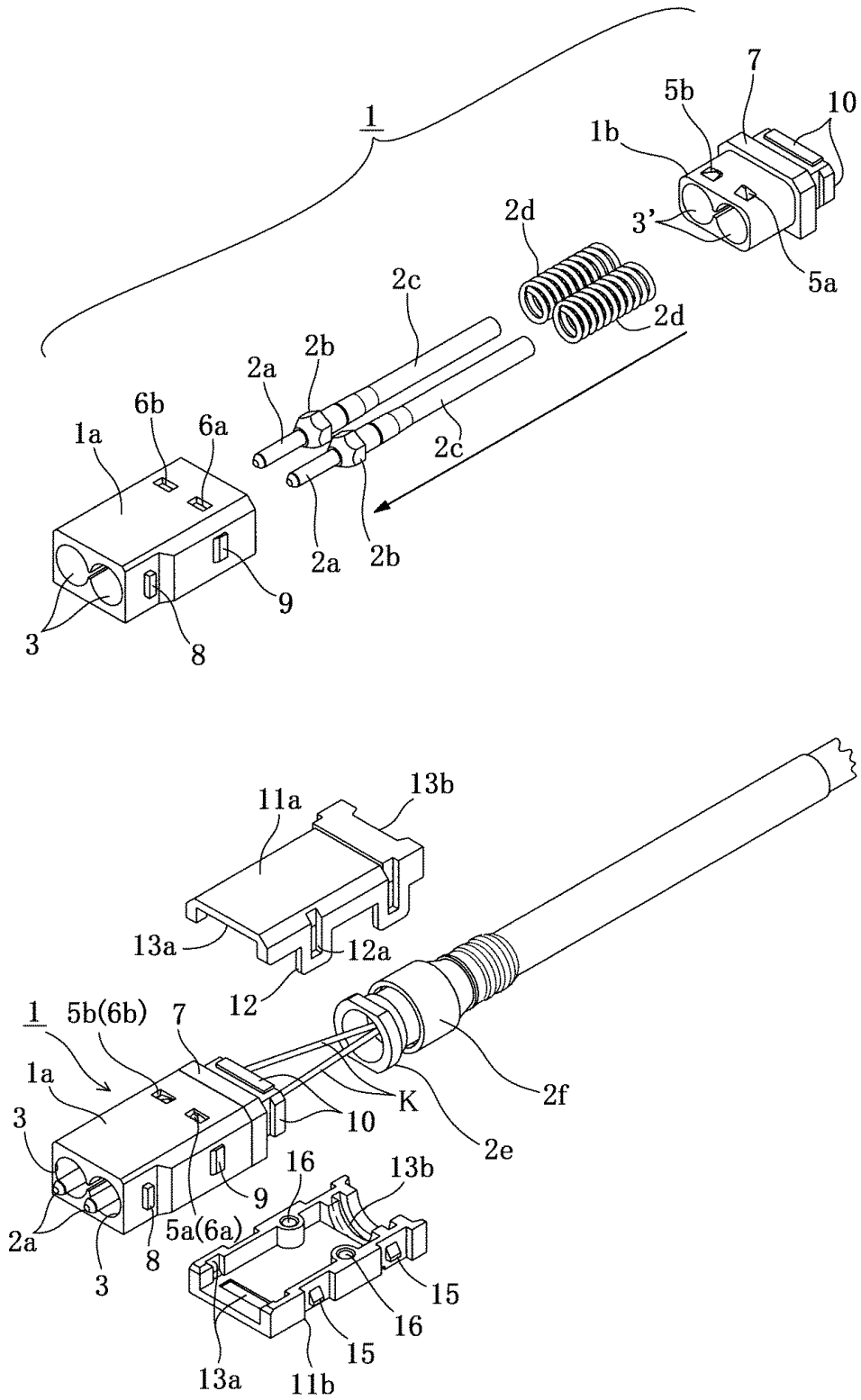
FIG. 9

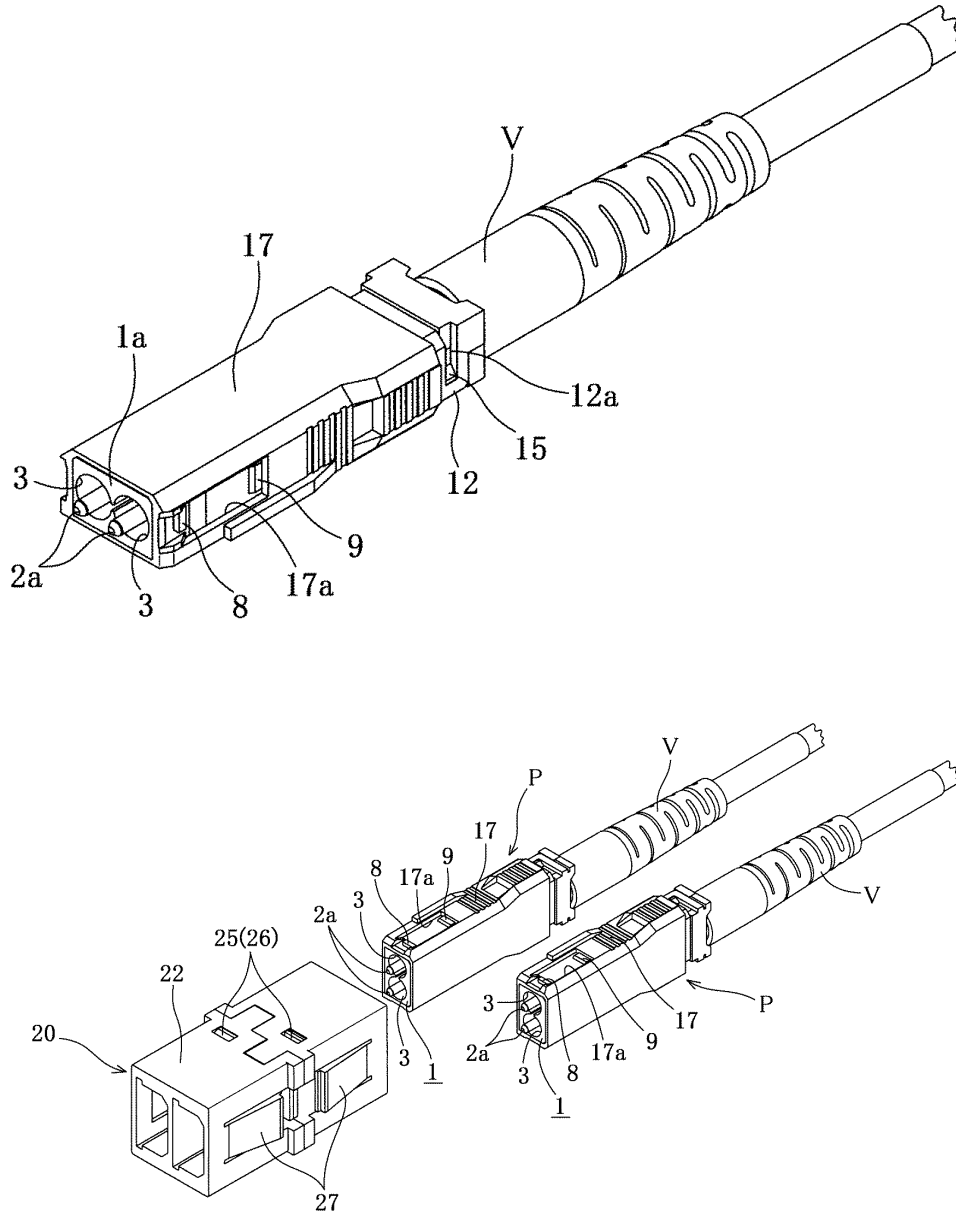
EX1015: Fig. 9.

12. Toyama

Toyama discloses an optical fiber connector (e.g., a plug body (P)) including two ferrules (2a), each supported by a ferrule holder (2b), two springs (2d), a knob 17, holder portions (11a, 11b), a stop ring (2e), and a strain relief boot (V).

EX1016: ¶[0022]; EX1002: ¶¶62-63.





EX1016: Figs. 1, 3, 6, and 11.

C. Level of Ordinary Skill

The person having ordinary skill in the art (“POSA”) would have: (1) at least a bachelor’s degree in mechanical engineering, electrical engineering, physics, or a related field and three years of experience in fiber optics and fiber optic

connectors; (2) a master's degree in in the fields previous mentioned and at least one year of experience in fiber optics and fiber optic connectors; or (3) industry experience (at least three years) designing fiber optic connectors in lieu of a formal degree. EX1002: ¶25.

The level of ordinary skill is not determinative here, as those of less or more skill would also find the claims to be unpatentable. EX1002: ¶26.

IV. CLAIM CONSTRUCTION

In a PGR, the Board gives claim terms their ordinary meaning as understood by a POSA. 37 C.F.R. §42.200(b).

Petitioner has applied the plain and ordinary meaning, but reserves the right to rebut or demonstrate invalidity under any Paten Owner claim construction(s). EX1002: ¶¶64-65.

V. GROUND 1: INDEFINITENESS

A claim is indefinite when “read in light of the specification delineating the patent, and the prosecution history, fail[s] to inform, with reasonable certainty, [a POSA] about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 901 (2014).

A. Claim 1 (and Dependent Claims 2-17) is Indefinite

Claim 1's recitation of “an alignment feature on at least one of the top surface and the bottom surface of the housing” is indefinite because it is subject to multiple different interpretations, making it unclear what the claim covers.

EX1002: ¶¶66-68. “A claim is indefinite if its language might mean several different things and no informed and confident choice is available among the contending definitions.” *HZNP Meds. LLC v. Actavis Labs. UT, Inc.*, 940 F.3d 680, 698 (Fed. Cir. 2019).

This limitation can mean the following:

1. An alignment feature that is on either the top surface, OR on the bottom surface, OR on both the top and bottom surfaces; or
2. A first alignment feature on the top surface, OR a different second alignment feature on the bottom surface, OR a first alignment feature on the top surface and a second different alignment feature on the bottom surface. EX1002: ¶69.

The specification is of no help in deciphering the intended meaning.

EX1002: ¶70.

The specification uses the term “alignment feature” twice:

- “The central portion 234 and the two outer trough portions 236 function as an ***alignment feature*** of the rail receiving portion 164.” EX1001: 7:13-15.
- “The area 1234 functions as an ***alignment feature*** of the rail receiving portion 1164.” EX1001: 13:16-18.

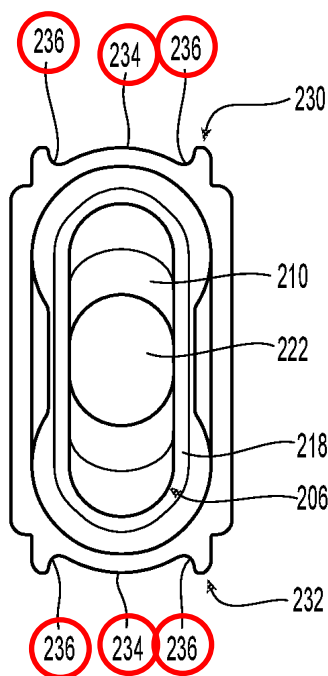


Fig. 8

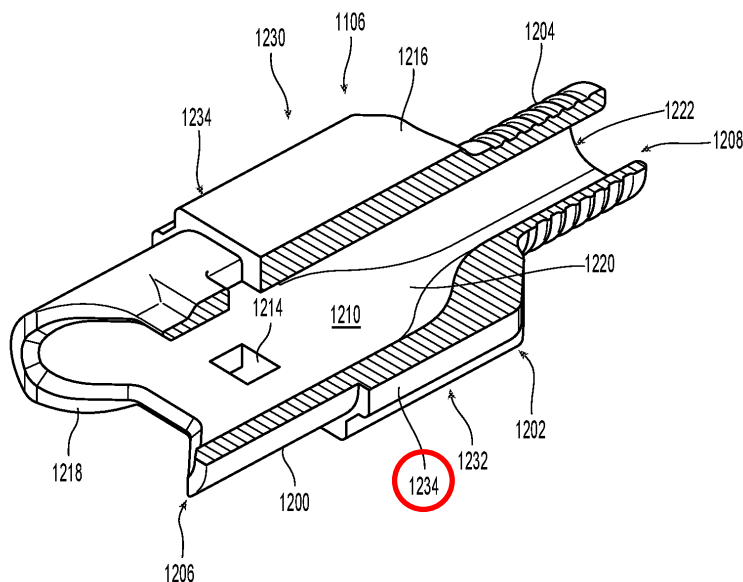


Fig. 27

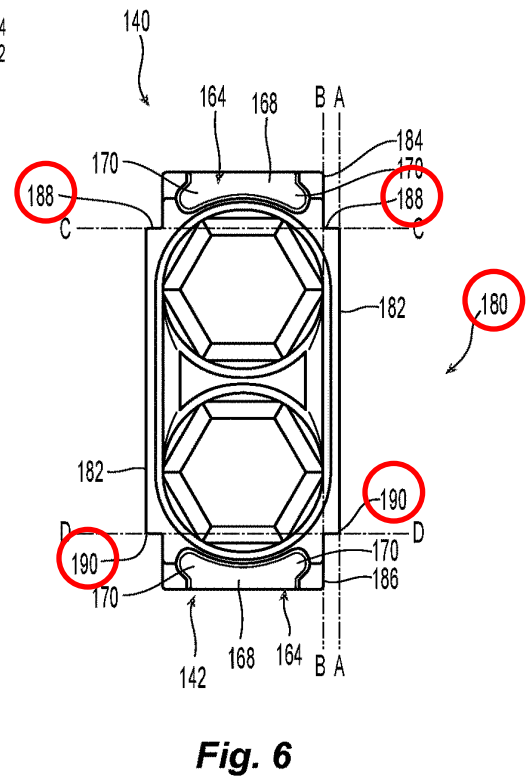
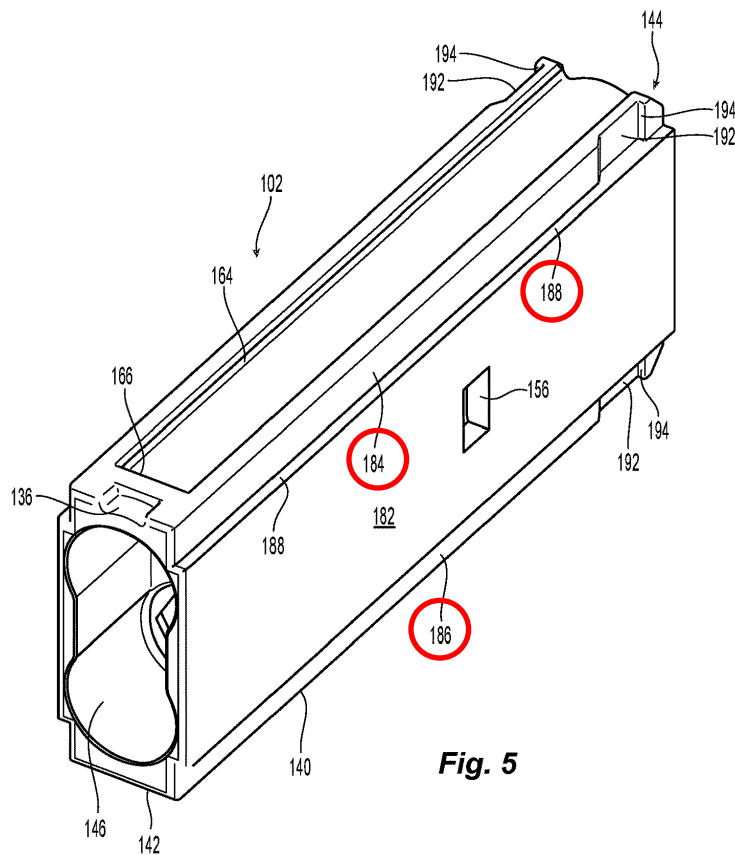
EX1001: Figs. 8 and 27 (annotated).

In each of these recitations, the discussed “alignment feature” is part of the crimp body (106, 1106). EX1002: ¶¶71-72. However, claim 1 states that the alignment feature is on the housing. EX1002: ¶72. Thus, these crimp body (106, 1106) “alignment features” are not the same alignment feature(s) referenced in claim 1 and offer no help in understanding the limitation. EX1002: ¶72.

The housing (102)¹ does include surfaces (184, 186) for aligning the connector (100) horizontally and surfaces (188, 190) for aligning the connector

¹ Housings (1102, 2102) include similar surfaces. EX1001: Figs. 25, 26, and 39; EX1002: ¶71.

vertically, but all of these surfaces are on the lateral sides of the housing, not the top or bottom surfaces (160, 162) *of the housing* as recited by claim 1. EX1001: 6:30-36, 9:22-41; EX1002: ¶71. The specification calls out “160” as the top surface and “162” as the bottom surface of the housing (102). EX1001: 5:55-57; EX1002: ¶71. And the specification states the horizontal/vertical aligning surfaces (184, 186, 188, 190) are on the side surfaces (180) of the housing (102). EX1001: 6:11-29; EX1002: ¶71.



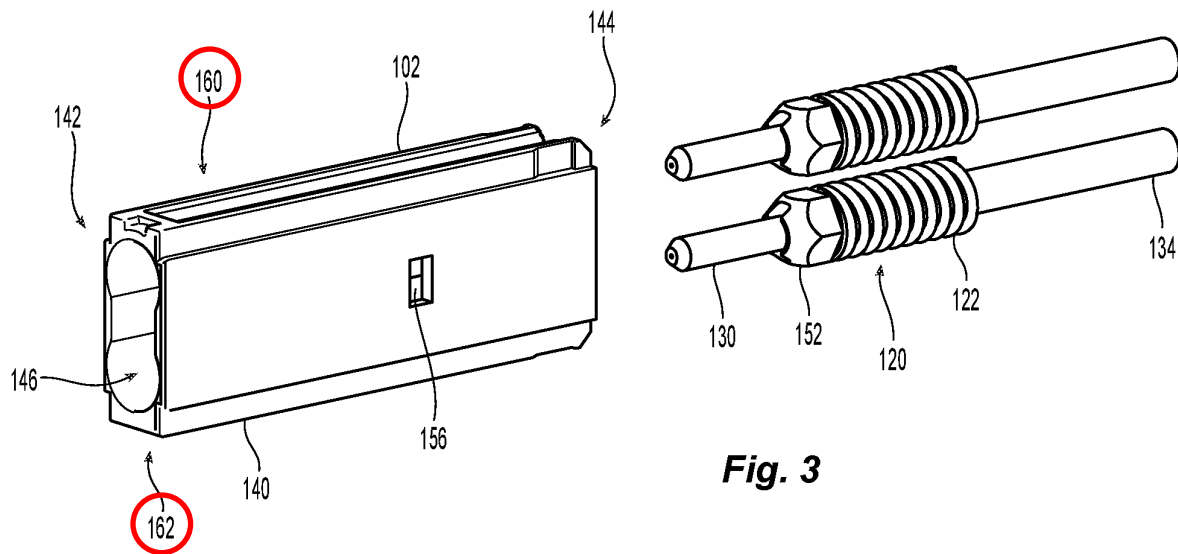


Fig. 3

EX1001: Figs. 3, 5 and 6 (annotated).

Thus, these surfaces (184, 186, 188, 190) are not the same alignment feature(s) referenced in claim 1 and again offer no help in understanding the limitation. EX1002: ¶74.

Claim 9 recites that “the alignment feature includes the rail receiving portion” but this also does not help in understanding the limitation. EX1002: ¶75.

The ‘466 Patent always shows and describes the housing (102, 1102, 2102) having two rail receiving portions (164, 1164), one on the top and one on the bottom of the housing. EX1001: 5:60-62, 11:54-56, 16:10-12, Figs. 39 and 48; EX1002: ¶75.

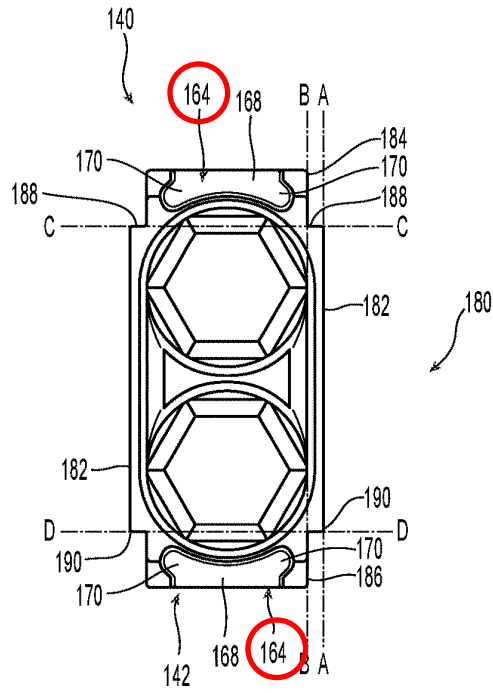


Fig. 6

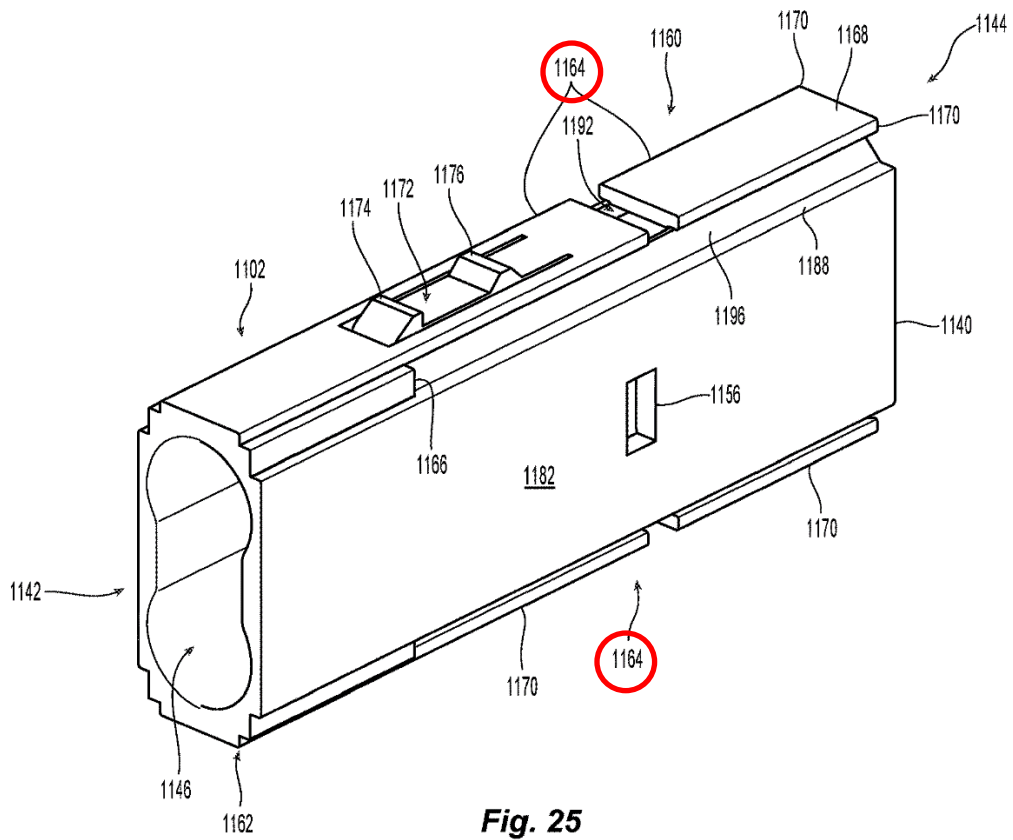


Fig. 25

EX1001: Figs. 6 and 25 (annotated).

The ‘466 Patent never describes the two rail receiving portions (164, 1164) as being optional—e.g., only one of the top or bottom surfaces of the housing includes a rail receiving portion. EX1002: ¶76. Thus, the rail receiving portions again offer no help in understanding the limitation. EX1002: ¶76.

Therefore, because claim 1 is subject to two inconsistent interpretations (and the intrinsic evidence offers no help choosing between them), claim 1 (and dependent claims 2-17) is indefinite. EX1002: ¶¶77-78.

B. Claim 14 is Indefinite

Claim 14 recites that “the alignment feature includes a vertical alignment feature and a horizontal alignment feature.” This claim is indefinite because it is subject to multiple different interpretations, making it unclear what the claim covers. EX1002: ¶¶79-80. “A claim is indefinite if its language might mean several different things and no informed and confident choice is available among the contending definitions.” *HZNP Meds. LLC v. Actavis Labs. UT, Inc.*, 940 F.3d 680, 698 (Fed. Cir. 2019).

It is unclear what a “vertical alignment feature” is. EX1002: ¶81. Is a “vertical alignment feature” a feature that (1) extends vertically and performs an alignment function, or (2) a feature that simply performs a vertical alignment function? EX1002: ¶81. Likewise, is a “horizontal alignment feature” a feature

that (1) extends horizontally and performs an alignment function, or (2) a feature that simply performs a horizontal alignment function? EX1002: ¶81.

The ‘466 Patent’s specification offers no help. EX1002: ¶82. The specification never uses these terms. EX1002: ¶82. And what descriptions of alignment occur are of no help. EX1002: ¶83. As explained in Section V(A), the recited “alignment feature” is part of the crimp body, not on the housing as required by claim 14 (via claim 1). EX1001: 7:13-15; 13:16-18; EX1002: ¶83. Similarly, the horizontal/vertical aligning surfaces (184, 186, 188, 190) are not on the top or bottom surfaces of the housing as recited by claim 1. EX1001: 6:30-36, 9:22-41. EX1002: ¶83. Thus, none of these features can be the alignment feature(s) referenced in claim 14 and offer no help in understanding claim 14. EX1002: ¶83.

Again, claim 9 indicates that alignment feature includes the rail receiving portions. EX1002: ¶84. However, the rail receiving portions are never described as performing any kind of alignment function with an adapter. EX1002: ¶84. Thus, the rail receiving portions again offer no help in understanding claim 14. EX1002: ¶84.

Therefore, claim 14 is indefinite. EX1002: ¶85.

C. Claim 15 (and Dependent Claim 16) is Indefinite

Claim 15 recitation of “each of the ferrule assemblies is separated from the other ferrule assembly by a wall between respective *ferrule seats* of the fiber optic ferrules of each of the ferrule assemblies” is indefinite because it is unclear what structure is required to correspond to the claimed “ferrule seats.” EX1002: ¶¶86-87.

The ‘466 Patent’s specification never uses the term “ferrule seat.” EX1002: ¶88.

Further, the natural understanding of what a “ferrule seat” is, is inconsistent with the phrasing here. EX1002: ¶89. A POSA would understand "ferrule seat" to mean the structure that seats a ferrule or ferrule assembly in a connector housing. EX1002: ¶89; EX1017: ¶[0071]; EX1018: ¶[0027]; EX1019: ¶[0055]. The “ferrule seat” could theoretically be part of the connector housing or part of the ferrule assembly, but it would need to be structure that performs the function of "seating" the ferrule in the connector housing. EX1002: ¶89.

In the '466 Patent, the potential seating structures include (1) the ferrule holders (132, 1132) or (2) the structures (148, 1148) of the housing (102, 1102) that orient the ferrule assemblies (120, 1120) in the housing and the corresponding flat surfaces (150, 1150) of the ferrule holders (132, 1132). EX1002: ¶90.

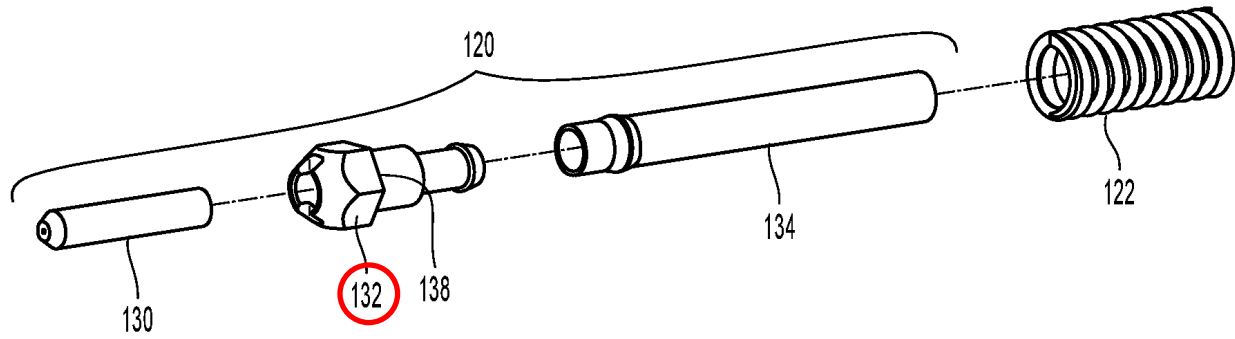


Fig. 3A

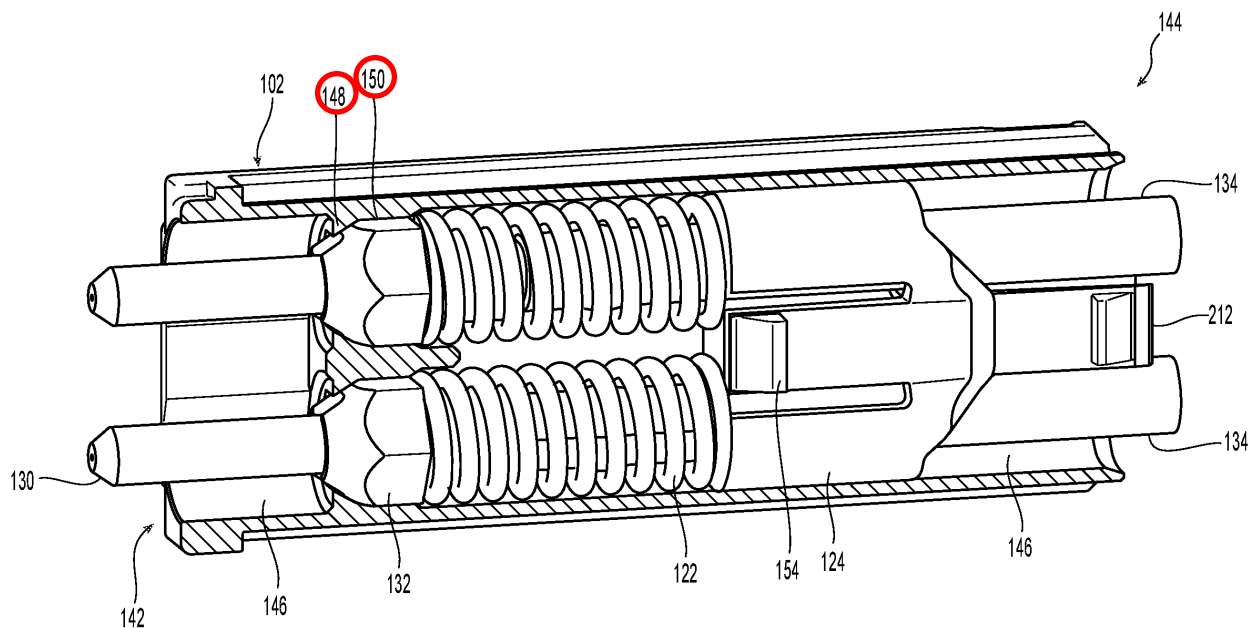


Fig. 4

EX1001: Figs. 3A and 4 (annotated).

However, claim 15 specifically recites that the "ferrule seats" are neither part of the housing nor part of the ferrule holder, but rather, ***are part of*** the fiber optic ferrules themselves. EX1002: ¶91. Recall that claim 1 recites ferrule assemblies comprising two distinct components—ferrules and ferrule holders. EX1002: ¶91. Here, claim 15 specifically recites that the ferrule seats are a part "of the fiber optic

ferrules of each of the ferrule assemblies." EX1002: ¶91. The only grammatical interpretation of this phrase is that the claimed ferrule seats are part of the ferrules, not the ferrule holders or connector housing. EX1002: ¶91. It is therefore unclear to a POSA what structural feature a ferrule needs to have in order for the ferrule to have a "ferrule seat" as claimed. EX1002: ¶91.

Therefore, claim 15 (and dependent claim 16) is indefinite. EX1002: ¶¶92-93.

VI. GROUND 2: LACK OF WRITTEN DESCRIPTION

The specification must reasonably convey that the inventor had possession of the claimed subject matter as of the filing date. *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64 (Fed. Cir. 1991).

A. Claim 1 (and Dependent Claims 2-17) Lacks Written Description

1. 1.d.1² Lacks Written Description

Claim 1 recites that "a front end [of the crimp body] *at least partially* disposed in the opening at the rear end of the housing." Use of the phrase "at least partially" means the claim covers (1) a front end of the crimp body *partially* disposed in the opening at the rear end of the housing, and (2) a front end of the

² Petitioner's headings (1.P, 1.a.1, etc.) correspond to the claim limitations outlined in the Claim Listing (EX1025).

crimp body *fully* disposed in the opening at the rear end of the housing. EX1002: ¶¶94-98.

The '466 Patent's specification contains no indication US Conec was in possession of a front end of the crimp body *partially* disposed in the opening. EX1002: ¶¶99-100.

The '466 Patent's fiber optic connectors (100, 1100, 2100) include a housing (102, 1102, 2102) and a crimp body (106, 1106). EX1001: 4:55-60, 10:51-55, 16:8-14; EX1002: ¶101. Each housing includes an opening (146, 1146) extending between a front end (142, 1142) and a rear end (144, 1144). EX1001: 5:6-8, 11:5-7, 16:8-14; EX1002: ¶101.

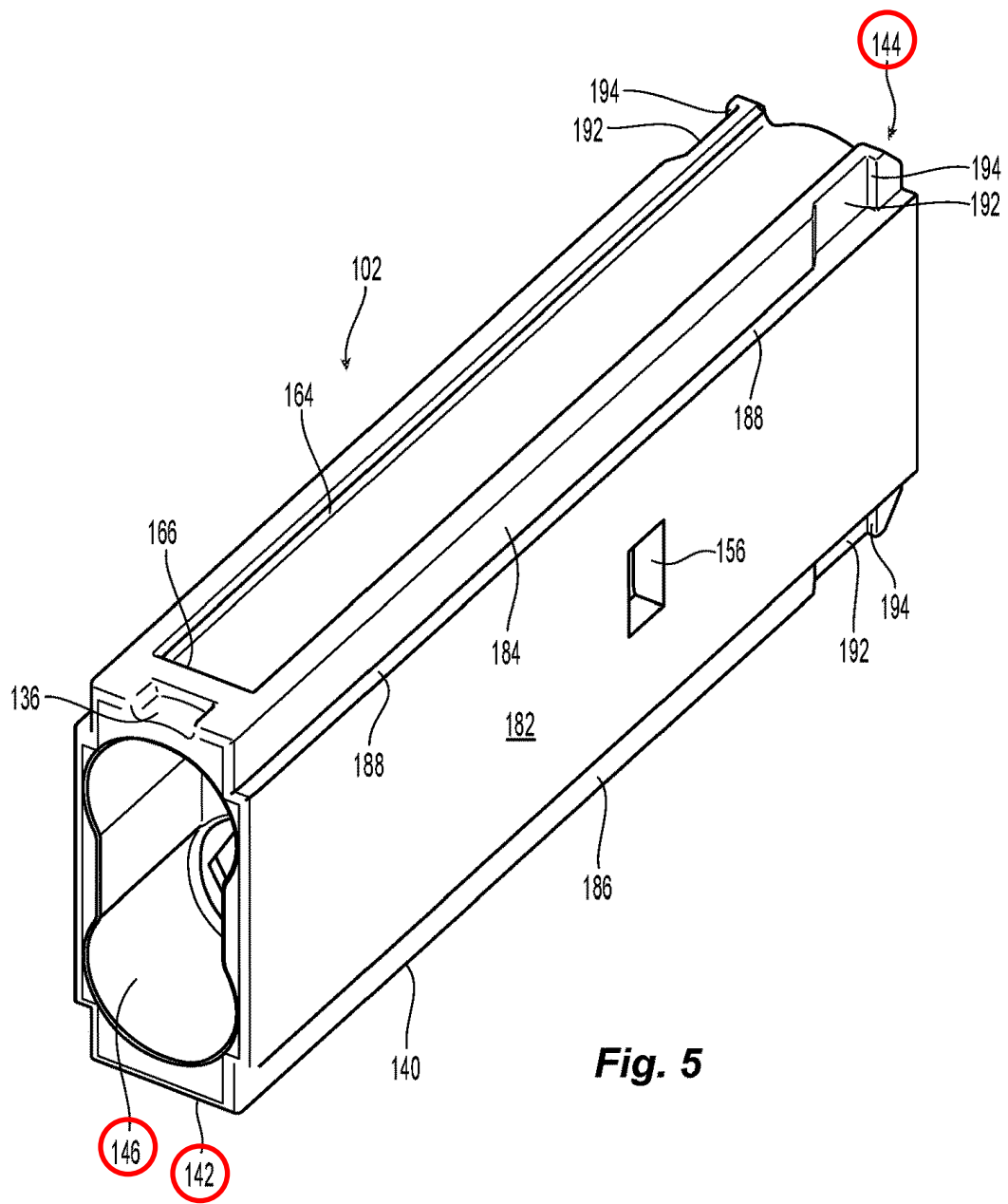
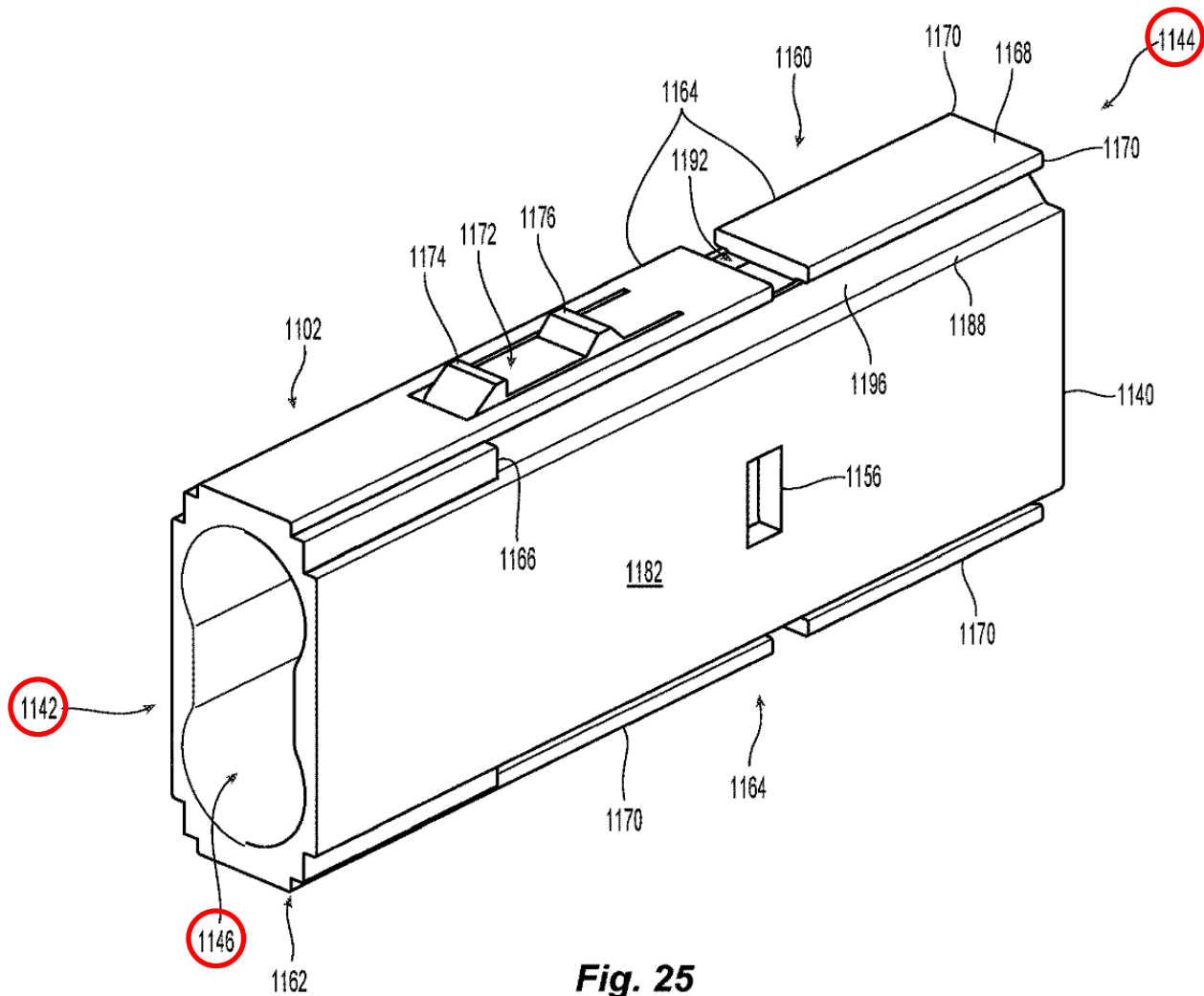


Fig. 5



EX1001: Figs. 5 and 25 (annotated).

The crimp body includes a front portion (200, 1200) with a front end (206, 1206). EX1001: 6:46-53, 12:51-60; EX1002: ¶102.

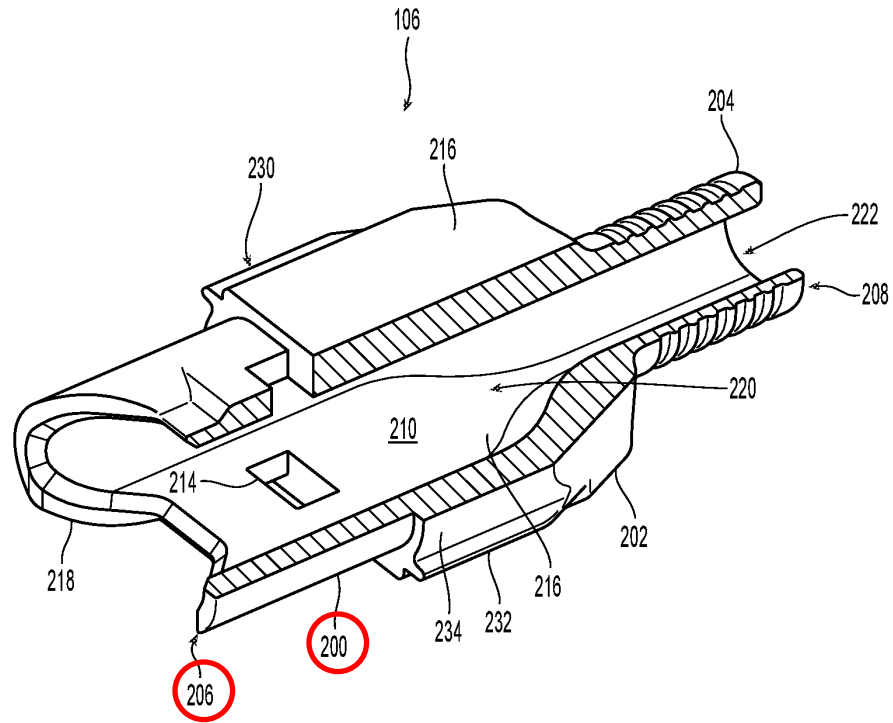


Fig. 9

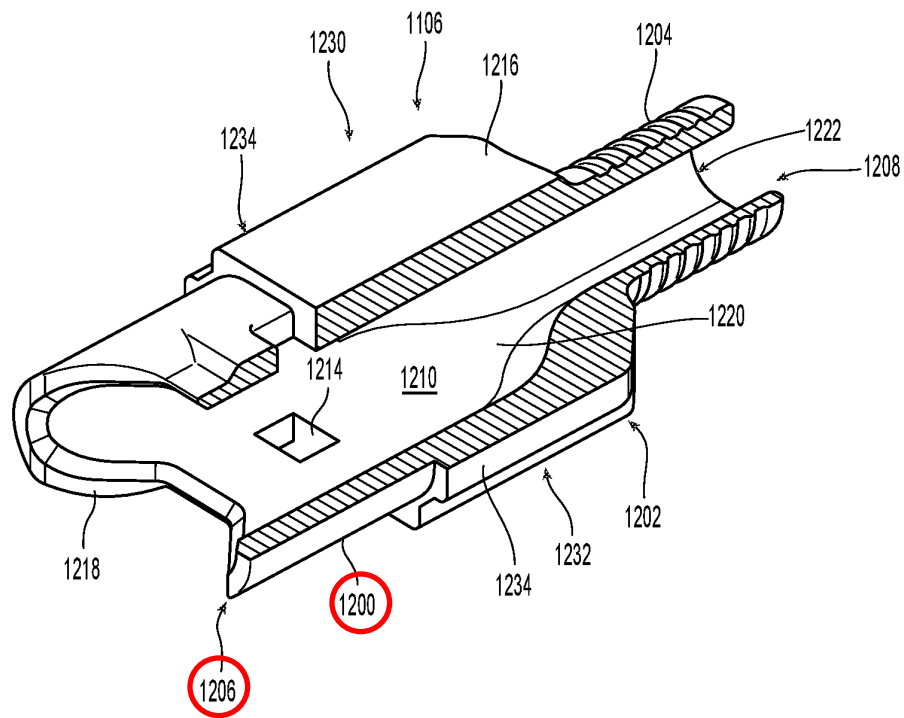
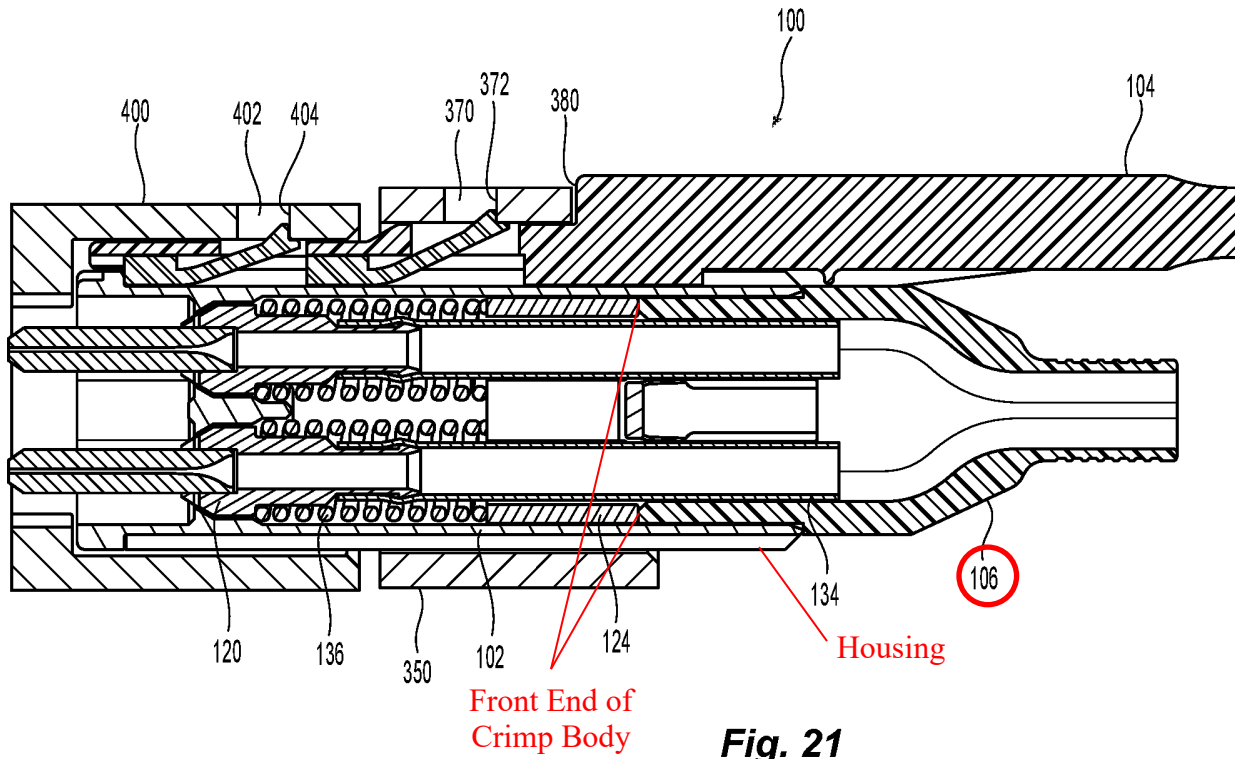


Fig. 27

EX1001: Figs. 9 and 27 (annotated).

The specification only shows the front end of each crimp body being *fully* disposed in the opening, not *partially* disposed. EX1002: ¶103.



Thus, US Conec was not in possession of the **full scope** of this claim limitation—“a front end [of the crimp body] [] **partially** disposed in the opening [] of the housing.” EX1002: ¶106; *Juno Therapeutics, Inc. v. Kite Pharma, Inc.*, 10 F.4th 1330, 1337 (Fed. Cir. 2021) (“the written description must lead a [POSA] to understand that the inventors possessed the **entire scope** of the claimed invention”); *LizardTech Inc. v. Earth Resource Mapping Inc.*, 424 F.3d 1336, 1345 (Fed. Cir. 2005) (“a failure to demonstrate that the patentee possessed the **full scope** of the invention recited in [the claim] ..., [results in] inadequate support for the claim under [§ 112(a)].”); *Rivera v. Int’l Trade Comm’n*, 857 F.3d 1315, 1319 (Fed. Cir. 2017) (“the specification did not provide the necessary written description support for the **full breadth** of the asserted claims”); *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1480 (Fed. Cir. 1998) (“claims may be no broader than the supporting disclosure”).

Therefore, claim 1 (and dependent claims 2-17) lacks written description support. EX1002: ¶¶107-108.

2. 1.e Lacks Written Description

Claim 1 recites that “an alignment feature on **at least one of** the top surface and the bottom surface of the housing.” The ‘466 Patent’s specification contains no indication US Conec was in possession of the full scope of this limitation under either possible meaning:

1. An alignment feature that is on either the top surface, OR on the bottom surface, OR on both the top and bottom surfaces; or
2. A first alignment feature on the top surface, OR a different second alignment feature on the bottom surface, OR a first alignment feature on the top surface and a second different alignment feature on the bottom surface. Section V(A); EX1002: ¶¶109-110.

As explained in Section V(A), the “alignment feature” recited by the specification is part of the crimp body, not on the housing. EX1001: 7:13-15; 13:16-18; EX1002: ¶¶111-113. Similarly, the horizontal/vertical aligning surfaces (184, 186, 188, 190) of the housing are not on the top or bottom surfaces of the housing. EX1001: 6:30-36, 9:22-41; EX1002: ¶¶114-115. Thus, none of these features provide written description support. EX1002: ¶¶113, 115.

Claim 9 indicates that alignment feature includes the rail receiving portions, but the description of the rail receiving portions does not support the full scope of this claim limitation under either interpretation. EX1002: ¶116. The specification always shows and describes the housing having two rail receiving portions. EX1001: 5:60-62, 11:54-56, 16:10-12, Figs. 39 and 48; EX1002: ¶116. The specification never describes the rail receiving portions as being optional—e.g., only one of the top or bottom surfaces of the housing includes a rail receiving portion. EX1001: 5:60-62, 11:54-56, 16:10-12, Figs. 39 and 48; EX1002: ¶116.

Thus, the description of the rail receiving portions does not support the full scope of this claim limitation under the first and second interpretations because the

specification does not teach a rail receiving portion on just the top surface of the housing (and not the bottom surface of the housing) and *vice versa*. EX1002: ¶¶117-118. Further, the specification also does not support this claim limitation under the first interpretation because each rail receiving portion is only on *either* the top or bottom surface of the housing—no *one* rail receiving portion is on *both* the top and bottom surfaces of the housing. EX1002: ¶117.

Therefore, claim 1 (and dependent claims 2-17) lacks written description support. EX1002: ¶¶119-120.

B. Claim 14 Lacks Written Description

Claim 14 recites that “the alignment feature includes a vertical alignment feature and a horizontal alignment feature.” The ‘466 Patent’s specification contains no indication US Conec was in possession of this claim. EX1002: ¶¶121-122.

As explained in Section V(A), the “alignment feature” recited by the ‘466 Patent is part of the crimp body, not on the housing. EX1001: 7:13-15; 13:16-18; EX1002: ¶123. Similarly, the horizontal/vertical aligning surfaces (184, 186, 188, 190) are not on the top or bottom surfaces of the housing. EX1001: 6:30-36, 9:22-41; EX1002: ¶123. Thus, none of these features provide written description support. EX1002: ¶123.

Claim 9 indicates that alignment feature includes the rail receiving portions, but they are never described as performing any kind of alignment function—e.g., horizontal or vertical alignment—with an adapter. EX1002: ¶¶124-125. Thus, the rail receiving portions provide no written description support. EX1002: ¶125.

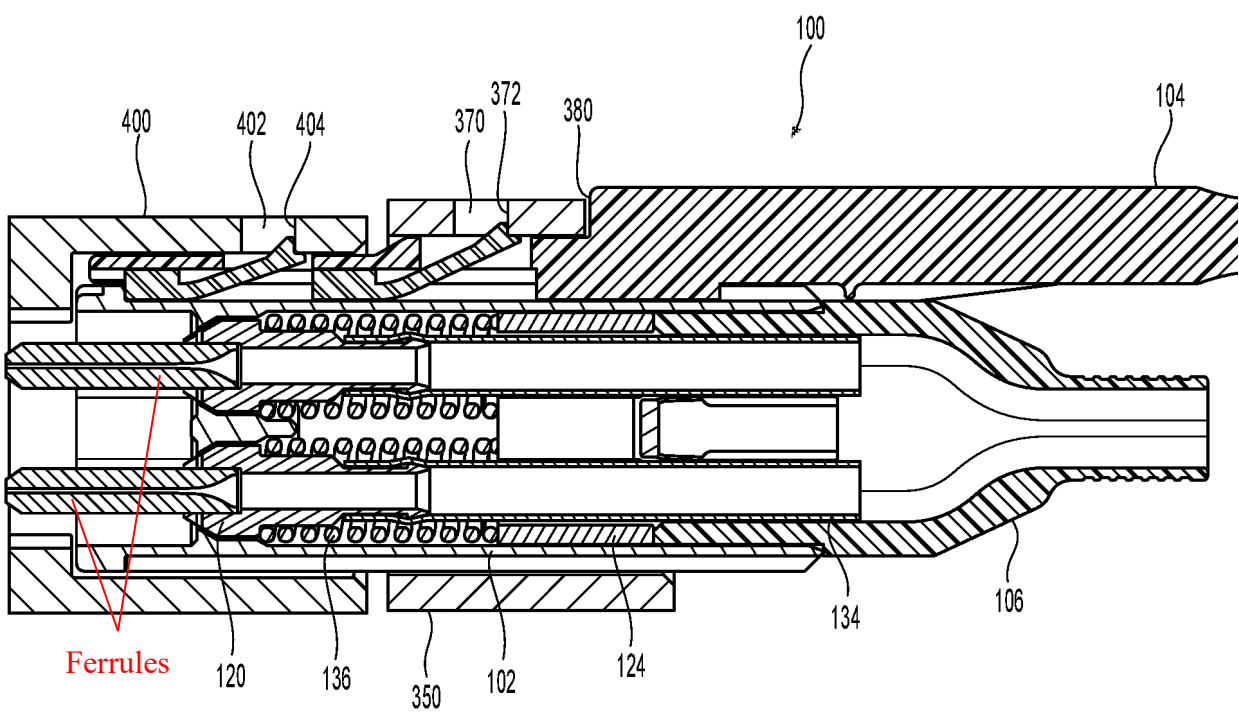
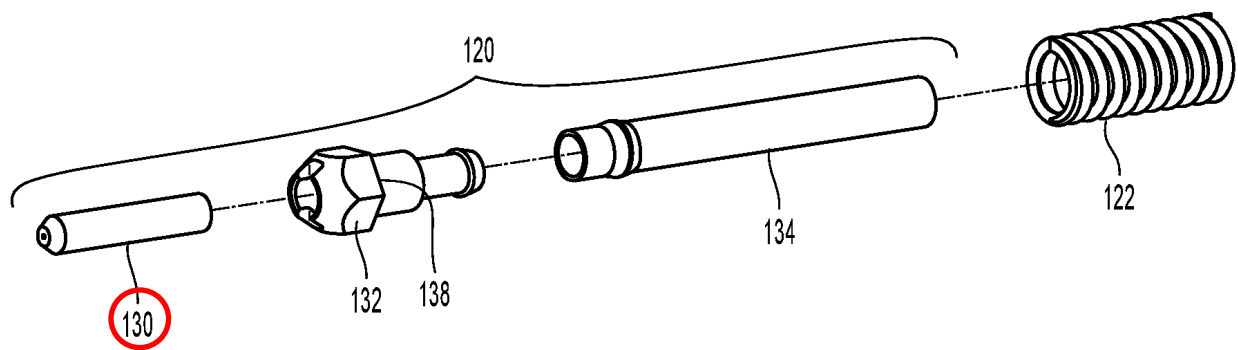
Therefore, claim 14 lacks written description support. EX1002: ¶126.

C. Claim 15 (and Dependent Claim 16) Lacks Written Description

Claim 15 recites that “each of the ferrule assemblies is separated from the other ferrule assembly by a wall between respective *ferrule seats of the fiber optic ferrules* of each of the ferrule assemblies.” The ‘466 Patent’s specification contains no indication US Conec was in possession of this claim. EX1002: ¶¶127-128.

As explained in Section V(A), the plain grammatical interpretation of this claim is that the “ferrule seats” *are part of* the “ferrules,” not another component such as a ferrule holder. EX1002: ¶129.

The specification never uses the term “ferrule seat.” EX1002: ¶130. Further, the specification never shows or describes the ferrules (130, 1130) as including any additional component. EX1001: 4:65-5:5, 10:63-11:4; EX1002: ¶¶130-131.



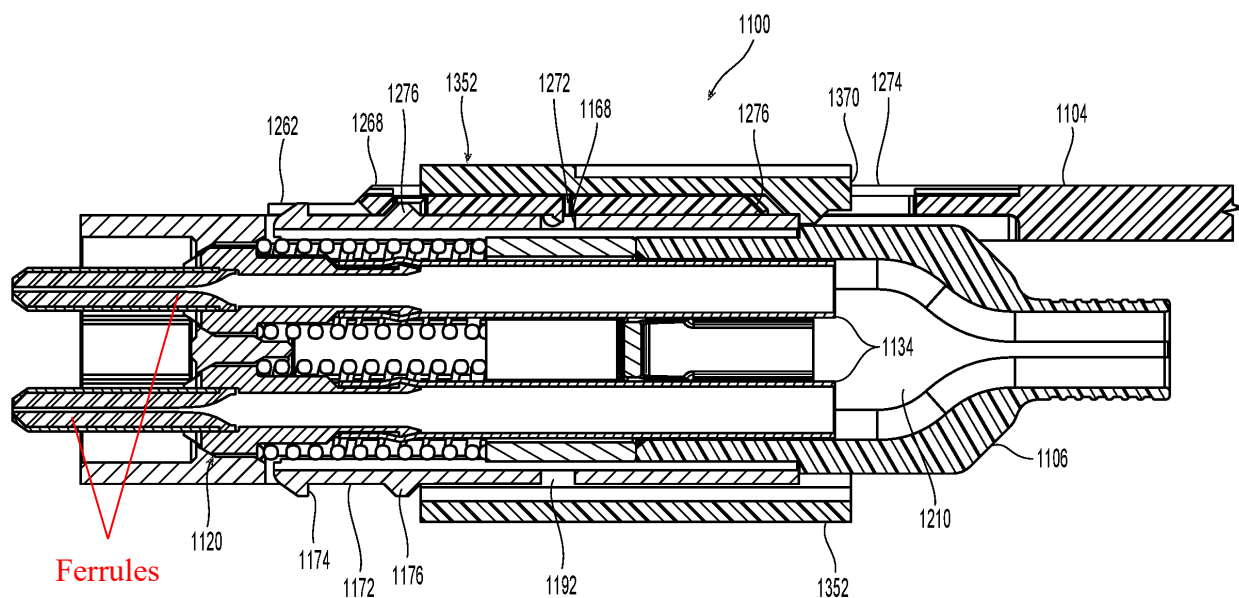


Fig. 33

EX1001: Figs. 3A, 21, and 33 (annotated).

Therefore, claim 15 (and dependent claim 16) lacks written description support. EX1002: ¶¶132-133.

VII. GROUND 3: Claims 1-3, 5-7, and 12-16 are Anticipated by Takano’209

A. Independent Claim 1

1.P

Takano'209 discloses an optical connector (2100). EX1003: ¶[0117];

EX1002: ¶¶134-135.

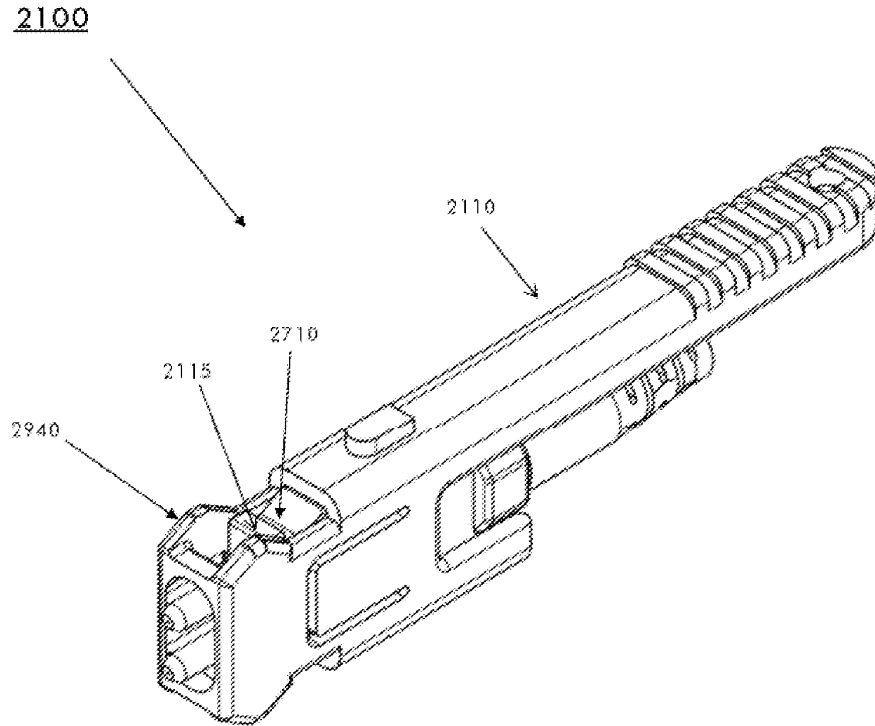


FIG. 21B

EX1003: Fig. 21B.

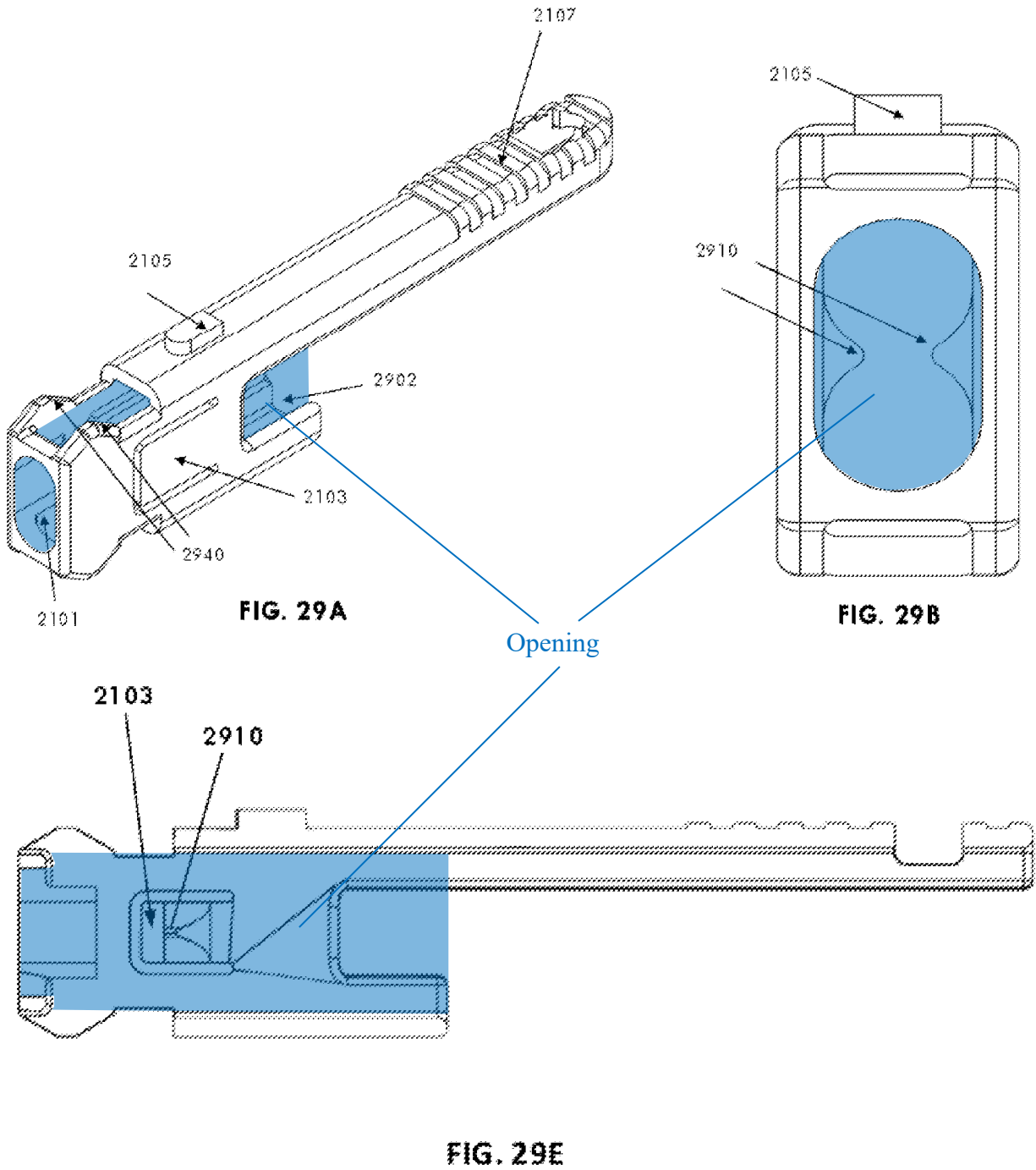
Therefore, Takano'209 meets 1.P. EX1002: ¶136.

