

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SENKO ADVANCED COMPONENTS
Petitioner

v.

US CONEC LTD.
Patent Owner

Case: IPR2024-01074
Patent No. 11,880,075

DECLARATION OF EDWARD M. CADY, JR.

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DECLARATION OF EDWARD M. CADY, JR.

I, Edward M. Cady, Jr., resident at 9985 7th St., Bay City, Oregon, hereby declare as follows:

I. INTRODUCTION

1. Although I am currently on sabbatical, I am a consulting product development director at IntelliConnex LLC, a chip and connectivity design company based in Toronto. I have been a recent contributing editor for 10 years with ConnectorTips and 22 years with ConnectorSupplier magazines and have had over 100+ technical interconnection articles and white papers published over several years. I also provide independent consulting advisement updates with investment companies relative to the business and trends of connectors, cables, and modules. I continue to closely follow various CPOs, OCP, OIF, PCI-Optical, IEEE-802.3 optical, InfiniBand optical, IOWN, and OSFP. Before COVID-19, I was active for decades in a number of MSAs, consortia, and industry and global interface standards groups involving specifications for optical connectors and cables. I consult regarding patent development, patent litigation, patent research, and strategy.

2. I have been working with fiber optical connector technology since 1978, participating in several global standards connector proposals, OEM and

hyperscaler design-in campaigns, specifications, and new product development. This has included the ST, FDDI, MAC, MU, and LC connectors.

3. From 1966 through 1972, I earned over 160 undergraduate and graduate credits in Chemistry, Math, Computer Science, English, and History, while working full-time and part-time in the electronics industry for DEC, Matrox Science & Bowmar-Ali. These credits were earned at Boston University, Becker College, University of Massachusetts, Hellenic College, and Harvard. I have taken coursework that was equivalent to a Masters in Management, MBA, and Masters in Technology from Northeastern University with courses held onsite at Data General, where I was an Engineering Manager for 8.5 years. I have taken coursework that was the equivalent to a bachelor's degree in Fiber Optics from the University of Arizona with courses held onsite at Apollo Computer.

4. After graduating and for the past 50+ years, I have been involved with the design and development of electronic and photonic devices and systems, particularly with connectors and cables. I have specified and helped design the connectors used in many dozens of electronic products, including connectors used for power, sense/controls, digital, audio, video, RF, and photonic signals, as well as connectors used for backplane, faceplate, board, module, peripheral, computing, and system level interconnections. This includes AOCs, AOMs, and data center pluggable modules that use various optical connectors. I have deep knowledge and

experience with LFF, SFF, VFF, and TFF optical connectors currently used in all types of Data Centers and Networks.

5. Through many years of working and research, I have gained extensive knowledge, experience, and expertise in the field of fiber optic connector design. I have co-developed woven and molded fiber circuit boards with custom 36 fiber connectors for DARPA. Having worked on fiber optic connector design for most of my career, I have an extensive background and understanding of the principles and processes involved with the field of technology of U.S. Patent No. 11,880,075 (“the ‘075 Patent”).

6. My compensation is in no way dependent on the outcome of this proceeding, and my compensation in no way affects the substance of my statements and opinions in this Declaration.

7. In providing the testimony set out in this declaration, I have reviewed the figures, specification, and claims of the ‘075 Patent. I have also reviewed the following documents which I understand will be attached as exhibits to the Petition for *Inter Partes* Review of the ‘075 Patent:

Exhibit No.	Description
1001	U.S. Patent No. 11,880,075
1002	Prosecution History 18/483,949
1004	U.S. Pat. No. 7,284,912 (“Suzuki”)

Exhibit No.	Description
1005	JP 3886619 (“JP610”)
1006	JP 2001-305391 (“JP391”)
1007	JP 2573482 (“Shimozu”)
1008	U.S. Pat. No. 5,222,168 (“Saito”)
1009	CN201740886U (“Chen”)
1010	U.S. Pat. No. 6,224,268 (“Manning”)
1011	U.S. Pat. No. 6,419,399 (“Loder”)
1012	U.S. Pat. No. 7,347,634 (“Günther”)
1013	U.S. Pat. App. Publ. No. US 2012/0141072 (“Katagiyama”)
1014	ITC Claim Charts
1015	U.S. Patent 6,149,313
1016	U.S. Pat. App. Publ. No. US 2010/0284656
1017	U.S. Patent 5,719,977
1018	U.S. Patent 7,204,644
1019	U.S. Patent 6,918,704
1020	Prosecution History 61/789,499
1021	Prosecution History 14/214,931
1022	Prosecution History 15/855,750
1023	Prosecution History 16/214,317

Exhibit No.	Description
1024	Prosecution History 17/145,864
1025	Prosecution History 17/857,300

8. In forming my opinions, I have relied upon various legal principles as explained to me by Senko's counsel. My understanding of these principles is summarized below.

9. I understand that in patent law, a patent's claims define the scope of protection for the claimed invention.

10. I understand that there are two types of U.S. patent claims: 1) independent claims and 2) dependent claims. I understand that independent claims only include the elements stated in the independent claim. I further understand that dependent claims include the elements stated in that dependent claim, plus any elements stated in any other claim(s) from which that dependent claim depends.

11. I understand that the validity of a patent's claims is determined on a claim-by-claim basis.

12. I understand that in this proceeding, Senko has the burden of proving that the challenged claims would have been unpatentable over the prior art by a preponderance of the evidence.

13. I understand that a claim is unpatentable as anticipated if the prior art reference teaches the claimed subject matter.

14. I understand that a claim is unpatentable as obvious if the differences between the claimed subject matter and the prior art are such that the subject matter, as a whole, would have been obvious to a hypothetical person having ordinary skill in the art at the time of the invention and who is presumed to have known the relevant prior art.

15. I understand that the question of obviousness is resolved based on underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of non-obviousness.

16. I further understand that for each of the obviousness grounds, Senko must demonstrate a person of ordinary skill would have: (1) a motivation to combine the teachings of the relevant references and (2) a reasonable expectation of success of developing the claimed invention.

17. I understand that a motivation to combine the teachings of the relevant references may come from, but is not limited to: teachings, suggestions, or motivations found in the prior art; the nature of the problem; or the knowledge of a person having ordinary skill in the art.

18. I understand that the United States Patent and Trademark Office (“USPTO”) will interpret the claims of the ‘075 Patent as they would have been understood by those of ordinary skill in the art as of the filing date of the ‘075

Patent in the view of the claim language itself, the specification and figures of the ‘075 Patent, the prosecution history of the ‘075 Patent, and other relevant evidence showing how one of ordinary skill would have understood the language.

19. In forming my opinions, I have applied the understanding of one of ordinary skill in the art working at the time of the invention claimed in the ‘075 Patent, *i.e.*, shortly prior to March 15, 2013.

20. It is my opinion that a person having ordinary skill in the art (“POSA”) at that time 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 mechanical engineering, electrical engineering, physics, or a related field 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.

21. In my opinion, the level of ordinary skill is not determinative because those of less or more skill would also find the claims to be unpatentable.

II. BACKGROUND OF THE ‘075 PATENT

22. Per the ‘075 Patent’s background, the identified field of invention of the ‘075 Patent was “fiber optic connectors with fiber optic ferrules that are ganged together.” EX1001: 1:25-27.

23. The figures below demonstrate the '075 Patent's primary embodiment of an adapter assembly as disclosed in its specification. The assembly (10) comprises an adapter (100) that mates with a fiber optic connector comprising a plug (200) ganging ferrules (12) held by ferrule holders (300). EX1001: 3:65-4:10.

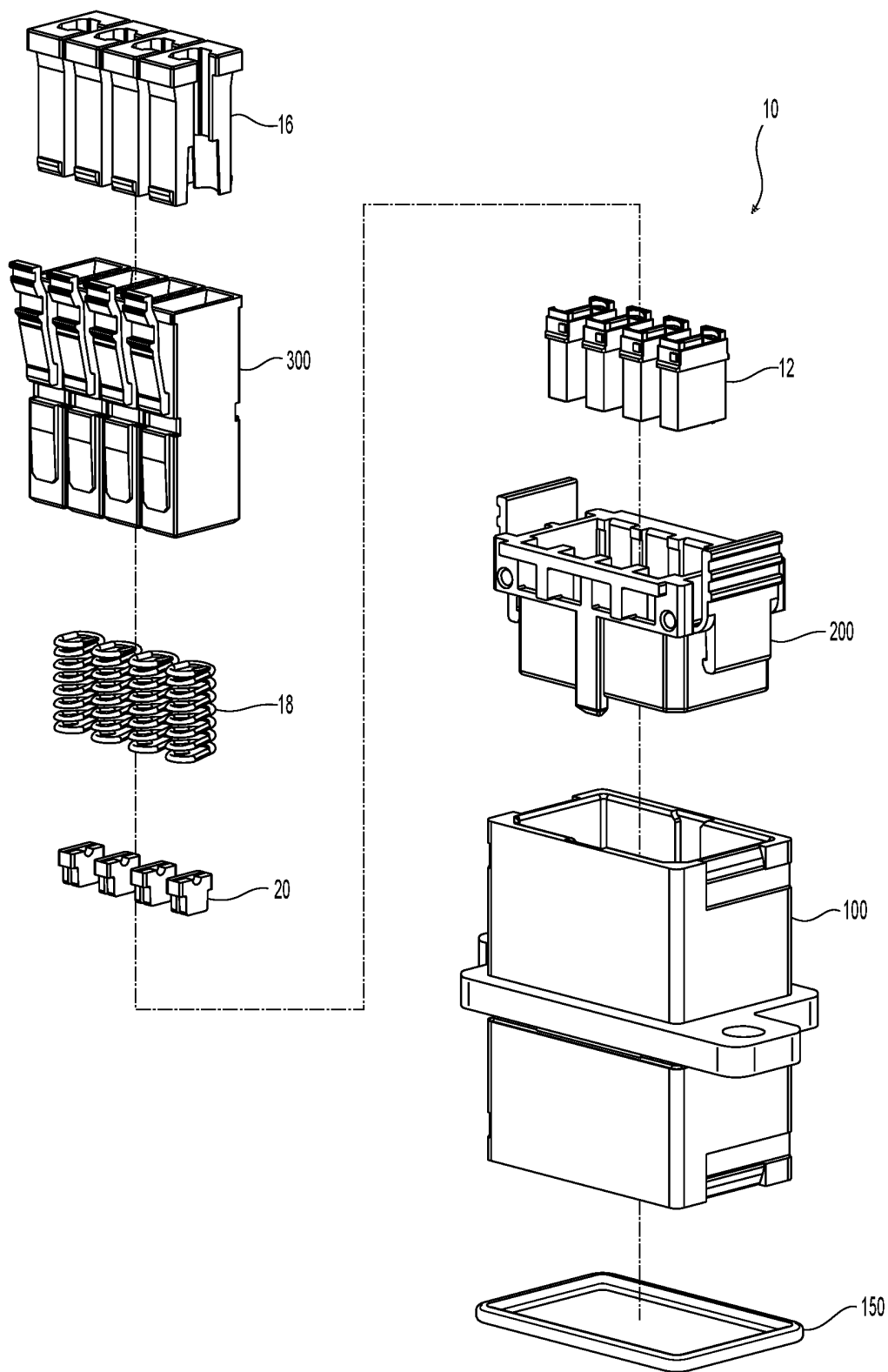


Fig. 2

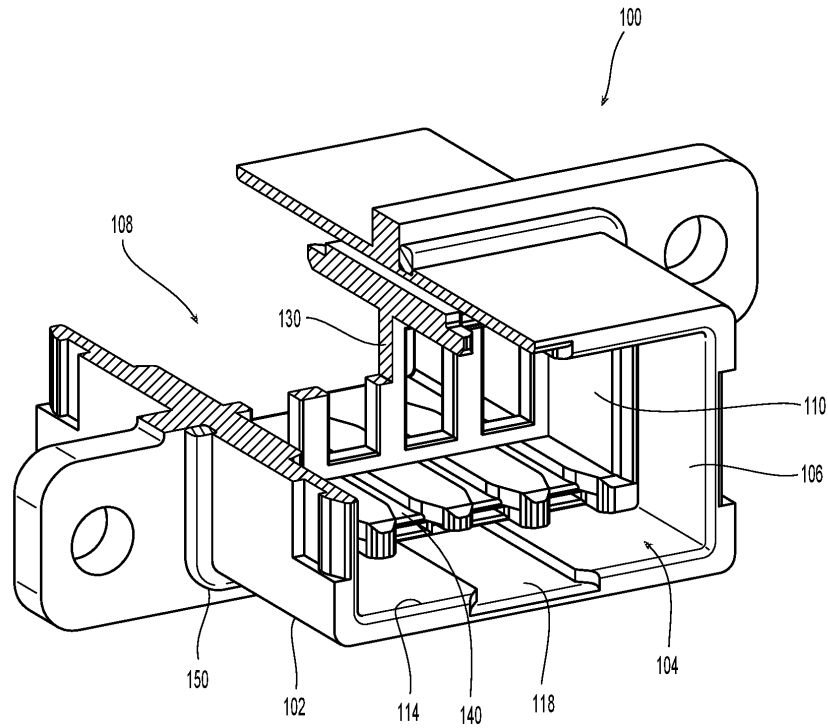


Fig. 3

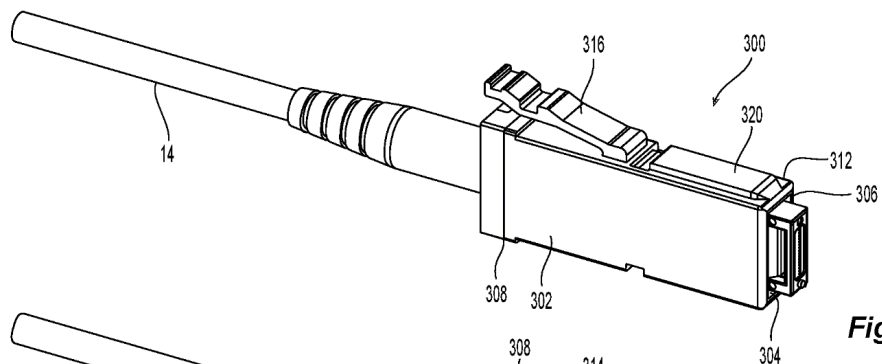


Fig. 5A

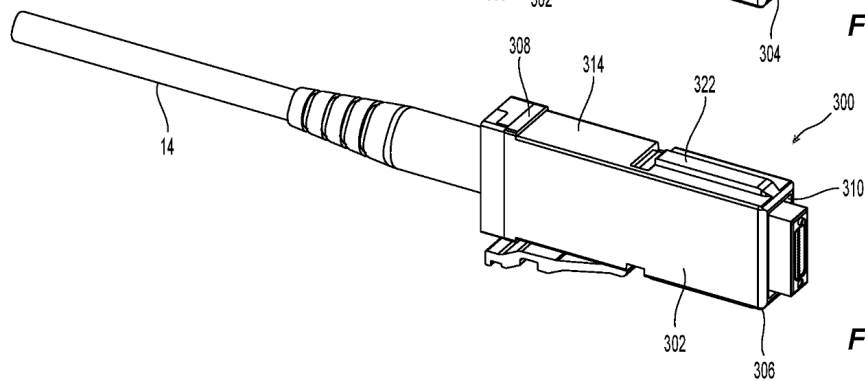
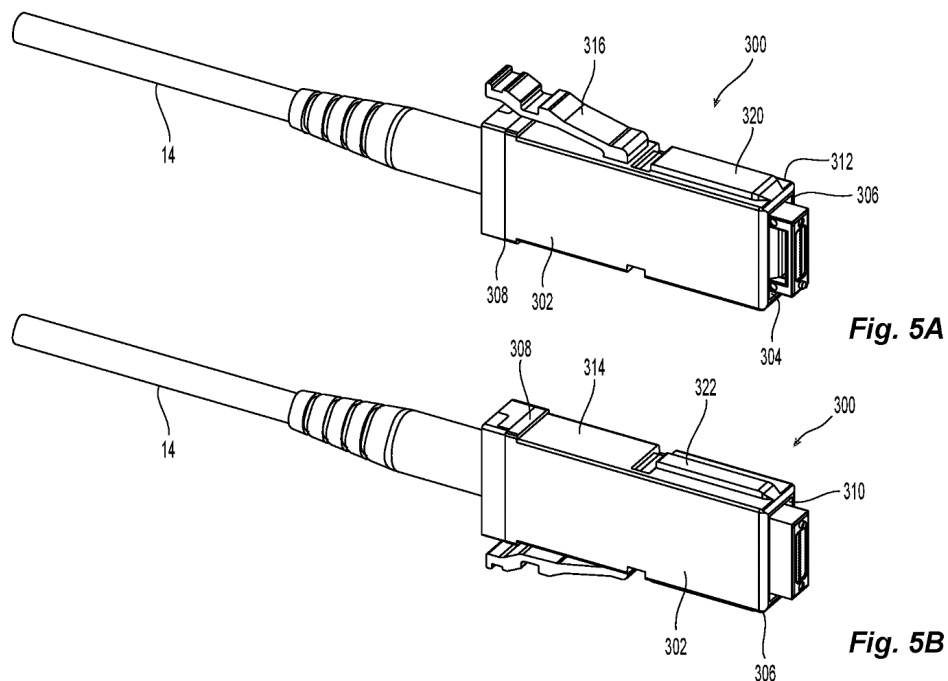


Fig. 5B

EX1001: Figs. 2, 3, 5A, 5B.

24. Although the specification provides detailed disclosures concerning the adapter (100) and the plug (200), the claims of the '075 Patent focus entirely on the ferrule holder (300). EX1001: 6:40-9:22.

25. Specifically, the ferrule holder (300) has a main body (302) with a central opening (304) that extends from a first end (306) to a second end (308) to house the fiber optic ferrules (12). EX1001: 4:22-25.



EX1001: Figs. 5A, 5B.

26. The ferrule (12) is located within an opening (310) at the first end (306). EX1001: 4:25-27.

27. The ferrule holder (300) has a top surface (312) with a cantilevered latch (316) and a projection (320). EX1001: 4:32-35.

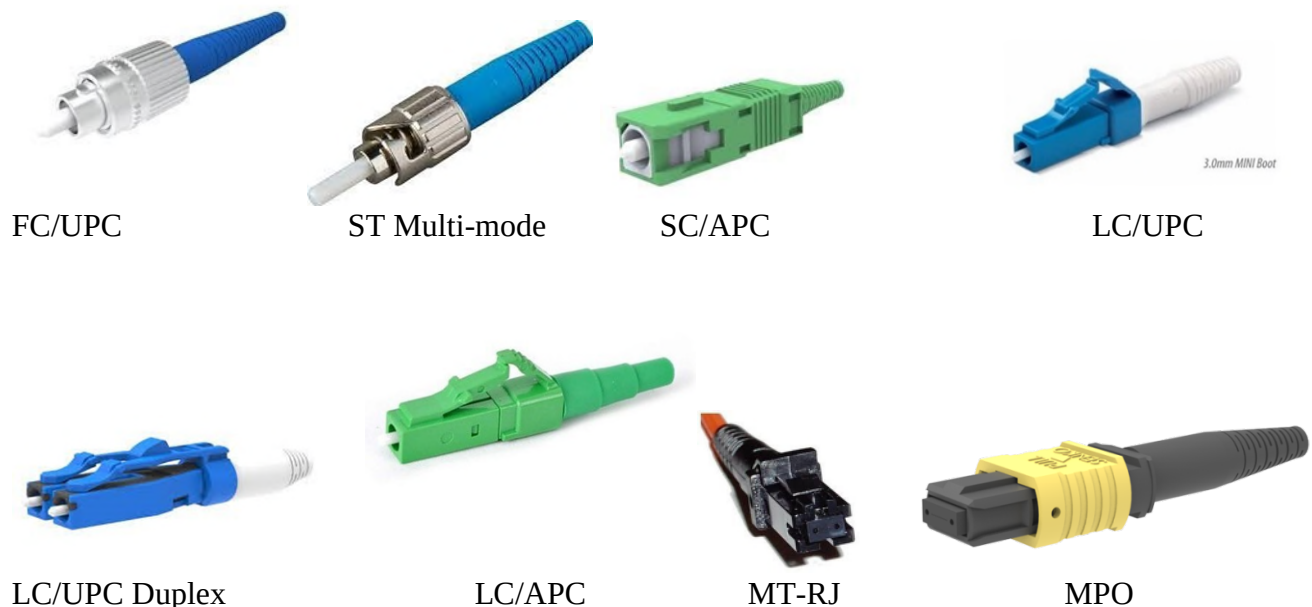
28. The ferrule holder (300) also has a bottom surface (314) with a projection (322). EX1001: 4:32-35.

29. The projections (320) and (322) further have different widths so as to act as a key in inserting the ferrule holder (300) into the plug (200). EX1001: 4:39-44.

III. BACKGROUND OF THE PRIOR ART

30. While there have been evolving standards for fiber optic connectors and increasing demands for higher pitch densities, fiber optic connection systems have been well-known in the art for decades.

31. Fiber optic connectors now come in several common varieties and ferrule types, including FC, SC, ST, LC, MU (primarily in Japan), E-2000 (primarily in parts of Europe), MPO/MTP, and MTRJ/MT:



32. The ceramic ferrule types listed are available in single fiber (simplex) and dual fiber (duplex) configurations.

33. The MT ferrule types have been developed for higher density ribbon fiber (& cable) - from 2-fiber in the case of MT-RJ, to 8-fiber, 12-fiber, 24-fiber, 48-fiber, and up to 72-fiber ribbon in a single, rectangular MT ferrule that was first commercialized in the MPO/MTP connector footprint.

34. Claims 2 and 21 of the '075 Patent specifically require the ferrule to be a MT style ferrule. The remainder of the claims are directed to multi-fiber ferrules, but are not otherwise specific as to the ferrule type.

35. The references outlined below, and other references elsewhere herein, disclose features of fiber optic connection systems, and those of ordinary skill in the art would consider them all to be in the same field of endeavor with each other and with the '075 Patent.

A. U.S. Pat. No. 7,284,912 ("Suzuki")

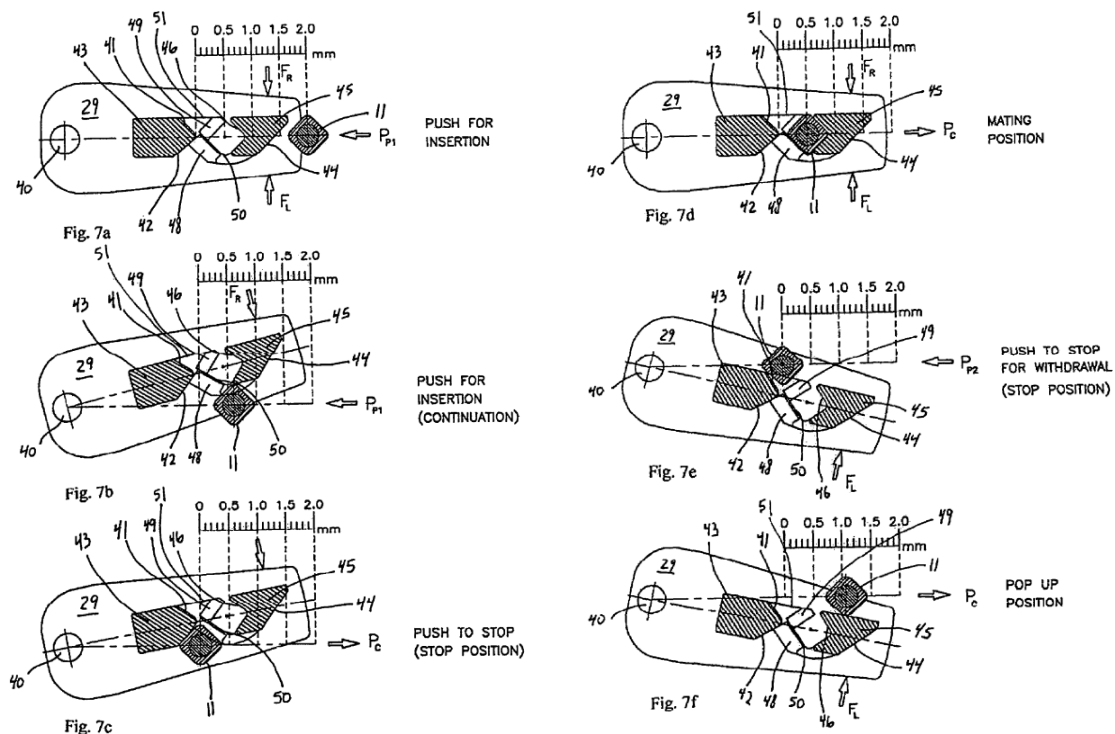
36. Suzuki discloses an "optical fiber interconnect system comprising a connector for carrying an array of optical fibers along a longitudinal axis."

EX1004: Abstract.

37. Suzuki introduces an adapter comprising a push-push coupling mechanism and spring biased automatic shutter. EX1004: Abstract.

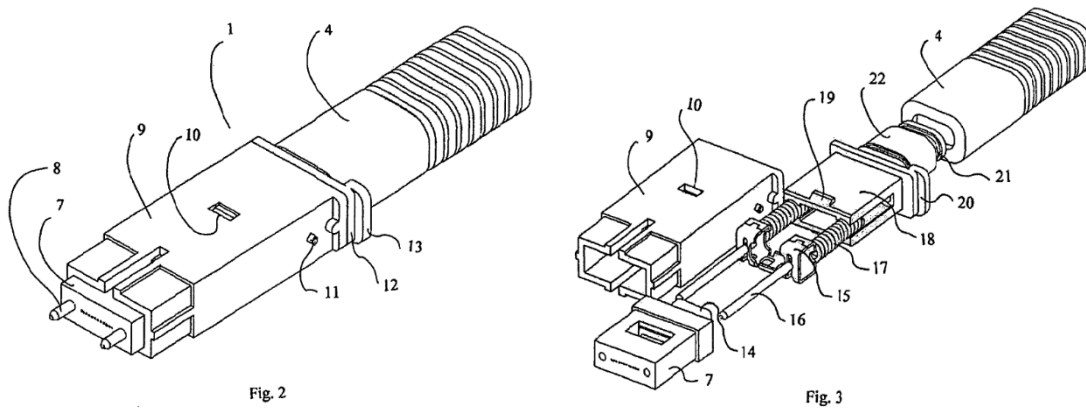
38. The operation of the push-push latching system uses a flipper with inclined cam surfaces for urging the flipper to swing in certain directions when pushed by a “dual pin” 11 of the connector. When the connector housing is pushed in a first time following insertion, the flipper is actuated such that a V-grooved surface for holding the back of the dual pin 11 is moved into a mating position. When the connector housing is pushed in a second time, the flipper is actuated in to a different orientation thereby releasing the dual pin. EX1004: 5:62-7:5.

39. The operation of the push-push system is illustrated in Figure 7a-7f (reproduced below):



EX1004: Figs. 7a-7f.

40. Suzuki's connector includes an MT standard ferrule (7), a housing (9), and a strain relief boot (4). EX1004: 4:34-50, 5:4-7, Figs. 2-3.

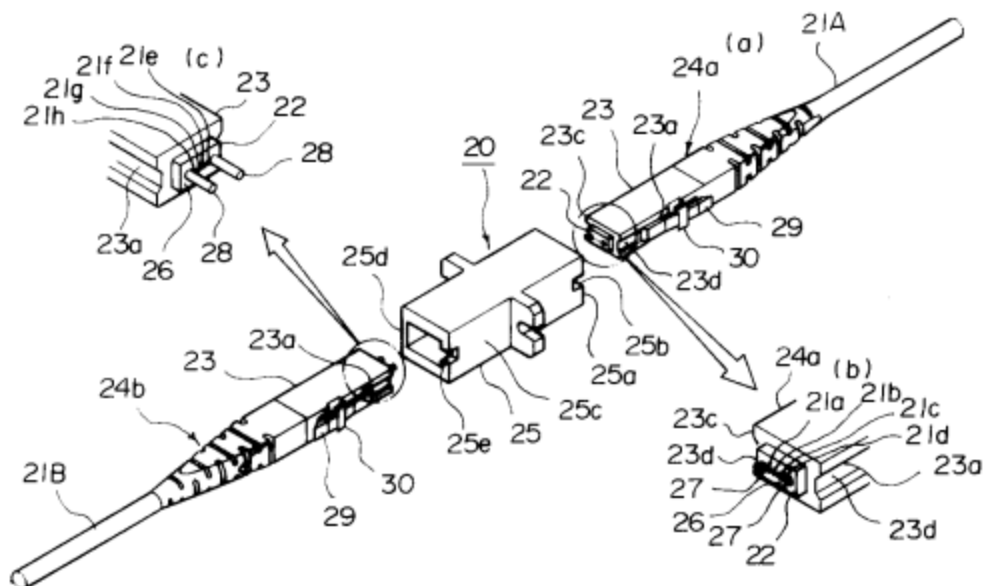


EX1004: Figs. 2-3.

41. The Suzuki connector further includes the above mentioned “dual pin” (11) on one surface of the housing for actuating push-push flipper and latching the connector within the adapter. EX1004: 5:46-61.

B. JP 3886619 (“JP610”)

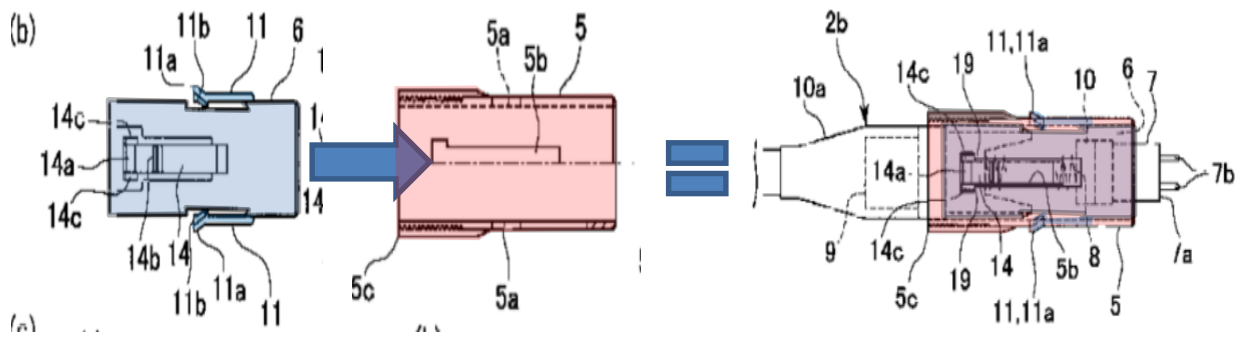
42. JP610 discloses a fiber optic connector comprising a “plug housing” (23) (i.e., a ferrule holder), a spring biased MT type ferrule (22) housed in the plug housing, and a “release lever” (29) (i.e., a latching mechanism). EX1005: [0010]-[0012].



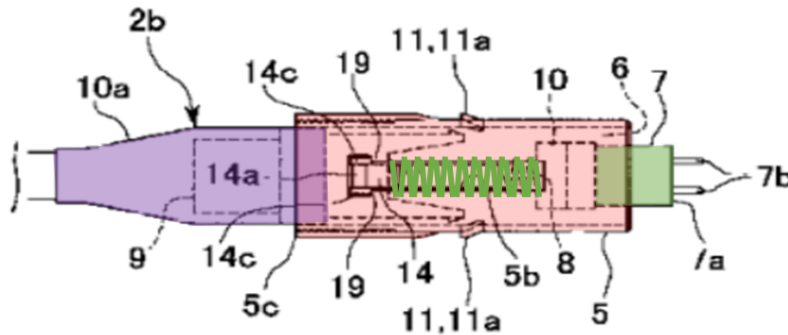
EX1005: Fig. 1.

C. JP 2001-305391 (“JP391”)

43. JP391 discloses an optical connector system comprising optical connector plugs (2a, 2b) and an adapter (3). The optical connector plugs each have a boot 10(a), “a sleeve-shaped plug frame” (5) and a “sleeve-shaped slide frame” (6) which collectively acts as a ferrule holder in the context of the ‘075 Patent housing a spring (8) biased ferrule (7). EX1006: [0009], [0011], Fig. 5(b).

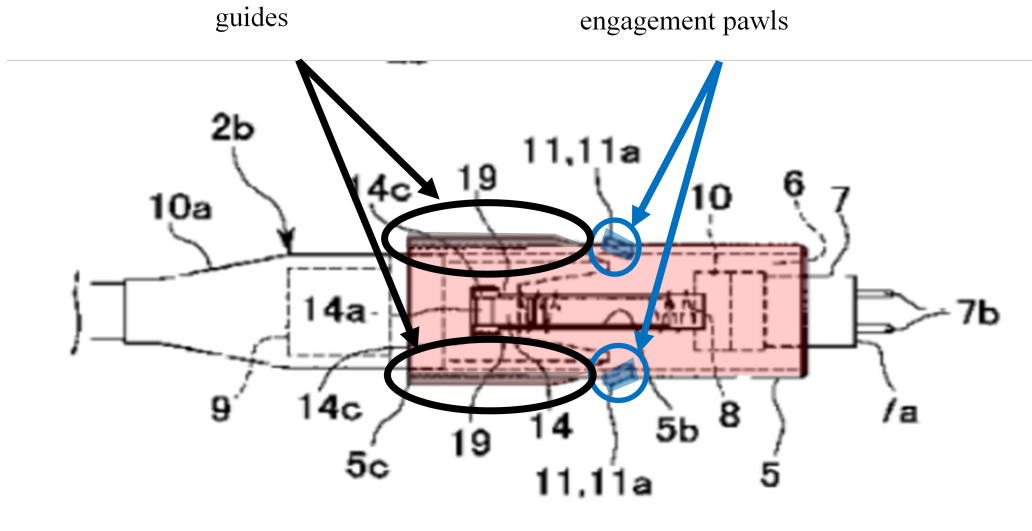


EX1006: Figures 7(b), 6(a), 5(b) (annotated).



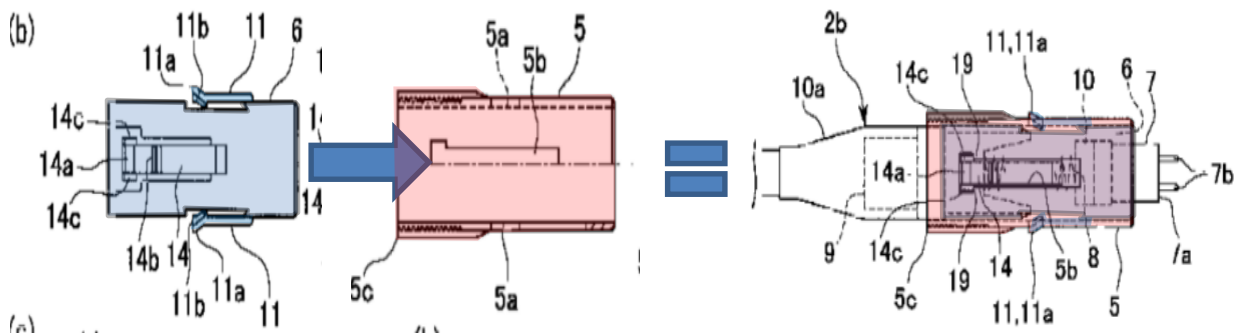
EX1006: Fig. 5(b) (annotated).

44. The JP391 connector housing—*i.e.*, the combination of the frame (5) and slide frame (6)—further includes guides (unlabeled) and engagement pawls (11)—*i.e.*, latches—on the on the top and bottom sides. EX1006: [0011].



EX1006: Fig. 5(b) (annotated).

45. Specifically, the engagement pawls (11) are attached to the slide frame (6) and extend through slots (5a) formed in the frame (5). EX1006: [0011].



EX1006: Figures 7(b), 6(a), 5(b) (annotated).

46. The engagement pawls (11) latch onto engagement portions (4a, 4b) of the adapter when inserted into the adapter. EX1006: [0012]-[0013].

47. The engagement pawls (11) can then subsequently be disengaged by sliding the plug frame (5) backwards relative the slide frame (6), thus contacting

and pressing down on the engagement pawls (11) and releasing engagement with the engagement portions (4a, 4b) of the adapter. EX1006: [0027]

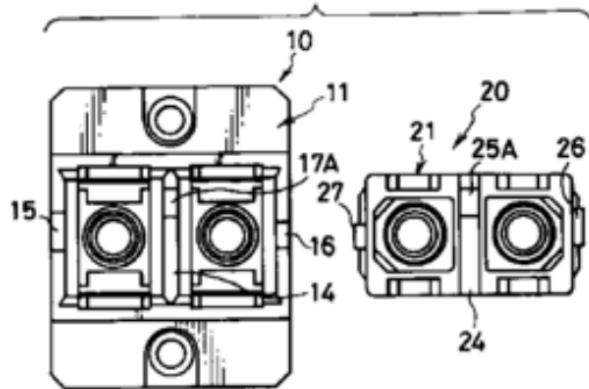
D. JP 2573482 (“Shimozu”)

48. Shimozu discloses a duplex optical connectors comprising an optical connector plug and an optical connector adapter that mate together. EX1007: [Claim 1].

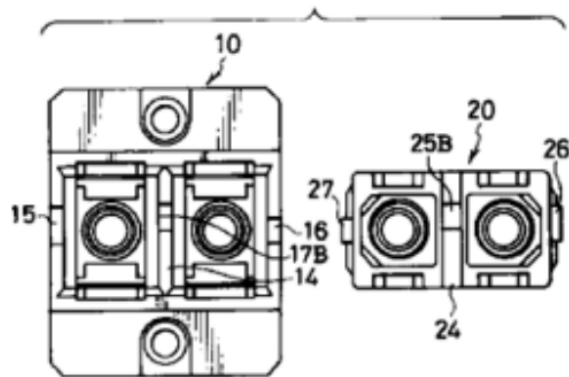
49. Shimozu teaches using two identification guides (26 and 27) on the sides of the optical connector plug and corresponding mating keyways (15 and 16) in the connector adapter. EX1007: [0011].

50. Specifically, Shimozu teaches sizing the widths of the identification guides 26 and 27—and their corresponding keyways 15 and 16—differently to prevent the “incorrect insertion”—*i.e.*, to ensure proper polarity. EX1007: [0012] (“A width of the identification guide key 26 is larger than a width of the identification guide key 27.”), [0014] (“When attempting to mate this in the opposite direction, for example, attempting to mate the double-core optical connector plug 20 with the double-core optical connector adapter 10 in a direction reversed from the position illustrated in FIG. 1, the respective guide keyway and guide key cannot fit together, and thus mating is not possible.”).

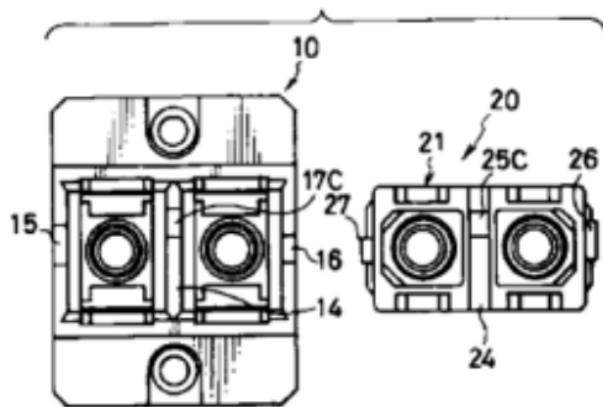
[FIG. 2]



[FIG. 3]



[FIG. 4]



E. U.S. Pat. No. 5,222,168 (“Saito”)

51. Saito teaches an optical connector system. EX1008: Abstract.

52. While an adapter is disclosed (*see e.g.*, EX1008: 10:31-34, Fig. 23), Saito’s teachings are largely directed to stacked-type multiple ferrule optical connector assemblies and their ferrules. EX1008: Abstract.

53. The ganged connectors are collectively inserted into one side of the adapter, with the grooves defined by the adjacent ribs (and between a rib and an

adjacent side wall (66a)) receiving the ferrules. EX1008:10:41-45 (“When the stacked-type optical connector 60 is attached to the adapter, the individual optical connectors 61 vertically move with its tapered surfaces 61d being guided by the partitioning pieces 66e, and they are separately housed in the respective spaces formed by the side piece 66c, the flap 66d, and the individual partitioning pieces 66e.”).

54. As the connectors (61) have the ability to float, the complementary shapes of the leading ends of the ferrule and the ribs (66e) guide each connector into pre-alignment for mating engagement with a corresponding connector inserted from the other side as shown in Figs. 24-26. The individual connecting pins (61f) of one optical connector (61) are thus pre-aligned for insertion into the individual guide-pin holes (61e) of the corresponding optical ferrule. EX1008:10:41-45 (“When the stacked-type optical connector 60 is attached to the adapter, the individual optical connectors 61 vertically move with its tapered surfaces 61d being guided by the partitioning pieces 66e, and they are separately housed in the respective spaces formed by the side piece 66c, the flap 66d, and the individual partitioning pieces 66e.”), 10:58 – 11:35 (“... [W]hen the individual stacked-type optical connectors 60 are pushed into the adapter 66, the tapered surfaces 61d are guided by the individual partitioning pieces 66e of the adapter 66, the individual optical connectors 61 vertically float.... When both stacked-type optical

connectors 60 are further pushed into the adapter 66, the individual connecting pins 61f of one optical connector 61 are inserted in the individual pin holes 61e of the other optical connector 61 while they are guided by the tapered ends, thereby butting the butting end surfaces 61c and 61c of the two optical connectors 61 and 61 as shown in FIG. 26...”), Figs. 24-26 (showing optical connectors (61) at separate stages of being pushed into the adapter (66) and mating).