1.a.1

Takano'209's optical connector (2100) includes an outer housing (2110).

EX1003: ¶[0117]; EX1002: ¶137. The outer housing includes a main body³ that extends between a front end and a rear end. EX1002: ¶137.

³ The "main body" is the portion of the outer housing that surrounds, protects, and houses the internal components. EX1002: ¶138. The pull tab (2107) extending rearward from the main body serves a different purpose and therefore is not



EX1003: Figs. 29A, 29B, and 29E (annotated).

Therefore, Takano'209 meets 1.a.1. EX1002: ¶140.

1.a.2

The outer housing (2100) has a top surface and a bottom surface bound by two opposing side surfaces such that a lateral width between the two side surfaces is less than a separation between the top and bottom surfaces. EX1003: ¶[0124]; EX1002: ¶141. Takano'209 states a lateral width of 4.2mm and a separation of top and bottom surfaces of 8.96mm. EX1003: ¶[0124]; EX1002: ¶141.

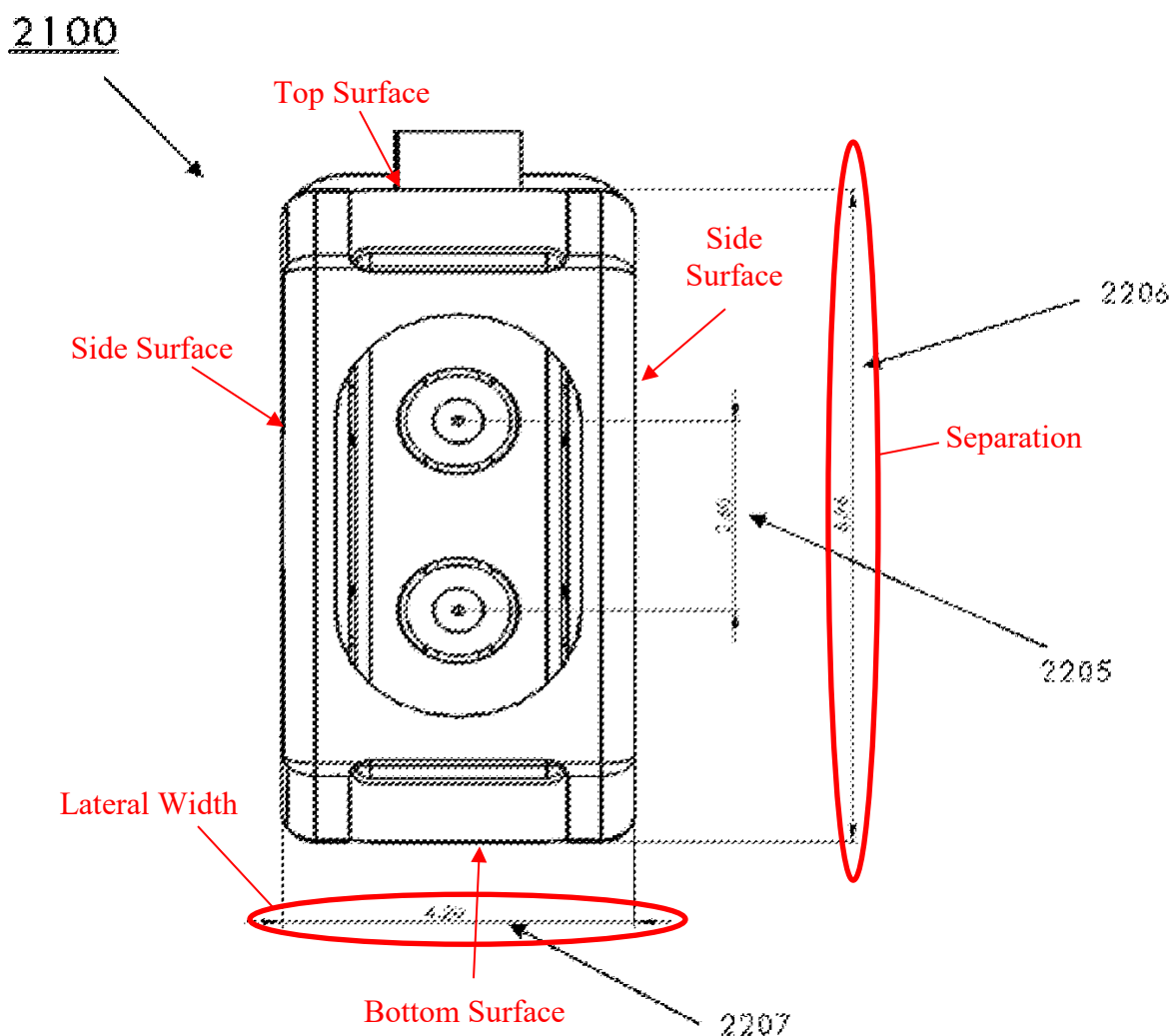


FIG. 22

EX1003: Fig. 22 (annotated).

Therefore, Takano'209 meets 1.a.2. EX1002: ¶142.

1.b.1

The optical connector includes two ferrule assemblies (2120) disposed within the opening of the outer housing (2110). EX1003: ¶[0117]; EX1002: ¶143.

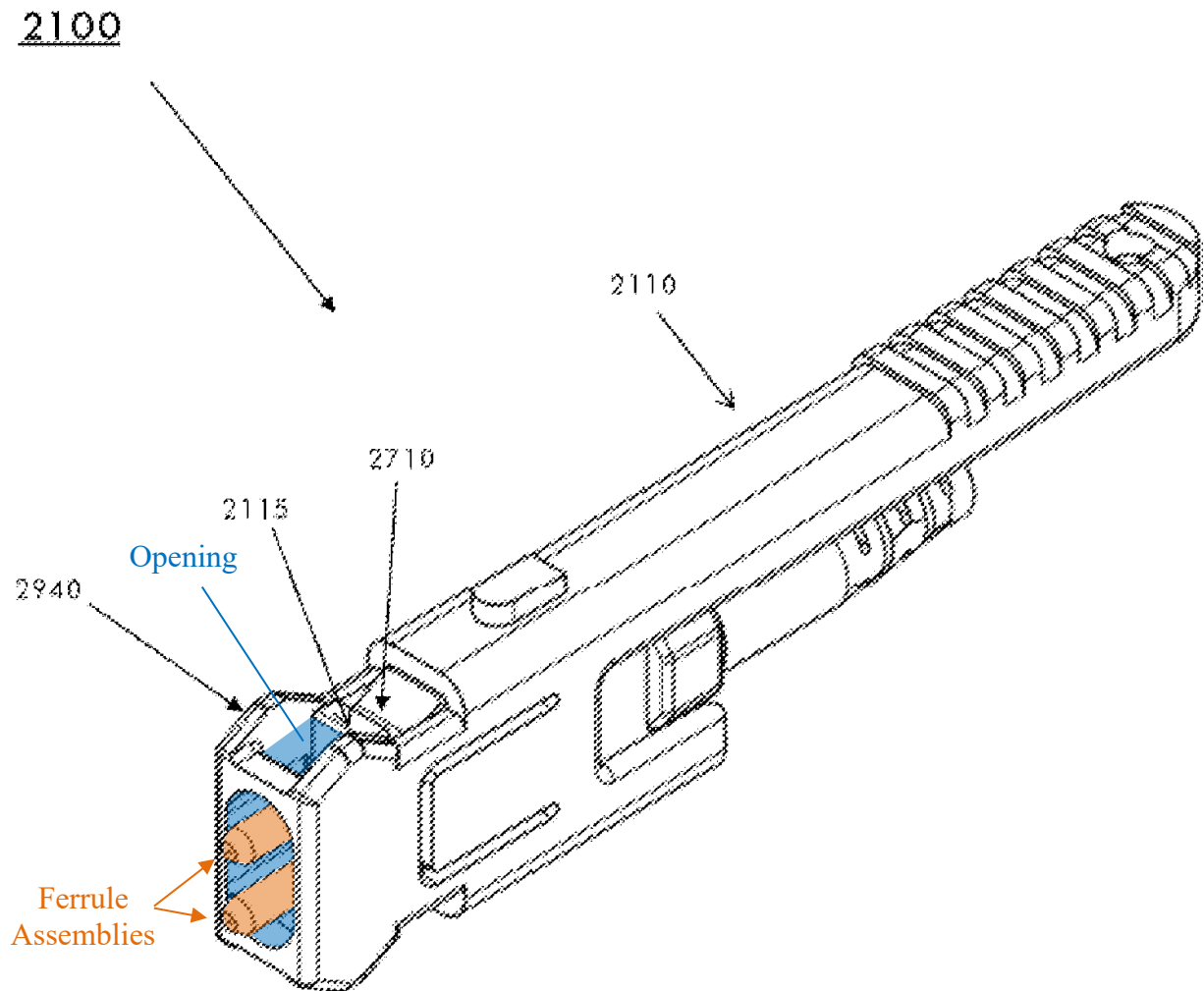


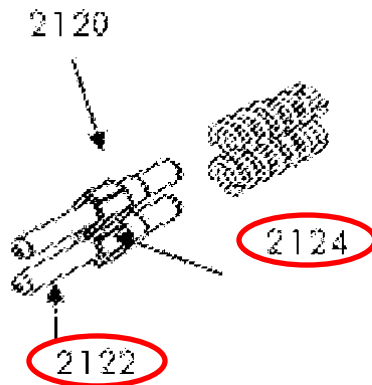
FIG. 21B

EX1003: Fig. 21B (annotated).

Therefore, Takano'209 meets 1.b.1. EX1002: ¶144.

1.b.2

Each ferrule assembly (2120) includes a ferrule (2122) and a ferrule holder (2124) (e.g., ferrule flange) to hold the ferrule. EX1003: ¶[0117]; EX1002: ¶145. Each ferrule extends forward of and away from the front end of the respective ferrule holder. EX1002: ¶145.



EX1003: Fig. 21A (annotated).

Therefore, Takano'209 meets 1.b.2. EX1002: ¶146.

1.c

The optical connector includes two springs (2125). EX1003: ¶[0117]; EX1002: ¶147.

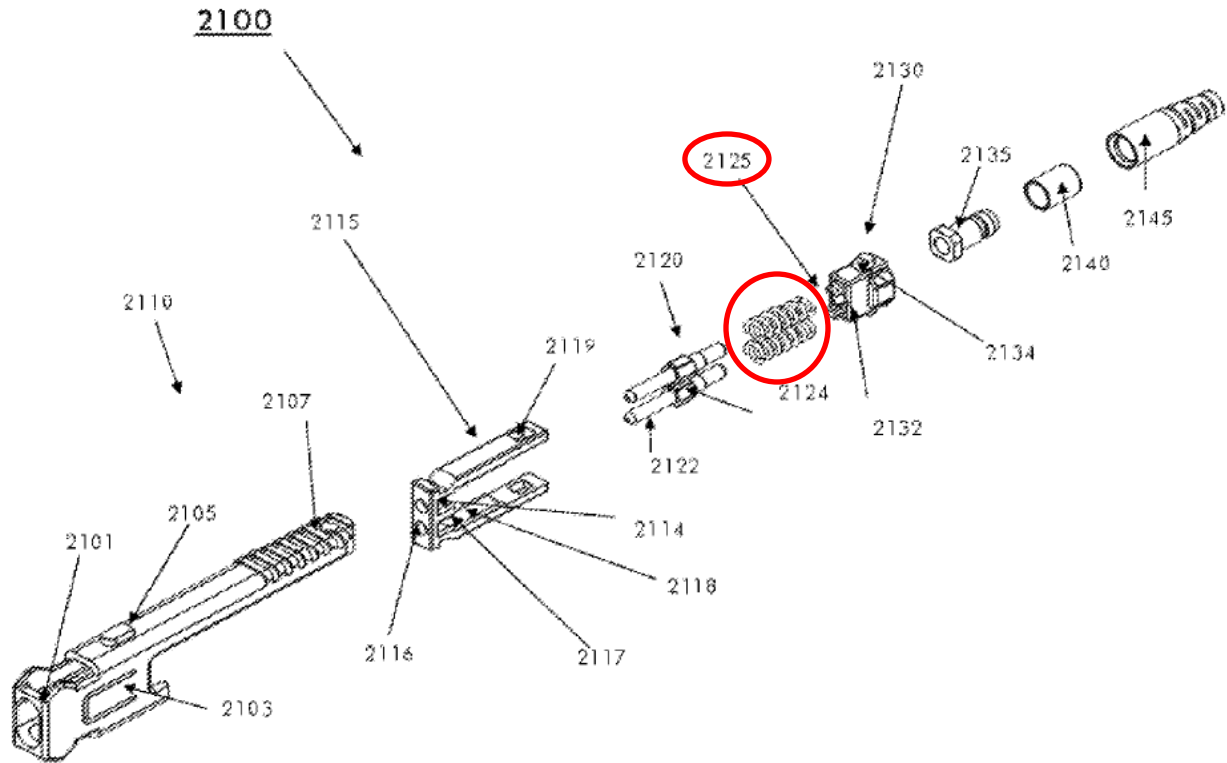
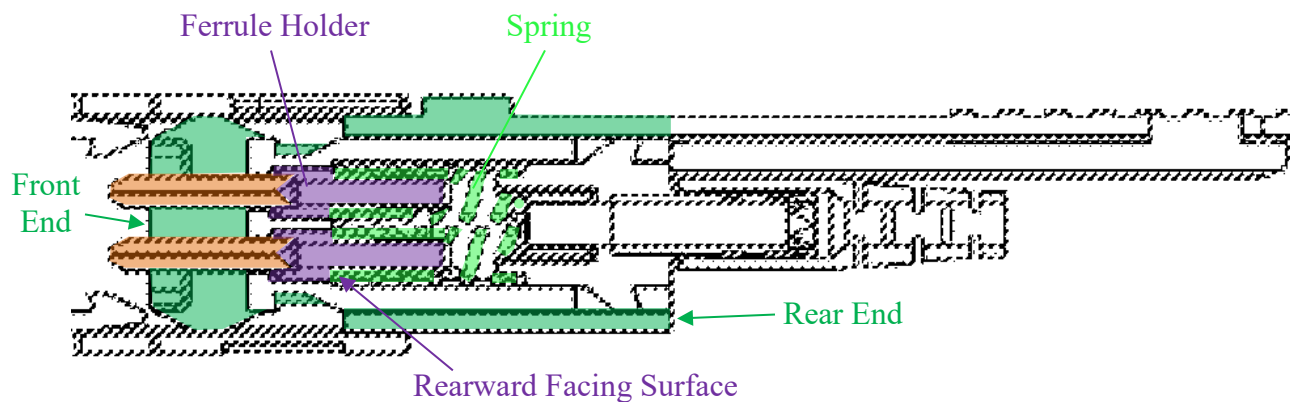


FIG. 21A

EX1003: Fig. 21A (annotated).

Each spring engages a rearward facing surface of the respective ferrule holder (2124) at its front end and extends toward the rear end of the outer housing (2110) to bias the ferrule assembly forward toward the front end of the outer housing. EX1003: Fig. 23B; EX1002: ¶148. Each spring is retained within the outer housing, captured between the ferrule holders and the back body (2130). EX1003: ¶[0123]; EX1002: ¶148.



EX1003: Fig. 23B (annotated).

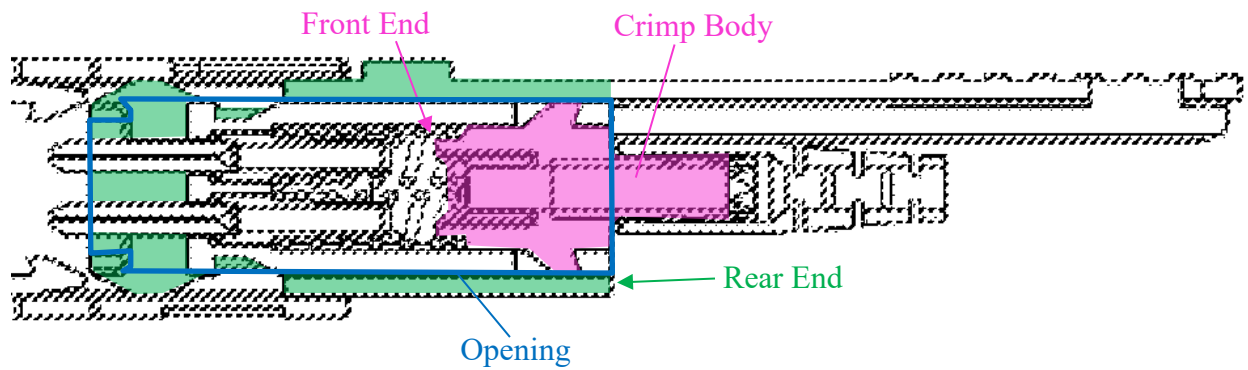
Therefore, Takano'209 meets 1.c. EX1002: ¶149.

1.d.1

The optical connector has a two-piece⁴ crimp body made up of the back body (2130) and a back post (2135) that are secured to one another. EX1003: ¶[0117]; EX1002: ¶150.

⁴ The '466 Patent explains a crimp body can be two pieces secured together.

EX1001: 7:20-23; EX1002: ¶150.



EX1003: Fig. 23B (annotated).

Therefore, Takano'209 meets 1.d.1. EX1002: ¶152.

1.d.2

The back post (2135) of the crimp body has a singular opening for optical fibers at the rear end of the crimp body. EX1002: ¶153.

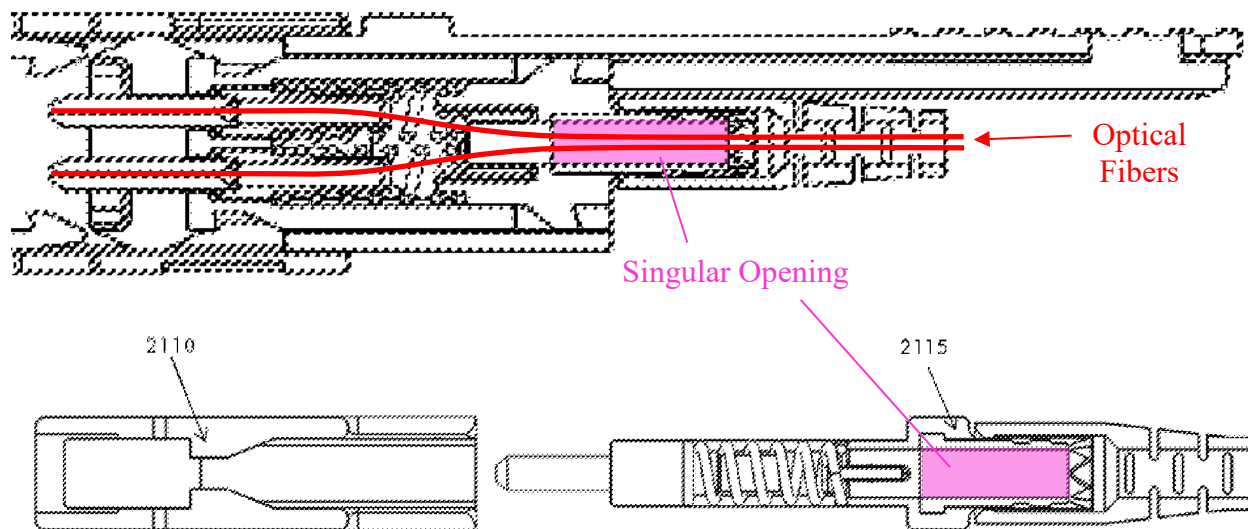


FIG. 35C

EX1003: Figs. 23B and 35C (annotated).

Therefore, Takano'209 meets 1.d.2. EX1002: ¶154.

1.e

A connector alignment key (2105) is on the top surface of the outer housing (2110). EX1003: ¶[0117]; EX1002: ¶155. The "adapter housing 2402 further includes connector alignment slots 2403 that mate with the connector alignment key 2105." EX1003: [0127]; EX1002: ¶155. Accordingly, the alignment key (2105) guides the optical connector into the adapter (2400), by mating with the adapter's alignment slot (2403). EX1002: ¶155.

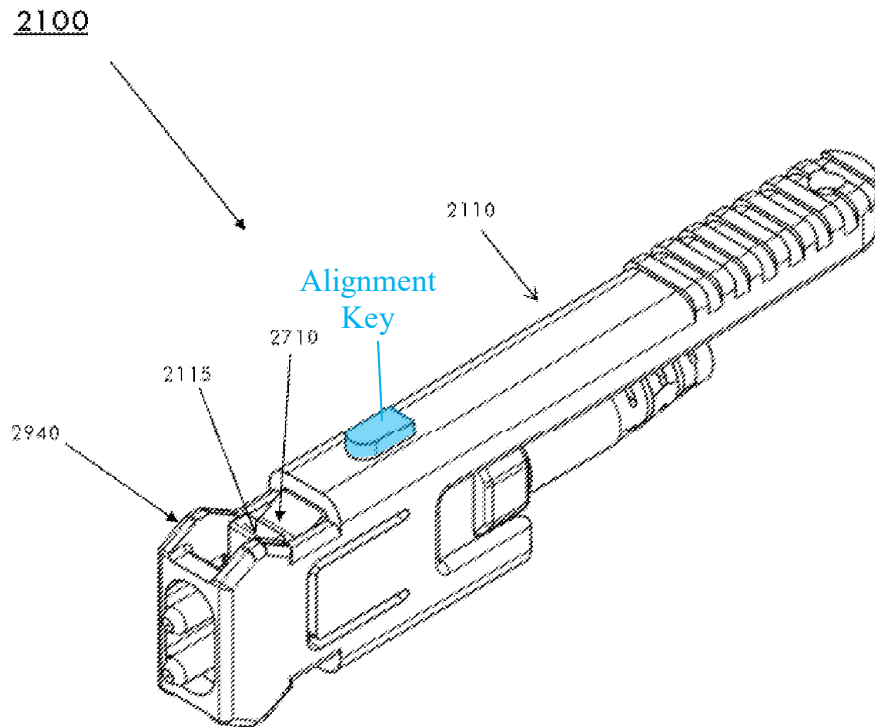
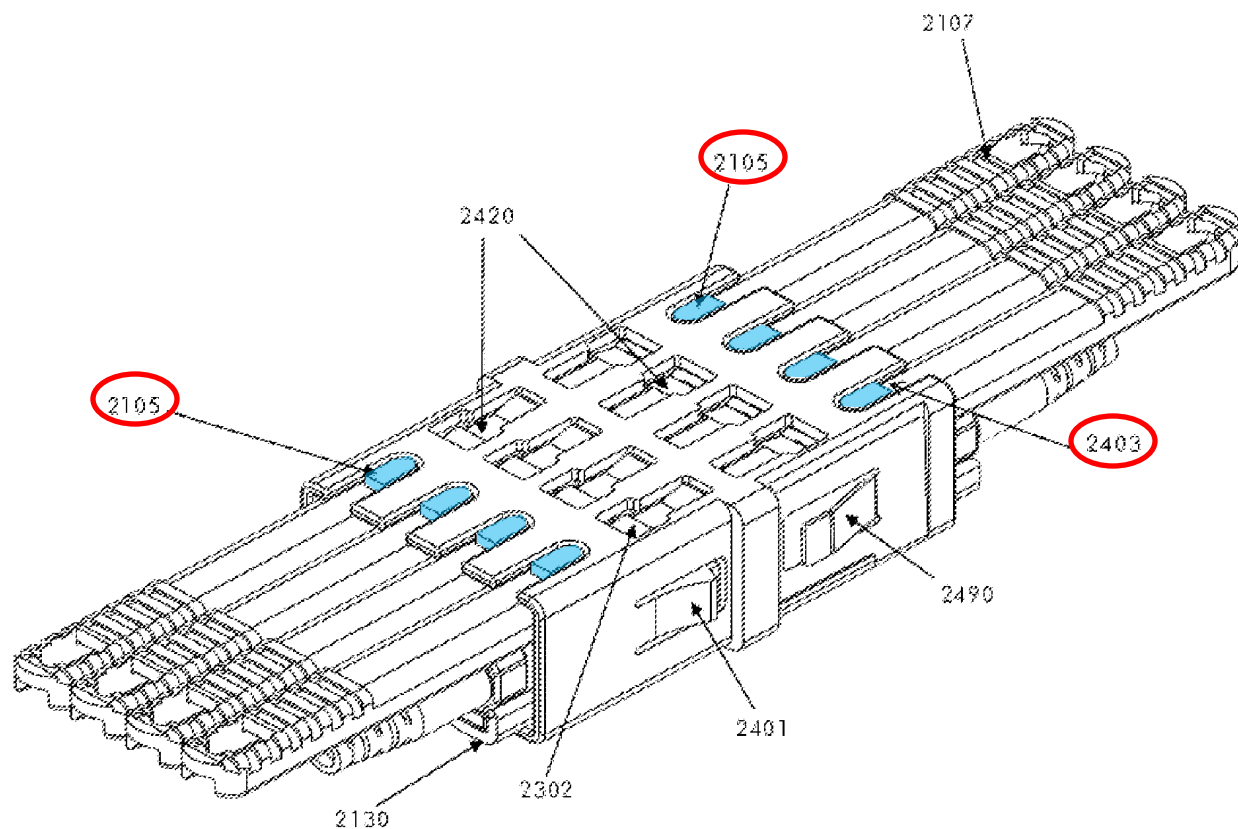


FIG. 21B



EX1003: Figs. 21B and 31.

Therefore, Takano’209 meets 1.e. EX1002: ¶156.

1.f

The optical connector includes a boot (2145) coupled to the rear end of the crimp body (specifically, back post (2135)). EX1003: ¶[0117]; EX1002: ¶157.

The boot has a longitudinal opening. EX1002: ¶157.

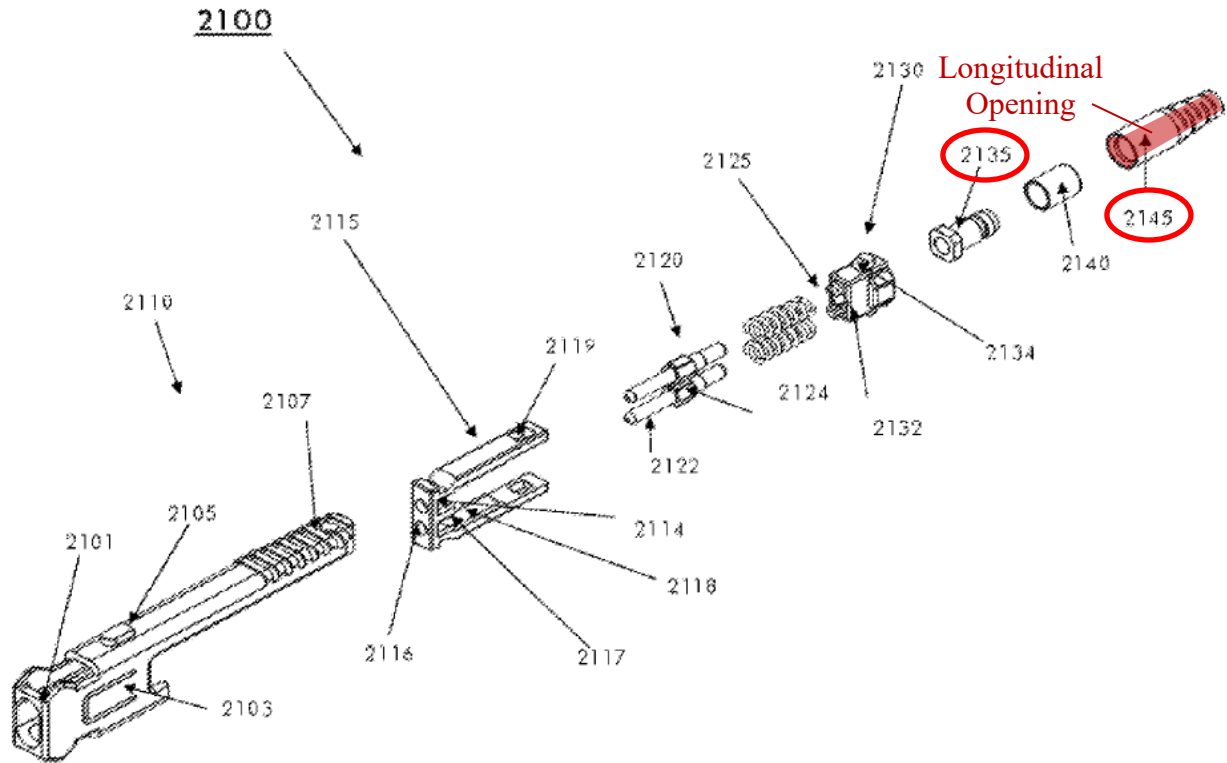
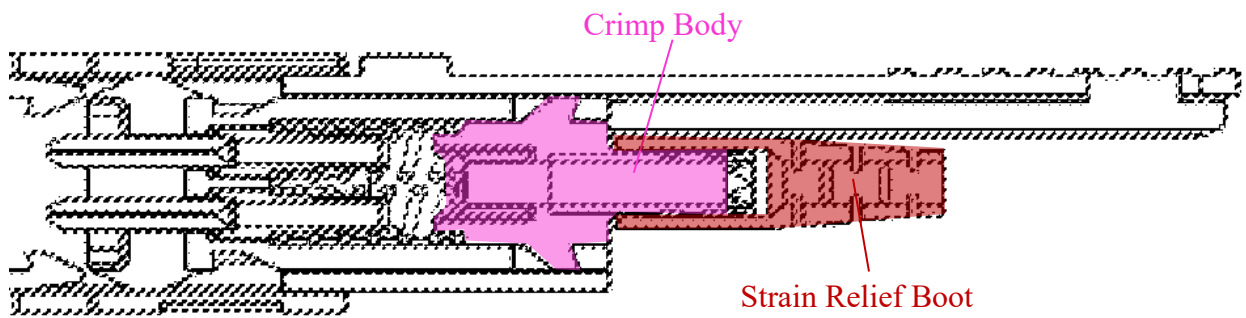


FIG. 21A



EX1003: Figs. 21A and 23B (annotated).

The boot's longitudinal opening is in continuum with the singular opening of the crimp body through which optical fibers pass from a cable to the ferrules.

EX1002: ¶158.

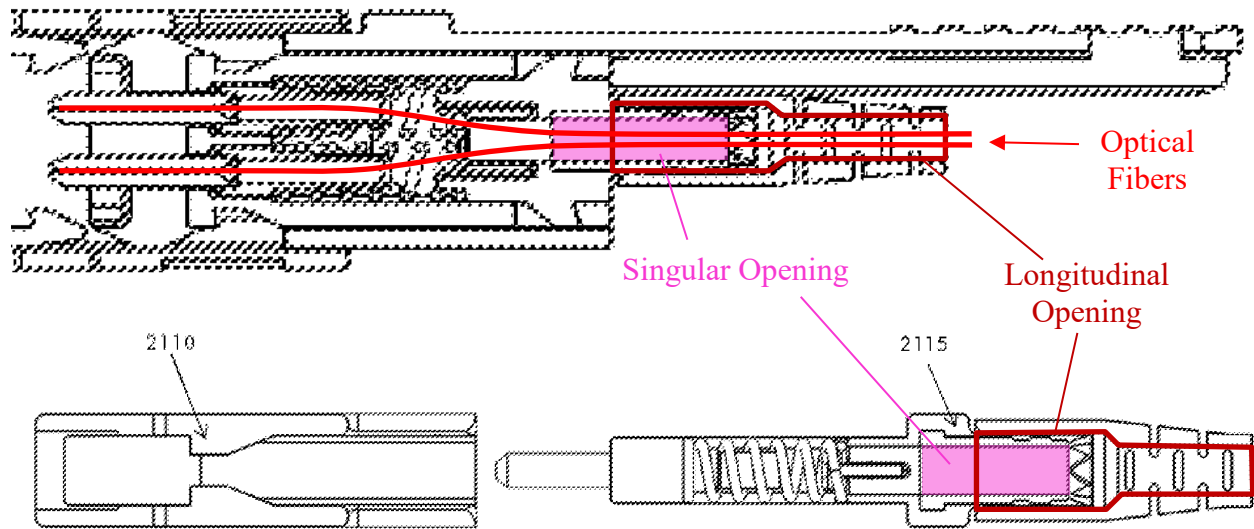


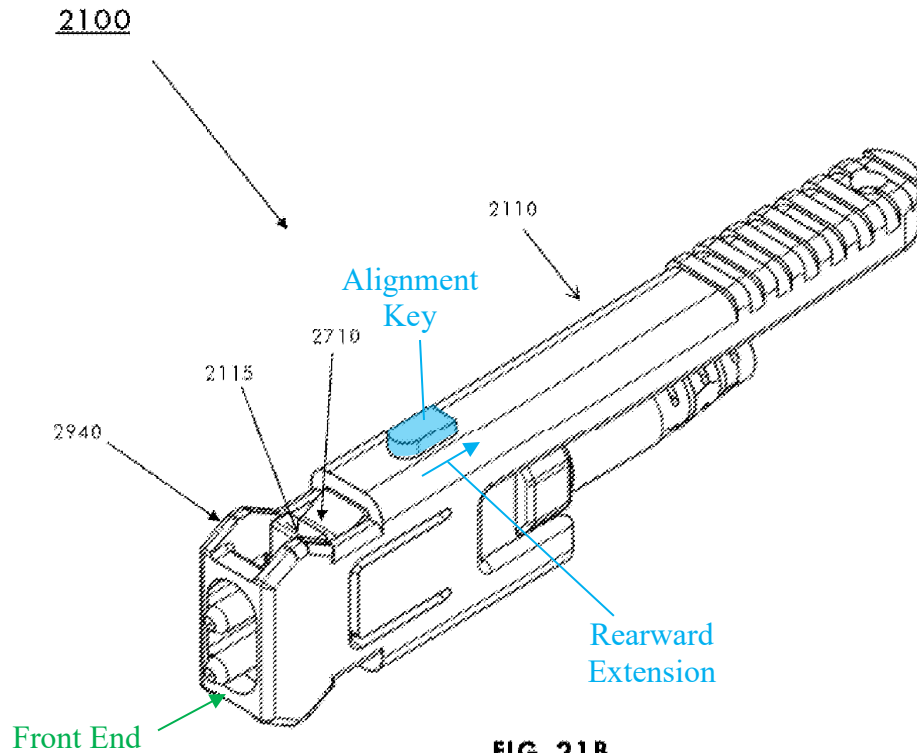
FIG. 35C

EX1003: Figs. 23B and 35C (annotated).

Therefore, Takano'209 meets 1.f. EX1002: ¶159.

B. Claim 2

The alignment key (2105) is positioned rearward of the front end of the outer housing (2110) and extends rearward. EX1002: ¶160.



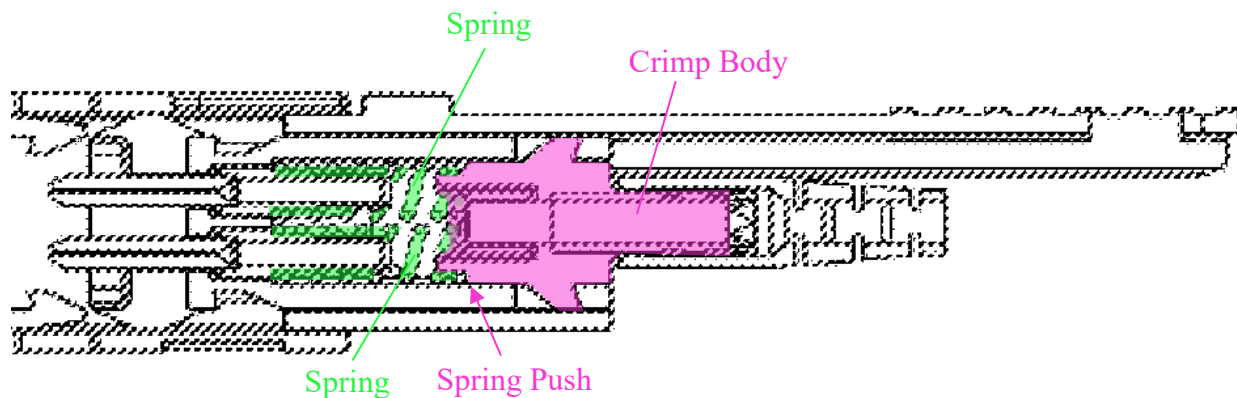
EX1003: Fig. 21B (annotated).

Therefore, Takano'209 meets this claim. EX1002: ¶161.

C. Claim 3

Claim 3's "spring push" may be part of the crimp body, due to claim differentiation based on claim 4 stating "the spring push is separate from the crimp body." EX1002: ¶¶162-164.

The crimp body (particularly, back body (2130)) forms a spring push engaging a rear portion of each of the two springs. EX1003: ¶[0123]; EX1002: ¶165.

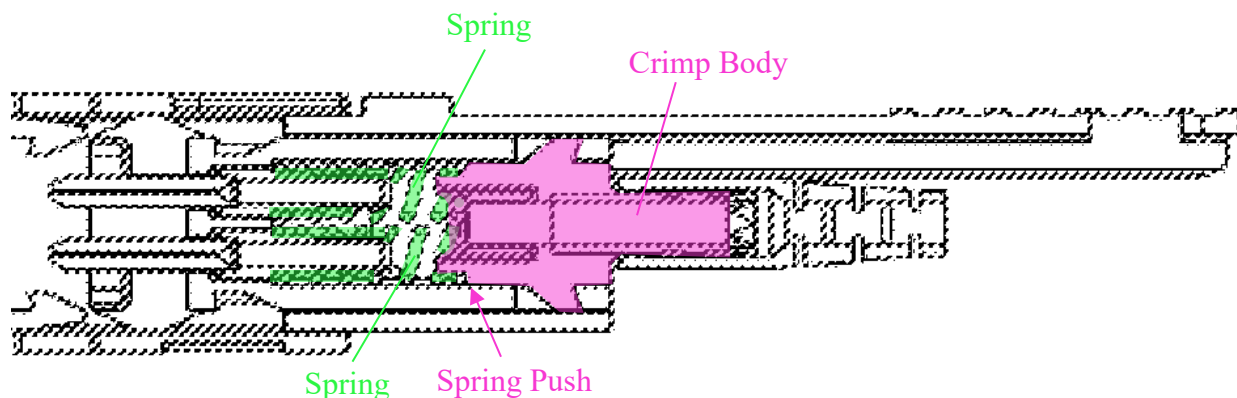


EX1003: Fig. 23B (annotated).

Therefore, Takano'209 meets this claim. EX1002: ¶166.

D. Claim 5

The back body (2130) engages the rear portion of each of the two springs simultaneously. EX1002: ¶167.



EX1003: Fig. 23B (annotated).

Therefore, Takano'209 meets this claim. EX1002: ¶168.

E. Claim 6

The pull tab (2107) provides an indicia of polarity. EX1002: ¶169. The pull tab is affixed to the top side of the main body and provides a clear indication to the user of which side is the top side, i.e., which side has the alignment key (2105) that

can only mate with the adapter (2400) when properly aligned to the alignment slot (2403). EX1002: ¶169.

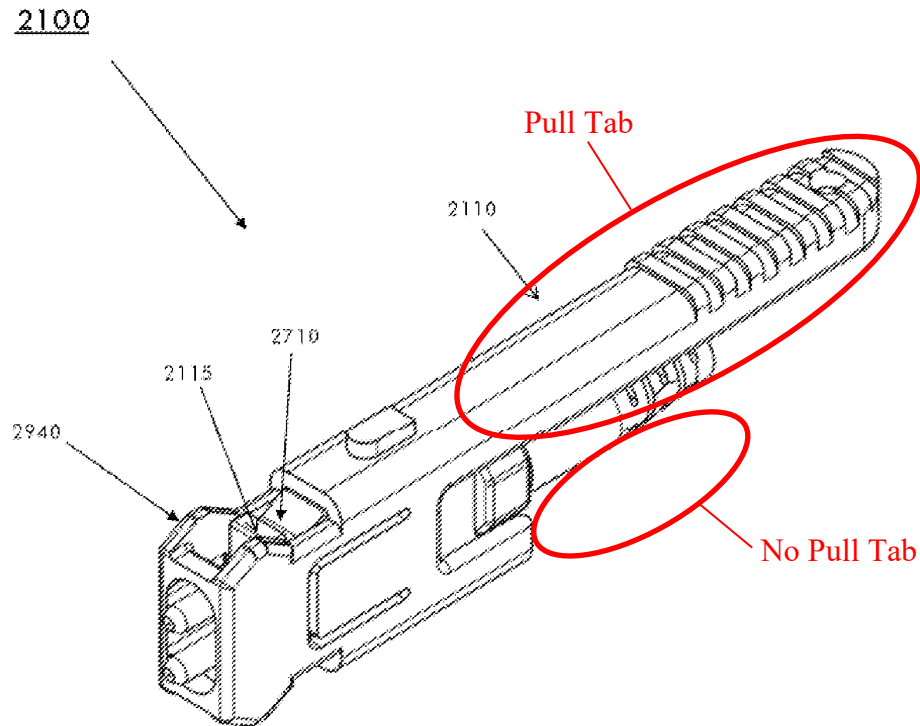


FIG. 21B

EX1003: Fig. 21B (annotated).

Alternatively or in addition, the alignment key (2105) is an indicia of polarity because it is only found on one side of the outer housing (2105) and it indicates the orientation in which the connector must be plugged into a mating receptacle. EX1002: ¶170.

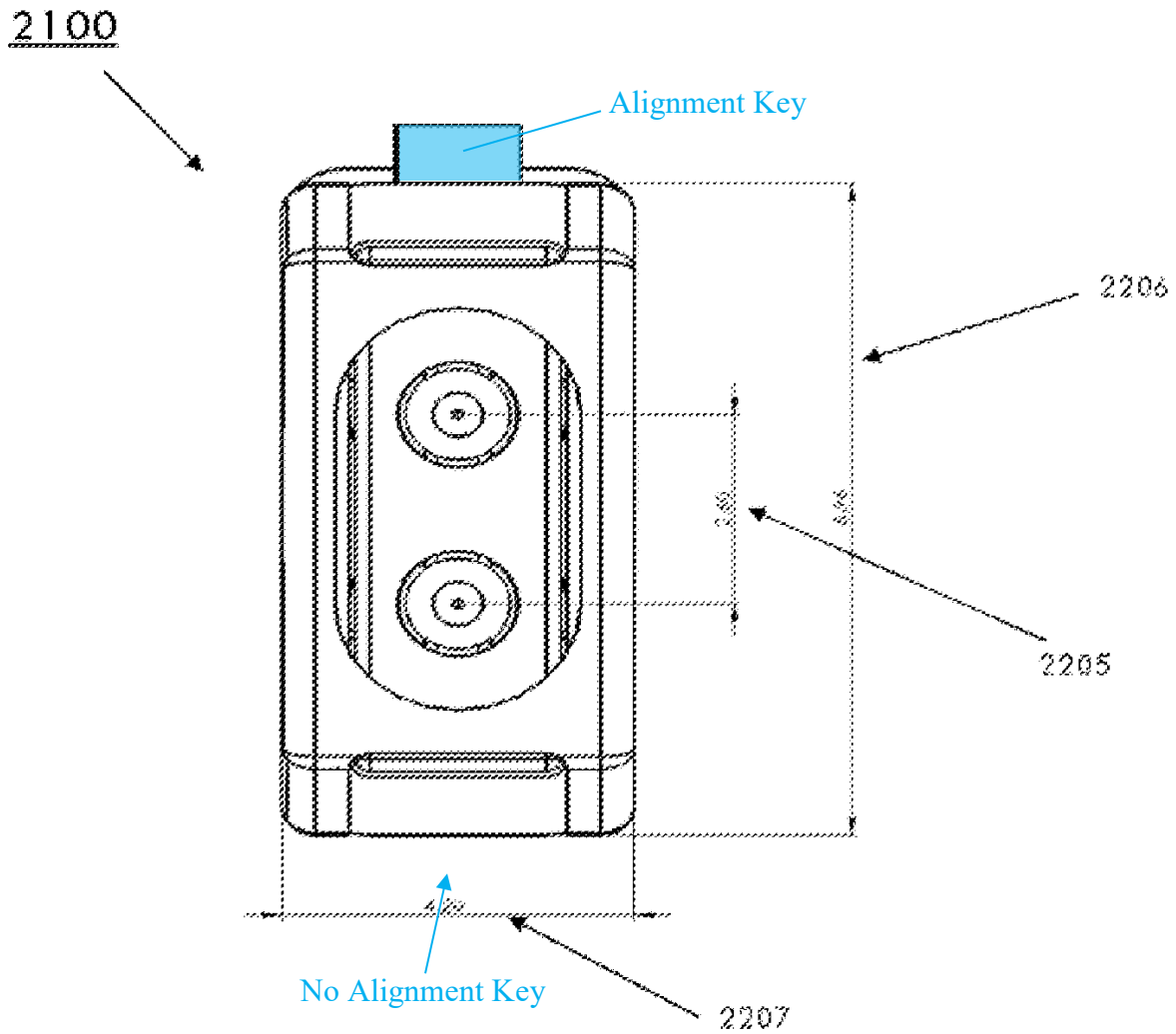


FIG. 22

EX1003: Fig. 22 (annotated).

Therefore, Takano'209 meets this claim. EX1002: ¶171.

F. Claim 7

7.a

The optical connector includes a crimp ring (2140), which is "a crimp band."

EX1003: ¶[0117]; EX1002: ¶172.

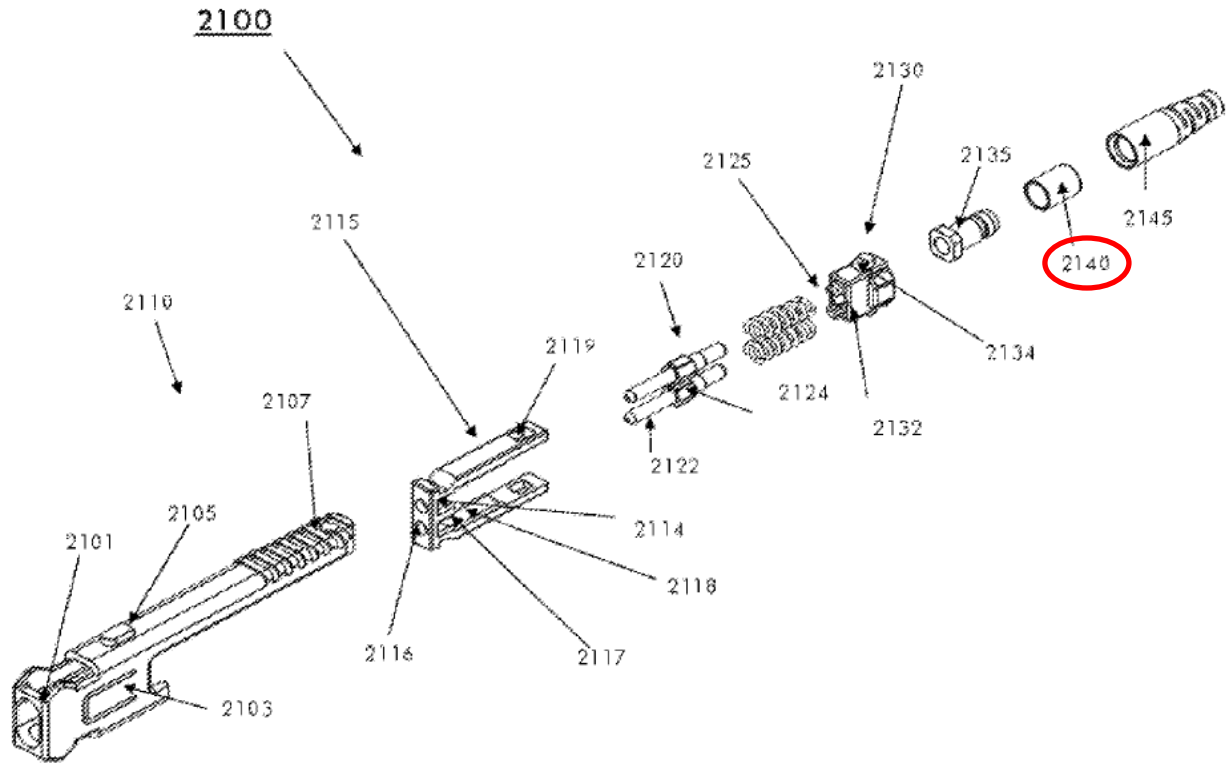
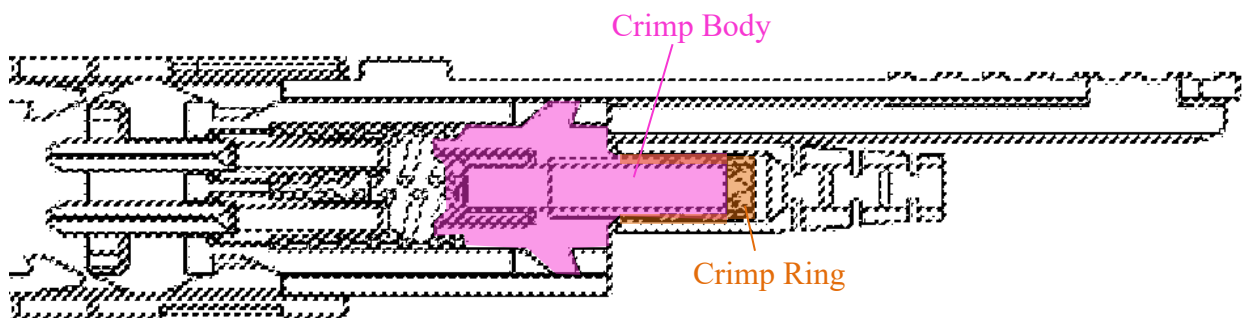


FIG. 21A

EX1003: Fig. 21A (annotated).

The crimp ring is secured around an outer surface of the rear end of the back post (2135). EX1002: ¶173.

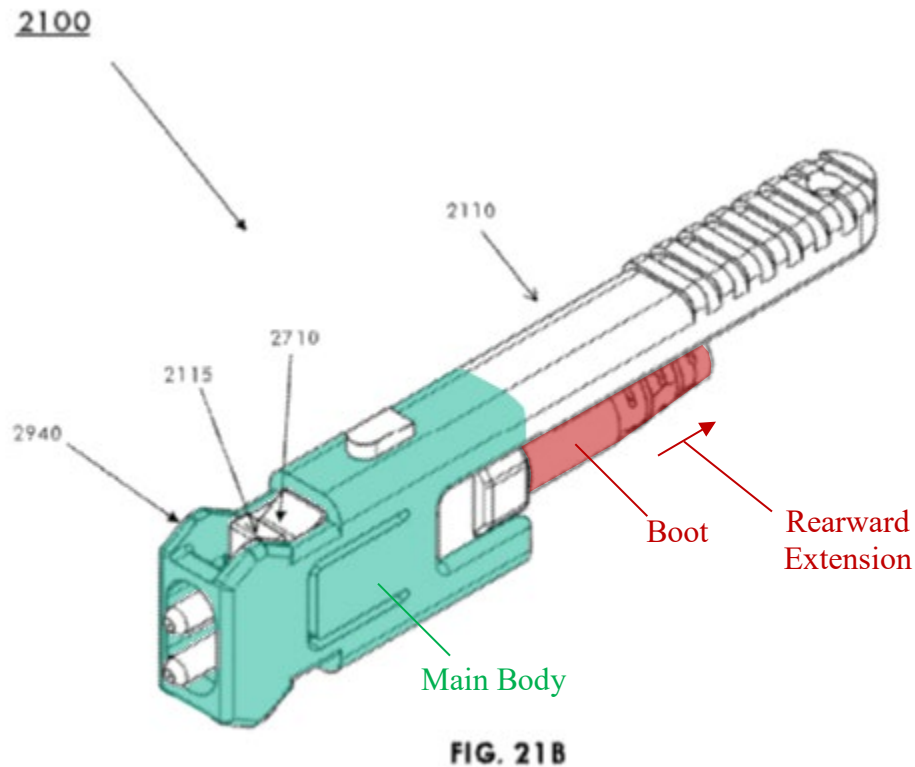


EX1003: Fig. 23B (annotated).

Therefore, Takano'209 meets 7.a. EX1002: ¶174.

7.b

The boot (2145) extends rearwardly away from the rear end of the main body of the outer housing (2110). EX1002: ¶175.



EX1003: Fig. 21B (annotated).

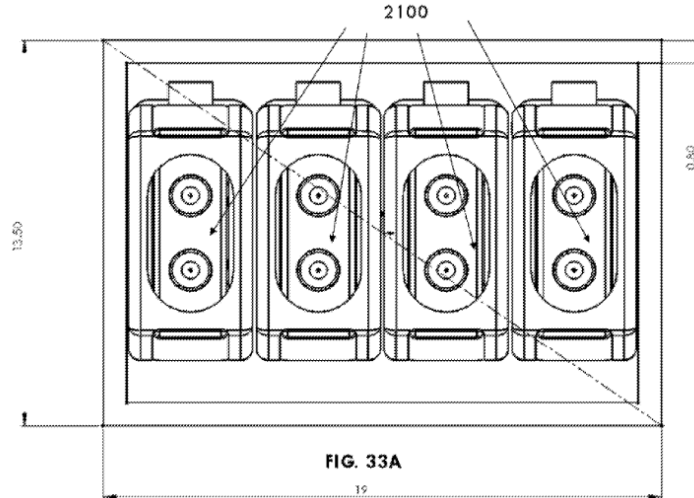
To the extent US Conec alleges the presence of the pull tab prevents Takano'209 from meeting this limitation, Takano'209 teaches an embodiment where the pull tab is removed from the optical connector. EX1002: ¶¶176-177. Takano'209 states the pull tab is *optional*. EX1003: ¶¶[0117] (“*optional* pull tab”), [0124] (“*optional* pull tab 2107”); EX1002: ¶177. In other words, Takano'209 teaches an embodiment where the outer housing (2110) does not have

a pull tab. EX1003: ¶¶[0117], [0124]; EX1002: ¶177. In this embodiment, the top portion of the outer housing (2110) would be cut off in-line with where the rear-bottom end of the main body is. EX1002: ¶178. In this embodiment, the boot would extend rearward beyond the rearmost point of the outer housing. EX1002: ¶178.

Therefore, Takano'209 meets 7.b. EX1002: ¶179.

G. Claim 12

Takano'209 explains the optical connector fits within a “quad small form factor pluggable (QSFP) footprint.” EX1003: ¶[0132]; EX1002: ¶180. Thus, the front end of the outer housing fits in the QSFP footprint. EX1002: ¶180.



EX1003: Fig. 33A.

Therefore, Takano'209 meets this claim. EX1002: ¶181.

H. Claim 13

The optical connector includes a two-piece crimp body made up of the back body (2130) and the back post (2135). EX1002: ¶182.

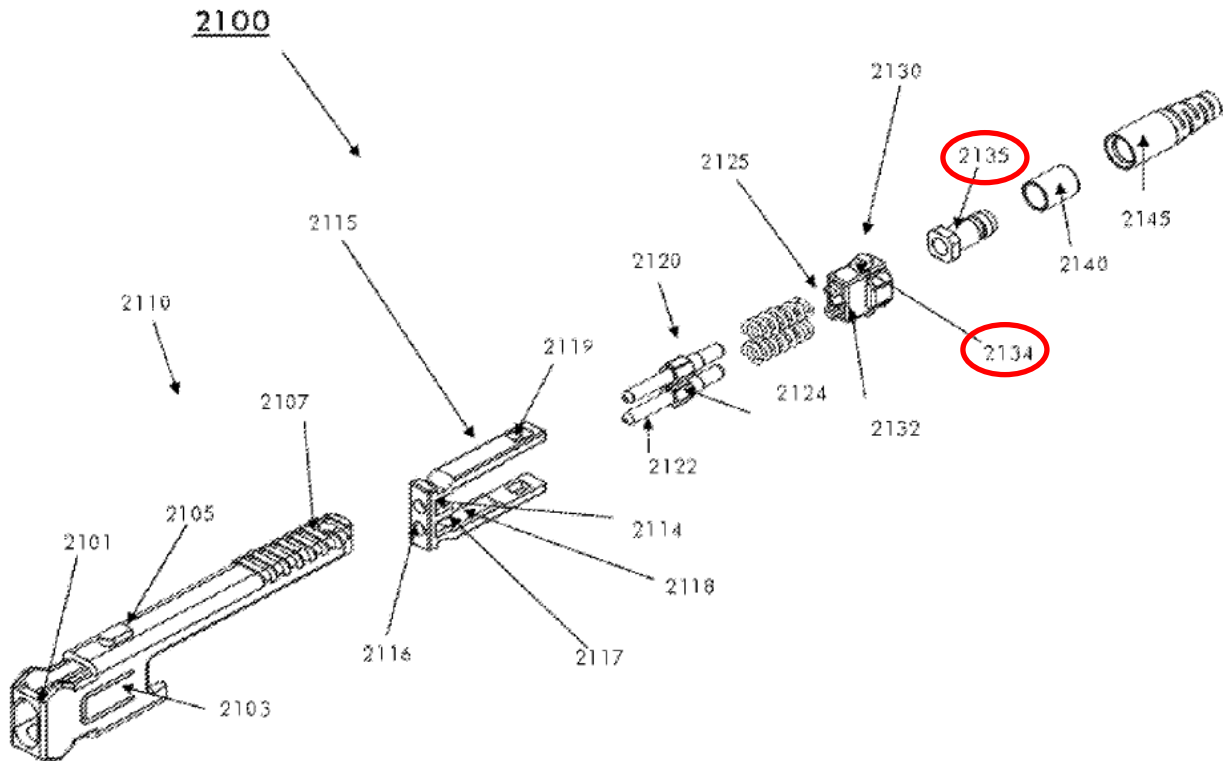


FIG. 21A

EX1003: Fig. 21A (annotated).

Therefore, Takano'209 meets this claim. EX1002: ¶183.

I. Claim 14

If "vertical alignment feature" and "horizontal alignment feature" are construed (Section V(A)) to mean a feature that extends vertically or horizontally, respectively, then surfaces A below meet "vertical alignment feature" and surface B below meets "horizontal alignment feature." EX1002: ¶¶184-185.

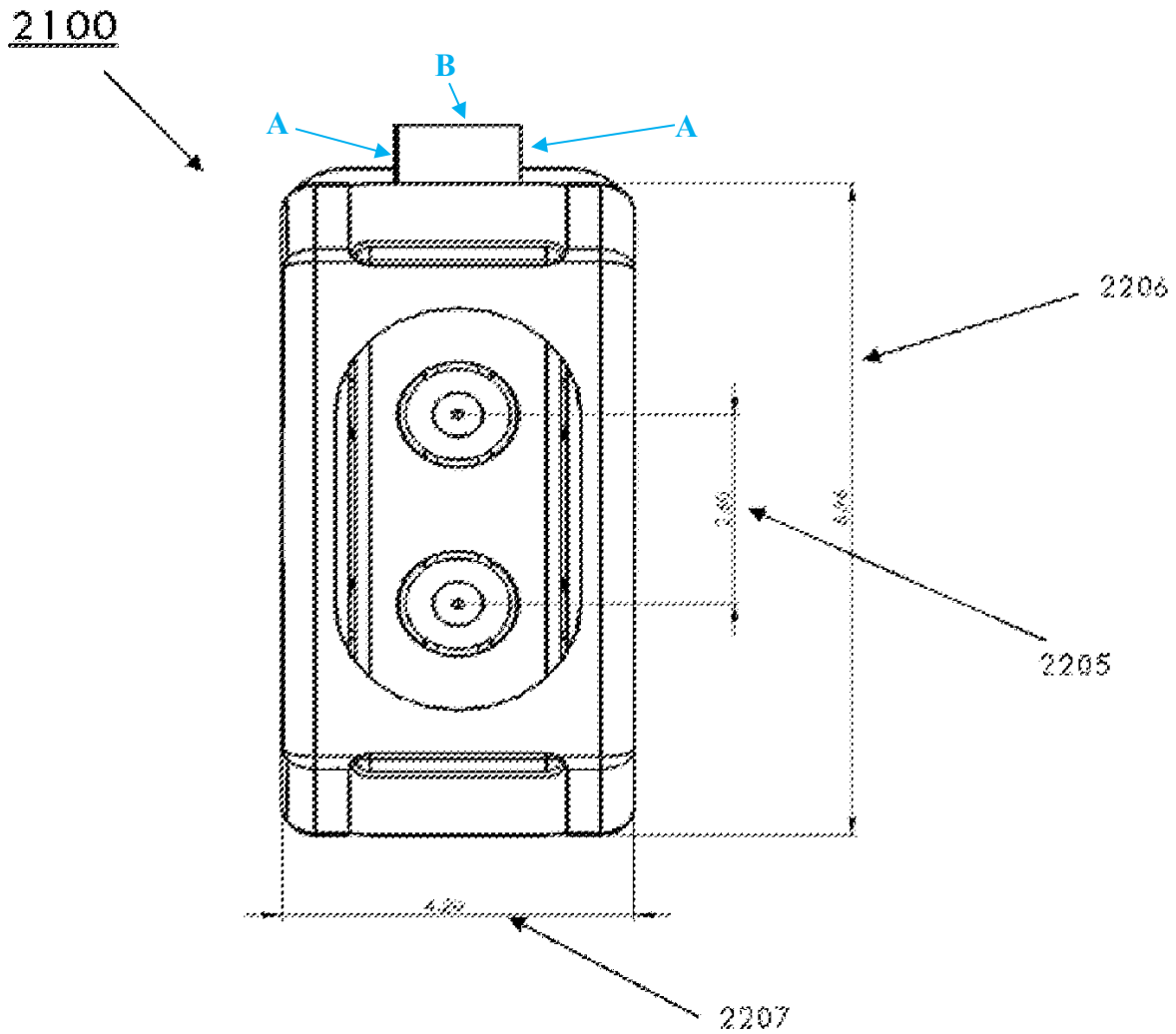


FIG. 22

EX1003: Fig. 22 (annotated).

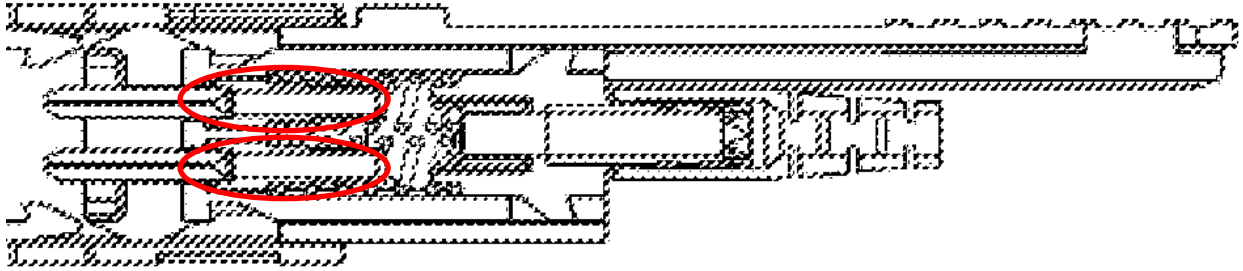
If "vertical alignment feature" and "horizontal alignment feature" are construed to mean a feature capable of engaging a mating alignment structure to align the connector vertically or horizontally, respectively, then surface B meets "vertical alignment feature" and surfaces A meet "horizontal alignment feature."

EX1003: Fig. 22; EX1002: ¶186.

Therefore, Takano'209 meets this claim. EX1002: ¶187.

J. Claim 15

Under any construction of this claim, the two ferrule seats are located in the circled areas below. Section V(C); EX1002: ¶188.



EX1003: Fig. 23B (annotated).

Each connector orientation protrusion (2910) of the outer housing (2110) meets the requirement of the wall in claim 15 because it forms a wall between the locations where two ferrule assemblies (2150) are seated in the outer housing and it extends rearward relative to the ferrule alignment slots (2117) where the ferrule holders (2124) are seated in the front body (2115). EX1003: ¶¶[0117], [0120]; EX1002: ¶189.

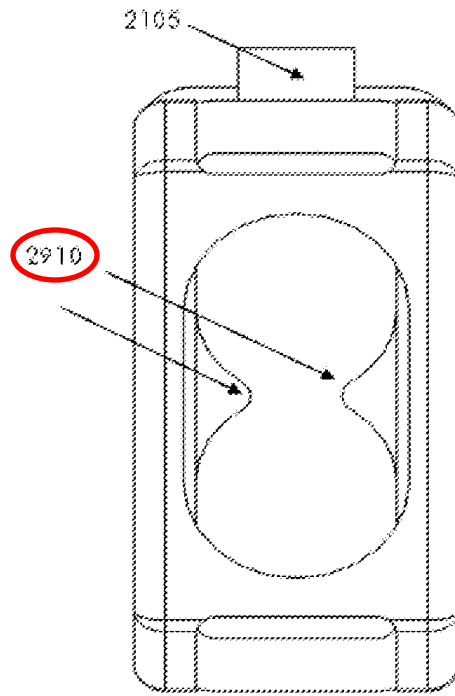
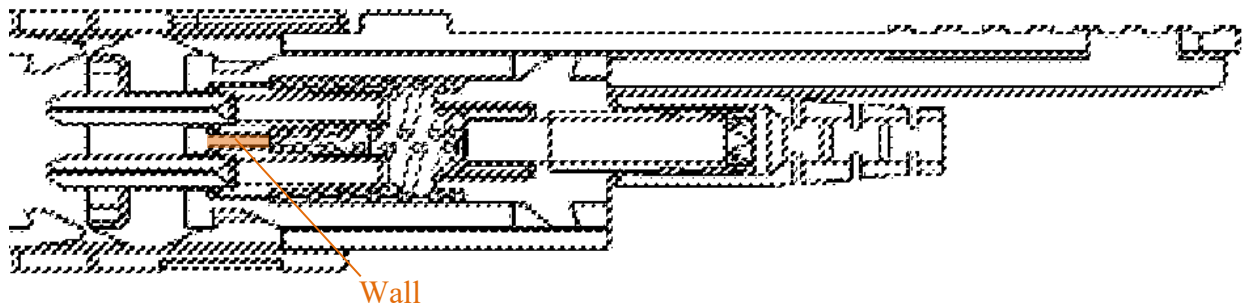
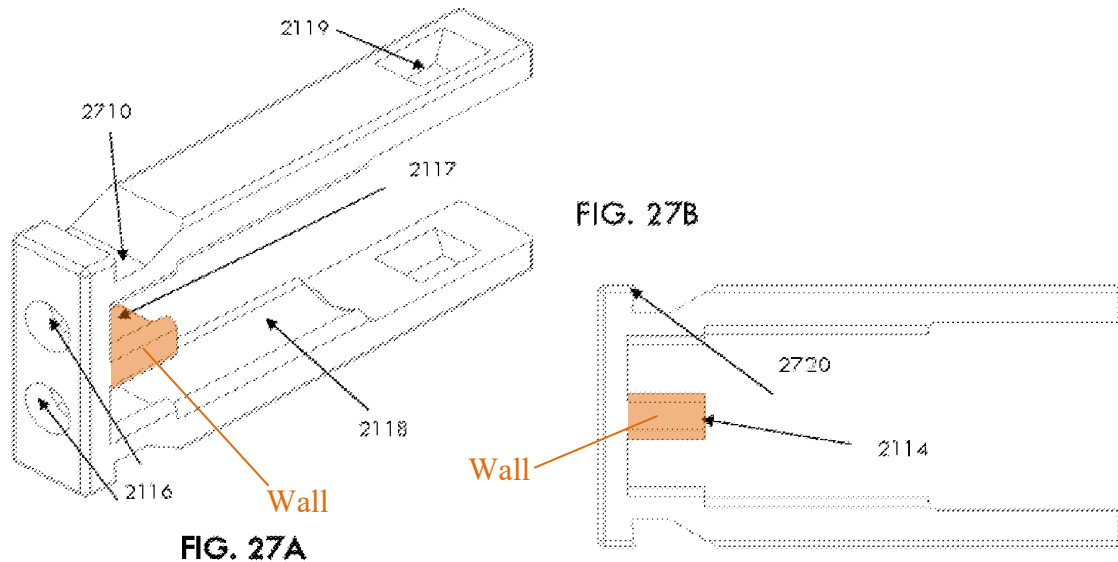


FIG. 29B

alignment slots (2117) where the ferrule holders (2124) are seated in the front body (2115). EX1002: ¶190.



EX1003: Figs. 27A&B and 23B (annotated).

Therefore, Takano'209 meets this claim. EX1002: ¶191.

K. Claim 16

There is a radial gap between each connector orientation protrusion (2910) of the outer housing (2110) and each ferrule holder sufficient to accommodate the portion of the ferrule spring received over the rear end of the ferrule holder.

EX1002: ¶192.

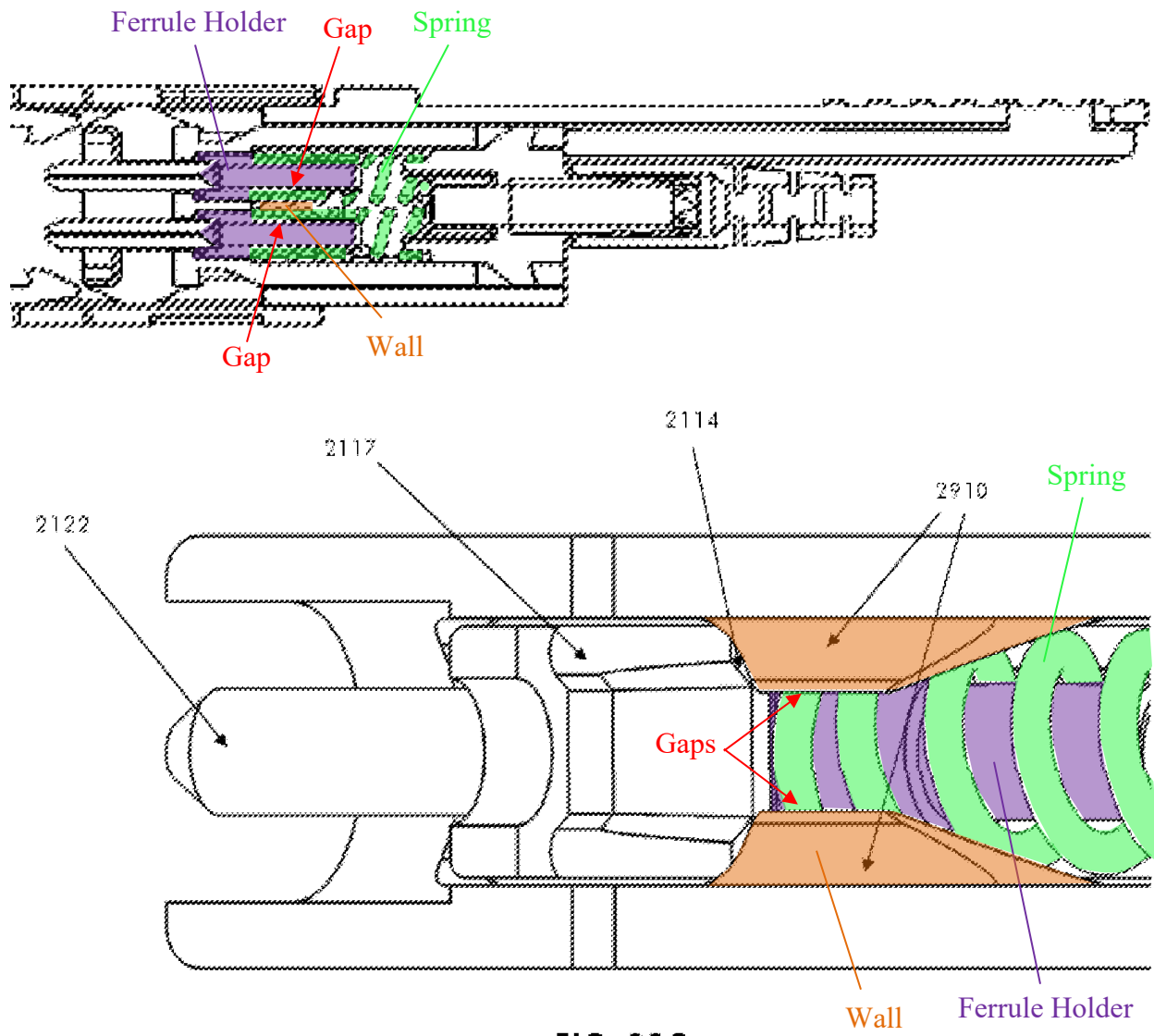


FIG. 29C

EX1003: Fig. 23B and 29C (annotated).

Therefore, Takano'209 meets this claim. EX1002: ¶193.

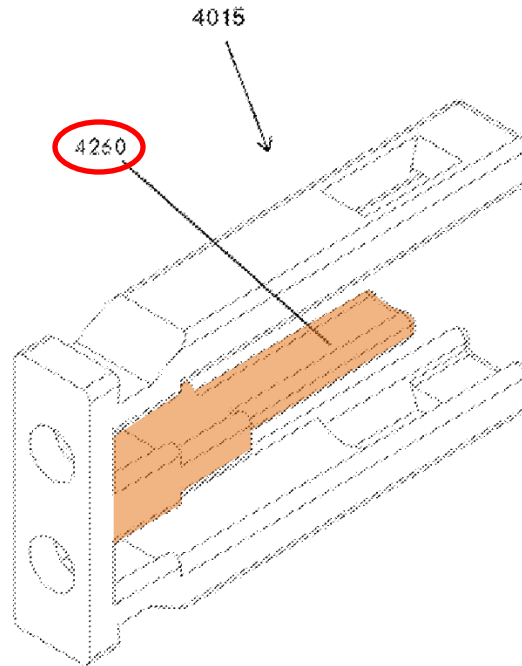


FIG. 42A

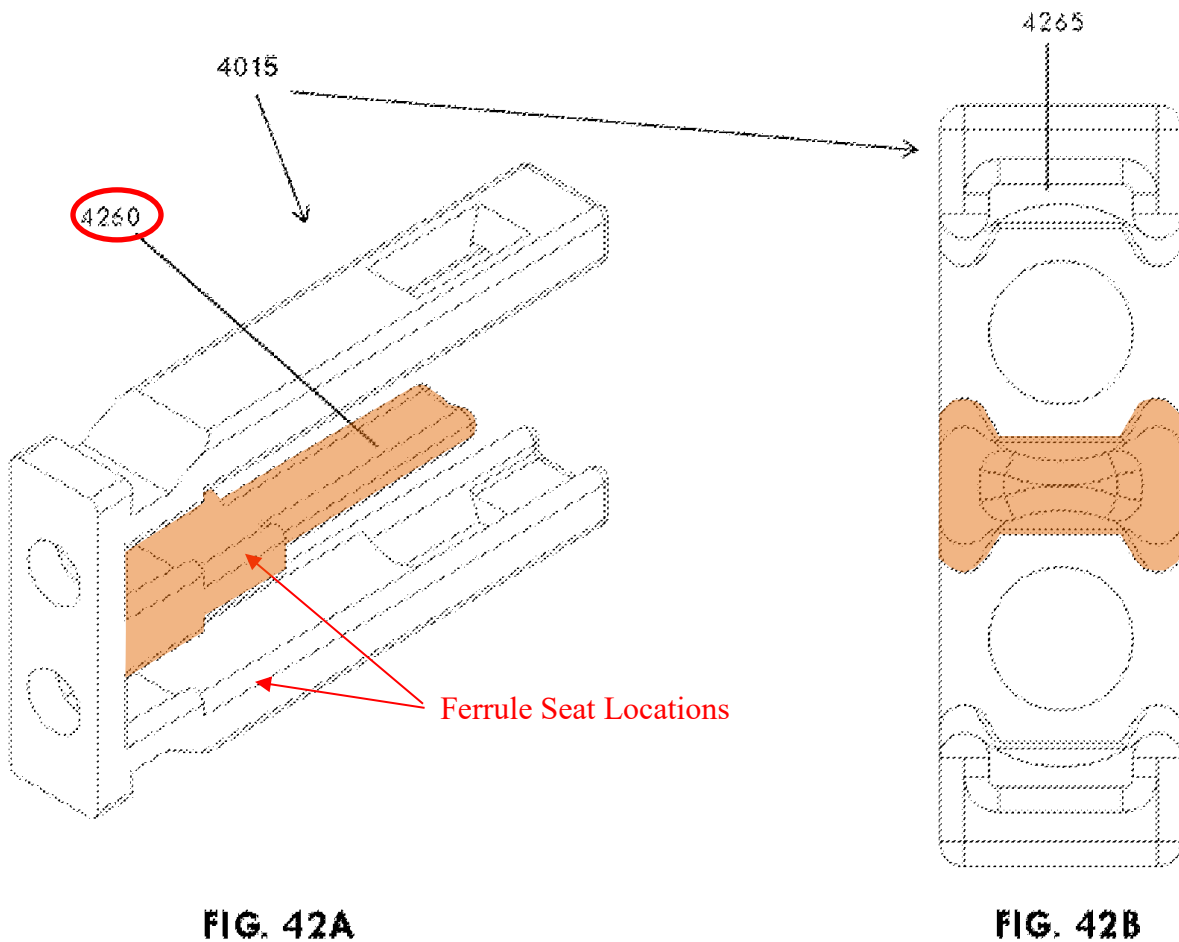
EX1003: Figs. 41 and 42A (annotated).

It would have been obvious to incorporate the elongated middle wall (4260) from the optical connector (4100) of Fig. 41 into the front body (2115) of the optical connector (2100) of Fig. 21A to separate and prevent entanglement of the two springs (2124). EX1003: ¶[0138]; EX1002: ¶197. Moreover, it's understood the distinguishing features of the optical connector (4100) of Fig. 41 are optional modifications of the optical connector (2100) of Fig. 21A. EX1002: ¶197.

A POSA would have had a reasonable expectation of success in making this modification because Fig. 41 discloses an optical connector (4100) that incorporates all the same basic features as the optical connector (2100) of Fig.

21A, except for the extended middle wall (4260) and a redesigned interface between the front body (4015) and the back body (4030). EX1002: ¶198.

This modification results in the optical connector (2100) of Fig. 21 having the middle wall (4260), which meets the requirement of the wall in claim 15 because it forms a wall between the locations where two ferrule assemblies (2150) are seated in the outer housing and it extends rearward relative to the ferrule alignment slots (2117) where the ferrule holders (2124) are seated in the front body (2115). EX1003: Figs. 42A-B; EX1002: ¶199.



EX1003: Figs. 42A-B (annotated).

Therefore, Takano'209 renders this claim obvious. EX1002: ¶200.

B. Claim 16

In the optical connector (2100) of Fig. 21A modified in view of the optical connector (4100) of Fig. 41 (Section VIII(A)), the elongated middle wall (4260) is "interposed between the ferrules and springs when the front body is assembled." EX1003: ¶[0138]; EX1002: ¶201. This requires a radial gap between the middle wall (4260) and the ferrule holders to accommodate the portion of each spring received around the rear portion of the ferrule holder and abutting the ferrule flange. EX1002: ¶201. Annotated Fig. 42B illustrates a gap for accommodating the spring between the middle wall (4260) and the rear portion of the ferrule holder. EX1002: ¶202. This gap would be present in the modified optical connector (2100) of Fig. 21A. EX1002: ¶202.

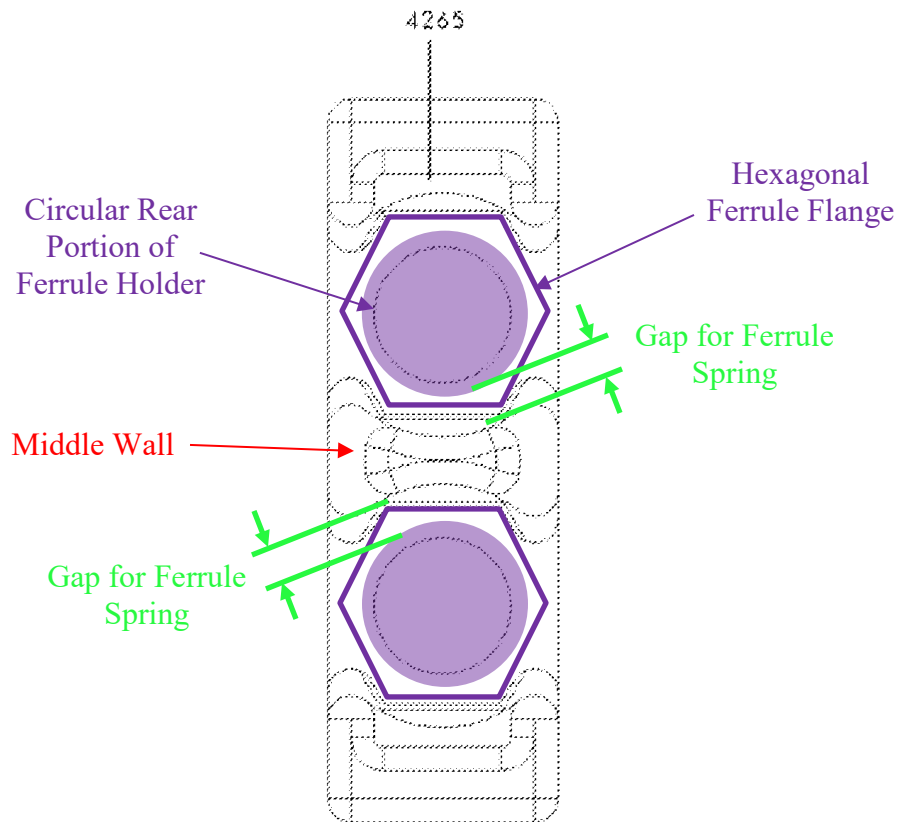


FIG. 42B

EX1003: Fig. 42B (annotated).

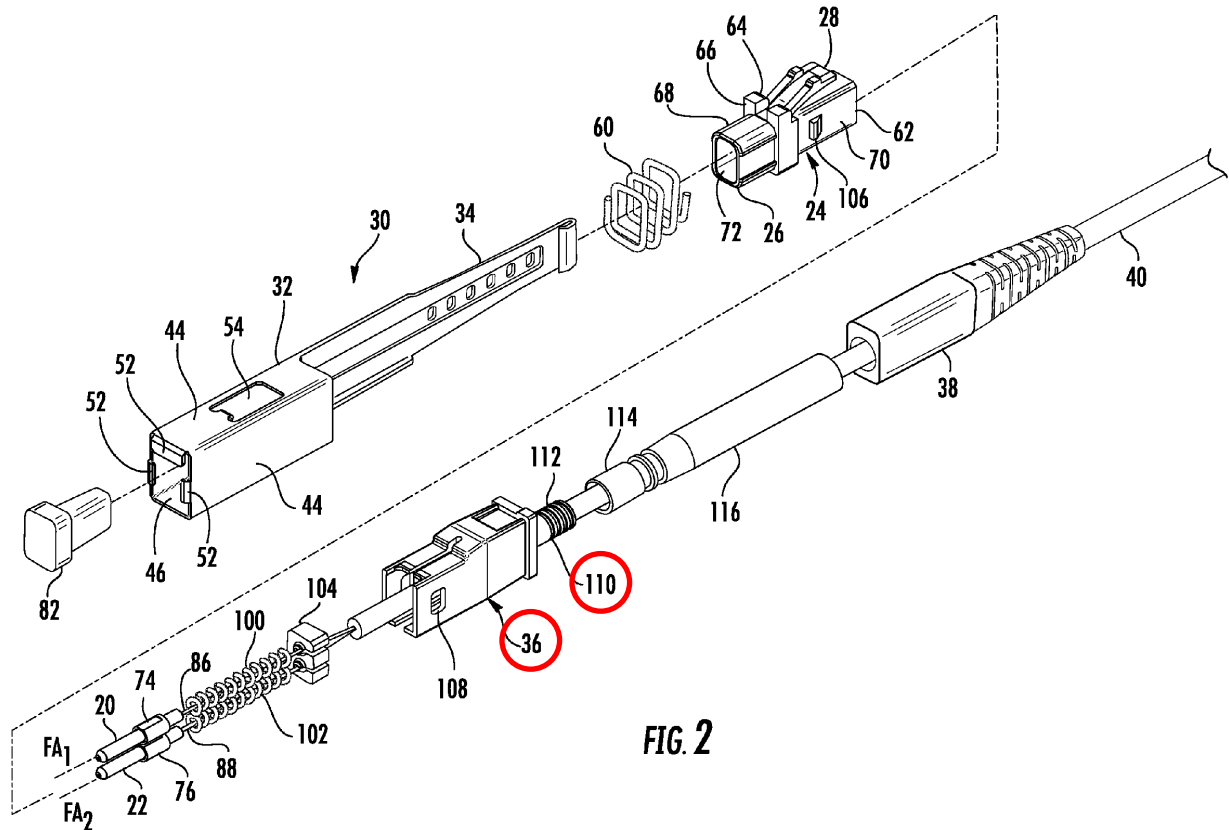
Therefore, Takano'209 renders this claim obvious. EX1002: ¶203.

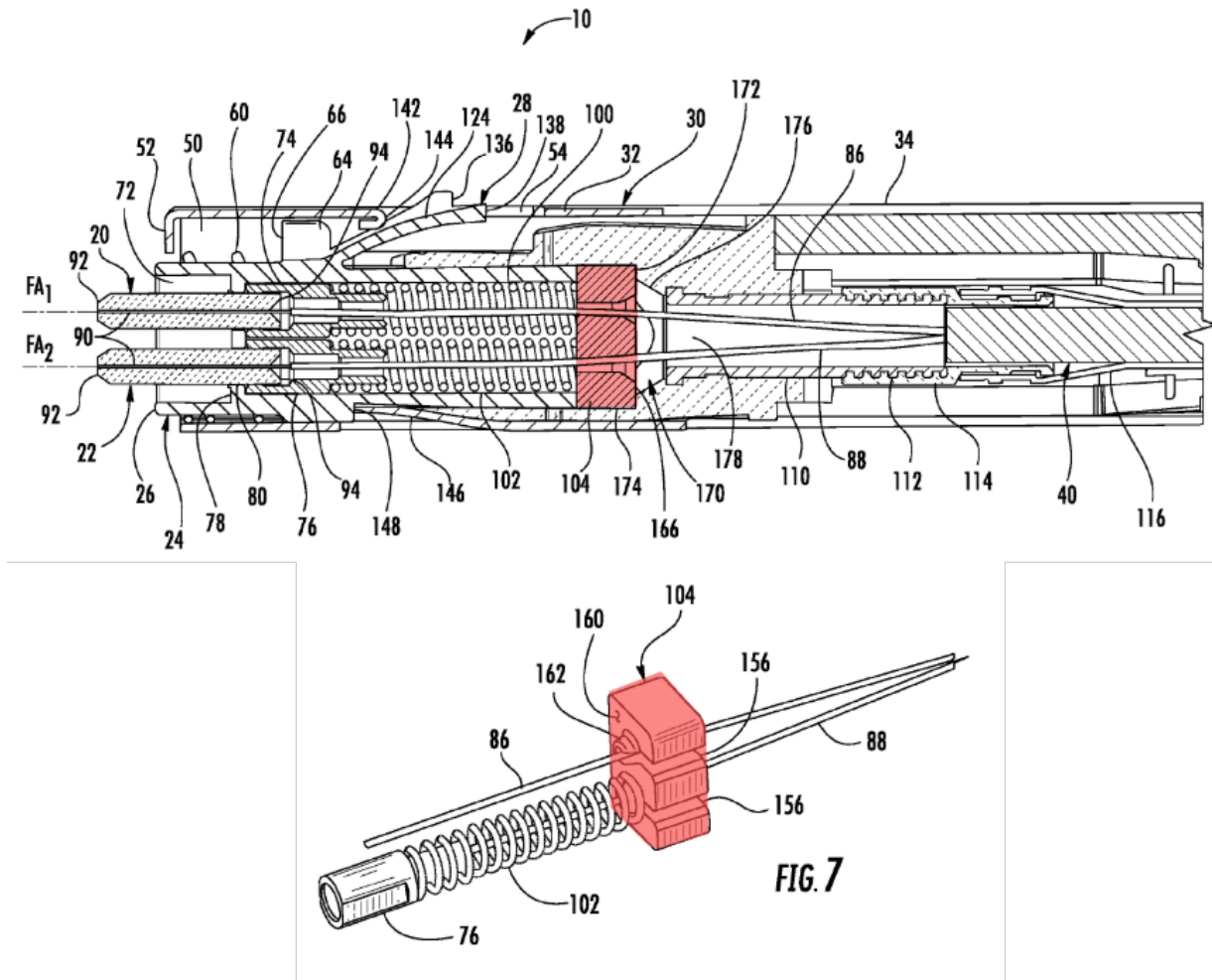
IX. GROUND 5: Claims 3-5 Would Have Been Obvious Over Takano'209 in view of Lee

A. Claim 4

Lee teaches an optical connector (10) that, like Takano'209's optical connector (2100), is taller than it is wide and holds two spring-loaded single-fiber ferrules (20, 22) at vertically spaced apart positions. EX1005: Figs. 2 and 3, ¶¶[0029]-[0030]; EX1002: ¶¶204-206. Between a two-piece crimp body (36, 110)

and ferrule springs (100, 102) is a separate spring push (104). EX1005: Figs. 2 and 3, ¶¶[0038], [0040]; EX1002: ¶206.





EX1005: Figs. 2, 3, and 7 (annotated).

It would have been obvious to modify Takano'209's optical connector (2100) to include Lee's spring push (104) to (1) help position the fibers close to the longitudinal axes of the ferrules; (2) protect the fibers from relative movement in relation to the ferrule springs by aligning spring seats (162, 164) with the slots (156, 158); and/or (3) provide improvements in the process of terminating a fiber optic cable with the connector by allowing for placement of the spring push (104)

onto the cable after the fibers have been installed in the ferrules, all expressly taught by Lee. EX1005: ¶¶[0053], [0055]; EX1002: ¶207.

This modification would have been nothing more than combining known prior art elements (Takano'209's optical connector and Lee's spring push) according to known methods (arrangement taught by Lee) to yield predictable results (an optical connector with an independently mountable spring push). EX1002: ¶208.

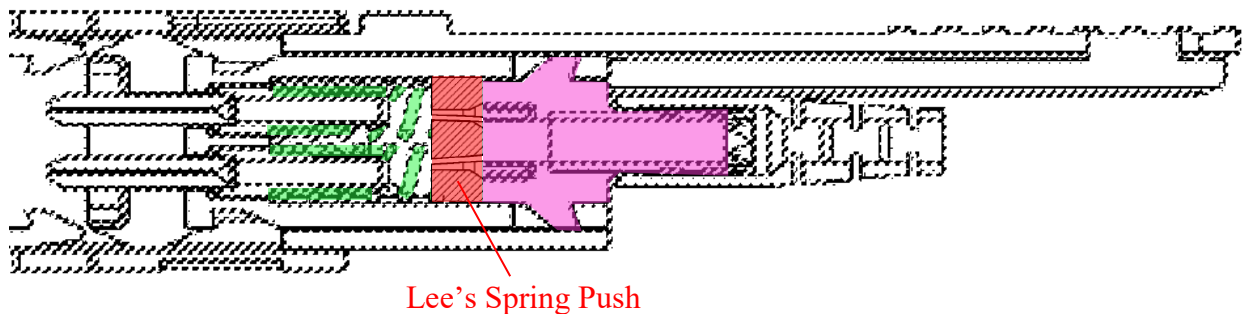
This modification would have also been nothing more than the application of a known technique (Lee's spring push) to improve a similar device (Takano'209's optical connector) in the same way to yield predictable results (an optical connector with an independently mountable spring push). EX1002: ¶209.

This modification would have also been nothing more than the use of a known technique (Lee's separate spring push) to a known device (Takano'209's optical connector) ready for improvement to yield predictable results (an optical connector with an independently mountable spring push). EX1002: ¶210. For example, Lee's spring push would function better to align the individual fibers with their respective ferrules and ferrule springs than the singular opening formed in the back body. EX1002: ¶210.

The POSA would have had a reasonable expectation of success in making this modification given the function and general placement of Lee's spring push

would not change in Takano'209's optical connector. EX1002: ¶211. Further, the POSA would have made any minor structural changes to facilitate this modification, as it would only require minor changes in dimensions and shapes well within the POSA's capabilities. EX1002: ¶211.

As schematic illustration of this modification is shown below:



EX1003: Fig. 23B (annotated, modified); EX1002: ¶212.

As a result of this modification, Takano'209's optical connector includes Lee's spring push, which is separate from the crimp body (back body and back post). EX1002: ¶213. Just like in Lee, the spring push would engage the rear portions of each of Takano'209's springs simultaneously. EX1005: Fig. 3, ¶[0053]; EX1002: ¶213.

Therefore, the Takano'209/Lee combination renders this claim obvious. EX1002: ¶214.

B. Claim 3

The Takano'209/Lee combination renders this claim obvious for the reasons discussed in Section IX(A). EX1002: ¶215.

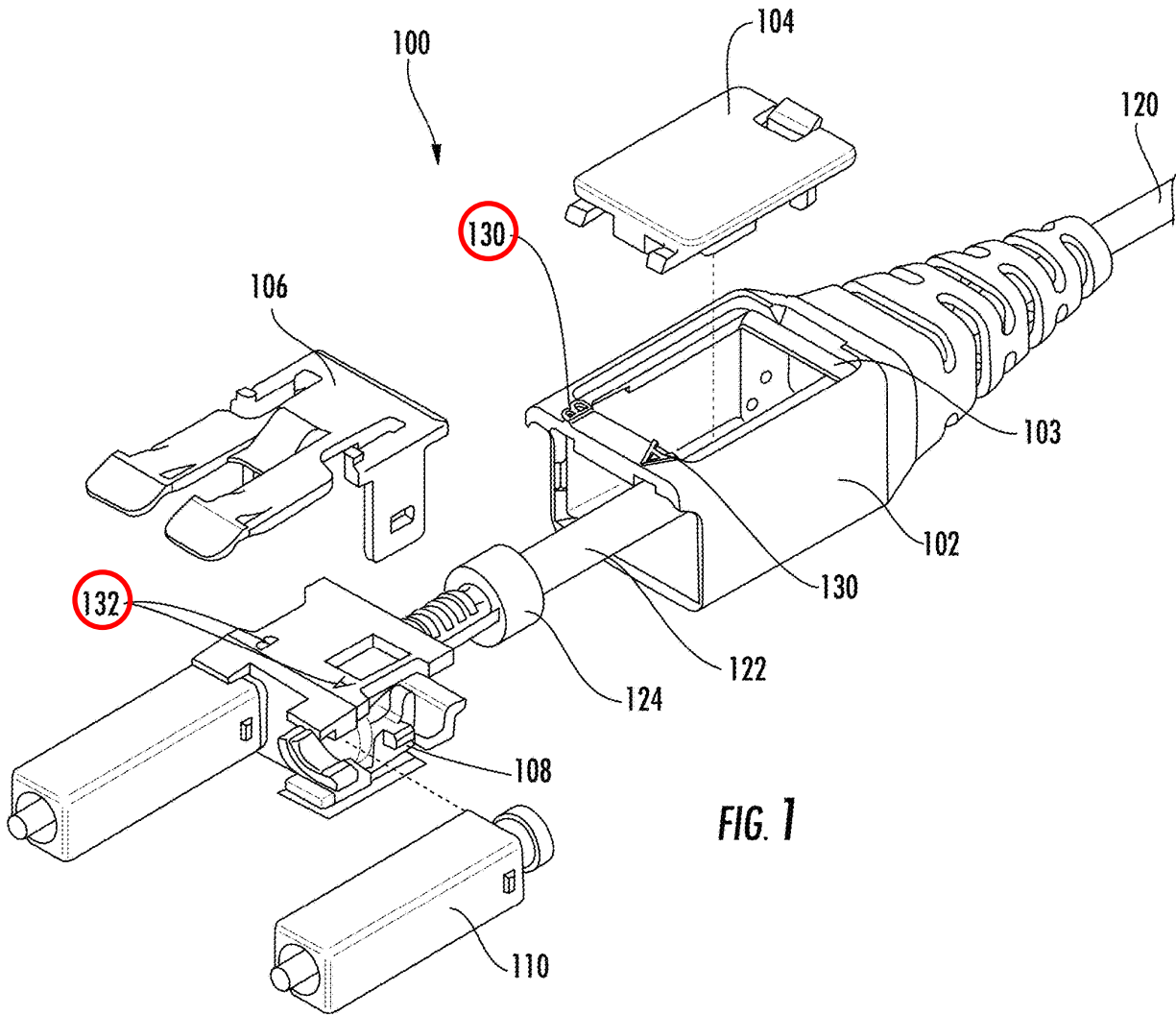
C. Claim 5

The Takano'209/Lee combination renders this claim obvious for the reasons discussed in Section IX(A). EX1002: ¶216.

X. GROUND 6: Claim 6 Would Have Been Obvious Over Takano'209 in view of Veatch

To the extent US Conec argues Takano'209 does not meet this claim, this claim would have been obvious in view of Veatch. EX1002: ¶¶217-218.

Veatch discloses a polarity change fiber optic connector (100), like Takano'209's optical connector (2100) (EX1003: ¶[0121]), with polarity indicia (130, 132) in the form of letters "A" and "B" to "indicate the polarity of the connector." EX1007: Fig. 1, 2:26-39; EX1002: ¶219.



EX1007: Fig. 1 (annotated).

It would have been obvious to modify Takano’209’s outer housing (2110) to include Veatch’s polarity indicia (130, 132) to “indicate the polarity of the connector.” EX1007: 2:33-34; EX1002: ¶220. Such polarity indicia “assist[s] [the] user in identifying the currently polarity configuration of the assembled connector[.]” EX1020: 14:39-46; *see* EX2021: ¶[0050]; EX1002: ¶220. Such

polarity indicia is standard “industry practice.” EX2022: 1:60-63, 6:20-25; EX1027: Fig. 2.2.1c; EX1002: ¶220.

This modification would have been nothing more than combining known prior art elements (Takano’209’s optical connector and Veatch’s polarity indicia) according to known methods (arrangement taught by Veatch) to yield predictable results (an indication of polarity for Takano’209’s optical connector). EX1002: ¶221.

This modification would have also been nothing more than the application of a known technique (Veatch’s polarity indicia) to improve a similar device (Takano’209’s optical connector) in the same way to yield predictable results (an indication of polarity for Takano’209’s optical connector). EX1002: ¶222.

The POSA would have had a reasonable expectation of success in making this modification given the function of Veatch’s polarity indicia would not change in Takano’209’s optical connector (2100). EX1002: ¶223. In making this modification, the POSA would place the polarity indicia on Takano’s outer housing (2110) to be easily and readily viewable by a user. EX1002: ¶223. Moreover, placing polarity indicia on a housing was a known placement in the art. EX1020: Fig. 8B, 14:39-46; EX1002: ¶223. For example, the POSA would place the letter “A” on the top surface of the outer housing and the letter “B” on the bottom surface of the outer housing, as shown representationally below. EX1002:

¶223. The modification to the outer housing (2100) would be obvious, per industry standard, independent of polarity change capability. EX1002: ¶413.

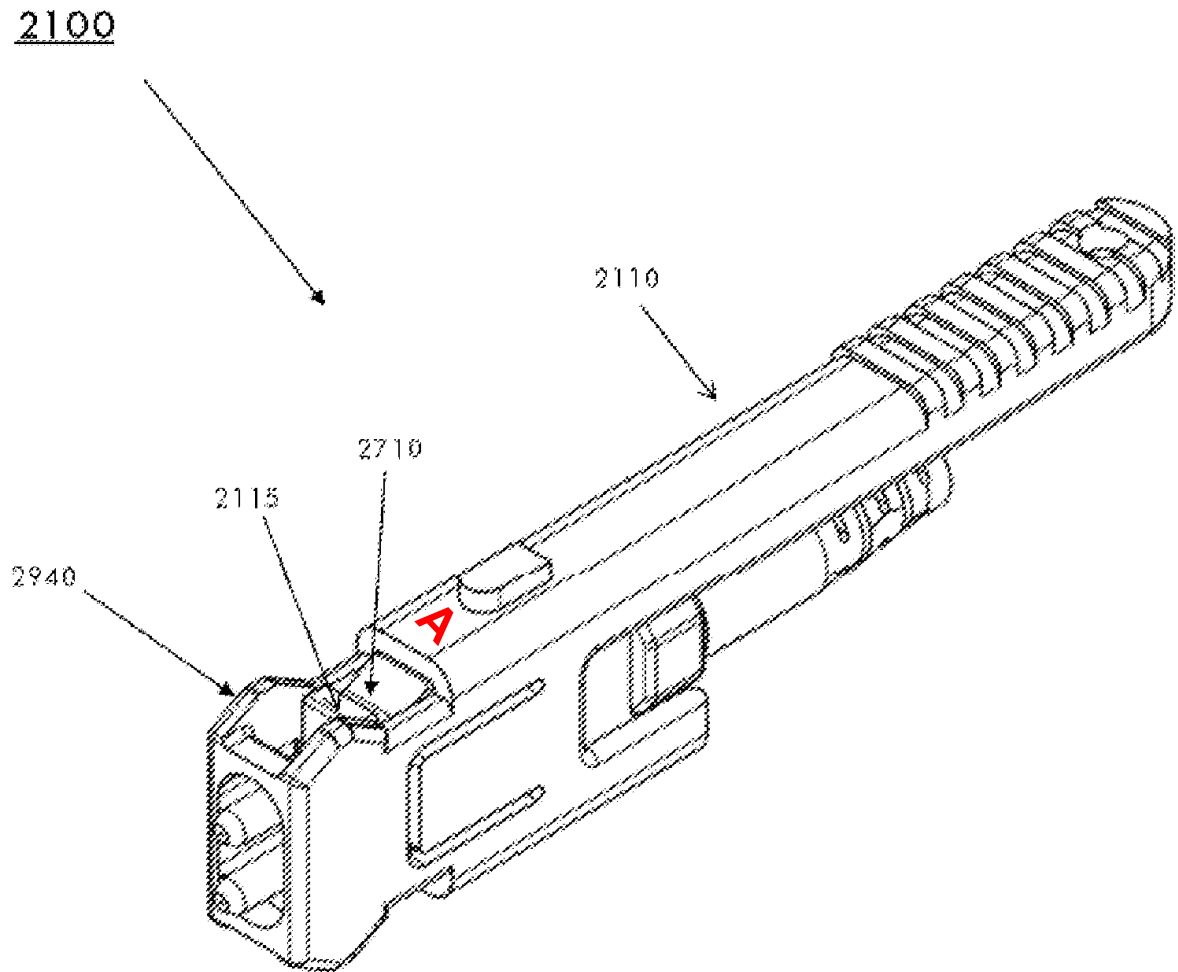


FIG. 21B

EX1003: Fig. 21B (modified).

In addition, because both Takano'209 and Veatch are polarity change connectors that facilitate polarity change by repositioning an outer component of the connector relative to an inner assembly, the POSA would have modified the inner front body (2115) to include indicia, such as the letter “A” on the top surface and the letter “B” on the bottom surface. Then, just as in Raven, during

a polarity change, the user could compare the indicia on the outer housing (2110) to the indicia on the inner housing (2115) to determine whether the connector (2100) is the first or second polarity. EX1007: 2:26-37.

As a result of this modification, Takano'209's optical connector includes Veatch's polarity indicia on the outer housing. EX1002: ¶224.

Therefore, the Takano'209/Veatch combination renders this claim obvious. EX1002: ¶225.

XI. GROUND 7: Claim 14 Would Have Been Obvious Over Takano'209 in view of Nguyen

Nguyen teaches a ferrule holder (300) with first and second projections (320, 322) on the top and bottom "to position the ferrules 12 in the adapter in the x [horizontal] and y [vertical] directions, eliminating the need for side walls." EX1006: ¶¶[0027], [0036]; EX1002: ¶¶226-228. The mating adapter (100) comprises three-sided grooves (140, 142) for engaging the projections of the ferrule holder to horizontally and vertically align the ferrule holder. EX1006: Fig. 7B, ¶¶[0034], [0036]; EX1002: ¶229.

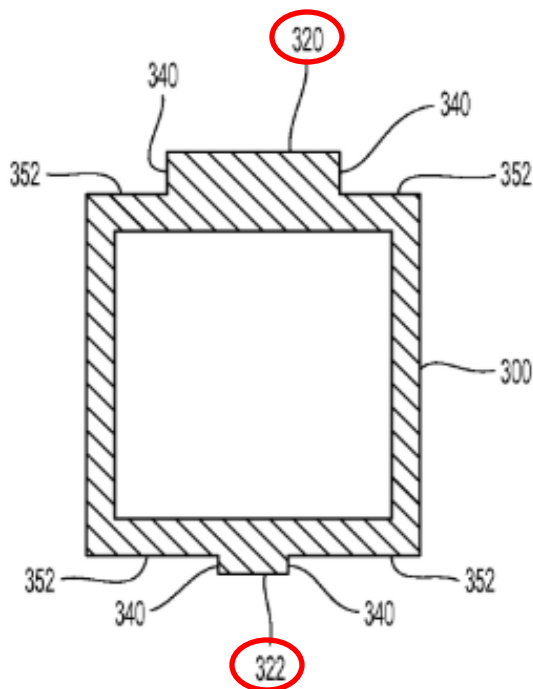


Fig. 7A

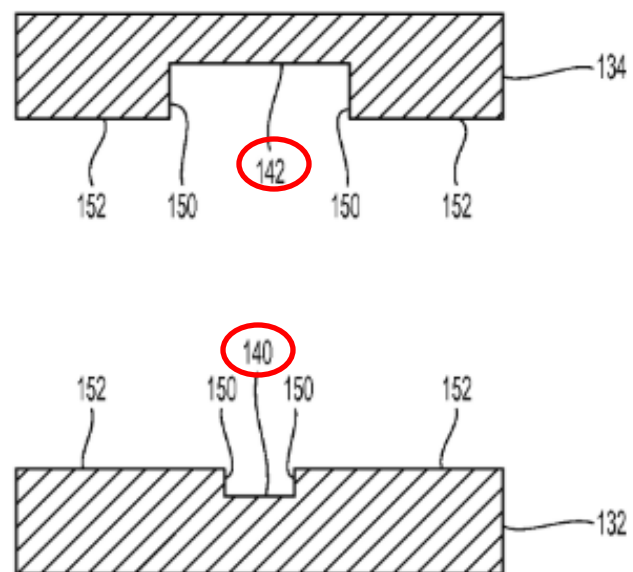


Fig. 7B

EX1006: Figs. 7A-B (annotated).

It would have been obvious to modify Takano'209's optical connector (2100) to include Nguyen's projections (320, 322) and modify Takano'209's mating adapter (2400) to include Nguyen's three-sided grooves (140, 142) to align Takano'209's optical connection in the x and y directions relative to the adapter.

EX1006: ¶[0027], [0036]; EX1002: ¶230. Nguyen explains these alignment features eliminate the need for internal adapter side walls for positioning. EX1006: ¶[0027]; EX1002: ¶230. Notably, Takano'209's adapter (2400) is devoid of internal side walls, such that the POSA would have recognized the benefit of employing the x-y alignment features of Nguyen in Takano'209. EX1002: ¶230.

This modification would have been nothing more than combining known prior art elements (Takano'209's optical connector and adapter) and Nguyen's x-y alignment features) according to known methods (arrangement taught by Nguyen) to yield predictable results (x-y alignment of Takano'209's optical connector in its adapter). EX1002: ¶231.

This modification would have also been nothing more than the application of a known technique (Nguyen's x-y alignment features) to improve a similar device (Takano'209's optical connector and adapter) in the same way to yield predictable results (x-y alignment of Takano'209's optical connector in its adapter). EX1002: ¶232.

This modification would have also been nothing more than the use of a known technique (Nguyen's x-y alignment features) to a known device (Takano'209's optical connector and adapter) ready for improvement to yield predictable results (x-y alignment of Takano'209's optical connector in its adapter). EX1002: ¶233. For example, the dual alignment keys on Takano'209's optical connector and three-sided grooves of Nguyen on the top and bottom walls of Takano'209's adapter would provide precision horizontal and vertical alignment of Takano'209's optical connector into the adapter. EX1002: ¶233.

The POSA would have had a reasonable expectation of success in making this modification given the function and general arrangement of Nguyen's x-y

alignment features would not change in Takano'209's optical connector and adapter. EX1002: ¶234. In making this modification, the POSA would have modified Takano'209's outer housing to include a second, smaller alignment key on the bottom side. EX1002: ¶234. The POSA would have modified Takano'209's adapter to replace each connector alignment slot with Nguyen's three-sided groove sized and arranged for receiving the alignment key. EX1002: ¶234. The POSA would also modify the bottom wall of Takano'209's adapter to include three-sided grooves sized and arranged for receiving the added alignment keys on the bottom wall of Takano'209's outer housing. EX1002: ¶234.

Takano'209's alignment key on the top of the outer housing and the added second alignment key (e.g., Nyugen's projection (322)) are each alignment features that includes a vertical alignment feature and a horizontal alignment feature. EX1002: ¶235.

If "vertical alignment feature" and "horizontal alignment feature" are construed (Section V(A)) to mean a feature that extends vertically or horizontally, respectively, then the vertical side surfaces of the alignment key (2105) and second alignment key meet "vertical alignment feature" and the horizontal surfaces of the alignment key (2105) and second alignment key meet "horizontal alignment feature." EX1002: ¶236.

If "vertical alignment feature" and "horizontal alignment feature" are construed to mean a feature that engages a mating alignment structure to align the connector vertically or horizontally, respectively, then the horizontal surfaces of the alignment key (2105) and second alignment key meet "vertical alignment feature" and the vertical side surfaces of the alignment key (2105) and second alignment key meet "horizontal alignment feature." EX1006: ¶[0036]; EX1002: ¶237.

Therefore, the Takano'209/Nguyen combination renders this claim obvious. EX1002: ¶238.

XII. GROUND 8: Claim 17 Would Have Been Obvious Over Takano'209 in view of Henke

Henke discloses a ferrule assembly comprising a ferrule (42), a ferrule holder (32(2)) and a lead-in tube (28(2)) integrated with the ferrule holder and extending rearward beyond a back post to "enable the optical fiber 34 to be more easily inserted into the lead-in bore." EX1008: ¶¶[0041], [0079]; EX1002: ¶¶239-243.

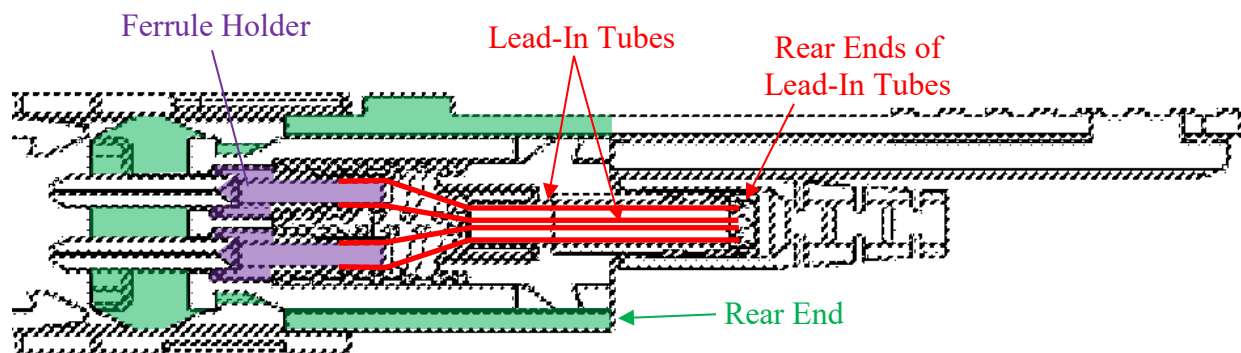
This modification would have been nothing more than combining known prior art elements (Takano'209's optical connector and Henke's lead-in tube) according to known methods (arrangement taught by Henke) to yield predictable results (Takano'209's optical connector with a lead-in tube for an optical fiber). EX1002: ¶246.

This modification would have also been nothing more than the application of a known technique (Henke's lead-in tube) to improve a similar device (Takano'209's optical connector) in the same way to yield predictable results (Takano'209's optical connector with a lead-in tube for an optical fiber). EX1002: ¶247. For example, the integrated lead-in tubes would assist with guiding the fibers into the ferrules during assembly and prevent adhesive from leaking onto the ferrule springs when the fibers are adhered in place. EX1002: ¶248.

The proposed modification would have been well within the capabilities of a POSA, and the POSA would have had a reasonable expectation of success. EX1002: ¶249. Henke teaches the integrated lead-in tubes may be used with LC ferrules, the type of Takano'209. EX1008: ¶[0107]; EX1003: ¶[0117]; EX1002: ¶249. Further, Henke's lead-in tubes are formed from flexible material, which would naturally conform to and fit within the interior geometry of the connector. EX1002: ¶249. At most, the proposed modifications would have required minor changes in the dimensions of parts to accommodate the two integrated lead-in

tubes in the interior of Takano'209's optical connector, well within the POSA's capabilities. EX1002: ¶249.

As illustrated below, in the Takano'209/Henke combination, the integrated lead-in tubes would extend from front end portions integrated with the ferrule holders, through the springs and the interior of the two-piece crimp body, to rear ends protruding slightly beyond the rear end of the back post. EX1002: ¶250. In the Takano'209/Henke connector, the lead-in tubes extend past the rear end of the main body and avoid leakage of an adhesive inserted into the lead-in tube into the main body, as taught by Henke. EX1008: ¶[0041]; EX1002: ¶250.



EX1003: Fig. 23B (annotated, modified).

Therefore, the Takano'209/Henke combination renders this claim obvious. EX1002: ¶251.

XIII. GROUND 9: Claims 1-3 and 5-14 are Anticipated (or Rendered Obvious) by Takano'369

A. Independent Claim 1

1.P

Takano'369 discloses a fiber optic connector (10300, 10400, 10500).

EX1009: Figs. 53-55, 18:63-64, 19:12-13, 19:32-34; EX1002: ¶¶252-253.

Although different reference numbers are used in Figures 53-55, the illustrated connectors (10300, 10400, 10500) are the same connector, just shown in different configurations. EX1002: ¶254. Further, Fig. 61 shows a connection system (101100) and demonstrates how four of the same connector of Figs. 53-55 would mate with a quad adapter (101114). EX1002: ¶255. In Figs. 64 and 65, the connectors labeled "Mini CS Simplex" are examples of the connector of Figs. 53-55. EX1002: ¶256.

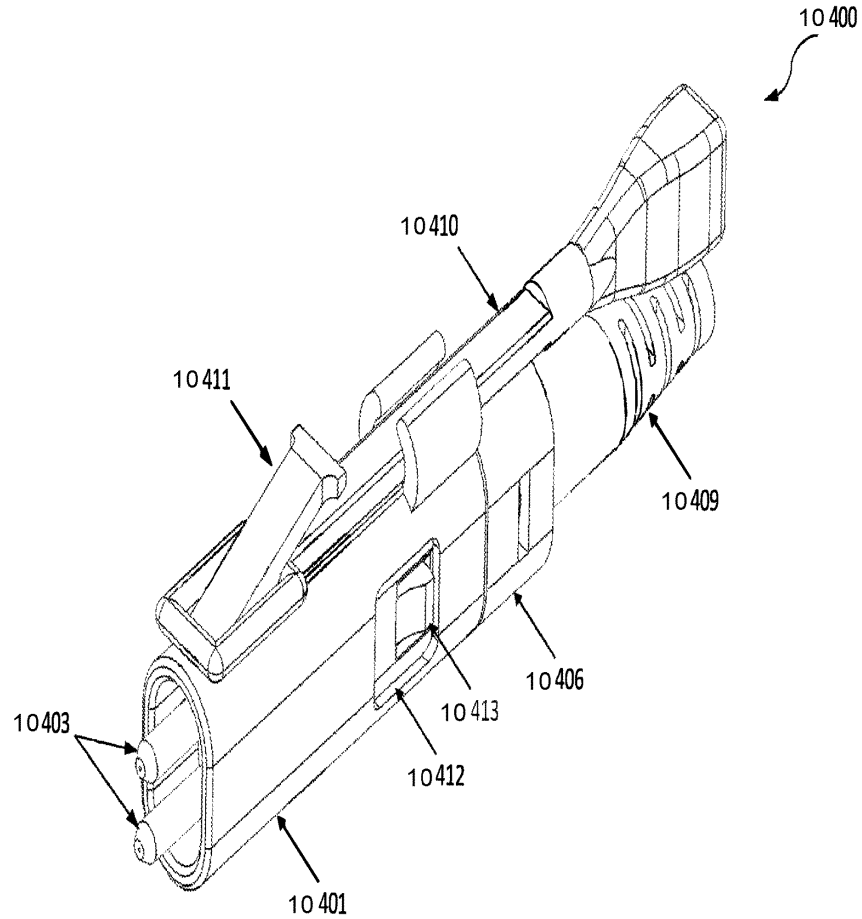


FIG. 54

EX1009: Fig. 54.

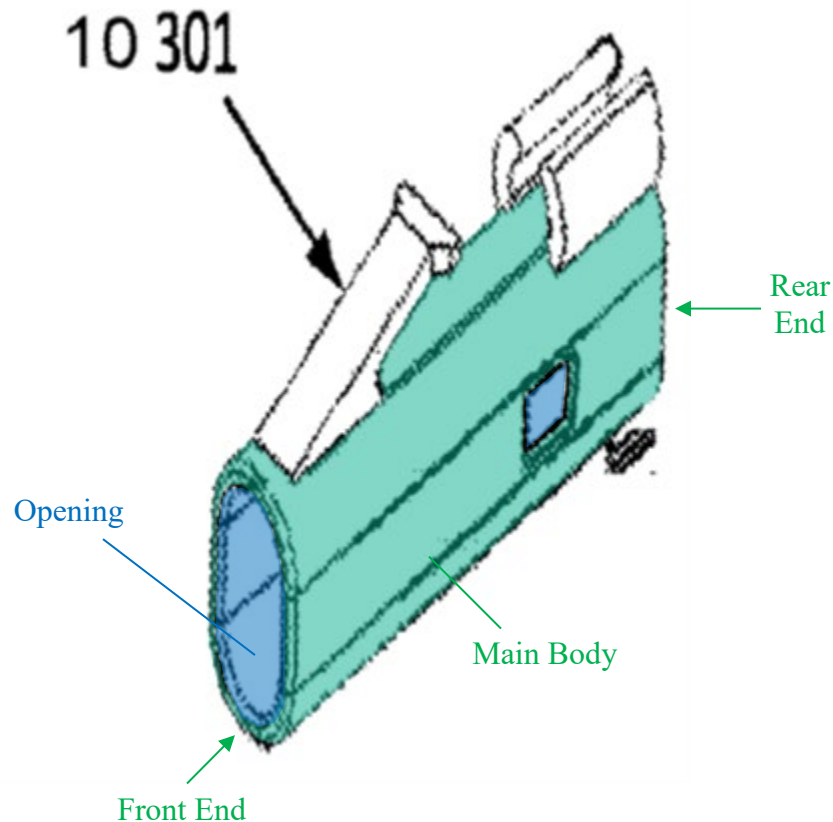
Therefore, Takano'369 meets 1.P. EX1002: ¶257.

1.a.1

Takano'369's connector includes an outer housing (10301, 10401, 10501).

EX1009: 19:1, 14-15, 34-41; EX1002: ¶258. The outer housing comprises a main

body (green) with front and rear ends, and an opening extending between the front and rear ends. EX1009: 19:35-36; EX1002: ¶258.

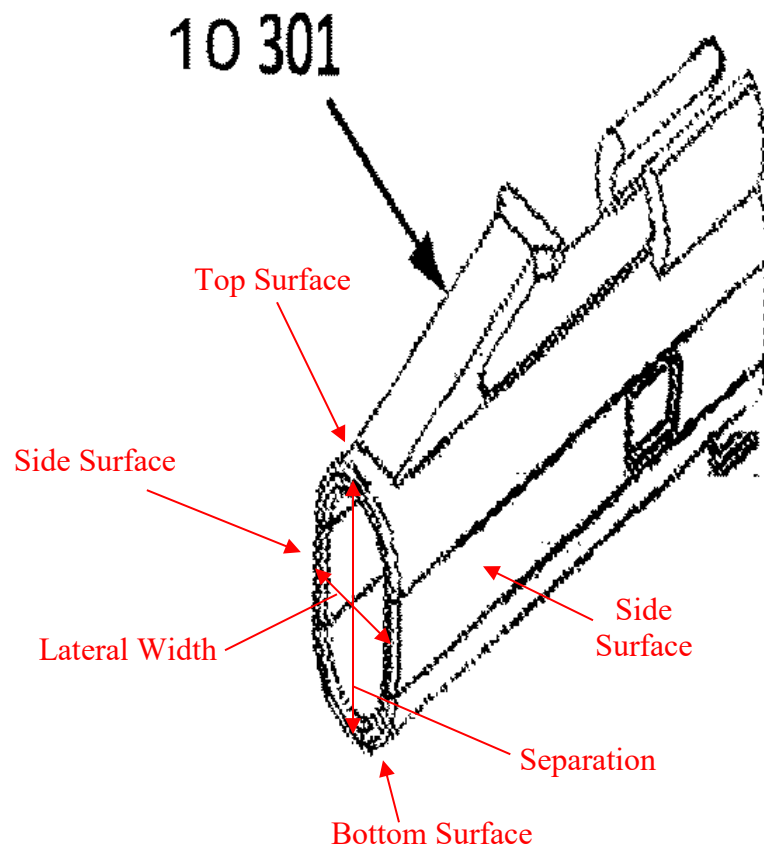


EX1009: Fig. 53 (annotated).

Therefore, Takano'369 meets 1.a.1. EX1002: ¶259.

1.a.2

The outer housing has a top surface, a bottom surface, and two opposing side surfaces. EX1009: Fig. 53; EX1002: ¶260. The lateral width between the two side surfaces is less than the separation between the top and bottom surfaces. EX1002: ¶260.



EX1009: Fig. 53 (annotated).

Therefore, Takano'369 meets 1.a.2. EX1002: ¶261.

1.b.1

Takano'369's connector includes two ferrule assemblies disposed within the opening of the outer housing. EX1009: 19:14-17; EX1002: ¶262.

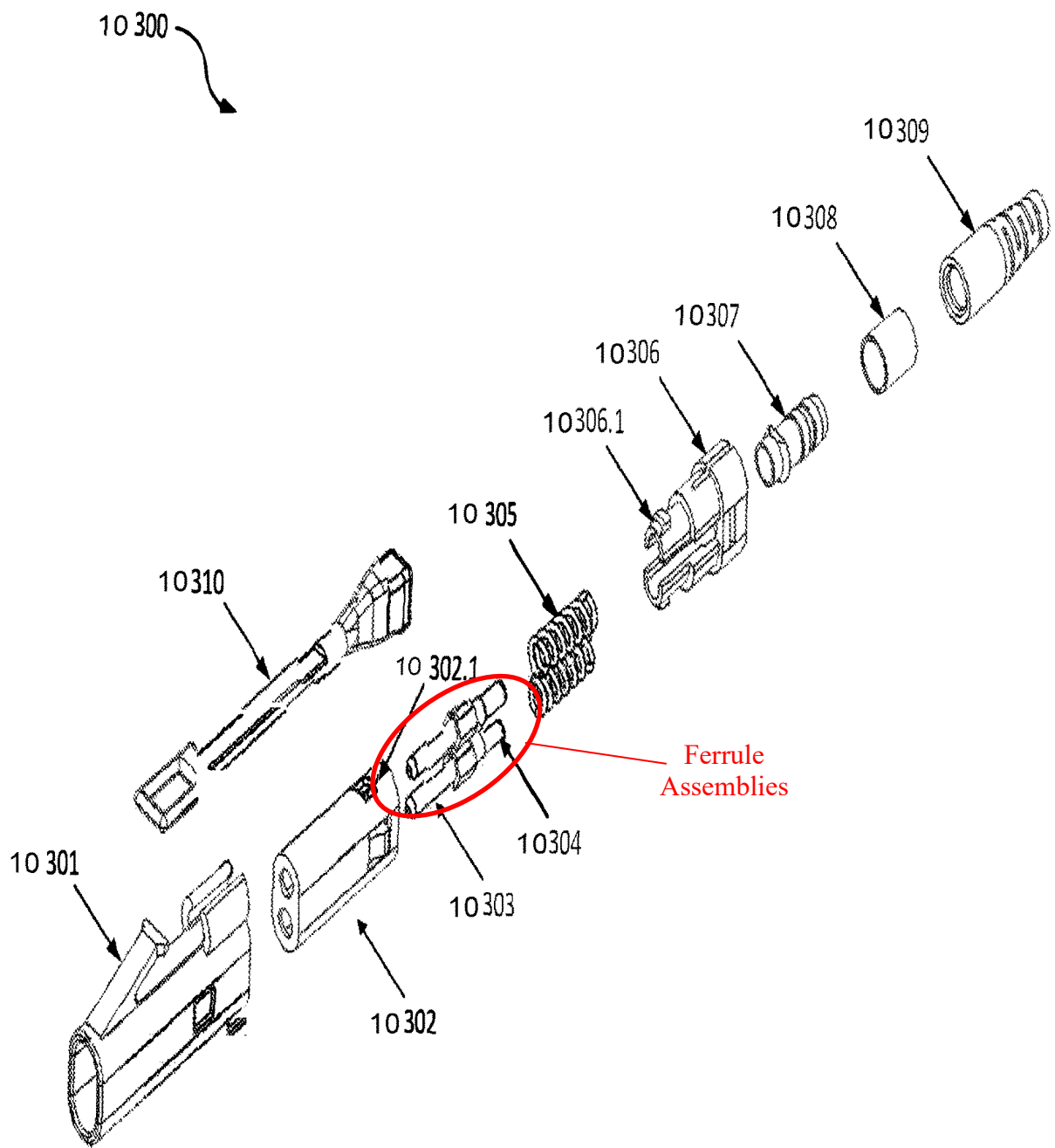
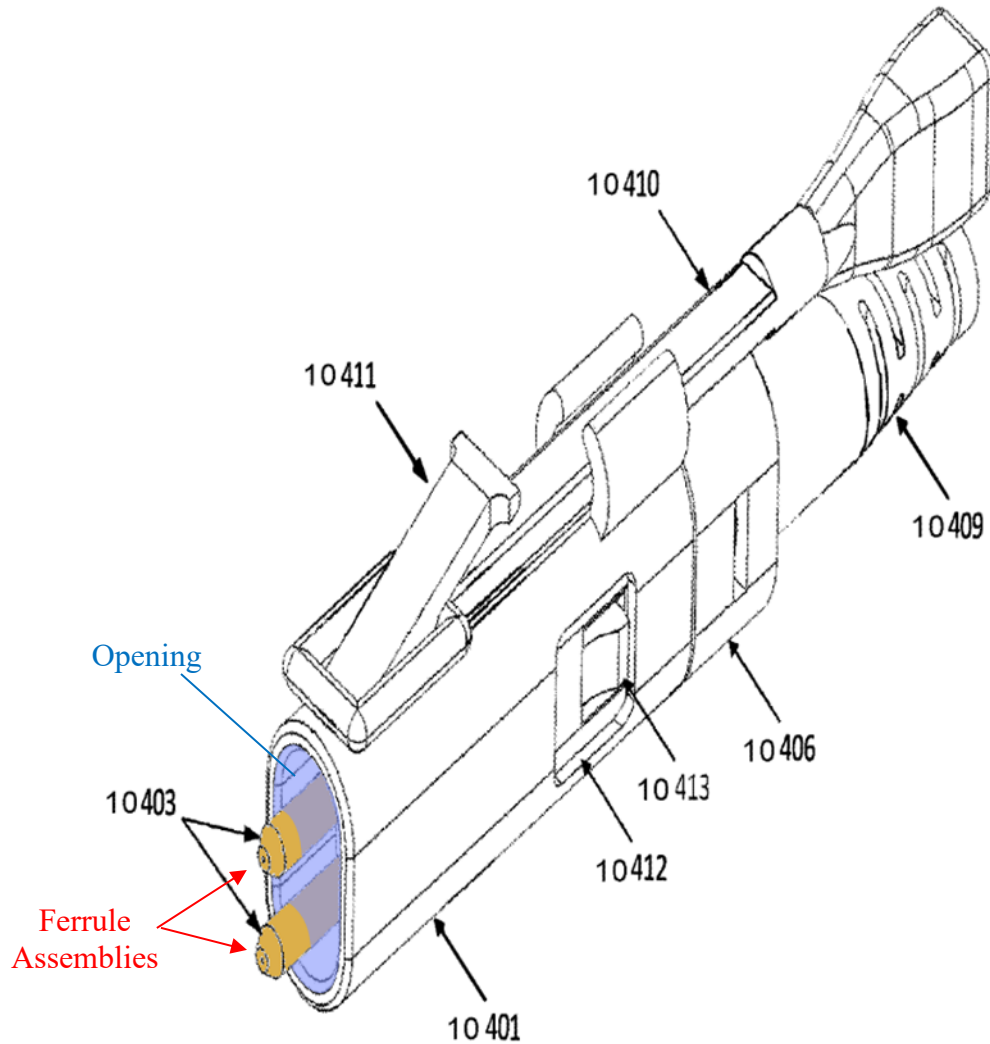


FIG. 53

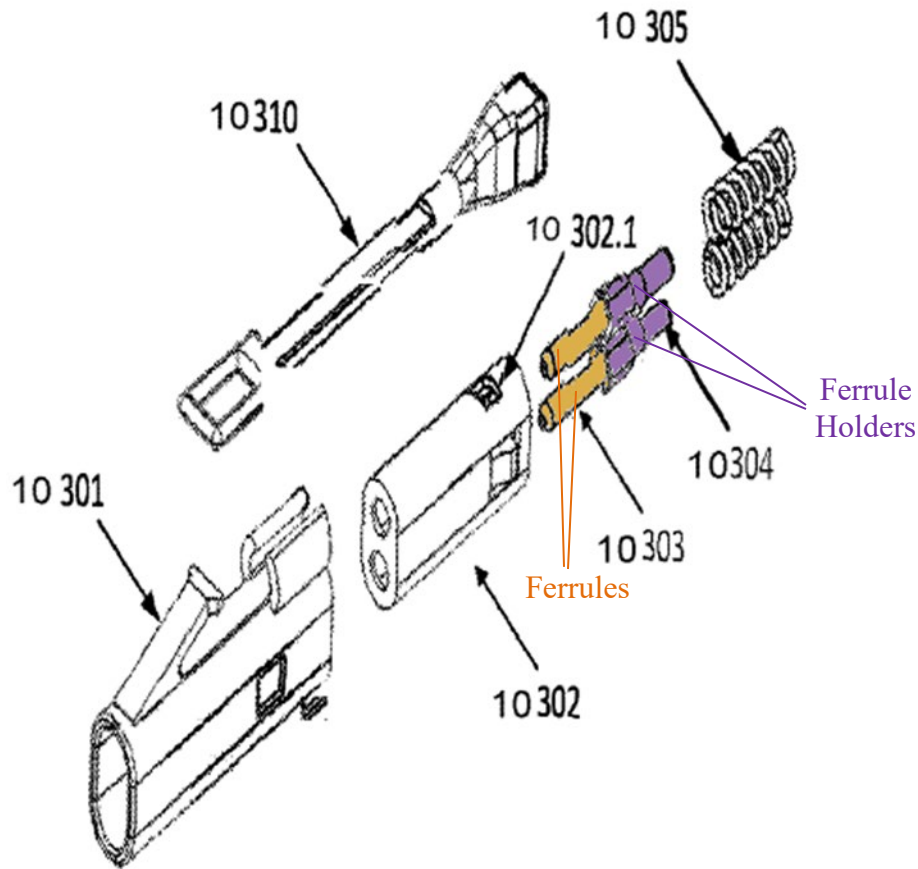


EX1009: Figs. 53 and 54 (annotated).