FIG. 24

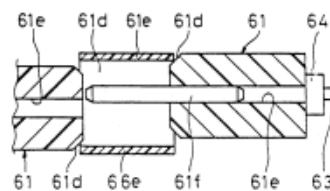


FIG. 25

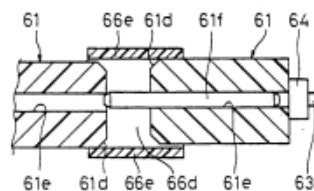
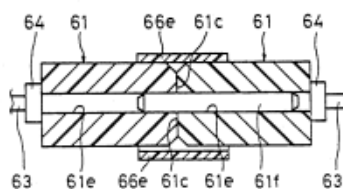


FIG. 26



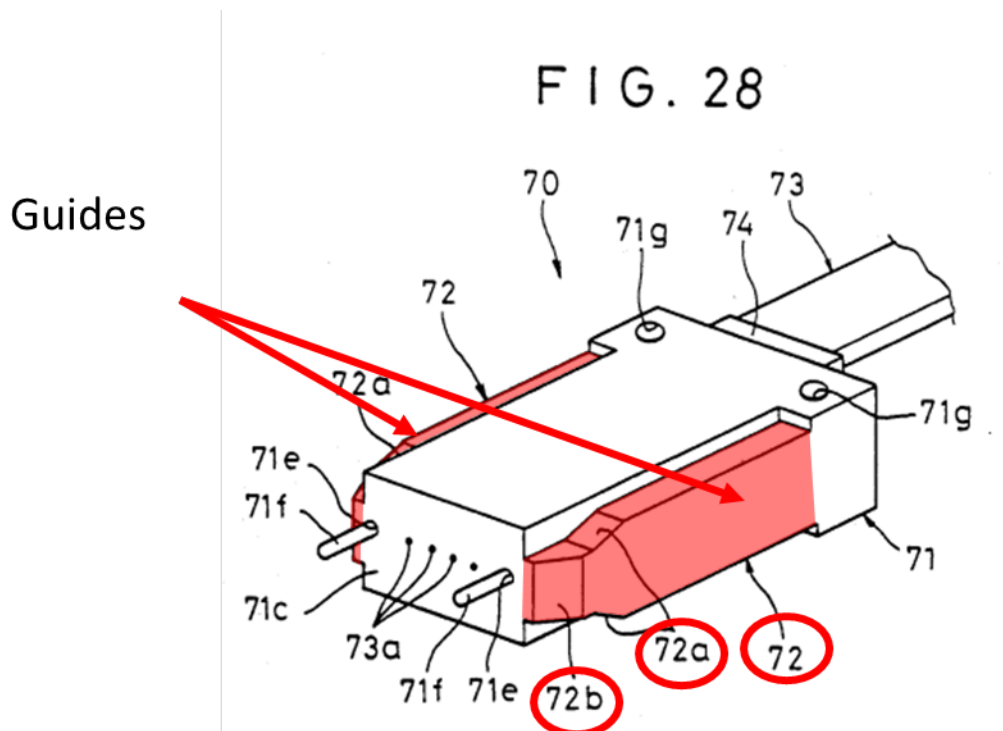
EX1008: Figs. 24-26.

55. Saito discloses a number of MT style ferrule embodiments for use in the multiple ferrule optical connector assemblies. EX1008: Figs. 2, 7, 12, 20, 28.

56. Saito discloses a number of MT style fiber optic ferrule embodiments.

57. Of particular relevance, is the ferrule embodiment depicted in Figure 28. This embodiment includes guides (72) having chamfered surfaces (72a and 72b) to assist in aligning the ferrule as it is inserted into an adapter. extending lengthwise along either side of the ferrules. EX1008: 11:56-60.

58. More specifically the guides use two sets of chamfered surfaces (72a and 72b) which serve the purpose of pre-aligning the ferrule in both the vertical and widthwise orientation when inserting the ferrule into an adapter. EX1008: 11:60-64; EXPERT DEC



EX1008: Fig. 28 (annotated).

F. Chinese Publication No. 201740886 (“Chen”)

59. Chen “relates to the field of communication technology, and in particular relates to a dual-core optical fiber connector.” EX1009: ¶[0001].

60. Chen discloses an optical fiber connector including a casing (4) and sleeve body (5) that collectively act as the connector’s housing. EX1009: ¶¶[0027].

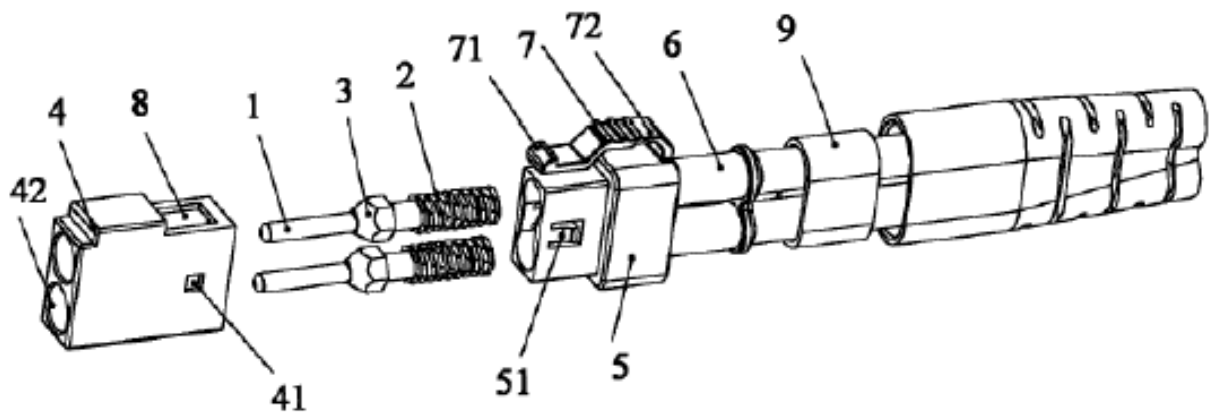


FIG. 3A

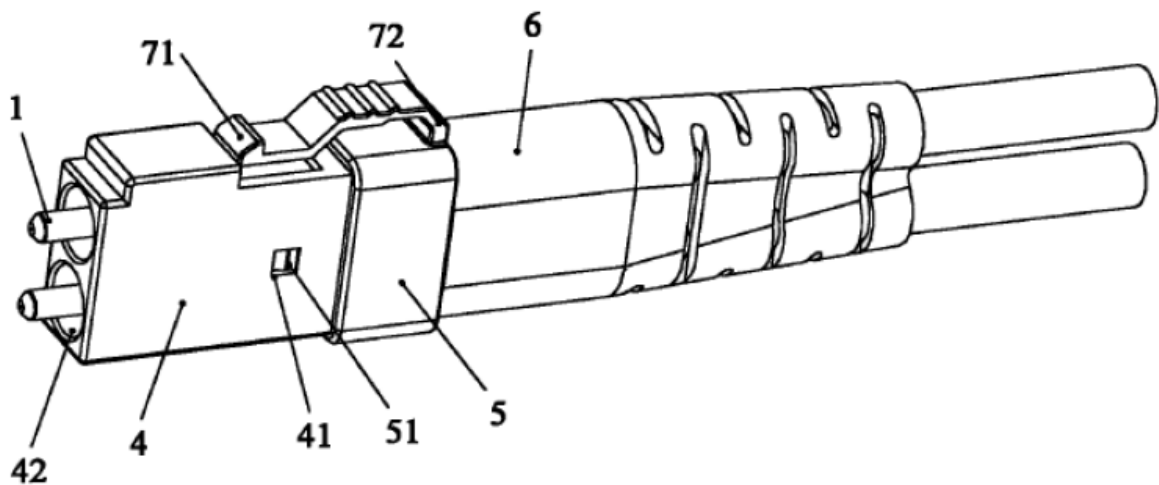


FIG. 3B

EX1009: Figs. 3A-B.

61. Notably, the height of the Chen connector housing (*i.e.*, the separation between the top side and the bottom side) is greater than its width (*i.e.*, the separation between the opposing side walls).

62. The Chen connector further has a projection on the casing (4) and a cantilever latch—referred to as a locking buckle handle (7)—on its sleeve body (5). EX1009: [0033], Fig. 3B. Both the projection and the cantilever latch are on the top side of the connector.

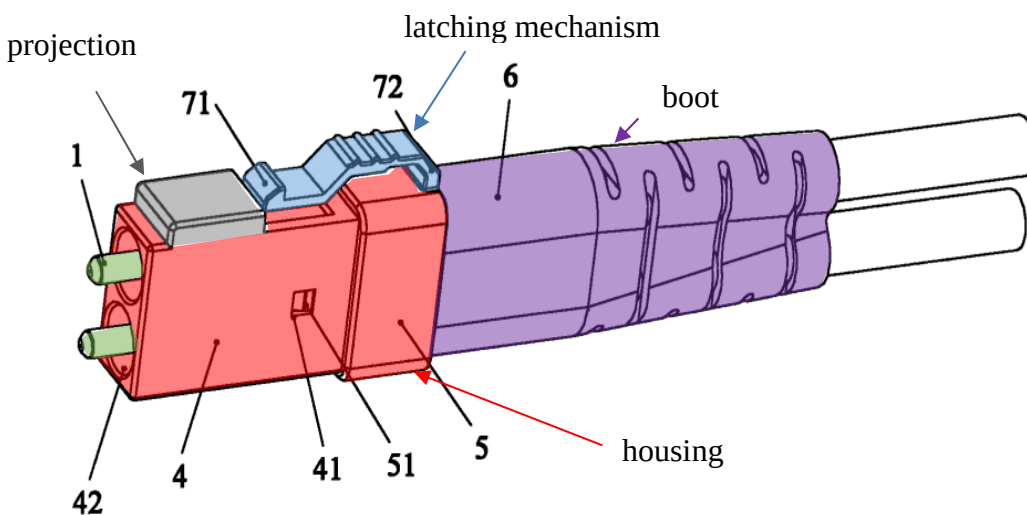


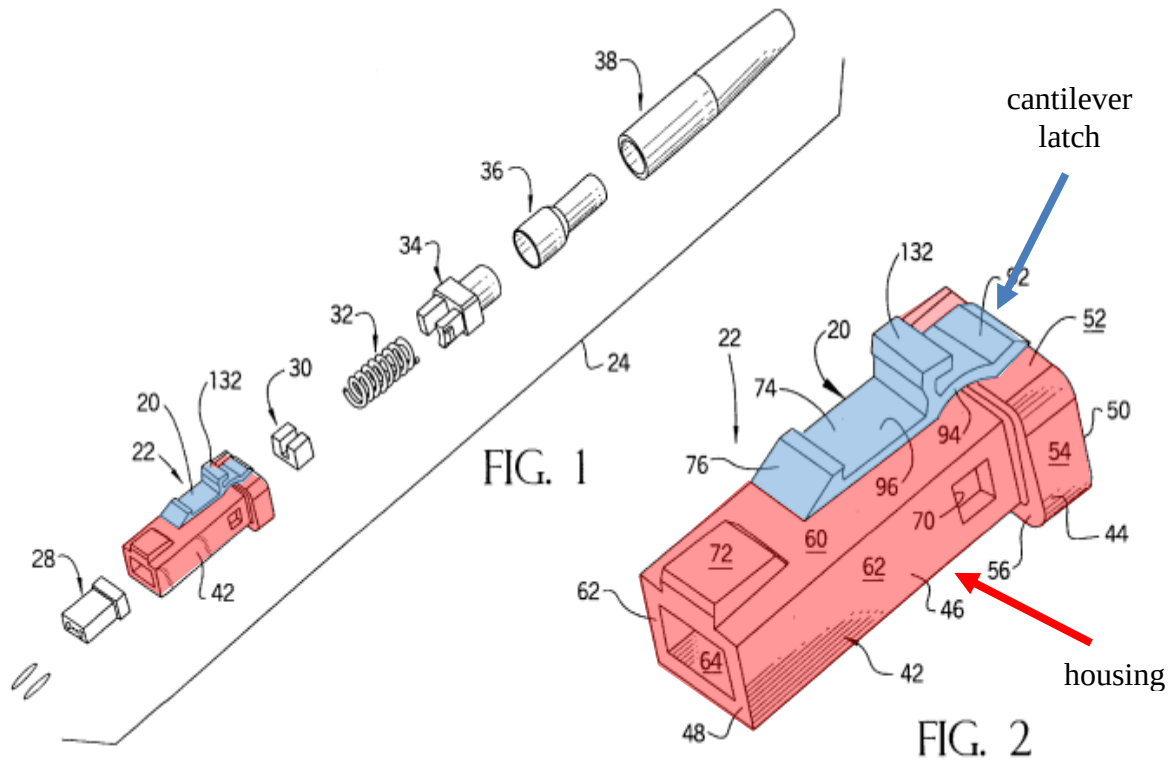
图 3B

EX1009: Figure 3B (annotated).

G. U.S. Pat. No. 6,224,268 (“Manning”)

63. Manning discloses a fiber optic connector incorporating a “forward-facing, aft-attached” cantilever latching mechanism designed to prevent loose wires or cables from getting tangled on the latch. EX1010: abstract; 1:30-39

(“Fiber optic connectors are often used in environments where there are many loose and/or hanging wires, such as copper conductor wires or other optical fibers Within environments such as these, it is advantageous to provide a connector which is not prone to entanglement on the wires...”), 2:1-12 (“... Another object of the present invention is to provide a plug housing having a novel latch structure ... such latch structure not being prone to entanglement with loose and/or hanging wires ...”), Figs. 1, 2.

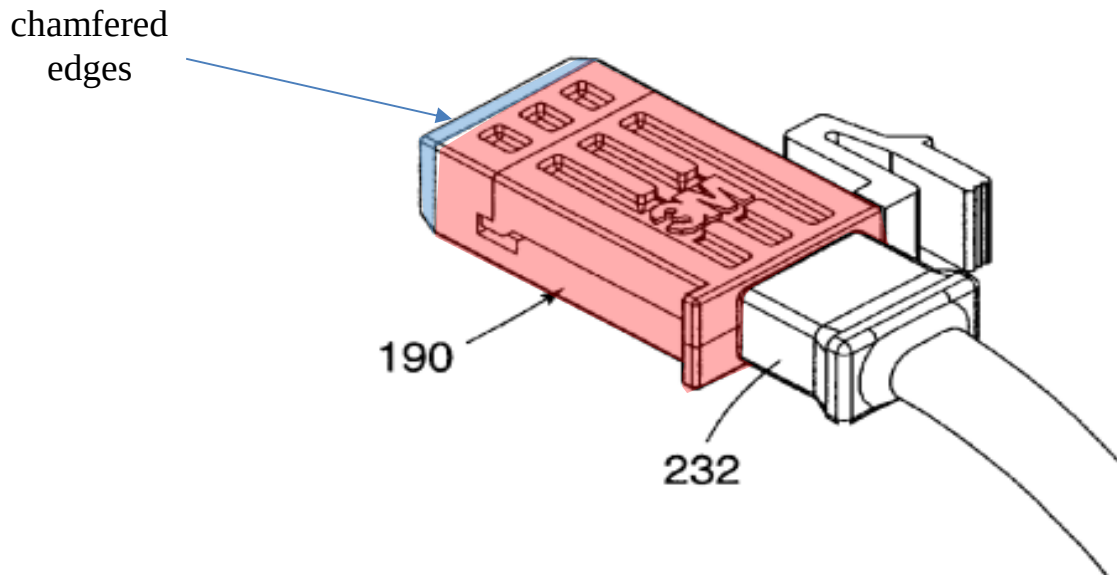


EX1010: Figs. 1, 2 (annotated).

H. U.S. Pat. No. 6,419,399 (“Loder”)

64. Loder discloses a “fiber optic connector system.” EX1011: Abstract.

65. Of specific relevance, Loder depicts its connector as having chamfered edges at the front end of the ferrule holder.



EX1011: Fig. 12 (annotated).

I. U.S. Pat. No. 7,347,634 (“Günther”)

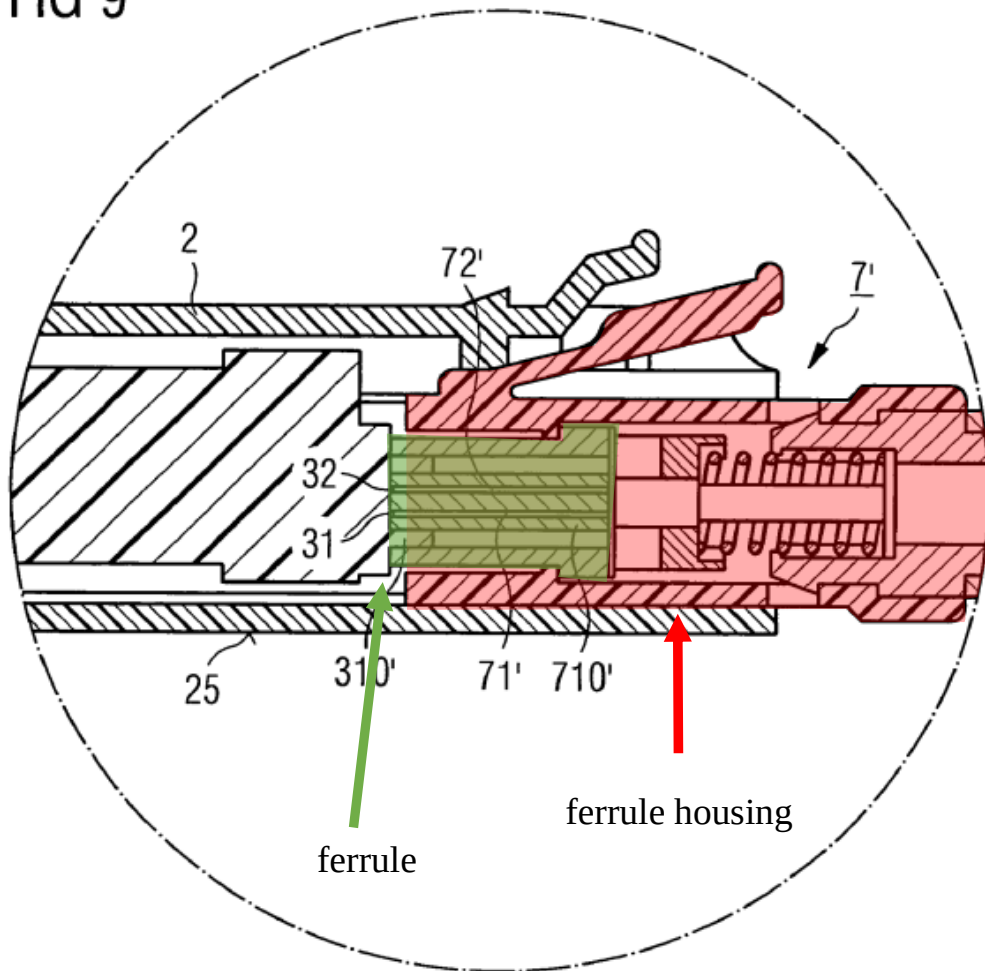
66. Günther discloses optoelectronic systems that include optical plugs.

EX1012: Abstract.

67. Of specific relevance, Figures 8 and 9 depict an of optical plugs in which a spring biased multi-fiber ferrule (710') is contained within a ferrule housing. EX1012: 9:24-37 (“FIGS. 8 and 9 show an optoelectronic module ... The optical plug 7" is again a plug 7" carrying two optical waveguides 71' 72', but the two optical waveguides 71', 72' are led together in just a single ferrule 710... The single ferrule 710' of this optical plug is received in an individual flange 310'

within which the two optical contact regions lying one above the other are arranged.”, Figs 8, 9

FIG 9

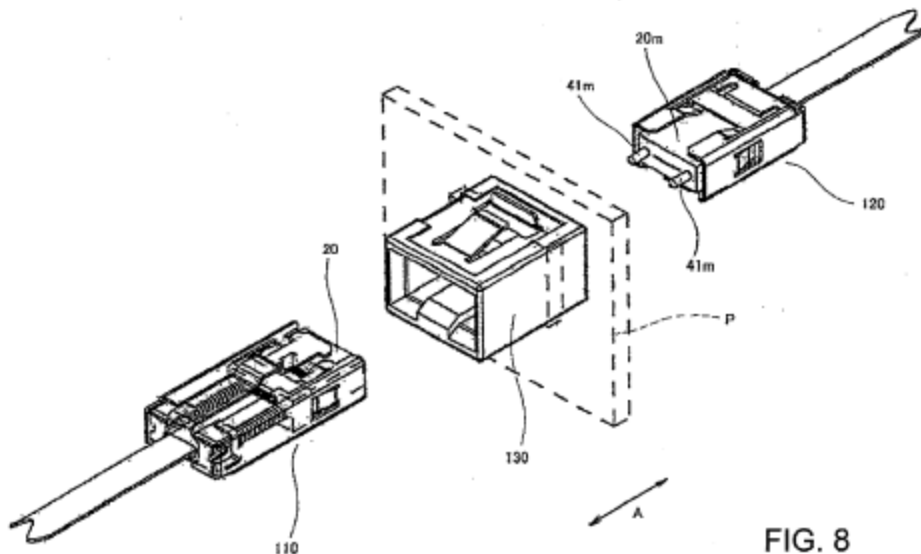


EX1012: Fig 9.

J. U.S. Pat. App. Publ. No. US 2012/0141072 (“Katagiyama”)

68. Katagiyama discloses “an optical connector comprising a ferrule slidably disposed in a housing and a biasing means for pressing the ferrule,

abutting a ferrule of a mating optical connector, against the ferrule of the mating optical connector.” EX1013: [0001].



EX1013: Fig. 8.

69. Of relevance, Katagiyama teaches that the “the front end of the ferrule is flush with or protrudes from a front end of the housing.” EX1013: Claim 9.

IV. CLAIM CONSTRUCTION

70. As I stated in Paragraph 18 above, it has been explained to me that the Board will interpret the claims of the ‘075 Patent as they would have been understood by those of ordinary skill in the art as of the filing date of the ‘075 Patent in view of the claim language itself, the specification and figures of the ‘075

Patent, the prosecution history of the '075 Patent, and other relevant evidence showing how one of ordinary skill would have understood the language.

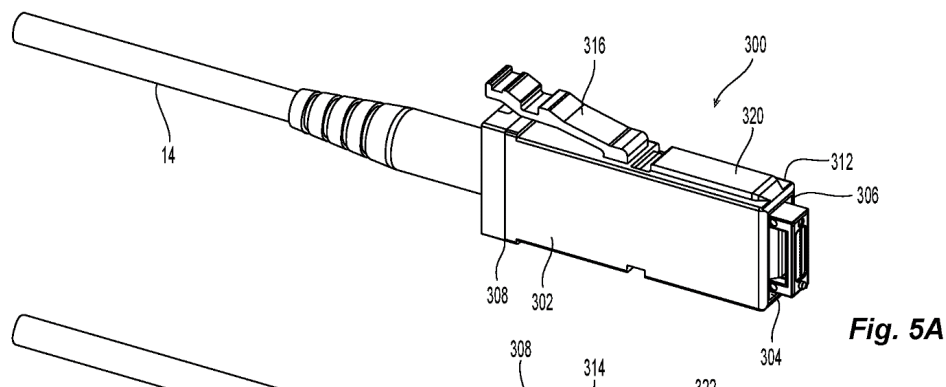
A. “Latching Mechanism”

71. I understand that patent applicants are permitted to recite a feature of an invention by what it does rather than by what it is and that such claiming is referred to as means-plus-function claiming.

72. I understand that under applicable statutes and legal precedent, for means-plus-function limitations the scope of the claim is considered to be limited the corresponding structure described in the specification and equivalents thereof, regardless if other alternative structures may be capable of forming the recited function.

73. I understand that Senko is asserting that the claim term “latching mechanism” as recited in claims 1, 18, 19, and 21 invokes means-plus-function claiming.

74. The specification of the '075 Patent discloses a single embodiment of the connector. This embodiment includes a cantilever latch (316) extending from the outer, top surface of the connector's housing, which those of skill in the art would recognize as being a mechanism that performs the recited latching function.
EX1001: 4:32-35.



EX1001: Fig. 5A.

75. One of skill in the art would recognize that other structures, in addition to cantilever latches, could also perform the function of latching the connector within an adapter.

76. I understand that to the extent the term “latching mechanism” mechanism is construed as being a means-plus-function limitation the claims scope would be limited to that of a cantilever latch extending from the outer surface of the connector’s housing or equivalents thereof.

77. I further understand that Patent Owner is asserting that features of Senko’s products that are structurally and operationally distinct from the cantilever latches disclose by the ‘075 Patent meet the “latching mechanism” limitation.

78. For the grounds asserted below as Grounds 1-4 apply the “latching mechanism” limitation to the extent it is not construed as a mans plus function limitation. Grounds 5-13 are applicable regardless of whether “latching mechanism” limitation is construed as a means-plus-function limitation.

V. GROUND 1: Obvious Over Suzuki in View of Shimozu

A. Independent Claim 1

[1.p] A fiber optic connector for a multi-fiber ferrule, comprising:

79. Suzuki discloses “[a]n optical fiber interconnect system comprising a connector for carrying an array of optical fibers.” EX1004: Abstract.

80. The connector is disclosed as being capable of handling “multi-channel MT standard ferrules”—*i.e.*, multi-fiber ferrules—while further stating that “[a]ny other combinations of connector types ... [including different] ferrule mode types (single and multi mode) ... are possible and should be considered within the scope of present invention.” EX1004: 2:54-56, 1:23-28 (“More particularly, the invention further relates to an MT-type interconnect system consisting of fiber optic connectors ...”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44 (“the introduction by the present invention of a multi-fiber connector with the standard MT type ferrule ...”).

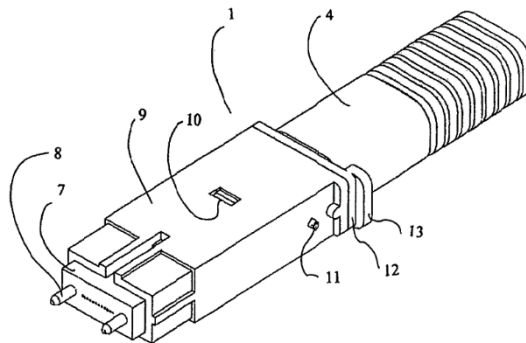


Fig. 2

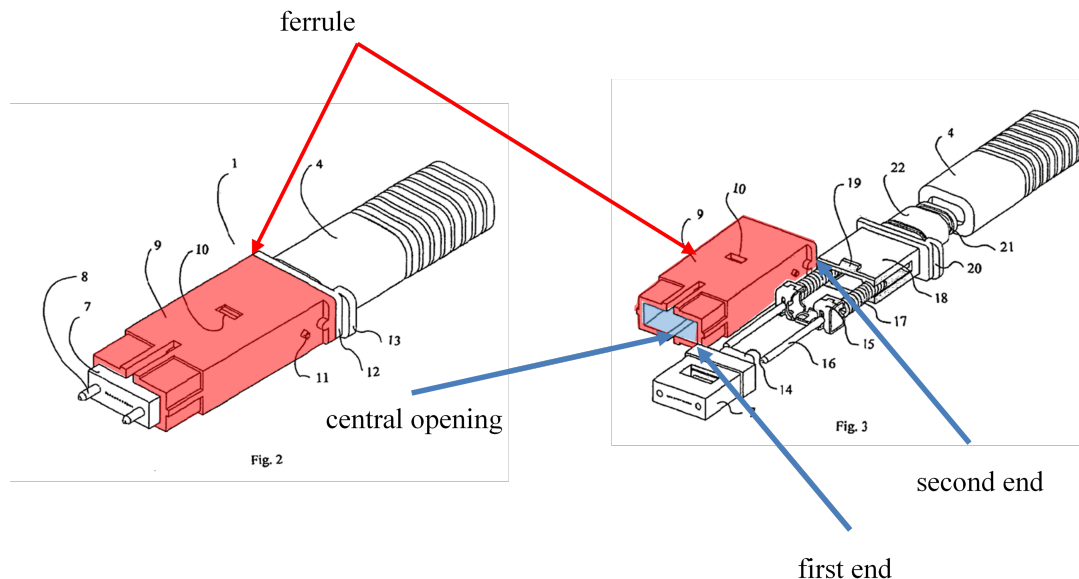
EX1004: Fig. 2.

81. Accordingly, to the extent that the preamble is deemed limiting, it is disclosed by Suzuki.

[1.a.] a ferrule holder having a central opening extending longitudinally from a first end to a second end

82. The optical connector disclosed by Suzuki has a “housing” (9)—*i.e.* a ferrule holder. EX1004: 4:33-39 (“FIG. 2 is an isometric view of the male connector 1 of FIG. 1 showing a miniature MT-type ferrule 7 with two pins 8 which makes it a male connector. It also shows front housing 9 with two latch openings 10 (only one opening is visible) and a dual pin 11. In addition, it shows rear housing 12 with pushing tab 13 and straight strain relief boot 4.”).

83. The exploded view of Figure 3 of Suzuki shows the housing/ferrule holder (9) as having a central opening extending longitudinally from a first end to a second end.



EX1004: Figs. 2 and 3 (annotated).

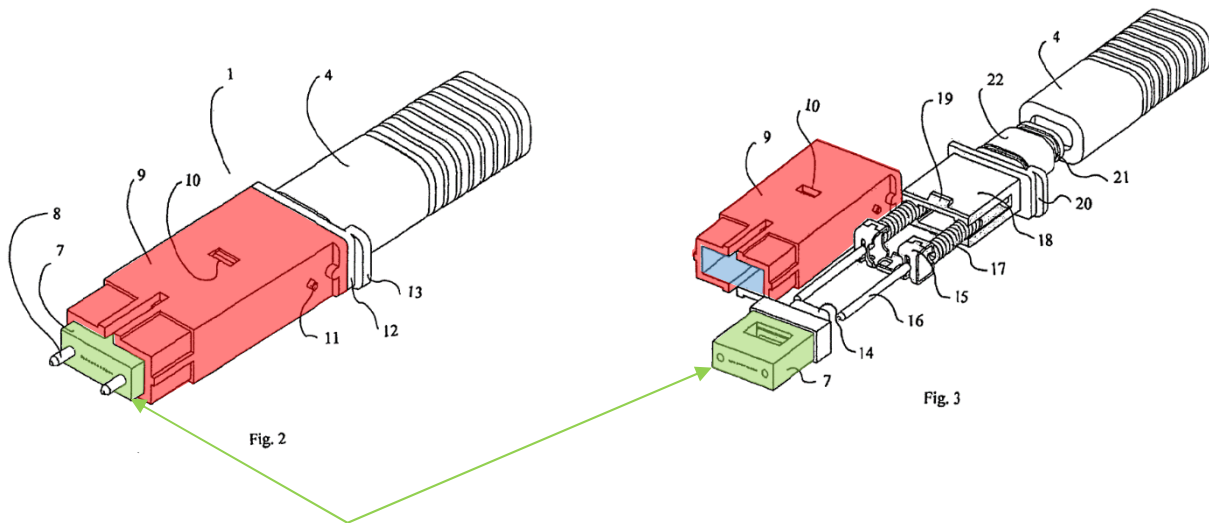
84. Accordingly, claim limitation [1.a] is disclosed by Suzuki.

[1.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

85. The optical connector disclosed by Suzuki has a MT style multi-fiber ferrule (7). EX1004: 1:33-35 (“The invention here disclosed applies primarily to multiple fiber applications.”); 1:49-52 (“The invention here disclosed applies primarily to multi-fiber applications.”); *see also* EX1004: 2:39-44 (“...the present invention of a multi-fiber connector with the standard MT type ferrule ...”), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrules so as to enable the acceptance of bare and cabled fiber optics.”).

86. The MT style ferrule of Suzuki are supported by an “array”/“plurality” of/“serveral” optical fibers. EX1004: Abstract, 1:49-52, 7:36, 8:5.

87. As assembled, the multi-fiber ferrule is housed within the central opening as shown in Figures 2 and 3.



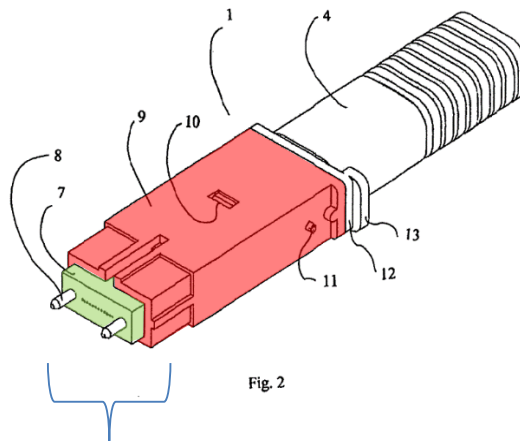
ferrule

EX1004: Figs. 2 and 3 (annotated).

88. Accordingly, claim limitation [1.b.1] is disclosed by Suzuki.

[1.b.2] the multi-fiber ferrule being exposed at an opening at the first end of the ferrule holder

89. As shown in Figure 2, the multi-fiber ferrule of Suzuki is exposed from the opening at one end (*i.e.*, “the first end”) of the ferrule holder.



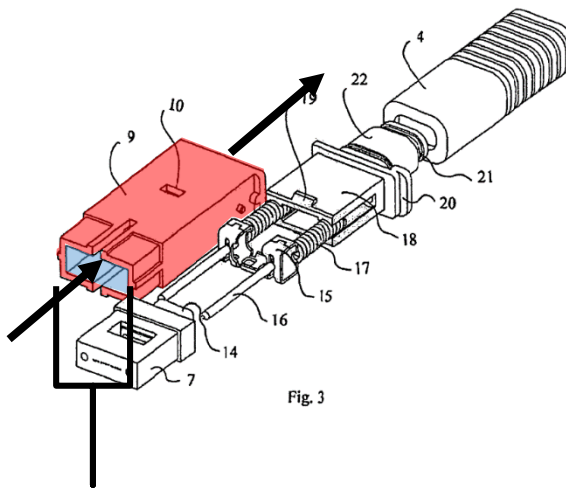
first end of the ferrule

EX1004: Fig. 2 (annotated).

90. Accordingly, claim limitation [1.b.2] is disclosed by Suzuki.

[1.b.3] the opening at the first end being in communication with the central opening

91. As shown in exploded view of the Figure 3, the opening at the front end of the ferrule holder from which the ferrule is exposed—*i.e.*, a “first end” in the context of the ‘075 Patent’s claims—is in communication with a central opening in the ferrule holder (9).



first end of the ferrule holder

EX1004: Fig. 3 (annotated).

92. Accordingly, claim limitation [1.b.3] is disclosed by Suzuki.

[1.c] a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers

93. The optical connector disclosed by Suzuki can have either a “strain relief boot” (4) for use with cables or a “small boot” (6) for use with bare ribbons.

EX1004: 5:4-7 (“The male connector 1 also preferably has a strain relief boot 4

(can be of many different configurations) for use with cables or a small boot 6 (as shown in FIG. 1 for the female connector 3) for use with bare ribbons.”).

94. Both the “strain relief boot” (4) for use with cables or the “small boot” (6) for use with bare ribbons would meet the limitation as both cables and bare ribbons would have at least two optical fibers when used in combination with MT-ferrules.

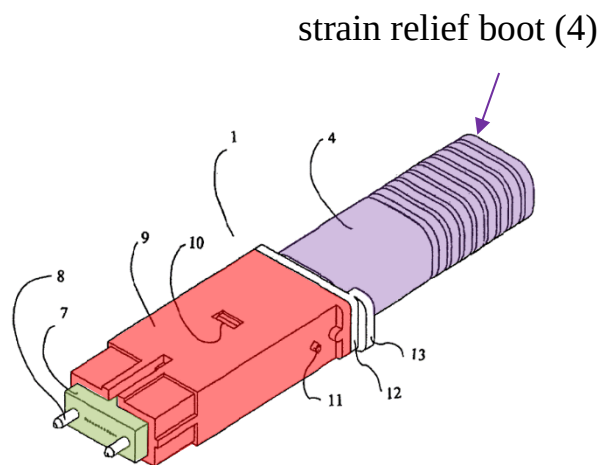


Fig. 2

EX1004: Fig. 2 (annotated).

95. Accordingly, claim limitation [1.c] is disclosed by Suzuki.

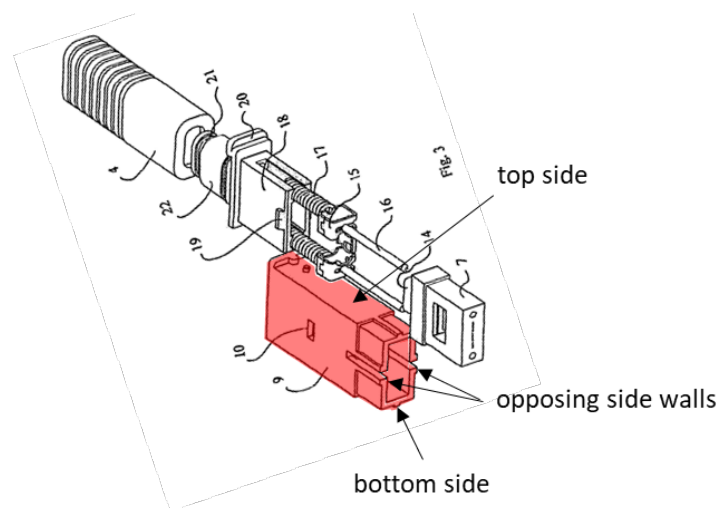
[1.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls

96. While the claims identify the various sides of the ferrule holder in the context of the fiber optic connector being in an up-right orientation, those of skill in the art would recognize that the orientation of a free standing fiber optic connector is merely a matter of perspective. Those of skill in the art would further

recognize that the orientation of a fiber optic connector in the field will ultimately be driven by the application in which the fiber optic connector is used.

97. Accordingly, those of skill in the art would recognize that connectors within the prior art—such as the connector of Suzuki—can be rotated to match the orientation as recited in the claims of the '075 Patent.

98. Accordingly, the top side, a bottom side, and opposing side walls joining the top and bottom sides of Suzuki can be identified according the rotated Figure 3 below:



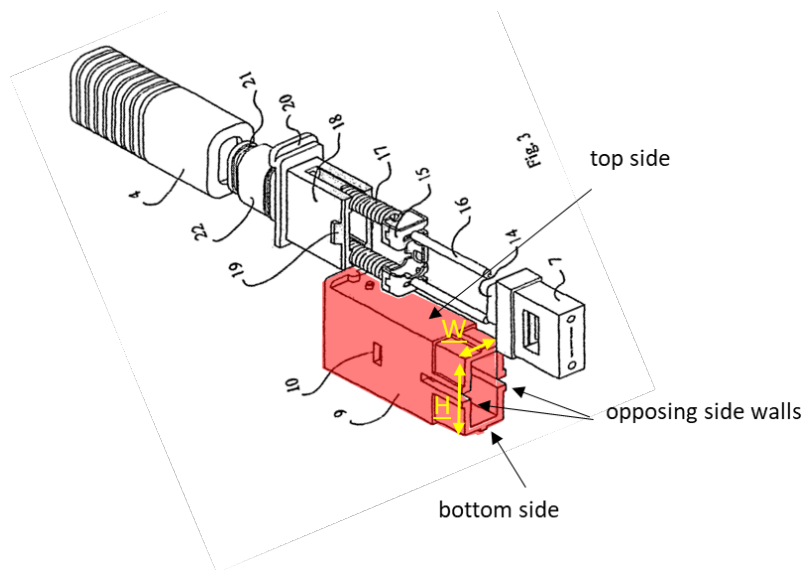
EX1004: Fig. 3 (rotated and annotated).

99. Accordingly, claim limitation [1.d] is disclosed by Suzuki.

[1.e.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

100. As addressed with respect to claim limitation [1.d] immediately above, those of skill in the art would the connector of Suzuki—can be rotated to match the orientation as recited in the claims of the ‘075 Patent.

101. In this orientation, Suzuki’s figures disclose the separation between the top side and the bottom side (H) as being greater than the separation between the opposing side walls (W) as shown in the rotated Figure 3 below:

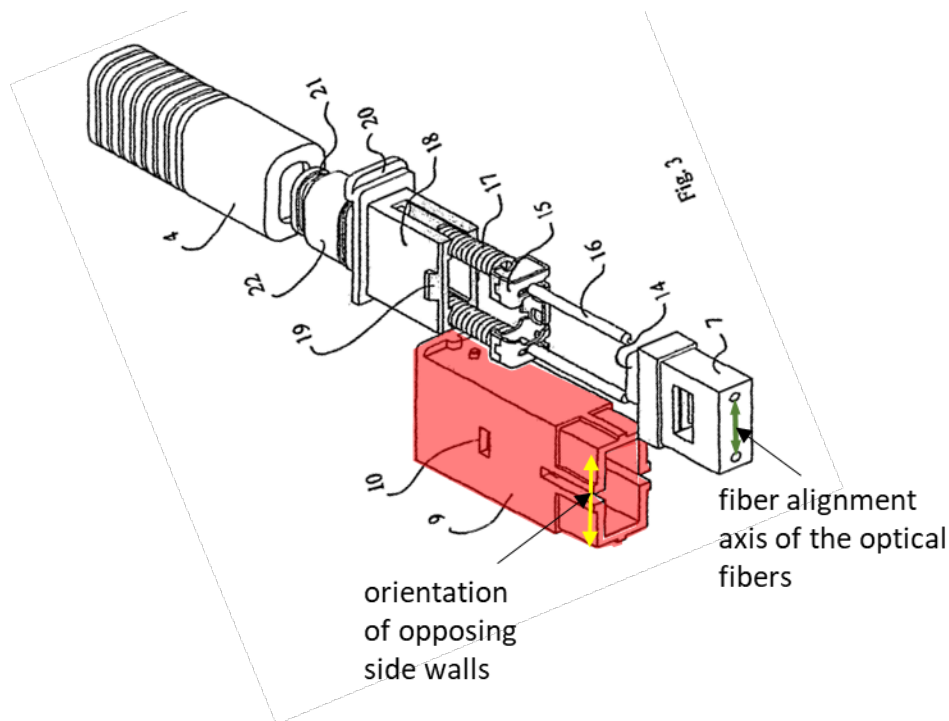


EX1004: Fig. 3 (rotated and annotated).

102. Accordingly, claim limitation [1.e.1] is disclosed by Suzuki.

[1.e.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the multi-fiber ferrule

103. In the context of the orientation of the connector of Suzuki addressed with respect to claim limitation [1.d] above, the opposing side walls are parallel to the fiber alignment axis of the optical fibers at an end face of the multi-fiber ferrule.

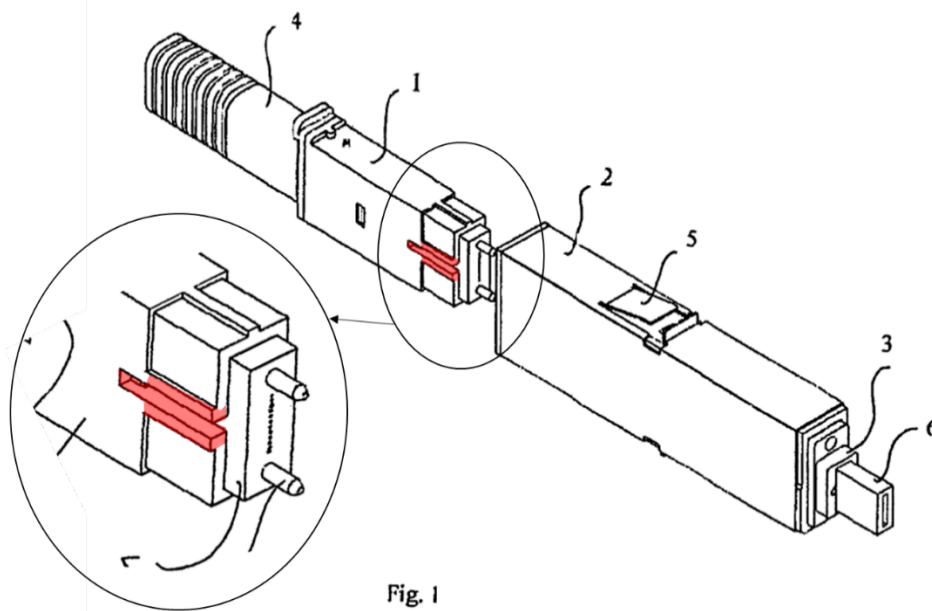


EX1004: Fig. 3 (rotated and annotated).

104. Accordingly, claim limitation [1.e.2] is disclosed by Suzuki.

[1.f] wherein a front end of the ferrule holder has a lead-in or a chamfer

105. Suzuki's figures disclose an alignment feature at the lead end of the connector housing—i.e., a lead-in—as shown below.



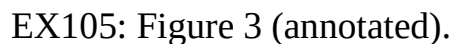
EX1004: Fig. 1 (rotated and annotated).

106. Although not discussed within the specification, the person of skill in the art would recognize these elements are intended to act as guides slots. More specifically, the person of skill in the art would recognize that the corresponding adapter would include rails horizontal rails along the middle of its interior side walls, such that when the connector is being inserted into the adapter the guides slots would receive the rails. In doing so the guide slots and rails would serve to pre-align the ferrule height-wise as it is being inserted into the adapter.

107. Notably U.S. Patent 6,149,313 provides similar lead-ins in the form of the cut-outs (30) and an explanation of their operation:

As illustrated, the shroud 18 can also include various alignment features for aligning the resulting fiber optic connector 10 with another fiber optic connector or with an alignment sleeve, an outlet or other receptacle. In this regard, the shroud body 20 can include an outwardly

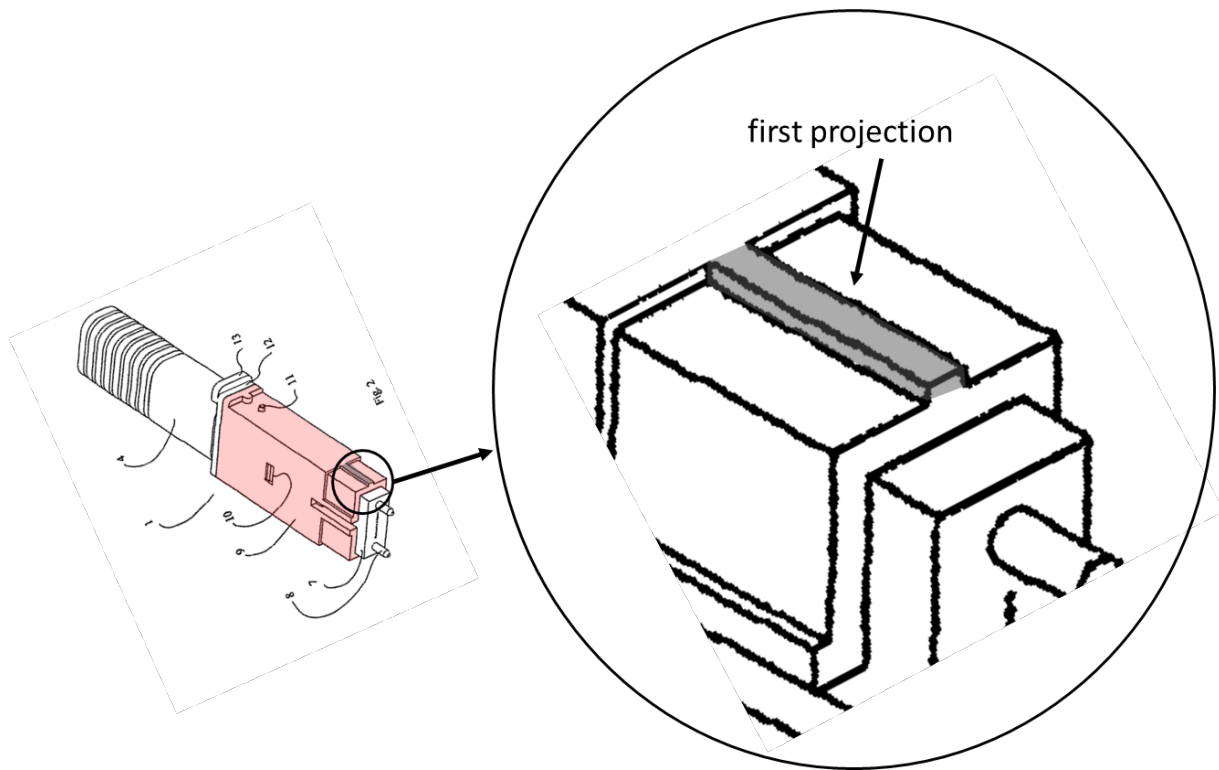
EX1015: 8:58-9:6



[1.g] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side

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Senko EX1003
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body that extends longitudinally rearward from the connector body's front opening.

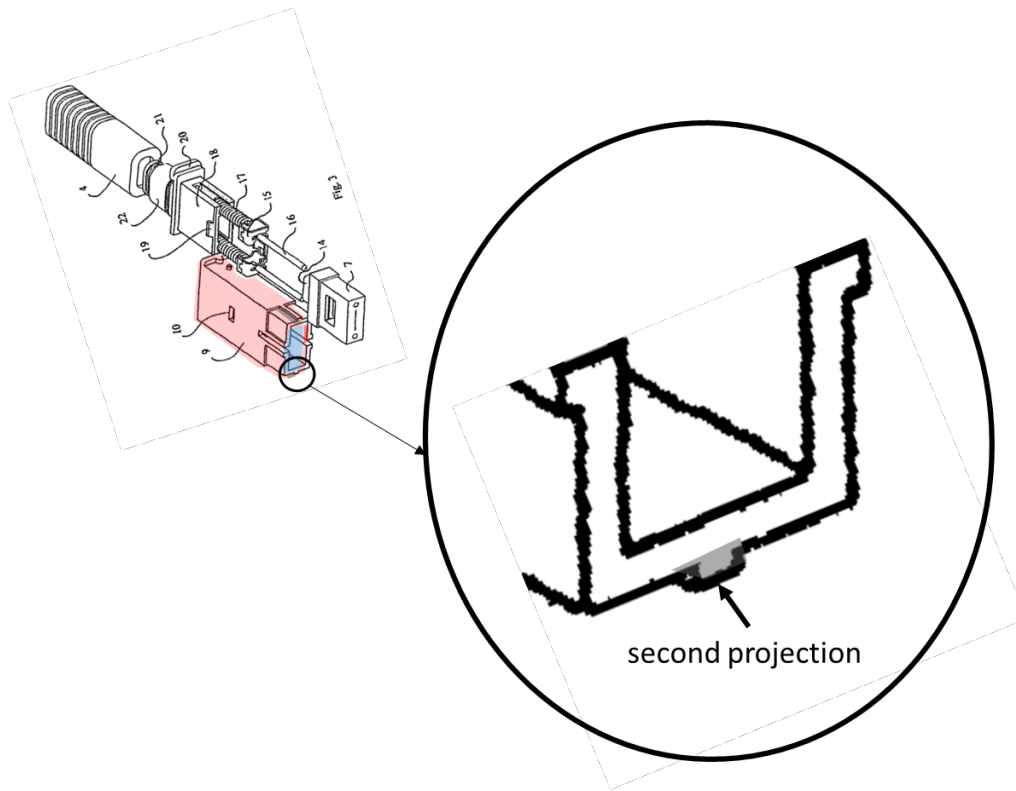


EX1004: Fig. 2 (rotated and annotated).

110. Accordingly, claim limitation [1.f] is disclosed by Suzuki.

[1.h] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side

111. Although not discussed within the specification, Suzuki's Figure 3 disclose a second projection on the outside surface on the bottom side of the connector body that extends longitudinally rearward from the connector body's front opening.



EX1004: Fig. 3 (rotated and annotated).

112. Accordingly, claim limitation [1.h] is disclosed by Suzuki.

[1.i] wherein the first projection has a different shape than the second projection

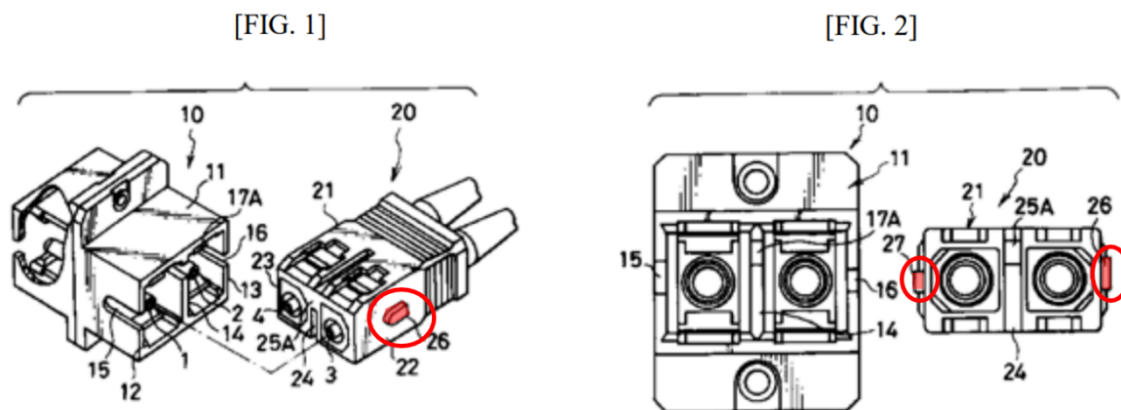
113. As addressed above, the figures of Suzuki depict first and second projections.

114. Those of skill in the art would recognize these first and second projections would provide width-wise alignment of the connector as it is inserted into an adapter. More specifically, the person of skill in the art would recognize that the corresponding adapter would include guide grooves to receive the projections along the middle of its interior on the top and bottom walls, such that

when the connector is being inserted into the adapter the adapter's guides grooves would receive the projections and in doing so would serve to pre-align the ferrule width-wise as it is being inserted into the adapter.

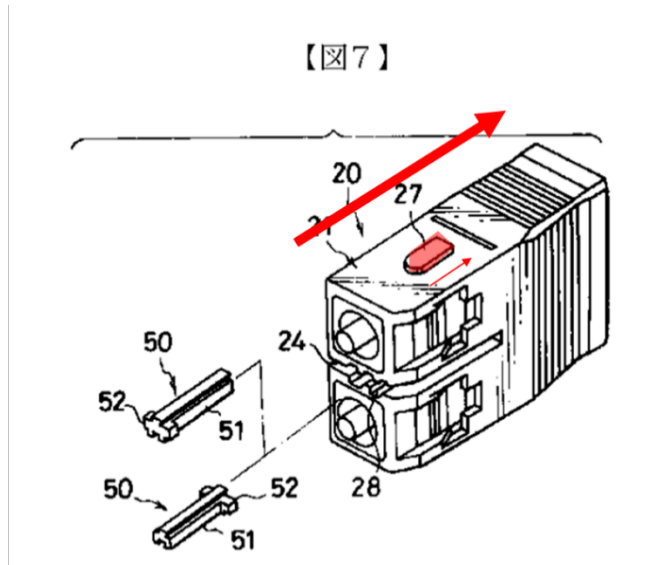
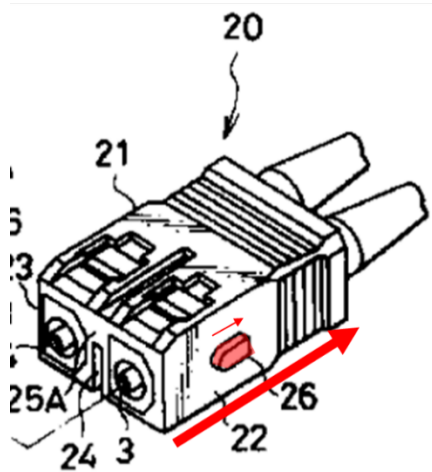
115. The first and second projections of the Suzuki connector appear to be the same shape, but it would have been obvious to use different sized and/or shaped projections to provide a key for polarity as disclosed in Shimozu.

116. Like Suzuki, Shimozu discloses connectors with projections—the “identification guides” (26 and 27)—along two opposing sides. EX1007: [0012], Figs 1 and 2.



EX1007: Figs 1 and 2 (annotated).

117. Also like Suzuki, the identification guides (26 and 27) of the Shimozu connector extend in a longitudinal direction as shown in Figures 1 and 7. EX1007: Figs 1 and 2.



EX1007: Figs 1 and 2 (excerpted and annotated).

118. Notably, Shimozu identification guides (26 and 27) serve the additional purpose of ensuring the proper polarity or orientation of the connector as it is inserted into the adapter.

119. Specifically, Shimozu teaches sizing the widths of the identification guides (26 and 27)—and their corresponding keyways (15 and 16)—differently to prevent the “incorrect insertion.” EX1007: [0012] (“A width of the identification guide key 26 is larger than a width of the identification guide key 27.”), [0014] (“When attempting to mate this in the opposite direction, for example, attempting to mate the double-core optical connector plug 20 with the double-core optical connector adapter 10 in a direction reversed from the position illustrated in FIG. 1, the respective guide keyway and guide key cannot fit together, and thus mating is not possible.”).

120. Sizing the first and second projections differently—as taught by Shimozu—was a known technique used to improve a similar device to the connector of Suzuki. Those of skill in the art would recognize that the use of the different sized projections would have resulted in a predictable improvement—improved error proofing and prevention of the inserting the multi fiber connector in the reverse orientation (*i.e.*, rotated 180°).

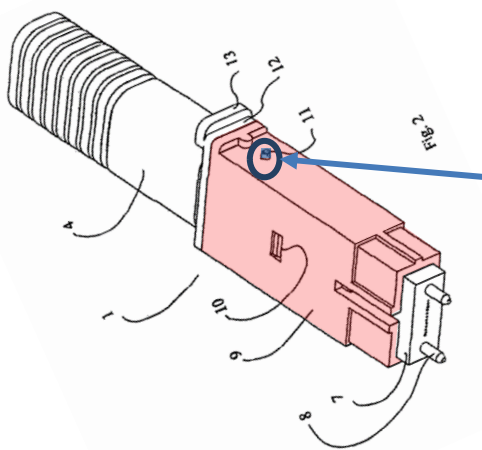
121. In my opinion, sizing the first and second projections of the connector disclosed by Suzuki differently would have been an obvious improvement. In my experience, connector systems routinely employ redundant means of ensuring the correct insertion orientation/polarity of connectors within adapters.

122. Accordingly, claim limitation [1.j] is rendered obvious by Suzuki in view of Shimozu.

[1.j] a latching mechanism on at least one of the top side and the bottom side

123. The Suzuki connector includes a “dual pin” (11) on the top side of the housing which acts as a latching mechanism. More specifically, the dual pin acts as a mechanical actuator (*i.e.*, a mechanism) to latch and unlatch from a mating adapter. EX1004: 5:46-48 (“It should be understood that dual pin 11 (shown on FIG. 2) is an integral part of the push-push mechanism 27, since this dual pin 11 serves as an actuator of the mechanism 27.”), 6:44-61 (“As square portion of pin 11 of connector 1 contacts and then slides along in contact with Surface 44, it is

guided along ramped cam Surface 48 until it reaches the stopped position ... When connector 1 is released and no longer pushed inwardly ... ramped cam surface 48 tends to urge pin 11 downwardly into the mated position so as to abut surfaces 50 and 46 as shown in FIG. 7d by capturing square portion of pin 11 therein”).



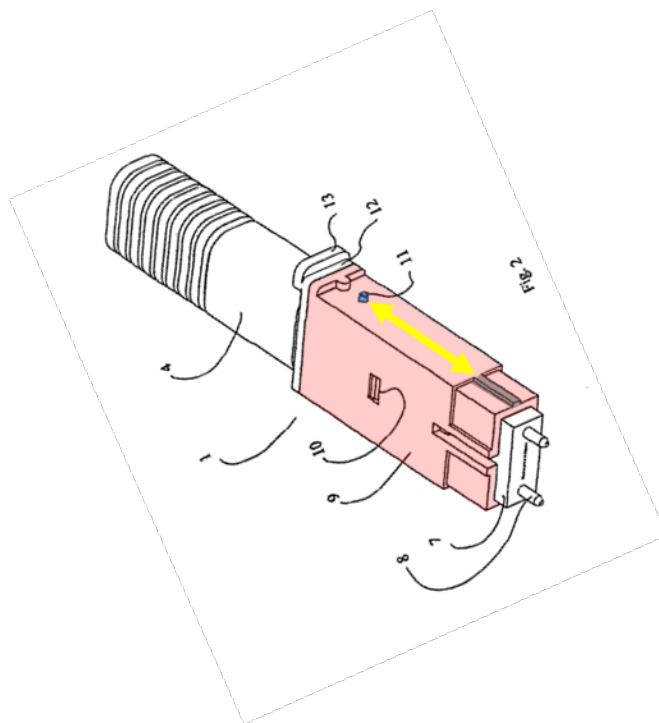
dual pin (11)
(i.e. latching
mechanism)

EX1004: Fig. 2 (rotated and annotated).

124. Accordingly, claim limitation [1.j] is disclosed by Suzuki.

[1.k] wherein the latching mechanism is unconnected to the first projection and the second projection

125. As disclosed in Suzuki’s figures, the Suzuki connector includes a “dual pin” (11) that is not directly connected to and is spatially separated from the first and second projections of the housing.



EX1004: Fig. 2 (rotated and annotated).

126. Accordingly, claim limitation [1.k] is disclosed by Suzuki.

B. Independent Claim 19

[19.p] A fiber optic connector for a multi-fiber ferrule, comprising:

127. The preamble to Claim 19 of the '075 Patent is verbatim identical to the preamble of Claim 1. For the reasons discussed above with respect to Claim 1 in Paragraphs 79 through 81, Suzuki discloses [19.p].

[19.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end

128. Claim element [19.a] is verbatim identical to claim element [1.a]. For the reasons discussed above in Paragraphs 82 through 84, Suzuki discloses element [19.a] of the '075 Patent.

[19.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

129. Claim element [19.b.1] is verbatim identical to claim element [1.b.1].

For the reasons discussed above in Paragraphs 85 through 88, Suzuki discloses element [19.b.1] of the '075 Patent.

[19.b.2] the multi-fiber ferrule being exposed at an opening at the first end of the ferrule holder

130. Claim element [19.b.2] is verbatim identical to claim element [1.b.2]

For the reasons discussed above in Paragraphs 89 through 90, Suzuki discloses element [19.b.2] of the '075 Patent.

[19.b.3] the opening at the first end being in communication with the central opening

131. Claim element [19.b.3] is verbatim identical to claim element [1.b.3]

For the reasons discussed above in Paragraphs 91 through 92, Suzuki discloses element [19.b.3] of the '075 Patent.

[19.c] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls

132. Claim element 19.c is verbatim identical to claim element [1.d] For the reasons discussed above in Paragraphs 96 through 99, Suzuki discloses element [19.c] of the '075 Patent.

[19.d.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

133. Claim element [19.d.1] is verbatim identical to claim element [1.e.1]

For the reasons discussed above in Paragraphs 100 through 102, Suzuki discloses element [19.d.1] of the '075 Patent.

[19.d.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the multi-fiber ferrule

134. Claim element [19.d.2] is verbatim identical to claim element [1.e.2]

For the reasons discussed above in Paragraphs 103 through 104, Suzuki discloses element [19.d.2] of the '075 Patent.

[19.e] wherein a front end of the ferrule holder has a lead-in

135. Claim element [19.e] of the '075 Patent is similar to claim element [1.f], except that it recites that the "front end of the ferrule holder has a lead-in" instead of a "lead-in or a chamfer." For the reasons discussed above in Paragraphs 105 through 108 with respect to [1.f], Suzuki discloses [19.e].

[19.f] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side

136. Claim element 19.f is verbatim identical to claim element [1.g] For the reasons discussed above in Paragraphs 109 through 110, Suzuki discloses element [19.f] of the '075 Patent.

[19.g] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side

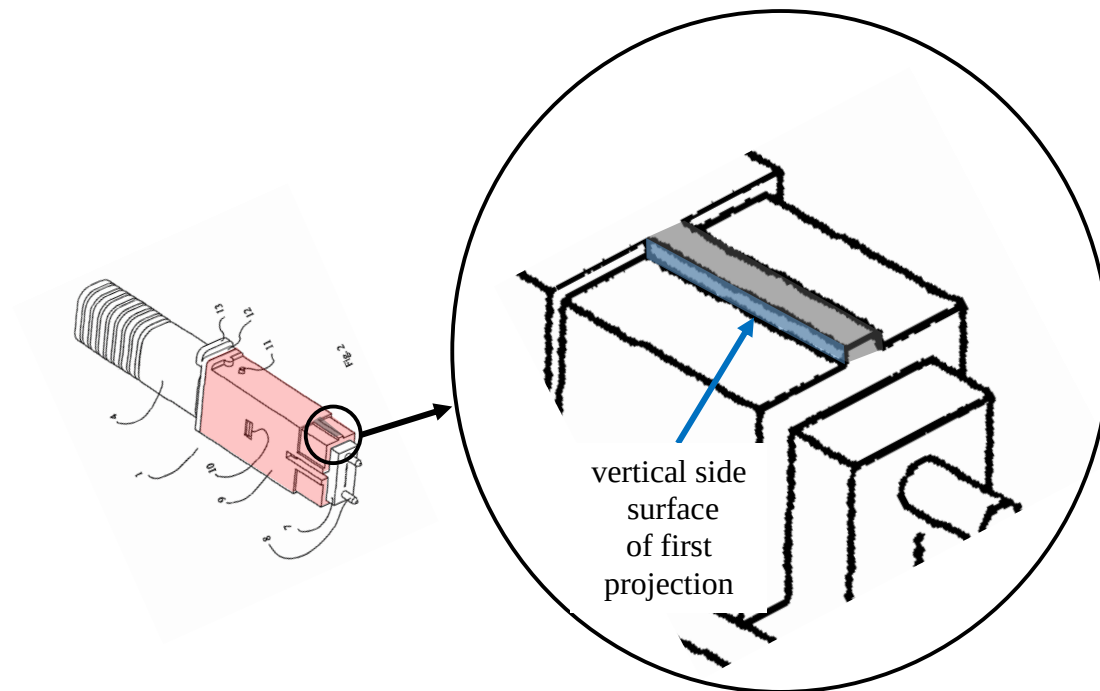
137. Claim element 19.g is verbatim identical to claim element [1.h] For the reasons discussed above in Paragraphs 111 through 112, Suzuki discloses element [19.g] of the '075 Patent.

[19.h] wherein the first projection has a different shape than the second projection

138. Claim element 19.h is verbatim identical to claim element [1.i] For the reasons discussed above in Paragraphs 112 through 122, the combination of Suzuki and Shimozu renders element 19.h of the '075 Patent obvious.

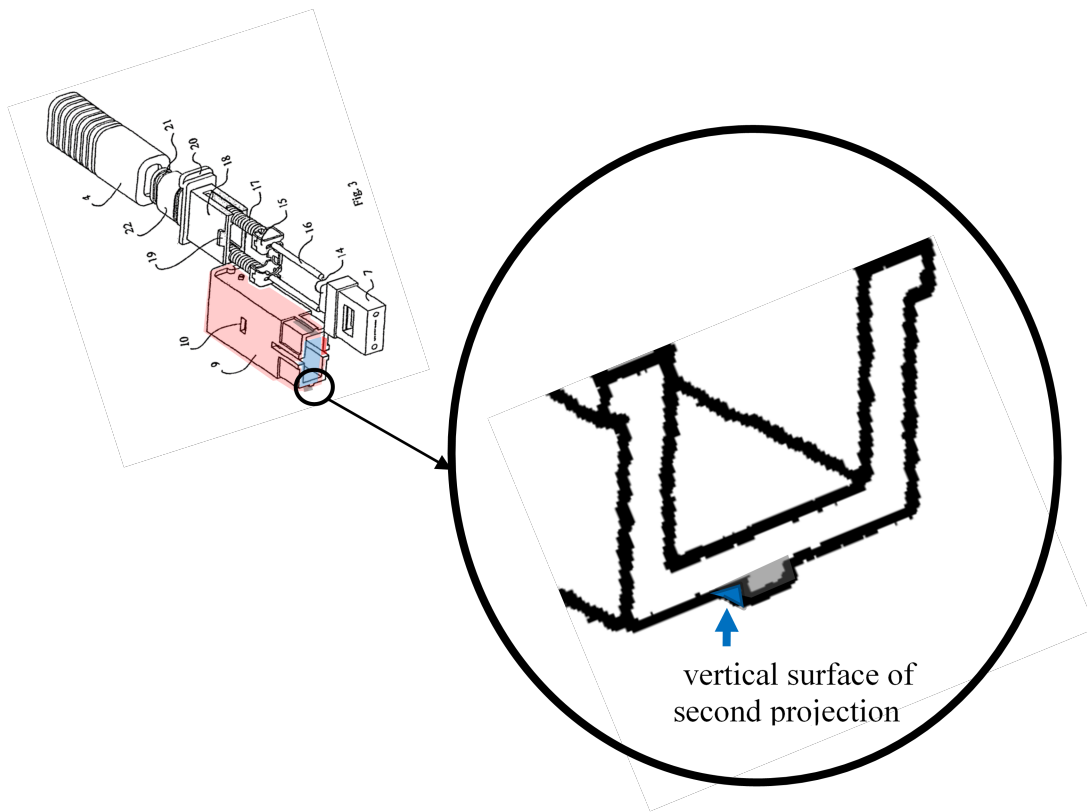
[19.i] wherein the first and the second projections each have a vertical side surface to align the ferrule holder with a vertical wall to control a horizontal direction of movement of the ferrule holder relative to an adapter

139. Suzuki's figures depict the first projection—the projection on the outside surface on the top side of the connector body—as having vertical side surfaces.



EX1004: Fig. 2 (rotated and annotated)

140. Although cut off by the viewing angle, Figure 3 shows a second projection—the projection on the outside surface on the bottom side—which appears to mirror the first projection. Accordingly, one of skill in the art would view Figure 3 as disclosing the second projection as also having vertical side surfaces.



EX1004: Fig. 2 (rotated and annotated).

141. Notably this limitation’s recitation that the vertical side surface “align[s] the ferrule holder with a vertical wall to control a horizontal direction of movement of the ferrule holder relative to an adapter” merely recites an intended use—and as such, I understand that it is not entitled to any patentable weight.

142. Regardless, those of skill in the art would recognize the first and second projections were intended to provide width-wise pre-alignment of the connector as it is inserted into an adapter by mating with guide grooves inside the corresponding adapter. Accordingly, those of skill in the art would understand that vertical side

surfaces of the first and second projections are intended to control the horizontal direction of movement of the ferrule holder relative to an adapter.

143. Therefore, Suzuki discloses [19.i].

[19.j] a latching mechanism on at least one of the top side and the bottom side

144. Claim element 19.j of the '075 Patent is verbatim identical to claim element [1.j]. As discussed above with respect to Claim 1 in Paragraphs 123 through 125, Suzuki discloses element [19.j].

[19.k] wherein the latching mechanism is unconnected to the first projection and the second projection

145. Claim element 19.k of the '075 Patent is verbatim identical to claim element [1.k]. As discussed above with respect to Claim 1 in Paragraphs 126 through 129, Suzuki discloses element [19.k].

C. Claim 2 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule is an MT type ferrule.

146. Claim 2 depends from Claim 1 adding the limitation that the multi-fiber ferrule is an MT type ferrule.

147. This additional limitation is disclosed by Suzuki in that the ferrule (7) of the Suzuki connector is identified as being an MT style multi-fiber ferrule.

EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44

(“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

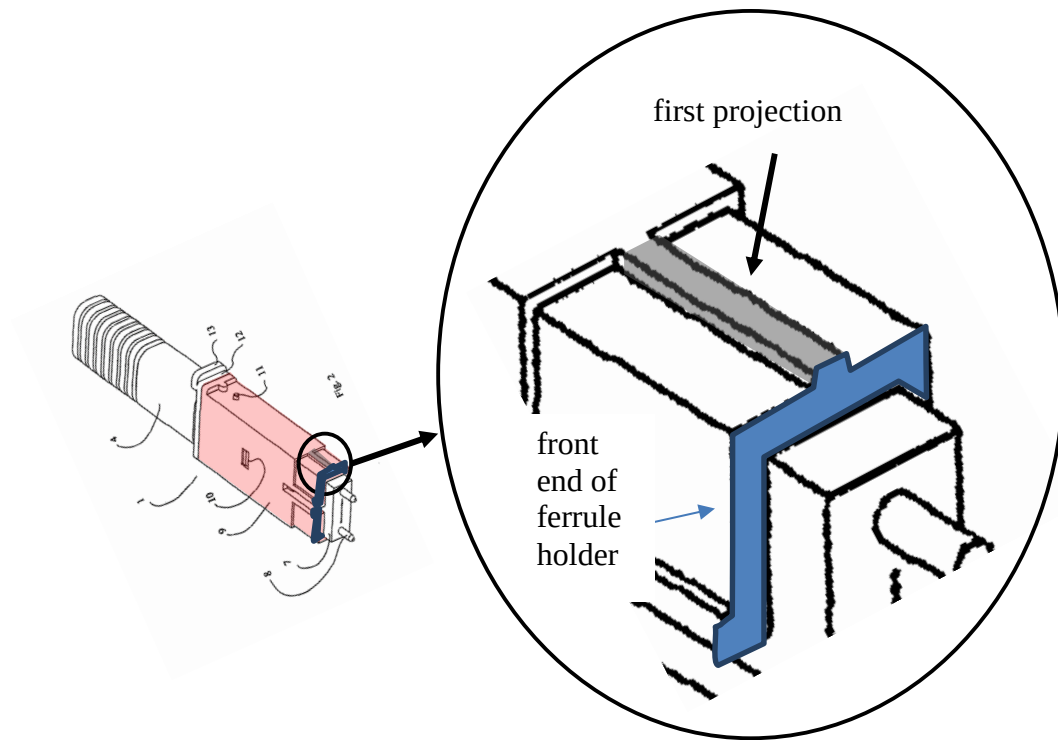
148. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

D. Claim 3 - The fiber-optic connector according to claim 1, wherein a top surface of the first projection is rearward of the front end of the ferrule holder

149. Claim 3 depends from Claim 1 adding the limitation that the top surface of the first projection is rearward of the front end of the ferrule holder.

This additional limitation was disclosed by Suzuki.

150. Specifically, the first projection of the Suzuki connector has a horizontal top surface that begins at the front end of the ferrule holder and extends horizontally rearward.

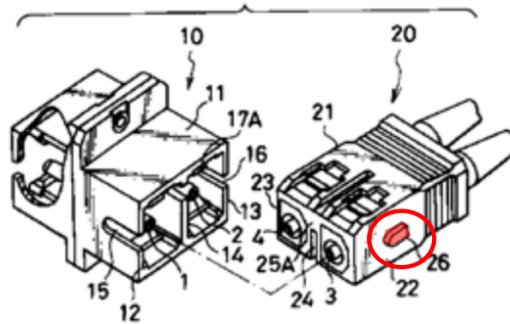


EX1004: Fig. 2 (rotated and annotated).

151. Thus, the top surface of the first projection of the Suzuki connector is rearward of the front end of the ferrule holder.

152. Even to the extent that the claim is construed to require the entire surface of the first projection be rearward of the front edge, Shimozu already teaches this arrangement as its identification guides (26 and 27) are also rearward of the front edge.

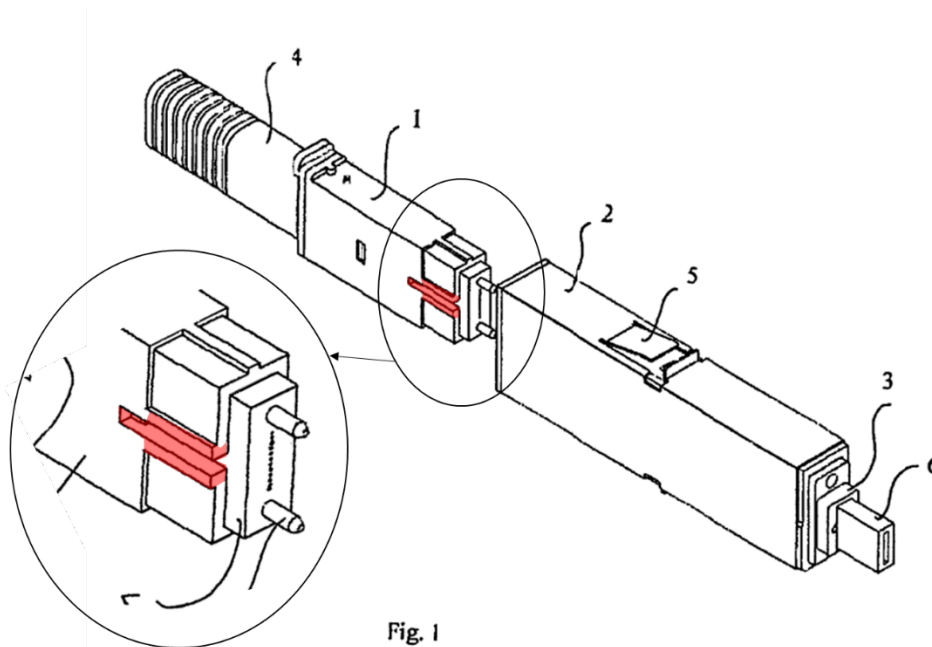
[FIG. 1]



153.

EX1007: Figs 1 (annotated).

154. As the Suzuki also includes lead-ins—as shown below—spacing the first projection rearward of the front edge would not diminish its purpose of providing additional width-wise alignment of the connector by mating with guide grooves inside the corresponding adapter



EX1004: Fig. 1 (rotated and annotated).

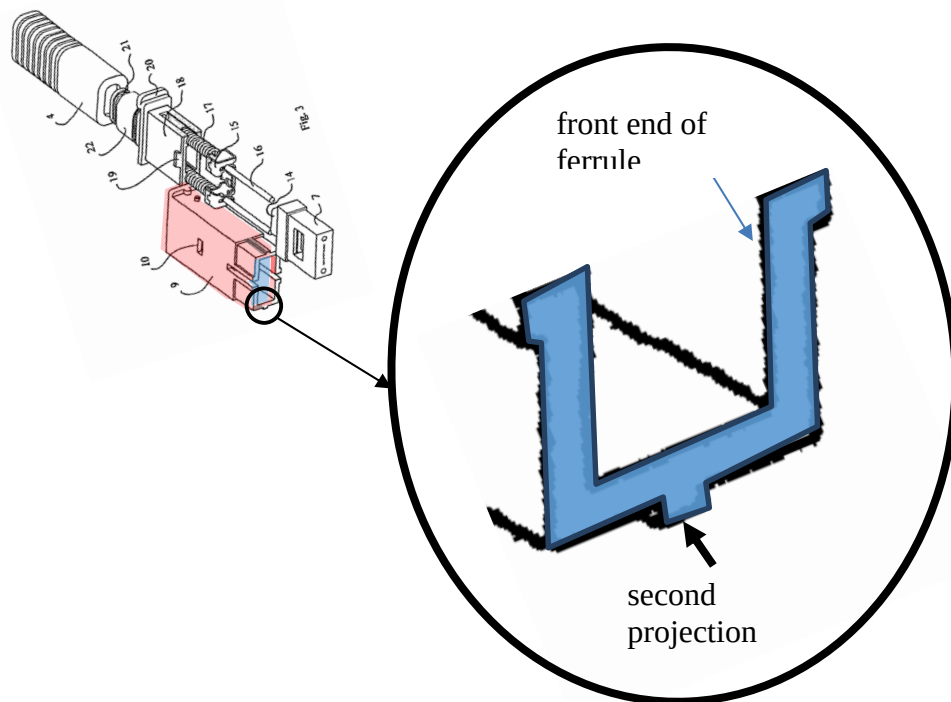
155. Accordingly, the combination of Suzuki and Shimozu renders this claim obvious.

E. Claim 4 - The fiber-optic connector according to claim 1, wherein a horizontal top surface of the second projection is rearward of the front end of the ferrule holder.

156. Claim 4 depends from Claim 1 adding the limitation that the top surface of the second projection is rearward of the front end of the ferrule holder. This claim limitation is nonsensical in that the second projection—which is recited as being on the bottom side in the [1.h] claim limitation—would have an exposed horizontal *bottom* surface rather than a horizontal *top* surface.

157. To the extent the claim is construed such that it would be met by any exposed horizontal surface of the second projection limitation, this limitation was disclosed by Suzuki.

158. One of skill in the art would expect and understand the second projection on the bottom side of the Suzuki connector to mirror first projection on its top side. As discussed above with respect to Claim 3, the first projection of the Suzuki connector has a horizontal top surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 2 (rotated and annotated)

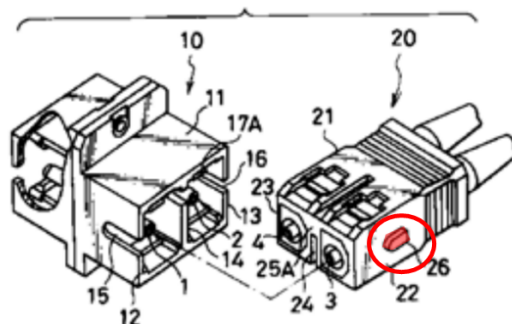
159. Accordingly, those of skill in the art would expect and understand second projection of the Suzuki connector to have an exposed horizontal bottom surface that begins at the front end of the ferrule holder and extends horizontally rearward.

160. Thus, the bottom surface of the second projection of the Suzuki connector is rearward of the front end of the ferrule holder.

161. Even to the extent that the claim is construed to require the entire surface of the second projection be rearward of the front edge, Shimozu already

teaches this arrangement as its identification guides (26 and 27) are also rearward of the front edge.

[FIG. 1]



EX1007: Fig. 1 (annotated).

162. As the Suzuki also includes lead-ins—as shown below—spacing the second projection rearward of the front edge would not diminish its purpose of providing additional width-wise alignment of the connector by mating with guide grooves inside the corresponding adapter.

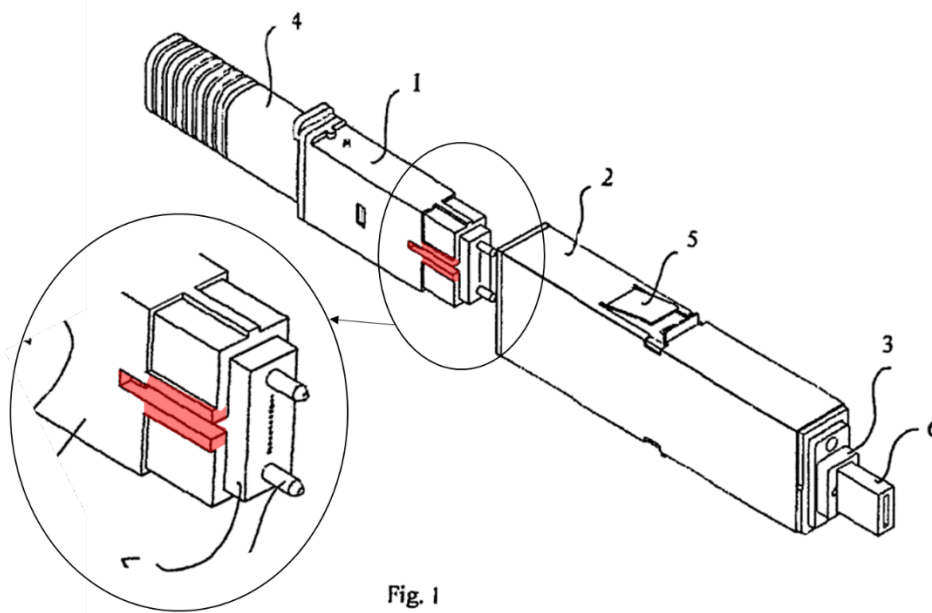


Fig. 1

EX1004: Fig. 1 (annotated).