Therefore, Takano'369 meets 1.b.1. EX1002: ¶263.

1.b.2

Each ferrule assembly includes a ferrule (10303, 10403) and a ferrule holder (10304) (e.g., ferrule flange) to hold the ferrule. EX1009: 19:2-3, 19:15-17; EX1002: ¶264. Each ferrule extends forward away from the front end of the ferrule holder. EX1002: ¶264.



EX1009: Fig. 53 (annotated).

Therefore, Takano'369 meets 1.b.2. EX1002: ¶265.

1.c

Takano'369's connector includes two springs (10305). EX1009: 19:3, 19:17; EX1002: ¶266. The back and front bodies (10306, 10302) are fastened together around the ferrules, ferrule flanges, and springs. EX1009: 19:8-11; EX1002: ¶266. The springs fit over the rear cylindrical portions of the ferrule flanges and the front ends of the springs engage the rearward facing surfaces of the larger hexagonal portions of the ferrule flanges. EX1002: ¶266. From their front

ends, the springs extend rearward. EX1002: ¶266. The springs bias the ferrule assemblies toward the front end of the housing. EX1009: Abstract; EX1002: ¶266. The springs are retained within the connector housing, between the front body (10302, 10502) and the back body (10306). EX1009: 19:8-11, 19:34-41; EX1002: ¶266.

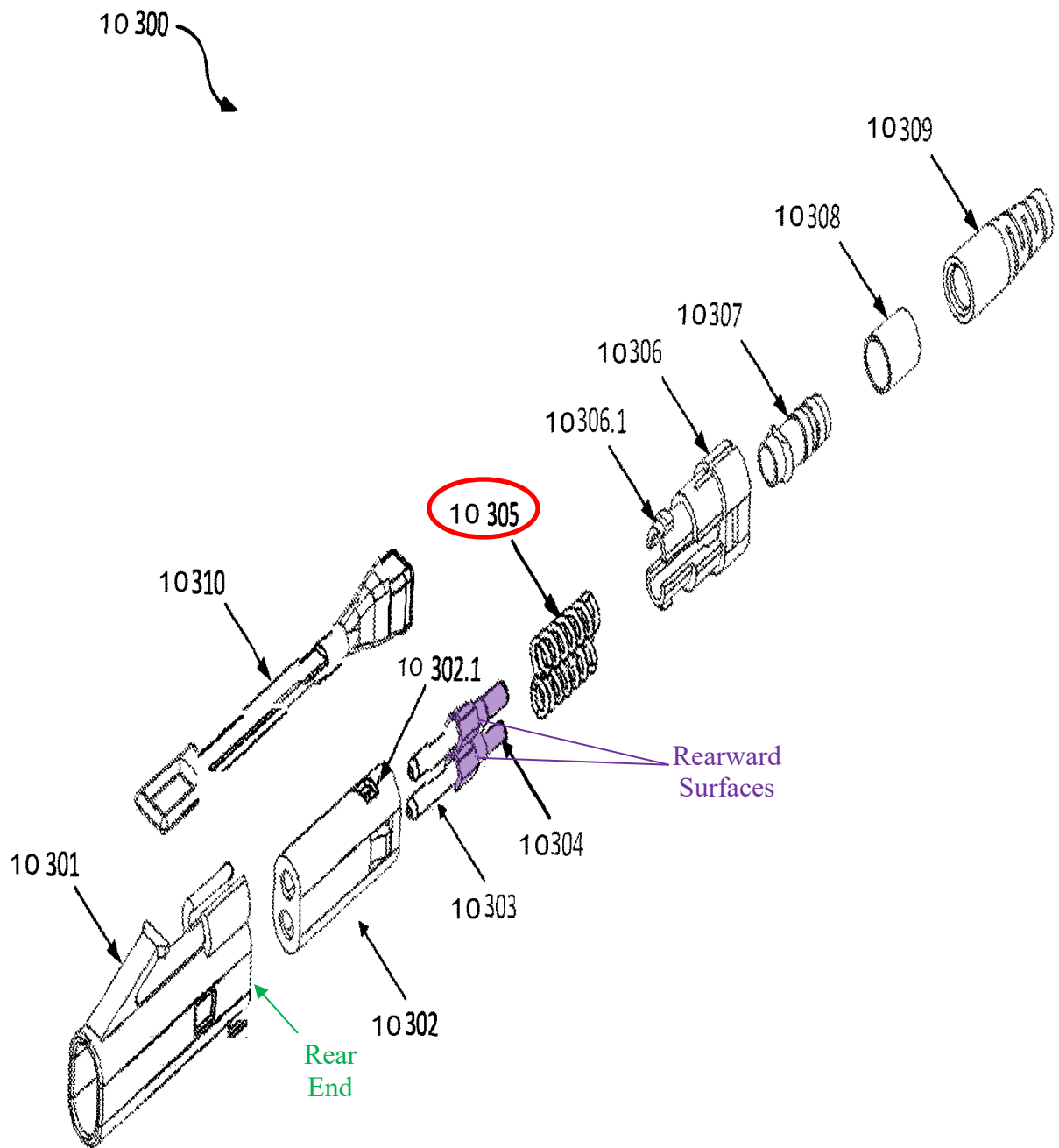


FIG. 53

EX1009: Fig. 53 (annotated).

If US Conec asserts Takano'369 does not expressly teach this limitation, this limitation would have been obvious in view of Takano'369's other teachings—Fig.

23A for example—that show this limitation is nothing more than the conventional way ferrule springs are arranged. EX1002: ¶267.

Therefore, Takano'369 meets (or renders obvious) 1.c. EX1002: ¶268.

1.d.1

Takano'369's connector includes a two-piece crimp body made up of a back body (10306, 10406) and a back post (10307). EX1009: 19:1-4, 19:13-18; EX1002: ¶269. The front end portion of the back body is secured to the front body, and in turn, the front body is secured to the outer housing. EX1009: 19:8-11, 19:34-41; EX1002: ¶269. Further, the front end portion of the back body protrudes into the rear end portion of the outer housing. EX1002: ¶269.

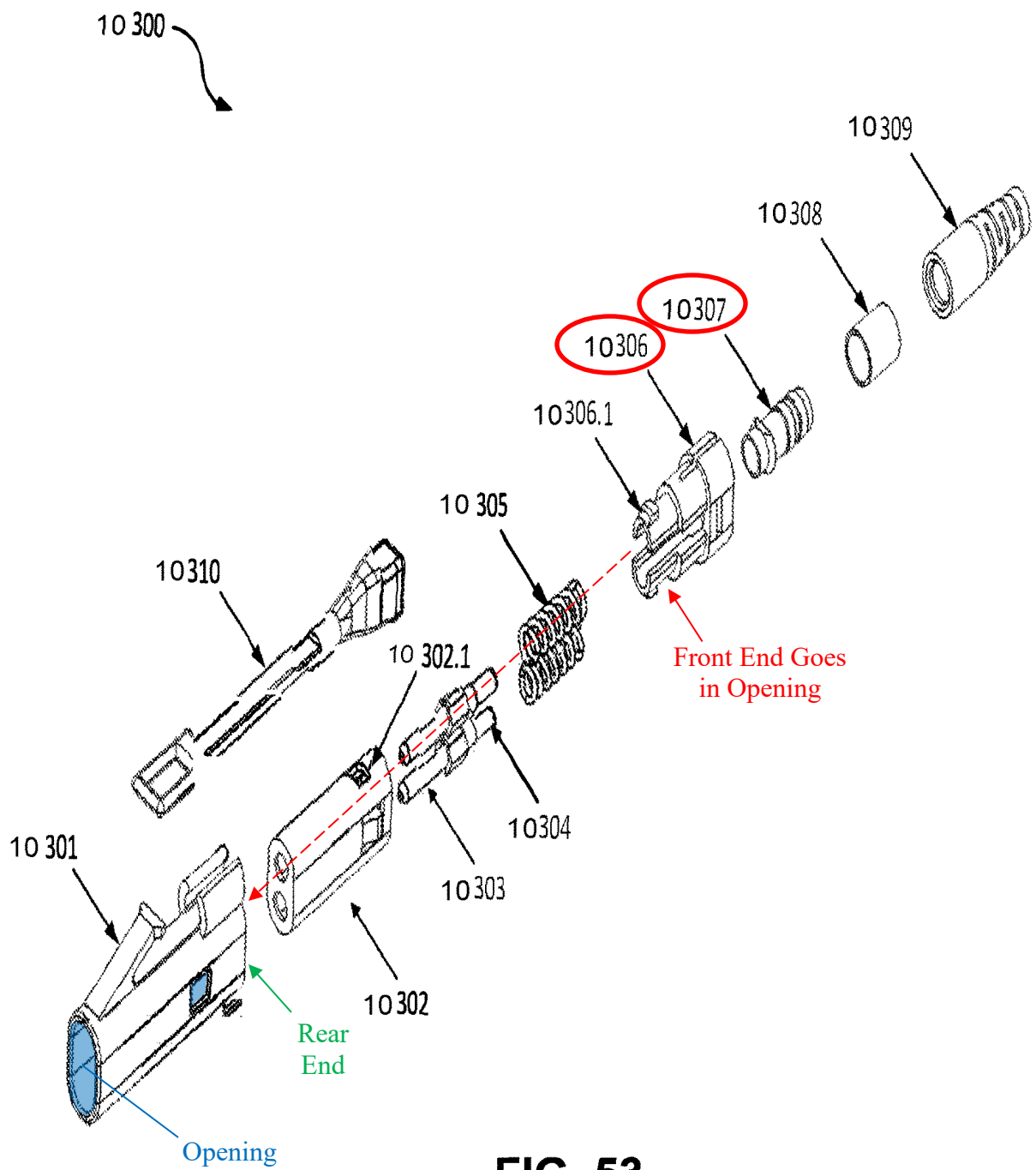


FIG. 53

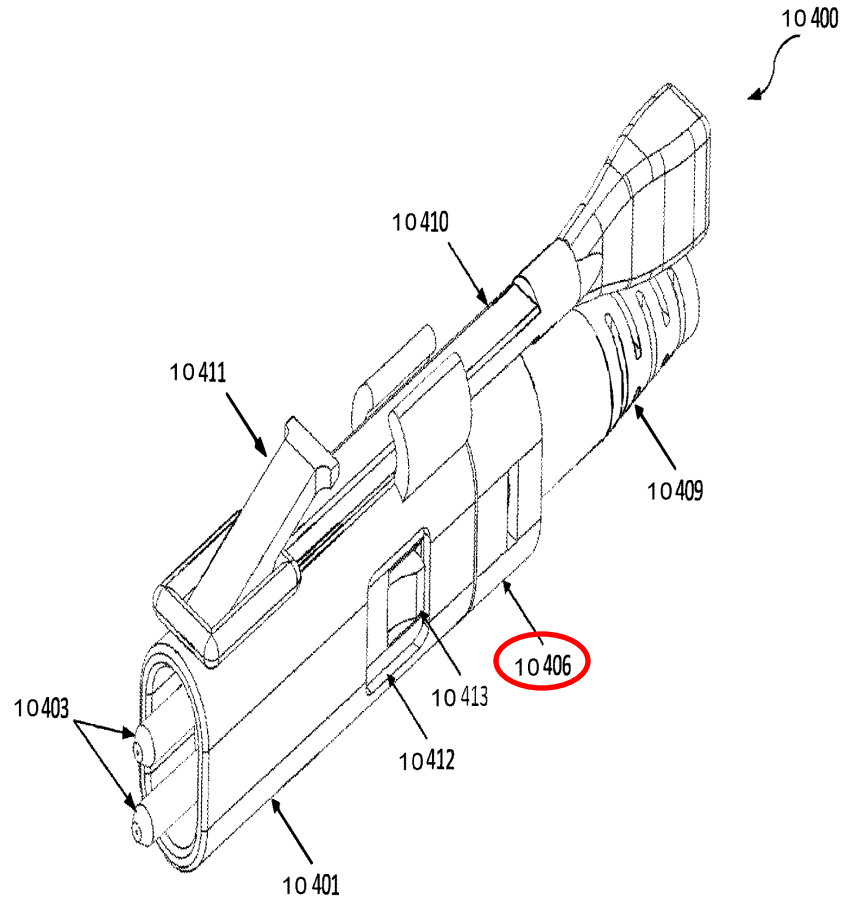


FIG. 54

EX1009: Figs. 53 and 54 (annotated).

Therefore, Takano'369 meets 1.d.1. EX1002: ¶270.

1.d.2

The back post (10307) defines a singular opening for optical fibers at the rear end of the crimp body. EX1002: ¶271. Figs. 64 and 65 depict singular

jacketed cables entering each simplex Takano'369's connector through the boot.

EX1009: 21:50-54, 22:3-6. EX1002: ¶271.

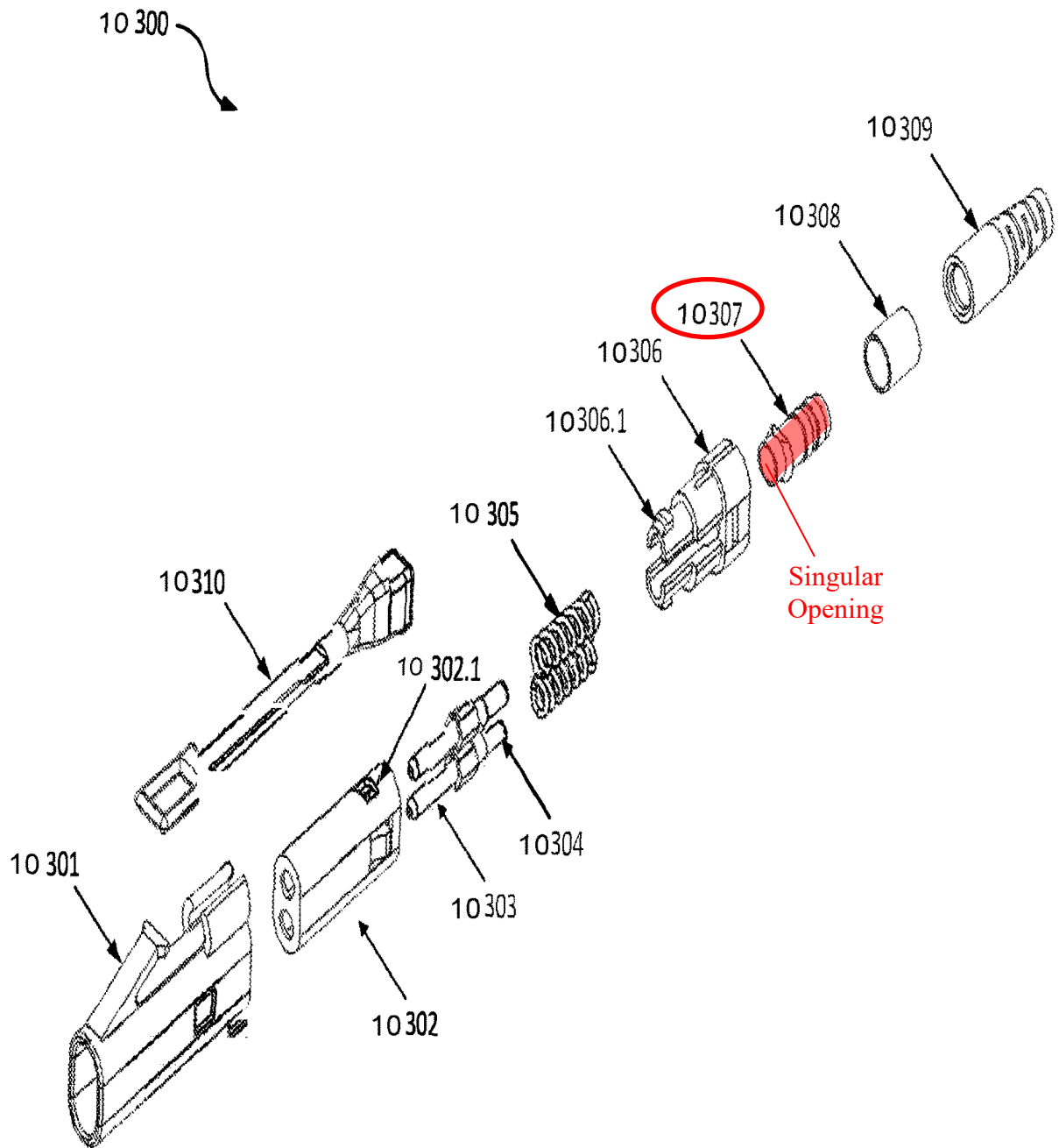


FIG. 53

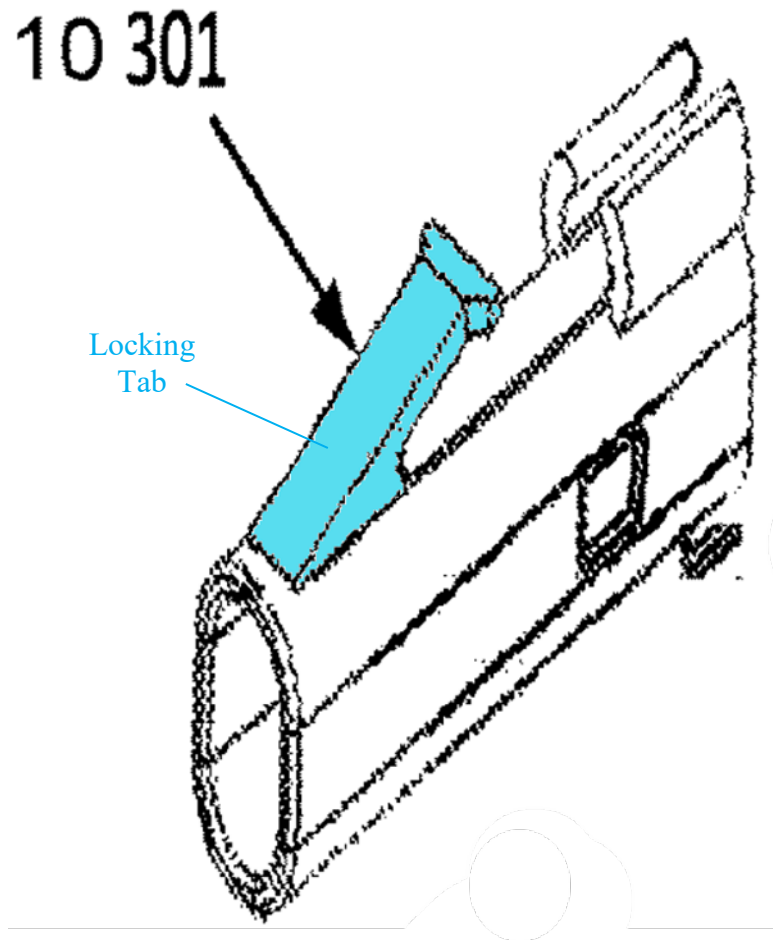
EX1009: Fig. 53 (annotated).

If US Conec asserts Takano'369 does not expressly teach this limitation, this limitation would have been obvious in view of Takano'369's other teachings—Fig. 23A for example—that show this limitation (e.g., a singular opening) is nothing more than the conventional configuration of crimp bodies in these types of connectors. EX1002: ¶272.

Therefore, Takano'369 meets (or renders obvious) 1.d.2. EX1002: ¶273.

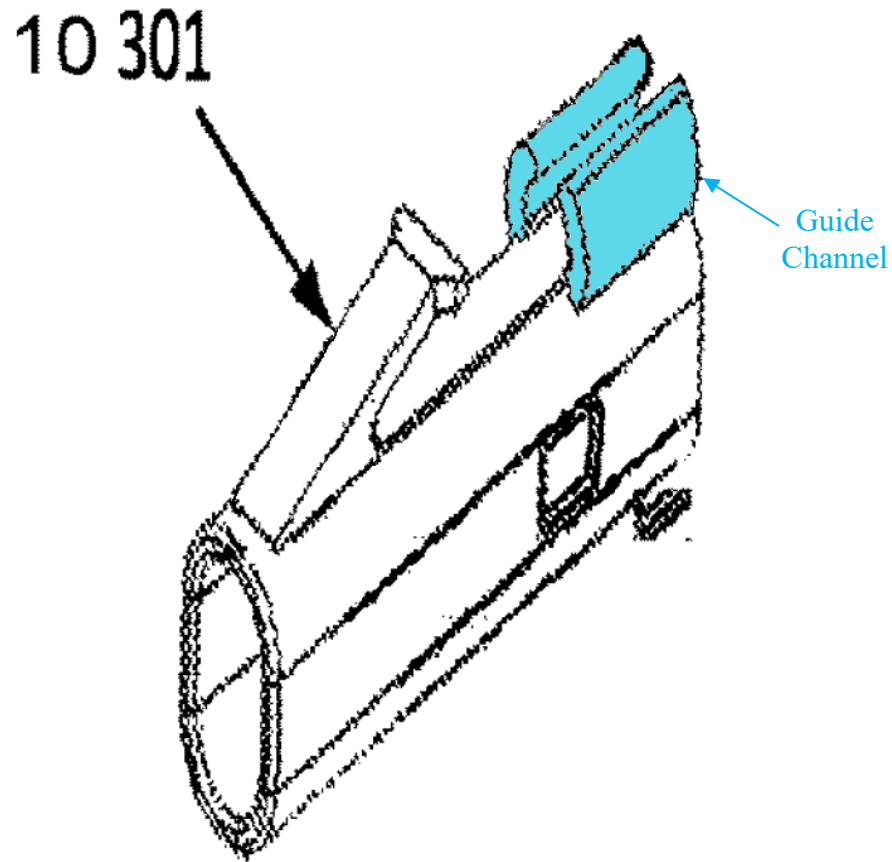
1.e

Takano'369's connector has a locking tab (10411) to secure the connector to the adapter. EX1009: 19:25-27; EX1002: ¶274. The locking tab is on the top surface of the outer housing, and because it (1) "interlock[s] with an adapter" and (2) "secure[s] the connector in to the adapter," the locking tab guides the connector into an adapter. EX1009: 19:25-27; EX1002: ¶274.



EX1009: Fig. 53 (annotated).

In addition, Takano'369's connector includes a guide channel on the top surface of the outer housing. EX1002: ¶275.



EX1009: Fig. 53 (annotated).

The guide channel fits into the mating adapter (101114). EX1002: ¶276.
The top surface of the guide channel engages the top wall of the adapter, which thereby guides Takano'369's connector into the adapter. EX1002: ¶276.

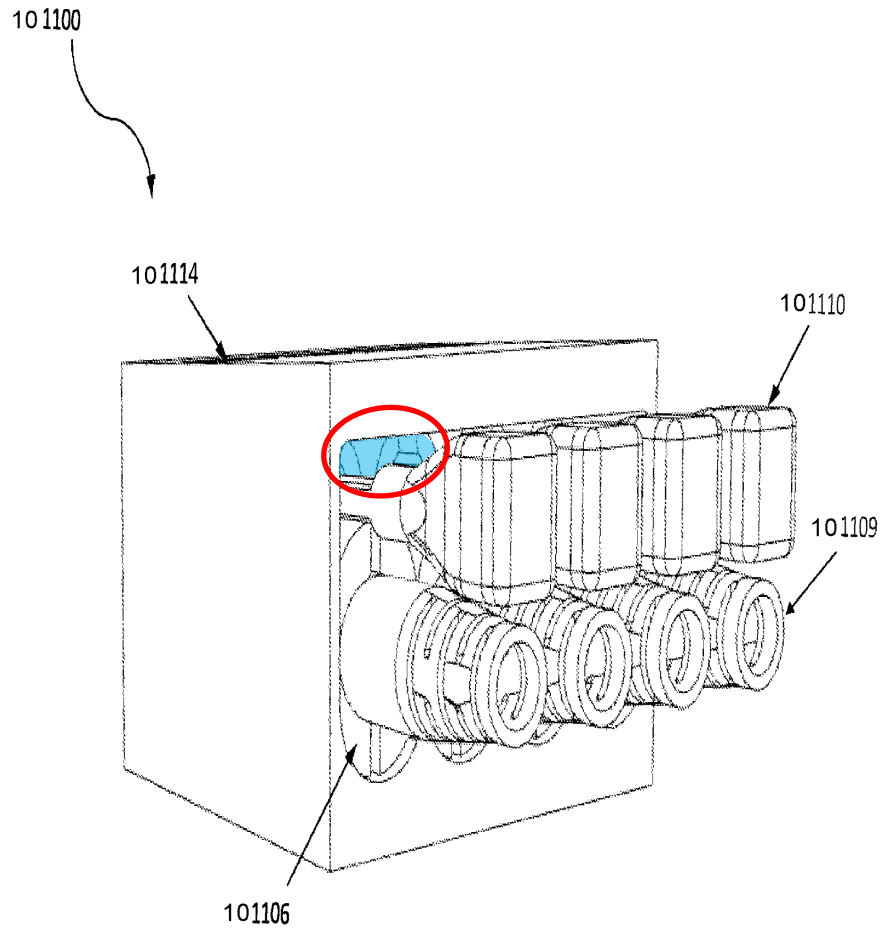


FIG. 61

EX1009: Fig. 61 (annotated).

Takano'369's connector also comprises a bottom curvature, which forms an alignment feature on the bottom surface of the housing. EX1002: ¶277.

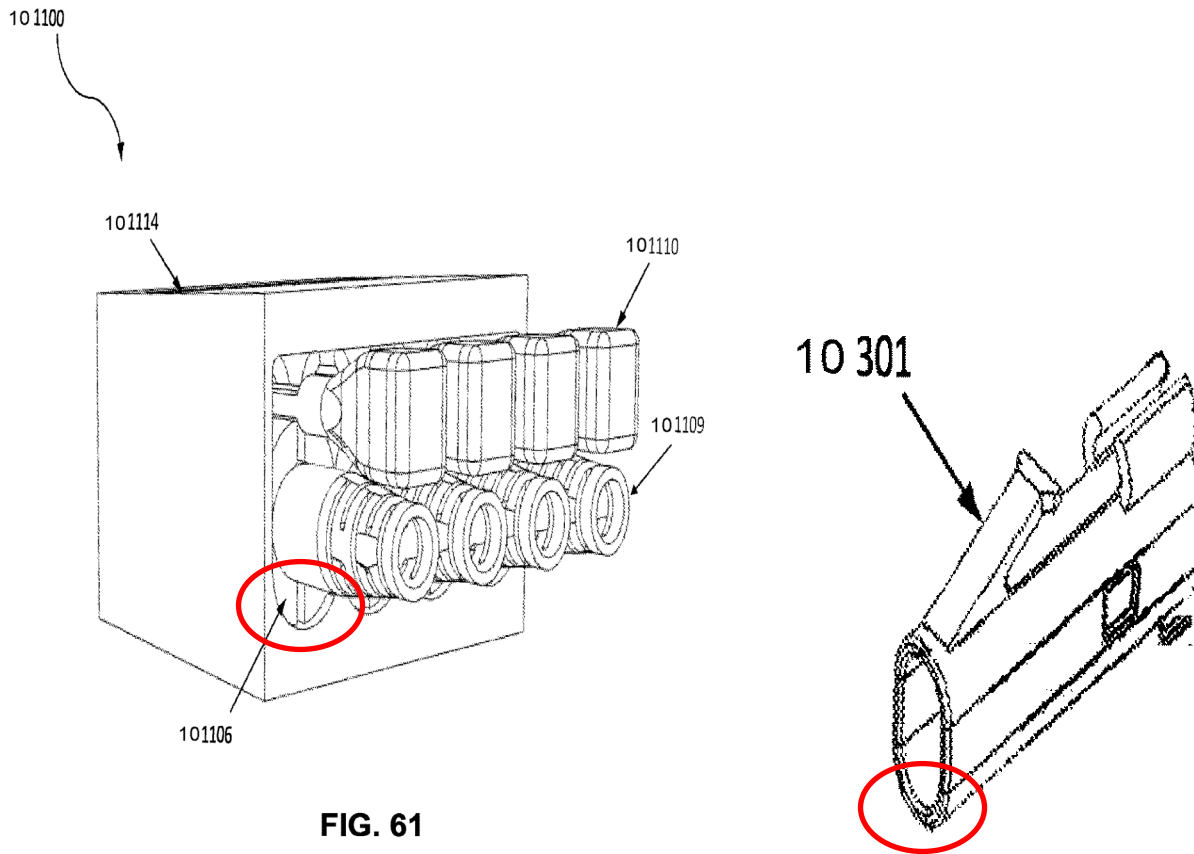


FIG. 61

EX1009: 53 and 61 (annotated).

The bottom curvature engages a mating arcuate recess formed in the bottom wall of the adapter (101114). EX1002: ¶278. The way the bottom curvature fits into the arcuate recesses on the bottom wall of the adapter guides Takano'369's connector into an individual channel of the four-channel adapter. EX1002: ¶278.

Therefore, Takano'369 meets 1.e. EX1002: ¶279.

1.f

Takano'369's connector includes a strain relief boot (10309, 10409, 10509) coupled to the rear end of the two-piece crimp body (10306, 10306). EX1009: 19:4, 19:13-19, Fig. 55; EX1002: ¶280. The boot has a longitudinal opening.

EX1002: ¶280. In the assembled connector, the boot fits over the back post (10307) such that the longitudinal opening is in continuum with the singular opening of the crimp body. EX1002: ¶280. The simplex Takano'369 connectors in Figs. 64 and 65 terminate two-fiber cables, indicating that two fibers pass from the cables through the longitudinal opening in the boot and the singular opening of the crimp body to the ferrules. EX1009: 21:50-54, 22:3-6; EX1002: ¶280.

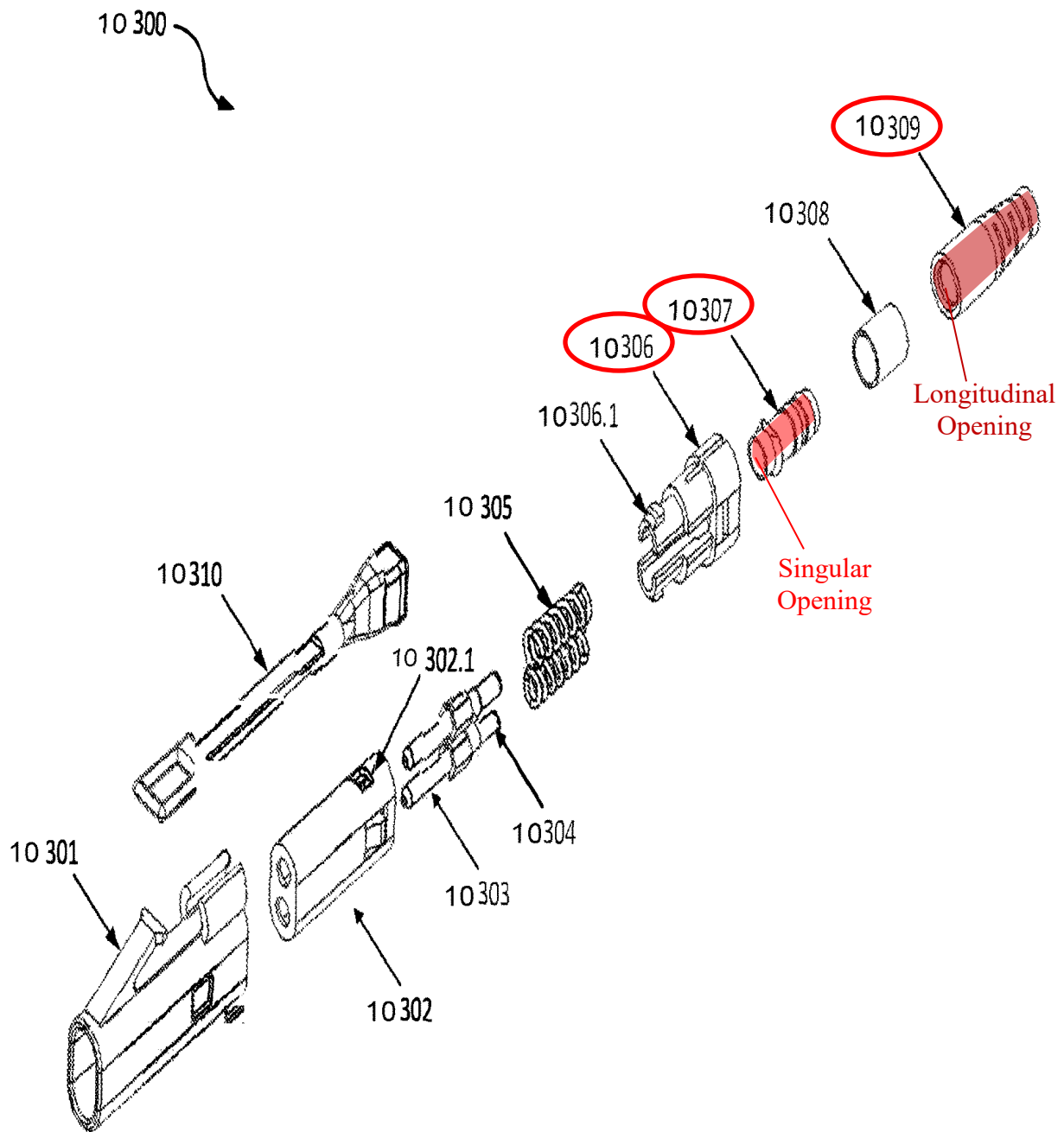


FIG. 53

EX1009: Fig. 53 (annotated).

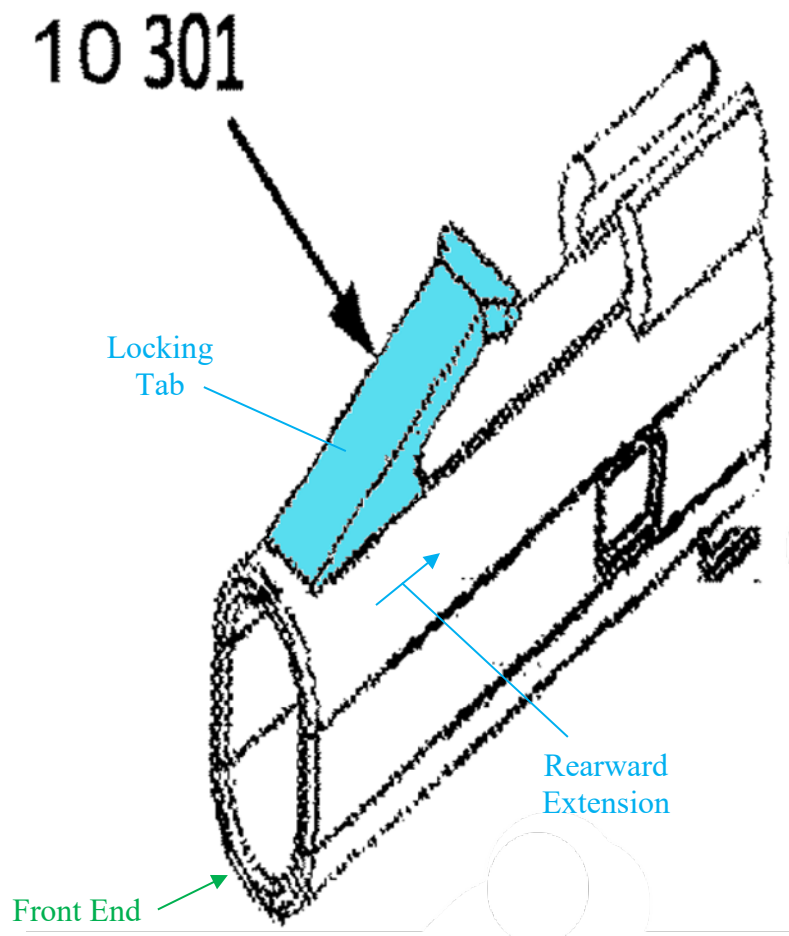
If US Conec asserts Takano'369 does not expressly teach this limitation, this limitation would have been obvious in view of Takano'369's other teachings—Fig.

23A for example—that show this limitation (e.g., aligned openings) is nothing more than the conventional configuration of boots and crimp bodies in these types of connectors. EX1002: ¶281.

Therefore, Takano’369 meets (or renders obvious) 1.f. EX1002: ¶282.

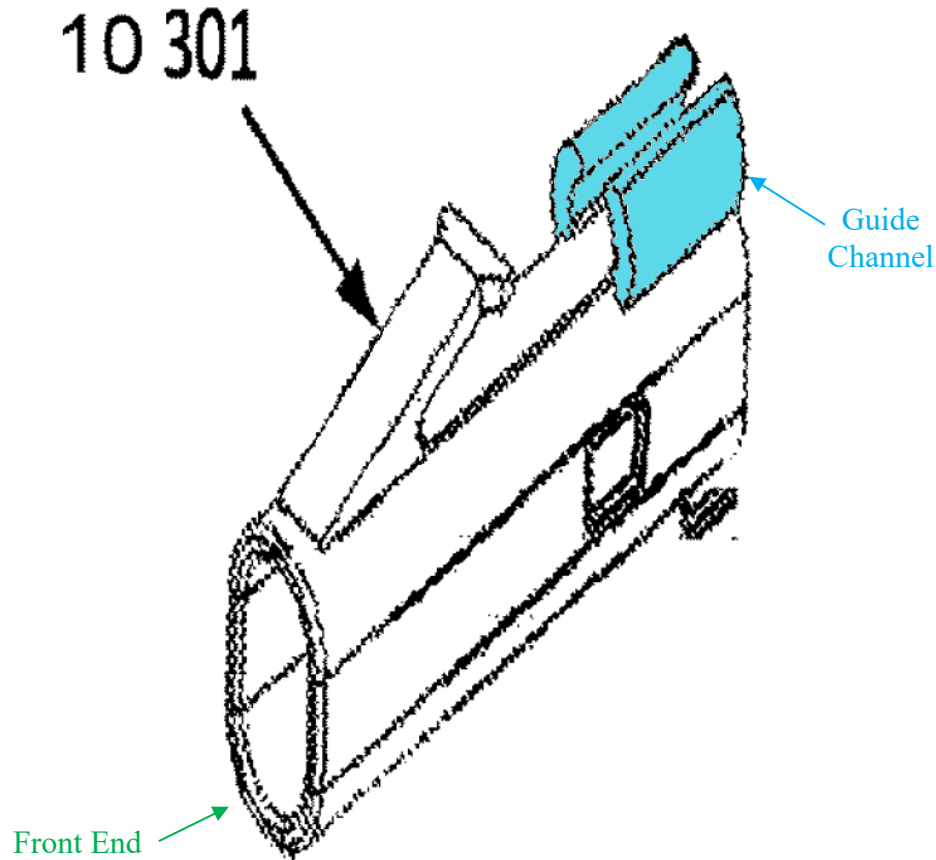
B. Claim 2

The locking tab (10411) starts rearward of the front end of the housing and extends rearward. Section XIII(A)(1.e); EX1002: ¶283.



EX1009: Fig. 53 (annotated).

The guide channel starts rearward of the front end of the housing and extends further rearward. Section XIII(A)(1.e); EX1002: ¶284.



EX1009: Fig. 53 (annotated).

Therefore, Takano'369 meets this claim. EX1002: ¶285.

C. Claim 3

Claim 3's "spring push" may be part of the crimp body. Section VII(C); EX1002: ¶286.

The front end of the back body (10306, 10406) is a spring push for engaging a rear portion of each of the two springs (10305). Section XIII(A)(1.c); EX1002: ¶287.

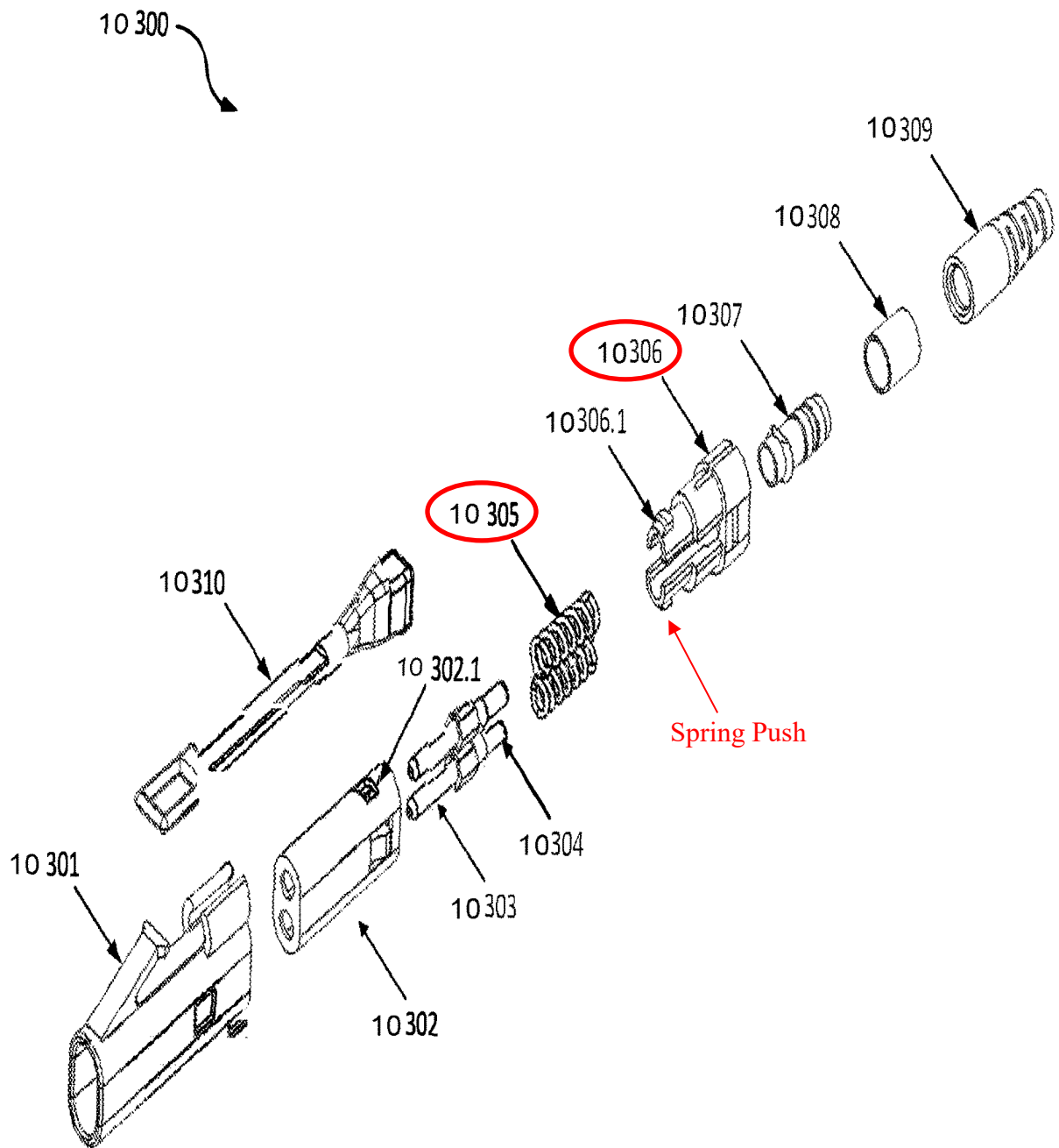


FIG. 53

EX1009: Fig. 53 (annotated).

If US Conec asserts Takano'369 does not expressly teach this limitation, this limitation would have been obvious in view of Takano'369's other teachings—Fig.

23A for example—that show this limitation is nothing more than the conventional way ferrule springs are engaged by a spring push in these types of connectors.

EX1002: ¶288.

Therefore, Takano’369 meets (or renders obvious) this claim. EX1002: ¶289.

D. Claim 5

The front end of the back body (10306, 10406) is a spring push that simultaneously engages the rear portion of each of the two springs. Section XIII(A)(1.c); EX1002: ¶290.

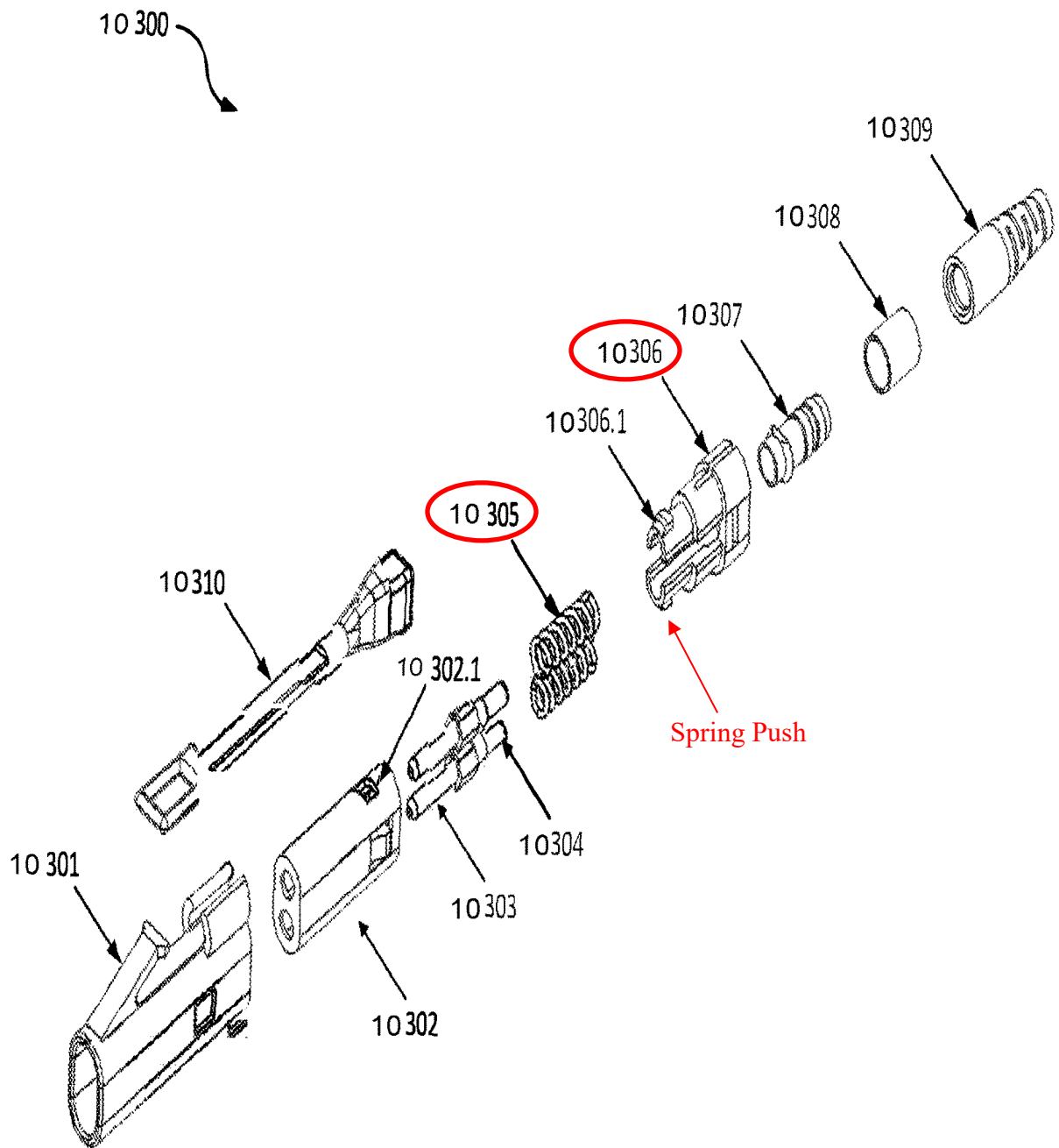


FIG. 53

EX1009: Fig. 53 (annotated).

If US Conec asserts Takano'369 does not expressly teach this limitation, this limitation would have been obvious in view of Takano'369's other teachings—Fig.

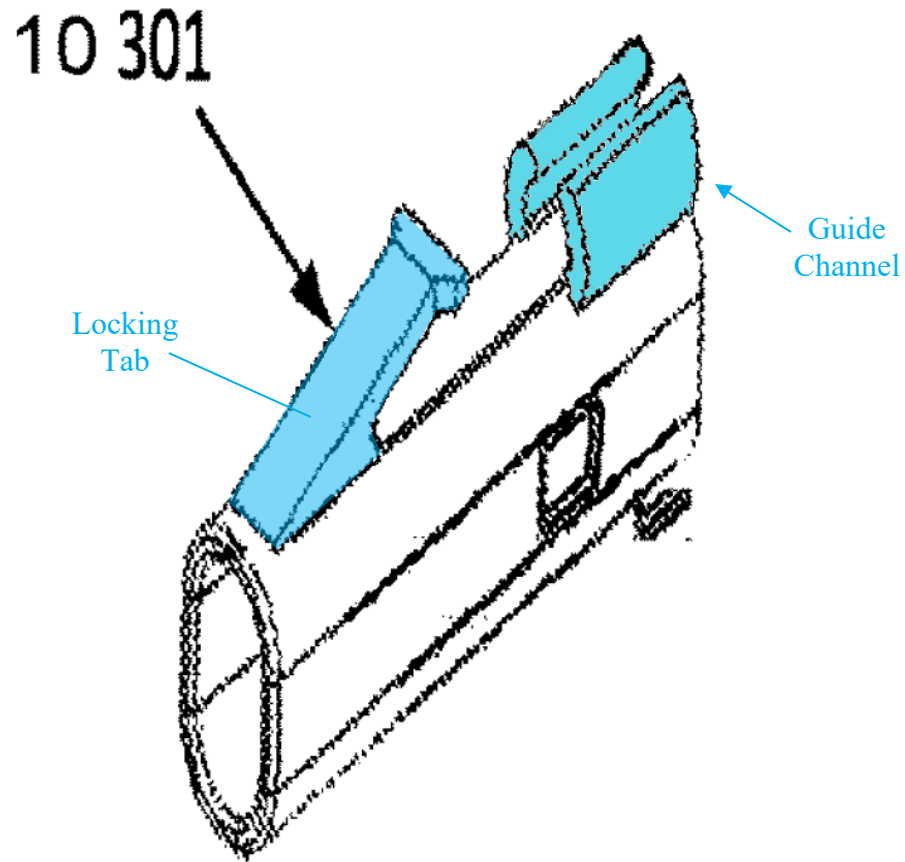
23A for example—that show this limitation is nothing more than the conventional way ferrule springs are engaged by a spring push in these types of connectors.

EX1002: ¶291.

Therefore, Takano’369 meets (or renders obvious) this claim. EX1002: ¶292.

E. Claim 6

The locking tab (10411) and the guide channel are both "indicia of polarity" on the connector housing (10301, 10401, 10501) in that both features indicate to the user the correct orientation for plugging the connector (10300, 10400, 10500) into a mating adapter. EX1002: ¶293. As noted below, these features are found on the top of the connector housing but not the bottom, so they distinguish the top side from the bottom side. EX1002: ¶293.

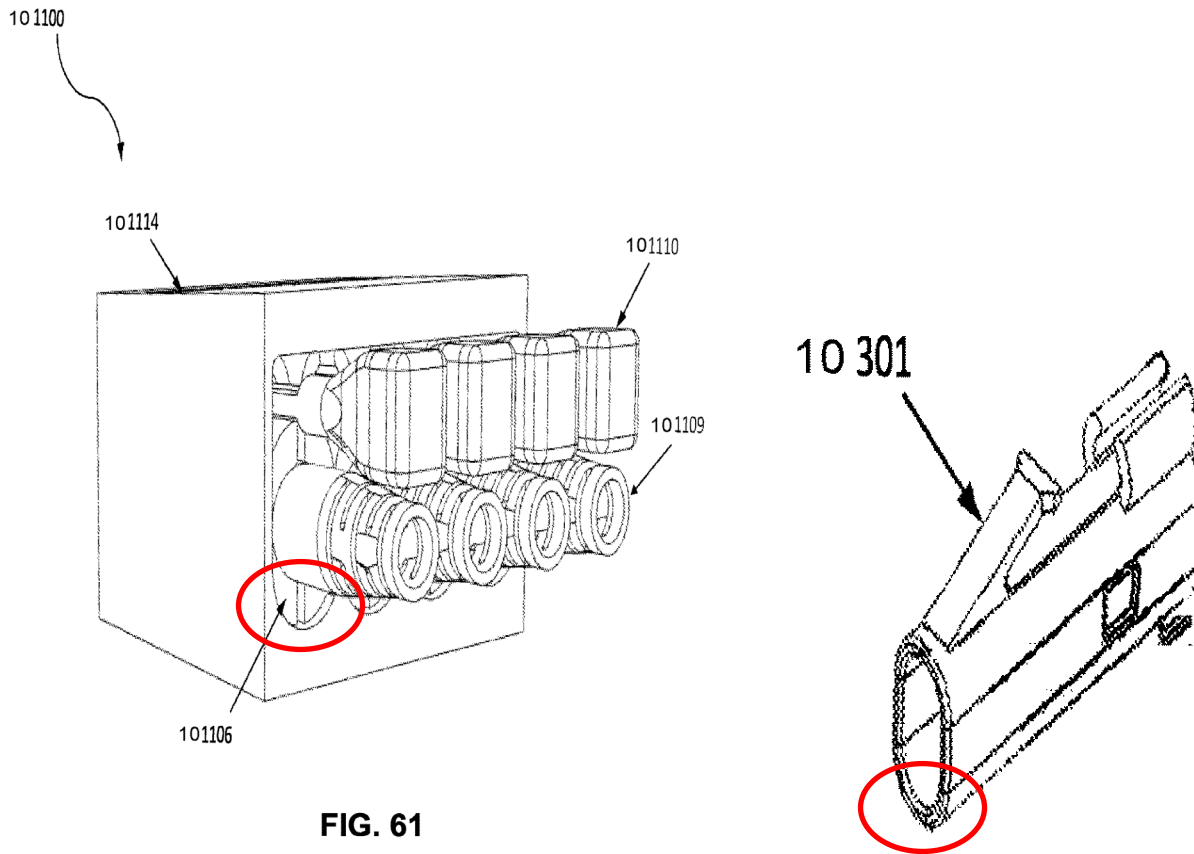


EX1009: Fig. 53 (annotated).

Further, the adapter (101114) has a flat top wall and a scalloped bottom wall.

EX1002: ¶294. The locking tab and guide channel indicate the proper orientation of Takano'369's connector relative to the adapter—i.e., with the locking tab and guide channel facing upward and the arcuate bottom feature facing downward.

EX1002: ¶294.



EX1009: 53 and 61 (annotated).

Therefore, Takano'369 meets this claim. EX1002: ¶295.

F. Claim 7

7.a

Takano'369's connector includes a crimp ring (10308) which is a crimp band. EX1009: 19:4; EX1002: ¶296. The crimp ring is secured around the outer surface of the back post (10307). EX1002: ¶296.

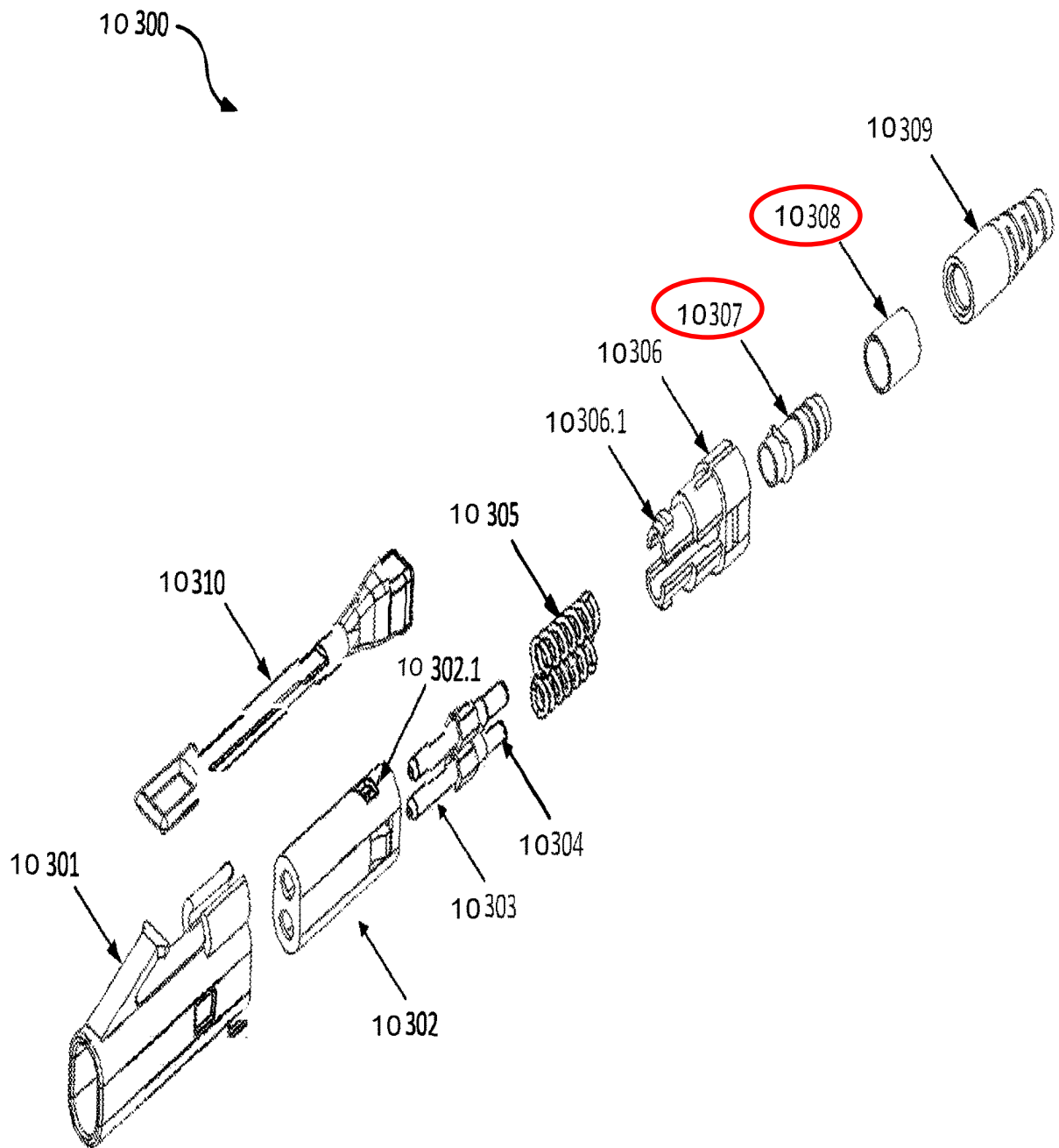


FIG. 53

EX1009: Fig. 53 (annotated).

Therefore, Takano'369 meets 7.a. EX1002: ¶297.

7.b

The boot (10309, 10409) is a strain relief boot that extends rearwardly away from the outer housing (10301, 10401, 10501). EX1002: ¶298.

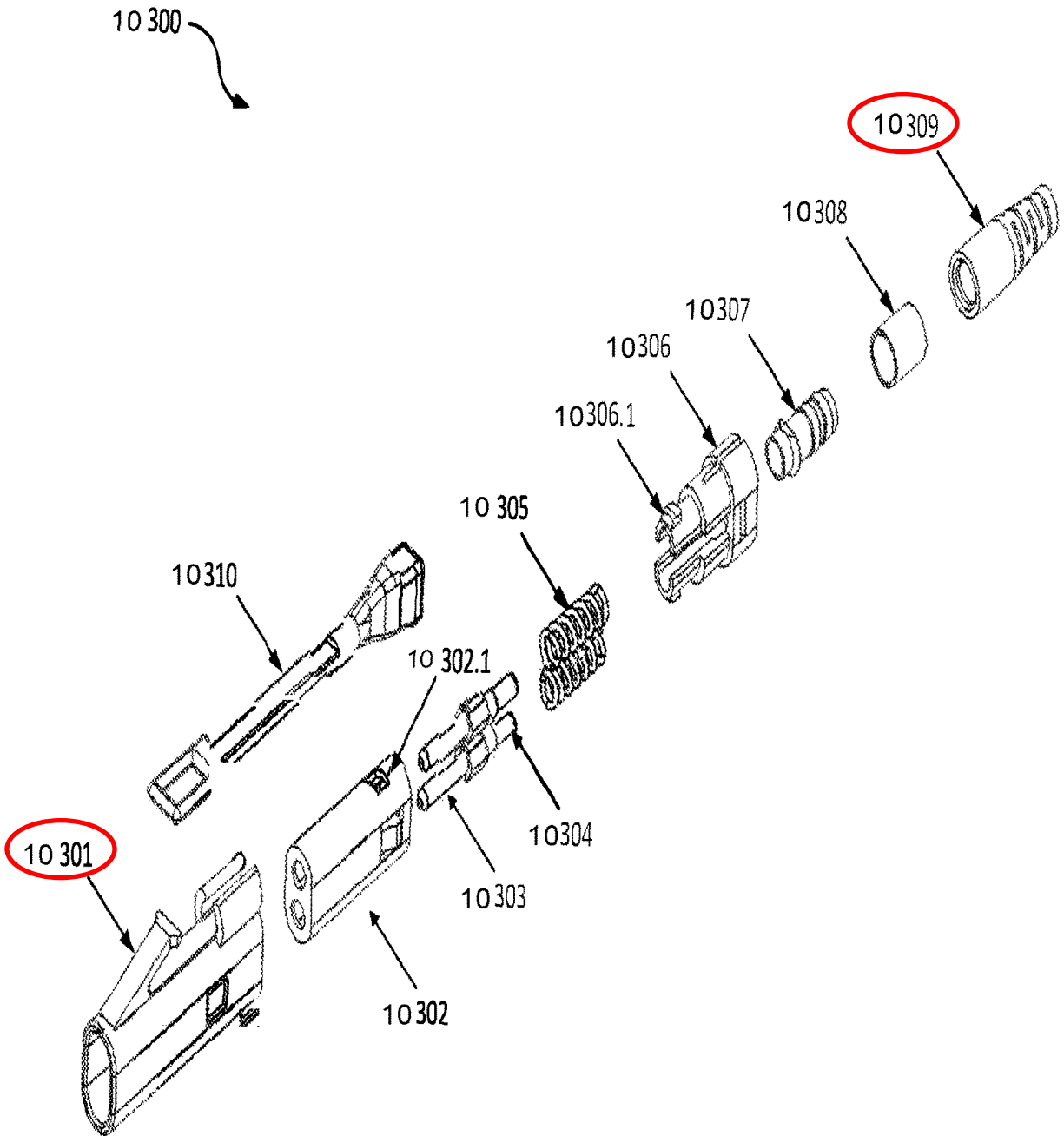


FIG. 53

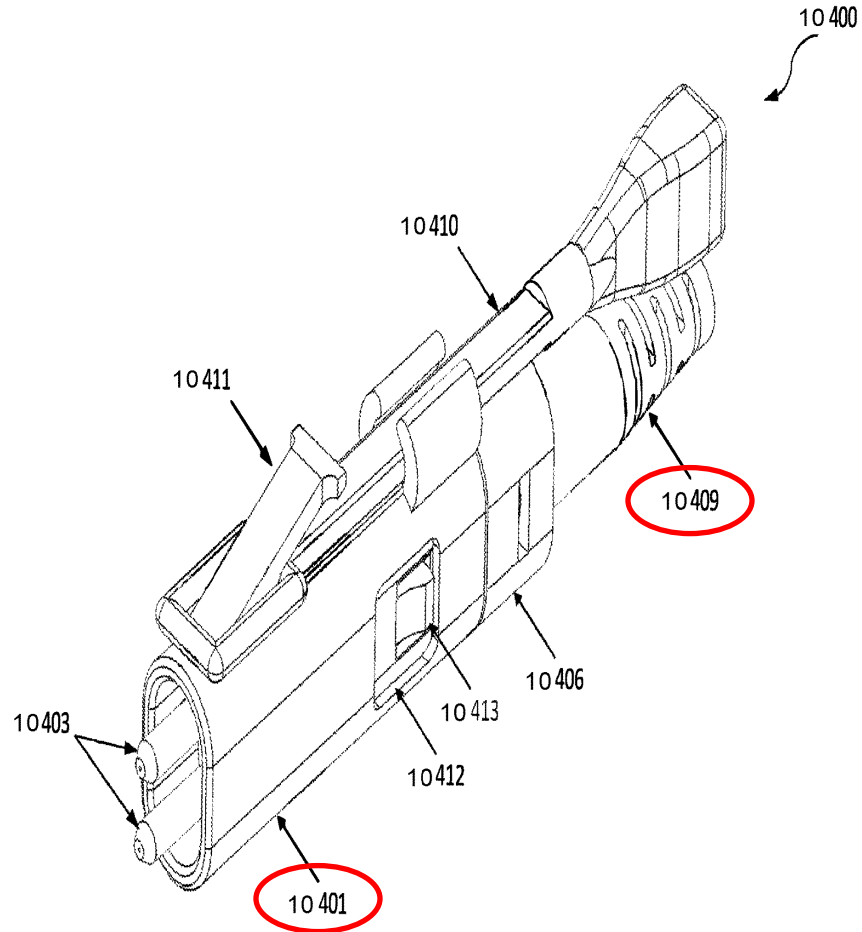


FIG. 54

EX1009: Figs. 53 and 54 (annotated).

Therefore, Takano'369 meets 7.b. EX1002: ¶299.

G. Claim 8

The guide channel on the top surface of the connector housing is a "rail receiving portion" as it receives the rail-shaped arm of a push-pull tab (10310,

10410, 10510). EX1002: ¶300. The guide channel extends along at least a portion of the housing. EX1002: ¶300.

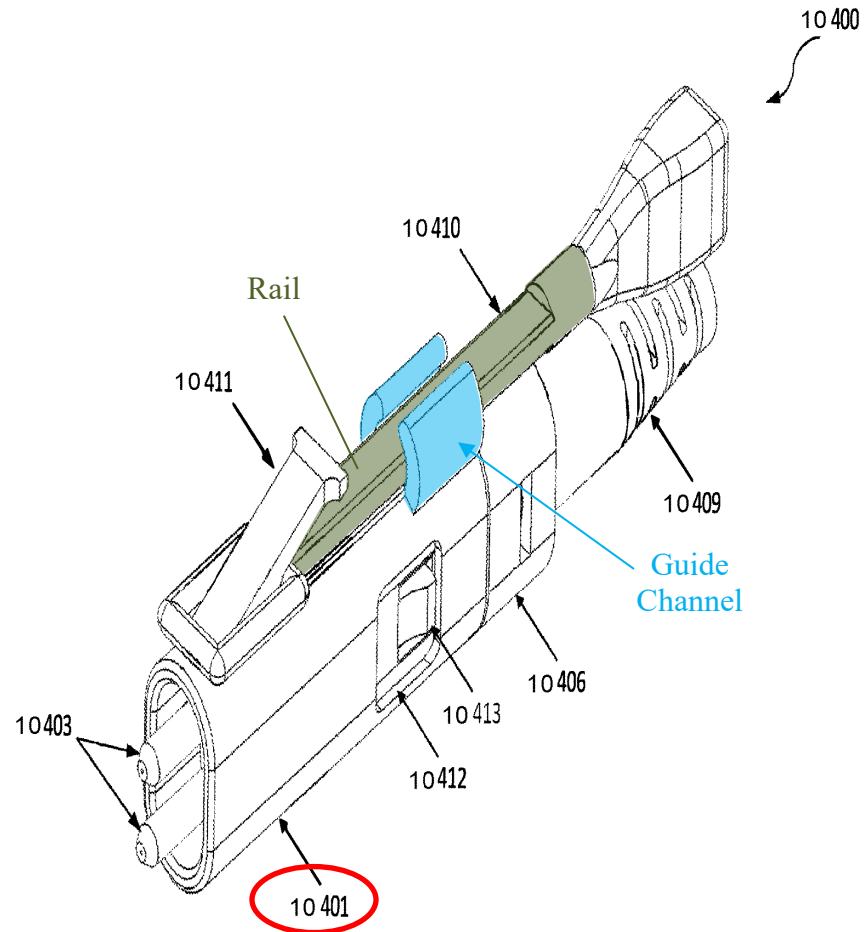


FIG. 54

EX1009: Fig. 54 (annotated).

Therefore, Takano'369 meets this claim. EX1002: ¶301.

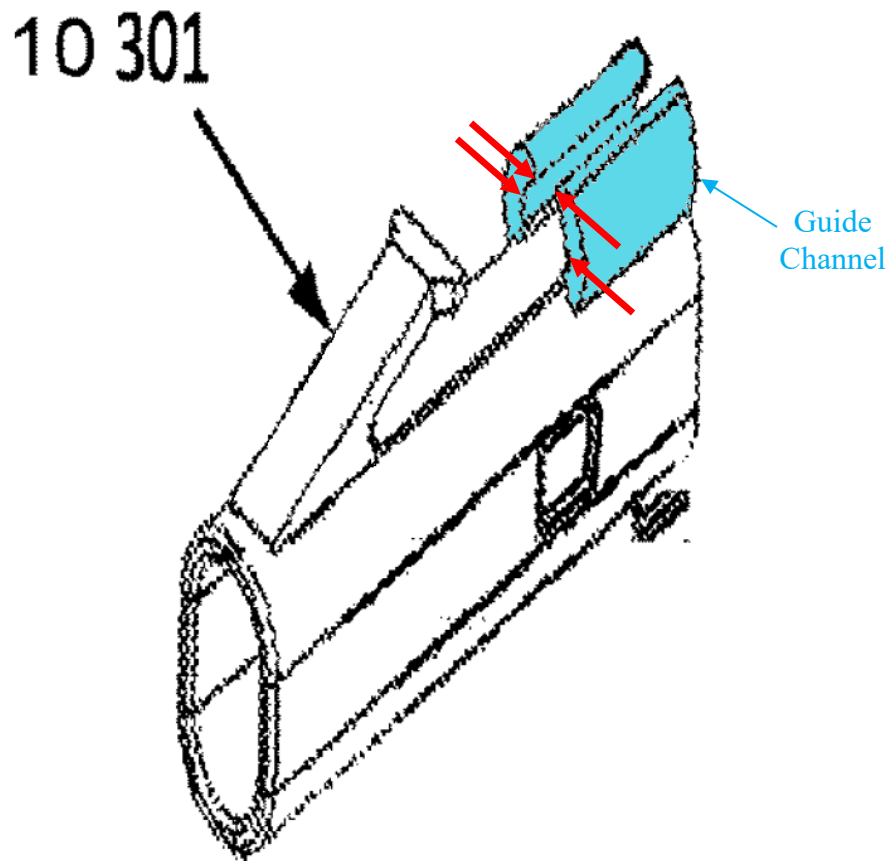
H. Claim 9

As explained in Sections XIII(A)(1.e) and XIII(G), the guide channel is an alignment feature that includes the rail receiving portion. EX1002: ¶302.

Therefore, Takano'369 meets this claim. EX1002: ¶303.

I. Claim 10

The guide channel has a dovetail or undercut configuration with a narrow top opening and a wider space below. EX1002: ¶304. The guide channel receives the push-pull tab, which is a latch component. EX1009: 19:27-30; EX1002: ¶304.



EX1009: Fig. 53 (annotated).

Therefore, Takano'369 meets this claim. EX1002: ¶305.

J. Claim 11

The push-pull tab is a push-pull latch mechanism. EX1009: 18:66-19:5, 19:25-31; EX1002: ¶306.

Therefore, Takano'369 meets this claim. EX1002: ¶307.

K. Claim 12

Takano'369's connectors are "narrow-pitch LC duplex connectors ... for use, for example, with future narrow pitch LC SFPs." EX1009: 6:22-25; *see also* EX1010: ¶[0037]; EX1002: ¶308. Thus, Takano'369's connector fits in an SFP footprint, which is 14x12.25 mm. EX1009: 16:44-45; EX1002: ¶308. Hence, the same connector also would fit in the larger QSFP footprint, which is 13.5x19 mm, such as if oriented so that the long sides of Takano'369's connector are parallel to the long sides (19mm) of the QSFP footprint. EX1009: 16:47-49; EX1002: ¶308. Therefore, the front end of the outer housing of Takano'369's connector fits in a QSFP footprint. EX1002: ¶308.

Therefore, Takano'369 meets this claim. EX1002: ¶309.

L. Claim 13

Takano'369's crimp body is two-pieces: back body (10306, 10406) and back post (10307). EX1002: ¶310.

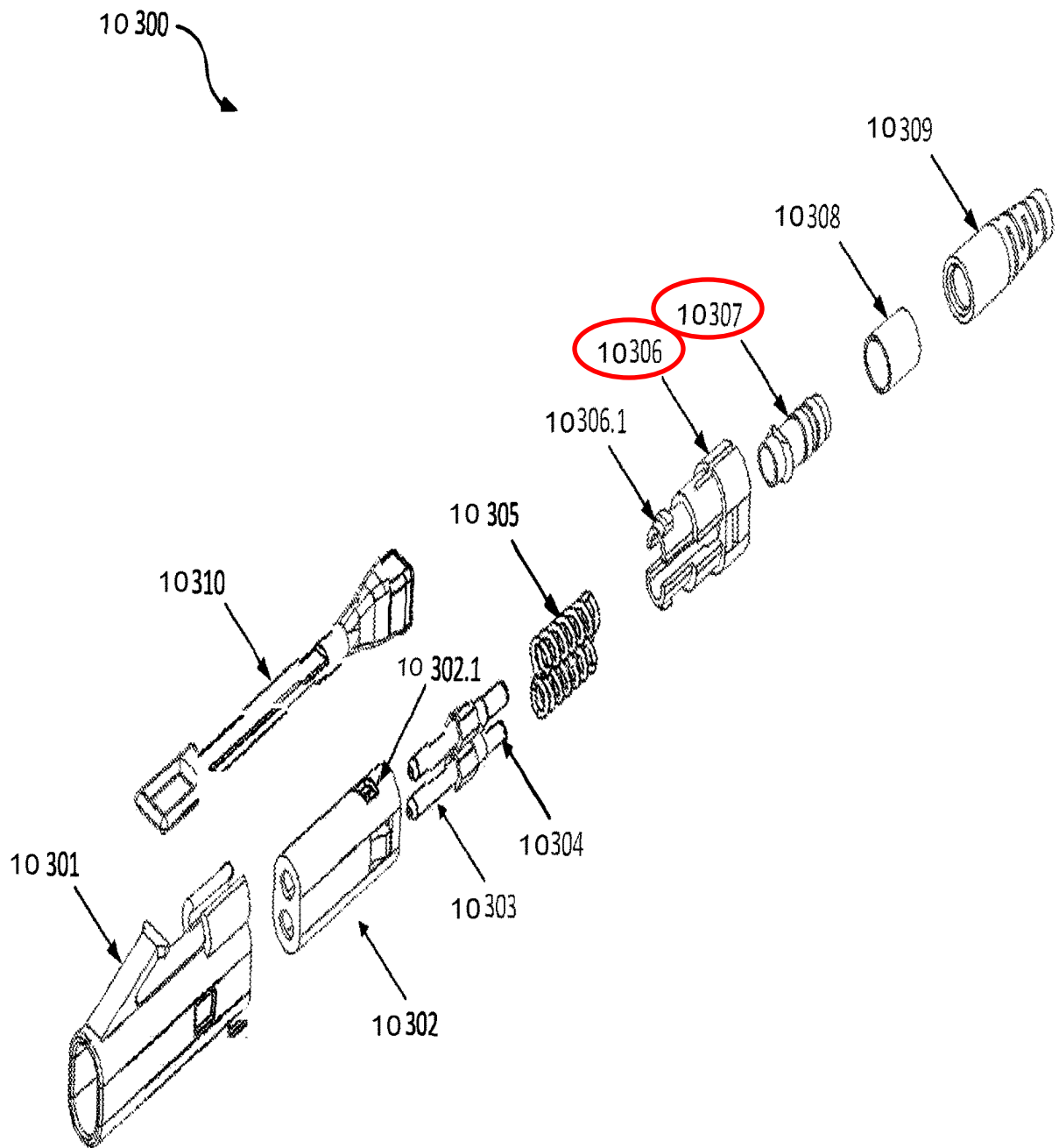


FIG. 53

EX1009: Fig. 53 (annotated).

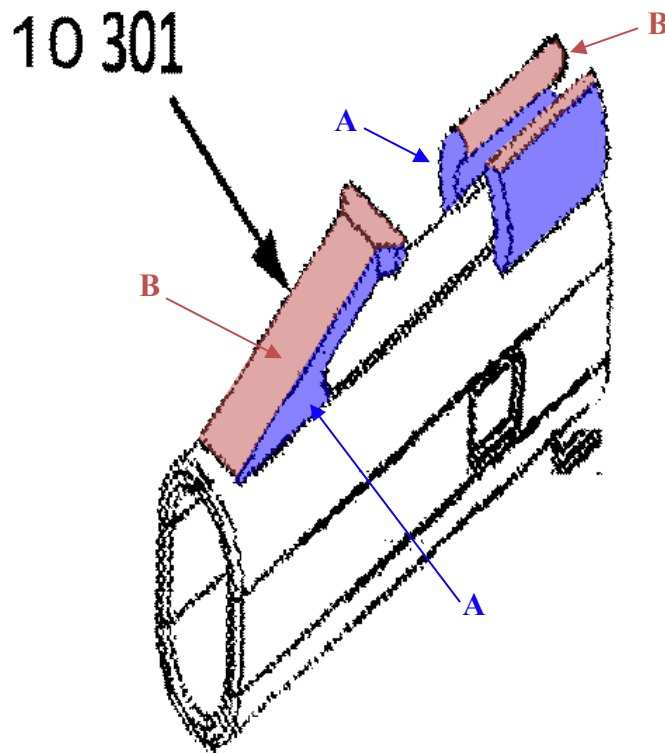
Therefore, Takano'369 meets this claim. EX1002: ¶311.

I. Claim 14

The locking lever (10114), guide channel, and/or bottom curvature are an alignment feature that includes a vertical alignment feature and a horizontal alignment feature, regardless of how these terms are construed (Section V(B)).

EX1002: ¶312.

If "vertical alignment feature" and "horizontal alignment feature" are construed (Section V(A)) to mean a feature that extends vertically or horizontally, respectively, then surfaces A meet "vertical alignment feature" and surfaces B meet "horizontal alignment feature." EX1002: ¶312.



EX1009: Fig. 53 (annotated).

If "vertical alignment feature" and "horizontal alignment feature" are construed to mean a feature capable of engaging a mating alignment structure to align the connector vertically or horizontally, respectively, then the top surface of the guide channel meets "vertical alignment feature" and the bottom curvature meets "horizontal alignment feature" and "vertical alignment feature." EX1002: ¶313. The top surface of the guide channel engages the flat top wall of the adapter (101114) to align the connector vertically. EX1002: ¶313. The bottom curvature feature engages a scalloped recess along the bottom wall of the adapter to align the connector horizontally and vertically. EX1002: ¶313.

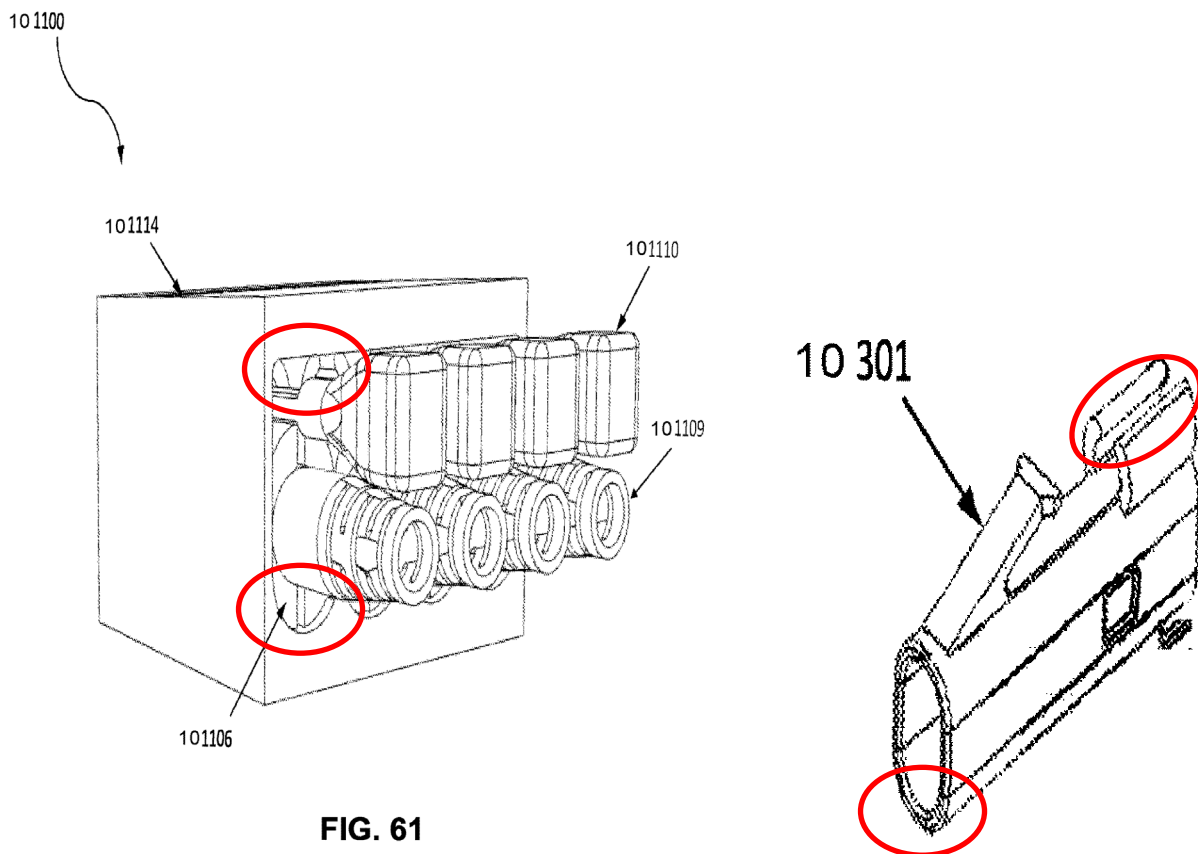


FIG. 61

EX1009: Figs. 53 and 61 (annotated).

Therefore, Takano'369 meets this claim. EX1002: ¶314.

XIV. GROUND 10: Claims 6 and 10 Would Have Been Obvious Over Takano'369 in view of Veatch

A. Claim 6

To the extent US Conec argues Takano'369's optical connector does not meet this claim, this claim would have been obvious in view of Veatch. EX1002: ¶¶315-316.

Veatch discloses a polarity change fiber optic connector (100), like Takano'369's optical connector (10300, 10400, 10500), with polarity indicia (130, 132). EX1007: Fig. 1, 2:26-39; EX1009: 19:44-50; EX1002: ¶317.

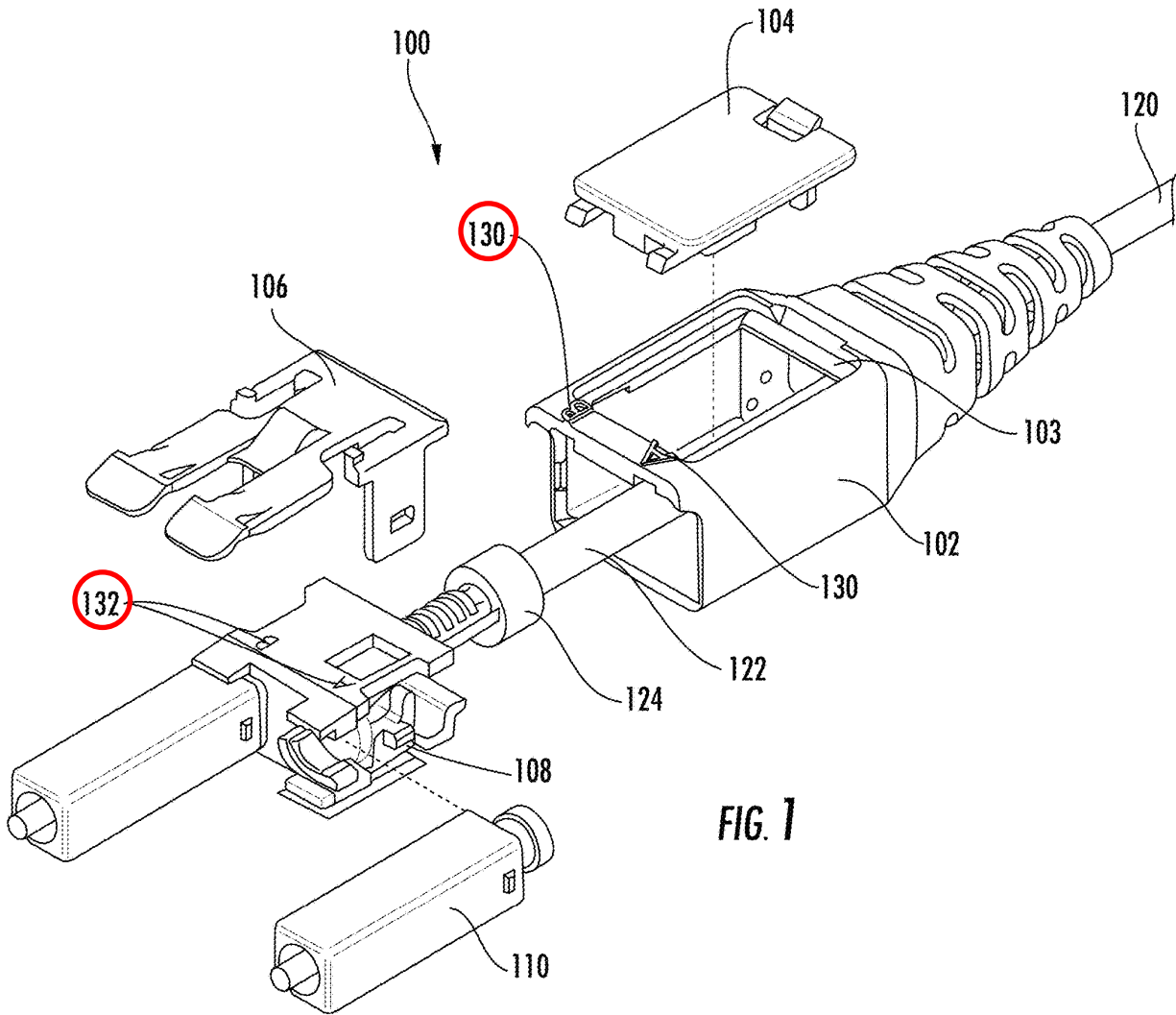


FIG. 1

EX1007: Fig. 1 (annotated).

It would have been obvious to modify Takano'369's outer housing (10301, 10401, 10501) to include Veatch's polarity indicia (130, 132) for the reasons explained in Section X.⁵ EX1002: ¶318.

⁵ The POSA would have also added Veatch's polarity indicia to Takano'369's front body (10302, 10503) as taught by Veatch. EX1007: 2:30-32; EX1002: ¶318.

This modification would have been nothing more than combining known prior art elements (Takano’369’s optical connector and Veatch’s polarity indicia) according to known methods (arrangement taught by Veatch) to yield predictable results (an indication of polarity for Takano’369’s optical connector). EX1002: ¶319.

This modification would have also been nothing more than the application of a known technique (Veatch’s polarity indicia) to improve a similar device (Takano’369’s optical connector) in the same way to yield predictable results (an indication of polarity for Takano’369’s optical connector). EX1002: ¶320.

The POSA would have had a reasonable expectation of success in making this modification given the function of Veatch’s polarity indicia would not change in Takano’369’s optical connector. EX1002: ¶321. In making this modification, the POSA would place the polarity indicia on Takano’s outer housing, as explained in Section X. EX1002: ¶321. For example, the POSA would place the letter “A” on the top round of the outer housing and the letter “B” on the bottom round of the outer housing, as shown representationally below. EX1002: ¶321.

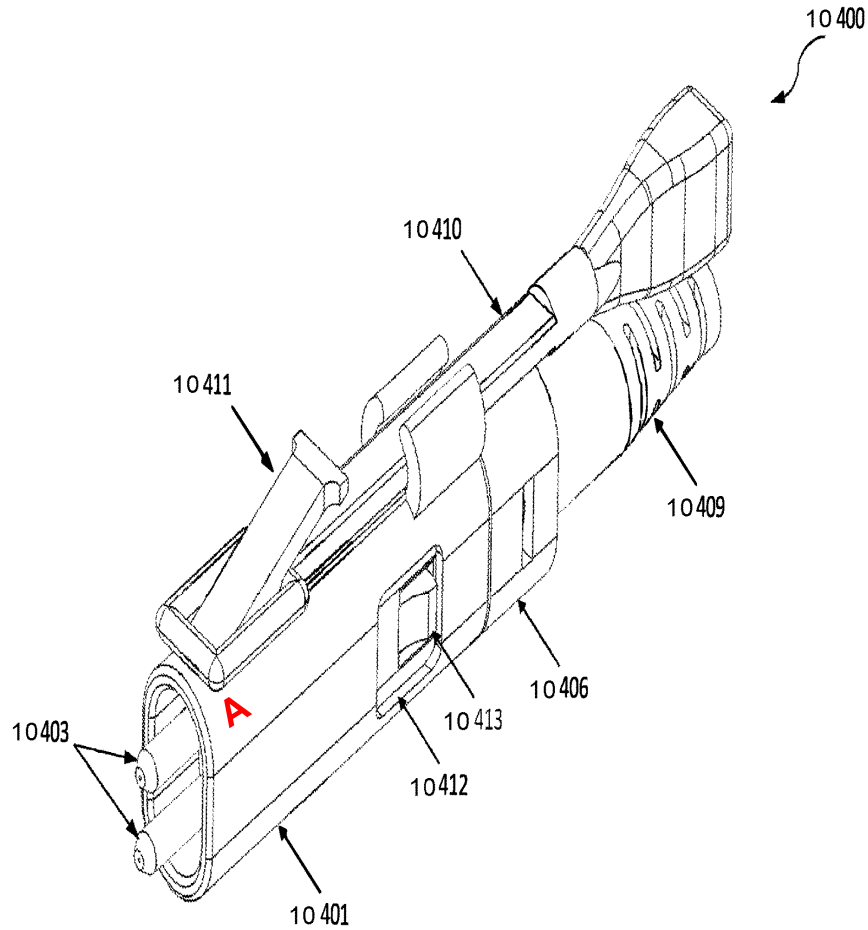


FIG. 54

EX1009: Fig. 54 (modified).

As a result of this modification, Takano'369's optical connector includes Veatch's polarity indicia on the outer housing. EX1002: ¶322.

Therefore, the Takano'369/Veatch combination renders this claim obvious. EX1002: ¶323.

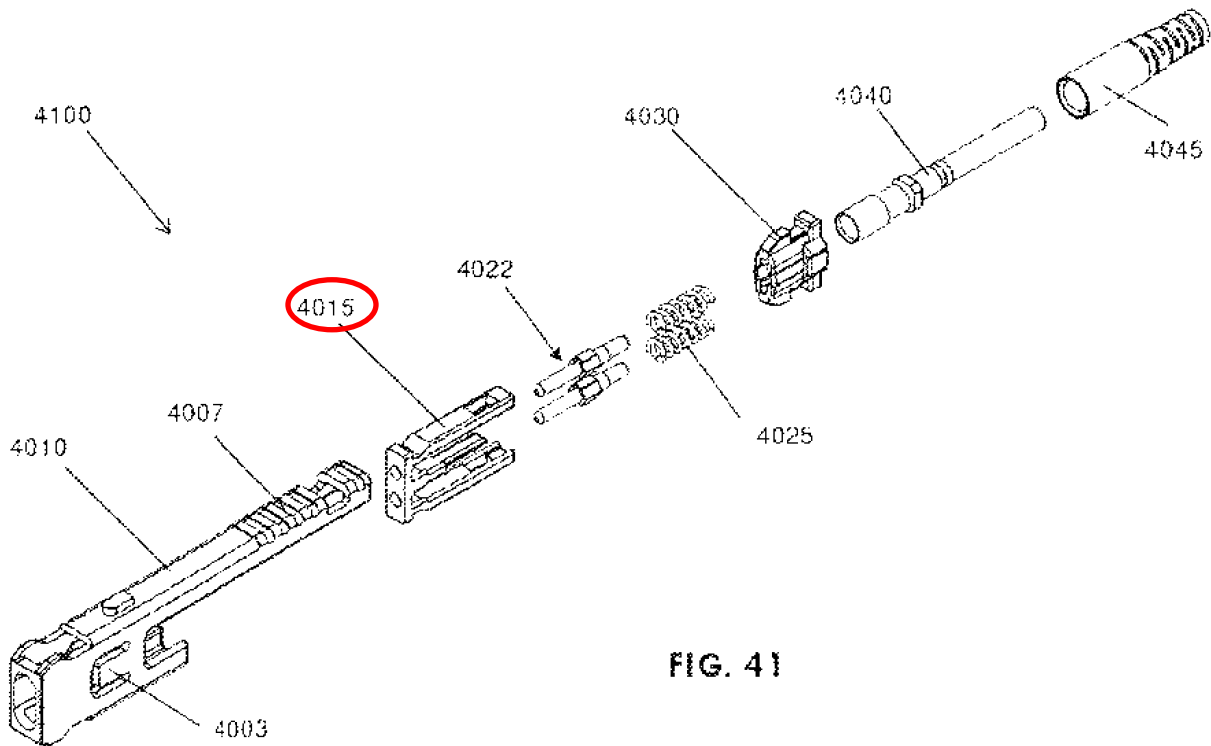
B. Claim 10

For reasons explained in Section XIII(I), the Takano’369/Veatch combination renders this claim obvious. EX1002: ¶324.

XV. GROUND 11: Claims 15 and 16 Would Have Been Obvious Over Takano’369

A. Claim 15

Takano'369's optical connector (4100) of Fig. 41 includes a front body (4015) with an elongated middle wall (4260). EX1009: 17:44-49; EX1002: ¶¶325-326.



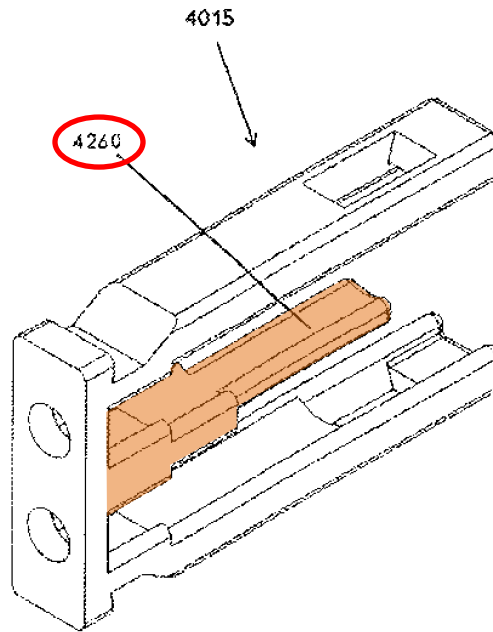


FIG. 42A

EX1009: Figs. 41 and 42A (annotated).

It would have been obvious to modify the front body (10302, 10503) of the optical connector (10300, 10400, 10500) of Figs. 53-55 in view of the optical connector (4100) of Fig. 41 to provide the front body (10302, 10503) with the elongated middle wall (4260) for the reasons explained in Section VIII(B).

EX1009: 17:46-49; EX1002: ¶327.

This modification would have been nothing more than combining known prior art elements (optical connector and elongated middle wall) according to known methods (arrangement taught by Takano'369) to yield predictable results (a wall separating the springs to prevent entanglement). EX1002: ¶328.

This modification would have also been nothing more than the application of a known technique (elongated middle wall) to improve a similar device (optical connector with two spring-loaded ferrules) in the same way to yield predictable results (a wall separating the springs to prevent entanglement). EX1002: ¶329.

A POSA would have had a reasonable expectation of success in making this modification because the elongated middle wall would perform the same function and be generally arranged in the optical connector of Figs. 53-55 as it was in the optical connector of Fig. 41. EX1002: ¶330.

This modification results in the optical connector of Figs. 53-55 having the middle wall, which meets the requirement of the wall in claim 15 because it forms a wall between the locations where two ferrule assemblies are seated in the outer housing and the wall extends rearward from where the ferrule holders are seated against the front body. EX1009: Figs. 42A-B; EX1002: ¶331.

Therefore, Takano'369 renders this claim obvious. EX1002: ¶332.

B. Claim 16

In the optical connector of Figs. 53-55 modified in view of the optical connector of Fig. 41 (Section XV(B)), the elongated middle wall is "interposed between the ferrules and springs when the front body is assembled." EX1009: 17:44-46; EX1002: ¶333. This requires a radial gap between the middle wall and the ferrule holders to accommodate the portion of each ferrule spring received

around the rear portion of the ferrule holder and abutting the ferrule flange.

EX1002: ¶333. Annotated Fig. 42B illustrates a gap for accommodating the spring between the middle wall (4260) and the rear portion of the ferrule holder.

EX1002: ¶333. This gap would be present in the modified optical connector of Figs. 53-55. EX1002: ¶333.

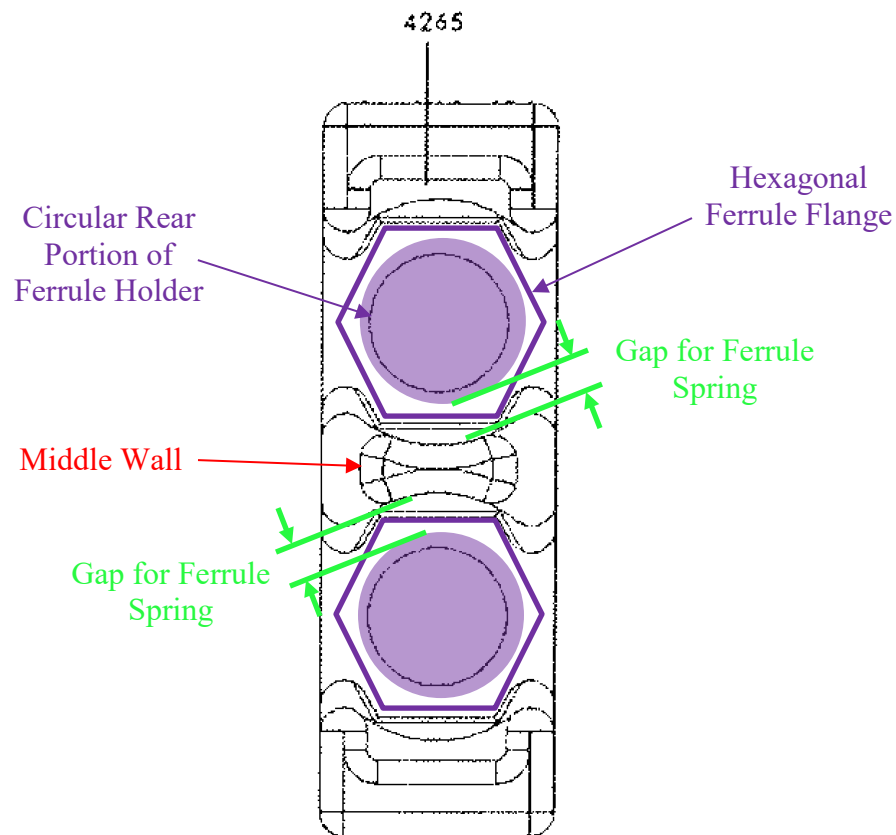


FIG. 42B

EX1009: Fig. 42B (annotated).

Therefore, Takano'369 renders this claim obvious. EX1002: ¶334.

XVI. GROUND 12: Claim 17 Would Have Been Obvious Over Takano'369 in view of Henke

It would have been obvious to modify Takano'369's optical connector of Figs. 53-55 so that each ferrule holder includes an integral lead-in tube like the lead-in tube (28(2)) in Fig. 7A of Henke for the reasons discussed in Section XII. EX1002: ¶¶335-336.

This modification would have been nothing more than combining known prior art elements (Takano'369's optical connector and Henke's lead-in tube) according to known methods (arrangement taught by Henke) to yield predictable results (Takano'369's optical connector with a lead-in tube for an optical fiber). EX1002: ¶337.

This modification would have also been nothing more than the application of a known technique (Henke's lead-in tube) to improve a similar device (Takano'369's optical connector) in the same way to yield predictable results (Takano'369's optical connector with a lead-in tube for an optical fiber). EX1002: ¶338. For example, the POSA would recognize that the integrated lead-in tubes would assist with guiding the fibers into the ferrules during assembly and prevent adhesive from leaking onto the ferrule springs when the fibers are adhered in place. EX1002: ¶339.

The proposed modification would have been well within the capabilities of a POSA, and the POSA would have had a reasonable expectation of success for the reasons discussed in Section XII. EX1002: ¶340.

In the Takano'369/Henke combination, the integrated lead-in tubes would extend from front end portions integrated with the ferrule holders, through the ferrule springs and the interior of the two-piece crimp body, to rear ends protruding slightly beyond the rear end of the back post. EX1002: ¶341. In the Takano'369/Henke connector, the lead-in tubes extend past the rear end of the main body and avoid leakage of an adhesive inserted into the lead-in tube into the main body, as taught by Henke. EX1008: ¶[0041]; EX1002: ¶341.

Therefore, the Takano'369/Henke combination renders this claim obvious. EX1002: ¶342.

XVII.GROUND 13: Claims 1-3, 5-7, and 14 Would Have Been Obvious Over Chen in View of Chang and Raven

A. Motivation to Modify Chen Based on Chang

Chen's connector includes a sleeve body (5) that depicts a double-barrel back post for receiving two cables. EX1011: Abstract; EX1002: ¶¶343-344.

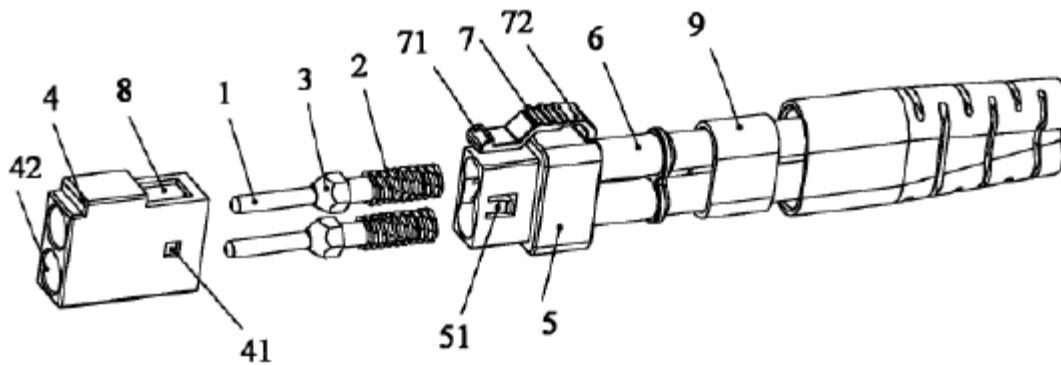
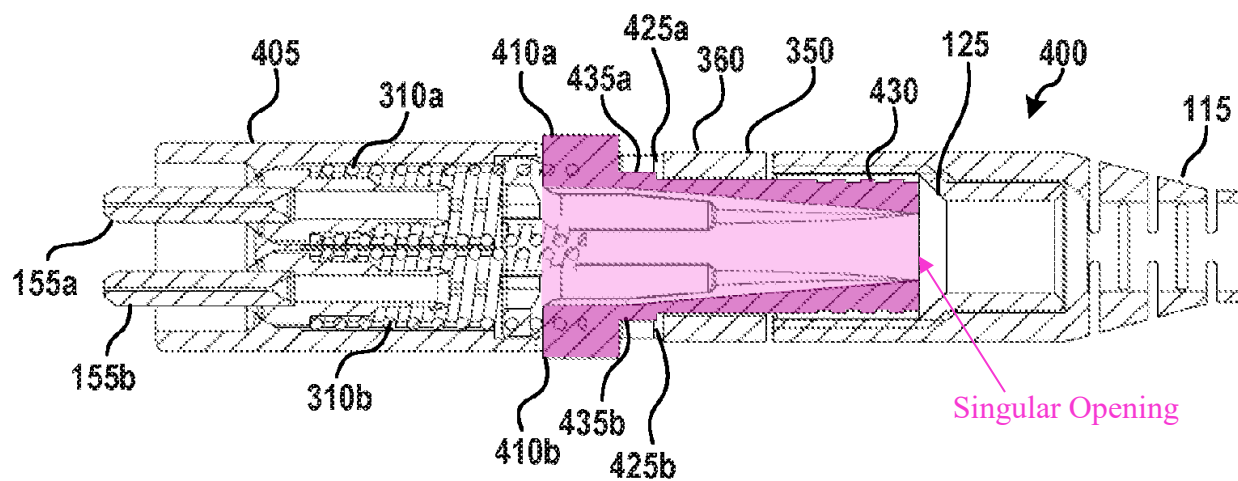
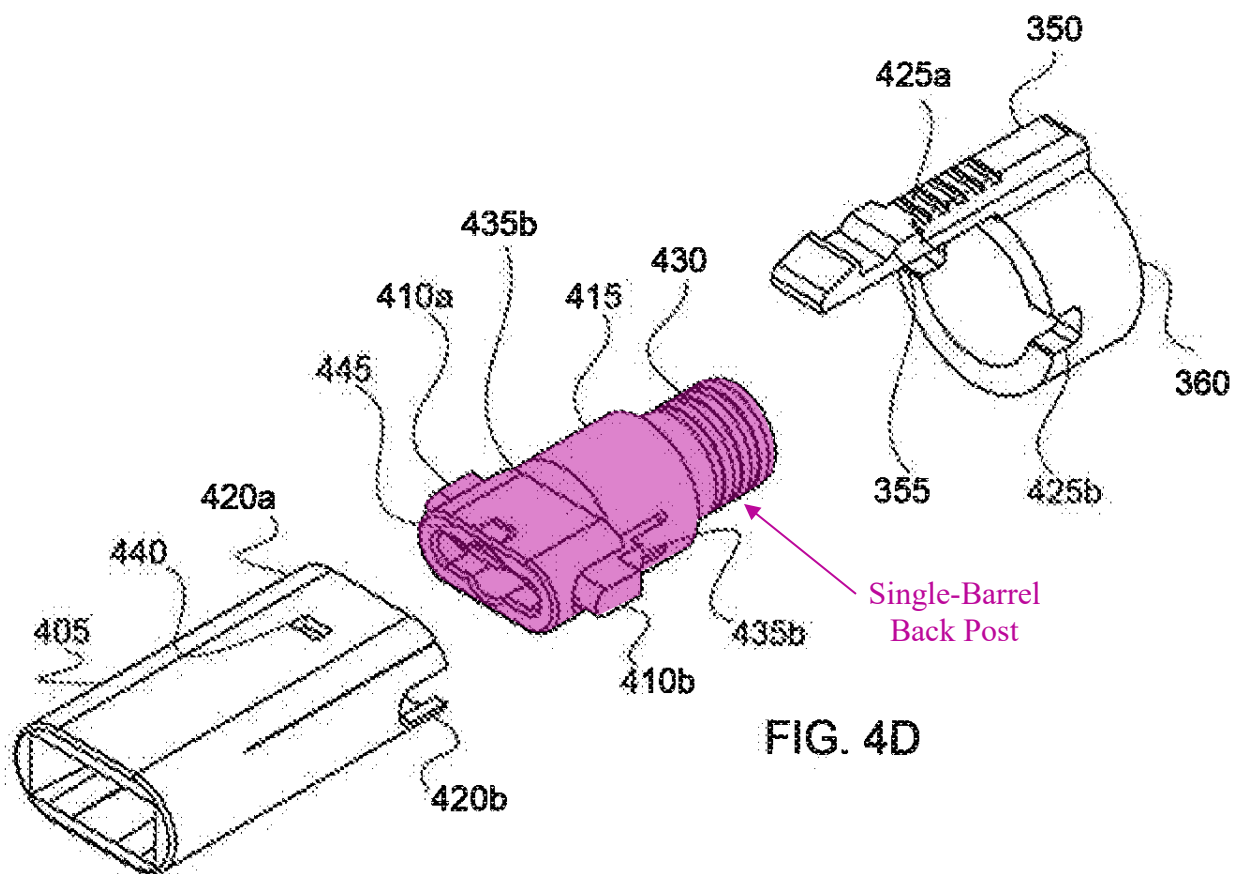


FIG. 3A

EX1011: Fig. 3A.

Chang discloses a fiber optic connector assembly (400) that holds two spring-loaded single-fiber ferrules (155a, 155b) in one integrated plug frame made up of a front body (405) and a crimp body. EX1012: ¶[0030]; EX1002: ¶345. The crimp body includes a single-barrel cylindrical back post receiving a single cable with multiple fibers. EX1012: ¶[0019]; EX1002: ¶345.



EX1012: Figs. 4B&D (annotated).

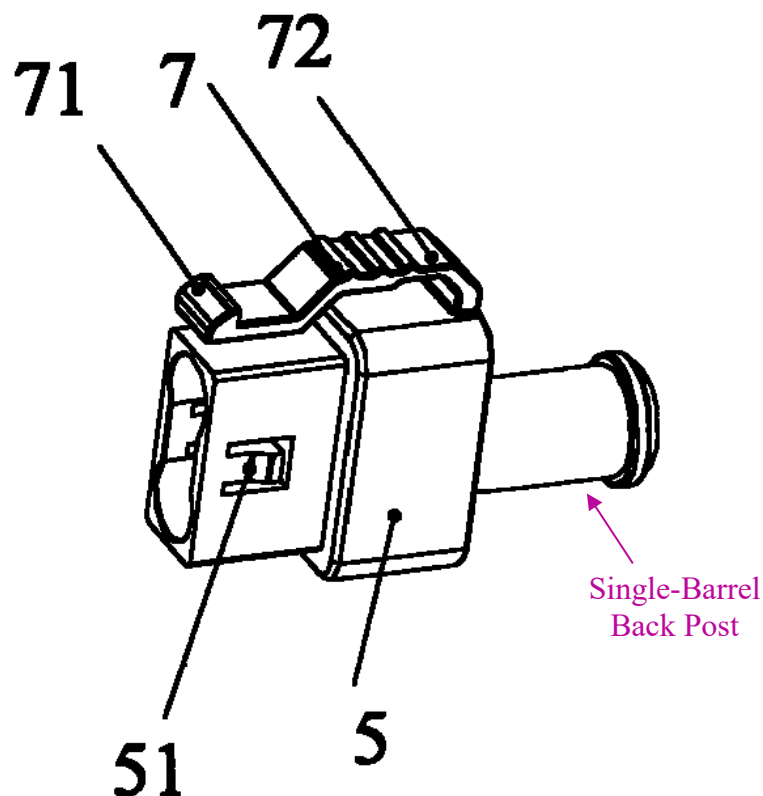
It would have been obvious to modify Chen's sleeve holder (5) in view of Chang to replace the double-barrel back post with Chang's single-barrel back post to enable Chen's connector to terminate a single two-fiber cable, a conventional widely used cable type for duplex LC connectors. EX1013: Figs. 1, 2, and 4 (two fiber cable (8)); EX1012: ¶¶[0019], [0024] (describing such a two-fiber cable); EX1029: Fig. 23 (showing a single-barrel back post for two optical fibers in a connector that is taller than it is wide); EX1002: ¶346. Using a single two-fiber cable in place of Chen's two single-fiber cables would reduce the number of cables by half, thereby improving cable management and organization and furthering Chen's goal of saving space in fiber optic systems. EX1011: Abstract, ¶¶[0016], [0030], [0037]; EX1002: ¶346.

This modification would have also been nothing more than the application of a known technique (Chang's single barrel back post) to improve a similar device (Chen's sleeve holder) in the same way to yield predictable results (Chen's sleeve holder terminating a two-fiber cable). EX1002: ¶347.

The POSA would have had a reasonable expectation of success in making this modification given that both references disclose crimp bodies for duplex connectors that fit into the rear end of a duplex connector front body, and both also provide a back post onto which a crimp band may secure the reinforcement material from one or more fiber optic cables. EX1002: ¶348. The double-barrel

back post in Chen would simply be changed to a single-barrel back post, which is well-within the POSA's capabilities. EX1002: ¶348.

A representative illustration of this modification is shown below:

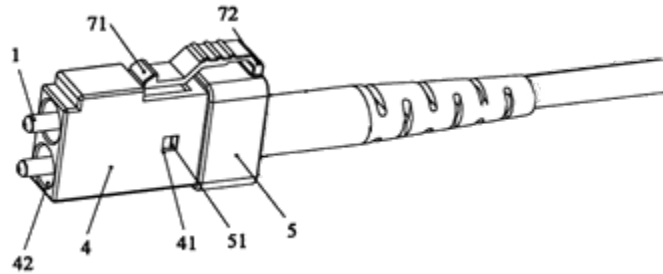


EX1011: Fig. 3A (annotated, modified); EX1002: ¶349.

In making this modification, the Chen's strain relief boot would be reconfigured to fit over the modified single-barrel back post, for example, by using a cylindrical strain relief boot like Chang's boot (115). EX1002: ¶350. Modifying Chen's boot is merely changing the size and shape of a strain relief boot from Chen's shape to an even more compact and conventional cylindrical shape (taught

by Chang). This minor constructional change is well-within the POSA's capability. EX1002: ¶350.

A representative illustration of is shown below:



EX1011: Fig. 3B (modified); EX1002: ¶351.

In making this modification, Chen's crimp band (9) would also be resized to fit over the modified single-barrel back post, for example, by using a cylindrical crimp band like Chang's crimp ring (120). EX1002: ¶352. Modifying Chen's crimp band (9) merely involves changing the size and shape of a crimp band to a conventional cylindrical shape. EX1002: ¶352. This minor constructional change is well within the POSA's capabilities. EX1002: ¶352.

B. Motivation to Modify Chen Based on Raven

Chen discloses a feature (cuboid projection, blue) on the top surface of the casing (4). EX1002: ¶353. The cuboid projection is an alignment feature that guides Chen's connector into a mating adapter. EX1002: ¶353.

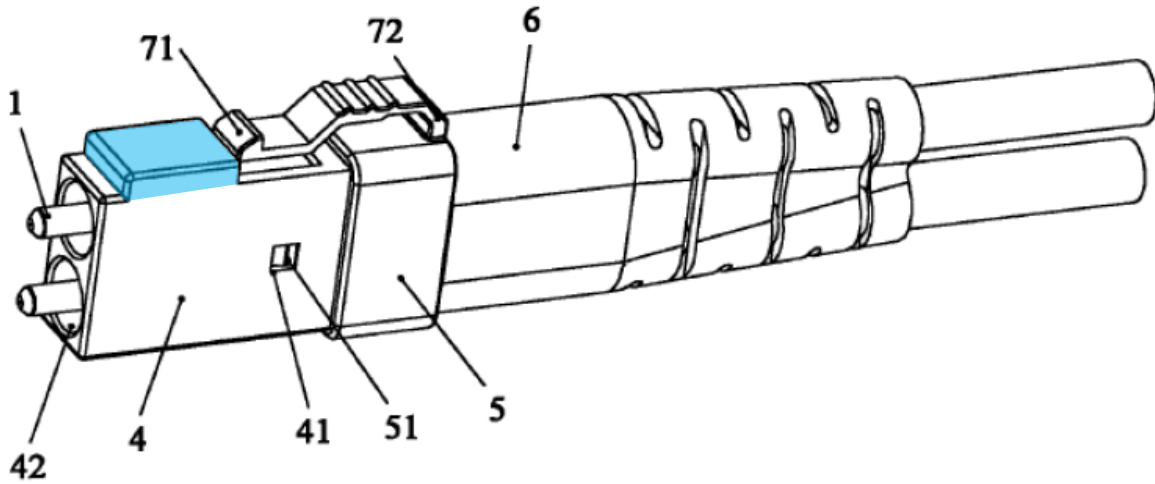


FIG. 3B

EX1011: Fig. 3B (annotated).

Raven discloses fiber optic connectors (45a, 45b) that, like Chen's connector, include a guide element (51a, 51b) that engage a recess in a socket to guide insertion and ensure correct orientation. EX1013: ¶¶[0039], [0098]; EX1002: ¶354.

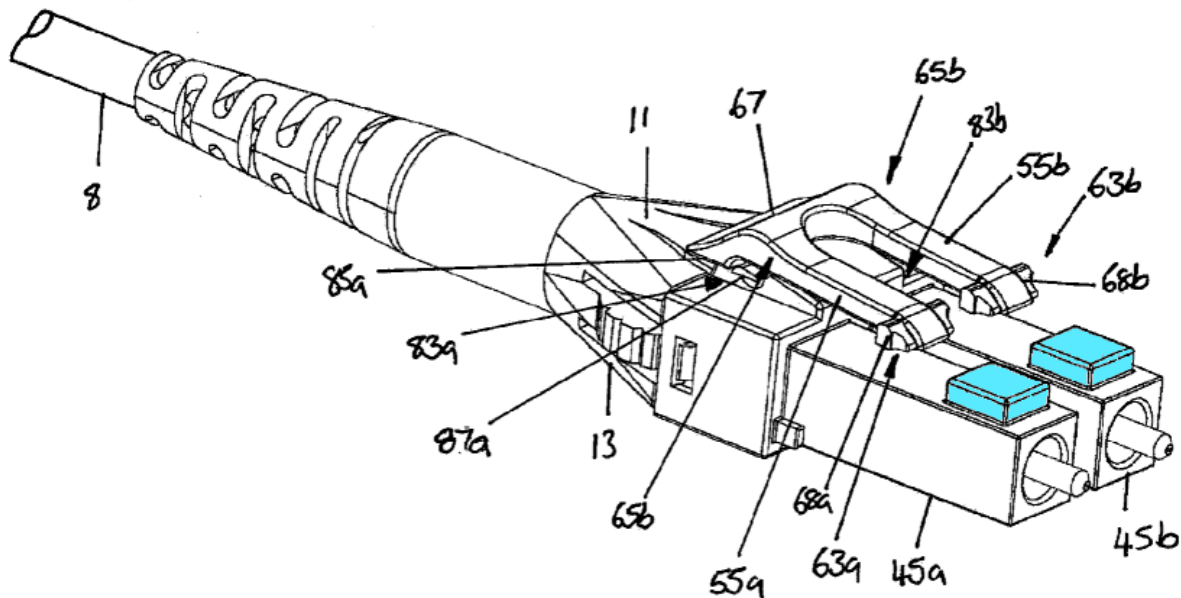


Fig. 2

EX1013: Fig. 2 (annotated).

It would have been obvious to make Chen's cuboid projection on top of the connector housing (4) a guide element that interacts with a socket to guide "insertion of the fiber optic connector" and "ensur[e] the correct location and/or orientation of the connector," as taught by Raven. EX1013: ¶[0039]; EX1002: ¶355.

This modification would have also been nothing more than the application of a known technique (Raven's guide elements) to improve a similar device (Chen's cuboid projection) in the same way to yield predictable results (limiting Chen's

connector to be inserted into a corresponding socket in its proper orientation).

EX1002: ¶356.

The proposed modification would have been well within the POSA's capabilities. EX1002: ¶357. The cuboid projection in Chen is almost identical to Raven's guide elements. EX1002: ¶357. Moreover, the modification would merely require resizing Chen's cuboid projection to be slightly narrower than the overall width of the casing (4) (as shown in Raven) and providing a mating adapter that includes a recess for receiving the cuboid projection as taught by Raven. EX1013: ¶¶[0039], [0098]; EX1002: ¶357. Such modifications are only minor constructional changes and are entirely predictable. EX1002: ¶357.

C. Independent Claim 1

1.P

Chen discloses a "dual-core optical fiber connector." EX1011: Abstract; EX1002: ¶358.

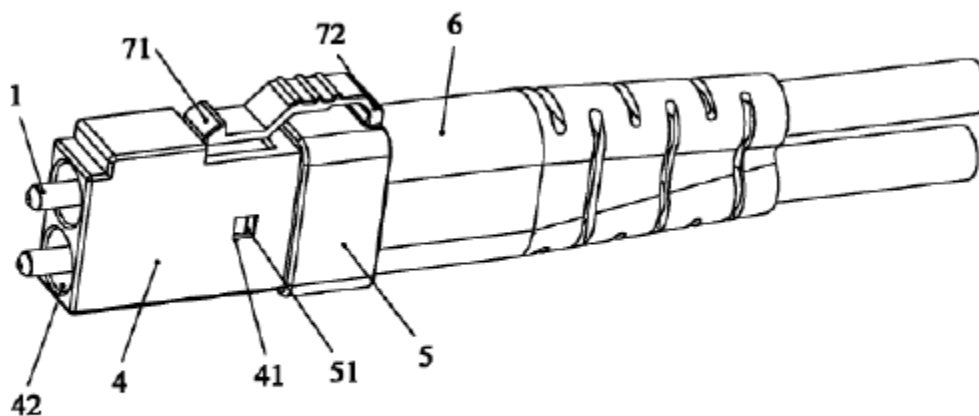


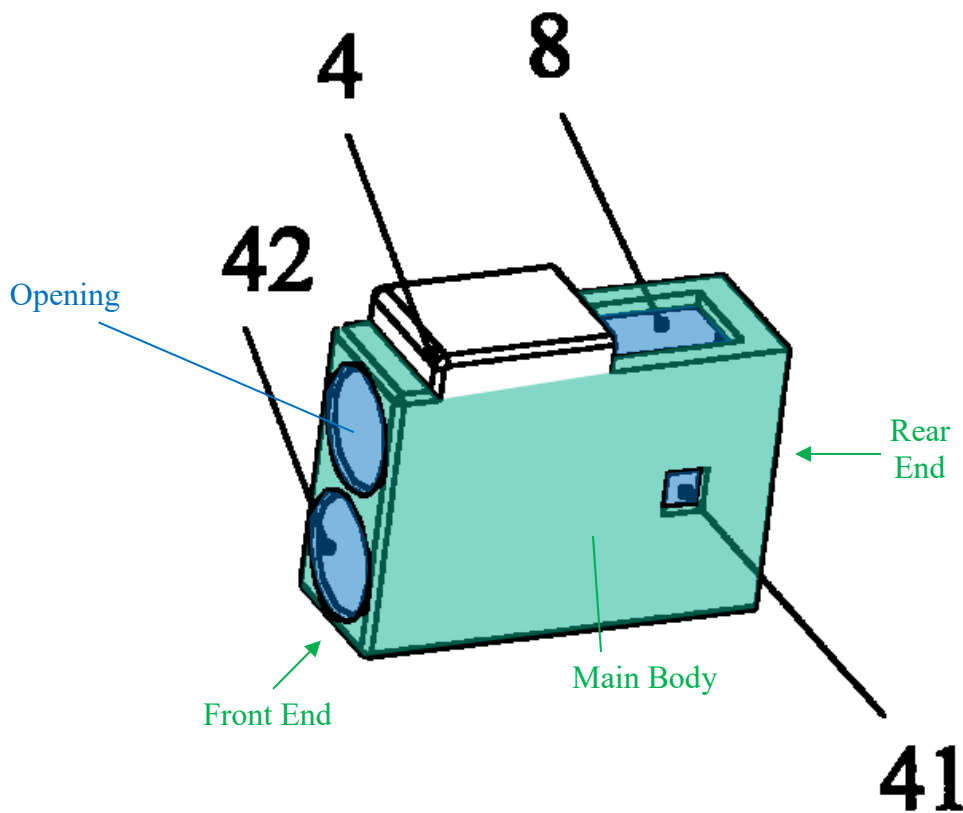
FIG. 3B

EX1011: Fig. 3B.

Therefore, Chen meets 1.P. EX1002: ¶359.

1.a.1

Chen's connector includes a housing comprising a casing (4), which is a main body extending between front and rear ends. EX1011: ¶¶[0027], [0031]; EX1002: ¶360. An opening extends between the front and rear ends. EX1011: ¶[0029]; EX1002: ¶360.