163. Accordingly, the combination of Suzuki and Shimozu renders this claim obvious.

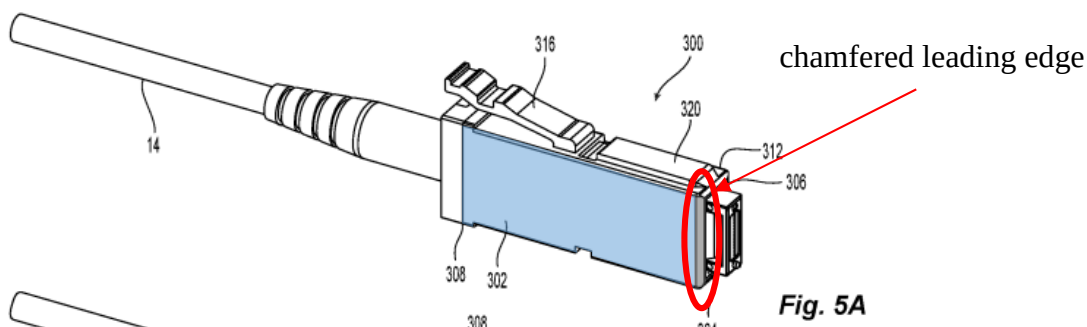
F. Claim 5 - the fiber-optic connector according to claim 1, wherein a top surface of each of the first projection and the second projection is rearward of the front end of the ferrule holder.

164. Claim 5 depends from Claim 1 adding a limitation that a top surface of each of the first projection and the second projection is rearward of the front end of the ferrule holder. Like Claim 4, this claim limitation is nonsensical in that the second projection—which is recited as being on the bottom side in the [1.h] claim limitation—would have an exposed horizontal bottom surface rather than a horizontal top surface.

165. To the extent the claim is construed such that it would be met by any exposed horizontal surface of the second projection limitation, this limitation would have been obvious in view of the Suzuki/Shimozu combination for the reasons explained in Claims 3 and 4.

G. Claim 6 - The fiber-optic connector according to claim 1, wherein the opposing sidewalls are smooth and solid.

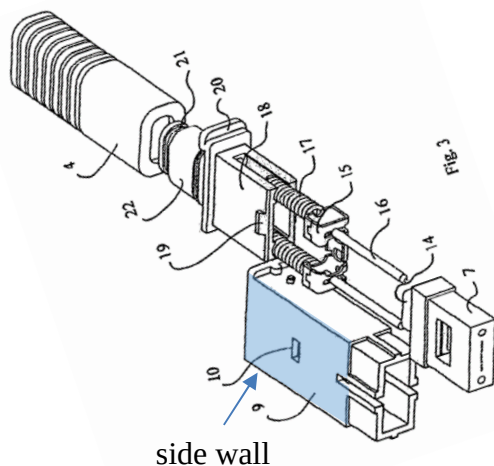
166. Claim 6 depends from Claim 1 adding a limitation that the opposing sidewalls are smooth and solid. Notably, the only relevant disclosures regarding the relative smoothness and/or solidness of the opposing sidewalls is from the figures.



EX1001: Fig. 5A (annotated).

167. As seen in Figure 5A above, the sidewalls have chamfered leading edges. As such the specification only provides written support to the extent that only a portion of the opposing sidewalls is required to be smooth and solid.

168. As seen in Fig. 3 of Suzuki, outside of the lead in the opposing walls of the Suzuki connector are smooth.



EX1004: Figure 3 (rotated and annotated).

169. Further, the opposing sidewalls of the Suzuki connector are depicted as being solid with the exception of the latch openings (10), which are only present to allow latches (19) of the rear housing to catch from the interior of the ferrule holder. EX1004: 4:55-57 (“Rear housing 18 is preferably secured inside of the connector housing 9 by two latches 19 that snap into two openings 10 in the connector housing 9[.]”)

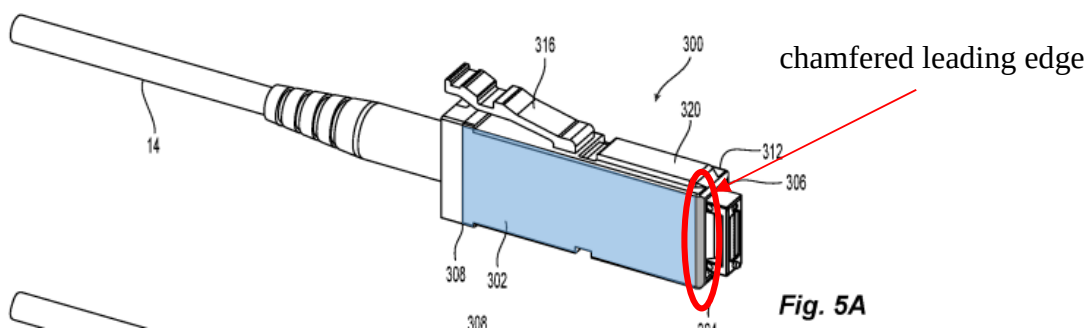
170. While it would have been a design need to latch the rear housing to the connector body and to do so by using two latches/latch openings on opposing sides of the connector, those of skill in the art would have recognized that there were only two locations (the opposing sides or the top and bottom sides) on which the two latches/latch openings could be located.

171. As there were finite predictable solutions as to where to locate the latches (19) and latch openings (10), it would have been an obvious variation of the Suzuki connector to locate the latches (19) and latch openings (10) on the top and bottom sides of the connector, leaving the opposing sidewalls of the Suzuki connector completely solid.

172. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

H. Claim 7- The fiber-optic connector according to claim 1, wherein the opposing sidewalls are flat.

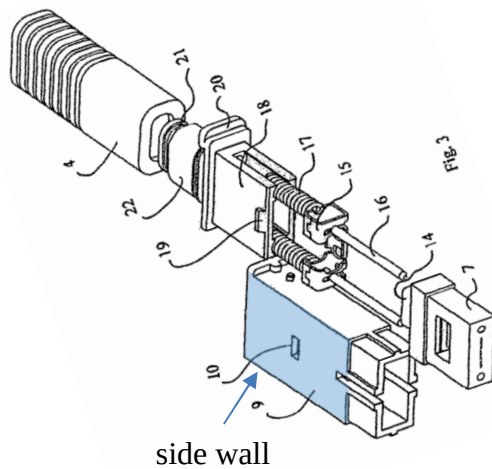
173. Claim 7 depends from Claim 1 adding a limitation that the opposing sidewalls are flat. As addressed with respect to Claim 6, the only relevant disclosures regarding the relative flatness of the opposing sidewalls is from the figures.



EX1001: Fig. 5A (annotated).

174. As seen in Figure 5A above, the sidewalls have chamfered leading edges. As such the specification only provides written support to the extent that only a portion of the opposing sidewalls is required to be flat.

175. As seen in Fig. 3 of Suzuki, outside of the lead in the opposing walls of the Suzuki connector are flat.



EX1004: Figure 3 (rotated and annotated).

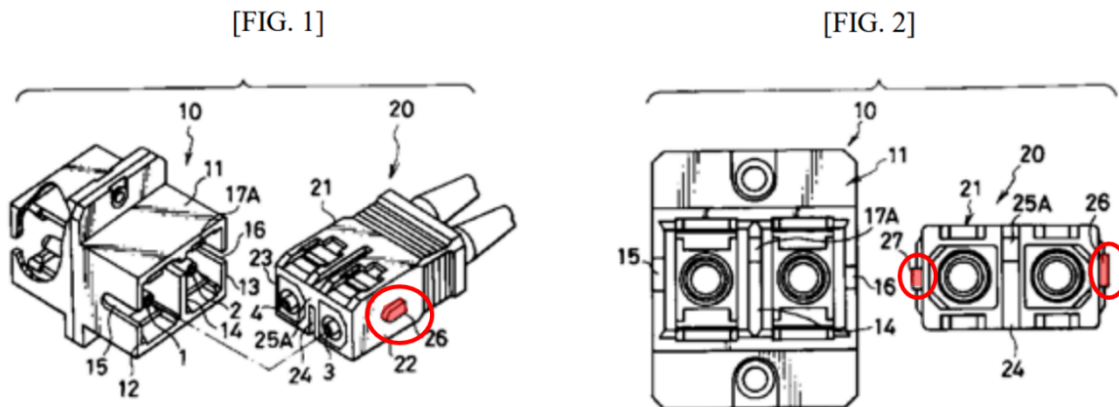
176. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

I. Claim 8 - The fiber-optic connector according to claim 1, wherein the first projection and the second projection have different widths.

177. Claim 8 depends from Claim 1 adding the limitation that the first projection and the second projection have different widths. This additional limitation would have been obvious in view of the Suzuki/Shimozu combination.

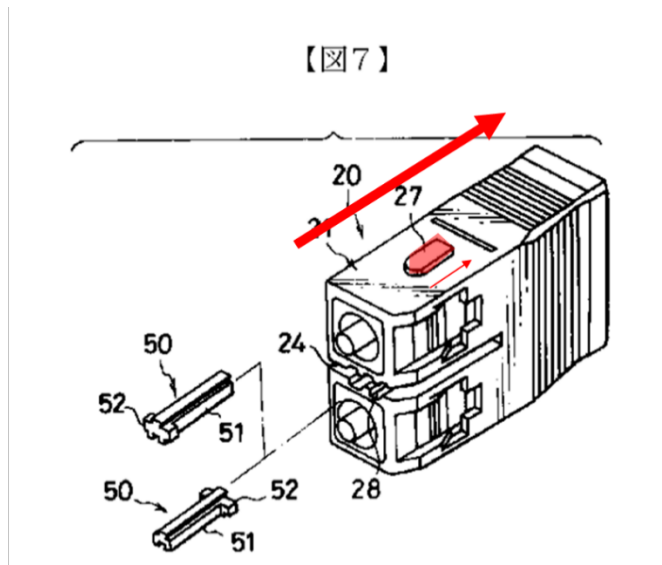
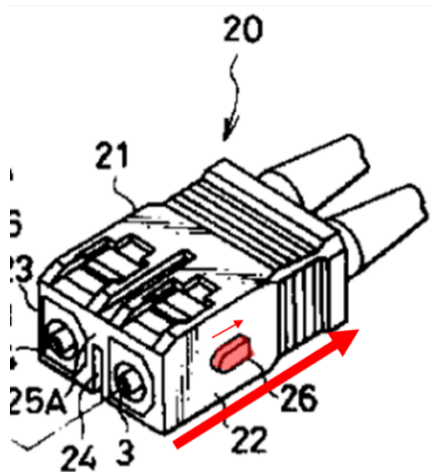
178. Specifically, the first and second projections of the Suzuki connector appear to be the same shape, but it would have been obvious to use different sized and/or shaped projections to provide a key for polarity as disclosed in Shimozu.

179. Like Suzuki, Shimozu discloses connectors with projections—identification guides (26 and 27)—along two opposing sides.



EX1007: Figs 1 and 2 (annotated).

180. Notably, the identification guides (26 and 27) extend in a longitudinal direction as shown in Figures 1 and 7.



EX1007: Figs. 1 and 7 (excerpted and annotated).

181. Shimozu further teaches sizing the widths of the identification guides (26 and 27)—and their corresponding keyways (15 and 16)—differently to prevent the “incorrect insertion.” EX1007: [0012] (“A width of the identification guide key 26 is larger than a width of the identification guide key 27.”), [0014] (“When attempting to mate this in the opposite direction, for example, attempting to mate the double-core optical connector plug 20 with the double-core optical connector adapter 10 in a direction reversed from the position illustrated in FIG. 1, the respective guide keyway and guide key cannot fit together, and thus mating is not possible.”).

182. Specifically, sizing the first and second projections differently—as taught by Shimozu—was a known technique used to improve a similar device to the connector of Suzuki that would have resulted in a predictable improvement—

improved error proofing and prevention of the inserting the multi fiber connector in the reverse orientation (*i.e.*, rotated 180°).

183. Accordingly, sizing the first and second projections of the connector disclosed by Suzuki differently would have been an obvious improvement.

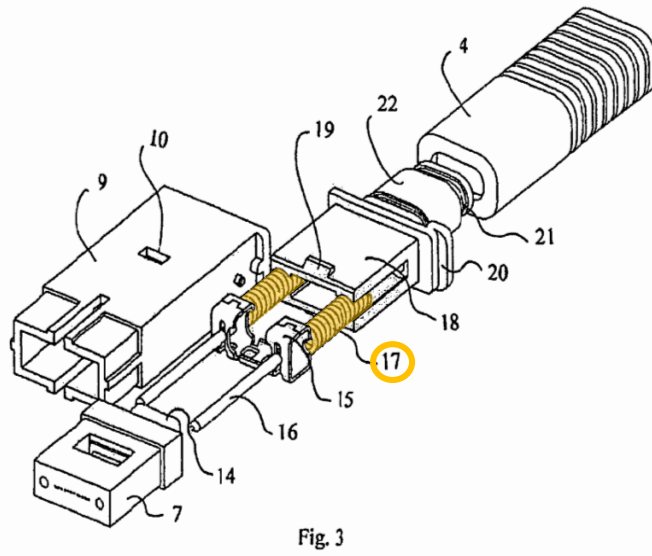
Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

J. Claim 9 - The fiber-optic connector according to claim 1, further comprising: a spring positioned rearward of the multi-fiber ferrule and configured to bias the multi-fiber ferrule towards the front end of the ferrule holder.

184. Claim 9 depends from Claim 1 adding the limitation that the fiber-optic include a spring biasing the multi-fiber ferrule towards the front end of the ferrule holder.

185. This additional limitation is disclosed by Suzuki in that the ferrule is spring loaded “by two coil springs serving to bias the ferrule forward within the connector housing.” EX1004: 3:36-42 (“Spring loading of the ferrule inside of the connector is preferably provided by two coil springs serving to bias the ferrule forward within the connector housing; however, other types of springs and means for biasing the ferrule forward. Such as, but not limited to, spring clips, torsion springs and elastic materials, should be considered as being within the scope of this invention.”).

186. Notably as depicted in Figure 3 of Suzuki, the springs (17) are position rearward of the ferrule (7).



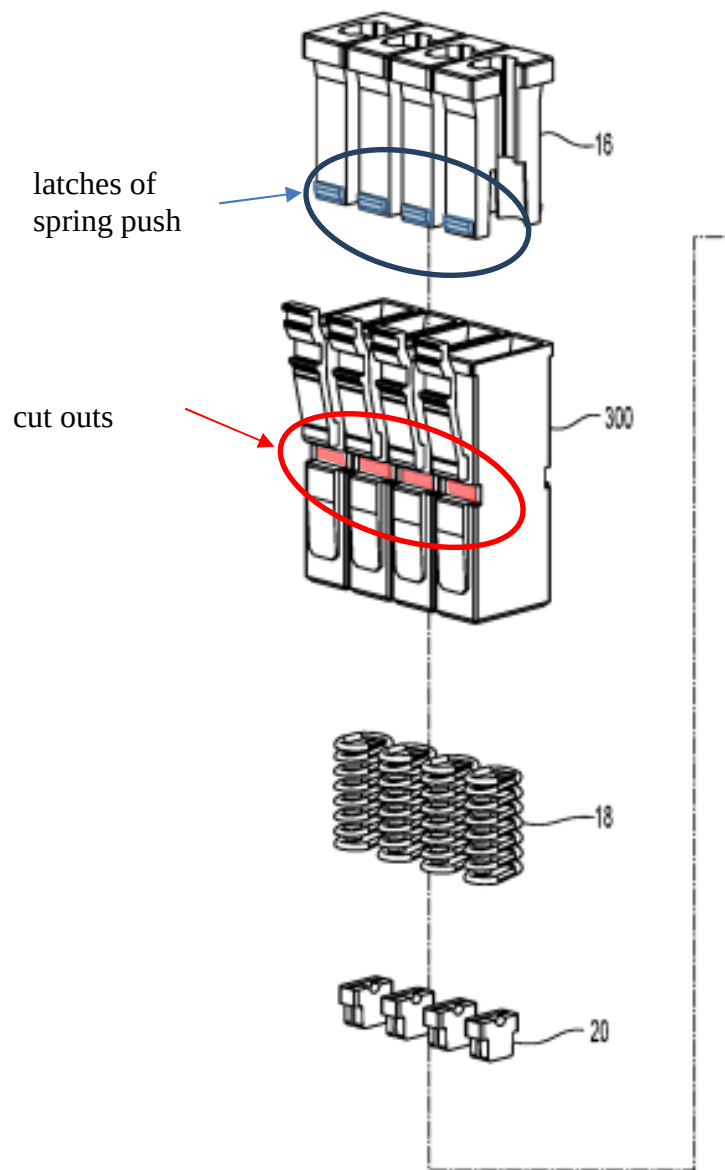
EX1004: Fig. 3 (annotated).

187. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

K. Claim 11 - The fiber-optic connector according to claim 1, further comprising: a cutout in each of the top side and the bottom side.

188. Claim 11 depends from Claim 1 adding a limitation that the top side and the bottom side of the ferrule holder include cutouts.

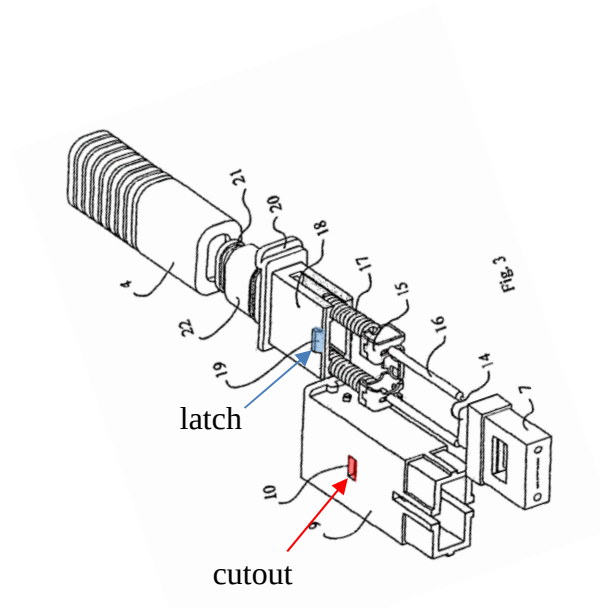
189. Although not discussed within the specification, Fig. 2 of the '075 Patent discloses cut outs in the ferrule holder (300) for receiving latches on the spring push (16) to hold the ferrule holder assembly together.



EX1001: Fig. 2 (annotated).

190. As seen in Fig. 3 of Suzuki, Suzuki has similar latch openings (10)—*i.e.* cut outs—for receiving the latches (19) of the rear housing to catch from the interior of the ferrule holder. EX1004: 4:55-58 (“Rear housing 18 is preferably

secured inside of the connector housing 9 by two latches 19 that snap into two openings 10 in the connector housing 9 (only one latch and one opening are shown”).



EX1004: Figure 3 (annotated).

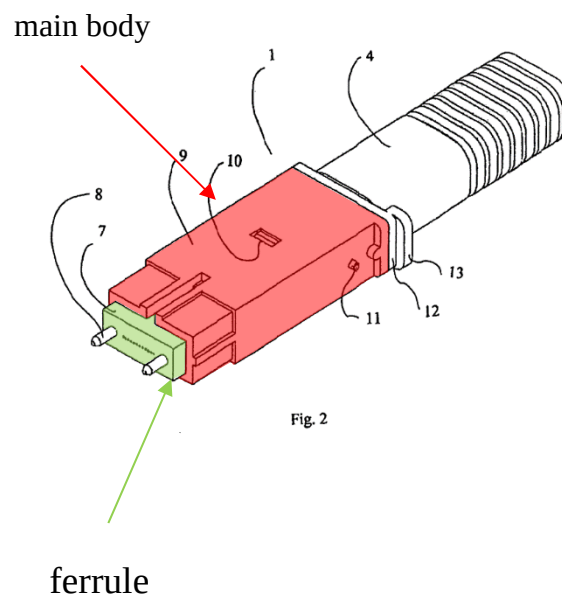
191. While it would have been a design need to latch the rear housing to the connector body and to do so by using two latches/latch openings on opposing sides of the connector, those of skill in the art would have recognized that there were only two locations (the opposing sides or the top and bottom sides) on which the two latches/latch openings could be located. *Compare*, EX1004: Fig: 3 (latches/latch openings on the opposing sidewalls), EX1012: Fig. 9 (latches/latch openings on the top and bottom walls).

192. As there were finite predictable solutions as to where to locate the latches (19) and latch openings (10), it would have been an obvious variation of the Suzuki connector to locate the latches (19) and latch openings (10) on the top and bottom sides of the connector.

193. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

L. Claim 12 - The fiber-optic connector according to claim 1, wherein a portion of the multi-fiber ferrule extends forward of the main body.

194. Claim 12 depends from Claim 1 adding the limitation that the ferrule extends forward of the main body. This additional limitation is disclosed by Suzuki in that the ferrule (7) is depicted in Figure 2 as extending forward of the main body.



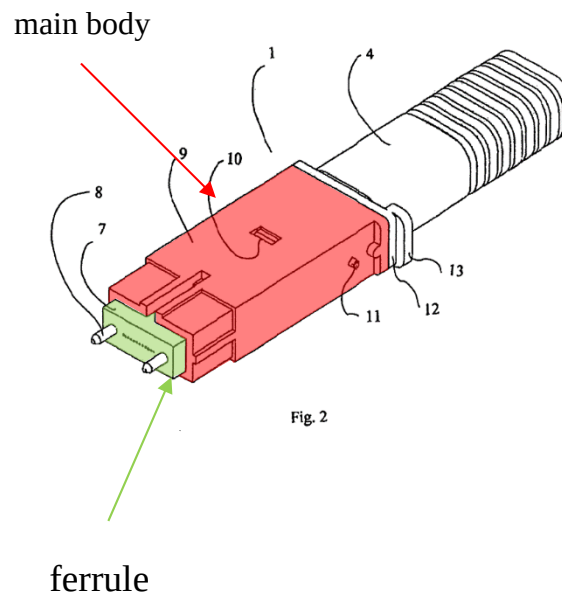
EX1004: Figure 2 (annotated).

195. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

M. Claim 13 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule extends beyond the main body.

196. Claim 13 depends from Claim 1 adding the limitation that the ferrule extends beyond the main body.

197. This additional limitation is disclosed by Suzuki in that the ferrule (7) is depicted in Figure 2 as extending beyond the front face of the main body.



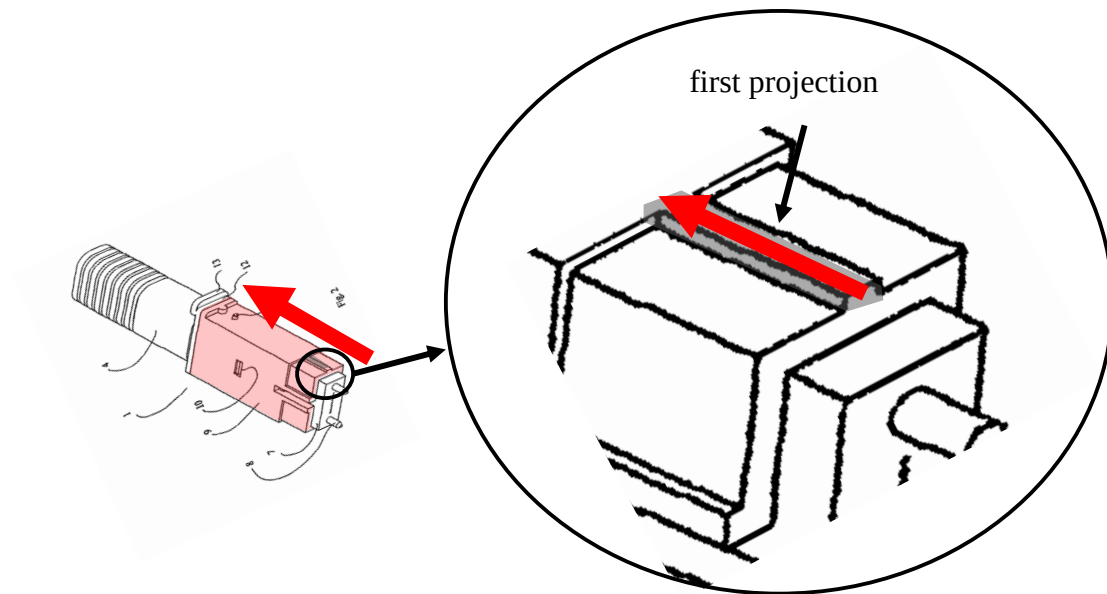
EX1004: Figure 2 (annotated).

198. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

N. Claim 15 - The fiber-optic connector according to claim 1, wherein at least one of the first projection or the second projection extends along a length of the ferrule holder.

199. Claim 15 depends from Claim 1 adding the limitation that at least one of the first projection or the second projection extends along a length of the ferrule holder. Notably, the only relevant disclosures regarding the extension of the first and second projections is in the figure—which depict the projections extending in the same direction—but not the entire length—as the ferrule holder. Accordingly, the person of ordinary skill in the art would understand the limitation to require the projections extends in the same direction as the length of the ferrule holder, rather than to suggest that the projection is required to extend the full length of the ferrule holder.

200. This additional limitation was disclosed by the figures of Suzuki. For example, Figure 3 of Suzuki shows that the top projection extends in the same direction as the ferrule holder.



EX1004: Figure 3 (rotated and annotated).

201. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

O. Claim 17 - The fiber-optic connector according to claim 1, wherein the first and the second projections each have a vertical side surface to align the ferrule holder with a vertical wall to control a horizontal direction of movement of the ferrule holder relative to an adapter.

202. Claim 17 depends from Claim 1 adding the limitation regarding the first and the second projections having vertical side surfaces. This additional limitation is the same as the limitation in claim element [19.i]. As discussed above with respect to claim element [19.i] in Paragraphs 140-141, Suzuki this additional limitation.

203. Accordingly, the combination of Suzuki and Shimozu renders this claim obvious.

P. Claim 20 - The fiber optic connector of claim 19, further comprising: a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers.

204. Claim 20 depends from Claim 19 adding the limitation that fiber optic connector includes a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers.

205. This additional limitation is verbatim identical to claim element [1.c]. As discussed above with respect to Claim 1, element [1.c] in Paragraphs 93-95, Suzuki discloses this additional element.

206. Therefore, the combination of Suzuki and Shimozu renders this claim obvious.

VI. GROUND 2: Obvious Over Suzuki in View of Shimozu and Saito.

A. Independent Claim 18

[18.p] A fiber optic connector for a multi-fiber ferrule, comprising:

207. The preamble to Claim 18 of the '075 Patent is verbatim identical to the preamble of Claim 1. As discussed above with respect to Ground 1 in Paragraphs 79 through 81, Suzuki discloses [18.p].

[18.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end

208. Claim element [18.a] of the '075 Patent is verbatim identical to claim element [1.a]. As discussed above with respect to Ground 1 in Paragraphs 82 through 84, Suzuki discloses [18.a].

[18.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

209. Claim element [18.b.1] of the '075 Patent is verbatim identical to claim element [1.b.1]. As discussed above with respect to Ground 1 in Paragraphs 85 through 88, Suzuki discloses [18.b.1].

[18.b.2] the multi-fiber ferrule being exposed at an opening at the first end of the ferrule holder

210. Claim element [18.b.2] of the '075 Patent is verbatim identical to claim element [1.b.2]. As discussed above with respect to Ground 1 in Paragraphs 89 through 90, Suzuki discloses [18.b.2].

[18.b.3] the opening at the first end being in communication with the central opening

211. Claim element [18.b.3] of the '075 Patent is verbatim identical to claim element [1.b.3]. As discussed above with respect to Ground 1 in Paragraphs 91 through 92, Suzuki discloses [18.b.3].

[18.c] a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers

212. Claim element 18.c of the '075 Patent is verbatim identical to claim element [1.c]. As discussed above with respect to Ground 1 in Paragraphs 93 through 95, Suzuki discloses [18.c].

[18.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls

213. Claim element 18.d of the '075 Patent is verbatim identical to claim element [1.d]. As discussed above with respect Ground 1 in Paragraphs 96 through 99, Suzuki discloses [18.d].

[18.e.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

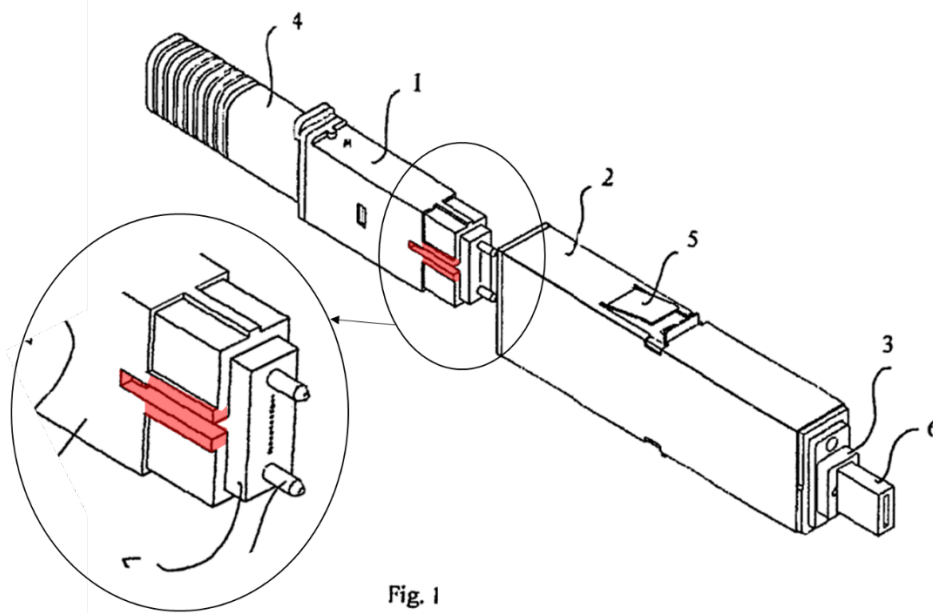
214. Claim element [18.e.1] of the '075 Patent is verbatim identical to claim element [1.e.1]. As discussed above with respect to Ground 1 in Paragraphs 100 through 102, Suzuki discloses [18.e.1].

[18.e.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the multi-fiber ferrule

215. Claim element [18.e.2] of the '075 Patent is verbatim identical to claim element [1.e.2]. As discussed above with respect to Ground 1 in Paragraphs 103 through 104, Suzuki discloses [18.e.2].

[18.f] wherein a front end of the ferrule holder has chamfer

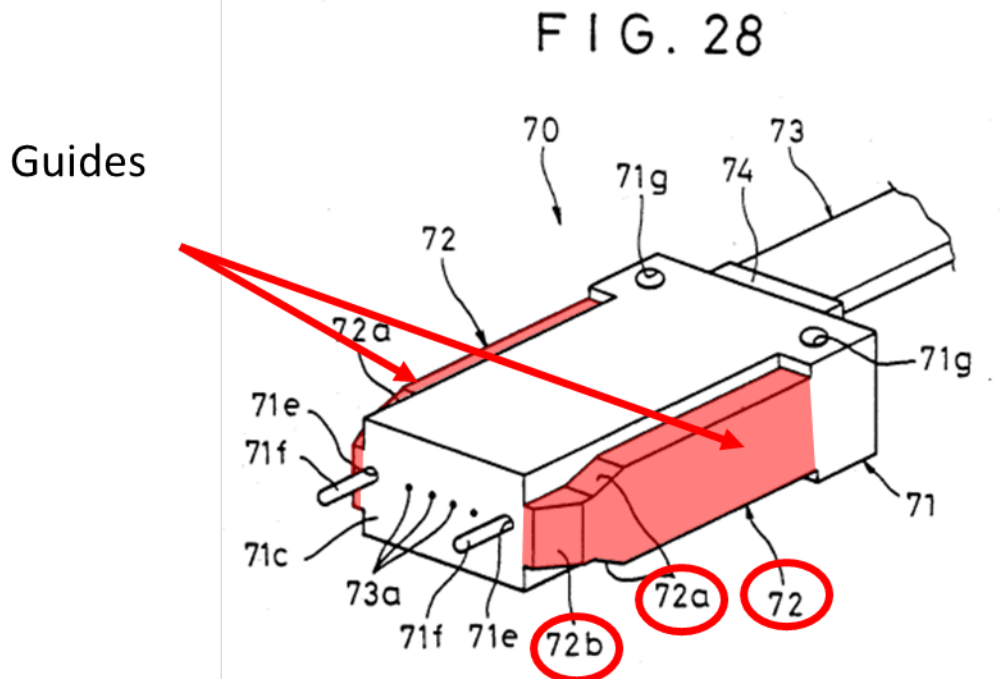
216. As discussed with respect to Ground 1, Claim 1, element [1.f] in Paragraphs 105 through 108, Suzuki's figures disclose a lead-in to assist in pre-aligning the ferrule and ferrule holder.



EX1004: Figure 1 (annotated).

217. Still, the use of chamfers for pre-aligning the ferrule and ferrule holders was well known in the art. For example, Saito uses alignment guides (72) in a manner that is equivalent to Suzuki's use of the first and second projections.

218. Saito further discloses the use of tapered/chamfered surface (72a and 72b) on at the lead end of its alignment guides to position the ferrule in both the vertical and widthwise orientation. EX1008: 11:56-64 ("the guide 72 being provided, as shown in [Figure 28], with tapered surfaces 72a and 72a which serve as vertical guides and a tapered surface 72b which serves as a widthwise guide for butt-connecting the connectors via the adapter 66").



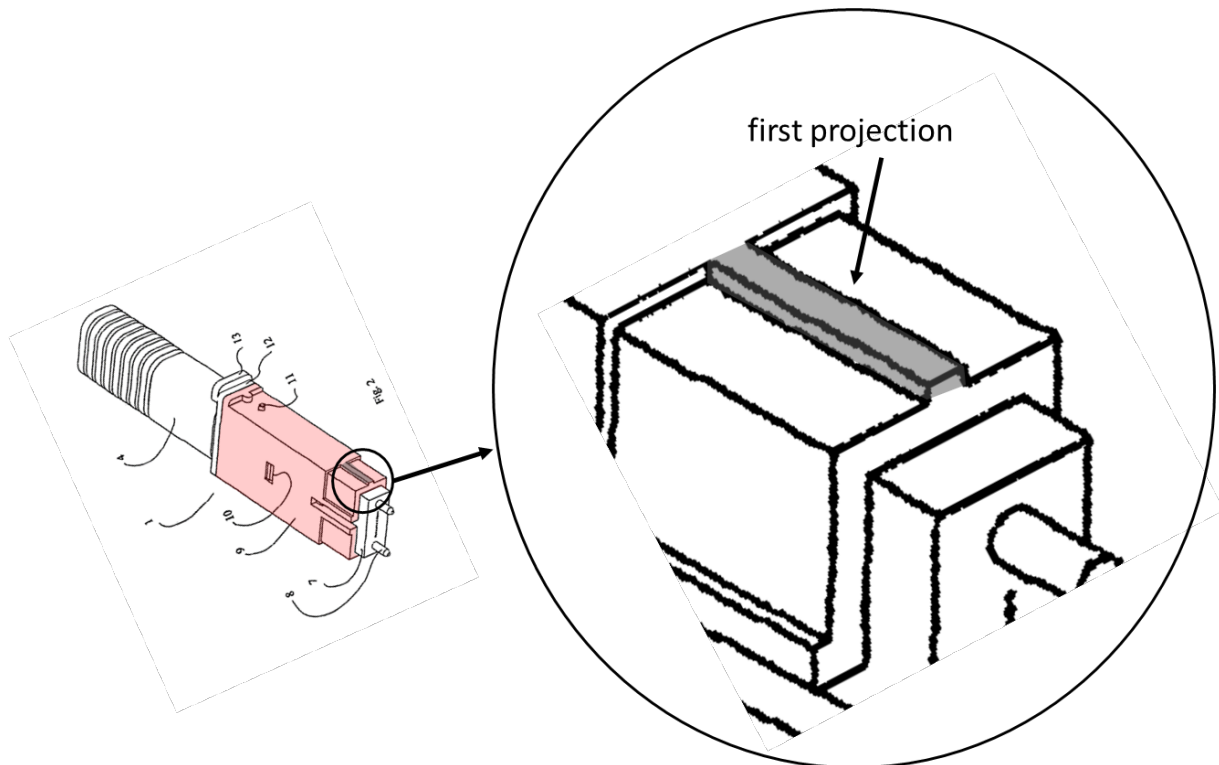
EX1008: Figure 28 (annotated).

219. Adding chamfered surfaces to the first and second projections—as taught by Saito—was a known technique used to improve a similar device to the connector of Suzuki that would have resulted in a predictable improvement—assisting in aligning and guiding the ferrule holders into the receiving slots within an adapter. Accordingly, adding chamfered surfaces to the first and second projections of the ferrule holders of the connector disclosed by Suzuki would have been an obvious improvement.

220. Therefore, Suzuki/Shimozu/Siato renders [18.f] obvious.

[18.g] a first projection extending longitudinally along the top side

221. Although not discussed within the specification, Suzuki's figures disclose a first projection on the outside surface on the top side of the connector body that extends longitudinally rearward from the connector body's front opening.



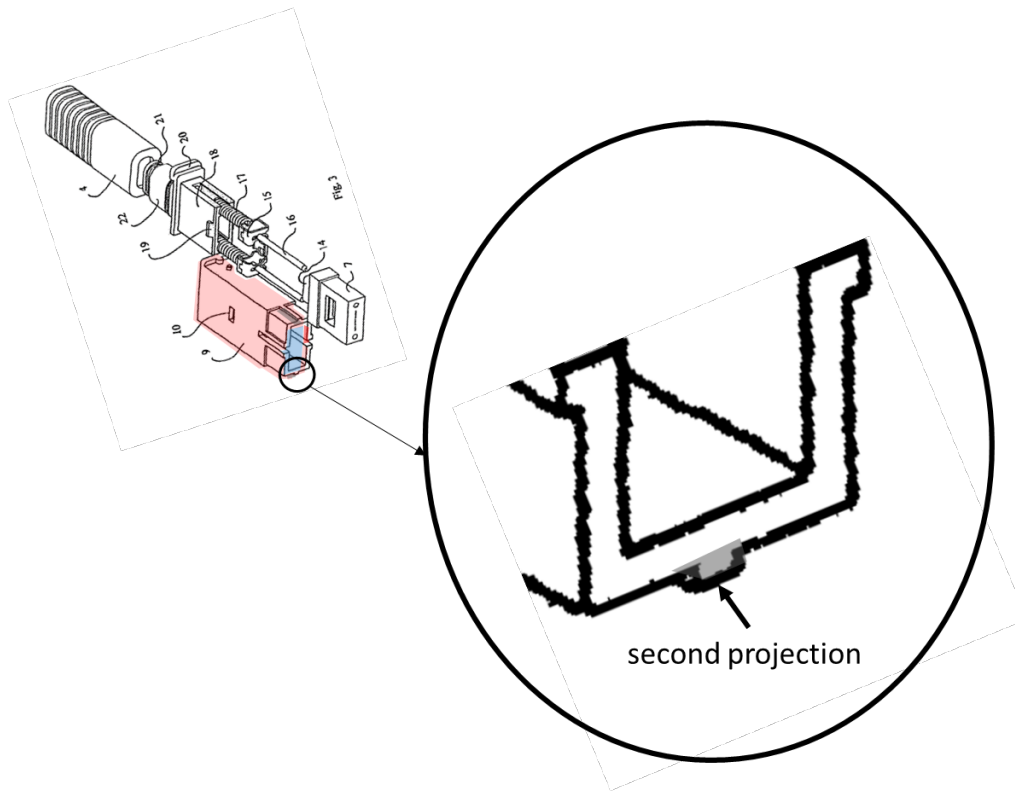
EX1004: Fig. 3 (annotated).

222. Therefore, Suzuki meets [1.g].

[18.h] a second projection extending longitudinally along the bottom side

223. Although not discussed within the specification, Suzuki's Figure 3 discloses a second projection on the outside surface on the bottom side of the

connector body that extends longitudinally rearward from the connector body's front opening.

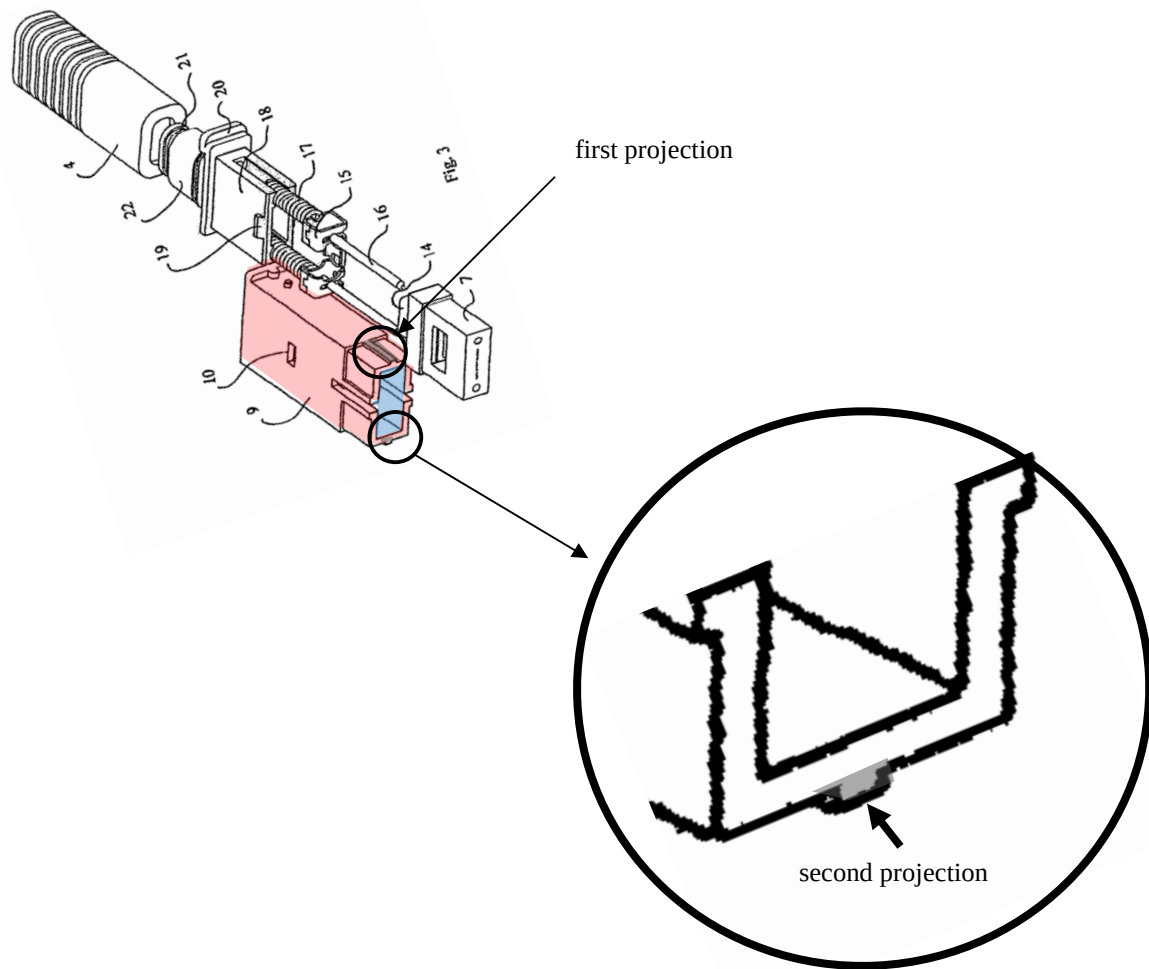


EX1004: Fig. 3 (annotated).

224. Therefore, Suzuki meets [1.h].

[18.i] wherein the first projections is on a first outside surface of the top side of the main body and has at least one dimension that is different than the second projection on an opposite second outside surface on the bottom side of the main body; and

225. As depicted in Figure 3, the first projection of the Suzuki connector is on a first outside surface and the second projection is on an opposite second outside surface.



EX1004: Fig. 3 (annotated).

226. As discussed in Paragraphs 113 through 122 with respect to claim element [1.i], varying at least one dimension between the first and second projections—as taught by Shimozu—was a known technique used to improve a similar device to the connector of Suzuki that would have resulted in a predictable improvement—improved error proofing and prevention of the inserting the multi

fiber connector in the reverse orientation (*i.e.*, rotated 180°). As such, sizing the first and second projections of the connector disclosed by Suzuki differently would have been an obvious improvement.

227. Therefore, Suzuki/ Shimozu renders [18.i] obvious.

[18.j] a latching mechanism on at least one of the top side and the bottom side

228. Claim element [18.j] is verbatim identical to claim element [1.j]. As discussed with respect to Ground 1 in Paragraphs 123 through 125, Suzuki discloses element [18.j] of the '075 Patent.

[18.k] wherein the latching mechanism is unconnected to the first projection and the second projection.

229. Claim element [18.k] is verbatim identical to claim elements [1.k]. As discussed with respect to Ground 1 in Paragraphs 126 through 128, Suzuki discloses element [18.k] of the '075 Patent.

B. Independent Claim 21

[21.p] A fiber optic connector for an MT-type ferrule, comprising:

230. Preamble [21.p] is similar to preamble [1.p] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

231. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54

(“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

232. Therefore, for the reasons discussed with respect to [1.p] in Paragraphs 79-81, Suzuki discloses [21.p].

[21.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end

233. Limitation [21.a] is similar to limitation [1.a] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

234. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

235. Therefore, for the reasons discussed above with respect to [1.a] in Paragraphs 82-84, Suzuki discloses [21.a].

[21.b.1] an MT-type ferrule housed within the central opening and having at least two optical fibers supported therein

236. Limitation [21.b.1] is similar to limitation [1.b.1] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

237. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

238. Therefore, for the reasons discussed above with respect to [1.b.1] in Paragraphs 85-88, Suzuki discloses [21.b.1].

[21.b.2] the MT-type ferrule being exposed at an opening at the first end of the ferrule holder

239. Limitation [21.b.2] is similar to limitation [1.b.2] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

240. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of

MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

241. Therefore, for the reasons discussed above with respect to [1.b.2] in Paragraphs 89-90, Suzuki discloses [21.b.2].

[21.b.3] the opening at the first end being in communication with the central opening

242. Limitation [21.b.3] is similar to limitation [1.b.3] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

243. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

244. Therefore, for the reasons discussed above with respect to [1.b.3] in Paragraphs 91-92, Suzuki discloses [21.b.3].

[21.c] a boot extending rearward of the ferrule holder and configured to support the at least two optical fibers

245. Limitation [21.c] is similar to limitation [1.c] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

246. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

247. Therefore, for the reasons discussed above with respect to [1.c] in Paragraphs 93-95, Suzuki discloses [21.c].

[21.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls

248. Limitation [21.d] is similar to limitation [1.d] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

249. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of

MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

250. Therefore, for the reasons discussed above with respect to [1.d] in Paragraphs 96-99, Suzuki discloses [21.d].

[21.e.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

251. Limitation [21.e.1] is similar to limitation [1.e.1] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

252. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

253. Therefore, for the reasons discussed above with respect to [1.e.1] in Paragraphs 100-102, Suzuki discloses [21.e.1].

[21.e.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the MT-type ferrule

254. Limitation [21.e.2] is similar to limitation [e.b.2] except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule.

255. The ferrule (7) of the Suzuki connector is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28 (“the invention further relates to an MT-type interconnect system consisting of fiber optic connectors”), 1:53-54 (“Traditionally, in multi-fiber connectors, the connection is achieved by the use of MT-type ferrules.”), 2:39-44 (“The introduction by the present invention of a multi-fiber connector with the standard MT type ferrule), 2:54-56 (“The miniature connectors can handle multi-channel MT standard ferrule).

256. Therefore, for the reasons discussed above with respect to [1.e.2] in Paragraphs 103-104, Suzuki discloses [21.e.2].

[21.f] wherein a front end of the ferrule holder has a chamfer

257. Claim element [21.f] is verbatim identical to claim element [18.f]. As discussed above with respect to Claim 1, element [18.f] in Paragraphs 217-221, the combination of Suzuki and Shimozu renders element [18.f] of the ‘075 Patent obvious.

[21.g] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side

258. Claim element [21.g] is verbatim identical to claim element [1.g]. As discussed above with respect to Claim 1, element [1.g] in Paragraphs 109-110, Suzuki discloses element [21.g] of the ‘075 Patent.

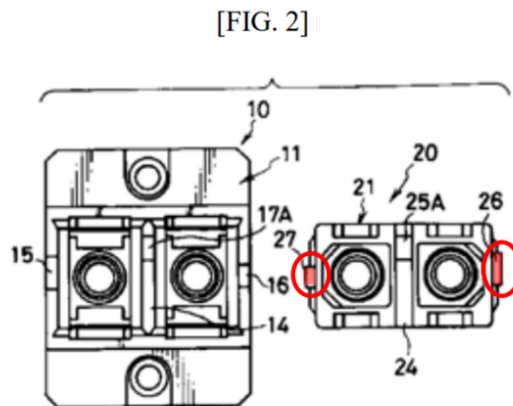
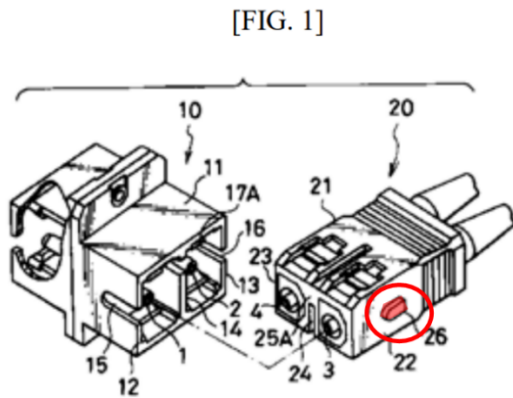
[21.h] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side

259. Claim element [21.h] is verbatim identical to claim element [1.h]. As discussed above with respect to Claim 1, element [1.h] in Paragraphs 111-1112, Suzuki discloses element [21.h] of the ‘075 Patent.

[21.i] wherein the first projection has a different height or a different width than the second projection

260. Claim element [21.i] is similar to [1.i], except that it more narrowly limits the “different shape[d]” first projection and the second projection to having “a different height or a different width.”

261. The modification to the connector of Suzuki as addressed above in Ground 1 with respect to claim element [1.i], would have further met the narrower limitation of claim element [21.i] in that Shimozu discloses sizing the widths of its identification guides (26 and 27)—and their corresponding keyways (15 and 16)—differently to prevent the “incorrect insertion.” EX1007: [0012], [0014].



EX1007: Figures 1 and 2 (annotated).

262. As discussed above with respect to Ground 1, Claim 1, element [1.i] in Paragraphs 113-122, the combination of Suzuki and Shimozu renders [21.i] obvious.

[21.j] a latching mechanism on at least one of the top side and the bottom side

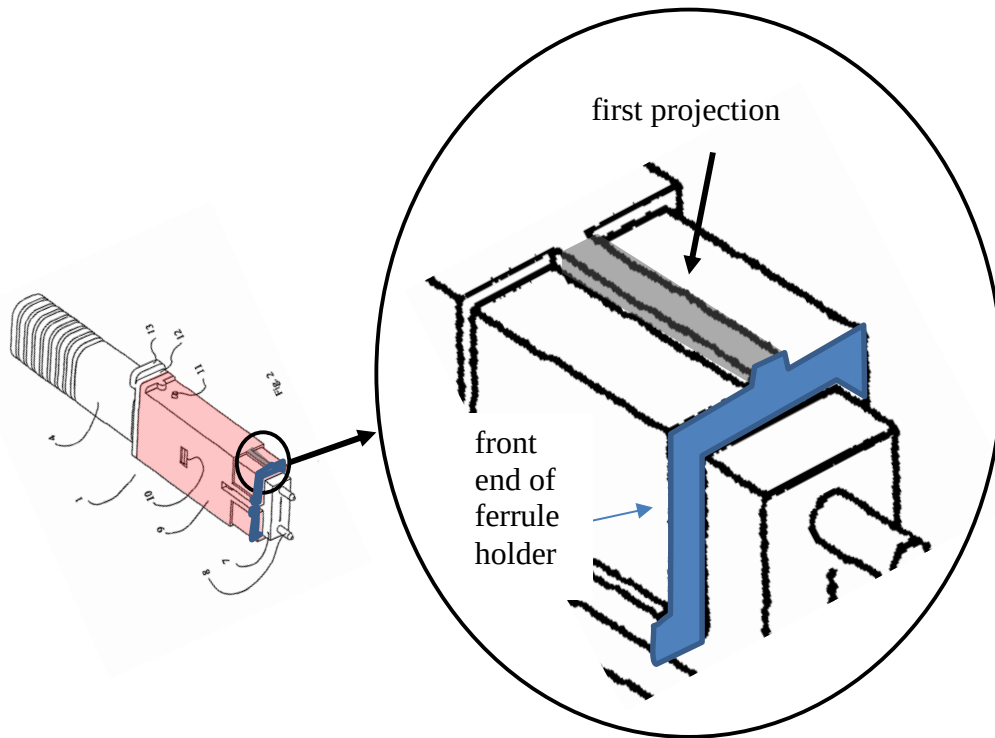
263. Claim element [21.j] is verbatim identical to claim element [1.j]. As discussed above with respect to Ground 1, Claim 1, element [1.j] in Paragraphs 123-125, Suzuki discloses element [21.j] of the '075 Patent.

[21.k] wherein the latching mechanism is unconnected to the first projection and the second projection

264. Claim element [21.k] is verbatim identical to claim element [1.k]. As discussed above with respect to Ground 1, Claim 1, element [1.k] in Paragraphs 126-127, Suzuki discloses element [21.k] of the '075 Patent.

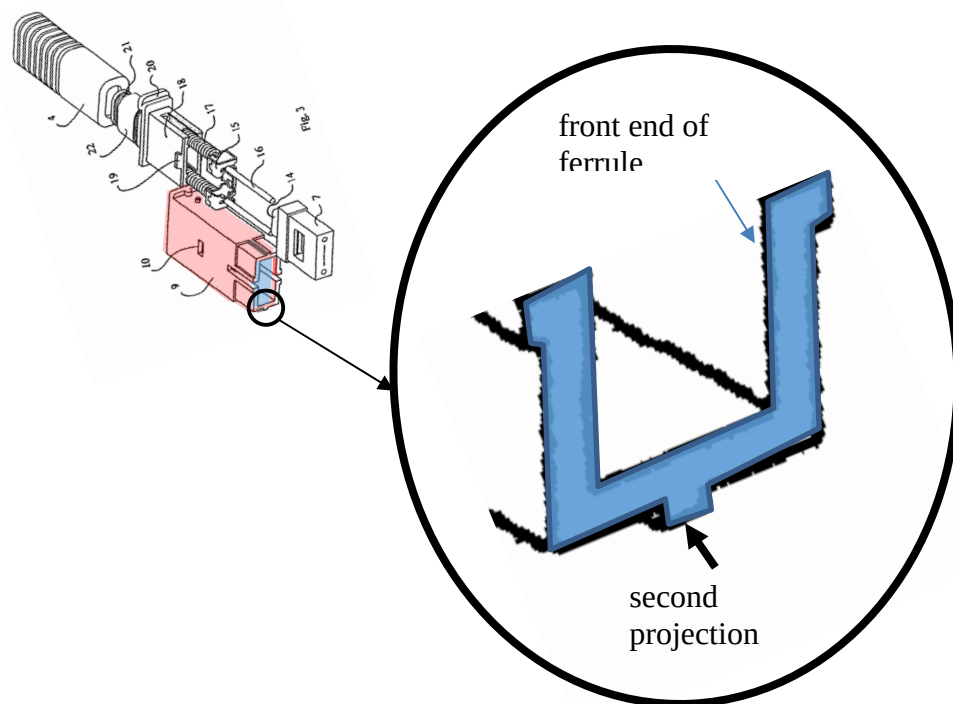
C. Claim 3 - The fiber-optic connector according to claim 1, wherein a top surface of the first projection is rearward of the front end of the ferrule holder.

265. As discussed in Ground 1 above, the first projection of the Suzuki connector has a horizontal top surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 2 (annotated).

266. One of skill in the art would have likewise understood the second projection of the Suzuki connector to have an exposed horizontal bottom surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 3 (annotated).

267. To the extent that US Conec argues that the limitations of Claim 3 are not met under Ground 1 due to the top surface of the first projection and/or the bottom surface of the second projection meeting the front face the ferrule holder, these limitations would still have been obvious in further view of Saito.

268. As discussed with respect to claim element [18.f] in Paragraphs 217-221, adding chamfered surfaces to the first and second projections—as taught by Saito—was a known technique used to improve a similar connector that would

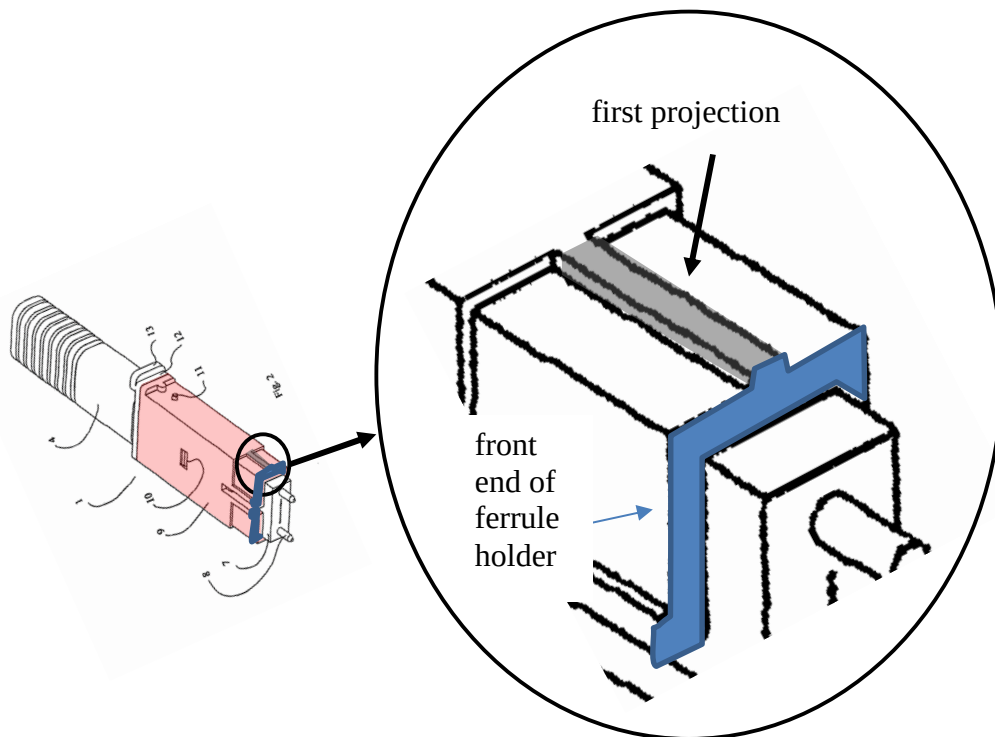
have resulted in a predictable improvement—assisting in aligning and guiding the ferrule holders into the receiving slots within an adapter.

269. In adding chamfers to the leading face of the first and second projections, the horizontal surfaces would no longer meet the front face of the ferrule holder of the Suzuki ferrule holder. Instead by adding chamfers, the tapered surfaces would offset the horizontal surface rearward from the front end of the ferrule holder.

270. Accordingly, Suzuki/Shimozu/Saito renders this claim obvious.

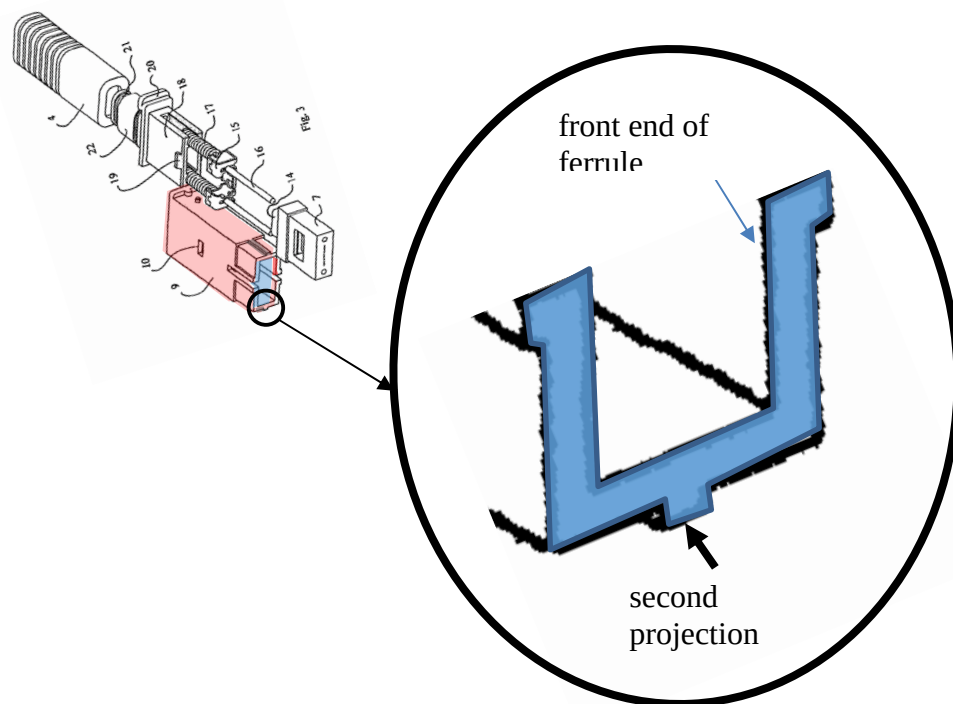
D. Claim 4 - The fiber-optic connector according to claim 1, wherein a horizontal top surface of the second projection is rearward of the front end of the ferrule holder.

271. As discussed in Ground 1 above, the first projection of the Suzuki connector has a horizontal top surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 2 (annotated).

272. One of skill in the art would have likewise understood the second projection of the Suzuki connector to have an exposed horizontal bottom surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 3 (annotated).

273. To the extent that US Conec argues that the limitations of Claim 4 are not met under Ground 1 due to the top surface of the first projection and/or the bottom surface of the second projection meeting the front face the ferrule holder, these limitations would still have been obvious in further view of Saito.

274. As discussed with respect to claim element [18.f] in Paragraphs 217-221, adding chamfered surfaces to the first and second projections—as taught by Saito—was a known technique used to improve a similar connector that would

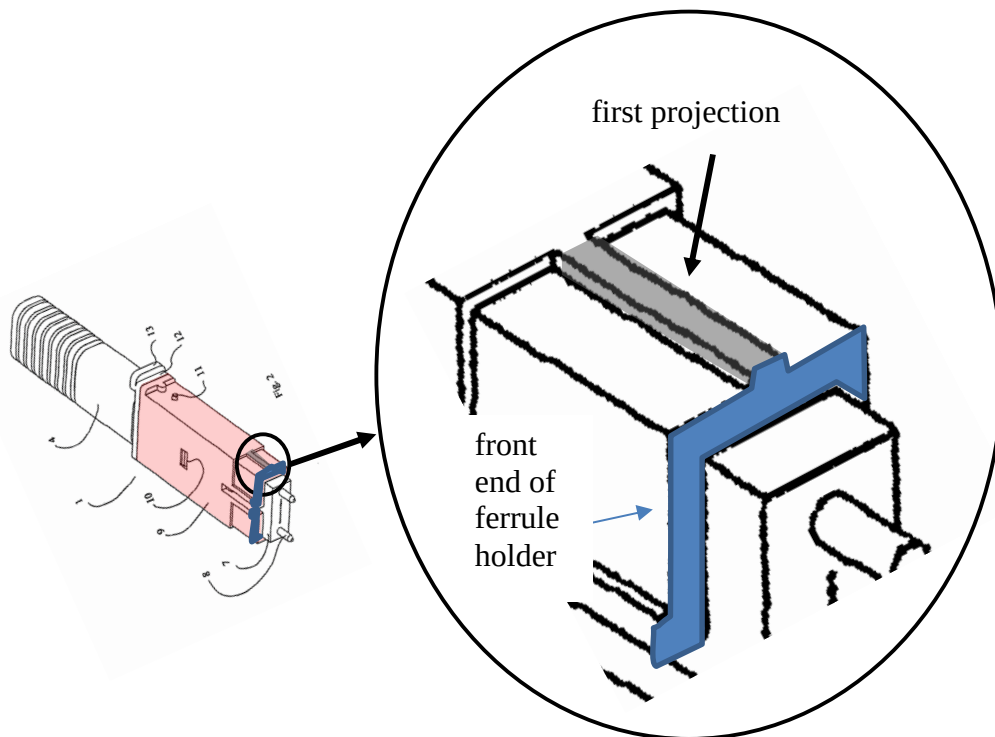
have resulted in a predictable improvement—assisting in aligning and guiding the ferrule holders into the receiving slots within an adapter.

275. In adding chamfers to the leading face of the first and second projections, the horizontal surfaces would no longer meet the front face the ferrule holder of the Suzuki ferrule holder. Instead by adding chamfers, the tapered surfaces would offset the horizontal surface rearward from the front end of the ferrule holder.

276. Accordingly, Suzuki/Shimozu/Saito renders this claim obvious.

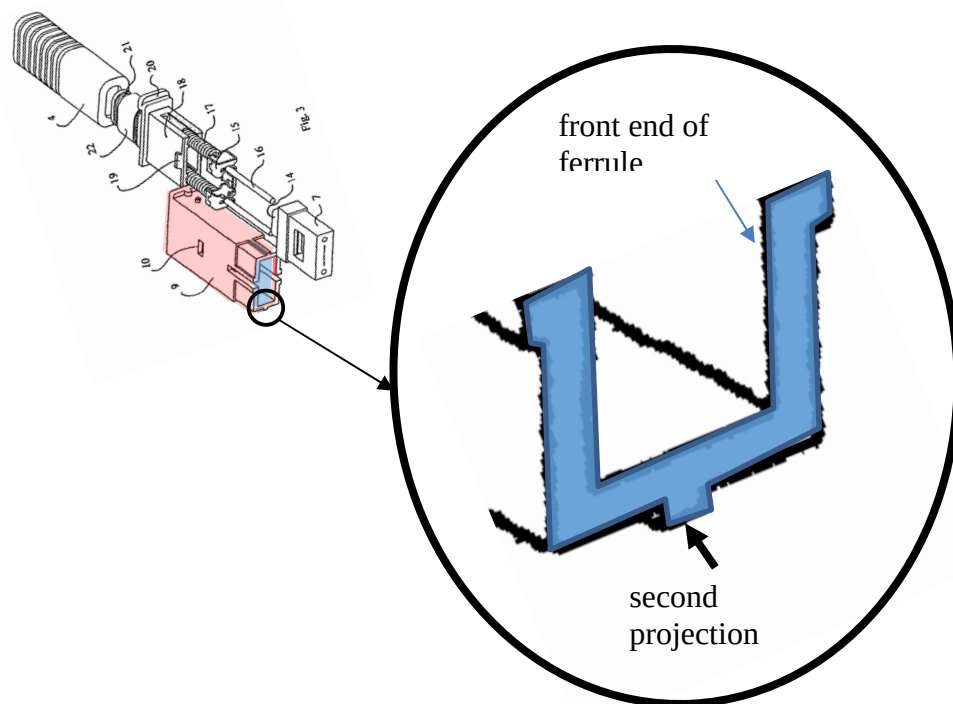
E. Claim 5 - The fiber-optic connector according to claim 1, wherein a top surface of each of the first projection and the second projection is rearward of the front end of the ferrule holder.

277. As discussed in Ground 1 above, the first projection of the Suzuki connector has a horizontal top surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 2 (annotated).

278. One of skill in the art would have likewise understood the second projection of the Suzuki connector to have an exposed horizontal bottom surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 3 (annotated).

279. To the extent that US Conec argues that the limitations of Claim 5 are not met under Ground 1 due to the top surface of the first projection and/or the bottom surface of the second projection meeting the front face the ferrule holder, these limitations would still have been obvious in further view of Saito.

280. As discussed with respect to claim element [18.f] in Paragraphs 217-221, adding chamfered surfaces to the first and second projections—as taught by Saito—was a known technique used to improve a similar connector that would

have resulted in a predictable improvement—assisting in aligning and guiding the ferrule holders into the receiving slots within an adapter.

281. In adding chamfers to the leading face of the first and second projections, the horizontal surfaces would no longer meet the front face the ferrule holder of the Suzuki ferrule holder. Instead by adding chamfers, the tapered surfaces would offset the horizontal surface rearward from the front end of the ferrule holder.

282. Accordingly, Suzuki/Shimozu/Saito renders this claim obvious.

F. Claim 16 - The fiber-optic connector according to claim 1, wherein at least one of the first projection or the second projection has a chamfered front end or a lead-in.

283. Claim 16 depends from Claim 1 adding the limitation regarding one of the first and the second projections having a chamfered front end or lead-in.

284. Neither the first and second projections of the Suzuki connector are disclosed as having a chamfered front end or a lead-in, but as discussed with regards to claim element [18.f] in Paragraphs 217-221, it would have been obvious to modify the first and second projections to include chamfers as disclosed in Saito.

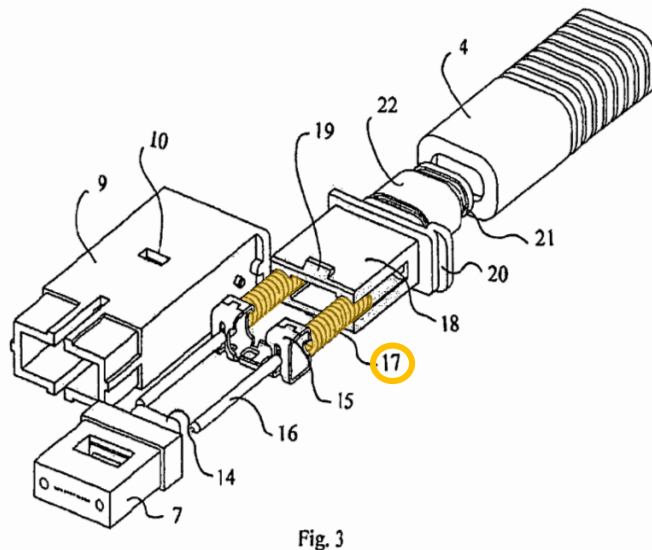
285. Accordingly, for the reasons discussed above with respect to Claim 18, element [18.f], Suzuki/Shimozu/Saito renders this claim obvious.

A. Claim 10 - The fiber-optic connector according to claim 9, wherein the spring at least partially surrounds the at least two optical fibers.

A. Claim 10 - The fiber-optic connector according to claim 9, wherein the spring at least partially surrounds the at least two optical fibers.

286. Claim 10 depends from Claim 9 adding the limitation that the spring
biasing the multi-fiber ferrule towards the front end of the ferrule holder at least
partially surrounds the at least two optical fibers.

287. While Suzuki discloses “two coil springs serving to bias the ferrule forward within the connector housing,” these two springs are of centered such that the springs would not necessarily partially surround the at least two optical fibers.

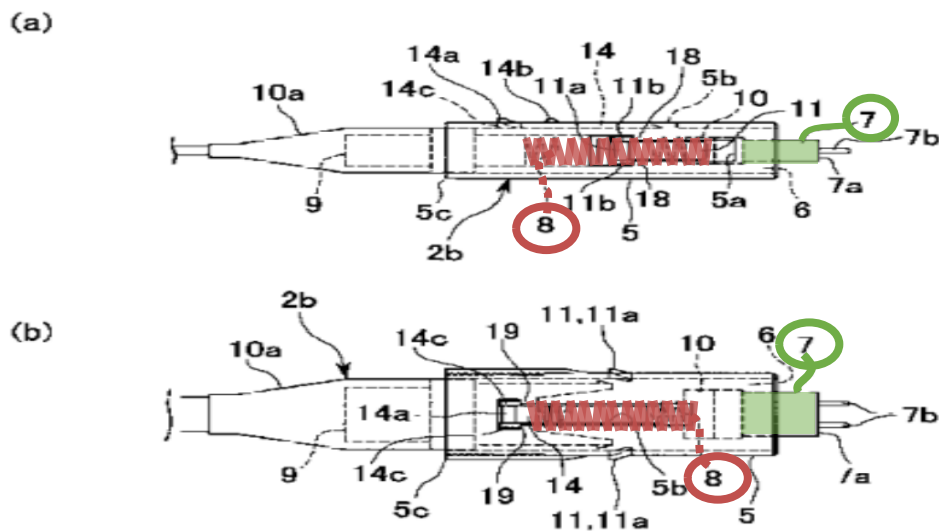


EX1004: Fig. 3 (annotated).

288. Other spring biasing configurations were known in the art. For example, JP391 uses a single centered spring instead. EX1006: [0009] (“a spring 8

to bias the optical connector ferrule 7 forward in the insertion direction into the optical connector adapter 3.”).

[FIG. 5]

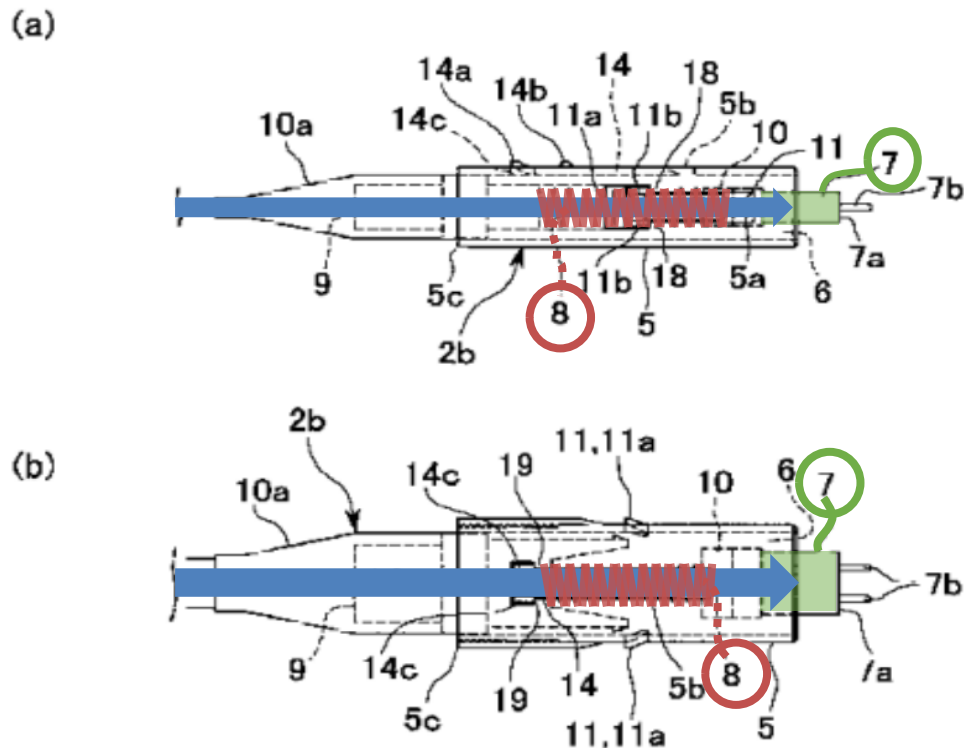


EX1006: Fig. 5 (annotated).

289. Although the routing of the optical fibers is not addressed by JP391, those of skill in the art would understand the claimed routing whereby the spring at least partially surrounds the optical fibers obvious, if not inherent. The optical fibers are necessarily routed from the fiber optic cable to the ferrule.

290. As depicted in Figure 5, the spring (8) is centered between the cable and the ferrule. Those of skill in the art would expect the optical fibers to be routed through the spring (8) as it would be the most direct path.

[FIG. 5]



EX1006: Fig. 5 (annotated).

291. The spring configurations of Suzuki and JP391 are simple and predictable substitutions for each other in that second projections rearward of the front end of the ferrule holder in that the components were nearly identical (two smaller springs compared to a single larger spring) and functioned the same in that the pair of springs/single spring both bias the optical connector ferrule forward in the insertion direction into the optical connector adapter.

292. Therefore, Suzuki/Shimozu/JP391 renders this claim obvious.

VIII. GROUND 4: Obvious Over Suzuki in View of Shimozu and Katagiyama.

A. Claim 14 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule is flush with the front end of the main body.

293. Claim 14 depends from Claim 1 adding the limitation that the multi-fiber ferrule is flush with the front end of the main body.

294. This additional limitation was known in the art. For example, Katagiyama disclosed that “the front end of the ferrule [can be] flush with or protrude[] from a front end of the housing.” EX1013: Claim 9.

295. Modifying the Suzuki connector such that the ferrule would be flush with the front end of the housing is merely a simple substitution of one known element for another to obtain the same predictable result.

296. Therefore, the combination of Suzuki, Shimozu, and Katagiyama renders Claim 14 obvious.

IX. GROUNDS 5-8: Obvious as Over Suzuki as Addressed in Grounds 1-3 in Further View of Chen

297. To the extent that the claim term “latch mechanism” as recited in each dependent claim of the ‘075 Patent is construed in such a way that it the dual pin (11) of Suzuki would not meet the limitation—for example if the “latch mechanism” is limited to a cantilevered latch—there were numerous other latching mechanisms known in the art.

298. Specifically, cantilevered latches were ubiquitous within the art of fiber optic connectors. EX1016: Figs 1-4 (latch 18), EX1017: Fig. 1 (latches 120, 220), EX1018: Figs. 1-5 (latch 50).

299. For example, the Figure 3B embodiment of Chen discloses a cantilevered latch (7) along the top side of a connector that has a similar geometry as Suzuki—more specifically, having a height that is greater than its width. Notably, the embodiment of connector shown in Figure 3B of Chen discloses having an elongated projection (unlabeled) and latching mechanism (7) that are not connected on the top side of the connector.

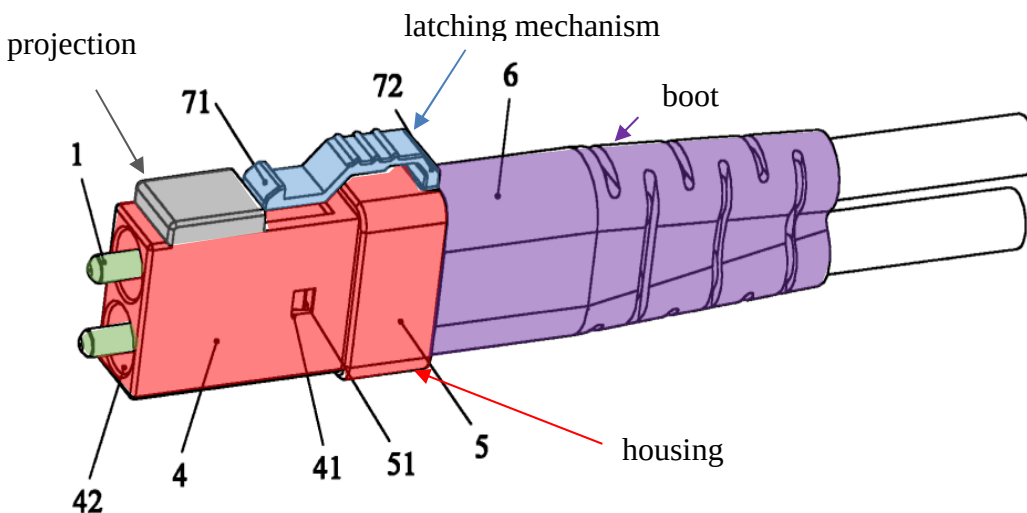


图 3B

EX1009: Figure 3B (annotated).

300. While Suzuki uses a push-push latching system—with moving mechanical parts within the adapter—there are advantages to traditional cantilever

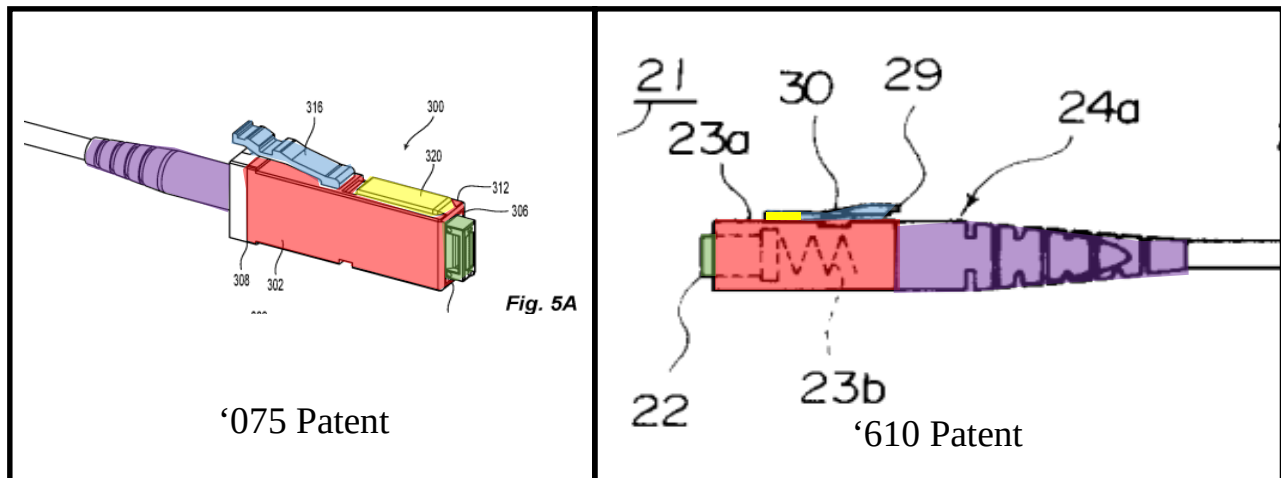
latching mechanisms like the ones disclosed by Chen. First, cantilever latching mechanisms are simpler mechanisms, with fewer components making them easier and less expensive to manufacture. Additionally, some customers prefer cantilever latching mechanisms as they are easier to ensure that they are securely inserted into the receiving adapters.

301. Such cantilevered latching mechanisms would still be compatible with the shuttering mechanism taught by Suzuki and would require minimal modification of the Suzuki connector to implement. As the dimensions of the Suzuki and Chen connector bodies are similar, those of skill in the art would recognize that the Suzuki connector has sufficient room on its top surface to accommodate the latch. And as cantilevered latches were already ubiquitous within the art, the success in implementing such a modification would have been predictable.

302. Therefore, the combination of Suzuki and Shimozu (and optionally Saito, JP391, or Katgiyama as discussed in Grounds 2-4) renders Claims 1-21 obvious.

X. GROUND 9: Obvious Over JP610 in View of Manning and Loder

303. JP610 discloses a closely similar ferrule holder to that claimed in the '075 Patent.



EX1001: Fig. 5A (annotated); EX1005: Figure 2 (annotated)

304. As addressed below, JP610 embodies substantially all of the claim limitations of the '075 Patent, except that the '610 shows that the latching mechanism and projection on the top surface of the ferrule holder in JP610 being unitary—rather than being unconnected. But JP610 is not wed to the unitary latching mechanism and first projection, as JP610 explicitly acknowledges that “the shape of the release levers or engagement pieces can be changed.” EX1005: [0019].