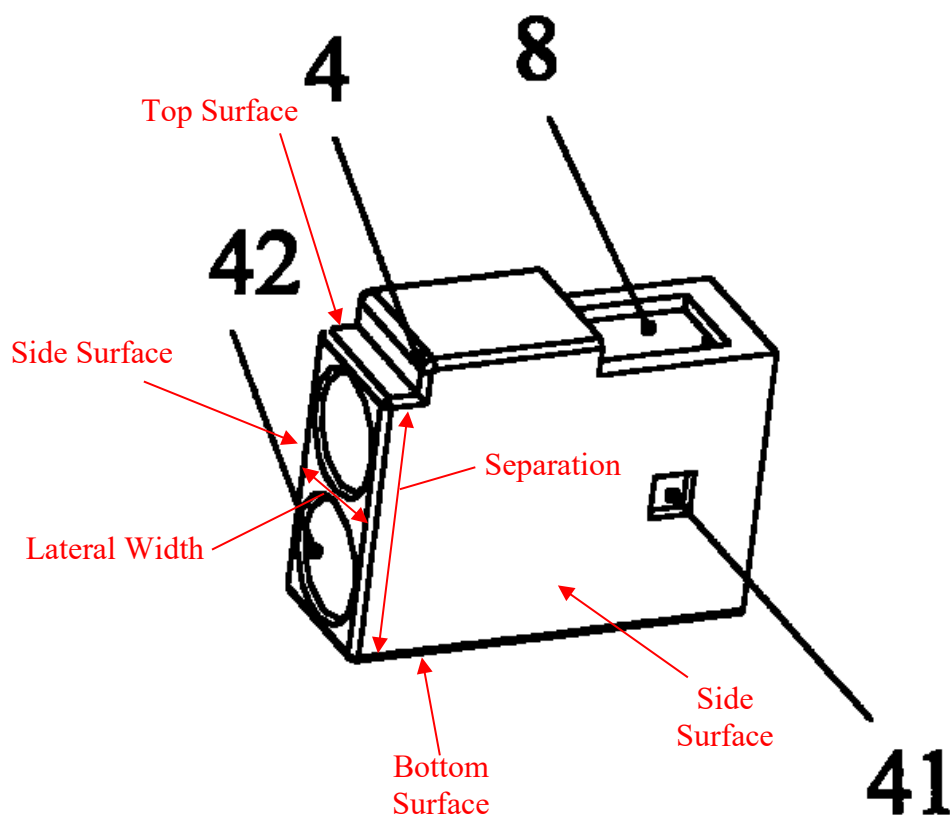


EX1011: Fig. 3A (annotated).

Therefore, Chen meets 1.a.1. EX1002: ¶361.

1.a.2

The casing (4) has a top surface and a bottom surface bound by two opposing side surfaces. EX1011: Figs. 3A-B; EX1002: ¶362. The lateral width between the two side surface is less than the separation between the top and bottom surfaces. EX1002: ¶362.



EX1011: Fig. 3A (annotated).

Therefore, Chen meets 1.a.2. EX1002: ¶363.

1.b.1

Chen's connector includes two ferrule assemblies (1, 3) disposed in the opening. EX1011: ¶[0029]; EX1002: ¶364.

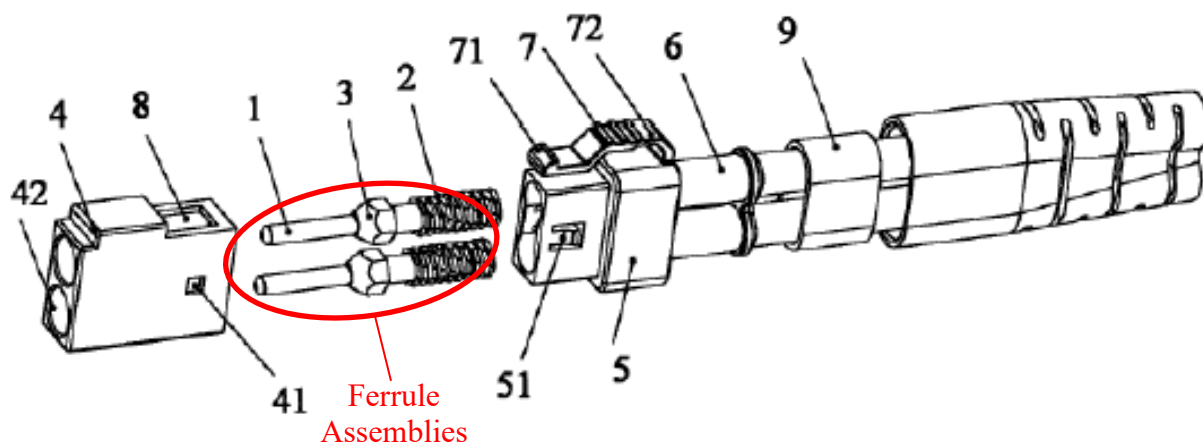


FIG. 3A

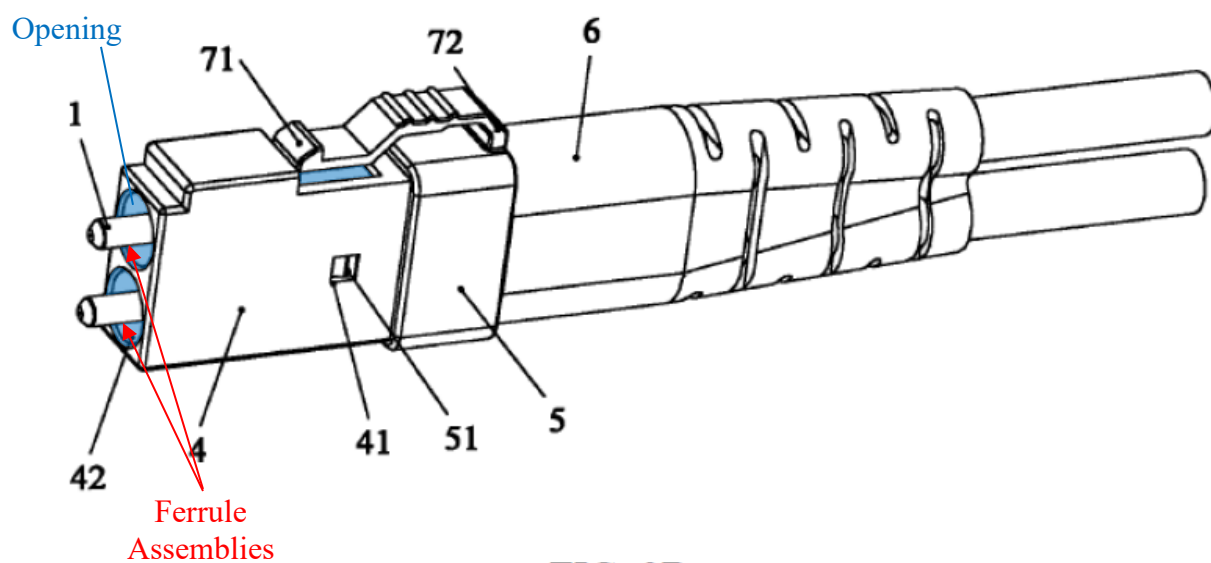


FIG. 3B

EX1011: Figs. 3A-B (annotated).

Therefore, Chen meets 1.b.1. EX1002: ¶365.

1.b.2

Each ferrule assembly includes a ferrule (1) and a block piece (3) ("ferrule holder"). EX1011: ¶[0028]; EX1002: ¶366. The ferrule is held by block piece and

extends forward and away from the front end of the block piece. EX1011:

¶[0028]; EX1002: ¶366.

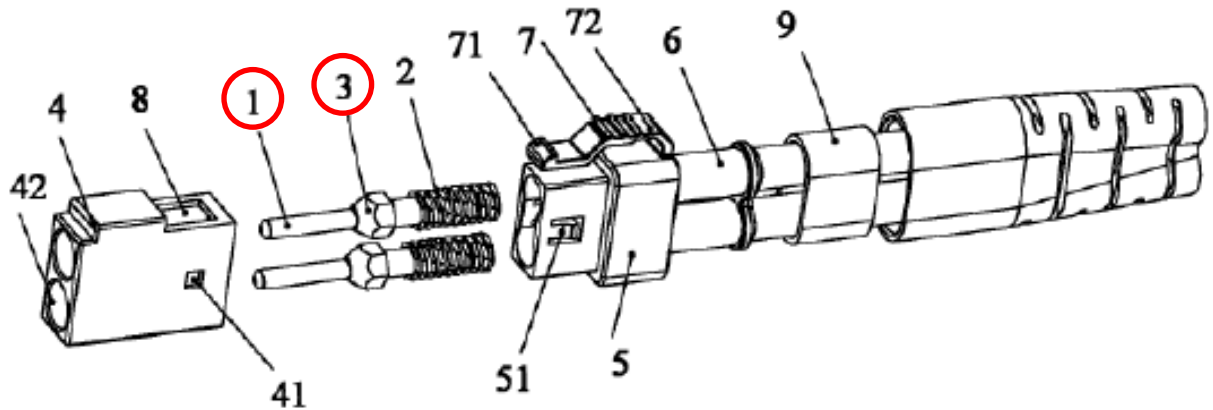


FIG. 3A

EX1011: Fig. 3A (annotated).

Therefore, Chen meets 1.b.2. EX1002: ¶367.

1.c

Chen's connector includes two elastic elements (2), such as springs.

EX1011: ¶[0028]; EX1002: ¶368. The elastic elements are retained within the

housing. EX1011: ¶[0029]; EX1002: ¶368. Each elastic element engages a

rearward facing surface of a respective ferrule holder (and extends rearward toward the rear end of the housing) to bias the respective ferrule assembly toward the front end of the housing. EX1011: ¶[0028]; EX1002: ¶368.

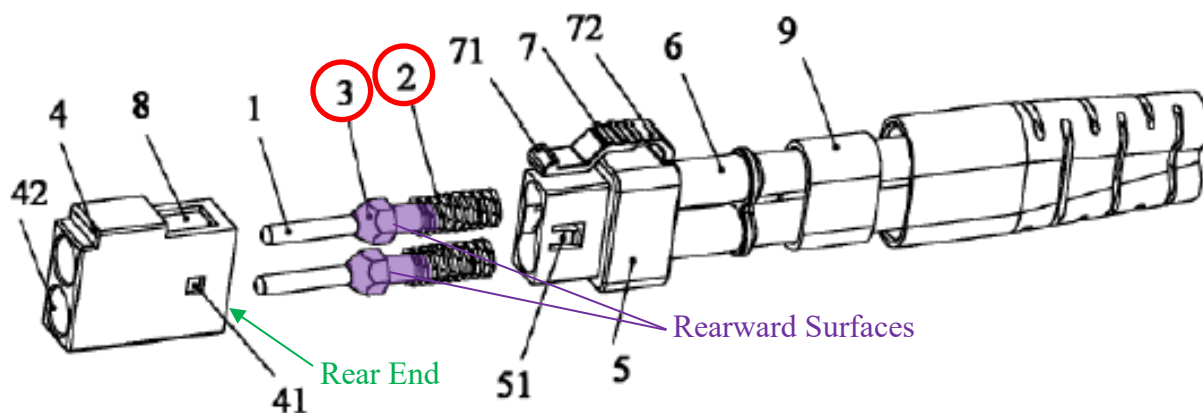


FIG. 3A

EX1011: Fig. 3A (annotated).

If US Conec asserts Chen does not expressly teach this limitation, this limitation would have been obvious in view of Chang and Raven, which both show this limitation is nothing more than the conventional way ferrule springs are arranged in these types of connectors. EX1002: ¶369.

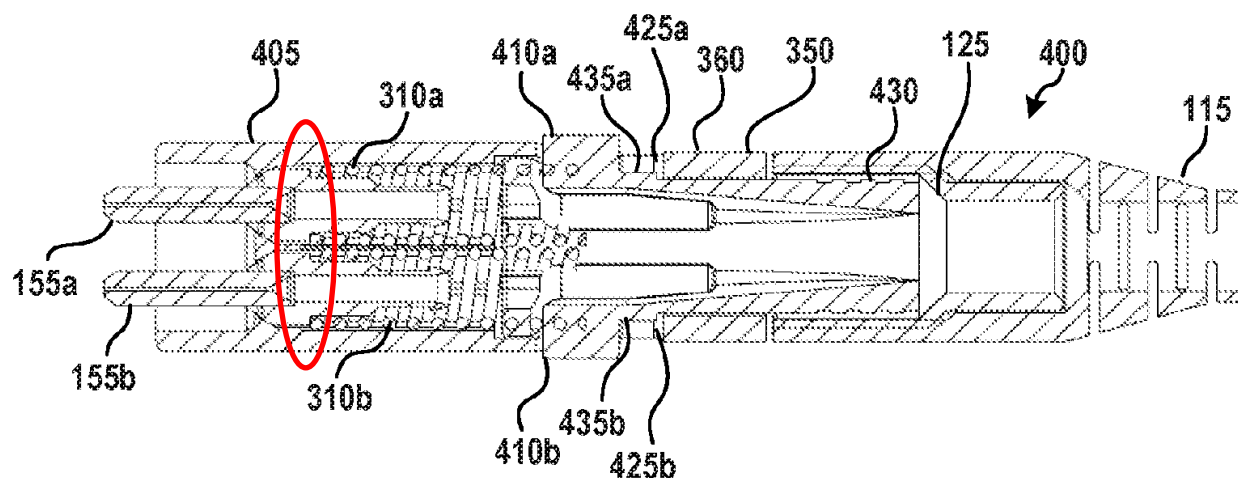


FIG. 4B

EX1012: Fig. 4B (annotated).

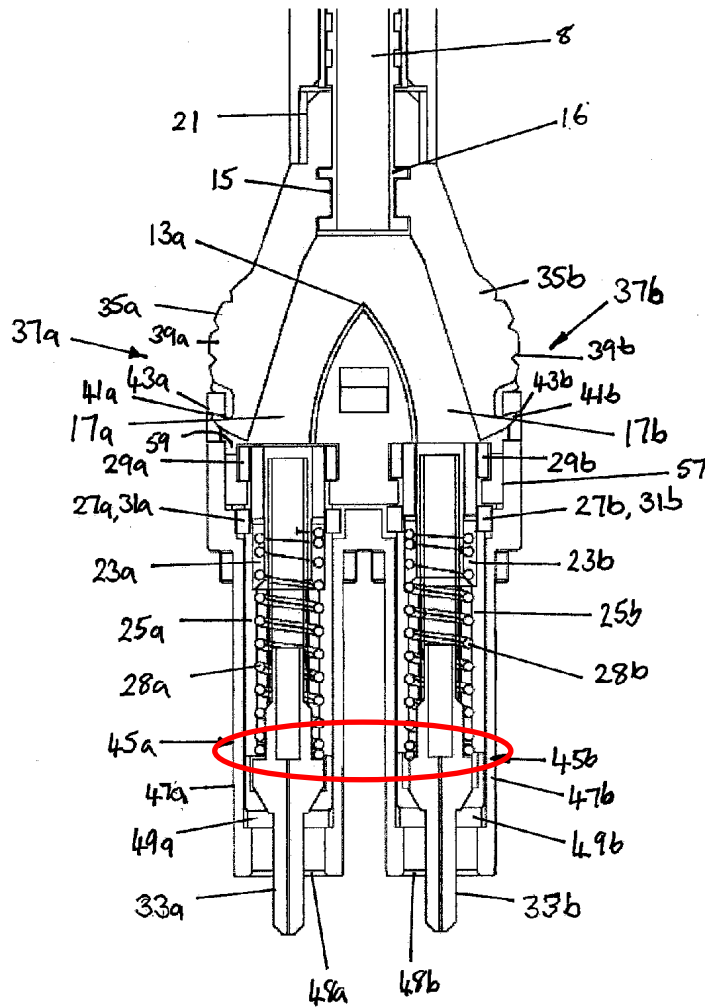


Fig. 4

EX1013: Fig. 4 (annotated).

Therefore, Chen meets (or renders obvious) 1.c. EX1002: ¶370.

1.d.1

Chen's connector includes a sleeve body (5), which is a "crimp body."

EX1011: ¶[0026]; EX1002: ¶371. The front end of sleeve body is disposed in the opening at the rear end of casing (4). EX1011: ¶¶[0034]-[0035]; EX1002: ¶371.

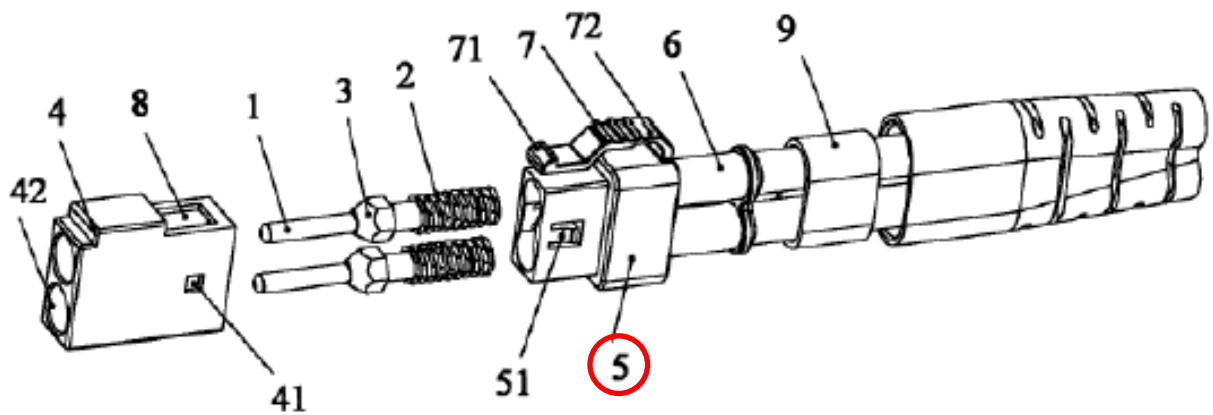


FIG. 3A

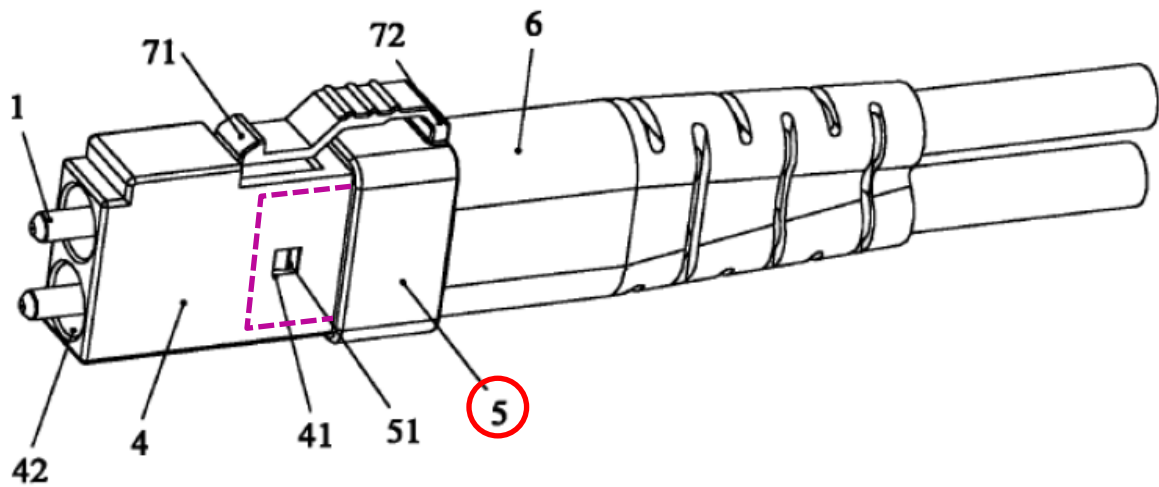


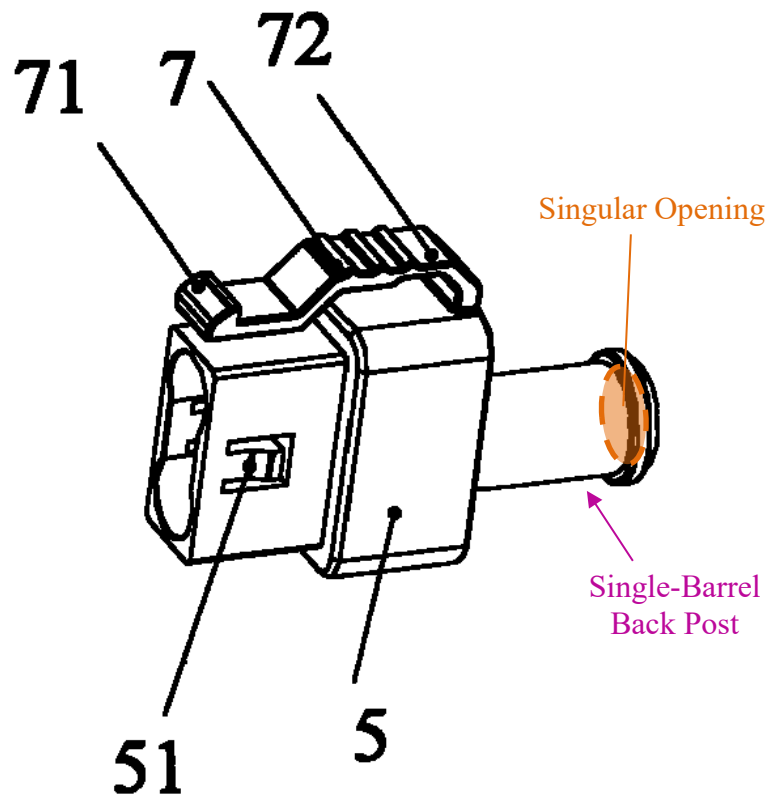
FIG. 3B

EX1011: Figs. 3A-B (annotated).

Therefore, Chen meets 1.d.1. EX1002: ¶372.

1.d.2

Chen's sleeve holder (5) modified in view of Chang has a single-barrel back post having a singular opening. Section XVII(A); EX1002: ¶373.



EX1011: Fig. 3A (annotated, modified).

Therefore, the Chen/Chang/Raven combination renders 1.d.2 obvious.

EX1002: ¶374.

1.e

Chen's cuboid projection is on the top surface of the casing (4) and is an alignment feature that guides the connector into an adapter. EX1002: ¶375.

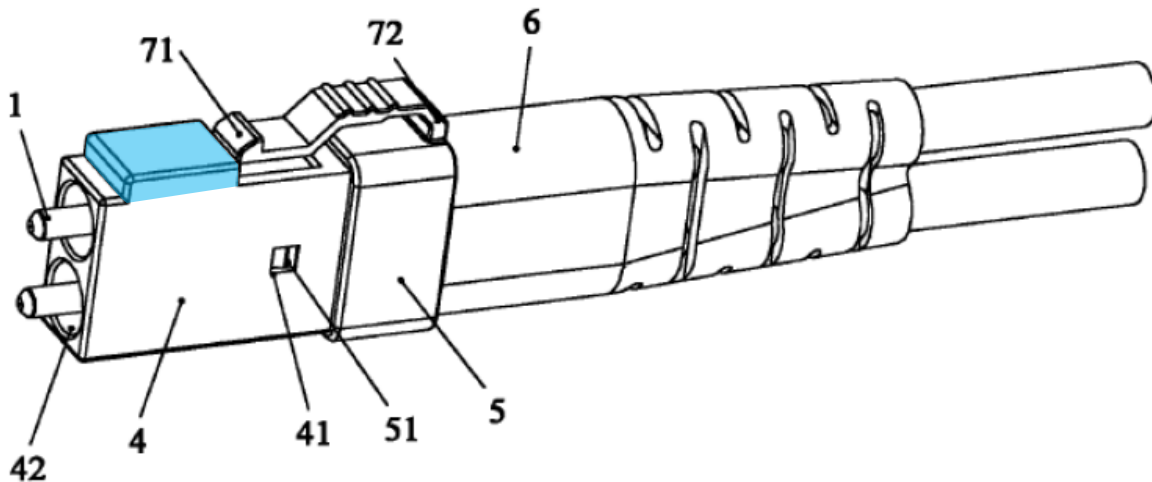


FIG. 3B

EX1011: Fig. 3B (annotated).

Alternatively or in addition, this limitation would have been obvious in view of Raven. Section XVII(B); EX1002: ¶376. The modification of Chen in view of Raven results in Chen's cuboid projection serving to guide Chen's connector into a corresponding adapter. Section XVII(B); EX1002: ¶376.

Therefore, Chen meets 1.e and/or the Chen/Chang/Raven combination renders 1.e obvious. EX1002: ¶377.

1.f

Chen depicts a strain relief boot coupled to the rear end of sleeve body (5). EX1011: Fig. 3A; EX1002: ¶378. As shown below, the boot has longitudinal opening in continuum with the opening of the sleeve body through which two optical fibers pass. EX1011: ¶[0014]; EX1002: ¶378.

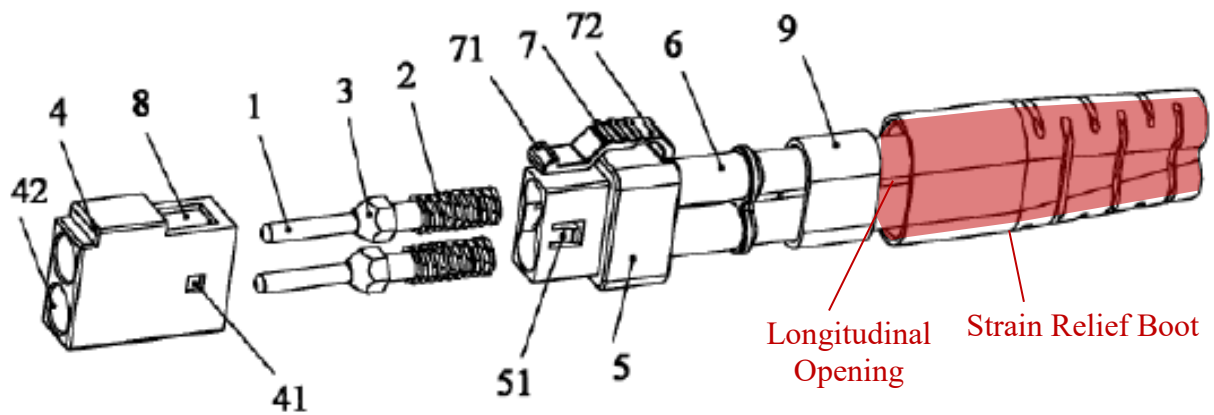


FIG. 3A

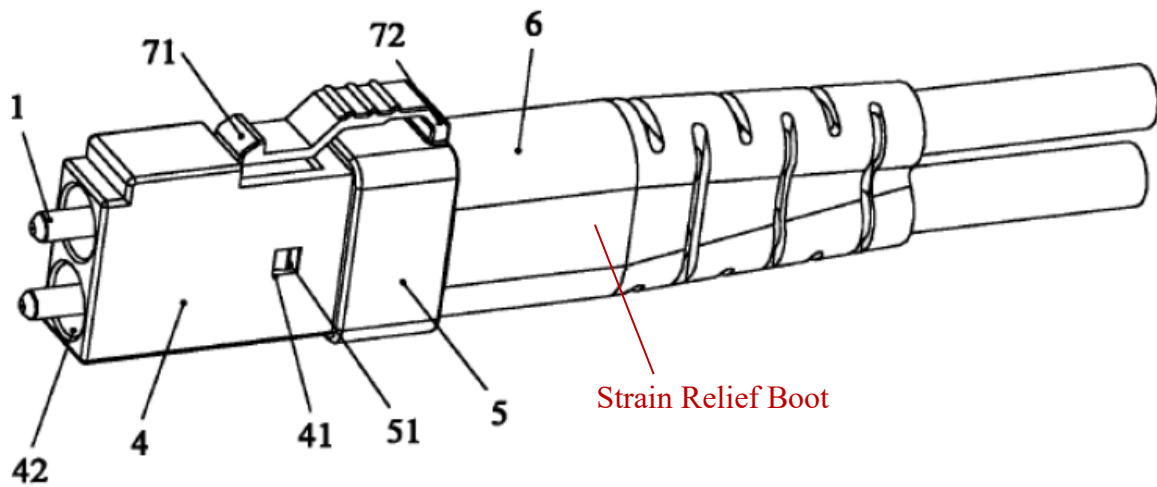
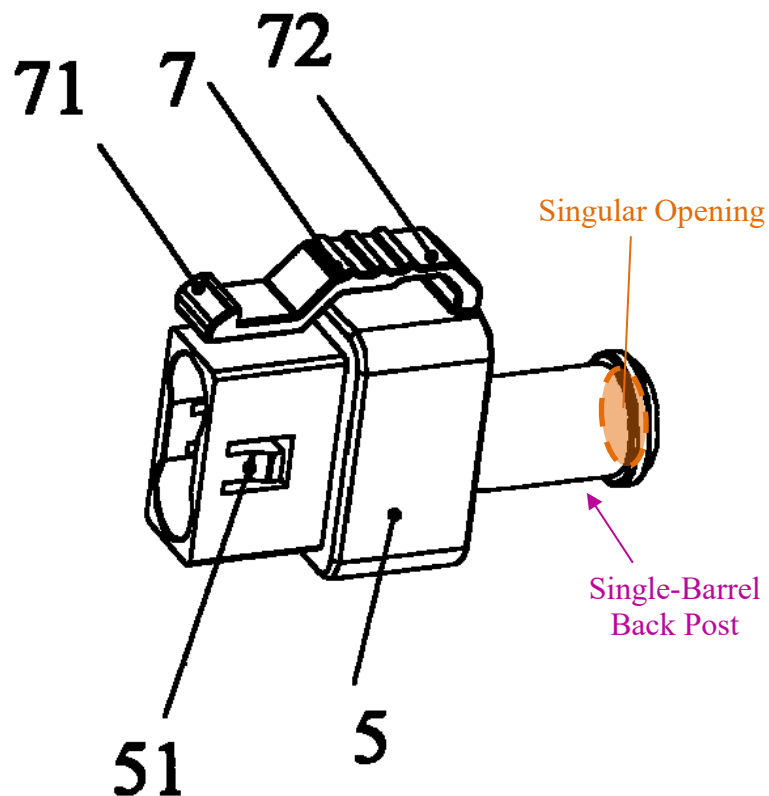
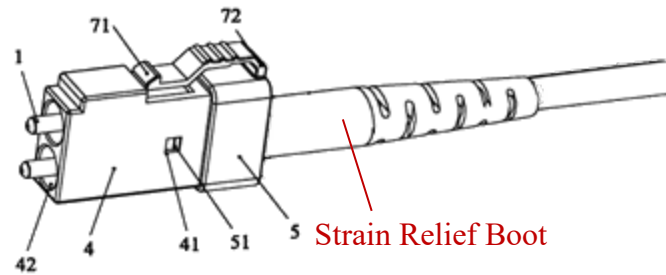


FIG. 3B

EX1011: Figs. 3A-B (annotated).

As a result of Chen's sleeve body and boot being modified in view of Chang—Section XVII(A)—the longitudinal opening of Chen's modified boot would be in continuum with the singular opening of Chen's modified sleeve body for the optical fibers to pass through. EX1002: ¶379.



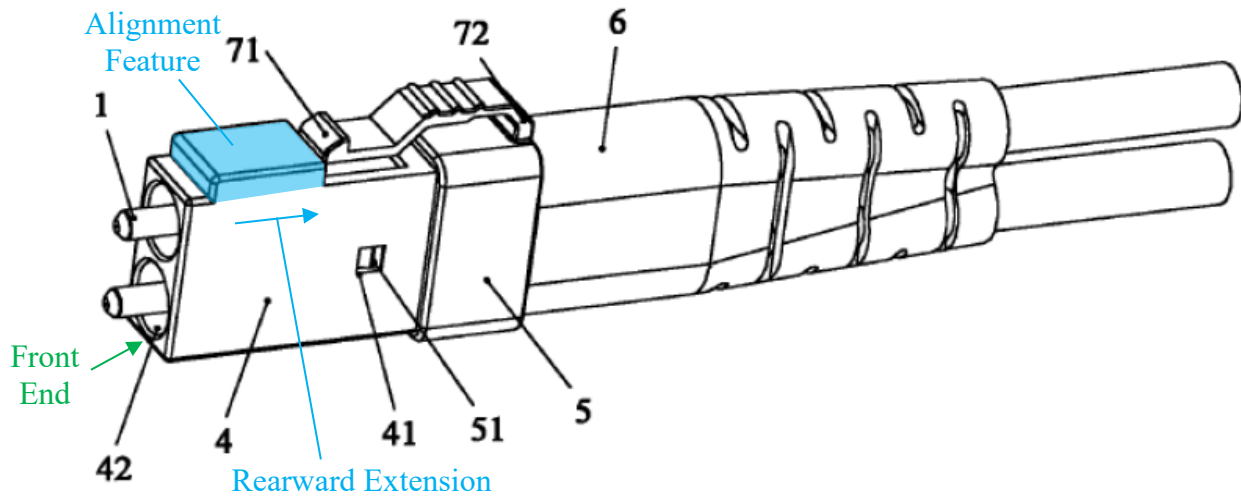
EX1011: Figs. 3A-B (annotated, modified).

Therefore, the Chen/Chang/Raven combination renders 1.f obvious.

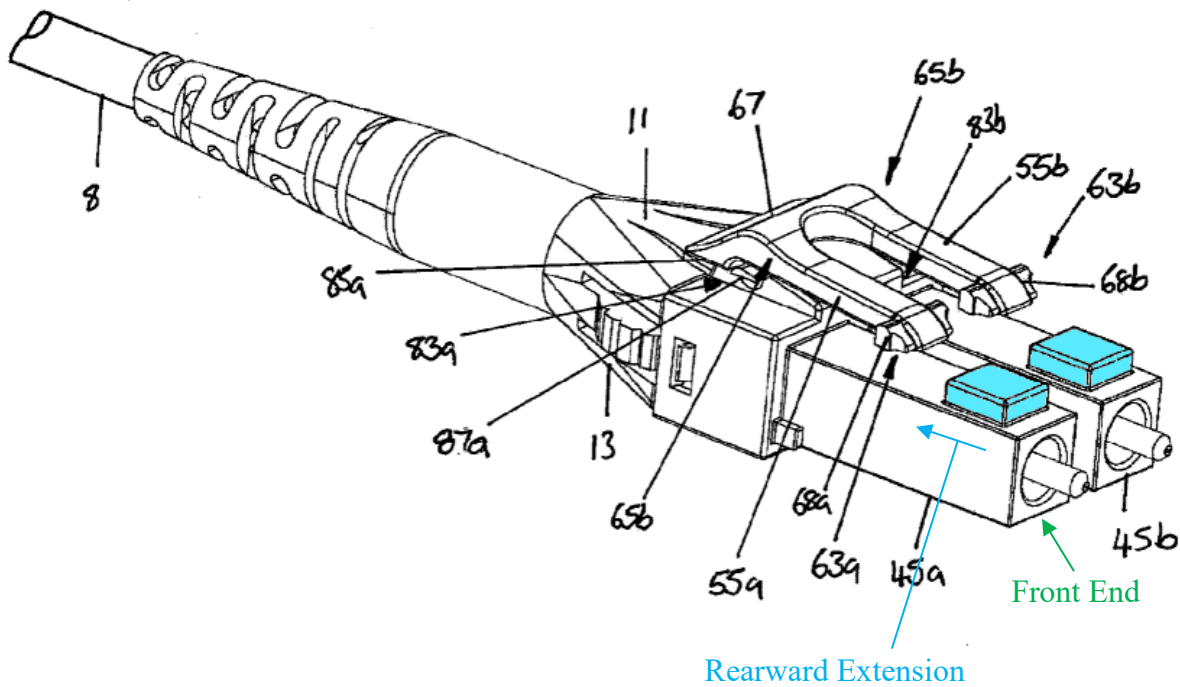
EX1002: ¶380.

D. Claim 2

Chen's alignment feature, alone and/or as modified, is positioned rearward of the front end of the housing and extends rearward. EX1002: ¶381.



EX1011: Fig. 3B (annotated).



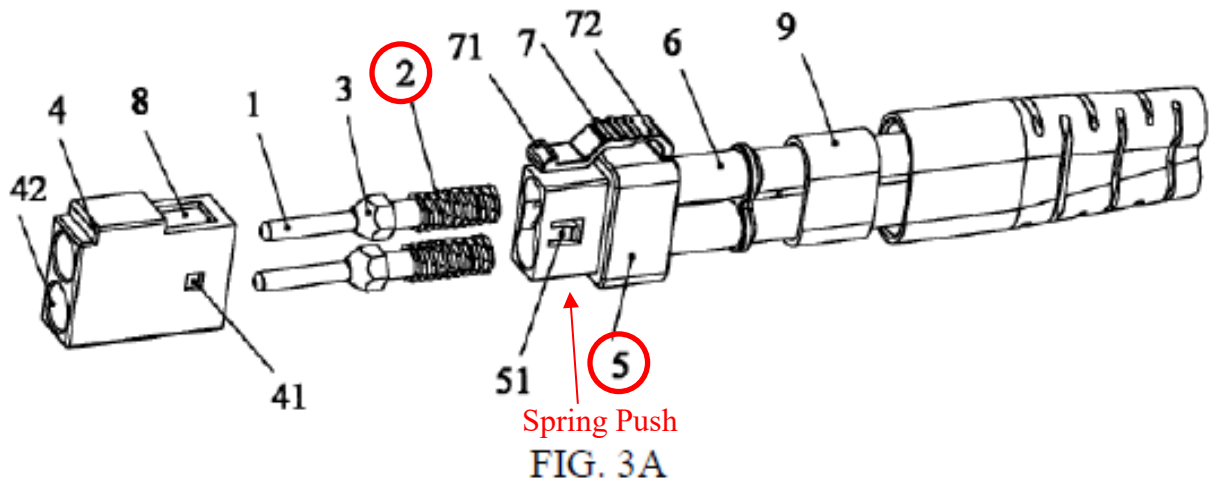
EX1013: Fig. 2 (annotated).

Therefore, Chen meets this claim and/or the Chen/Chang/Raven combination renders this claim obvious. EX1002: ¶382.

E. Claim 3

Claim 3's "spring push" may be part of the crimp body. Section VII(C); EX1002: ¶383.

Chen's sleeve body (5) includes internal structure that engages the rear portion of both elastic elements (2) to engage the elastic elements with the block pieces (3). EX1011: ¶¶[0027]-[0028]; EX1002: ¶384.



EX1011: Fig. 3A.

Therefore, Chen meets this claim. EX1002: ¶385.

F. Claim 5

Chen's sleeve body simultaneously engages the rear portions of the elastic elements. Section XVII(E); EX1002: ¶386.

Therefore, Chen meets this claim. EX1002: ¶387.

G. Claim 6

Chen's cuboid projection on the casing (4) (alone or as modified) provides an indicia of polarity in that it is located on only the top side of the connector and provides a clear indication of the orientation in which the connector must be plugged into an adapter. Section XVII(B)&(C)(1.e); EX1002: ¶388.

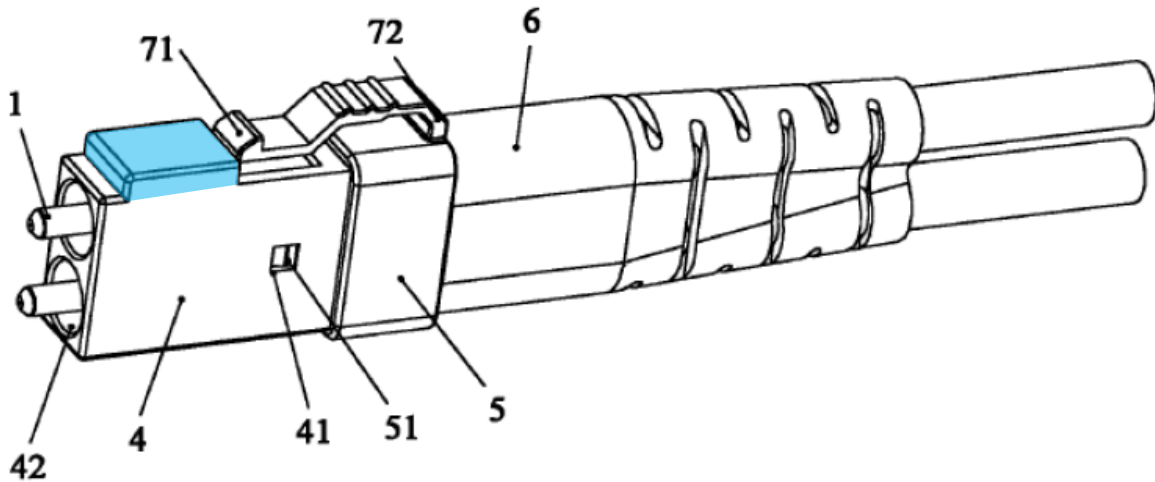


FIG. 3B

EX1011: Fig. 3B (annotated).

Therefore, Chen meets this claim and/or the Chen/Chang/Raven combination renders this claim obvious. EX1002: ¶389.

H. Claim 7

7.a

Chen's connector includes a tail jacket (9), which is a crimp band, secured around the double-barrel back post of the sleeve body (5). EX1011: ¶[0036]; EX1002: ¶390.

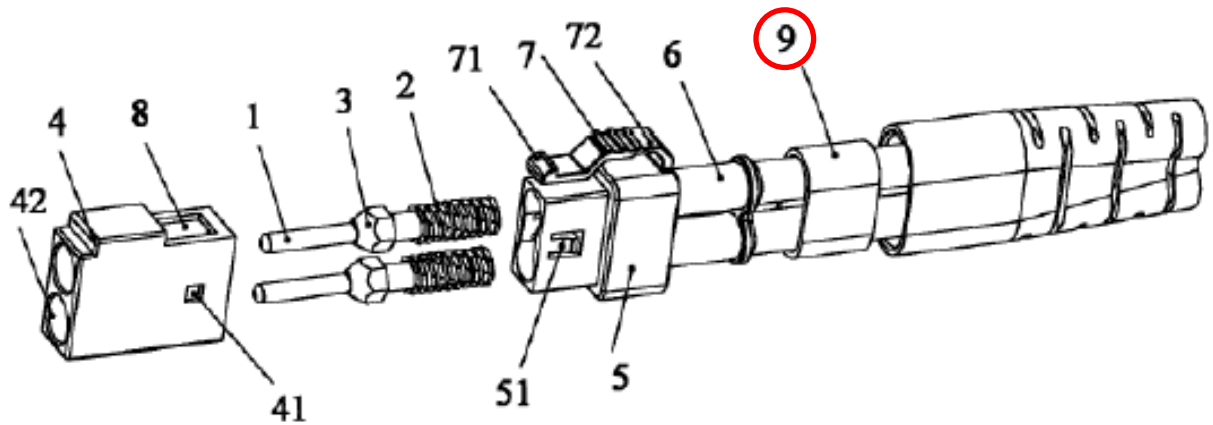


FIG. 3A

EX1011: Fig. 3A.

As a result of Chen's sleeve body and tail jacket being modified in view of Chang—Section XVII(A)—Chen's modified tail jacket would be secured around an outer surface of the single-barrel back post of Chen's modified sleeve body.

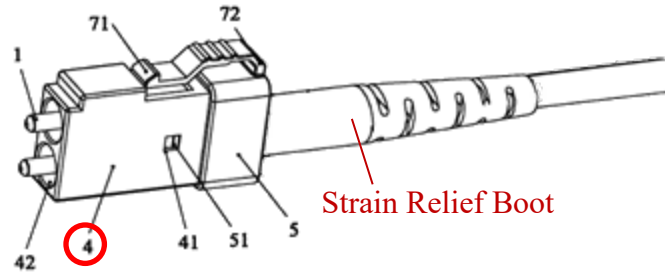
EX1002: ¶391.

Therefore, the Chen/Chang/Raven combination renders 7.a obvious.

EX1002: ¶392.

7.b

The modified boot (Section XVII(A)) would have extended rearwardly away from the casing (4), same as Chen's unmodified boot. EX1011: Fig. 3B; EX1002: ¶393.



EX1011: Fig. 3B (annotated, modified).

Therefore, the Chen/Chang/Raven combination renders 7.b obvious.

EX1002: ¶394.

I. Claim 14

Chen's cuboid projection, alone or as modified, teaches this claim regardless of how the claim is construed (Section V(B)). EX1002: ¶395. If "vertical alignment feature" and "horizontal alignment feature" are construed to mean a feature that extends vertically or horizontally, respectively, then surface A meet "vertical alignment feature" and surface B meets "horizontal alignment feature."

EX1002: ¶395.

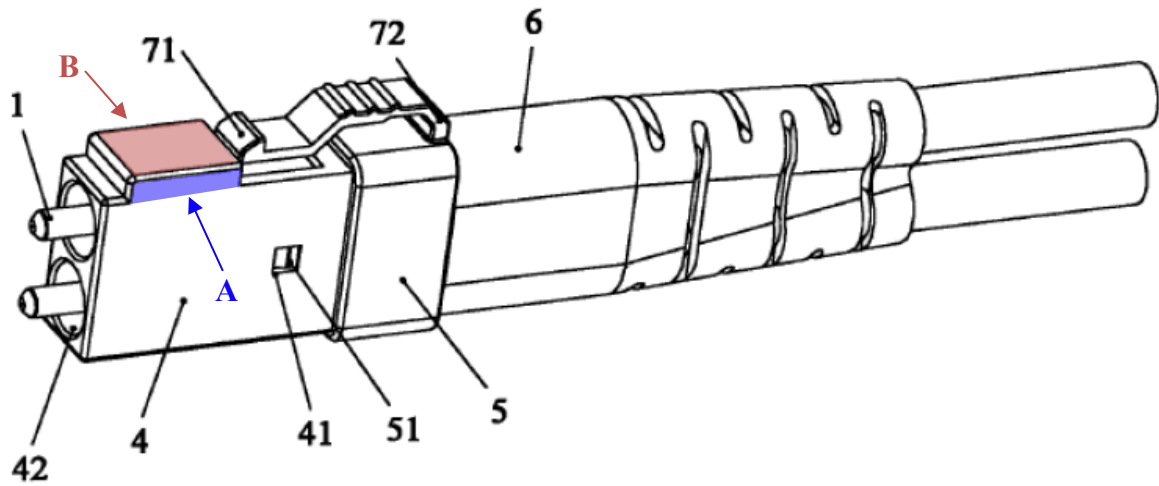


FIG. 3B

EX1011: Fig. 3B (annotated).

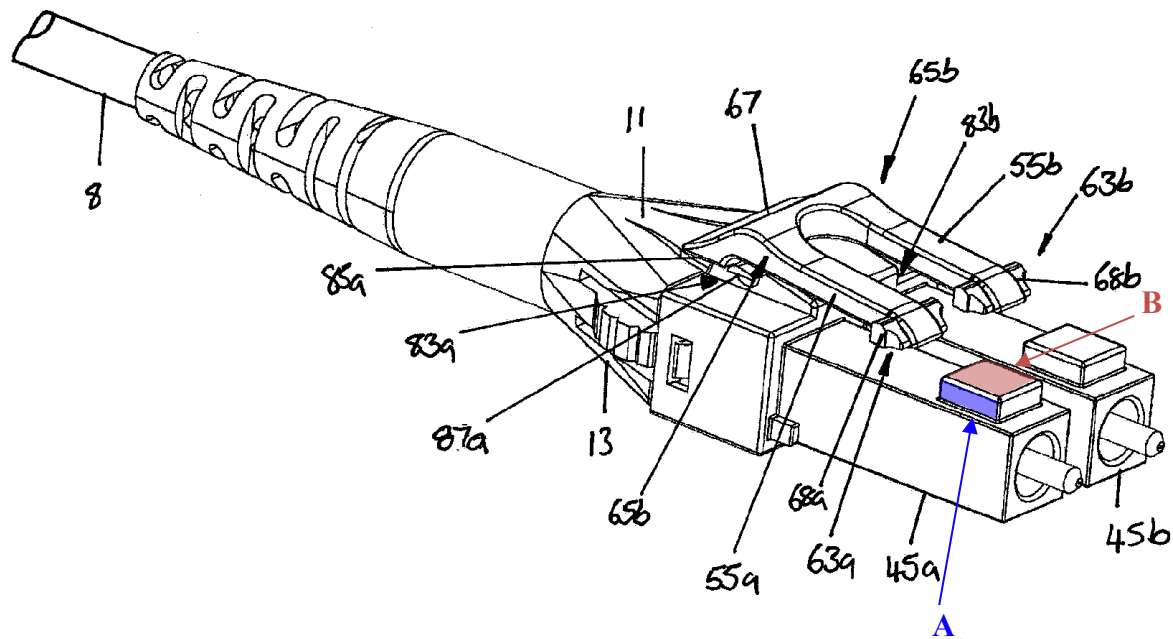


Fig. 2

EX1013: Fig. 2 (annotated).

If "vertical alignment feature" and "horizontal alignment feature" are construed to mean a feature capable of engaging a mating alignment structure to align the connector vertically or horizontally, respectively, then surface B meets "vertical alignment feature" and surface A meets "horizontal alignment feature." EX1002: ¶396.

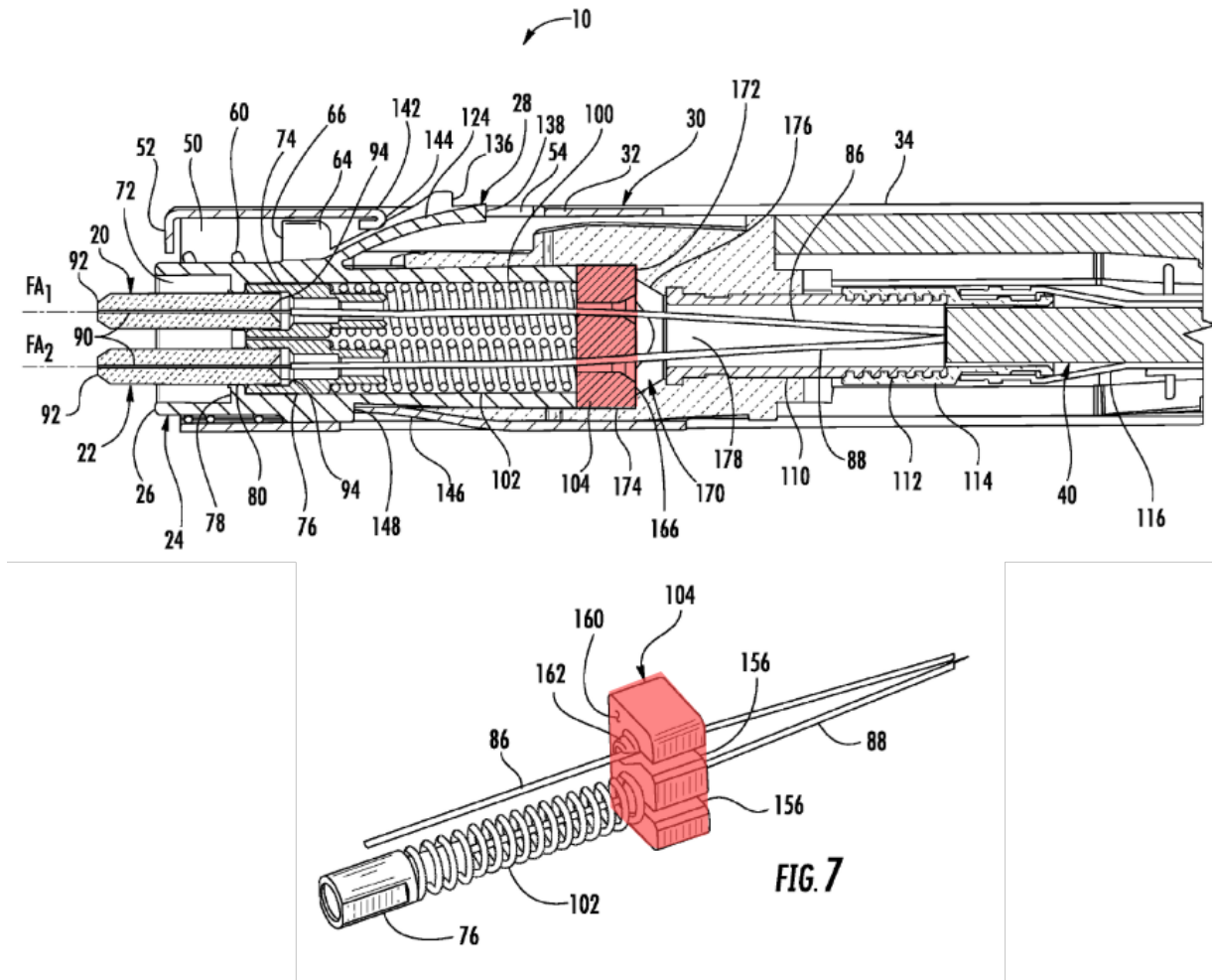
Raven teaches that the cuboid projection fits into a slot in a mating adapter in order to guide the connector into the adapter. EX1013: ¶¶[0039], [0098]; EX1002: ¶397. Following Raven's teachings, in making this modification Chen's cuboid projection would be sized so that the top surface B engages an upper horizontal surface defining the recess in the socket to vertically align the connector and surfaces A engage opposing side surfaces of the recess in the socket to align the connector horizontally. EX1002: ¶397.

Therefore, Chen meets this claim and/or the Chen/Chang/Raven combination renders this claim obvious. EX1002: ¶398.

XVIII. GROUND 14: Claims 3-5 Would Have Been Obvious Over Chen/Chang/Raven in view of Lee

A. Claim 4

Lee teaches a spring push (104) for engaging springs (100, 102). EX1005: ¶¶[0052]-[0053]. EX1002: ¶¶399-400.



EX1005: Figs. 3 and 7 (annotated).

It would have been obvious to modify the Chen/Chang/Raven combination to include Lee's spring push (104) for the reasons discussed in Section IX(A).

EX1002: ¶401.

This modification would have been nothing more than combining known prior art elements (the optical connector of the Chen/Chang/Raven combination and Lee's spring push) according to known methods (arrangement taught by Lee)

to yield predictable results (an optical connector with an independently mountable spring push). EX1002: ¶402.

This modification would have also been nothing more than the application of a known technique (Lee's spring push) to improve a similar device (the optical connector of the Chen/Chang/Raven combination) in the same way to yield predictable results (an optical connector with an independently mountable spring push). EX1002: ¶403. For example, Lee's spring push would function better to align the individual fibers with their respective ferrules and ferrule springs. EX1002: ¶403.

The POSA would have had a reasonable expectation of success in making this modification given the function and general placement of Lee's spring push would not change in the optical connector of the Chen/Chang/Raven combination. EX1002: ¶404. Further, the POSA would have made any minor structural changes to facilitate this modification, as it would only require minor changes in dimensions and shapes well within the POSA's capabilities. EX1002: ¶404.

As a result of this modification, the optical connector of the Chen/Chang/Raven combination includes Lee's spring push, which is separate from the sleeve body. EX1002: ¶405. Just like in Lee, the spring push would engage the rear portions of each of Chen's elastic elements simultaneously. EX1005: Fig. 3, ¶[0053]; EX1002: ¶405.

Therefore, the Chen/Chang/Raven/Lee combination renders this claim obvious. EX1002: ¶406.

B. Claim 3

The Chen/Chang/Raven/Lee combination renders this claim obvious for the reasons discussed in Section XVIII(A). EX1002: ¶407.

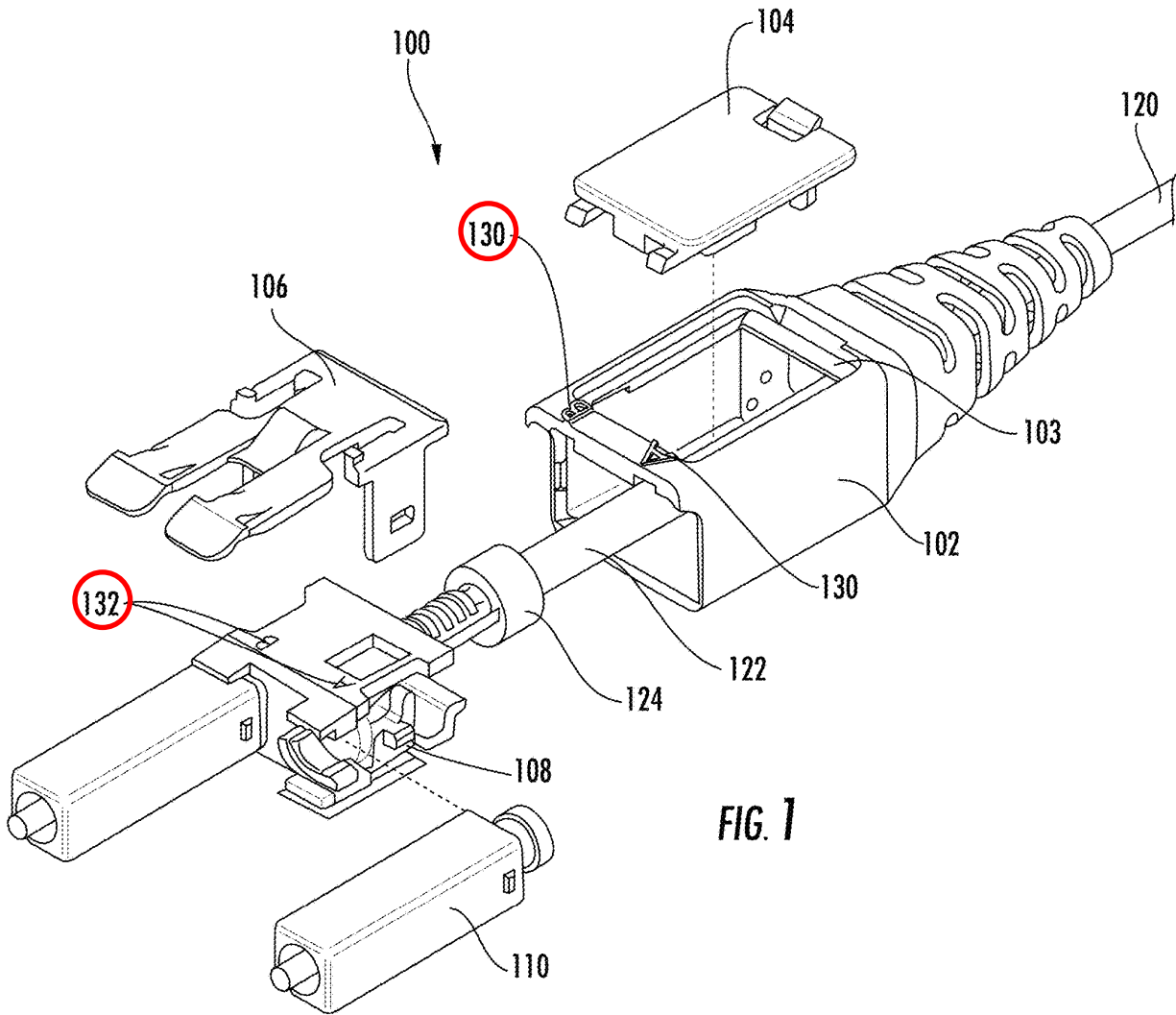
C. Claim 5

The Chen/Chang/Raven/Lee combination renders this claim obvious for the reasons discussed in Section XVIII(A). EX1002: ¶408.

XIX. GROUND 15: Claim 6 Would Have Been Obvious Over Chen/Chang/Raven in view of Veatch

To the extent US Conec argues Chen's optical connector does not meet this claim, this claim would have been obvious in view of Veatch. EX1002: ¶¶409-410.

Veatch discloses polarity indicia (130, 132) for a fiber optic connector (100). EX1007: Fig. 1, 2:26-39; EX1002: ¶411.



EX1007: Fig. 1 (annotated).

It would have been obvious to modify Chen's casing (4) to include Veatch's polarity indicia (130, 132) for the reasons explained in Section X. EX1002: ¶412.

This modification would have been nothing more than combining known prior art elements (Chen's optical connector and Veatch's polarity indicia) according to known methods (arrangement taught by Veatch) to yield predictable results (an indication of polarity for Chen's optical connector). EX1002: ¶413.

This modification would have also been nothing more than the application of a known technique (Veatch's polarity indicia) to improve a similar device (Chen's optical connector) in the same way to yield predictable results (an indication of polarity for Chen's optical connector). EX1002: ¶414.

The POSA would have had a reasonable expectation of success in making this modification given the function of Veatch's polarity indicia (130, 132) would not change in Chen's optical connector. EX1002: ¶415. In making this modification, the POSA would place the polarity indicia on Chen's casing (4), as explained in Section X. EX1002: ¶415. For example, the POSA may place the letter "A" adjacent the top of the casing (4) and the letter "B" adjacent the bottom casing, as shown representationally below. EX1002: ¶415.

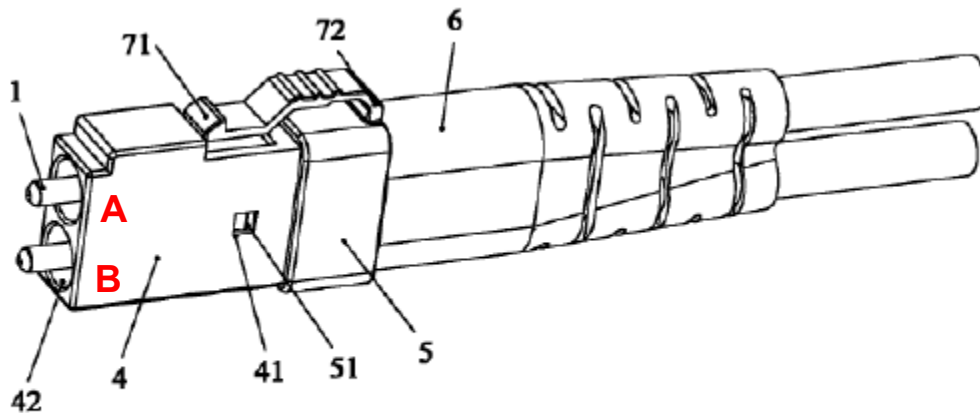


FIG. 3B

EX1011: Fig. 3B (modified).

As a result of this modification, Chen's optical connector includes Veatch's polarity indicia on the casing. EX1002: ¶416.

Therefore, the Chen/Chang/Raven/Veatch combination renders this claim obvious. EX1002: ¶417.

XX. GROUND 16: Claim 12 Would Have Been Obvious Over Chen/Chang/Raven in view of QSFP-DD

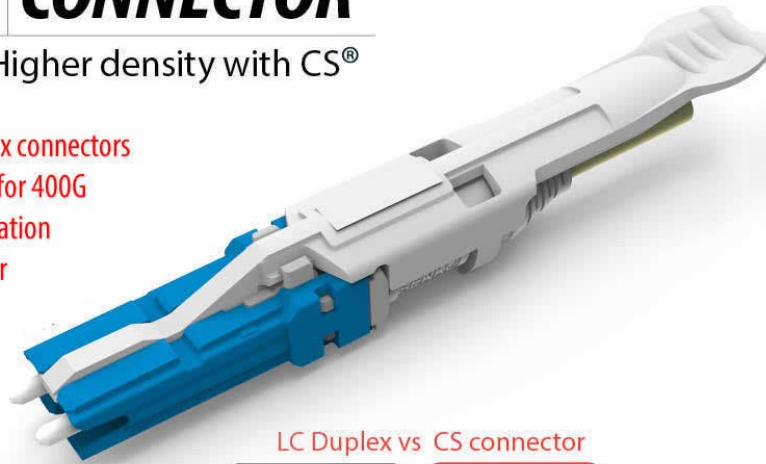
Chen explains the "connector has a small volume." EX1011: ¶[0016]; EX1002: ¶¶418-419.

It would have been obvious in view of QSFP-DD to size Chen's connector to fit within a QSFP footprint. EX1002: ¶420. For example, it would be obvious to size Chen's connector so that two dual-core Chen connectors could fit within one QSFP-DD optical interface in a similar way to how two CS connectors are shown to fit within a QSFP-DD optical interface, as shown below, to make Chen's connector compatible with QSFP-DD applications, e.g., as an alternative to the CS connector. EX1002: ¶¶420-421.

CS[®] CONNECTOR

Reach Higher density with CS[®]

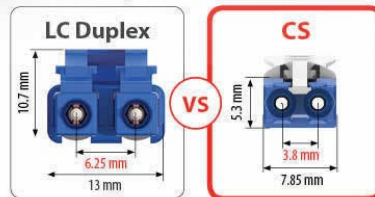
New Duplex connectors
optimized for 400G
new generation
Data Center



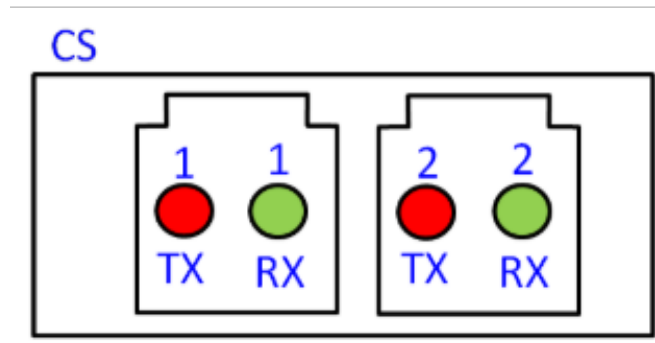
QSFP QSFP-DD



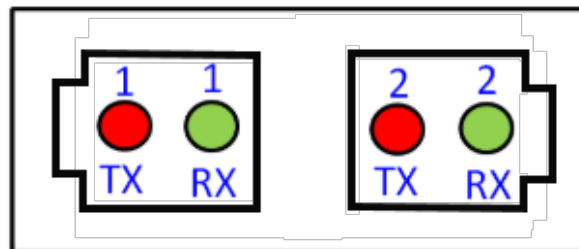
LC Duplex vs CS connector



EX1028 (image of a CS connector).