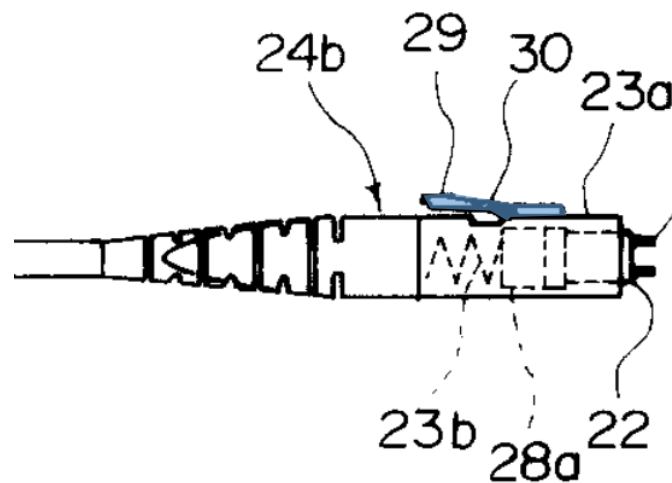
305. As such, it would have been obvious to substitute JP610 connector’s latch structure with other well-known latch structures known in the art.

A. Motivation to Modify JP610 Connector in View of Manning

306. The ferrule holder disclosed in JP610 included a rearward extending cantilevered latch—identified as an “release lever” (29). EX1005: [0013]

(“Therefore, when the optical connector plug 24a is inserted into the housing 25,

the release lever 29 enters the notch 25b, and the guide grooves 23d enter the guides on the housing 25 to provide stable support in the housing 25.”).



EX1005: Figure 2 (excerpted and annotated).

307. It was recognized in the art that such latch configurations can be prone to entanglement with wires and cables. EX1010: 1:30-39 (“Within environments such as these, it is advantageous to provide a connector which is not prone to entanglement on the wires. Entanglement with wires during connection or disconnection of a connector can provide that the wires become damaged or some portion of the connector becomes damaged.”). Accordingly, it was known to introduce forward facing latches such as those described in Manning. EX1010: 2:1-12 (“Another object of the present invention is to provide a plug housing having a novel latch structure thereon in a connector, such connector being used to terminate an optical fiber, and such latch structure not being prone to entanglement

with loose and/or hanging wires during engagement or disengagement of the connector.”), Figure 2; *see also* EX1009: Figure 3B; EX1019: (U.S. Patent 6,918,704): Figure 1.

308. As explained by Manning, forward facing latch structures comprises a “cantilevered beam ha[ving] an end fixed to a rearward portion of the plug housing and its free end extend[ing] forwardly toward the forward end of the plug housing.” EX1010: 2:25-29.

309. Additionally, in implementing a forward facing latch structure, a projection or key would be “spaced slightly forward of the forwardmost end of the beam” which “acts as a shroud and prevents tangling of the other wires with the latch structure.” EX1010: 6:18-20; 10:17-29.

310. Manning demonstrates such a projection/ forward facing latch arrangement as follows:

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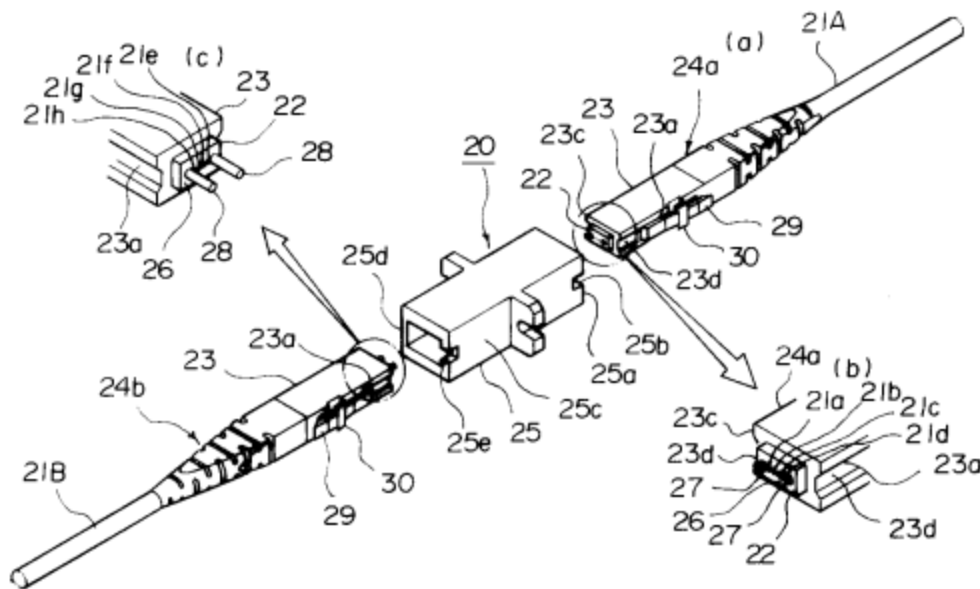
B. Independent Claim 1

[1.p] A fiber optic connector for a multi-fiber ferrule, comprising:

313. JP610 discloses “optical connector plugs composed of a multi-core optical connector ferrule, in which optical fibers terminate.” EX1005: [0007].

Specifically, the multi-fiber ferrule of JP610 is disclosed as a MT type ferrule.

EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules”).



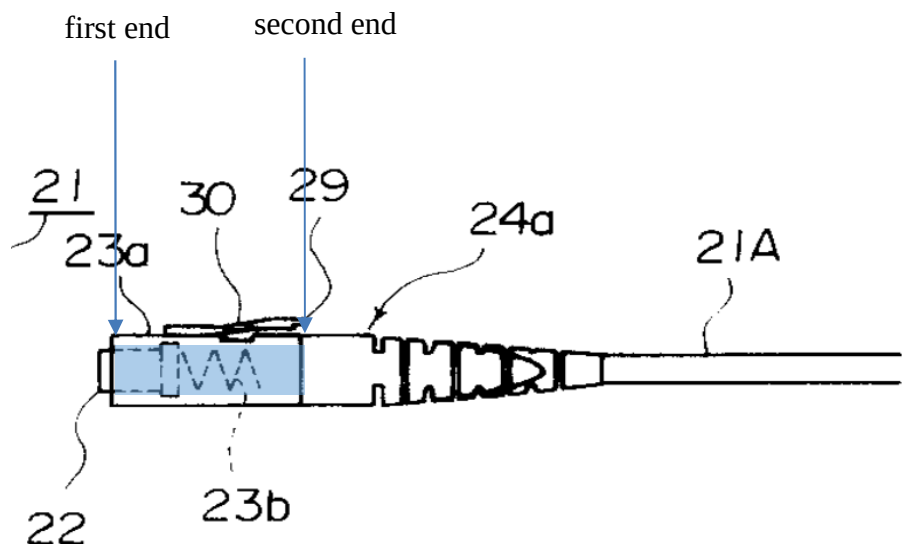
EX1005: Fig. 1.

314. Therefore, JP610 discloses [1.P].

[1.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end

315. The optical connector disclosed by JP610 has a “plug housing” (23)—*i.e.* a ferrule holder in the context of the ‘075 Patent—having a “rectangular cross section that conforms to the optical connector ferrule 22, and the optical connector ferrule 22 is freely moved back and forth” EX1005: [0011]. Those of skill in the art would recognize that JP610 is disclosing the plug housing as having a central opening with a rectangular cross section extending longitudinally.

316. Figure 2 “show[s] the internal configuration” of the ferrule holder, which the POSA would recognize as necessarily having a central opening (blue in the figure below) extending from a first end to a second end to receive the spring biased ferrule and allow the optical fibers to extend from the boot to the ferrule. EX1005: [0011].

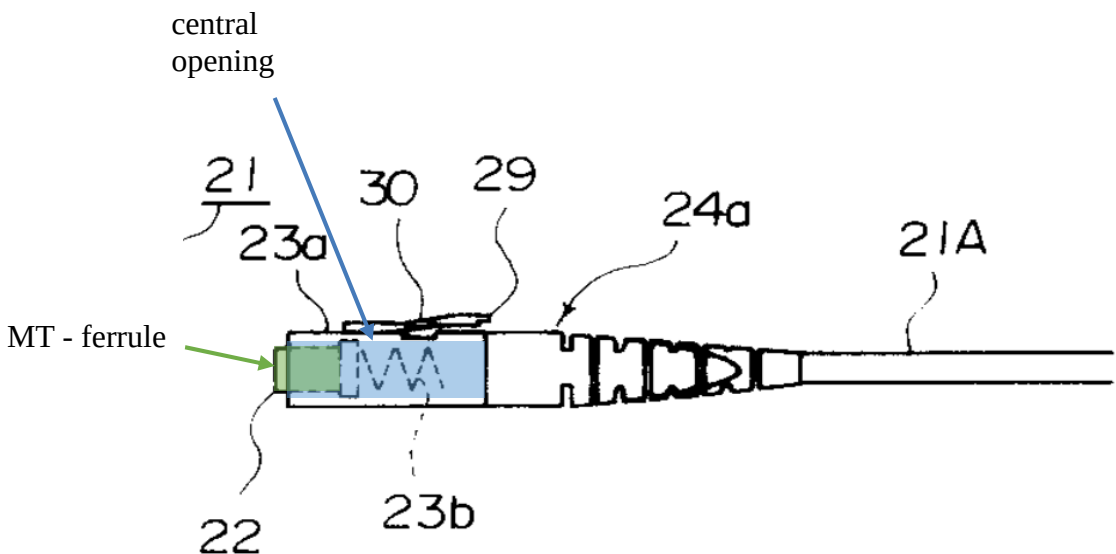


EX1005: Fig. 2 (excerpted and annotated).

317. Therefore, JP610 discloses [1.a].

[1.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

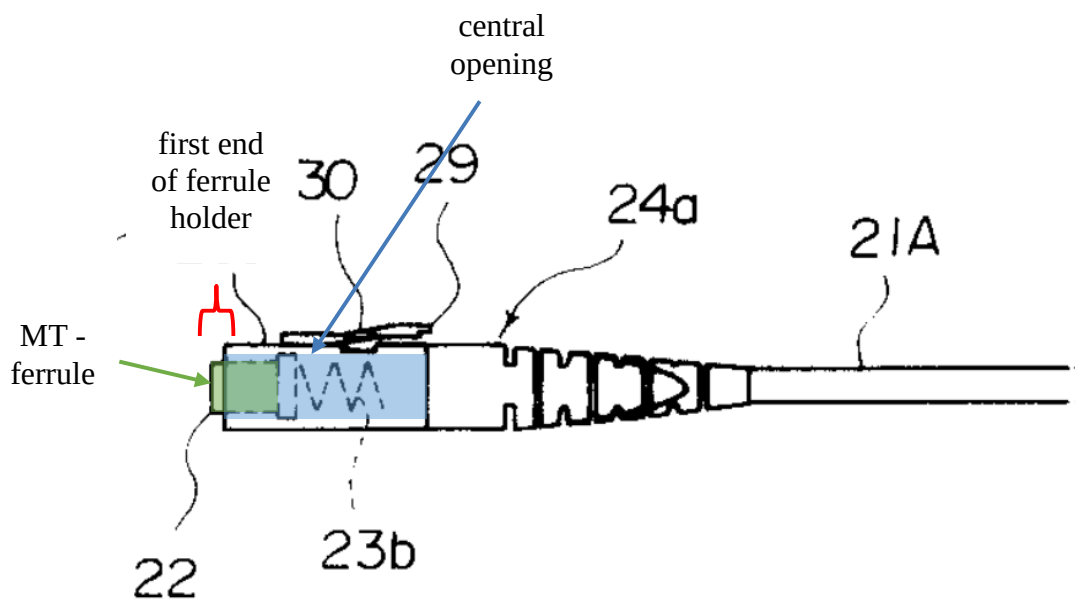
318. The optical connector disclosed by JP610 has an “optical connector ferrule 22 containing multi-core optical fibers 21.” EX1005: [0009]. Specifically, the multi-fiber ferrule of JP610 is disclosed as a MT type ferrule. EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules ...”).



EX1005: Fig. 2 (excerpted and annotated).

[1.b.3] the opening at the first end being in communication with the central opening

323. Those of skill in the art would recognize that opening at the first end of JP610 from which the ferrule extends is necessarily in communication with the central opening to permit the optical fibers to extend from the boot and terminate at the ferrule.



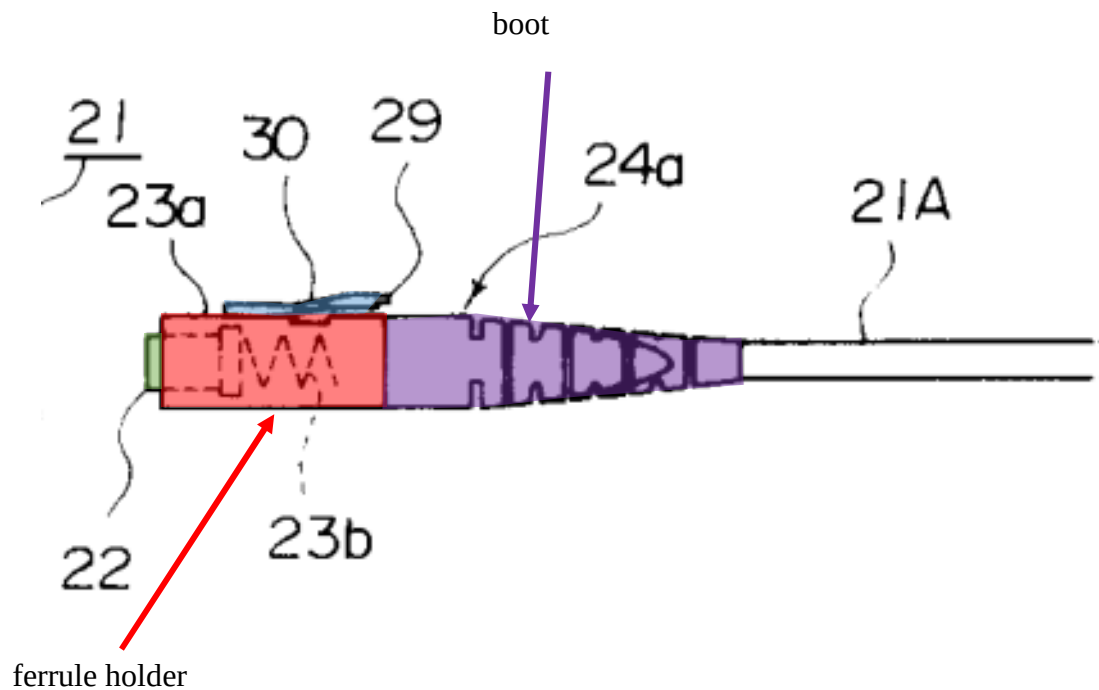
EX1005: Fig. 2 (excerpted and annotated).

324. Therefore, JP610 discloses [1.b.3].

[1.c] a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers

325. Although not discussed within the specification, JP610's figures depict a boot extending in a rearward direction from the ferrule holder and supporting the optical fiber 21.

326. Specifically, JP610 discloses that the "optical fiber 21 can have any configuration, such as a configuration in which four optical fiber tape core fibers are housed in a coated tube, or a configuration in which four single-core optical fibers are housed in a coated tube." EX1005: [0009].



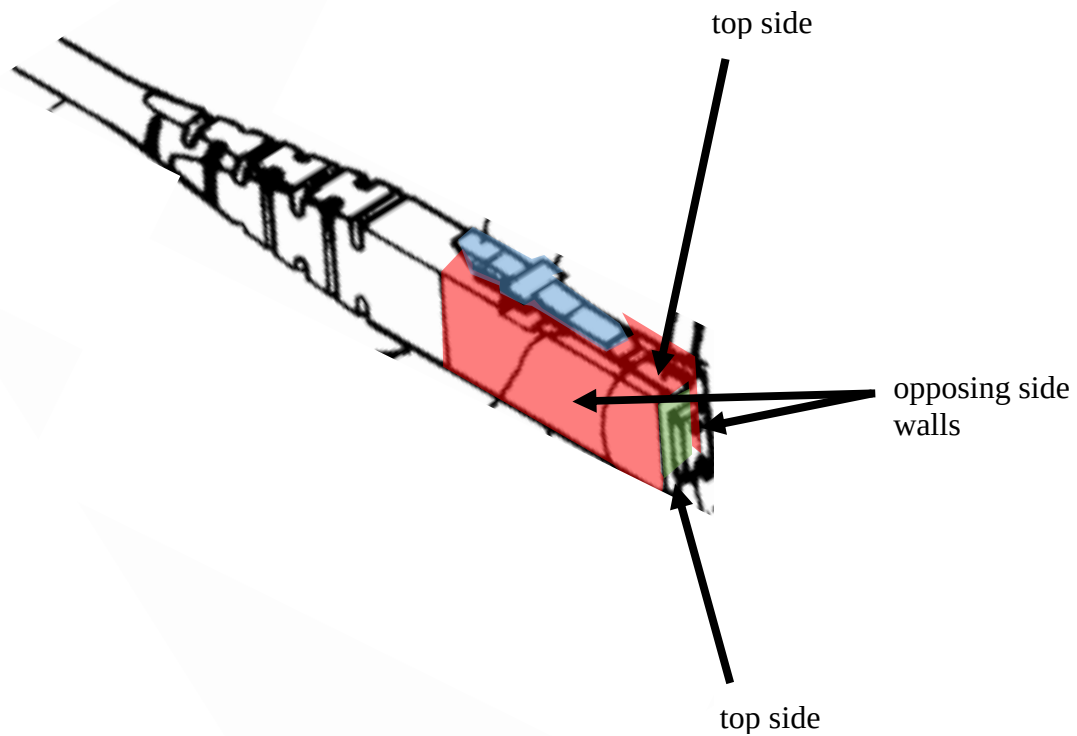
EX1005: Fig. 2 (excerpted and annotated).

327. Therefore, JP610 discloses [1.c].

[1.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls

328. While the claims identify the various sides of the ferrule holder in the context of the fiber optic connector being in an up-right orientation, those of skill in the art would recognize that the orientation of a free standing fiber optic connector is merely a matter of perspective. Those of skill in the art would further recognize that the orientation of a fiber optic connector in the field will ultimately be driven by the application in which the fiber optic connector is used.

329. Accordingly, a connector within the prior art—such as the connector of JP610—can be rotated to match the orientation as recited in the claims of the ‘075 Patent. By doing so, the top side, a bottom side, and opposing side walls joining the top and bottom sides can be identified according the excerpted and rotated Figure 1 below:



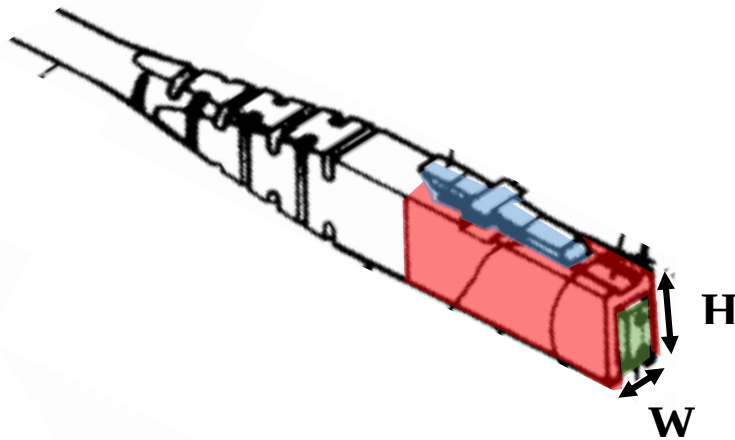
EX1005: Figure 1 (excerpted, rotated, and annotated).

330. Therefore, JP610 discloses [1.d].

[1.e.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

331. In the context of the orientation with respect to claim limitation [1.d] immediately above, the separation between the top side and the bottom side (H) is

more than a separation between the opposing side walls (W) as shown in the rotated Figure 3 below:



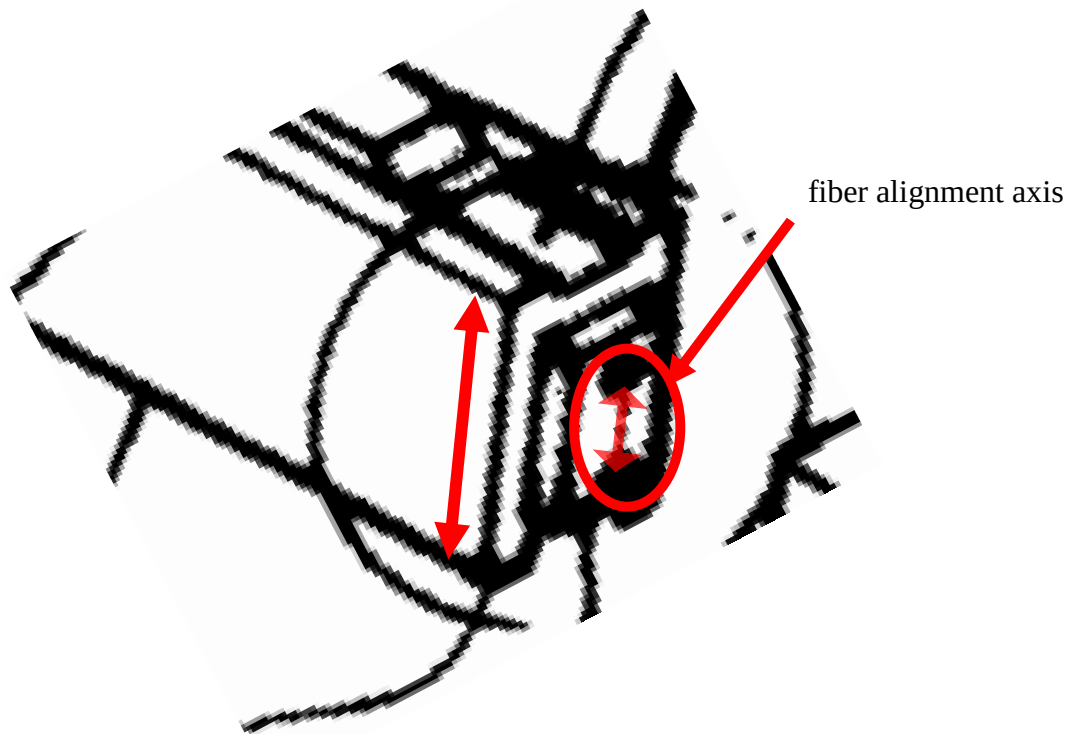
EX1005: Figure 1 (excerpted, rotated, and annotated).

332. Therefore, JP610 discloses [1.e.1].

[1.e.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the multi-fiber ferrule

333. In the context of the orientation of the connector of JP610 addressed with respect to claim limitations [1.d] and [1.e.1] immediately above, the opposing

side walls are parallel to the fiber alignment axis of the optical fibers at an end face of the multi-fiber ferrule.



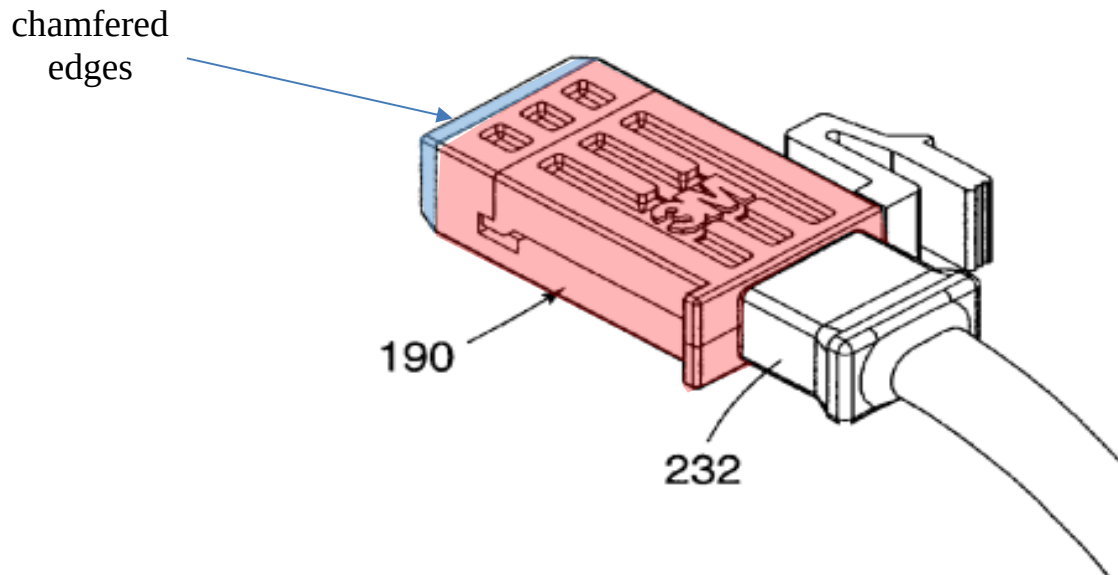
EX1005: Figure 1 (excerpted, rotated, and annotated).

334. Therefore, JP610 discloses [1.e.2].

[1.f] wherein a front end of the ferrule holder has a lead-in or a chamfer

335. Although not disclosed in JP610, it was well known in the art to provide chamfers on the leading edges of ferrule holders to assist in easing the front end of the connector into an adapter.

336. Specifically, the front end of the ferrule holder of the Loder connector is depicted as having chamfered edges.



EX1011: Fig. 12 (annotated).

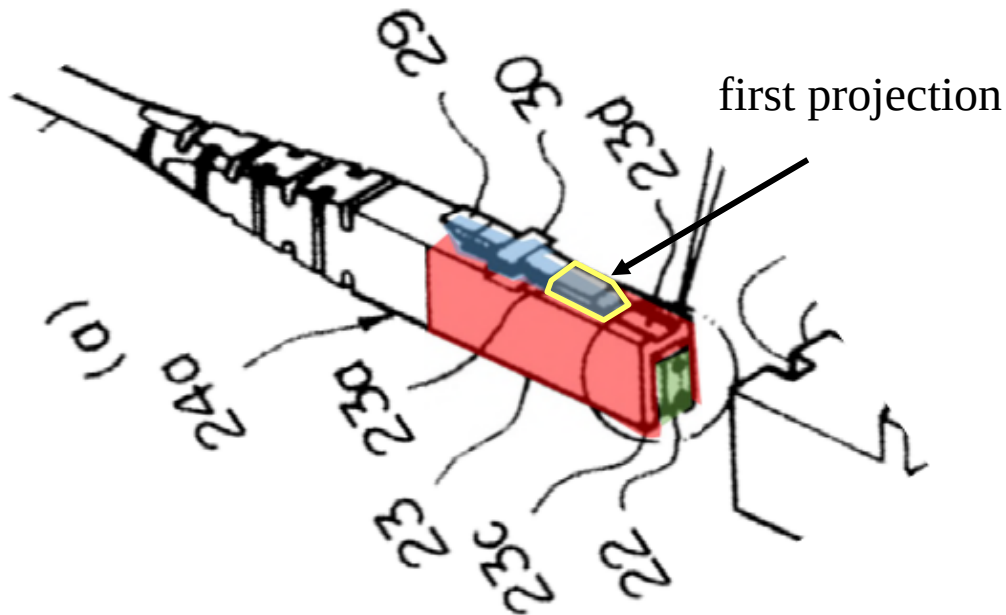
337. Adding chamfered surfaces at the edge of the ferrule holders—as disclosed by Loder—was a known technique used to improve a similar device to the connector of JP610 that would have resulted in a predictable improvement—assist in aligning and guiding the ferrule holders into the receiving slots within an adapter. Accordingly, those of skill in the art would have viewed the addition of chamfered surfaces at the edge of the ferrule holder to be a simple and obvious improvement to JP610 connector.

338. Therefore, JP610/Loder renders [1.f] obvious.

[1.g] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side

339. JP610 includes a first projection on the outside surface on the top side of the main body and extending longitudinally in the form of fulcrum of the release

lever/latch (29). EX1005: [0012] (“As shown in Fig. 1 (a), a release lever 29 protrudes from one side wall 23a at one end of the plug housing 23 for the optical connector plug 24a in the cross-sectional longitudinal direction.”).



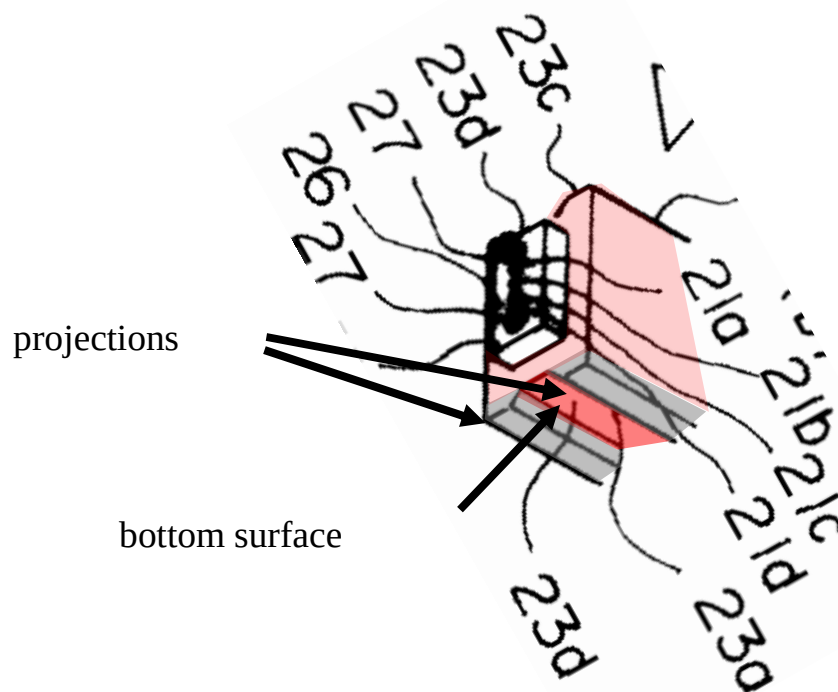
EX1005: Figure 1 (excerpted, rotated, and annotated).

340. Accordingly, JP610 discloses the [1.g] limitation.

[1.h] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side

341. As depicted in Figures 1A and 1B, the connector housing of JP610 had a grooves 23(d) framed by two longitudinal projections (shaded gray in the annotated drawing below) on both of the side walls (23a, 23c)—the top and bottom sides in the context of the orientation with respect to claim limitation [1.d] above.

EX1005: [0013], Claim 3. The projections extend longitudinally along the bottom side.

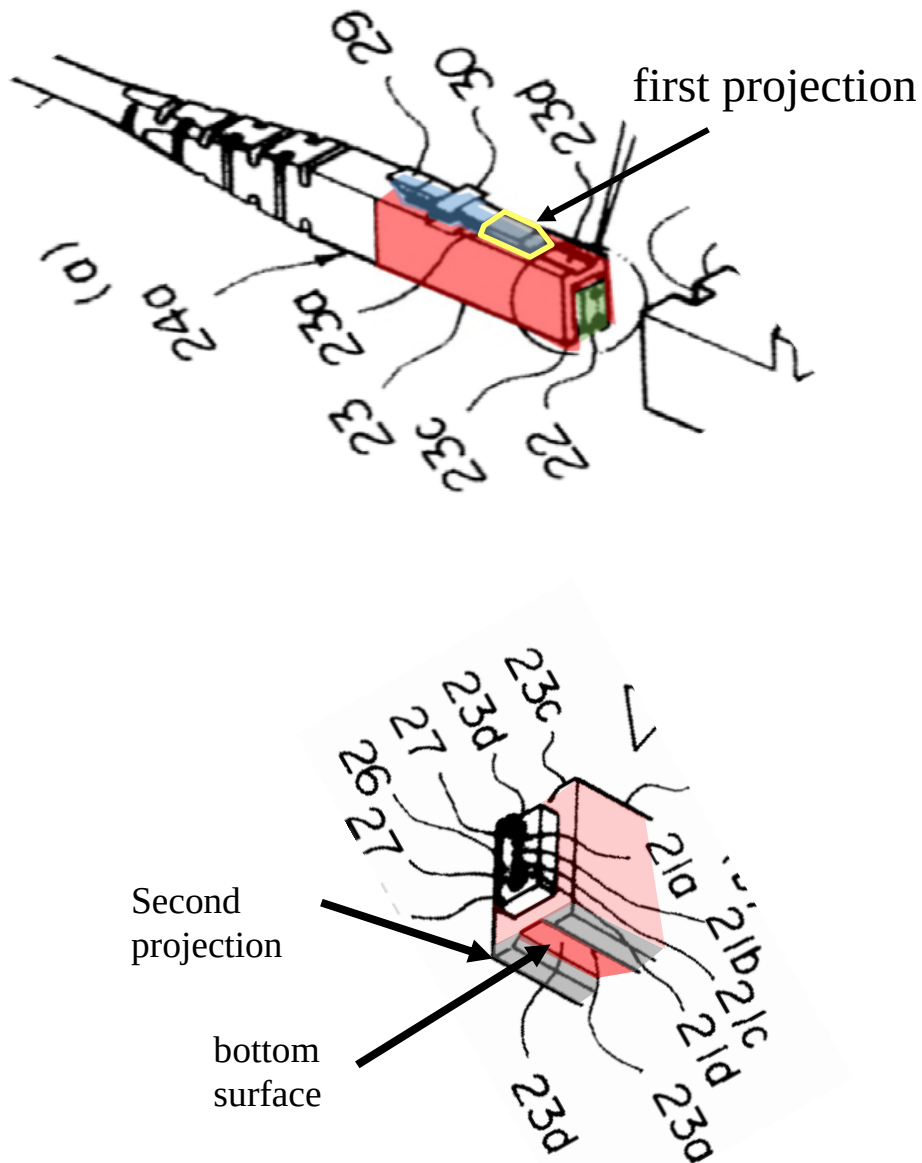


EX1005: Figure 1 (excerpted, rotated, and annotated).

342. Therefore, JP610 discloses [1.h].

[1.i] wherein the first projection has a different shape than the second projection

343. As illustrated below, the first projection on to the top side has a different shape than the second projection.



EX1005: Figure 1 (excerpted, rotated, and annotated).

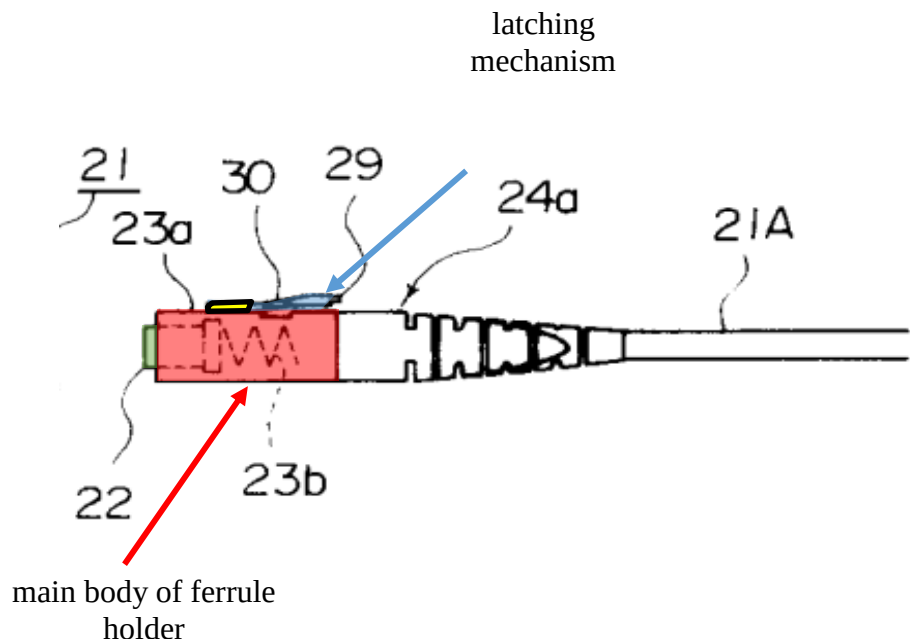
344. At a minimum, the first projection is wider than the second projection as readily observed from the drawings. Any such dimensional difference gives the first projection a "different shape" than the second projection.

345. Therefore, JP610/Manning combination renders [1.i] obvious.

[1.j] a latching mechanism on at least one of the top side and the bottom side

346. The connector of JP610 includes “a release lever 29 [i.e., a cantilever latching arm] protrud[ing] from one side wall 23a at one end of the plug housing 23 for the optical connector plug 24a in the cross-sectional longitudinal direction.”
EX1005: [0012].

347. In the context of the orientation of the connector of JP610 addressed with respect to claim limitation [1.d], JP610’s release lever (29) is a latching mechanism on the top side of the connector’s main body:



EX1005: Figure 2 (excerpted and annotated).

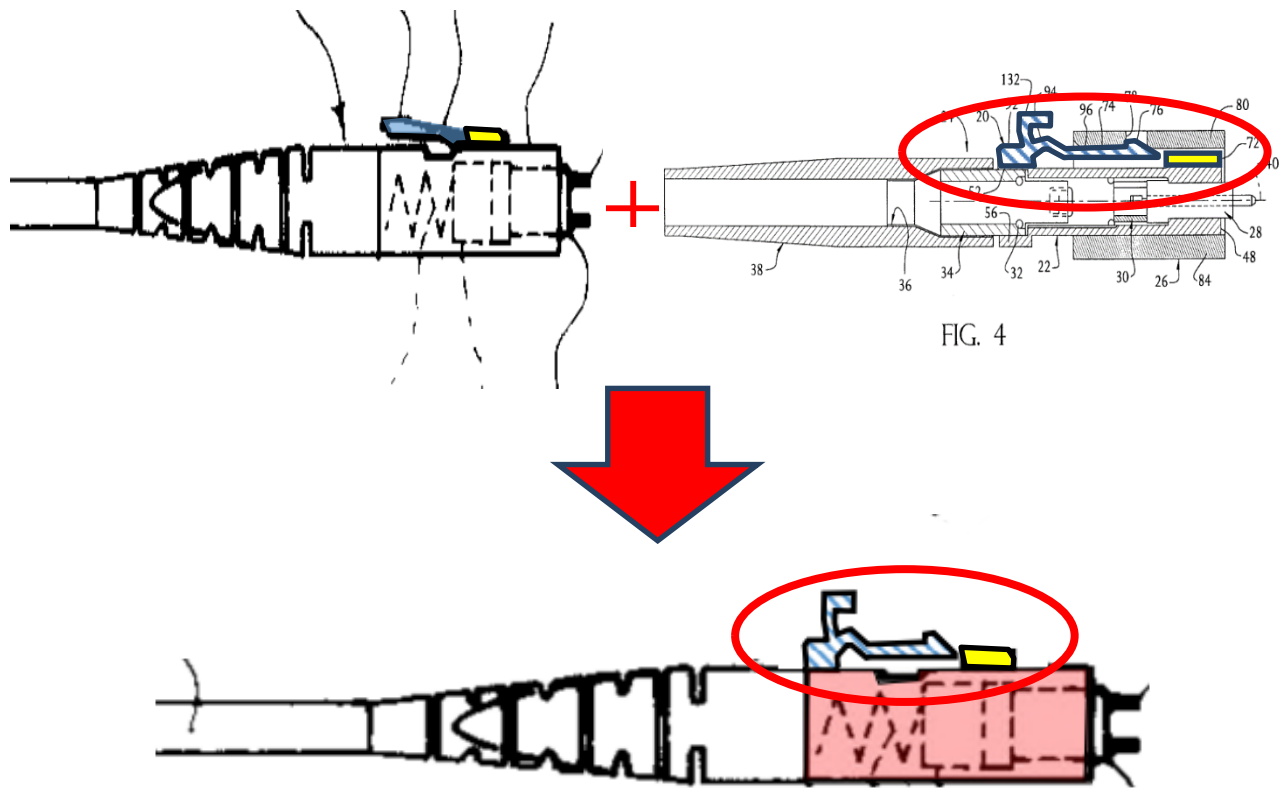
348. Accordingly, JP610 discloses the [1.j] limitation.

[1.k]. wherein the latching mechanism is unconnected to the first projection and the second projection

349. The latch mechanism of JP610 is located on the top side of the housing is separated from the second projection located on the bottom side of the housing. However, the latching mechanism on the top side of the housing of JP610 is connected to the first projection.

350. It would have been obvious to modify JP610 to make the latching mechanism unconnected to and separated from the first projection. More specifically it would be obvious to replace the rearward projecting latching mechanism shown in the '610 with the forward projecting latching mechanism shown by Manning for the reasons given above in Paragraphs 307-313.

351. The modified connector of JP610 would have its latching mechanism unconnected to the first projection. EX1010: 6:18-20 (describing the key (72)—*i.e.*, a projection—“spaced slightly forward” of the latch). The latching mechanism is necessarily unconnected to the first projection, as if it were connected the latching mechanism the latching mechanism would no longer have a free end and would no longer be deformable or resilient.



352. Accordingly, JP610/Manning renders [1.k] obvious. JP610 in view of Manning and Loder renders Claim 1 of the '075 Patent obvious.

B. Independent Claim 18

[18.p] A fiber optic connector for a multi-fiber ferrule, comprising

353. Claim element [18.p] of the '075 Patent is verbatim identical to claim element [1.p]. As discussed above with respect to Ground 1, Claim 1, element [1.p] in Paragraphs 314-315, JP610 discloses element [18.p].

[18.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end;

354. Claim element [18.a] of the '075 Patent is verbatim identical to claim element [1.a]. As discussed above with respect to Ground 1, Claim 1, element [1.a] in Paragraphs 316-318, JP610 discloses element [18.a].

[18.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

355. Claim element [18.b.1] of the '075 Patent is verbatim identical to claim element [1.b.1]. As discussed above with respect to Ground 1 in Paragraphs 319 through 321, JP610 discloses [18.b.1].

[18.b.2] the multi-fiber ferrule being exposed at an opening at the first end of the ferrule holder

356. Claim element [18.b.2] of the '075 Patent is verbatim identical to claim element [1.b.2]. As discussed above with respect to Ground 1 in Paragraphs 322 through 323, JP610 discloses [18.b.2].