EX1014: Fig. 33.



EX1014: Fig. 33 (modified to fit two Chen connectors).

The POSA would have had a reasonable expectation of success because both the CS connector (shown above) and Chen's connector are fiber optic connectors that integrate two spring-loaded single-fiber ferrules into a common duplex connector housing with a latch mechanism located on one side of the connector housing. EX1002: ¶422. Thus, the POSA would have a reasonable expectation that Chen's casing could be configured to have roughly the same footprint as a CS connector so that two Chen connectors could fit side-by-side in the orientation indicated above. EX1002: ¶422. Hence, the front end of Chen's casing would fit in a QSFP footprint. EX1002: ¶422.

Therefore, the Chen/Chang/Raven/QSFP-DD combination renders this claim obvious. EX1002: ¶423.

XXI. GROUND 17: Claims 13, 15, and 16 Would Have Been Obvious Over Chen/Chang/Raven in view of Takano'209 (or Kiani⁶ (if needed))

A. Claim 13

Two-piece crimp bodies were well known. EX1002: ¶¶424-425. For example, Takano'209 shows multiple different connectors with a two-piece crimp body made up of back body and back post. EX1003: Figs. 3, 21A, 37, 41, 47, and 48; EX1002: ¶425.

⁶ Apply Kiani if Takano'209 does not qualify as prior art.

It would have found it obvious to modify Chen's sleeve body (as already modified in view of Chang) in view of Takano'209 to make Chen's sleeve body two pieces—(1) the single-barrel back post and (2) the remainder of the sleeve body. Two-piece crimp bodies allow the back post to be formed from a more robust material than the back body, which allows for improved crimping of cable strength members to the crimp body and also allows the crimp body to be set up for different types of optical cables by selecting the corresponding back post for a given type of optical cable. EX1002: ¶426.

The modification is the simple substitution of one known element (a two-piece crimp body) for another (a one-piece crimp body) to yield predictable results (a crimp body with a robust back post for crimping). *See also* EX1005: ¶[0040] (disclosing that one- and two-piece crimp bodies are known equivalent alternatives); EX1002: ¶427.

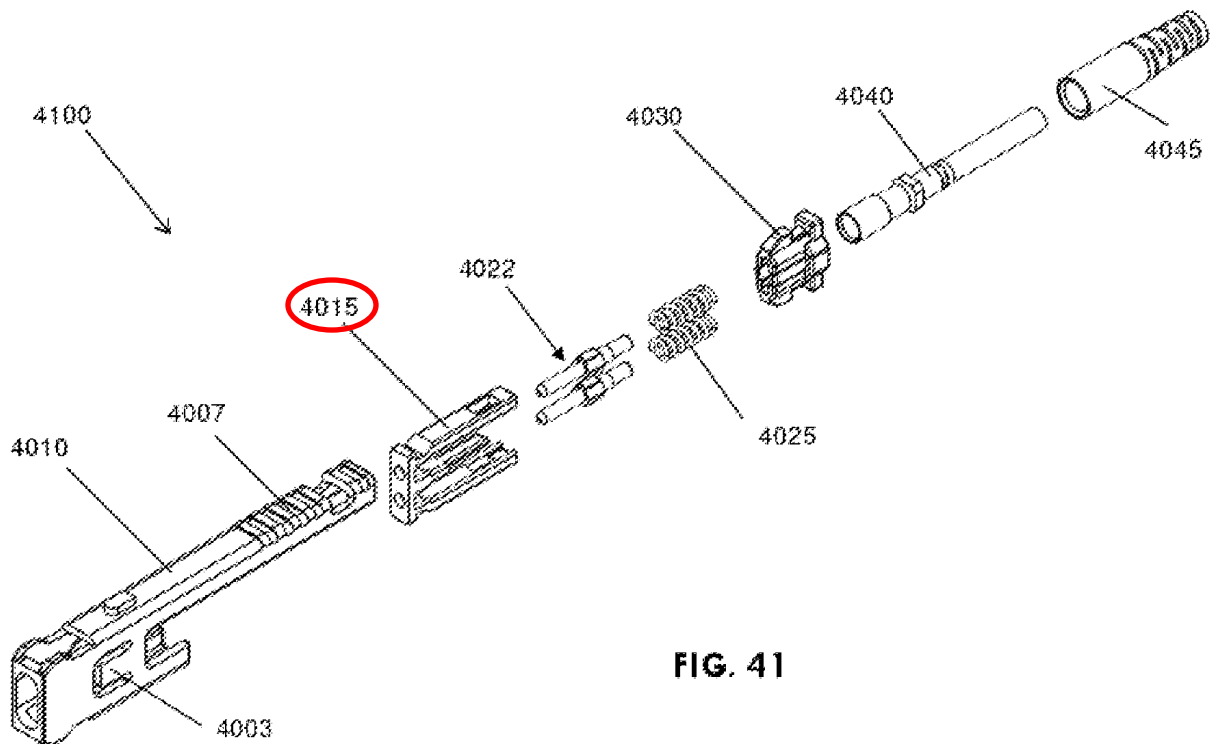
The POSA would have had a reasonable expectation of success in making this modification as one-piece and two-piece crimp bodies are known alternatives and each connect to the fiber optic cable by crimping. EX1005: ¶[0040]; EX1002: ¶428.

Therefore, the Chen/Chang/Raven/Takano'209 combination renders this claim obvious. EX1002: ¶429.

B. Claim 15

Chen's positioning chambers (42) comprise ferrule seats for seating the ferrules (1) in position within the casing (4). EX1011: ¶[0032]; EX1002: ¶430.

Takano'209's optical connector (4100) of Fig. 41 includes a front body (4015) with an elongated middle wall (4260). EX1003: ¶¶[0137]-[0138]; EX1002: ¶431.



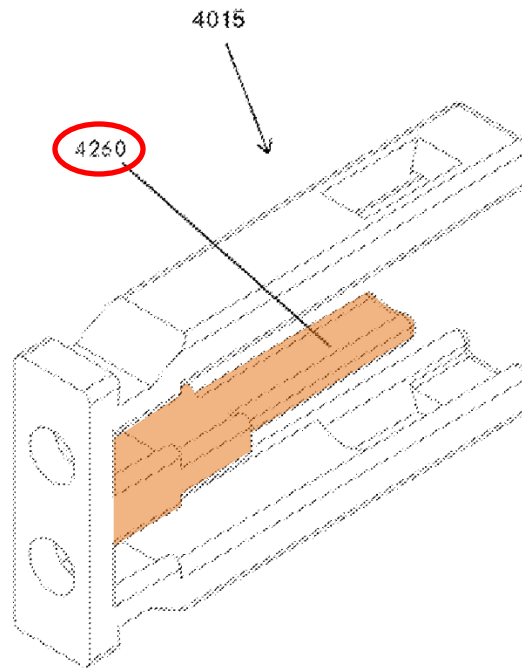


FIG. 42A

EX1003: Figs. 41 and 42A (annotated).

Kiani also teaches ferrule carrier (810) with a rib (924). EX1015: ¶¶[0069], [0074]; EX1002: ¶432.

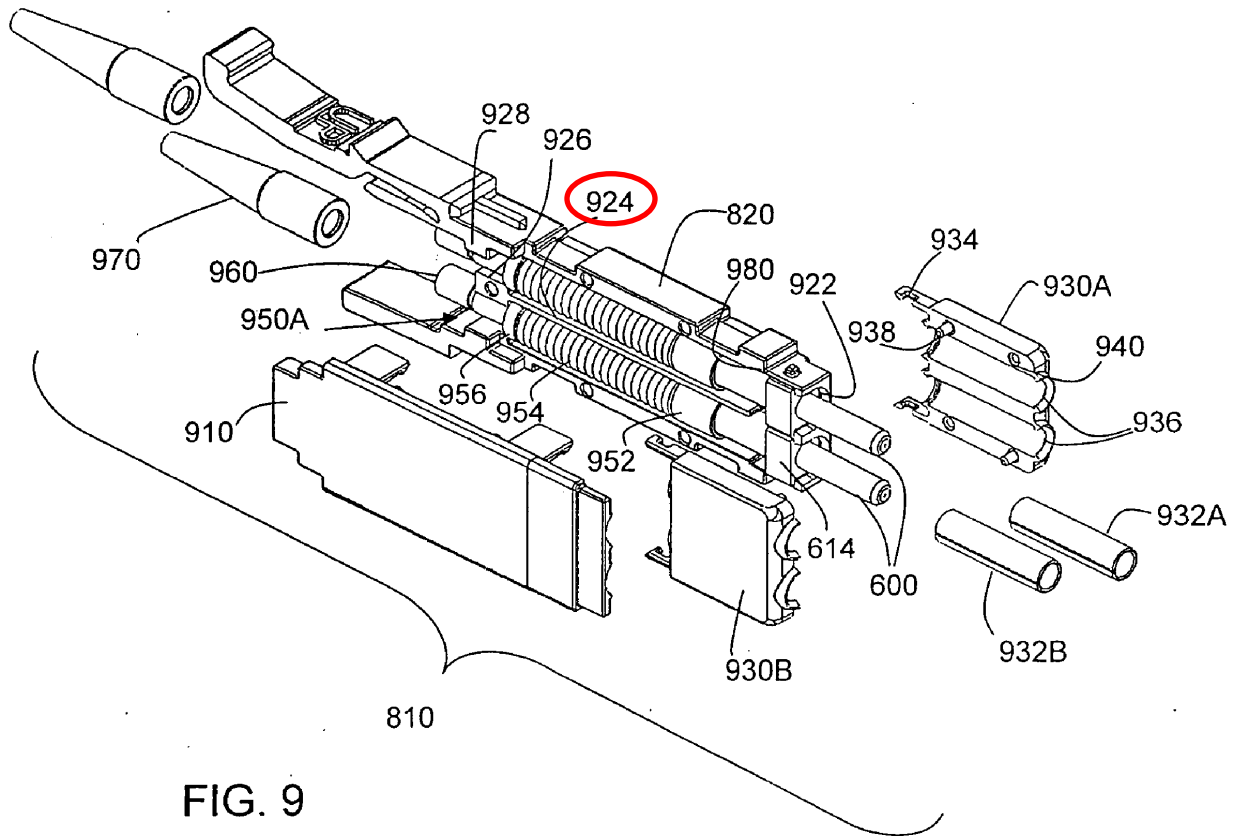


FIG. 9

EX1015: Fig. 9 (annotated).

It would have been obvious to modify Chen's casing (4) in view of Takano'209 (or Kiani) to add the elongated middle wall (4260) (or Kiani's rib) for the reasons discussed in Section VIII(B). EX1003: ¶[0138]; EX1015: ¶[0074] (a rib "to ensure that spring(s) 954 stay positioned."); EX1002: ¶433.

This modification would have also been nothing more than the application of a known technique (Takano'209's middle wall (or Kiani's rib)) to improve a similar device (the optical connector of the Chen/Chang/Raven combination) in the same way to yield predictable results (preventing entanglement of the elastic elements). EX1002: ¶434.

In making this modification, the POSA would have added Takano'209's middle wall (or Kiani's rib) between Chen's ferrule assemblies and positioning chambers (42). EX1002: ¶435. The added middle wall (or Kiani's rib) would extend rearward into Chen's casing—either stopping short of the orifice (41) or being narrower than the central portion of the front opening in the sleeve body so as not to interfere with insertion of the sleeve body into the casing. EX1002: ¶435.

A POSA would have had a reasonable expectation of success in making this modification because the middle wall (or Kiani's rib) would serve the same function and be in generally the same position in Chen as in Takano'209 (or Kiani). EX1002: ¶436. This modification would require only minor changes in dimensions and shapes of molded parts (e.g., casing), well within the POSA's capabilities. EX1002: ¶436.

This modification results in the optical connector of the Chen/Chang/Raven combination having the middle wall (or Kiani's rib), which meets the requirement of the wall in claim 15 because it forms a wall between the locations where two ferrule assemblies are seated in Chen's casing and it extends rearward relative to where the ferrule assemblies are seated in Chen's positioning chambers. EX1002: ¶437.

Therefore, the Chen/Chang/Raven/Takano'209 (or Kiani) combination renders this claim obvious. EX1002: ¶438.

C. Claim 16

In the optical connector of the Chen/Chang/Raven combination modified in view of Takano'209 (or Kiani) (Section XXI(B)), Takano'209's elongated middle wall (or Kiani's rib) is "interposed between the ferrules and springs when the front body is assembled." EX1003: ¶[0138]; EX1002: ¶439. This requires a radial gap to accommodate Chen's elastic elements between the added middle wall and the cylindrical rear portions of each block piece, which elastic elements "fit[] over." EX1011: ¶[0028]; EX1002: ¶439.

Therefore, the Chen/Chang/Raven/Takano'209(or Kiani) combination renders this claim obvious. EX1002: ¶440.

XXII.GROUND 18: Claim 17 Would Have Been Obvious Over Chen/Chang/Raven in view of Henke

It would have been obvious to modify the optical connector of the Chen/Chang/Raven combination so that each block piece includes an integral lead-in tube like the lead-in tube in Fig. 7A of Henke for the reasons discussed in Section XII. EX1002: ¶¶441-442.

This modification would have been nothing more than combining known prior art elements (Chen's block piece and Henke's lead-in tube) according to known methods (arrangement taught by Henke) to yield predictable results (optical connector with a lead-in tube for an optical fiber). EX1002: ¶443.

This modification would have also been nothing more than the application of a known technique (Henke's lead-in tube) to improve a similar device (Chen's connector) in the same way to yield predictable results (optical connector with a lead-in tube for an optical fiber). EX1002: ¶444. For example, the POSA would recognize that the integrated lead-in tubes would assist with guiding the fibers into the ferrules during assembly and prevent adhesive from leaking onto the elastic elements when the fibers are adhered in place. EX1002: ¶444.

The proposed modification would have been well within the capabilities of a POSA, and the POSA would have had a reasonable expectation of success for the reasons discussed in Section XII. EX1002: ¶445.

In the Chen/Chang/Raven/Henke combination, the integrated lead-in tubes would extend from front end portions integrated with Chen's block piece, through the elastic elements and the interior of the modified sleeve body, to rear ends protruding slightly beyond the rear end of the single-barrel back post of the modified sleeve body. EX1002: ¶446. In the Chen/Chang/Raven/Henke connector, the lead-in tubes extend past the rear end of Chen's casing and avoid leakage of an adhesive inserted into the lead-in tube into the main body, as taught by Henke. EX1008: ¶[0041]; EX1002: ¶446.

Therefore, the Chen/Chang/Raven/Henke combination renders this claim obvious. EX1002: ¶447.

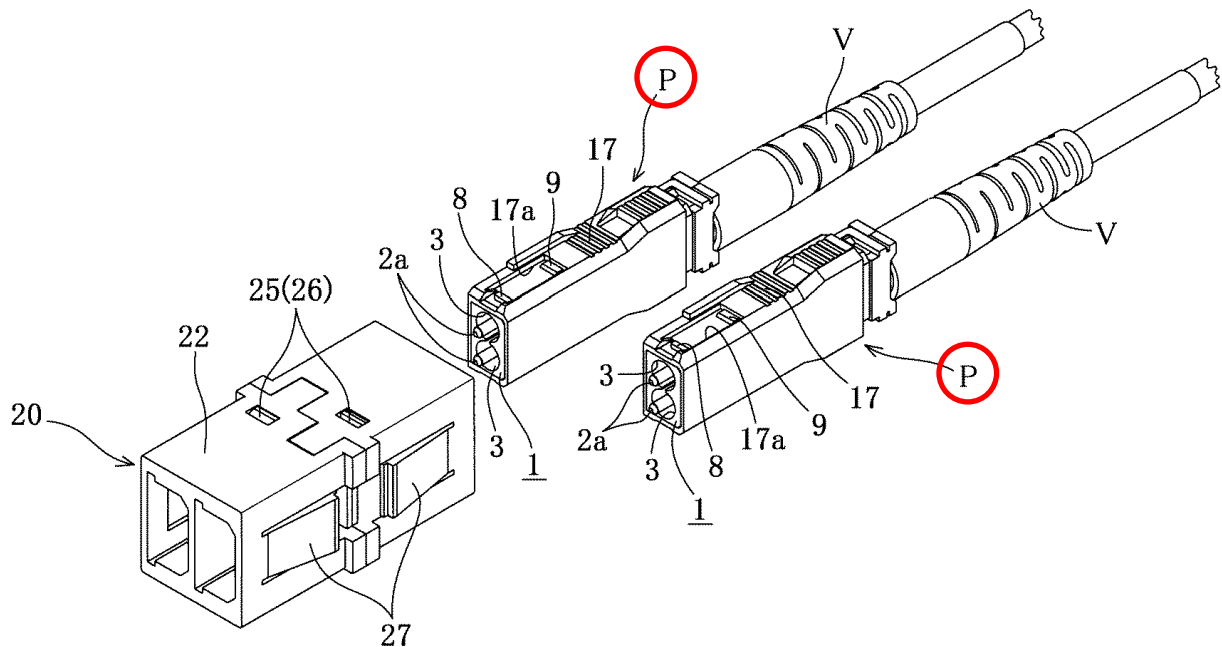
XXIII. GROUND 19: Claims 1-7 and 14-16 are Anticipated by Toyama

A. Independent Claim 1

1.P

Toyama discloses a plug body (P), which is "a fiber optic connector."

EX1016: ¶[0022]; EX1002: ¶¶448-449.



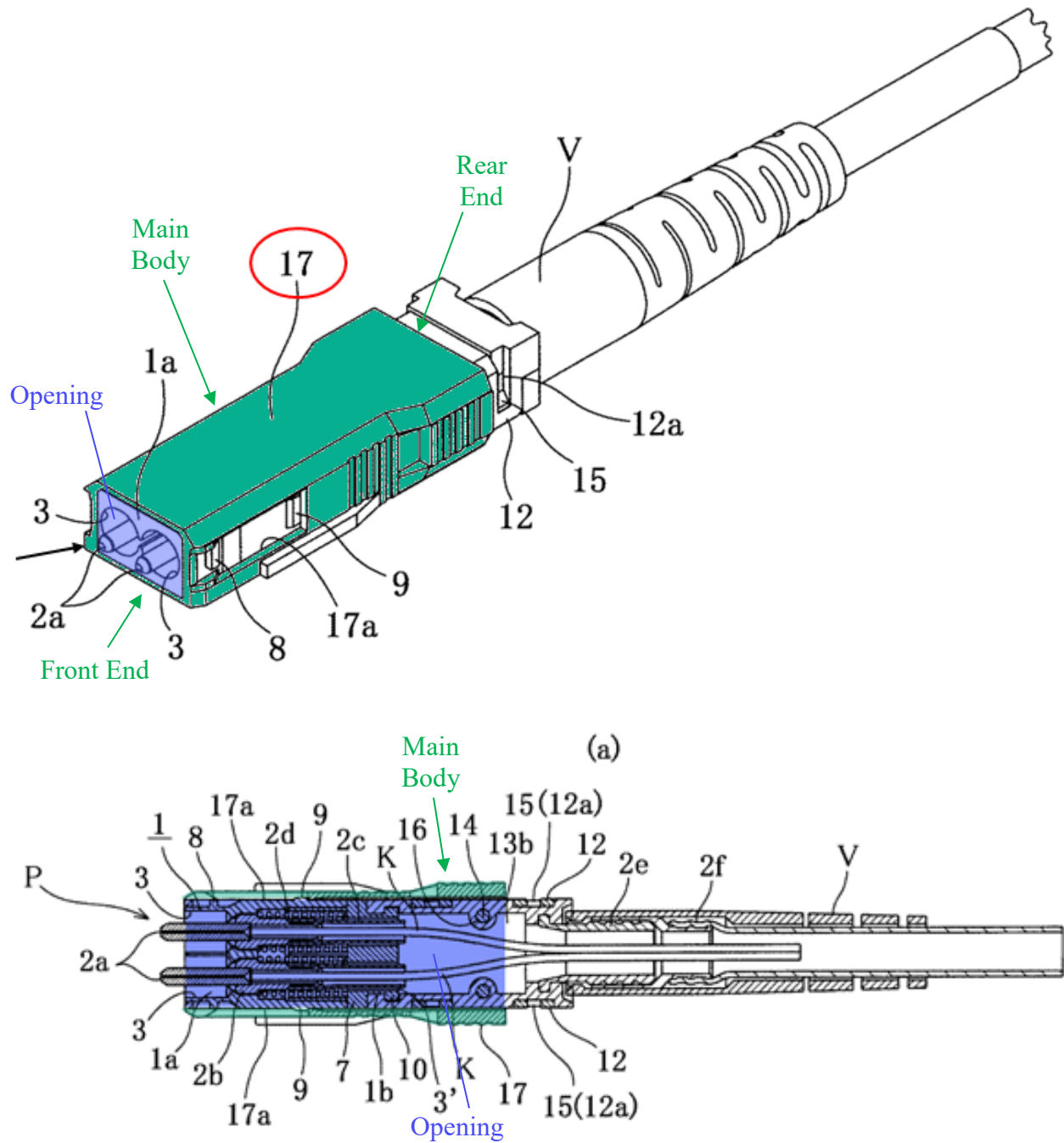
EX1016: Fig. 11 (annotated).

Therefore, Toyama meets 1.P. EX1002: ¶450.

1.a.1

Toyama's knob (17) is a housing having a main body (green) extending between a front end and a rear end and having an opening (blue) extending therebetween. EX1016: ¶¶[0022], [0032] (describing knob (17) as "forming an angular cylindrical shape that can cover the entire plug frame"); EX1002: ¶451.

【 図 6 】

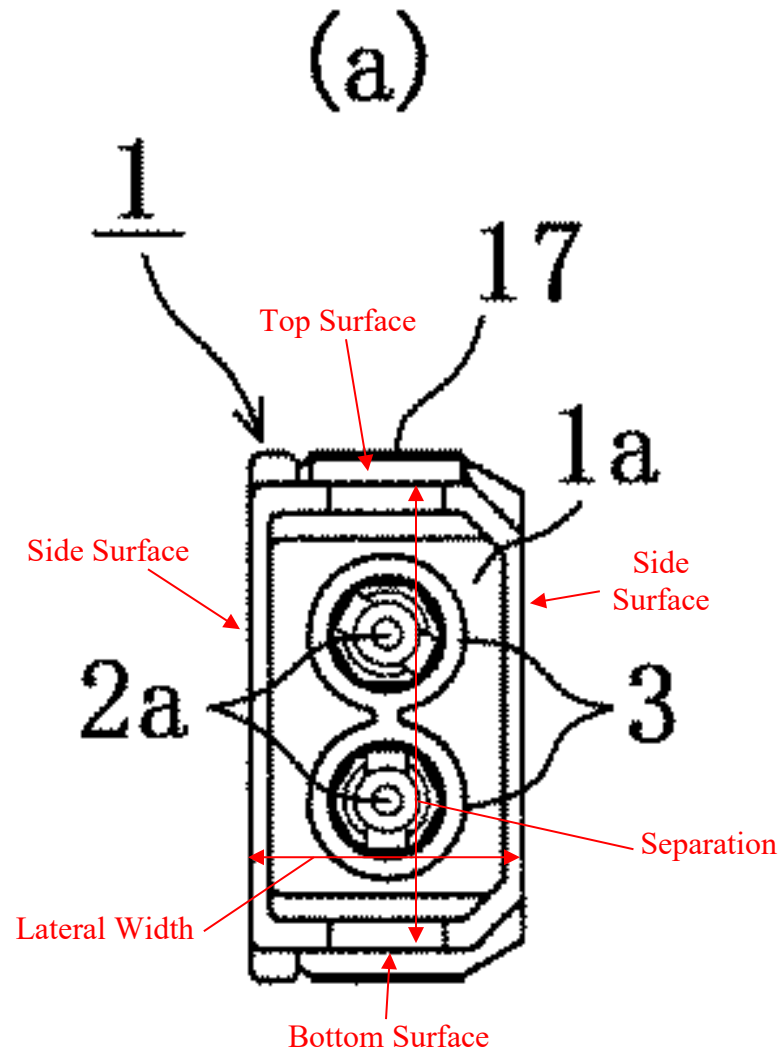


EX1016: Figs. 6 and 8(a) (annotated).

Therefore, Toyama meets 1.a.1. EX1002: ¶452.

1.a.2

Toyama's knob (17) has top and bottom surfaces bound by two opposing side surfaces with a lateral width between the two side surfaces being less than a separation between the top and bottom surfaces. EX1002: ¶453.

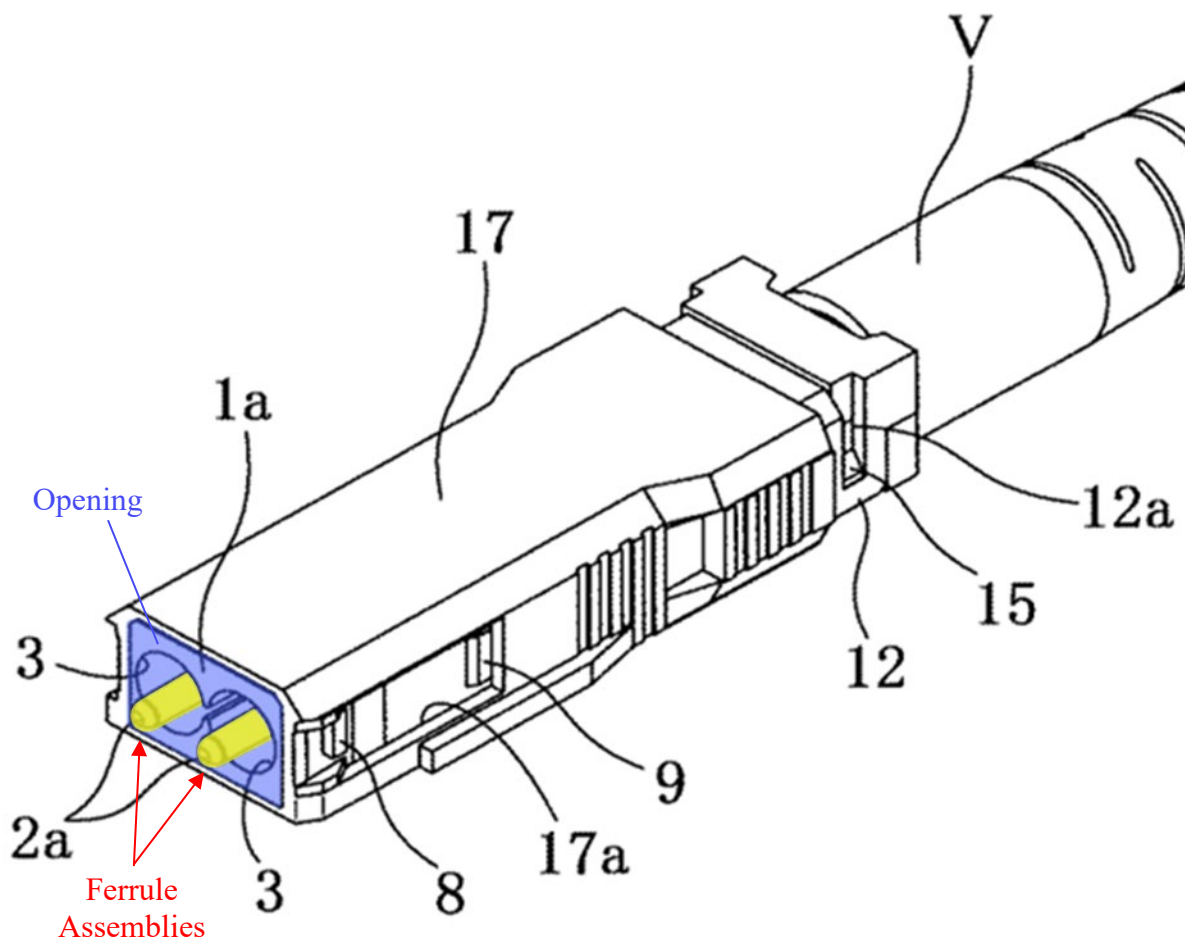


EX1016: Fig. 7(a) (annotated).

Therefore, Toyama meets 1.a.2. EX1002: ¶454.

1.b.1

Toyama discloses two ferrule assemblies disposed within the opening of the knob (17). EX1002: ¶455.



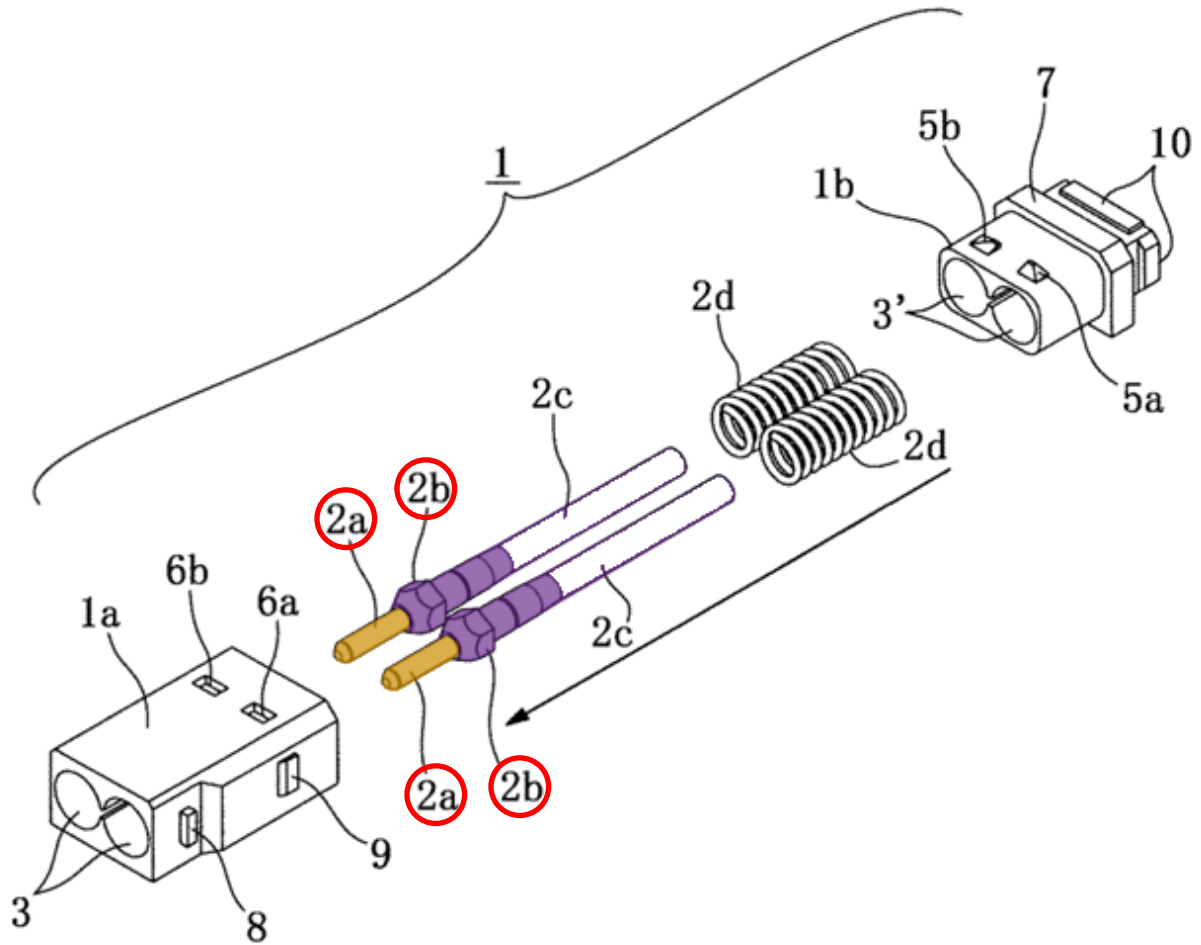
EX1016: Fig. 6 (annotated).

Therefore, Toyama meets 1.b.1. EX1002: ¶456.

1.b.2

Each ferrule assembly includes a ferrule (2a) held by a ferrule holder (2b).

EX1016: ¶[0022]; EX1002: ¶457. Each ferrule (2a) extends forwardly away from the front end of the ferrule holder (2b). EX1002: ¶457.

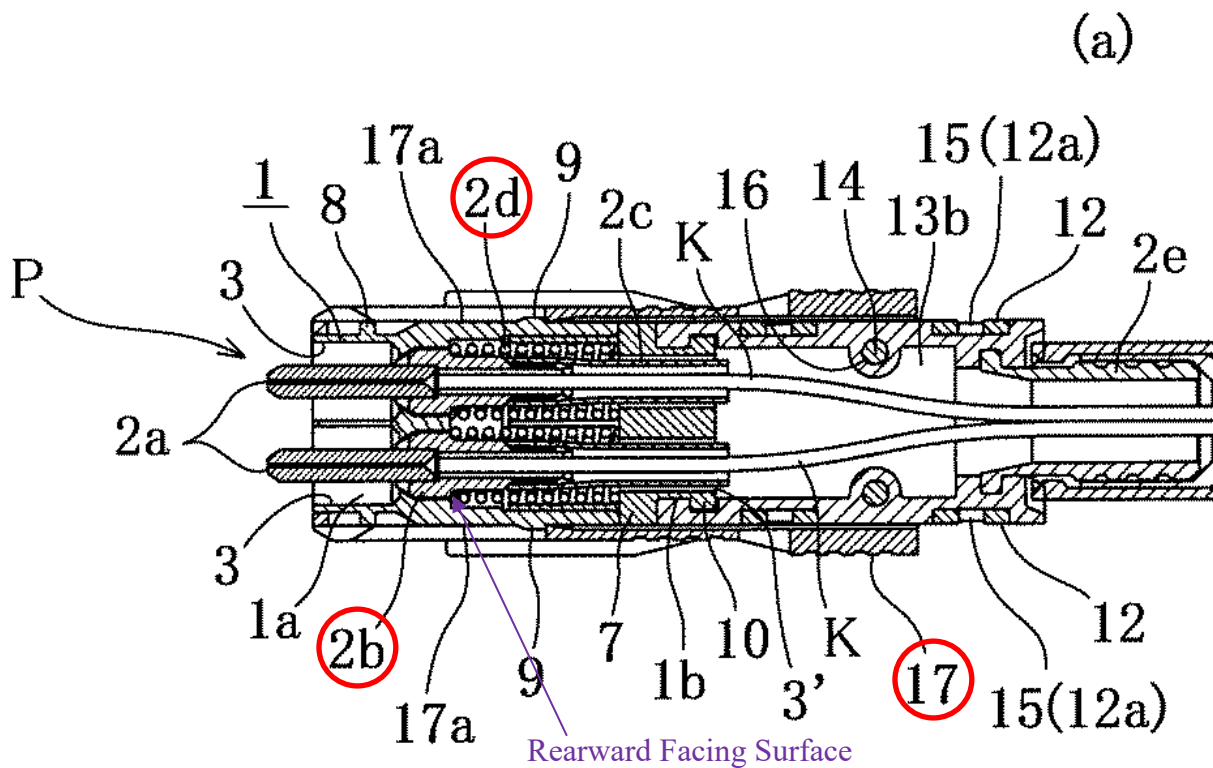


EX1016: Fig. 1 (annotated)

Therefore, Toyama meets 1.b.2. EX1002: ¶458.

1.c

Toyama discloses two springs (2d) retained within the knob (17). EX1016: ¶[0024]; EX1002: ¶459. Each spring (2d) engages a rearward facing surface of a ferrule holder (2b) and extends towards the rear end of the knob (17) to bias the ferrule assemblies toward the front end of the knob (17). EX1016: ¶[0024]; EX1002: ¶459.



EX1016: Fig. 8(a) (annotated).

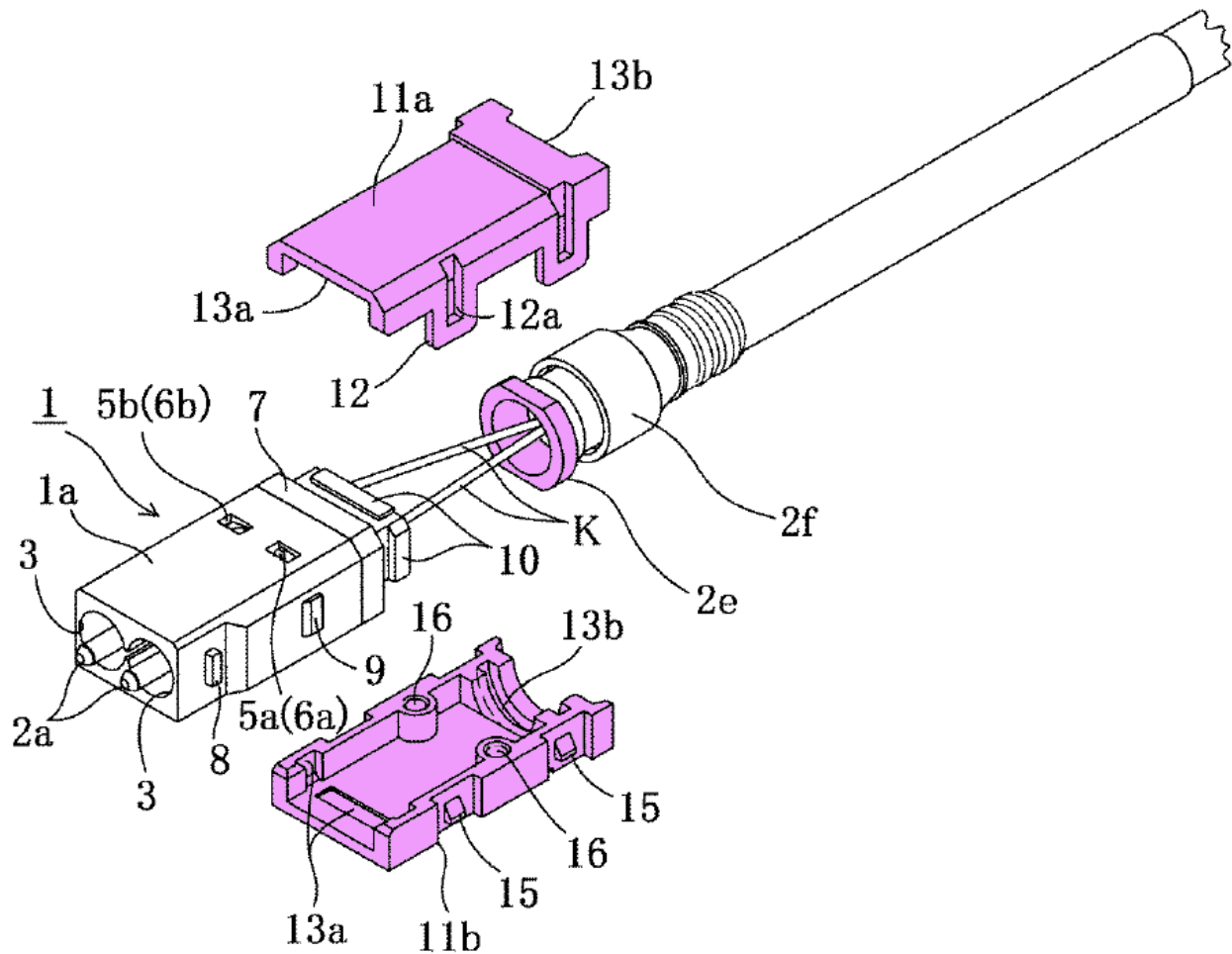
Therefore, Toyama meets 1.c. EX1002: ¶460.

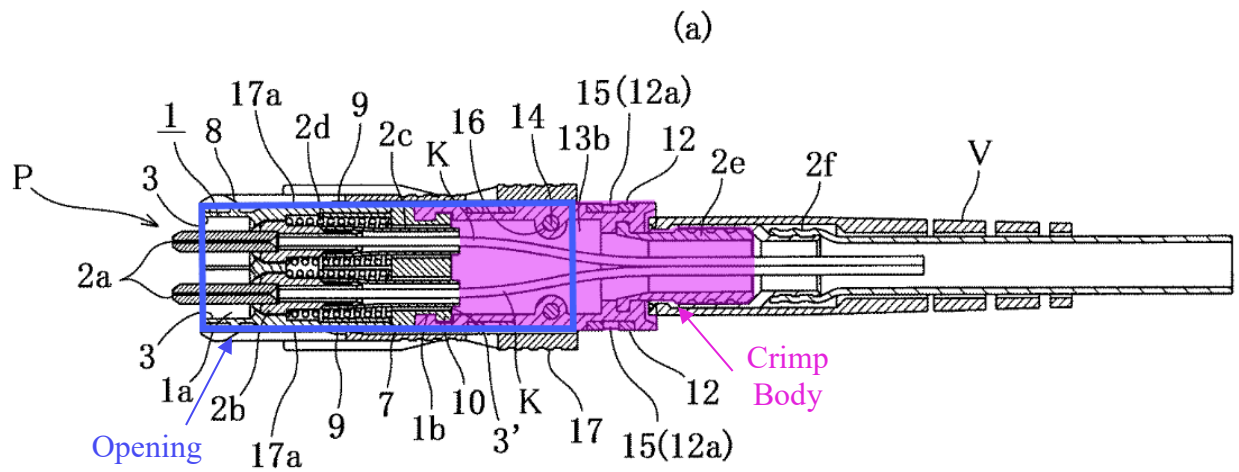
1.d.1

Toyama discloses a three-piece crimp body made up of stop ring (2e) (which is back post for crimped engagement with a crimping ring (2f)) and, the holder portions (11a, 11b) clamped onto the case (1) and the stop ring (2e) from the outside. EX1016: ¶[0022]; EX1002: ¶461. The three parts (2e, 11a, 11b) form "a crimp body" and are secured to the plug body (P), specifically the case (1).

EX1002: ¶461. The three-piece crimp body is partially disposed in the opening at the rear end of the knob (17). EX1016: ¶[0022]; EX1002: ¶461. The '466 Patent

explains a crimp body is an element that is “attached to the housing,” has a cylindrical “outer surface 204 to receive a crimp band,” and allows the optical fibers to spread out while “not [being] bent beyond their bend radius.” EX1001: 6:51, 6:64, 7:2-5. Toyama’s three-piece crimp body preforms all of these functions. EX1016: ¶[0022], Fig. 8(a).



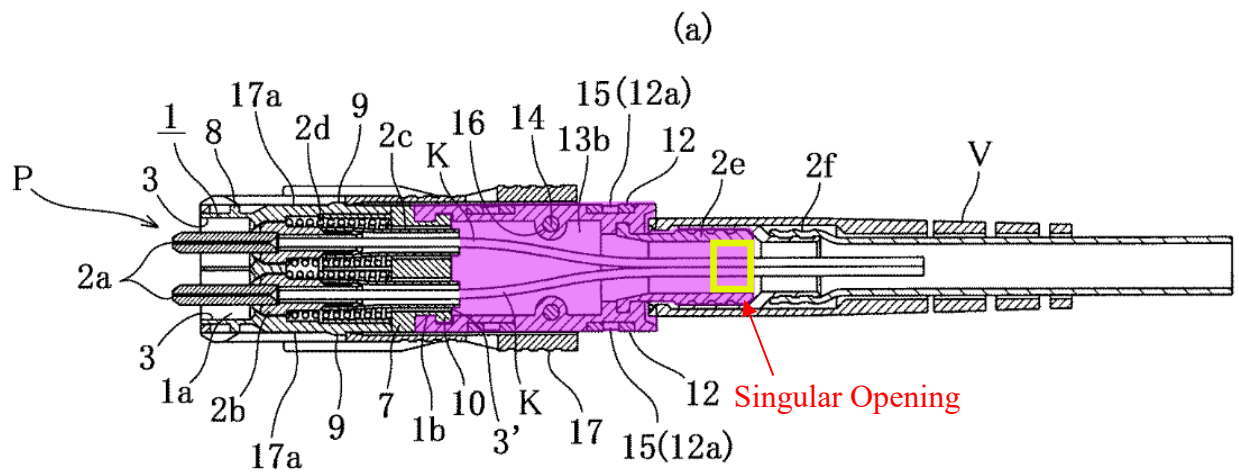


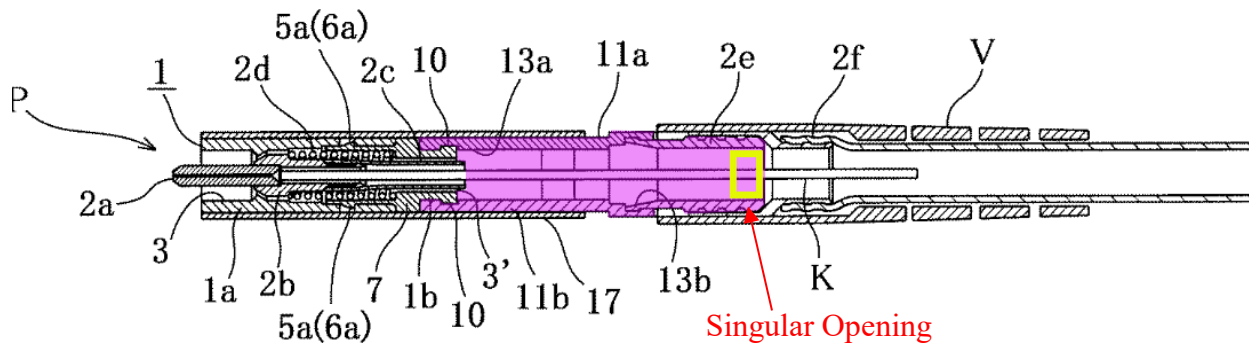
EX1016: Figs. 3 and 8(a) (annotated).

Therefore, Toyama meets 1.d.1. EX1002: ¶462.

1.d.2

The stop ring (2e) forms a singular opening at the rear end of Toyama's three-piece crimp body. EX1002: ¶463.





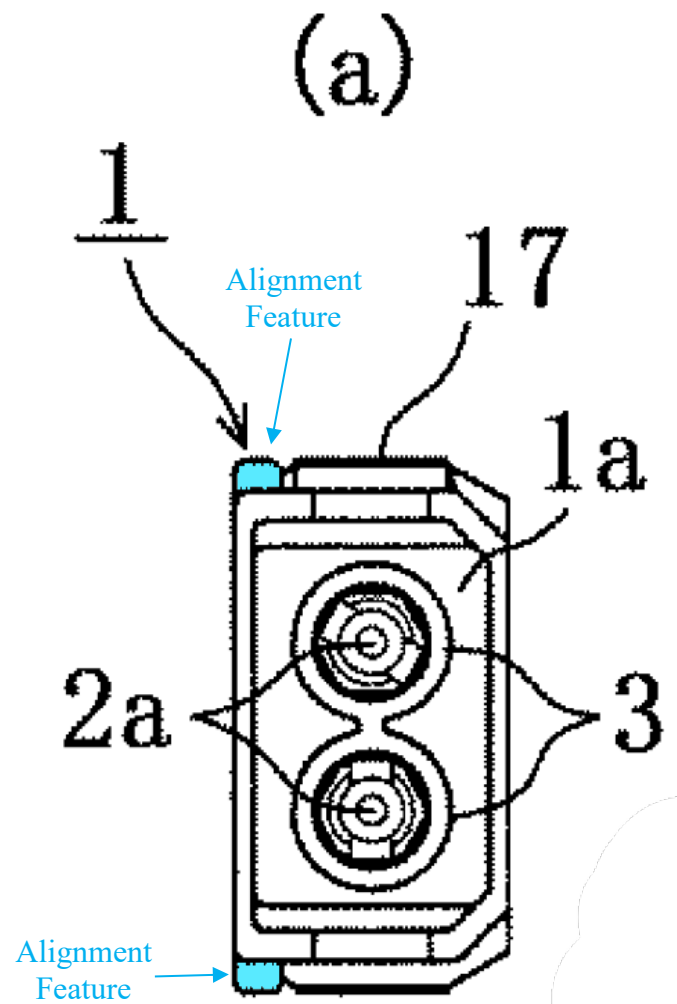
EX1016: Figs. 8(a)&(b) (annotated).

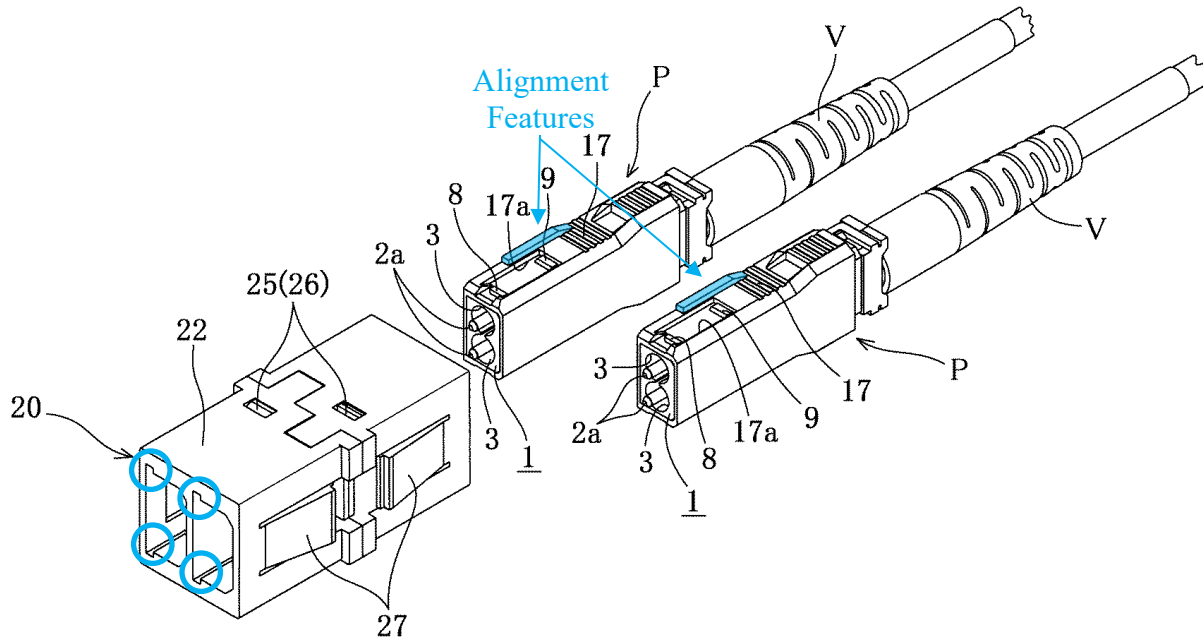
Therefore, Toyama meets 1.d.2. EX1002: ¶464.

1.e

Toyama discloses alignment features on the top surface and the bottom surface of the knob (17). EX1002: ¶465. The alignment features are keys that fit within keyways of the adapter (20) to guide the connector into the adapter.

EX1002: ¶465.





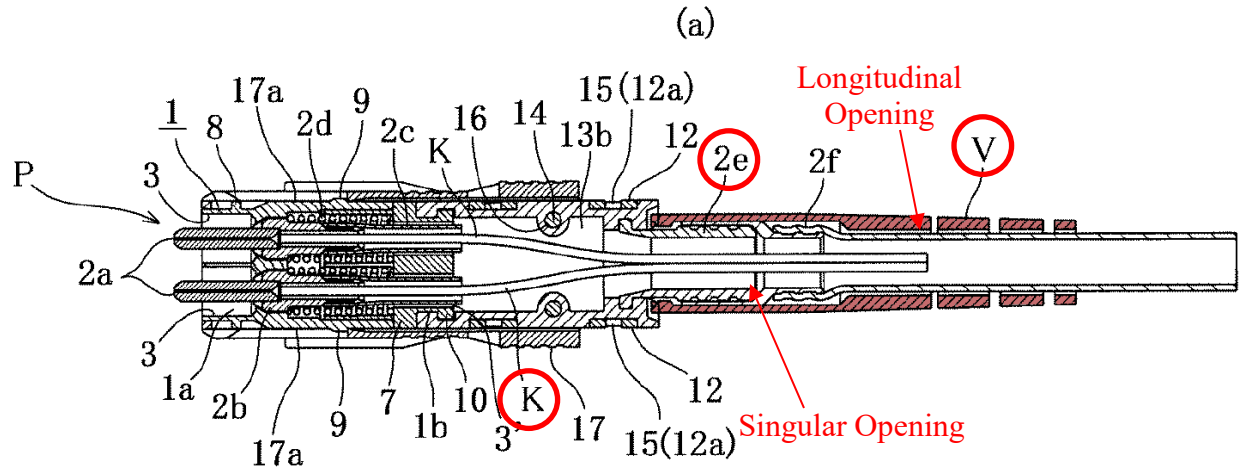
EX1016: Figs. 7(a) and 11 (annotated).

Therefore, Toyama meets 1.e. EX1002: ¶466.

1.f

Toyama discloses a strain relief boot (V) connected to the stop ring (2e).

EX1016: ¶[0022]; EX1002: ¶467. The boot (V) has a longitudinal opening in continuum with the singular opening of the crimp body through which optical fibers (K) pass. EX1002: ¶467.

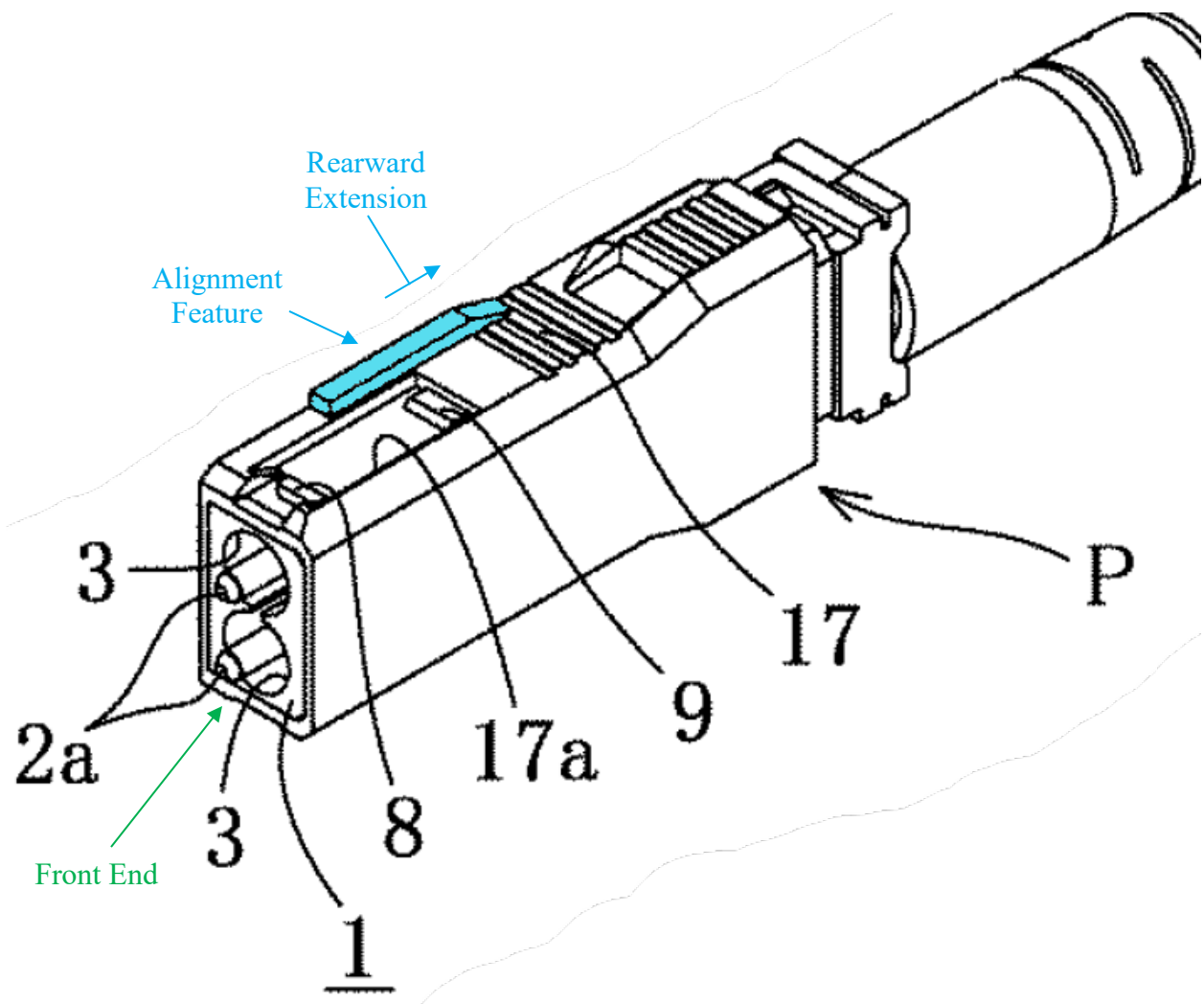


EX1016: Fig. 8(a) (annotated).

Therefore, Toyama meets 1.f. EX1002: ¶468.

B. Claim 2

Each alignment feature is positioned rearward of the front end of the knob (17) and extends rearward. EX1002: ¶469.

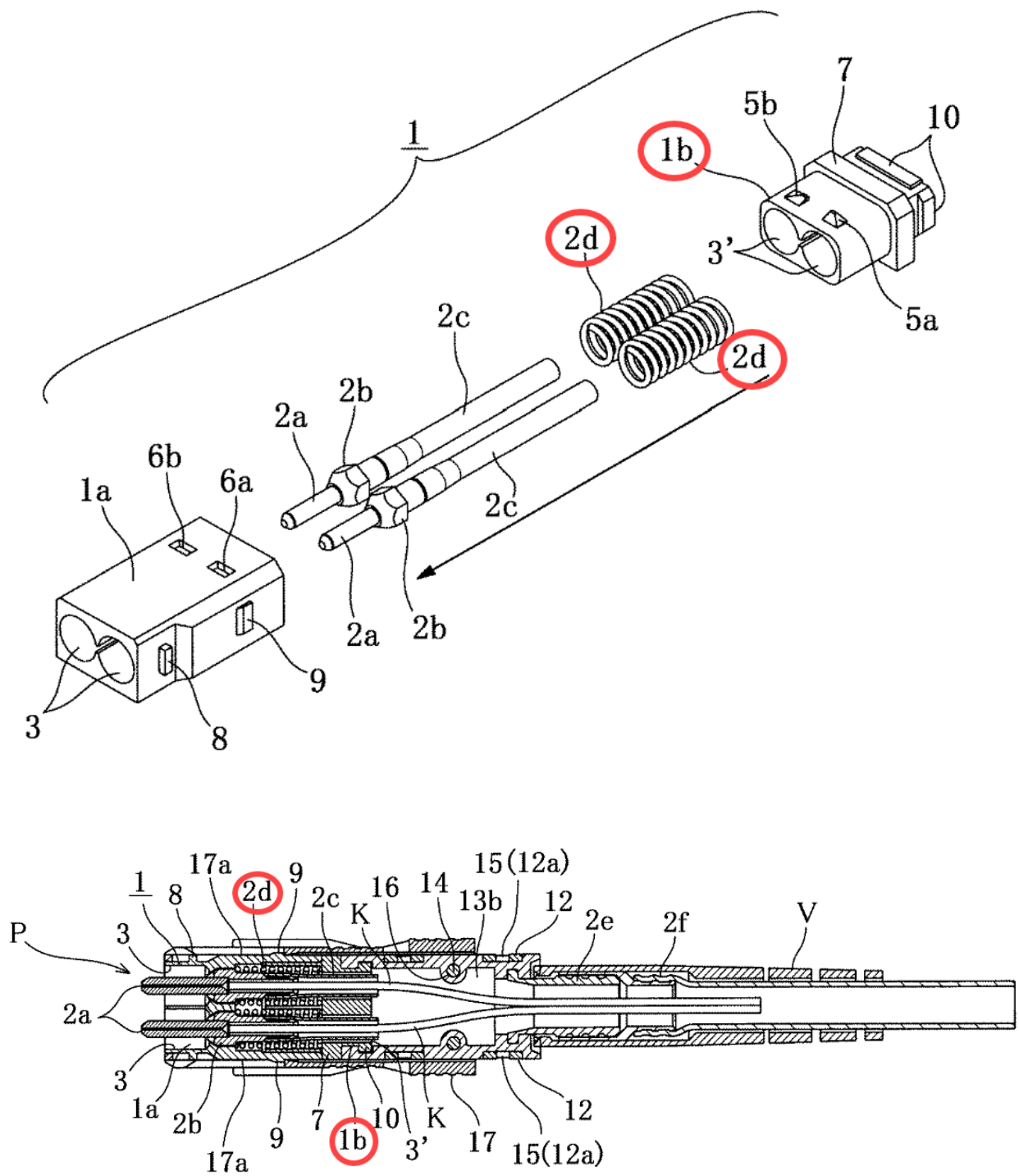


EX1016: Fig. 11 (annotated).

Therefore, Toyama meets this claim. EX1002: ¶470.

C. Claim 3

Toyama discloses a rear case portion (1b), a spring push, that engages rear portions of the springs (2d). EX1016: ¶[0022]; EX1002: ¶471.

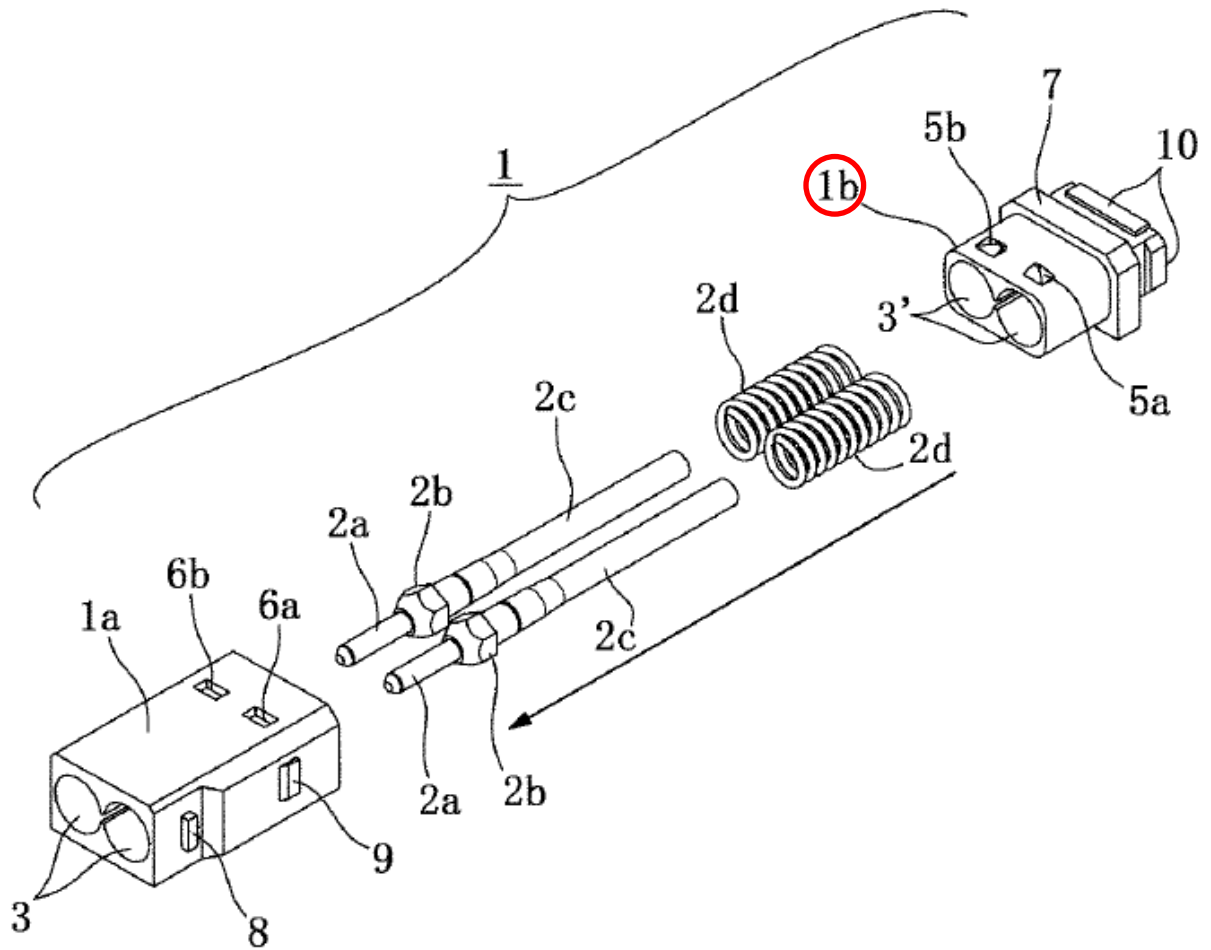


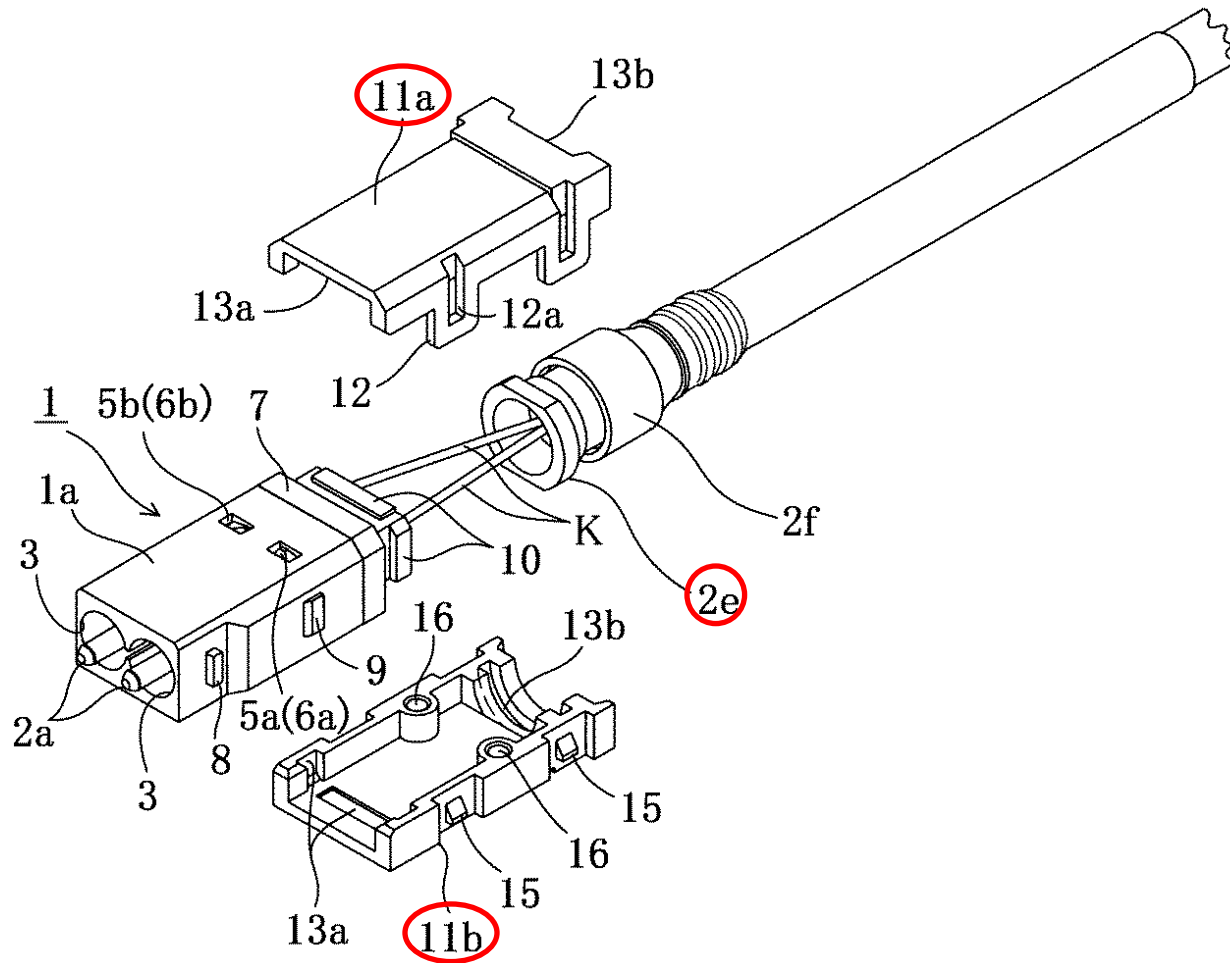
EX1016: Figs. 1 and 8(a) (annotated).

Therefore, Toyama meets this claim. EX1002: ¶472.

D. Claim 4

The rear case portion (1b) is separate from the three-piece crimp body (2e, 11a, 11b). EX1002: ¶473.



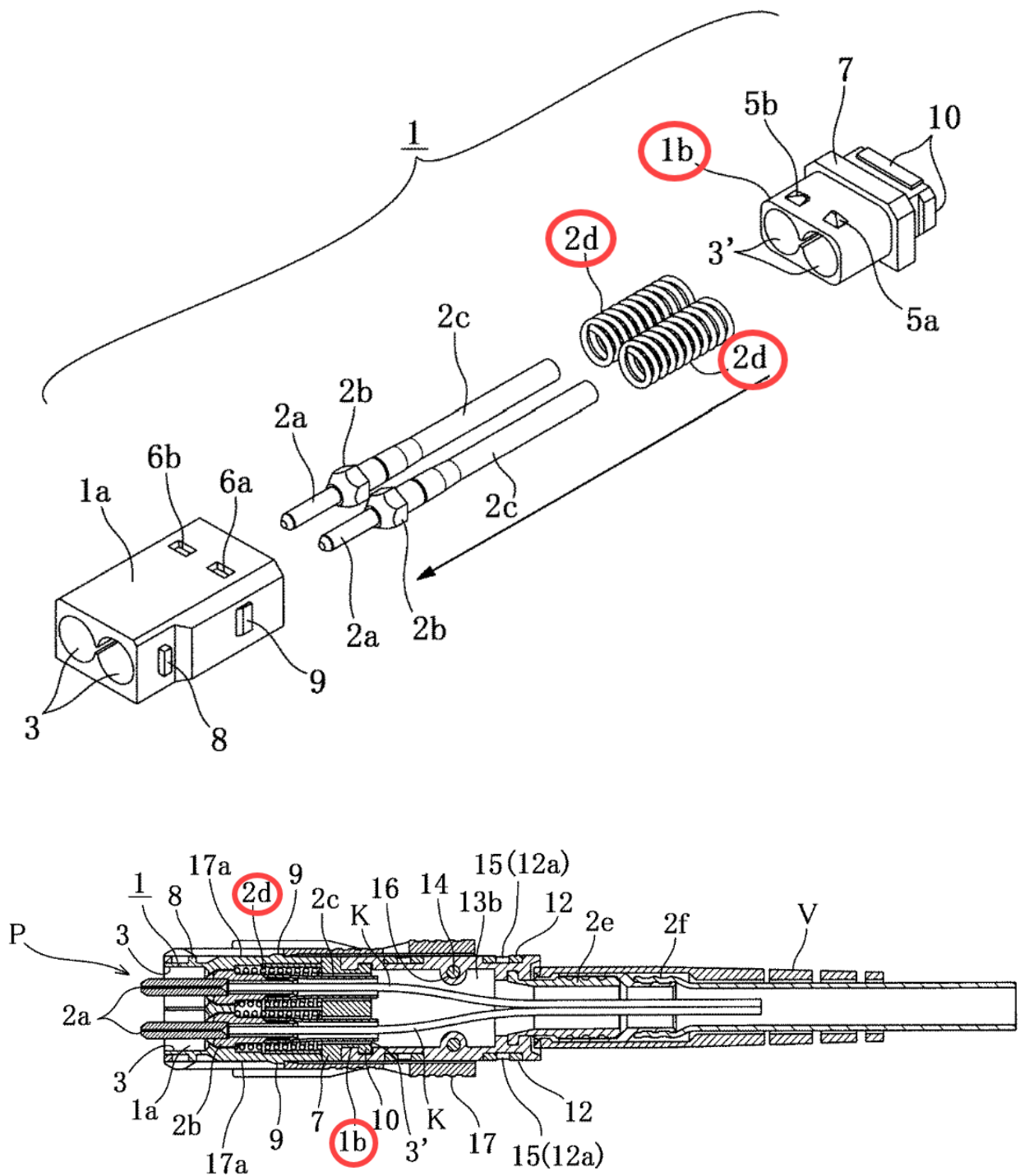


EX1016: Figs. 1 and 3 (annotated).

Therefore, Toyama meets this claim. EX1002: ¶474.

E. Claim 5

The rear case portion (1b) simultaneously engages rear portions of the springs (2d). EX1016: ¶[0022]; EX1002: ¶475.

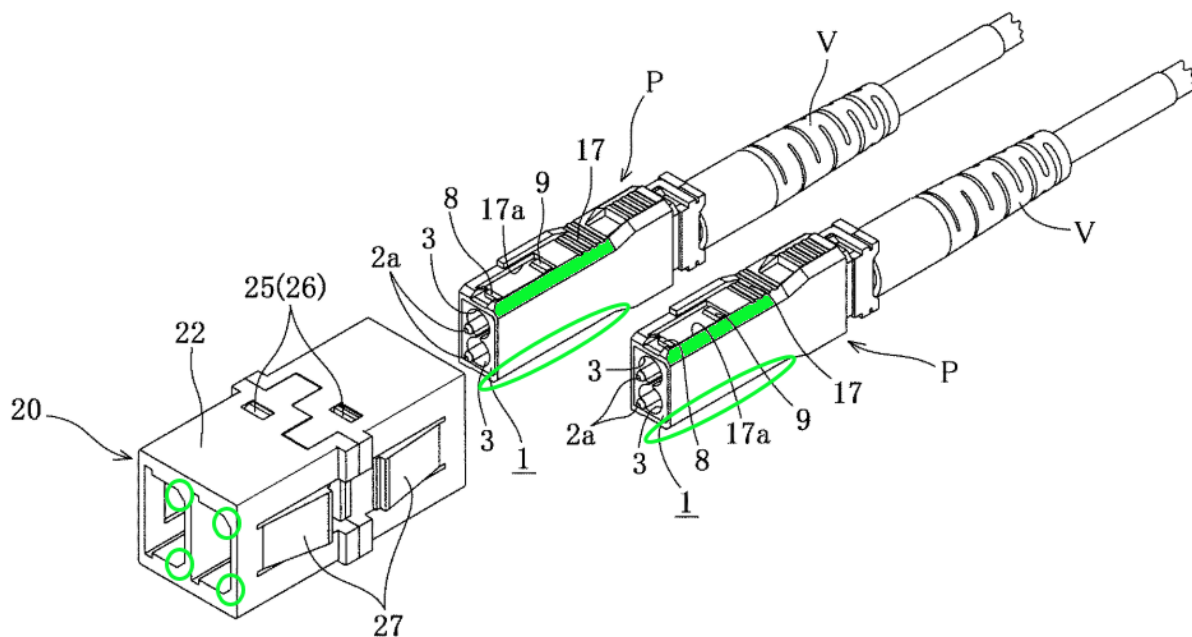


EX1016: Figs. 1 and 8(a) (annotated).

Therefore, Toyama meets this claim. EX1002: ¶476.

F. Claim 6

The corner chamfers on the narrow sides of the knob (17) are "an indicia of polarity" as they indicate in which direction the plug body (P) must be inserted into the adapter (20) (with the outside corner chamfers of the plug body (P) aligned to the inside corner chamfers of the adapter (20)). EX1002: ¶477.



EX1016: Fig. 11 (annotated).

Therefore, Toyama meets this claim. EX1002: ¶478.

G. Claim 7

7.a

Toyama discloses a crimping ring (2f), which is "a crimp band." EX1016: ¶[0022]; EX1002: ¶479. The crimping ring (2f) is secured around an outer surface of the stop ring (2e). EX1016: ¶[0022]; EX1002: ¶479.

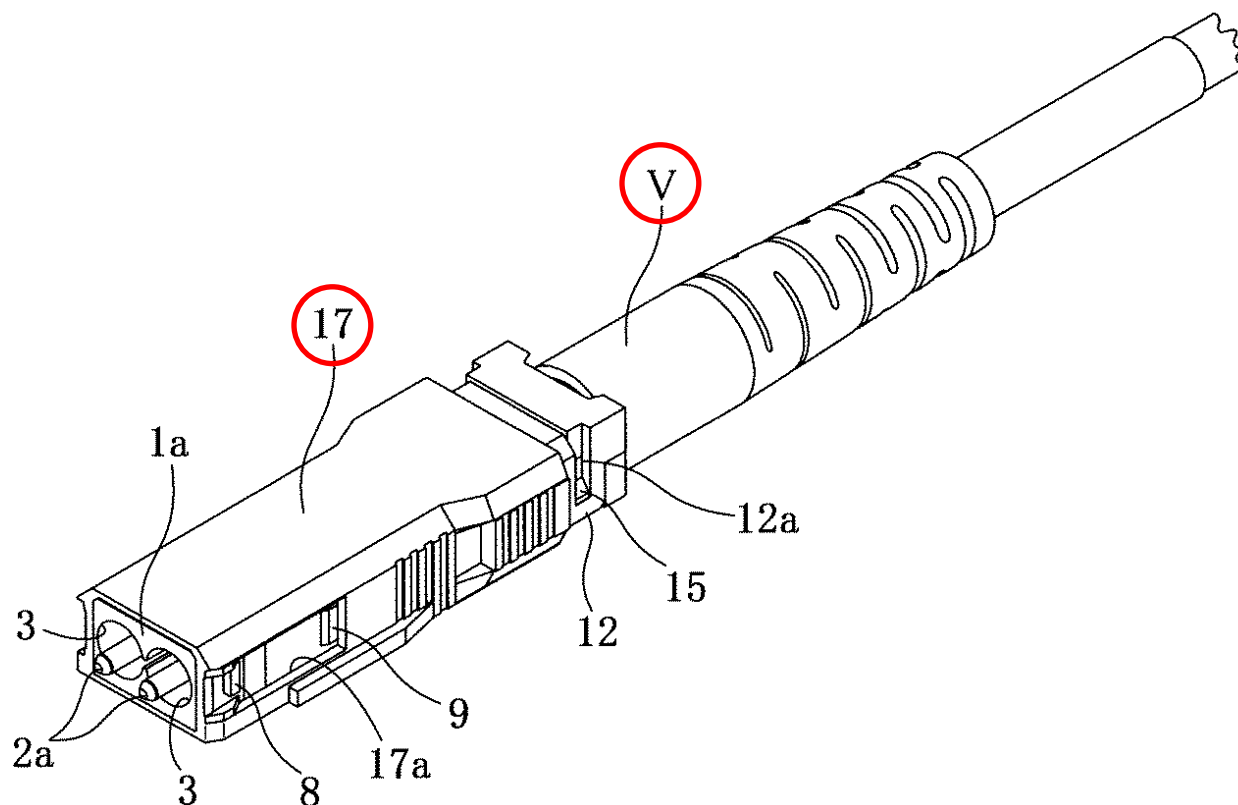
This exploded perspective view shows the assembly of the cable connector. The main components are:

- 1**: The main housing, which includes a front face **1a** with ports **2a** and **3**, and a rear face **5b(6b)** with a locking tab **7**.
- 2e** and **2f**: A cable with a braided shield **2e** and an inner conductor **2f**, terminating in a connector **K**.
- 3**: A small component, possibly a pin or plug, located near the front face **1a**.
- 5a(6a)**: A component on the rear face of the housing, which includes a locking mechanism **9** and a tab **8**.
- 10**: A component that interfaces with the cable connector **K**.
- 11a** and **11b**: Components that interface with the cable connector **K** and the housing.
- 12**: A component that interfaces with the cable connector **K**.
- 13a** and **13b**: Components that interface with the cable connector **K** and the housing.
- 15** and **16**: Components that interface with the cable connector **K** and the housing.

Therefore, Toyama meets 7.a. EX1002: ¶480.

The boot (V) extends rearwardly away from the rear end of the knob (17).

204

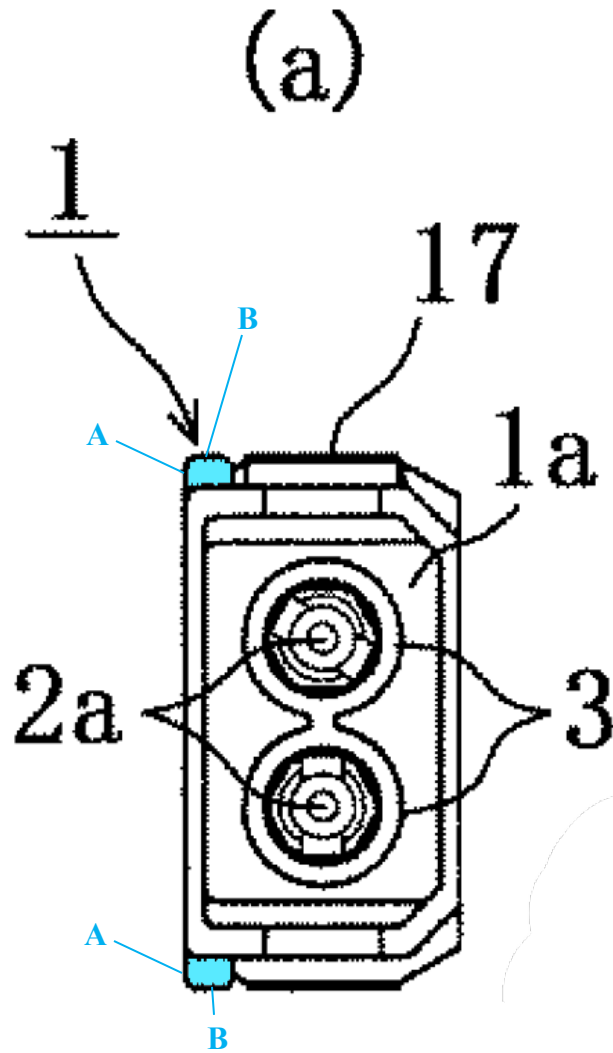


EX1016: Fig. 6 (annotated).

Therefore, Toyama meets 7.b. EX1002: ¶482.

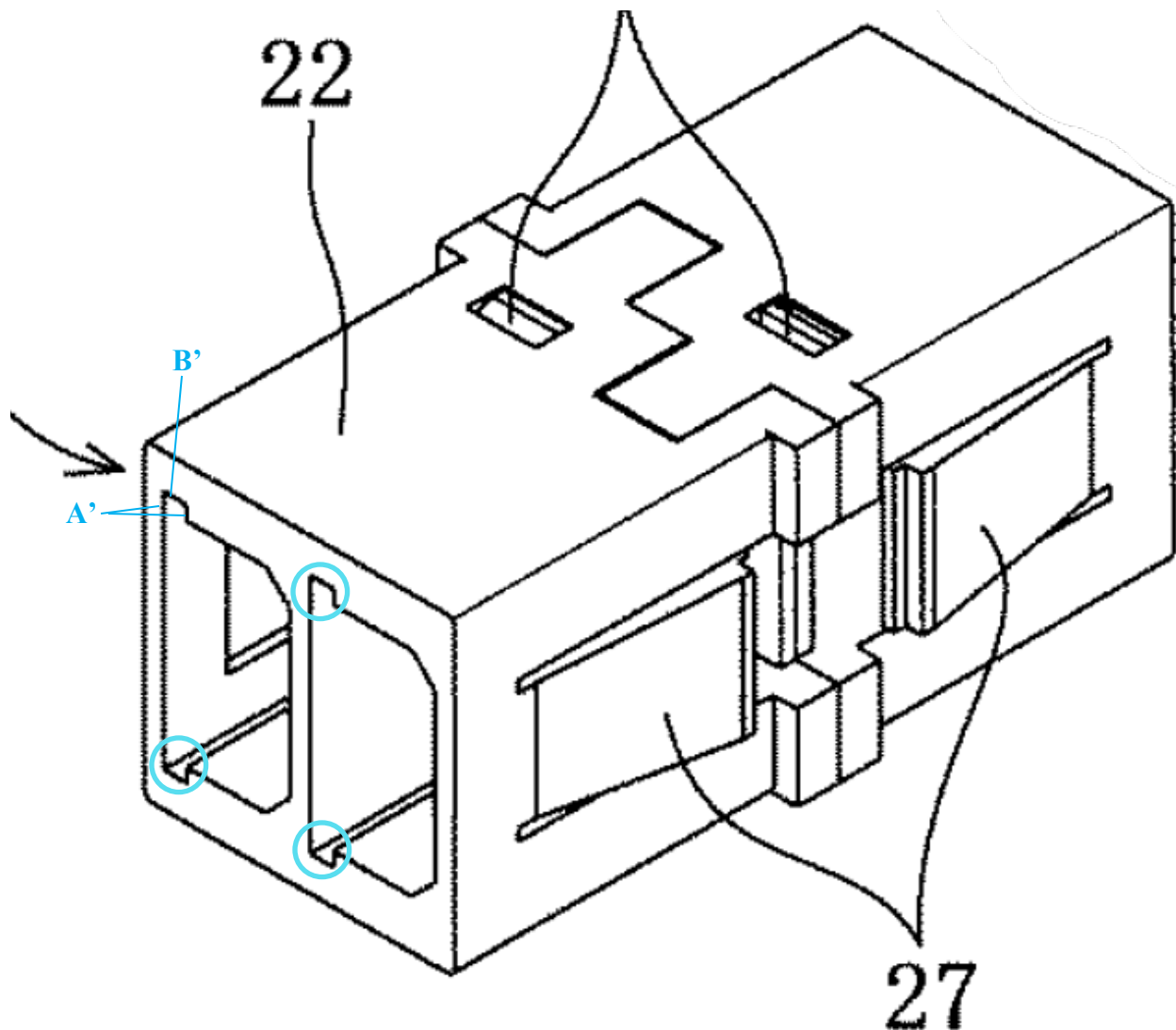
H. Claim 14

Each alignment feature has vertical side surfaces A and a horizontal surface B. EX1002: ¶483. If "vertical alignment feature" and "horizontal alignment feature" are construed to mean a feature that extends vertically or horizontally, respectively, then surfaces A meet "vertical alignment feature" and surface B meets "horizontal alignment feature." EX1002: ¶483.



EX1016: Fig. 7(a) (annotated).

If "vertical alignment feature" and "horizontal alignment feature" are construed to mean a feature capable of engaging a mating alignment structure to align the connector vertically or horizontally, respectively, then surface B meets "vertical alignment feature" because it engages/aligns to surface B' of adapter (20), and surfaces A meets "horizontal alignment feature" because they engage/align to surfaces A' of adapter (20). EX1002: ¶484.

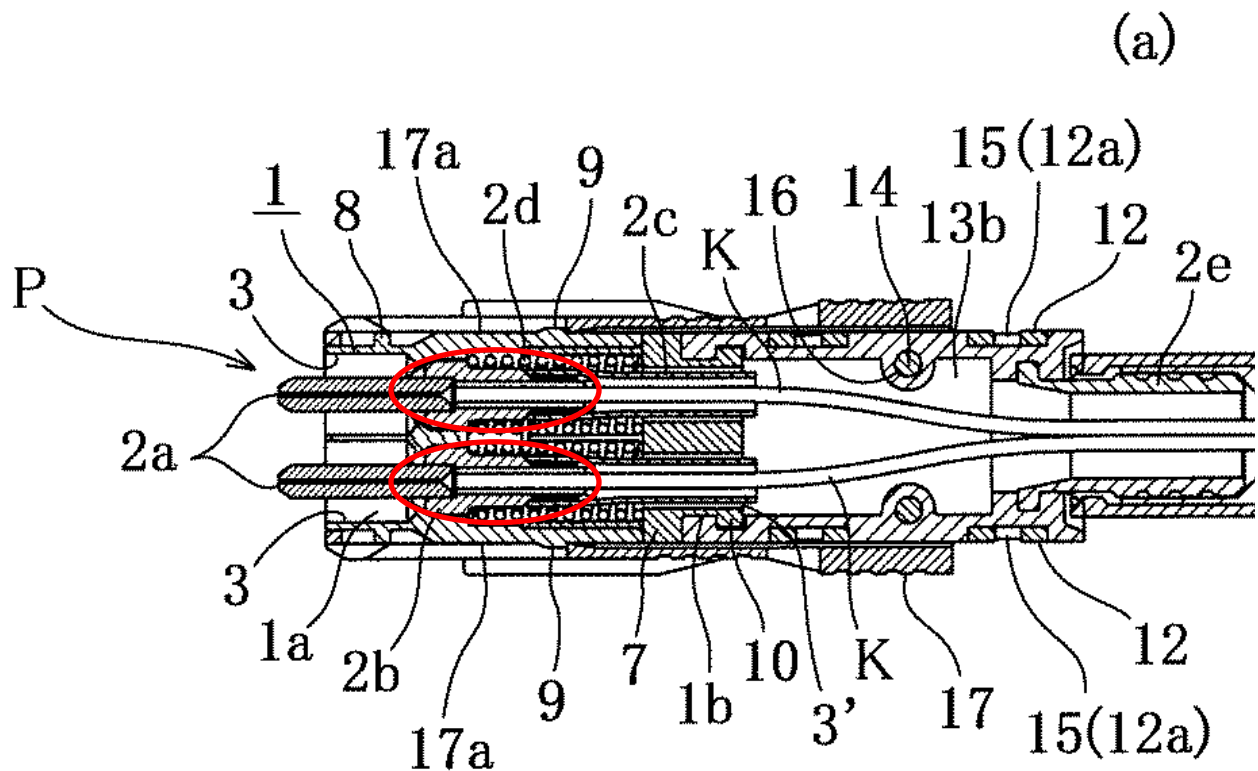


EX1016: Fig. 11 (annotated).

Therefore, Toyama meets this claim. EX1002: ¶485.

I. Claim 15

Toyama discloses ferrules (2a) seated in respective ferrule holders (2b), which are seated in respective openings (3) in the front case portion (1a). EX1016: ¶¶[0022]-[0023]; EX1002: ¶486. Under any construction of this claim, the two ferrule seats are located in the circled areas below. EX1002: ¶486.

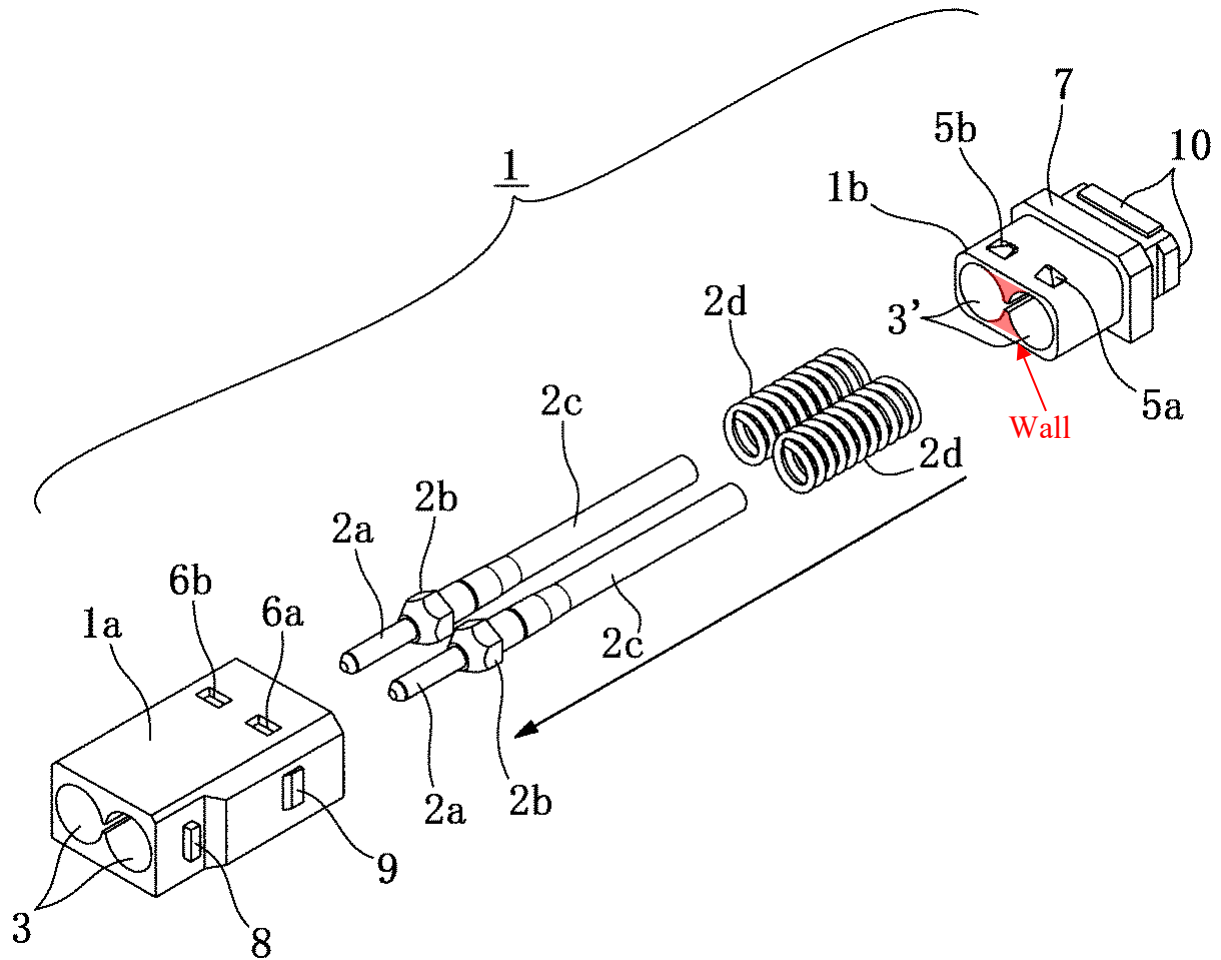


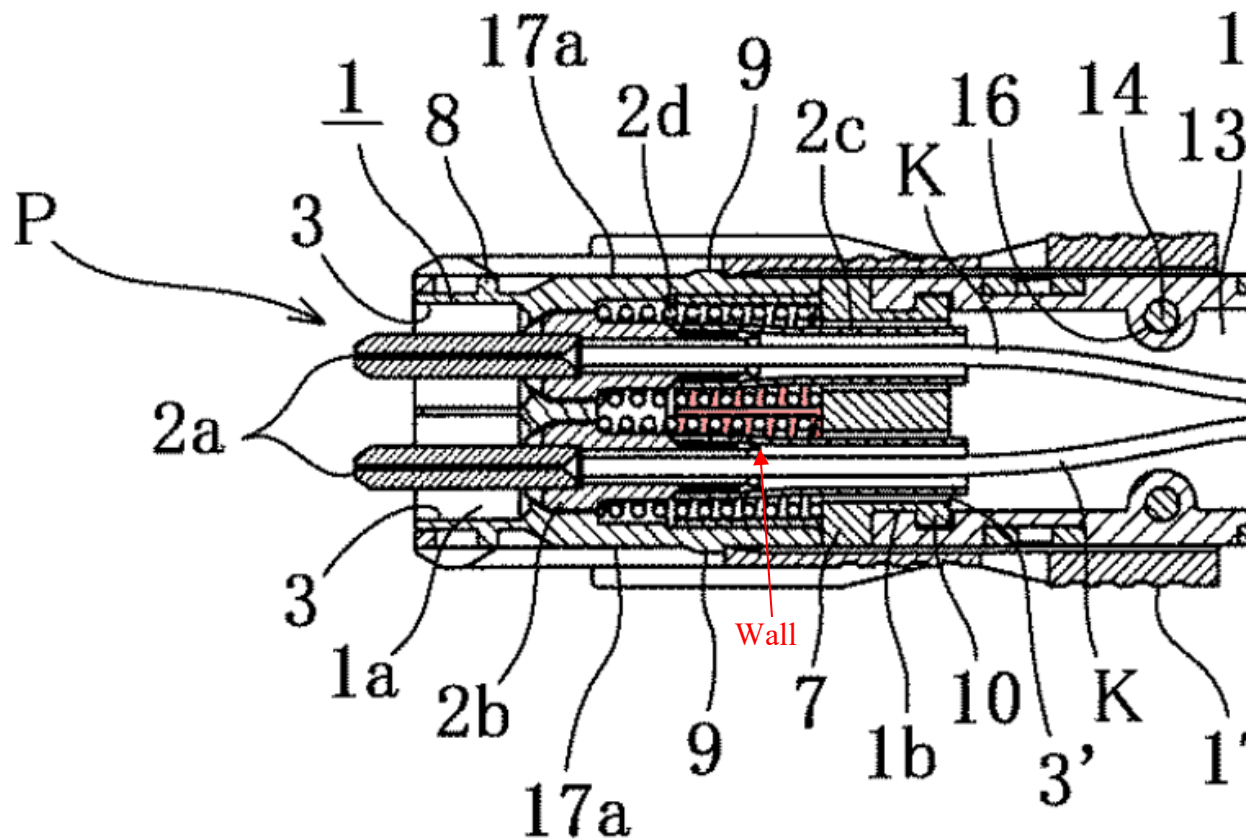
EX1016: Fig. 8a (annotated).

Toyama discloses "the rear case portion 1b of the case 1 has two insertion holes 3', 3' into which the tube 2c at the rear end of each ferrule 2a is inserted via a coil spring 2b." EX1016: ¶[0023]; EX1002: ¶487. The rear case portion (1b) includes a wall between the insertion holes (3'). EX1002: ¶487. Since the springs (2d) are accepted in the openings (3'), the wall between the openings (3') is positioned between the springs (2d) in the assembled plug body (P). Hence, the wall is located between the ferrule seats identified above. EX1002: ¶487. The front end of the wall is clearly shown in Fig. 1. EX1002: ¶487. From this front

end, the wall extends rearward away from the respective ferrule seats. EX1002:

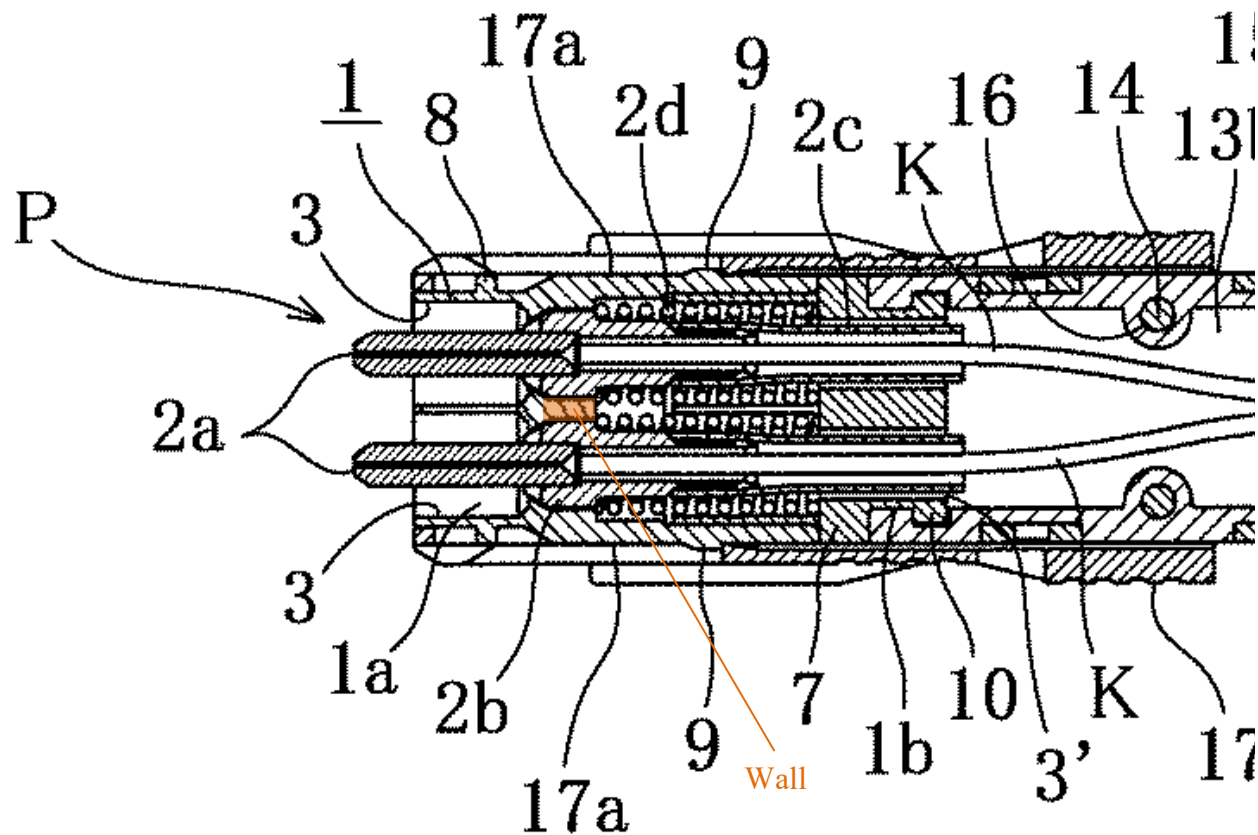
¶487.





EX1016: Figs. 1 and 8(a) (annotated).

Alternatively or in addition, the front case portion (1a) includes a wall separating the ferrule assemblies between the locations where the ferrule assemblies are seated in the case and the wall extends rearward and away from where the ferrule assemblies are seated in the case. EX1002: ¶488.

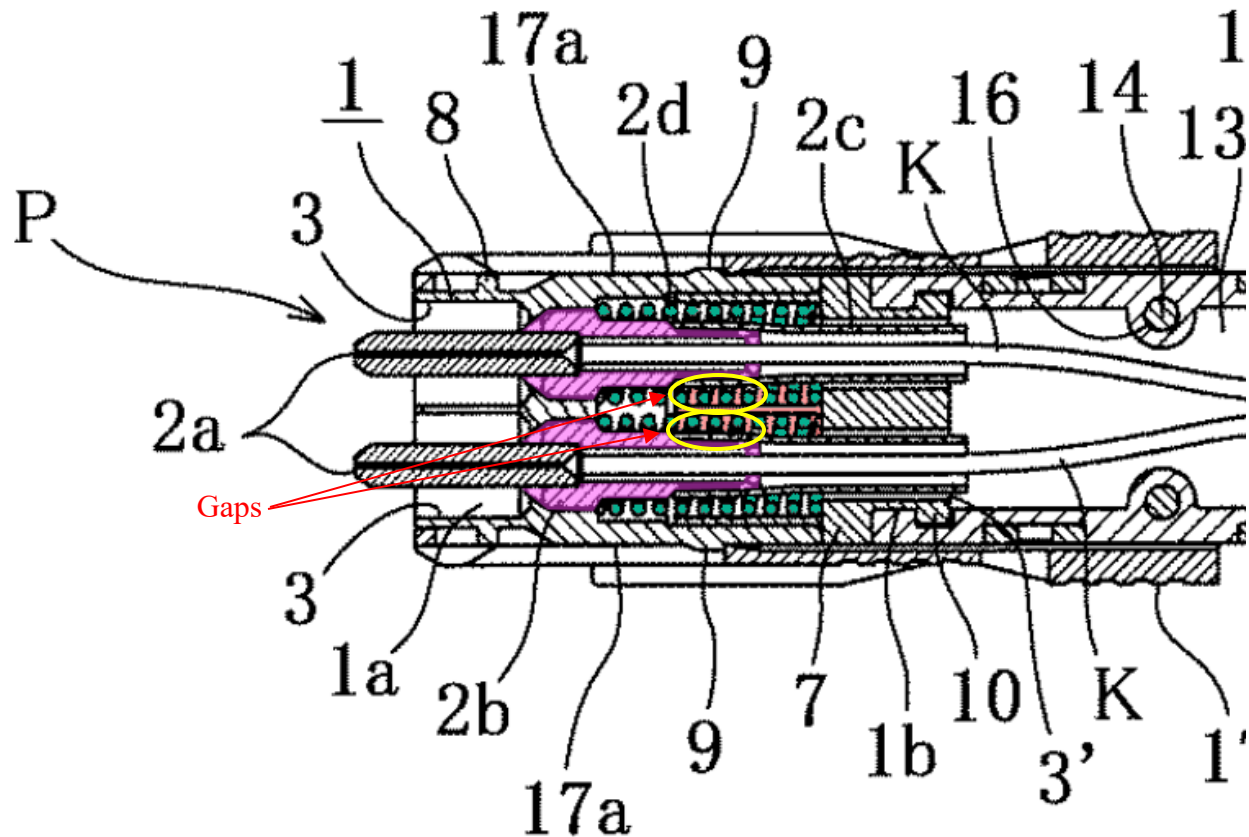


EX1016: Fig. 8a (annotated).

Therefore, Toyama meets this claim. EX1002: ¶489.

J. Claim 16

There is a gap between the wall and the ferrule holders (2b) to accommodate portions of the springs (2d) and tubes (2c). EX1002: ¶490.



EX1016: Fig. 8(a) (annotated).

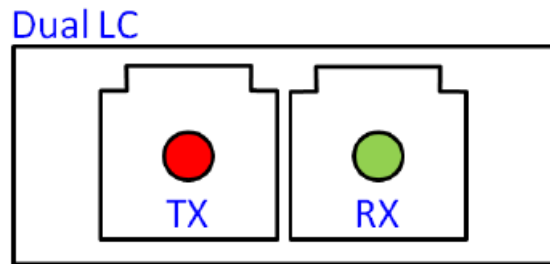
Therefore, Toyama meets this claim. EX1002: ¶491.

XXIV. GROUND 20: Claim 12 Would Have Been Obvious Over Toyama in view of QSFP-DD (if needed)

Toyama discloses that, in comparison with standard LC components, its connection system "doubles the number of core wires that can be installed in communication equipment over the same area." EX1016: ¶[0015]; EX1002: ¶¶492-493. As shown below, QSFP-DD discloses that a QSFP footprint can

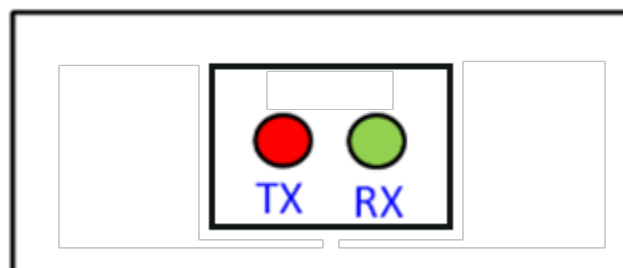
accommodate two LC connectors containing a total of two LC core wires (EX1014: Fig. 33). Therefore, since Toyama teaches that its connection system accommodates double the number of core wires in the same area, Toyama is understood to teach that its connector would fit two double-core plug bodies (P) in the same QSFP footprint that accommodates two single-core LC plug bodies.

EX1002: ¶493.



EX1014: Fig. 33.

To the extent US Conec contests whether two Toyama plug bodies (P) could fit in a QSFP footprint, as shown below, it is beyond dispute that one Toyama plug body (P) would fit in a QSFP footprint if oriented so that the long sides of the plug body (P) are parallel to the long sides of the QSFP footprint, which meets the requirements of claim 12. EX1002: ¶494.



EX1014: Fig. 33 (modified to show how a single Toyama connector would easily fit within the QSFP footprint).

Therefore, Toyama meets this claim or the Toyama/QSFP-DD combination renders this claim obvious. EX1002: ¶495.

XXV. GROUND 21: Claim 17 Would Have Been Obvious Over Toyama in view of Henke

Toyoma discloses "tube[s] 2c at the rear end of each ferrule 2a." EX1016: ¶[0023]; EX1002: ¶¶496-497. During assembly, "a core wire stripped at the end of the optical cable is inserted into the fiber hole at the center of each ferrule 2a via each tube 2c." EX1016: ¶[0041]; EX1002: ¶497. Hence, the tubes (2c) are lead-in tubes. EX1002: ¶497. Fig. 8(a) shows the tubes (2c) are "attached to each of the ferrule holders 2b." EX1002: ¶497.

It would have been obvious to extend Toyama's tubes (2c) to protrude out of the rear end of the stop ring (2e), like the lead-in tube in Fig. 7A of Henke for the reasons discussed in Section XII. EX1002: ¶498.

This modification would have also been nothing more than the application of a known technique (Henke's long lead-in tube that protrudes out the rear end of a back post) to improve a similar device (Toyama's plug body (P)) in the same way to yield predictable results (assembled optical connector with an exposed lead-in tube for guiding the optical fiber). EX1002: ¶499.

For example, the POSA would recognize that the longer, protruding lead-in tubes make it easier to guide the fibers into the ferrules (2a) in the assembly process described in Toyama. EX1016: ¶[0041]. Further, the POSA would understand that the longer lead in tubes would allow for injecting adhesive to adhere the fibers in the ferrules (2a) while preventing adhesive from leaking into the interior of the holders (11a, 11b). EX1002: ¶500.

The proposed modification would have been well within the capabilities of a POSA, and the POSA would have had a reasonable expectation of success for the reasons discussed in Section XII. EX1002: ¶501.

In the Toyama/Henke combination, the tubes would extend from the ferrule holders (2b), through the springs (2d) and the interior of the three-piece crimp body (2e, 11a, 11b), to rear ends protruding slightly beyond the rear end of the stop ring (2e). EX1002: ¶502. In the Toyama/Henke connector, the lead-in tubes extend past the rear end of Toyama's knob (17) and avoid leakage of an adhesive inserted into the lead-in tube into the main body, as taught by Henke. EX1008: ¶[0041]; EX1002: ¶502.

Therefore, the Toyama/Henke combination renders this claim obvious. EX1002: ¶503.

XXVI. GROUND 22: Claims 15 and 16 Would Have Been Obvious Over Toyama in view of Takano’209 (or Kiani⁷ (if needed))

A. Claim 15

It would have been obvious to modify Toyama’s front case portion (1a) in view of Takano’209 (or Kiani) to incorporate the elongated middle wall (4260) (or Kiani’s rib) for the reasons discussed in Section VIII(B). EX1003: ¶[0138]; EX1015: ¶[0074] (a rib "to ensure that spring(s) 954 stay positioned."); EX1002: ¶¶504-507.

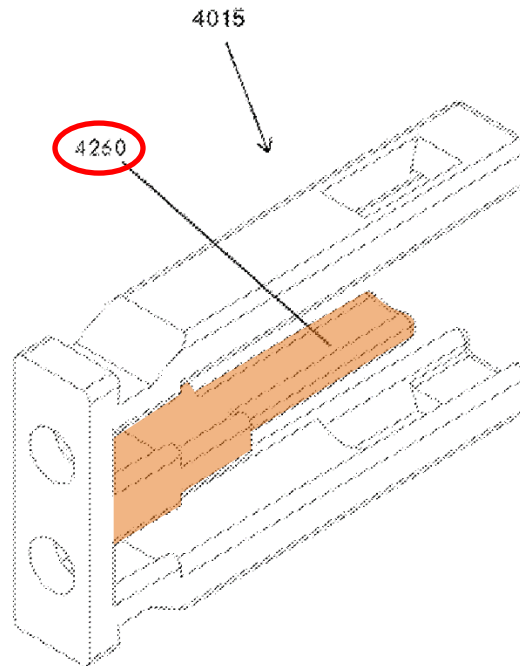


FIG. 42A

EX1003: Figs. 41 and 42A (annotated).

⁷ Apply Kiani if Takano’209 does not qualify as prior art.

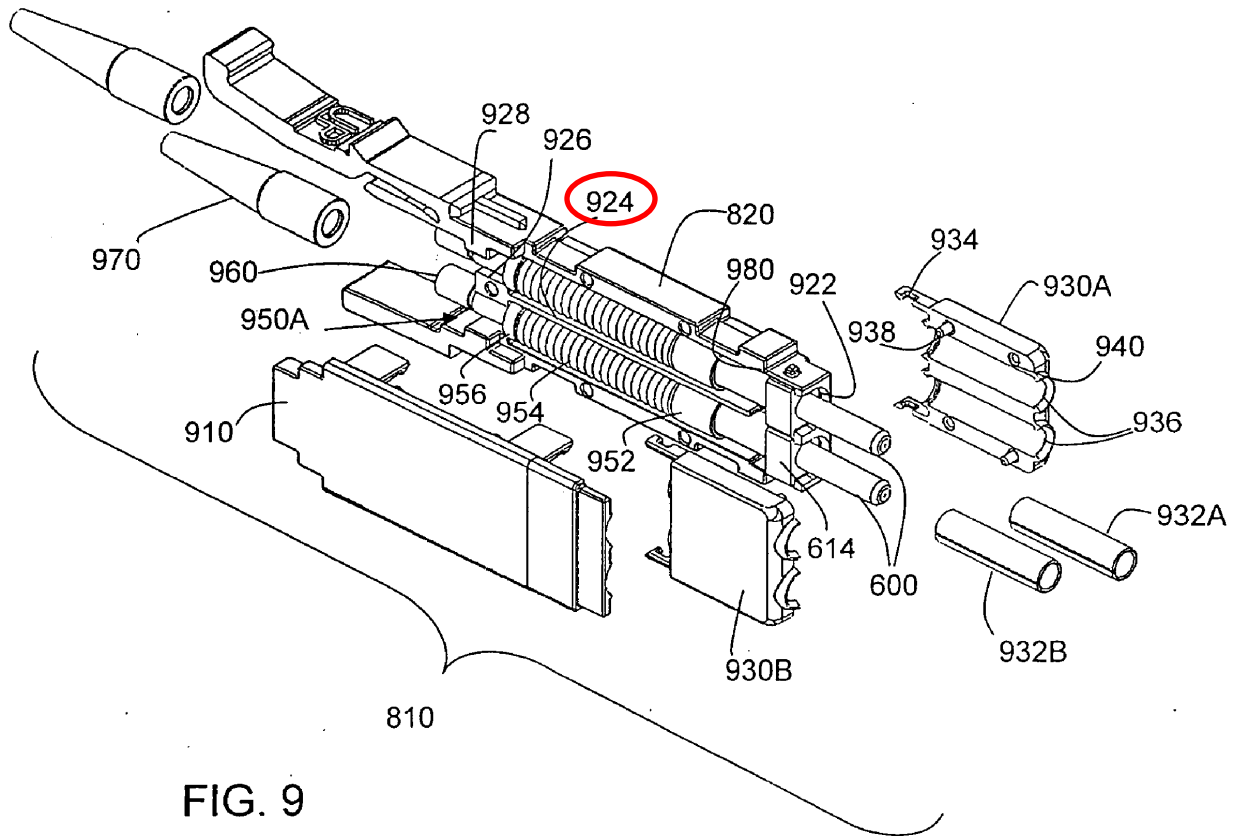


FIG. 9

EX1015: Fig. 9 (annotated).

This modification would have also been nothing more than the application of a known technique (Takano'209's middle wall (or Kiani's rib)) to improve a similar device (Toyama's optical connector) in the same way to yield predictable results (preventing entanglement of the elastic elements). EX1002: ¶508.

In making this modification, the POSA would have added Takano'209's middle wall (or Kiani's rib) between Toyama's ferrule assemblies. EX1002: ¶509. The extended middle wall (or Kiani's rib) would extend rearward in Toyama's knob (17), stopping short of the rear case portion (1b) so as not to interfere with connection of the front and rear case portions (1a, 1b). EX1002: ¶509.

A POSA would have had a reasonable expectation of success in making this modification because the middle wall (or Kiani's rib) would serve the same function and be in generally the same position in Toyama that it had in Takano'209 (or Kiani). EX1002: ¶510. This modification would require only minor changes in dimensions and shapes of molded parts (e.g., casing), well within the POSA's capabilities. EX1002: ¶510.

This modification results in Toyama's optical connector having the middle wall (or Kiani's rib), which meets the requirement of the wall in claim 15 because it forms a wall between the locations where two ferrule assemblies are seated in Toyama's case (1) and it extends rearward relative to where the ferrule assemblies are seated in Toyama's case. EX1002: ¶511.

Therefore, the Toyama/Takano'209 (or Kiani) combination renders this claim obvious. EX1002: ¶512.

B. Claim 16

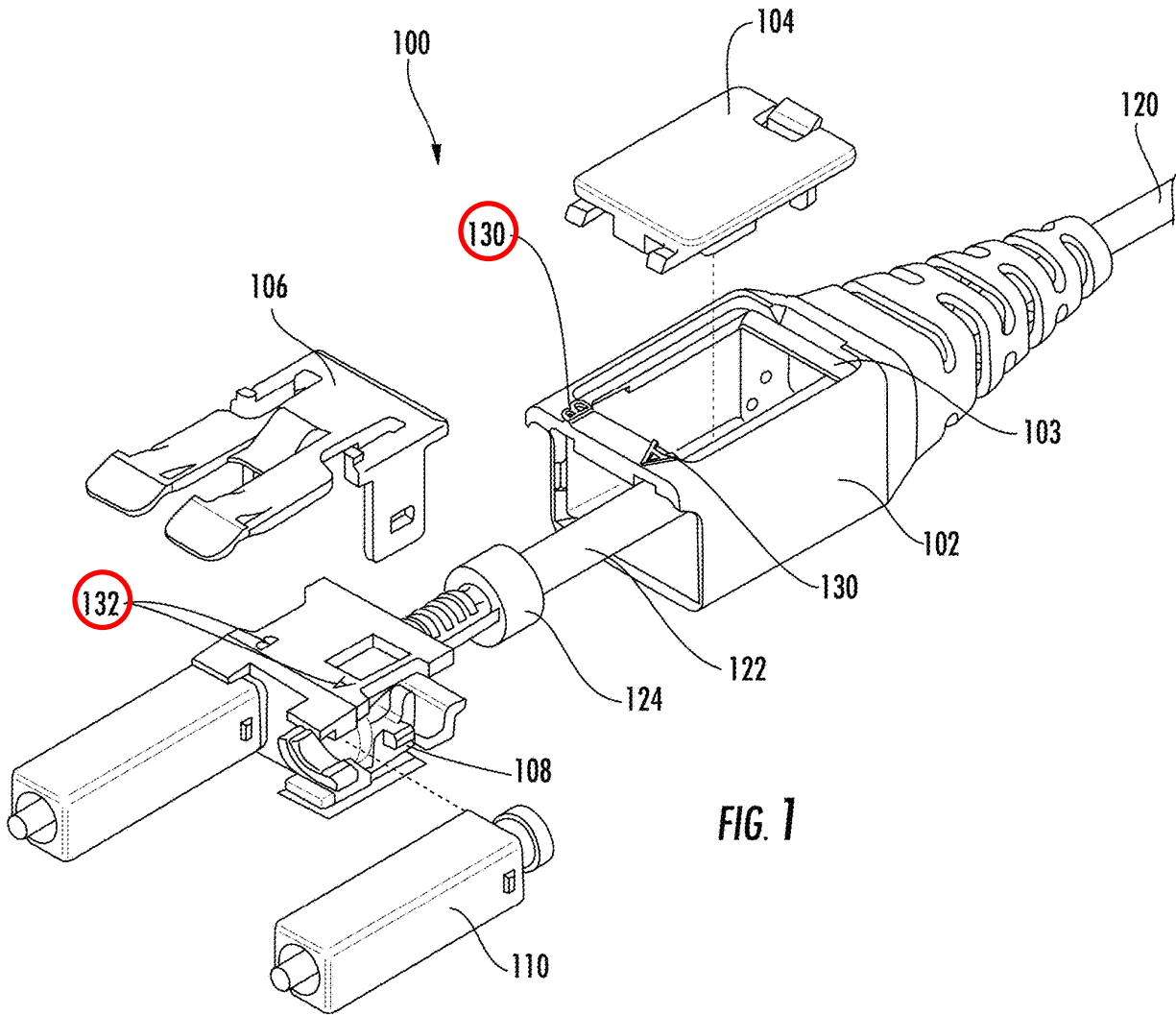
In Toyama's optical connector modified in view of Takano'209 (or Kiani) (Section XXVI(A)), Takano'209's elongated middle wall (or Kiani's rib) is "interposed between the ferrules and springs when the front body is assembled." EX1003: ¶[0138]; EX1002: ¶513. This requires a radial gap to accommodate Toyama's springs between the added middle wall and the cylindrical rear portions of each ferrule holder, which each spring fits over. EX1002: ¶513.

Therefore, the Toyama/Takano'209 (or Kiani) combination renders this claim obvious. EX1002: ¶514.

XXVII. GROUND 23: Claim 6 Would Have Been Obvious Over Toyama in view of Veatch

To the extent US Conec argues Toyama's optical connector does not meet this claim, this claim would have been obvious in view of Veatch. EX1002: ¶515-516.

Veatch discloses polarity indicia (130, 132) for a fiber optic connector (100). EX1007: Fig. 1, 2:26-39; EX1002: ¶517.



EX1007: Fig. 1 (annotated).

It would have been obvious to modify Toyama's knob (17) to include Veatch's polarity indicia (130, 132) for the reasons explained in Section X.

EX1002: ¶518.

This modification would have been nothing more than combining known prior art elements (Toyama's optical connector and Veatch's polarity indicia)

according to known methods (arrangement taught by Veatch) to yield predictable results (an indication of polarity for Toyama's optical connector). EX1002: ¶519.

This modification would have also been nothing more than the application of a known technique (Veatch's polarity indicia) to improve a similar device (Toyama's optical connector) in the same way to yield predictable results (an indication of polarity for Toyama's optical connector). EX1002: ¶520.

The POSA would have had a reasonable expectation of success in making this modification given the function of Veatch's polarity indicia (130, 132) would not change in Toyama's optical connector. EX1002: ¶521. In making this modification, the POSA would place the polarity indicia on Toyama's knob (17), as explained in Section X. EX1002: ¶521. For example, the POSA may place the letter "A" adjacent the top of the knob (17) and the letter "B" adjacent the bottom knob, as shown representationally below. EX1002: ¶521.

XXIX. TAKANO’209 AND TAKANO’369 ARE PRIOR ART TO THE ‘466 PATENT

Pursuant to *Penumbra*, “a reference patent document need only meet the “ministerial requirements” of §§ [] 120, and the provisional [] to which the reference patent document claims a right of priority must ‘describe[] the subject matter’ relied upon in the reference patent document.” *Penumbra, Inc. v. Rapidpulse Inc.*, IPR2021-01466, Paper 34 at 32 (P.T.A.B. Mar. 10, 2023) (precedential).

Penumbra is currently under appeal and Senko reserves the right to demonstrate Takano’209 and Takano’369 are prior art under any test established.

A. Takano’209 is Effectively Filed as of the ‘276 Provisional’s Filing Date

Takano’209 meets the “ministerial requirements,” as Takano’209 claims the benefit of the ‘276 Provisional (EX1003: ¶[1001]); Takano’209 was co-pending with the ‘276 Provisional (EX1003: (22)), and Takano’209 shares common inventors with the ‘276 Provisional (EX1003: (72); EX1004: 17). EX1002: ¶¶525-529.

Further, the ‘276 Provisional describes the subject matter in Takano’209 forming the grounds of this Petition. EX1002: ¶530. The correspondence between the specification of Takano’209 and the ‘276 Provisional is summarized in the following chart:

Takano’209’s Disclosure	‘276 Provisional’s Corresponding Disclosure
¶¶[0117]-[0132]	¶¶[111]-[125]
Figs. 21A-36B	Figs. 21A-36B
¶¶[0137]-[0138]	¶¶[130]-[131]
Figs. 41-42B	Figs. 41-42B

Significantly, the figures identified in the chart above are generally identical between Takano’209 and the ‘276 Provisional. EX1002: ¶¶531-532.

B. Takano’369 is Effectively Filed as of the ‘710 Provisional’s Filing Date

Takano’369 meets the “ministerial requirements,” as Takano’369 claims the benefit of the ‘710 Provisional (EX1009: 1:26-28); Takano’369 was co-pending with U.S. App. No. 17/327,197 which also claims priority to the ‘710 Provisional (EX1009: (22); EX1023: 358), and Takano’369 shares common inventors with the ‘710 Provisional (EX1009: (72); EX1010: 30). EX1002: ¶¶533-534. And Takano’369 incorporates the ‘710 Provisional by reference. EX1009: 1:8-30.

Further, the ‘710 Provisional describes the subject matter in Takano’369 forming the grounds of this Petition. EX1002: ¶535. The correspondence between the specification of Takano’369 and the ‘710 Provisional is summarized in the following chart:

Takano’369’s Disclosure	‘710 Provisional’s Corresponding Disclosure
18:63-19:50	¶¶[0041]-[0044]
Figs. 53-55, 61, 64, 65	Figs. 3-5, 11, 14, 15

Significantly, the figures identified in the chart above are generally identical between Takano’369 and the ‘710 Provisional. EX1002: ¶¶536-537.

Takano’369 also meets the “ministerial requirements” to claim priority to the ‘276 Provisional, which describes Figs. 21A-52 of Takano’369. EX1009: (22), (72), 1:8-30; EX1004: Figs. 21A-52, 17). EX1002: ¶¶538-541.

XXX. THE BOARD SHOULD NOT DENY INSTITUTION

The ‘466 Patent is currently in a district-court case and an ITC investigation. Institution should not be denied under 35 U.S.C. §314(a) because the related district-court proceeding is in its early stages and trial has yet to be set. Further, this Petition sets forth compelling unpatentability challenges. Accordingly, the *Fintiv* factors favor institution. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020) (precedential).

Institution should not be denied under 35 U.S.C. §325(d). While Takano’209 and Veatch were cited, these references were never applied. EX1024: 12-21, 271-278. *Advanced Bionics* favors institution because “the Office [has] erred in a manner material to the patentability of challenged claims.” *Advanced Bionics, LLC v. Med-El Elektr. Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (P.T.A.B. Feb. 13, 2020) (precedential). The Examiner did not reject the claims based on Takano’209 or Veatch. EX1024: 12-21, 271-278. In fact, no prior art was applied against the claims. EX1024: 12-21, 271-278. Thus, the Examiner

made a material error not applying these references, such as Takano’209 which anticipates many of the claims as demonstrated herein.

XXXI. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

A. Real Parties-In-Interest under 37 C.F.R. §42.8(b)(1)

Senko Advanced Components, Inc. is the real party-in-interest for this Petition.

B. Related Matters under 37 C.F.R. §42.8(b)(2)

The ‘466 Patent is involved a civil action in *US Conec Ltd. v. Senko Advance Co., Ltd. et al*, 2-24-cv-00202, currently pending in the United States District Court for the Eastern District of Texas. The ‘466 Patent is also being asserted by US Conec Ltd. in *Fiber-Optic Connectors, Adapters, Jump Cables, Patch Cords, Products Containing the Same, and Components Thereof*, Inv. No. 337-TA-3733 before the International Trade Commission.

C. Designation of Lead and Back-Up Counsel under 37 C.F.R. §42.8(b)(3)

Pursuant to 37 C.F.R. §§42.8(b)(3) and 42.10(a), Senko Advanced Components, Inc. provides the following designation of counsel:

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D. Service Information (37 C.F.R. §42.8(b)(4)):

Senko Advanced Components, Inc. consents to service by email to lead and backup counsel, using the email addresses above.

E. Payment Information Under 37 C.F.R. §§42.15(a) and 42.203(a)

The *post-grant* review fees have been submitted herewith pursuant to 37 C.F.R. §42.203(a) and 42.15(a).

XXXII. GROUNDS FOR STANDING

The ‘466 Patent is eligible for *post-grant* review. Petitioner is not barred or estopped from petitioning for *post-grant* review. This Petition is filed within nine months from ‘466 Patent’s grant date (August 22, 2023).

XXXIII. CONCLUSION

For these reasons, *post-grant* review of the ‘466 Patent is requested.

Dated: May 21, 2024

Respectfully submitted,
/Kurt F. James/
Kurt F. James, Reg. No. 33,716

Counsel for Petitioner

CERTIFICATE OF SERVICE

Under 37 C.F.R. § 42.6(e), the undersigned certifies that on May 21, 2024, a copy of the PETITION FOR POST-GRANT REVIEW OF U.S. PATENT NO. 11,733,466 and associated exhibits were served via FedEx pursuant to 37 C.F.R. § 42.205 on the following attorneys of record for Patent Owner:

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**CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME
REQUIREMENTS UNDER 37 C.F.R. §42.24**

Under 37 C.F.R. § 42.24(d), the undersigned certifies that this Petition for *Post-Grant* Review complies with the type-volume limitation of 37 C.F.R. § 42.24(a)(1) because it contains 18,469 words, excluding the parts of the Petition exempted by 37 C.F.R. §42.24(a).

This paper also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(2)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(2)(iii) and (iv).

/Kurt F. James/

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