[18.b.3] the opening at the first end being in communication with the central opening

357. Claim element [18.b.3] of the '075 Patent is verbatim identical to claim element [1.b.3]. As discussed above with respect to Ground 1 in Paragraphs 324 through 325, JP610 discloses [18.b.3].

[18.c] a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers,

358. Claim element [18.c] of the '075 Patent is verbatim identical to claim element [1.c]. As discussed above with respect to Ground 1, Claim 1, element [1.c] in Paragraphs 326-328, JP610 discloses element [18.c].

[18.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls,

359. Claim element [18.d] of the '075 Patent is verbatim identical to claim element [1.d]. As discussed above with respect to Ground 1, Claim 1, element [1.d] in Paragraphs 329-331, JP610 discloses element [18.d].

[18.e.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

360. Claim element [18.e.1] of the '075 Patent is verbatim identical to claim element [1.e.1]. As discussed above with respect to Ground 1 in Paragraphs 332 through 333, JP610 discloses [18.e.1].

[18.e.2] the opposing side walls being parallel to a fiber alignment axis of the, at least two optical fibers at an end face of the multi-fiber ferrule

361. Claim element [18.e.2] of the '075 Patent is verbatim identical to claim element [1.e.2]. As discussed above with respect to Ground 1 in Paragraphs 334 through 335, JP610 discloses [18.e.2].

[18.f] wherein a front end of the ferrule holder has chamfer

362. Claim element [18.f] of the '075 Patent is similar to claim element [1.f], except that it recites that the “front end of the ferrule holder has a chamfer” instead of a “lead-in or a chamfer.” For the reasons discussed above with respect to [1.f] in Paragraphs 336-339, JP610/Loder renders [18.f] obvious.

[18.g] a first projection extending longitudinally along the top side

363. Claim element [18.e] of the '075 Patent is similar to claim element [1.e], except that it omits the language “on a first outside surface on the top side of the main body.” As discussed above with respect to [1.g] in Paragraphs 340-341, JP610 discloses the [18.g] limitation and the limitation would have continued to have been met under JP610/Manning combination.

[18.h] a second projection extending longitudinally along the bottom side

364. Claim element [18.h] of the '075 Patent is similar to claim element [1.h], except that it omits the language “on a second outside surface on the bottom side of the main body.” As discussed above with respect to [1.h] in Paragraphs 342-343, JP610 discloses the [18.h] limitation and the limitation would have continued to have been met under JP610/Manning combination.

[18.i] wherein the first projections is on a first outside surface of the top side of the main body and has at least one dimension that is different than the second projection on an opposite

**second outside surface on the bottom side of the main body;
and**

365. Claim element [18.i] of the '075 Patent is similar to claim element [1.i].

366. Compared to [1.i], claim element [18.i] adds that the “first projections is on a first outside surface of the top side of the main body,” which was addressed in [1.g]; adds that “the second projection [is] on an opposite second outside surface on the bottom side of the main body,” which was addressed in [1.h]; and rephrases “has a different shape” as “has at least one dimension that is different,” but which was disclosed by JP610 for the same reasons as discussed in [1.i].

367. As discussed above with respect to [1.g]-[1.i], JP610 discloses the [18.i] limitation and the limitation would have continued to have been met under JP610/Manning combination.

**[18.j] a latching mechanism on at least one of the top side and the
bottom side,**

368. Claim element [18.j] of the '075 Patent is verbatim identical to claim elements [1.j].

369. As discussed above with respect to Claim 1, element [1.j] in Paragraphs 347-349, JP610 discloses the [18.j] limitation and the limitation would have continued to have been met under JP610/Manning combination.

[18.k] wherein the latching mechanism is separated longitudinally from the first projection and the second projection.

370. Claim element [18.k] of the '075 Patent is verbatim identical to claim elements [1.j].

371. As discussed above with respect to Claim 1, element [1.j] in Paragraphs 350-353, JP610/Manning combination renders [18kj] obvious.

C. Independent Claim 19

[19.p] A fiber optic connector for a multi-fiber ferrule, comprising

372. Claim element [19.p] of the '075 Patent is verbatim identical to claim element [1.p]. As discussed above with respect to Claim 1, element [1.p] in Paragraphs 314-315, JP610 discloses element [19.p].

[19.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end;

373. Claim element [19.a] of the '075 Patent is verbatim identical to claim element [1.a]. As discussed above with respect to Claim 1, element [1.a] in Paragraphs 316-318, JP610 discloses element [19.a].

[19.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

374. Claim element [19.b.1] is verbatim identical to claim element [1.b.1]. For the reasons discussed above in Paragraphs 319 through 321, JP610 discloses element [19.b.1] of the '075 Patent.

[19.b.2] the multi-fiber ferrule being exposed at an opening at the first end of the ferrule holder

375. Claim element [19.b.2] is verbatim identical to claim element [1.b.2]

For the reasons discussed above in Paragraphs 322 through 323, JP610 discloses element [19.b.2] of the '075 Patent.

[19.b.3] the opening at the first end being in communication with the central opening

376. Claim element [19.b.3] is verbatim identical to claim element [1.b.3]

For the reasons discussed above in Paragraphs 324 through 325, JP610 discloses element [19.b.3] of the '075 Patent.

[19.c] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls,

377. Claim element [19.c] of the '075 Patent is verbatim identical to claim elements [1.d]. As discussed above with respect to Claim 1, element [1.d] in Paragraphs 329-331, JP610 discloses elements [19.c] of the '075 Patent.

[19.d.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

378. Claim element [19.d.1] is verbatim identical to claim element [1.e.1]

For the reasons discussed above in Paragraphs 332 through 333, JP610 discloses element [19.d.1] of the '075 Patent.

[19.d.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the multi-fiber ferrule

379. Claim element [19.d.2] is verbatim identical to claim element [1.e.2]

For the reasons discussed above in Paragraphs 334 through 336, JP610 discloses element [19.d.2] of the '075 Patent.

[19.e] wherein a front end of the ferrule holder has a lead-in;

380. Claim element [19.e] of the '075 Patent is similar to claim element [1.f], except that it recites that the “front end of the ferrule holder has a lead-in” instead of a “lead-in or a chamfer.”

381. The specification of the '075 Patent never uses the term “lead-in.” Rather the only written support for the front end of the ferrule holder having a lead-in is the figures of '075 Patent's disclosure of the edges of the ferrule holder being chamfered.

382. Accordingly, those of skill in the art would recognize that chamfers on the front edges of the ferrule holder would meet the claimed “lead-in.” For the reasons discussed above with respect to [1.f] in Paragraphs 336-339, JP610/Loder renders [19.e] obvious.

[19.f] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side;

383. Claim element [19.f] of the '075 Patent is verbatim identical to claim elements [1.g]. As discussed above with respect to Ground 1, Claim 1, element [1.g] in Paragraphs 340-341, JP610 discloses the [19.f] limitation and the limitation would have continued to have been met under JP610/Manning combination.

[19.g] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side,

384. Claim element [19.g] of the '075 Patent is verbatim identical to claim elements [1.h]. As discussed above with respect to Ground 1, Claim 1, element [1.h] in Paragraphs 342-343, JP610 discloses the [19.g] limitation and the limitation would have continued to have been met under JP610/Manning combination.

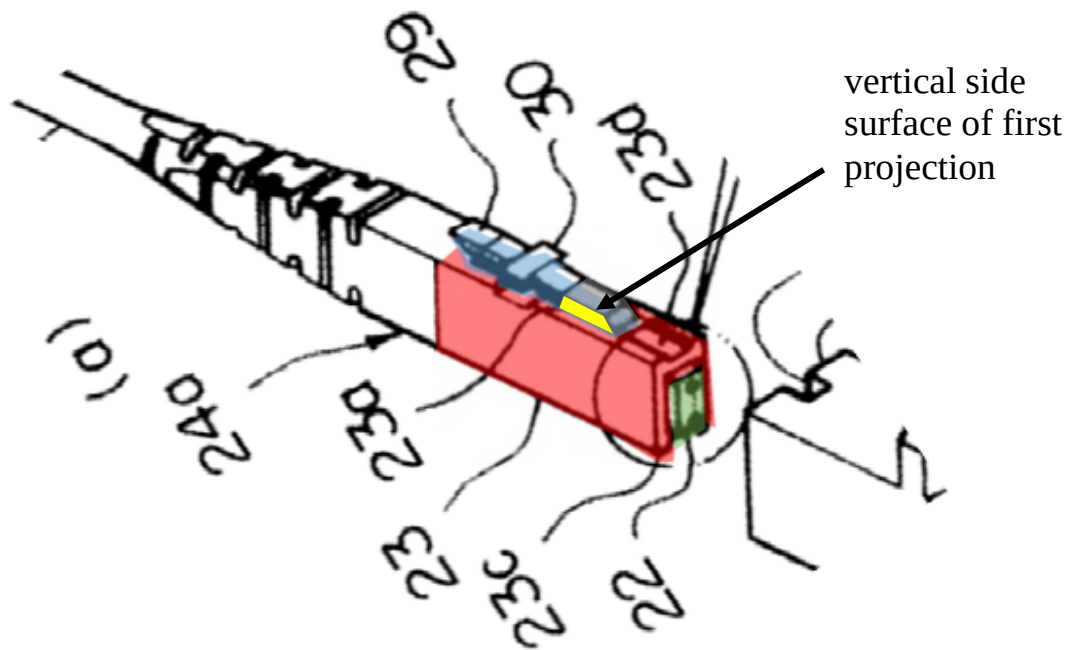
[19.h] wherein the first projection has a different shape than the second projection,

385. Claim element [19.h] of the '075 Patent is verbatim identical to claim elements [1.i]. As discussed above with respect to Ground 1, Claim 1, element [1.i] in Paragraphs 344-346, JP610 discloses the [19.h] limitation and the limitation would have continued to have been met under JP610/Manning combination.

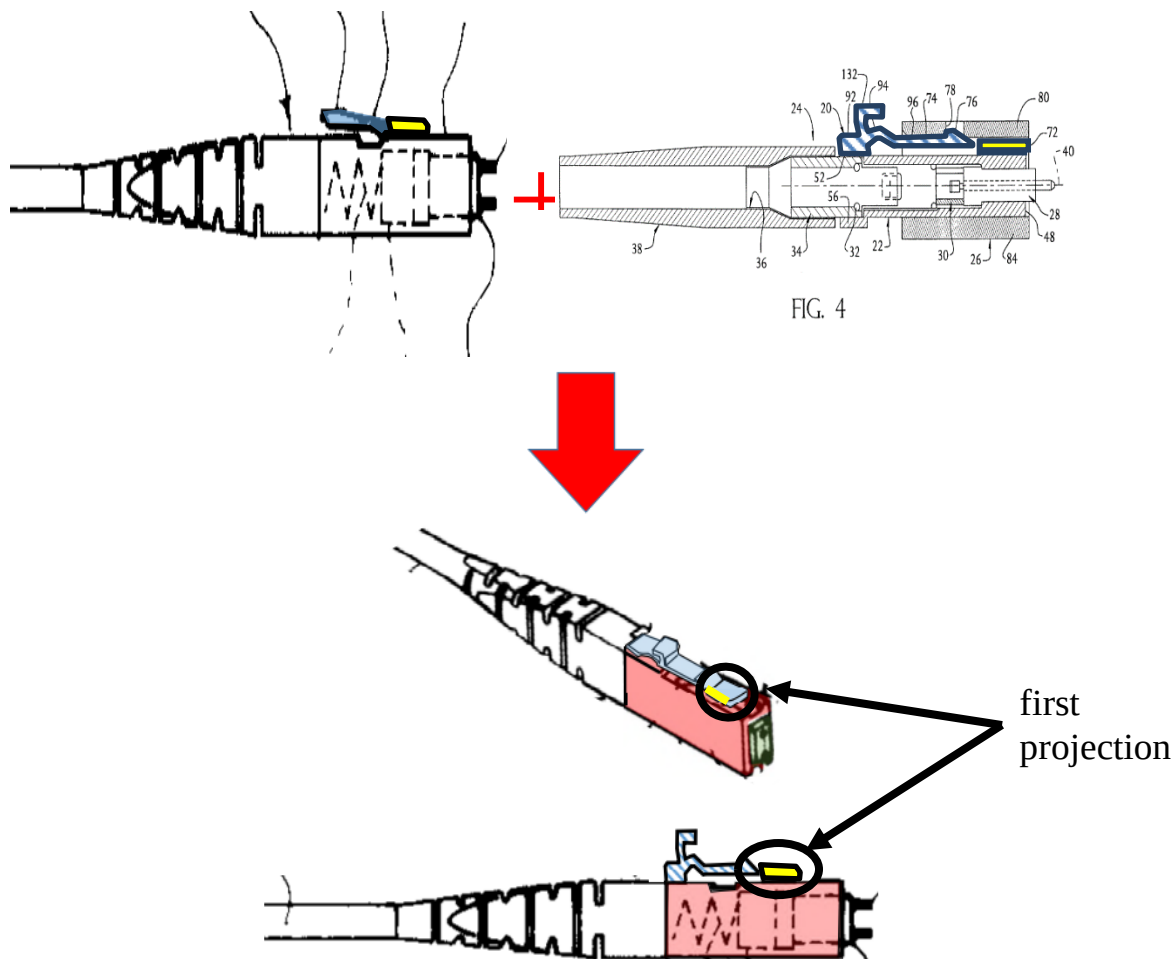
[19.i] wherein the first and the second projections each have a vertical side surface to align the ferrule holder with a vertical

wall to control a horizontal direction of movement of the ferrule holder relative to an adapter

386. As addressed with respect to [1.g] above, the connector of JP610 includes a first projection on the outside surface on the top side of the main body and extending longitudinally in the form of fulcrum of the release lever/latch (29). EX1005: [0012] (“As shown in Fig. 1 (a), a release lever 29 protrudes from one side wall 23a at one end of the plug housing 23 for the optical connector plug 24a in the cross-sectional longitudinal direction.”). This projection includes vertical side surfaces on each side.



387. Also addressed with respect to [1.g] above, when modifying the connector of JP610 to include a forward facing latch, those of skill in the art would have separated the first projection from the latch and spaced it “slightly forward of the forwardmost end of the [latch arm]” so that it could “act[] as a shroud and prevent[] tangling of the other wires with the latch structure.” EX 6:18-20; 10:17-29. The first projection as modified would continue to include vertical side surfaces on each side.



Modified from EX1005: Figs. 1(a), 2 and EX1010: Fig. 4.

A hand-drawn perspective view of a mechanical assembly. The assembly consists of a base with a grid-like top surface, a central vertical shaft, and a yellow rectangular component. Various parts are labeled with handwritten numbers and letters: 23c, 23d, 27, 26, 27, 21a, 21b, 21c, 21d, 23a, and 23b. A line points from the text 'vertical side walls of second projections' to the yellow rectangular component.

389. Notably this limitation’s recitation that the vertical side surface “align[s] the ferrule holder with a vertical wall to control a horizontal direction of

movement of the ferrule holder relative to an adapter” merely recites an intended use—and as such I understand that it is not entitled to any patentable weight.

390. Regardless, those of skill in the art would recognize the first and second projections would be capable of providing width-wise alignment of the connector as it is inserted into an adapter by mating with guide grooves inside the corresponding adapter.

391. Accordingly, those of skill in the art would understand that vertical side surfaces of the first and second projections are capable of controlling the horizontal direction of movement of the ferrule holder relative to an adapter.

392. Accordingly, JP610/Manning/Loder renders [19.i] obvious.

[19.j] a latching mechanism on at least one of the top side and the bottom side,

393. Claim element [19.j] of the ‘075 Patent is verbatim identical to claim elements [1.j].

394. As discussed above with respect to Claim 1, element [1.j] in Paragraphs 347-349, JP610 discloses the [19.j] limitation and the limitation would have continued to have been met under JP610/Manning combination.

[19.k] wherein the latching mechanism is unconnected to the first projection and the second projection.

395. Claim element [19.k] of the ‘075 Patent is verbatim identical to claim elements [1.j].

396. As discussed above with respect to Claim 1, element [1.k] in Paragraphs 350-353, JP610/Manning combination renders [19.k] obvious.

D. Independent Claim 21

[21.p] A fiber optic connector for an MT-type ferrule, comprising:

397. The claim element [21.p] is similar to [1.p], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. The ferrule of JP610 is identified as being an “MT connector.” EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules[.]”).

398. Thus, for the reasons discussed above with respect to [1.p] in Paragraphs 313-315, JP610 discloses [21.p].

[21.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end;

399. The claim element [21.a] is similar to [1.a], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. The ferrule of JP610 is identified as being an “MT connector.” EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules[.]”).

400. Thus, for the reasons discussed above with respect to [1.a] in Paragraphs 316-318, JP610 discloses [21.a].

[21.b] an MT-type ferrule housed within the central opening and having at least two optical fibers supported therein, the MT-type ferrule being exposed at an opening at the first end of the ferrule holder, the opening at the first end being in communication with the central opening;

401. The claim element [21.b] is similar to [1.b], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. The ferrule of JP610 is identified as being an “MT connector.” EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules[.]”).

402. Thus, for the reasons discussed above with respect to [1.b] in Paragraphs 319-325, JP610 discloses [21.b].

[21.c] a boot extending rearward of the ferrule holder and configured to support the at least two optical fibers,

403. The claim element [21.c] is similar to [1.c], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. The ferrule of JP610 is identified as being an “MT connector.” EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules[.]”).

404. Thus, for the reasons discussed above with respect to [1.c] in Paragraphs 326-328, JP610 discloses [21.c].

[21.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls,

405. The claim element [21.d] is similar to [1.d], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. The ferrule of JP610 is identified as being an “MT connector.” EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules[.]”).

406. Thus, for the reasons discussed above with respect to [1.d] in Paragraphs 329-331, JP610 discloses [21.d].

[21.e] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls, the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the MT-type ferrule, and

407. The claim element [21.e] is similar to [1.e], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. The ferrule of JP610 is identified as being an “MT connector.” EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules[.]”).

408. Thus, for the reasons discussed above with respect to [1.e] in Paragraphs 332-335, JP610 discloses [21.e].

[21.f] wherein a front end of the ferrule holder has a chamfer;

409. Claim element [21.f] is verbatim identical to claim element [18.f]. As discussed above with respect to Claim 1, element [18.f], JP610/Loder renders element [21.f] of the '075 Patent obvious.

[21.g] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side;

410. Claim element [21.g] is verbatim identical to claim element [1.g]. As discussed above with respect to Ground 1, Claim 1, element [1.g], in Paragraphs 340-341, JP610 discloses the [21.g] limitation, and the limitation would have continued to have been met under JP610/Manning combination.

[21.h] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side,

411. Claim element [21.h] is verbatim identical to claim element [1.h]. As discussed above with respect to Ground 1, Claim 1, element [1.h], in Paragraphs 342-343, JP610 discloses the [21.h] limitation, and the limitation would have continued to have been met under JP610/Manning combination.

[21.i] wherein the first projection has a different height or a different width than the second projection; and

412. The claim element [21.i] is similar to [1.i], except that it more narrowly limits the “different shape[d]” first projection and the second projection to having “a different height or a different width.” As discussed above with

respect to Claim 1, element [1.i] in Paragraphs 344-346, JP610 discloses the [21.i] limitation and the limitation would have continued to have been met under JP610/Manning combination.

[21.j] a latching mechanism on at least one of the top side and the bottom side,

413. Claim element [21.j] is verbatim identical to claim element [1.j]. As discussed above with respect to Ground 1, Claim 1, elements [1.j] in Paragraphs 347-349, JP610/Manning/Loder renders [21.j] obvious.

[21.k] wherein the latching mechanism is unconnected to the first projection and the second projection.

414. Claim element [21.k] is verbatim identical to claim element [1.j]. As discussed above with respect to Ground 1, Claim 1, elements [1.k] in Paragraphs 350-353, JP610/Manning/Loder renders [21.k] obvious.

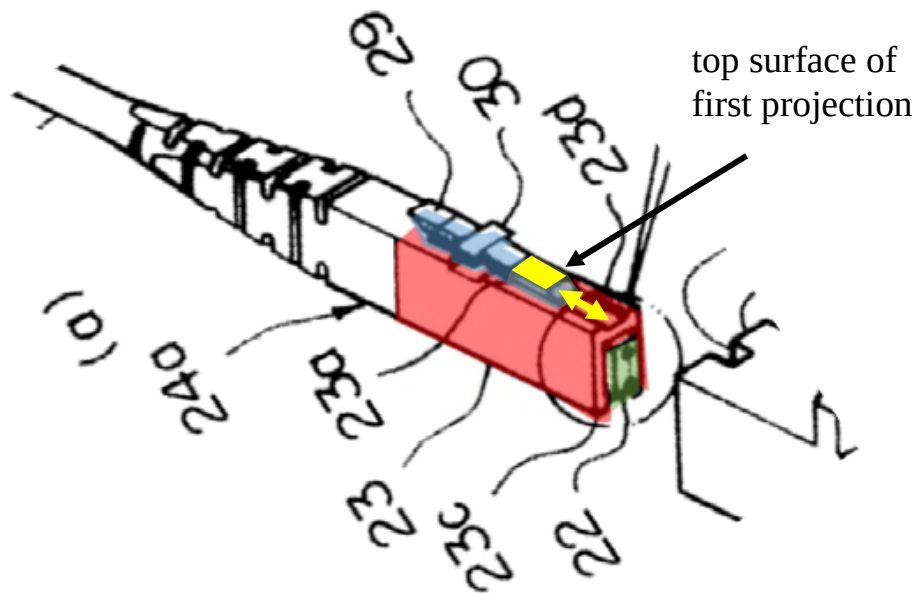
E. Claim 2 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule is an MT type ferrule.

415. Claim 2 depends from Claim 1 adding the limitation that the multi-fiber ferrule is an MT type ferrule. This additional limitation is disclosed by JP610 in that the ferrule is identified as being an “MT connector.” EX1005: [0010] (“The optical connector ferrules 22 are the so-called MT (mechanically transferrable) optical connector ferrules[.]”).

416. Therefore, JP610/Manning/Loder renders this claim obvious.

F. Claim 3 - The fiber-optic connector according to claim 1, wherein a top surface of the first projection is rearward of the front end of the ferrule holder

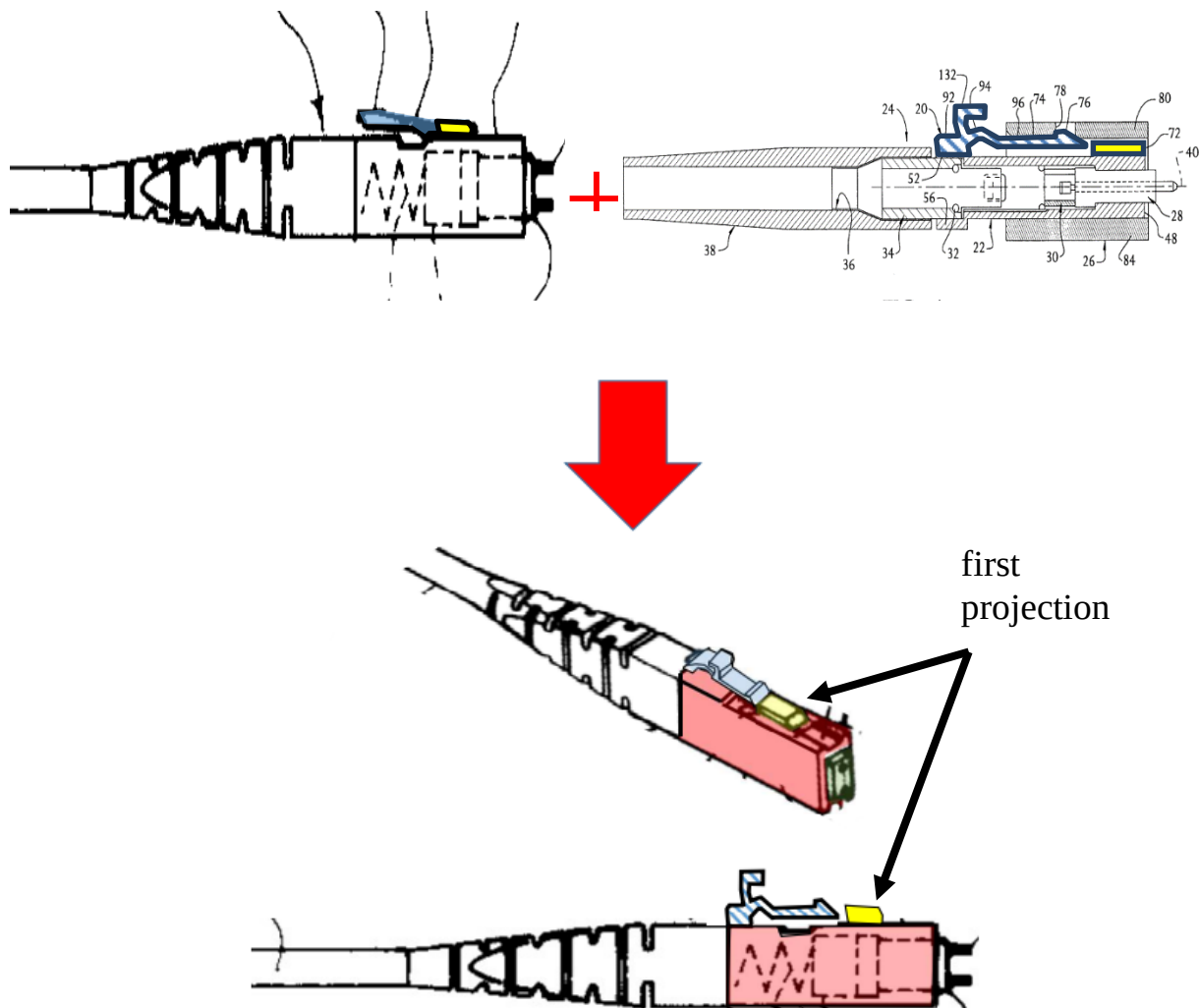
417. Claim 3 depends from Claim 1 adding the limitation that the top surface of the first projection is rearward of the front end of the ferrule holder. This limitation is disclosed by JP610, as shown in the excerpt from Figure 1 below.



EX1005: Figure 1 (excerpted, rotated, and annotated).

418. In modifying the connector of JP610 to include a forward facing latch, the first projection would be “slightly forward of the forwardmost end of the [latch arm]” so that it could “act[] as a shroud and prevent[] tangling of the other wires with the latch structure.” EX1010: 6:18-20 (“The key 72 provided on the extending portion top wall 60 is spaced slightly forward of the forwardmost end of

the beam 74.”); 10:17-29 (“Therefore, the key 72, 72a, 72b acts as a shroud to prevent the entanglement of the other wires with the latch structure 20, 20a, 20b.”).



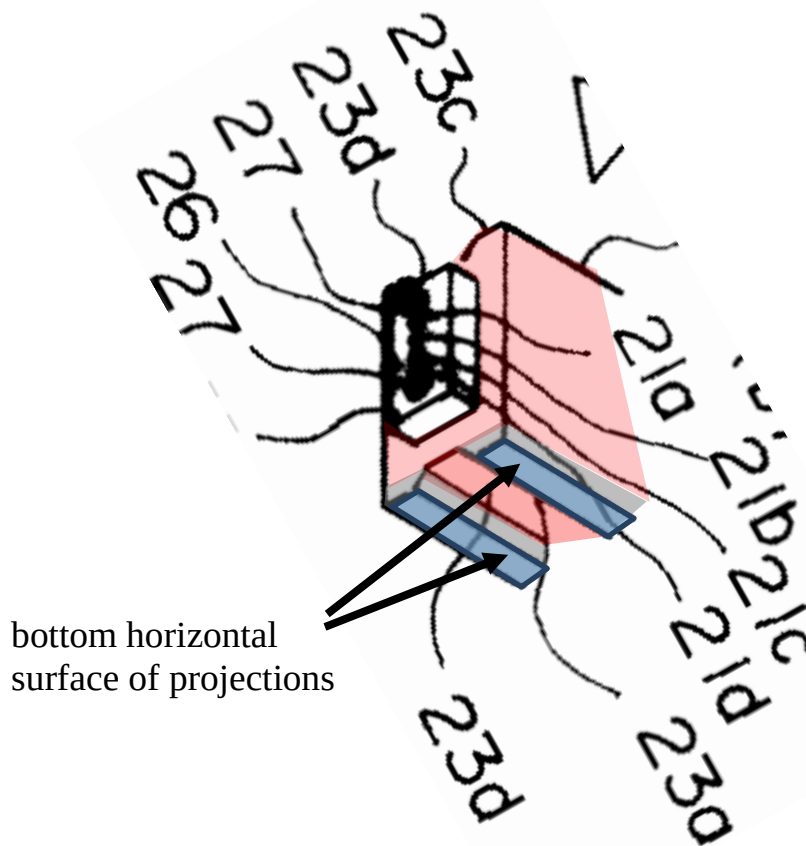
419. Accordingly, JP610 discloses the additional limitation of Claim 2 and the limitation would have continued to have been met under JP610/Manning combination.

420. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

G. Claim 4 - The fiber-optic connector according to claim 1, wherein a horizontal top surface of the second projection is rearward of the front end of the ferrule holder.

421. Claim 4 depends from Claim 1 adding the limitation that the top surface of the second projection is rearward of the front end of the ferrule holder. This claim limitation is nonsensical in that the second projection—which is recited as being on the bottom side in the [1.h] claim limitation—would have an exposed horizontal *bottom* surface rather than a horizontal *top* surface. To the extent the claim is construed such that it would be met by any exposed horizontal surface of the second projection limitation, this limitation was disclosed by JP610.

422. Specifically, the second projection of JP610 connector has a horizontal bottom surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1005: Figure 1 (excerpted, rotated, and annotated).

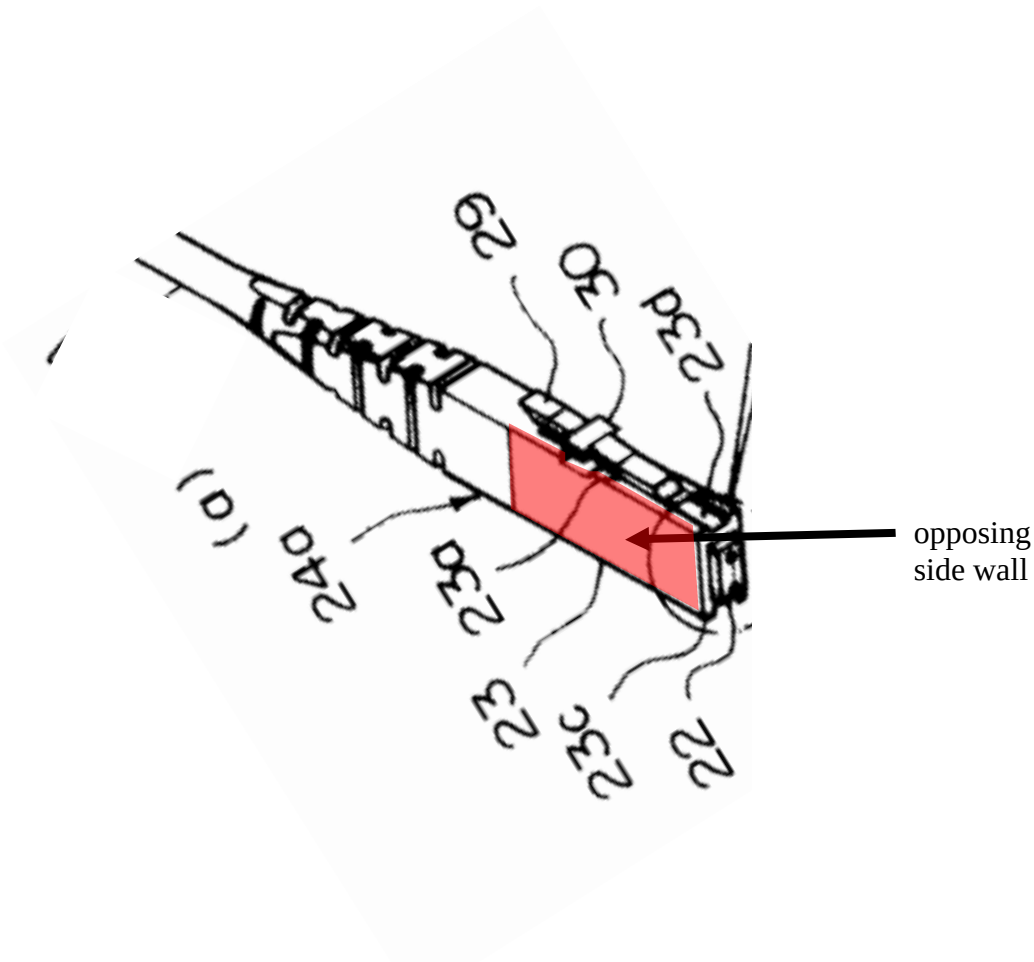
423. Further, by adding chamfers surrounding the face of the ferrule holder, the chamfer would separate the face of the ferrule holder and the horizontal bottom surface of the projection such that the horizontal bottom surface of the projection would be rearward of the front end of the ferrule holder.

H. Claim 5 - the fiber-optic connector according to claim 1, wherein a top surface of each of the first projection and the second projection is rearward of the front end of the ferrule holder.

424. Claim 5 depends from Claim 1 adding a limitation that a top surface of each of the first projection and the second projection is rearward of the front end of the ferrule holder. Claim 5 merely adds the same limitations of Claims 3 and 4, and as such would have been obvious in view of JP610/Manning/Loder combination for the reasons explained above in Claims 3 and 4.

I. Claim 6 - The fiber-optic connector according to claim 1, wherein the opposing sidewalls are smooth and solid.

425. Claim 6 depends from Claim 1 adding a limitation that the opposing sidewalls are smooth and solid. As shown in the excerpt of Figure 1 below, JP610 discloses the opposing sidewalls as being smooth and solid.

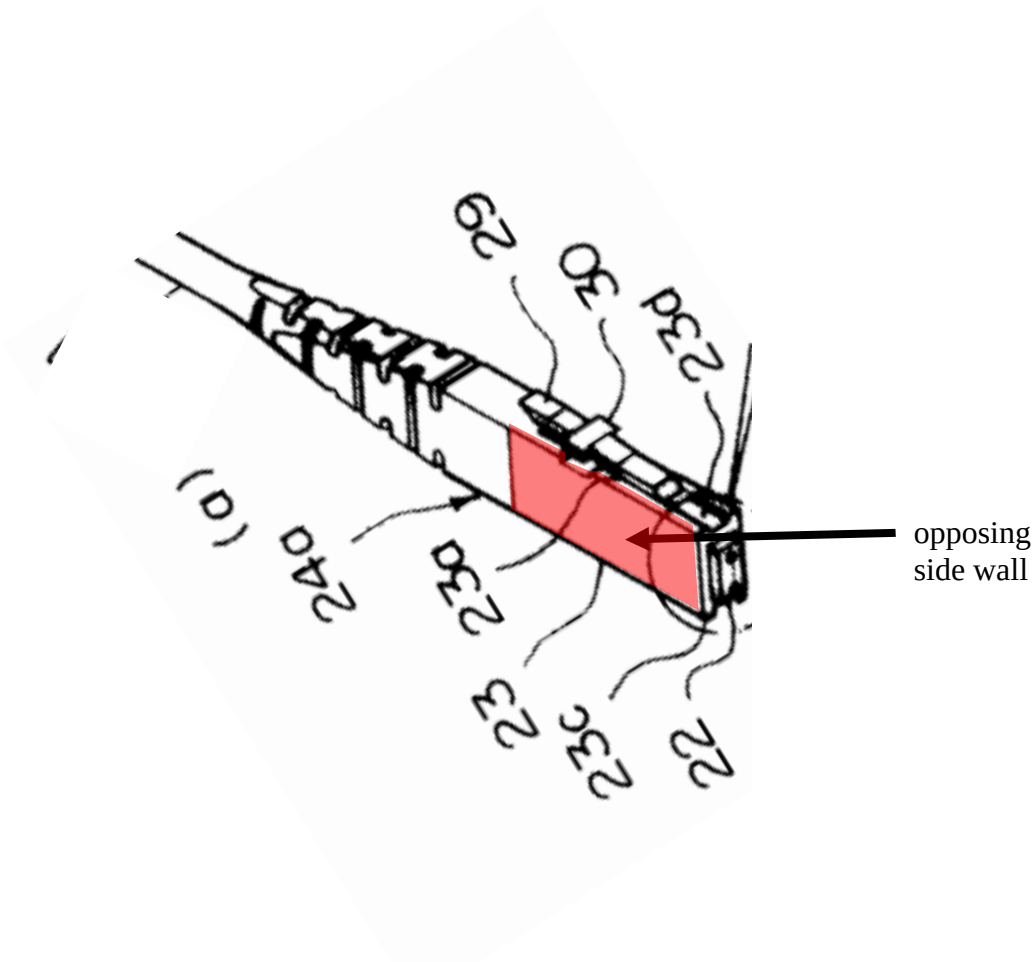


EX1005: Figure 1(excerpted, rotated, and annotated).

426. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

J. Claim 7- The fiber-optic connector according to claim 1, wherein the opposing sidewalls are flat.

427. Claim 7 depends from Claim 1 adding a limitation that the opposing sidewalls are flat. As shown in the excerpt of Figure 1 below, JP610 discloses the opposing sidewalls as being flat.

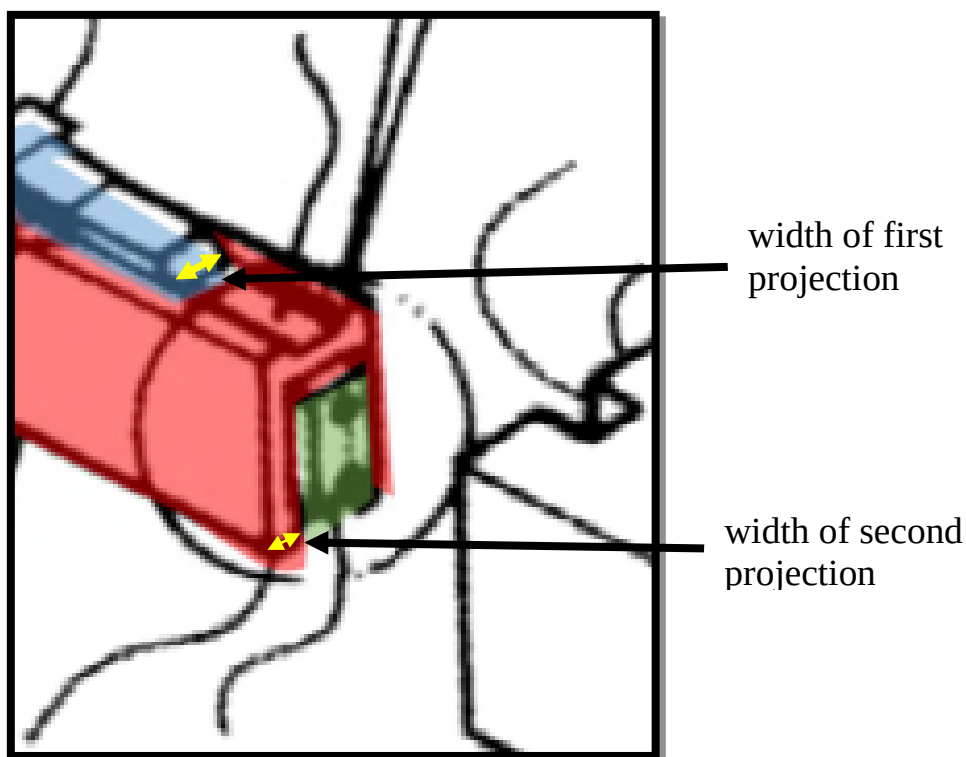


EX1005: Figure 1 (excerpted, rotated, and annotated).

428. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

K. Claim 8 - The fiber-optic connector according to claim 1, wherein the first projection and the second projection have different widths.

429. Claim 8 depends from Claim 1, further limiting the “different shape[d]” first projection and the second projection to having different widths. As disclosed in the figures, the first projection of JP610 connector is wider than the second projection.



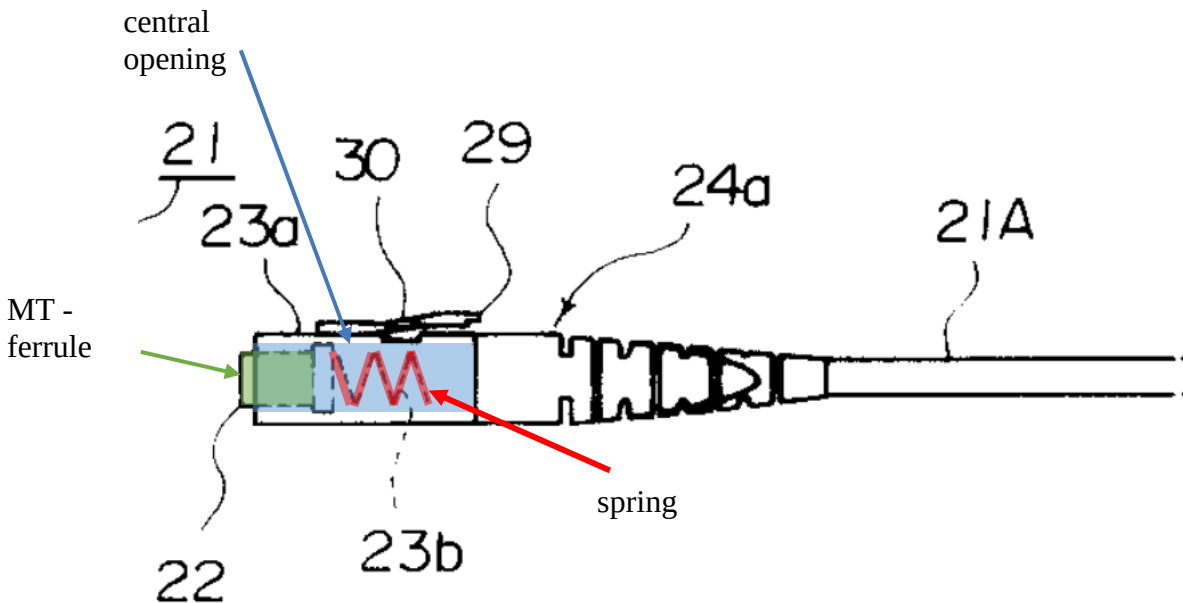
EX1005: Figure 1 (excerpted, rotated, and annotated).

430. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

- L. Claim 9 - The fiber-optic connector according to claim 1, further comprising: a spring positioned rearward of the multi-fiber ferrule and configured to bias the multi-fiber ferrule towards the front end of the ferrule holder.**

431. Claim 9 depends from Claim 1 adding the limitation that the fiber-optic include a spring biasing the multi-fiber ferrule towards the front end of the ferrule holder. JP610 discloses that in that “the plug housings 23 contain a biasing means 23b (coil spring) that biases the optical connector ferrule 22 in the butt connection direction.” EX1005: [0011].

432. Notably as depicted in Figure 1, the spring is position rearward of the ferrule (22).



EX1005: Figure 2 (excerpted and annotated).

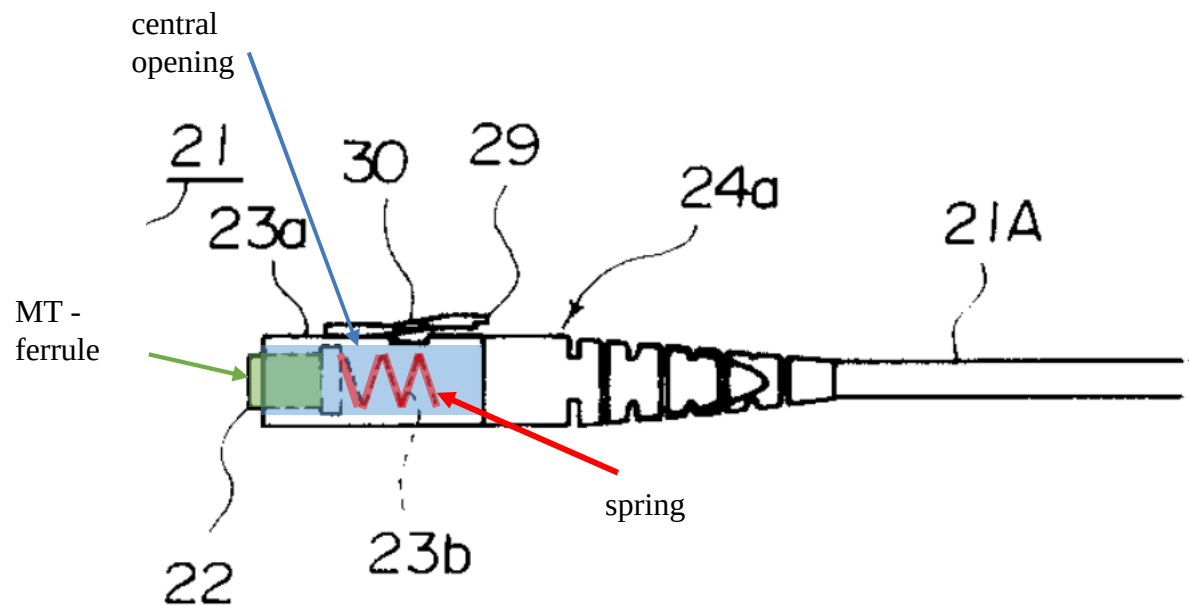
433. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

M. Claim 10 - The fiber-optic connector according to claim 9, wherein the spring at least partially surrounds the at least two optical fibers

434. Claim 10 depends from Claim 9 adding the limitation that the spring at least partially surrounds the optical fibers.

435. Although the routing of the optical fibers is not addressed by JP610, those of skill in the art would understand the claimed routing whereby the spring at

least partially surrounds the optical fibers is obvious, if not inherent. The optical fibers are necessarily routed from the fiber optic cable (21A) to the ferrule. As depicted in Figure 2, the spring is centered between the cable and the ferrule. Those of skill in the art would expect the optical fibers to be routed through the spring as it would be the most direct path.

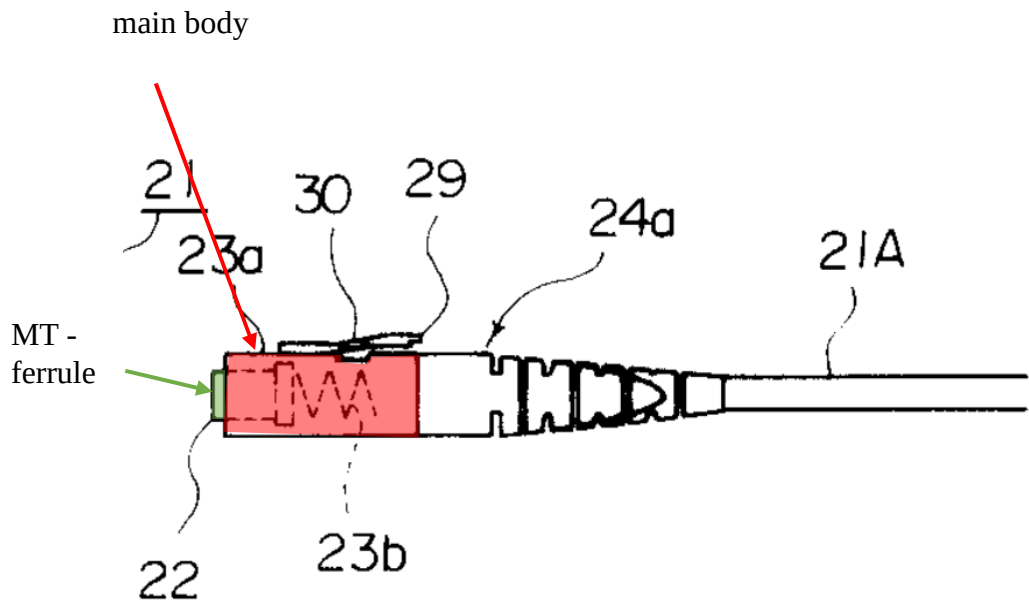


EX1005: Figure 2 (excerpted and annotated).

436. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

N. **Claim 12 - The fiber-optic connector according to claim 1, wherein a portion of the multi-fiber ferrule extends forward of the main body.**

437. Claim 12 depends from Claim 1 adding the limitation that the ferrule extends forward of the main body. As disclosed in the figures, the first projection of JP610 extends forward of the main body.

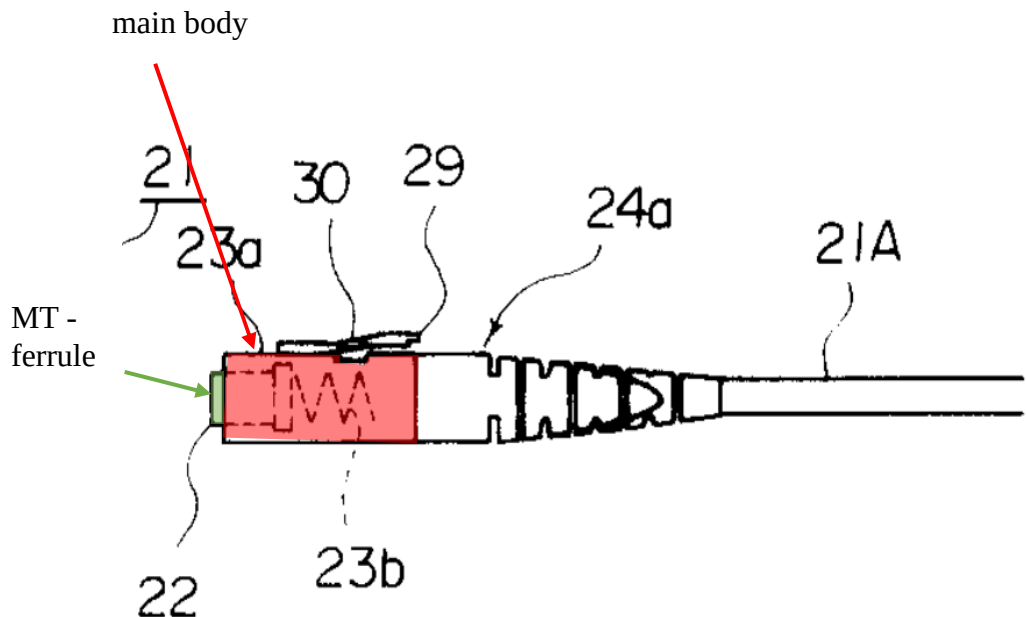


EX1005: Figure 2 (excerpted and annotated).

438. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

O. Claim 13 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule extends beyond the main body.

439. Claim 13 depends from Claim 1 adding the limitation that the ferrule extends beyond the main body. As disclosed in the figures, the first projection of JP610 extends beyond the main body.



EX1005: Figure 2 (excerpted and annotated).

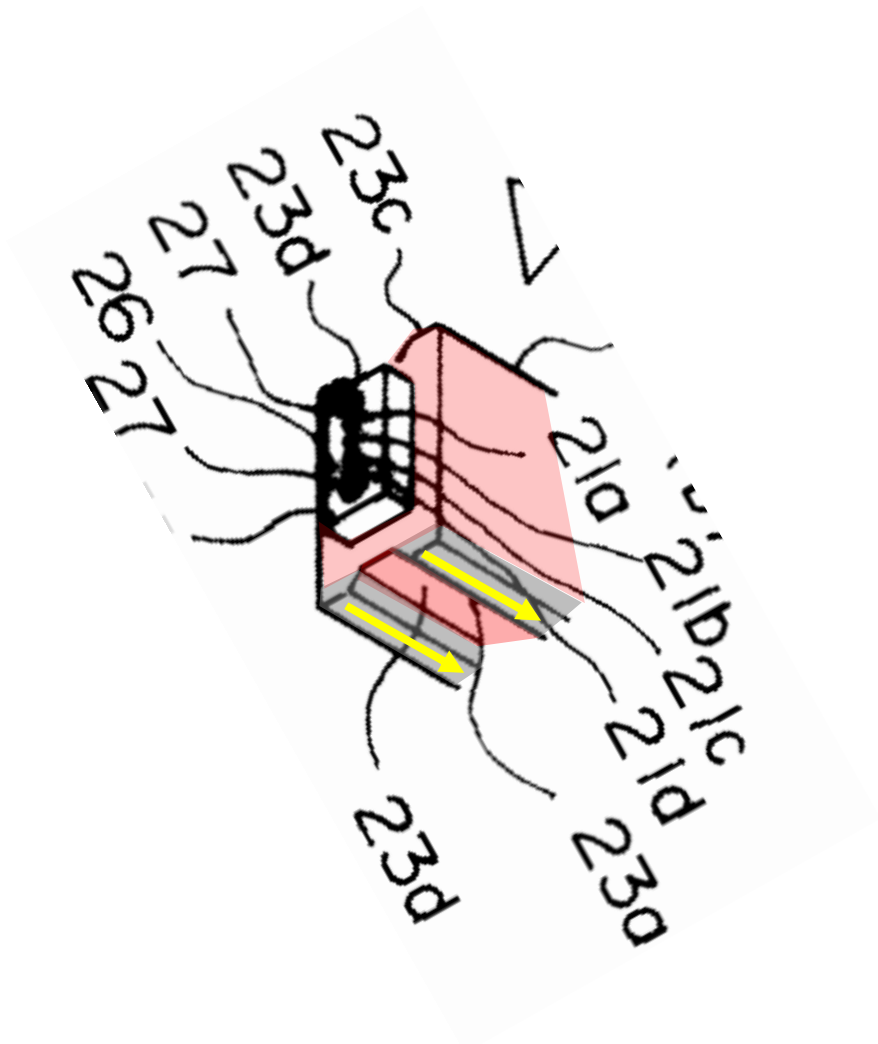
440. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

P. Claim 15 - The fiber-optic connector according to claim 1, wherein at least one of the first projection or the second projection extends along a length of the ferrule holder.

441. Claim 15 depends from Claim 1 adding the limitation that at least one of the first projection or the second projection extends along a length of the ferrule holder.

442. Notably, the only relevant disclosures regarding the extension of the first and second projections is in the figure—which depict the projections extending in the same direction—but not the entire length—as the ferrule holder. Accordingly, the person of ordinary skill in the art would understand the limitation to require the projections extends in the same direction as the length of the ferrule holder, rather than to suggest that the projection is required to extend the full length of the ferrule holder.

443. As disclosed in the figures, the second pair of projections of JP610 extends extend along a length of the ferrule holder:

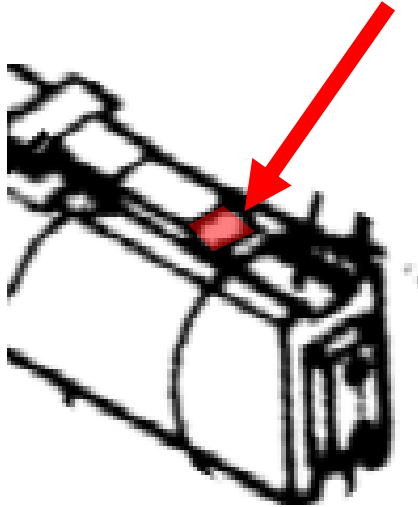


EX1005: Figure 1 (excerpted, rotated, and annotated).

444. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

Q. Claim 16 - The fiber-optic connector according to claim 1, wherein at least one of the first projection or the second projection has a chamfered front end or a lead-in.

445. Claim 16 depends from Claim 1 adding the limitation regarding one of the first and the second projections having a chamfered front end or lead-in. As disclosed in the figures, the first projection of the '610 has a chamfered front face.



EX1005: Figure 1 (excerpted, rotated, and annotated).

446. Therefore, the JP610/Manning/Loder combination renders this claim obvious.

R. Claim 17 - The fiber-optic connector according to claim 1, wherein the first and the second projections each have a vertical side surface to align the ferrule holder with a vertical wall to control a horizontal direction of movement of the ferrule holder relative to an adapter.

447. Claim 17 depends from Claim 1 adding the limitation regarding the first and the second projections having vertical side surfaces. This additional limitation is the same as the limitation in claim element [19.i]. As discussed above with respect to claim element [19.i] in Paragraphs 387-393, the JP610/Manning/Loder combination renders this claim obvious.

S. Claim 20 - The fiber optic connector of claim 19, further comprising: a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers.

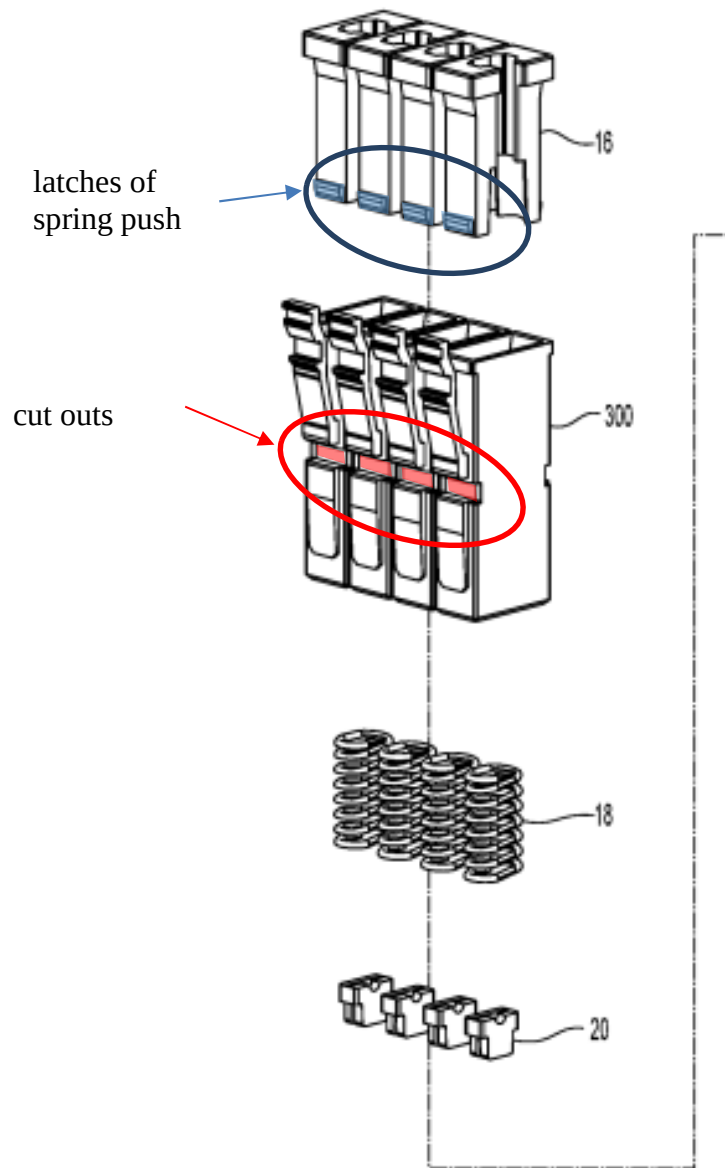
448. Claim 20 depends from Claim 19 adding the limitation that fiber optic connector includes a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers. This additional limitation is verbatim identical to claim element [1.c]. As discussed above with respect to Claim 1, element [1.c] in Paragraphs 326-328, JP610 discloses this additional element.

449. Therefore, JP610/Manning/Loder renders this claim obvious.

XI. GROUND 10: Obvious Over JP610 in View of Shimozu and Günther

A. Claim 11 - The fiber-optic connector according to claim 1, further comprising: a cutout in each of the top side and the bottom side.

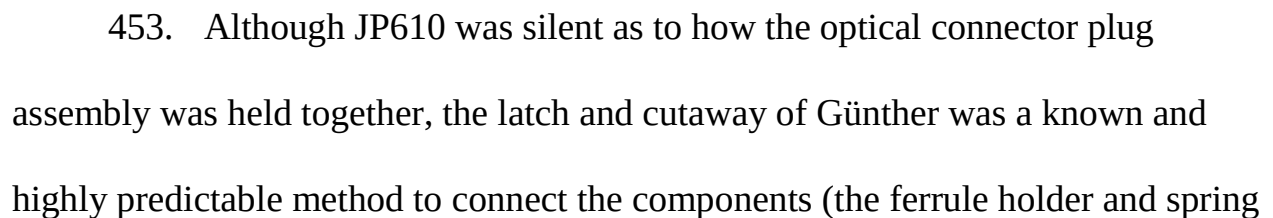
450. Claim 11 depends from Claim 1 adding a limitation that the top side and the bottom side of the fiber-optic connector include cutouts. Although not discussed within the specification, Fig. 2 of the '075 Patent discloses cut outs in the ferrule holder (300) for receiving latches on the spring push (16) to hold the ferrule holder assembly together.



EX1001: Fig. 2 (annotated).

451. JP610 is silent with respect to how its ferrule holder assembly is held together, but the use of latching a spring push to cutouts within the ferrule body was a common method. *See e.g.* EX1012: Fig. 9; EX1004: 4:55-59, Fig. 3.

EX1012: Fig. 9 (annotated).



push) together. Accordingly, it would have been obvious to implement the latch/cutaway of Günther as the method of connect the components (the ferrule holder and spring push) together.

454. Therefore, the combination of JP610, Manning, Loder, and Günther renders claim 11 obvious.

XII. GROUND 11: Obvious Over JP610 in View of Shimozu and Katagiyama.

A. Claim 14 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule is flush with the front end of the main body.

455. Claim 14 depends from Claim 1 adding the limitation that the multi-fiber ferrule is flush with the front end of the main body.

456. This additional limitation was known in the art. For example, Katagiyama disclosed that “the front end of the ferrule [can be] flush with or protrude[] from a front end of the housing.” EX1013: Claim 9.

457. Modifying the JP610 connector such that the ferrule would be flush with the front end of the housing is merely a simple substitution of one known element for another to obtain the same predictable result.

458. Therefore, the combination of JP610, Shimozu, and Katagiyama renders Claim 14 obvious.

XIII. GROUND 12: Obvious Over JP391 in View of Shimozu

A. Independent Claim 1

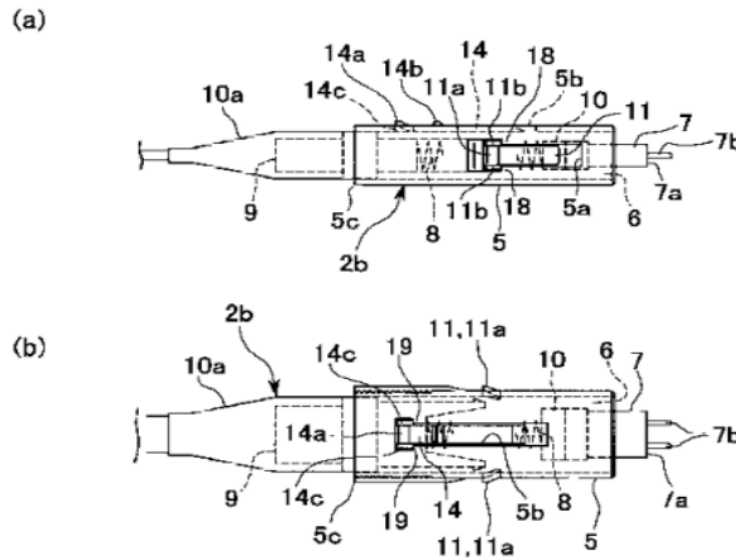
[1.p] A fiber optic connector for a multi-fiber ferrule, comprising:

459. JP391 discloses an “an optical connector 1 provided with an optical connector adapter 3 into which optical connector plugs 2a, 2b are inserted and connected to each other.” EX1006: Abstract.

460. In the context of the claims of the ‘705 Patent the “optical connector plugs” (2a, 2b) correspond to the claimed “fiber optic connector for a multi-fiber ferrule.”

461. Specifically, JP391 identifies the ferrule used in the disclosed fiber optic connector as being an “MT-type optical connector ferrule”—*i.e.* a multi-fiber ferrule—while also stating that “[v]arious configurations may be adopted as the optical connector ferrule.” EX1006: [0010].

[FIG. 5]

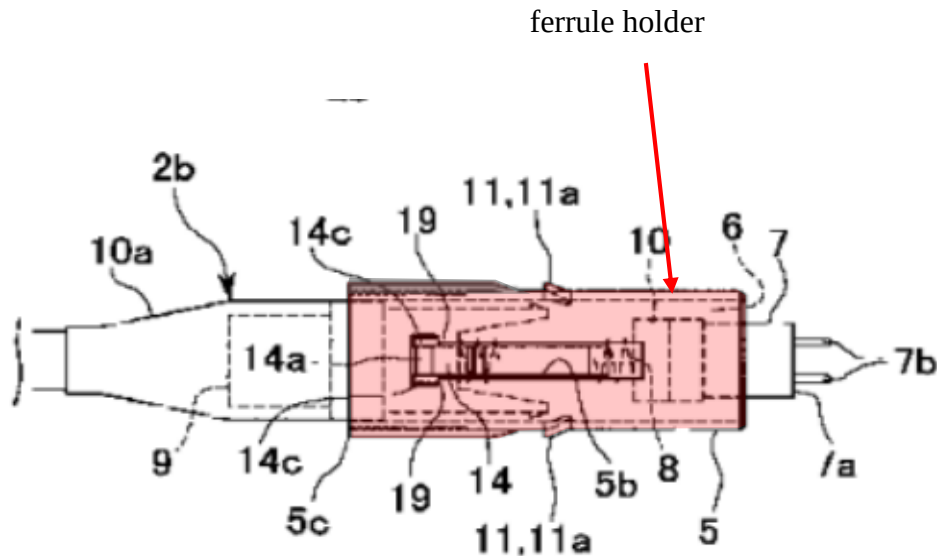


EX1006: Fig. 5(a+b).

462. Therefore, JP391 meets [1.p].

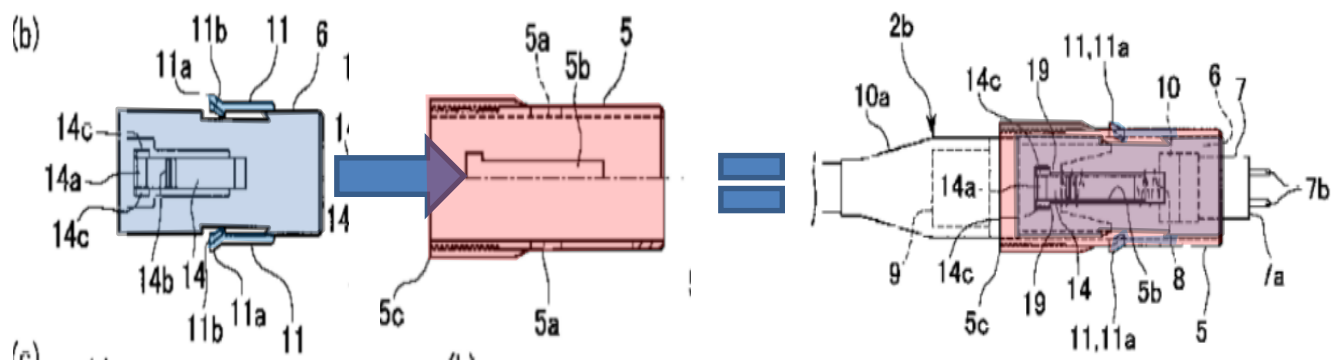
[1.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end;

463. The optical connector disclosed by JP391 has a “a sleeve-shaped plug frame” (5) and a “sleeve-shaped slide frame” (6) which collectively act as a ferrule holder in the context of the claims of the ‘075 Patent. EX1006: [0009] (“an optical connector plug 2b includes a sleeve-shaped plug frame 5. And a sleeve-like slide frame 6 that is slidably accommodated in the optical connector plug 2b.”).



EX1006: Fig. 5(b) (annotated).

464. Specifically, the sleeve-shaped slide frame (6) (shown isolated in Figure 7) slides inside of the sleeve-shaped plug frame (5) (shown isolated in Figure 6).

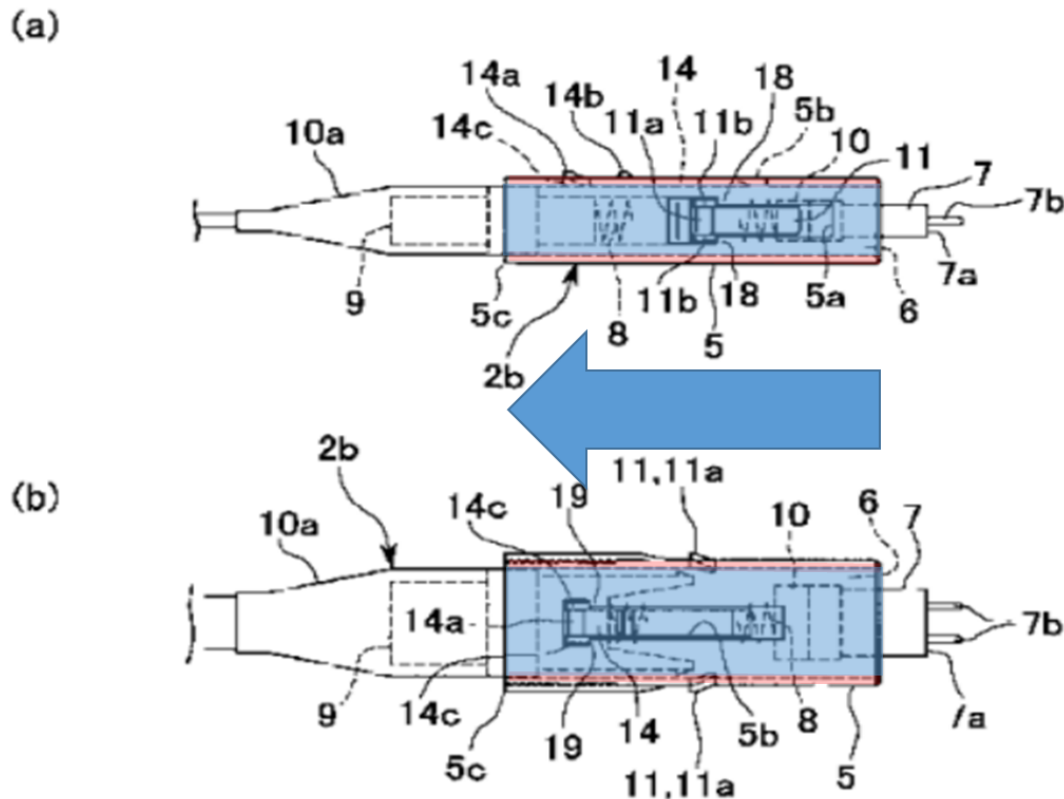


EX1006: Figures 7(b), 6(a), 5(b) (annotated).

465. Notably, both the slide frame and the plug frame (5) are described as being “sleeve-shaped.” EX1006: [0029]. In particular, the interior of the sleeve-

shaped slide frame (6) contains a central opening that extends longitudinally from a first end to a second end.

[FIG. 5]



EX1006: Fig. 5(a, b) (annotated).

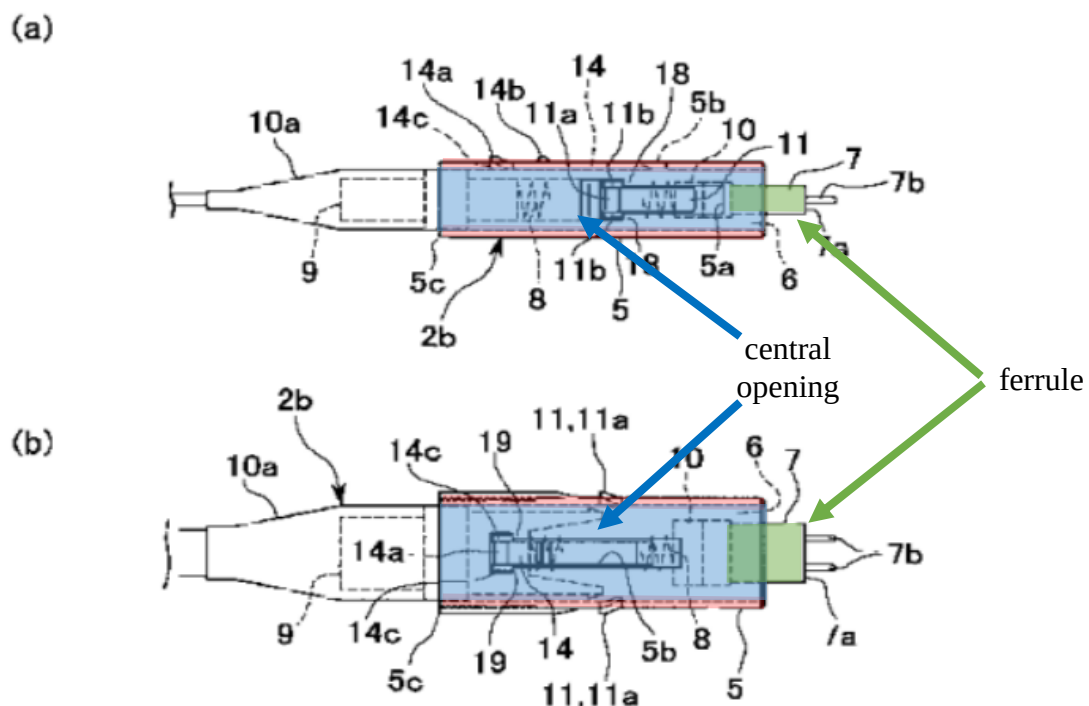
466. Therefore, JP391 meets [1.a].

[1.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

467. The optical connector disclosed by JP391 has a ferrule housed within the central opening of the sleeve-shaped slide frame (6). JP391 identifies the

ferrule used in the disclosed fiber optic connector as being “MT-type optical connector ferrule”—*i.e.* a multi-fiber ferrule—while also stating that “[v]arious configurations may be adopted as the optical connector ferrule.” EX1006: [0010]. MT-type optical connector ferrules are multi-fiber ferrules. One of skill in the art would recognize that the MT-type optical connector ferrule would be inherently supported by at least two optical fibers.

[FIG. 5]

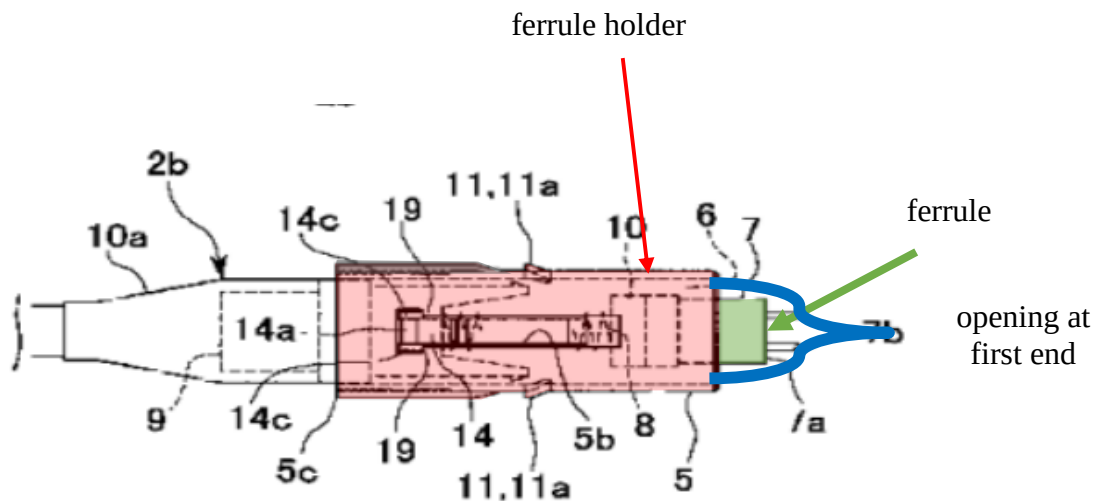


EX1006: Fig. 5(a+b) (annotated).

468. Therefore, JP391 meets [1.b.1].

[1.b.2] the multi-fiber ferrule being exposed at an opening at the first end of the ferrule holder

469. As shown in Figure 5, the multi-fiber ferrule of JP391 is exposed from the opening at one end (*i.e.*, “the first end”) of the ferrule holder—*i.e.*, the sleeve-shaped slide frame (6)/sleeve-shaped plug frame (5).



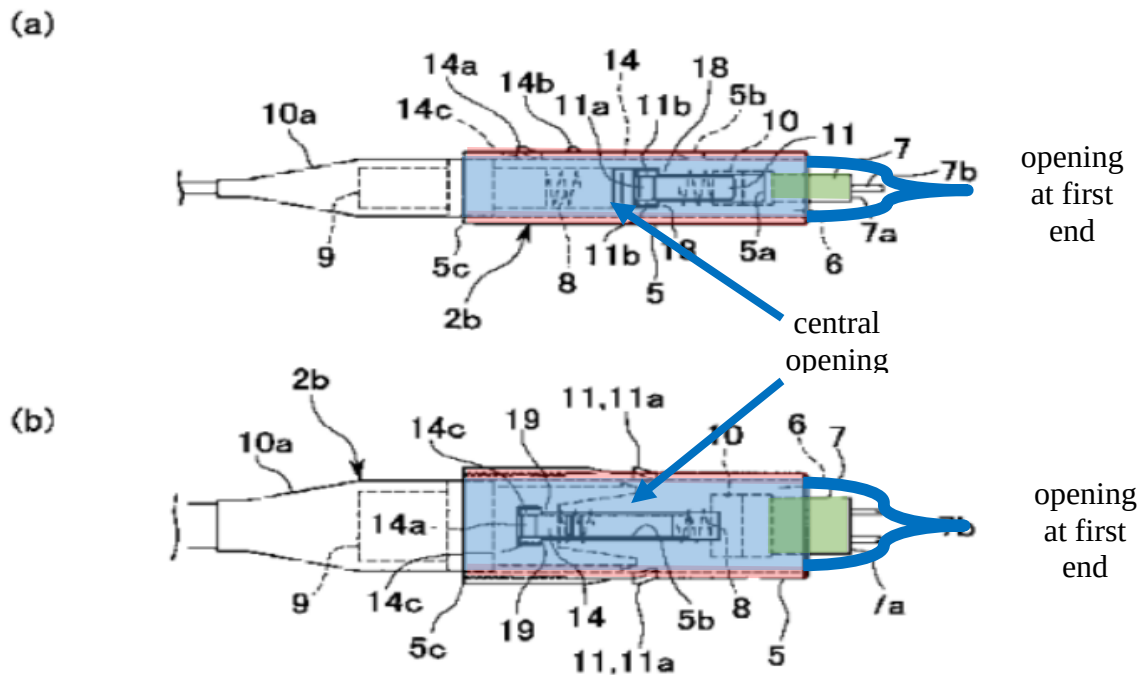
EX1006: Fig. 5(b) (annotated).

470. Therefore, JP391 meets [1.b.2].

[1.b.3] the opening at the first end being in communication with the central opening

471. As shown in Figure 5 of JP391, the opening at the end of the ferrule holder from which the ferrule (7) is exposed is in communication with a central opening in the ferrule holder—*i.e.* the sleeve-shaped slide frame (6)/sleeve-shaped plug frame (5).

[FIG. 5]

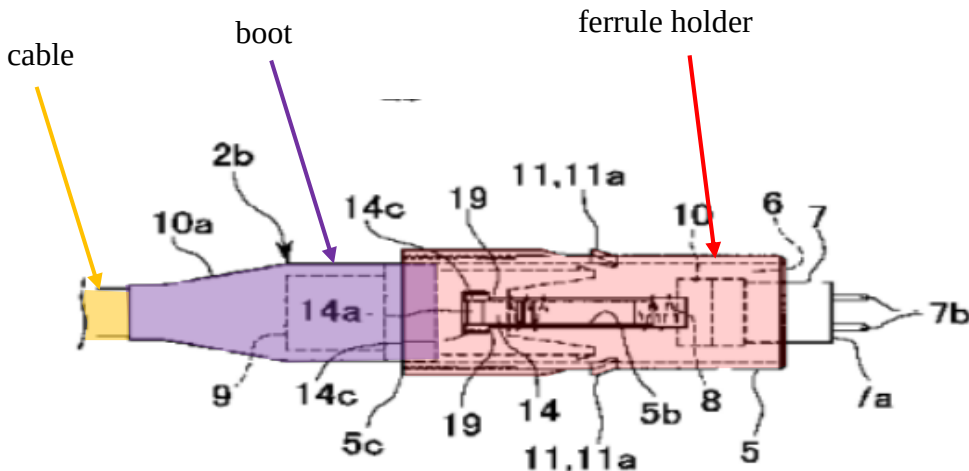


EX1006: Fig. 5(a+b) (annotated).

472. Therefore, JP391 meets [1.b.3].

[1.c] a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers,

473. The optical connector disclosed by JP391 has a boot 10(a) that extends in a rearward direction from the ferrule holder—*i.e.* the sleeve-shaped slide frame (6)/sleeve-shaped plug frame (5). EX1006: EX1006: [0009] (“In FIG. 1 to FIG. 5, ... 10a is a boot.”) As shown in Figure 5 the boot supports the fiber optic cable—which a person of skill in the art would recognize the fiber optic cable inherently carries at least two optical fibers.



EX1006: Fig. 5(b) (annotated).

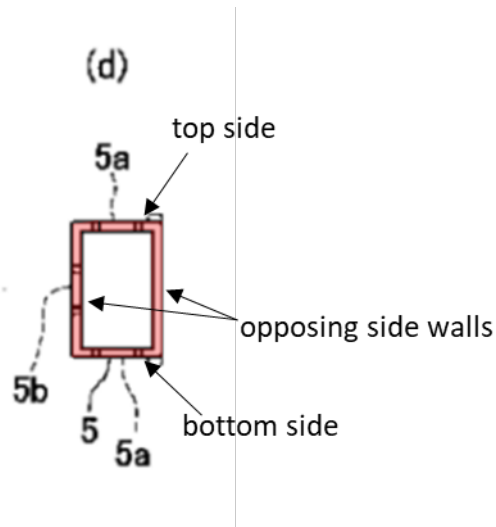
474. Therefore, JP391 meets [1.c].

[1.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls,

475. As discussed above with respect to Ground 1, the person of skill in the art would recognize that the orientation of a fiber optic connector is a matter of perspective and that connectors within the prior art—such as the connector of JP391—can be rotated to match the orientation as recited in the claims of the ‘075 Patent.

476. The ferrule holder of the JP391 connector has a main body—the combination of the sleeve-shaped slide frame (6) and sleeve-shaped plug frame (5)—that has a top side, bottom side, and opposing side walls joining the top and bottom sides. Figure 6(d) (annotated below to identify the sides) provides a view

of the sleeve-shaped plug frame (5)—*i.e.*, the outermost component of the main body—as seen from the lead end of the connector.

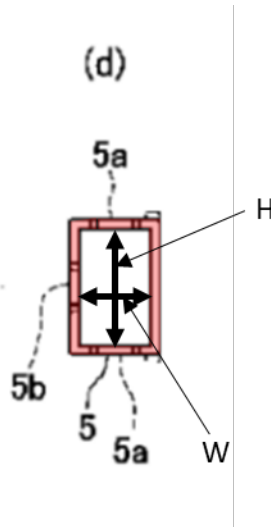


EX1006: Fig. 5(d) (annotated).

477. Therefore, JP391 meets [1.d].

[1.e.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls,

478. In the context of the orientation of the connector of JP391 addressed with respect to claim limitation [1.d] immediately above, the separation between the top side and the bottom side (H) is more than a separation between the opposing side walls (W) as shown in Figure 6(d) below:

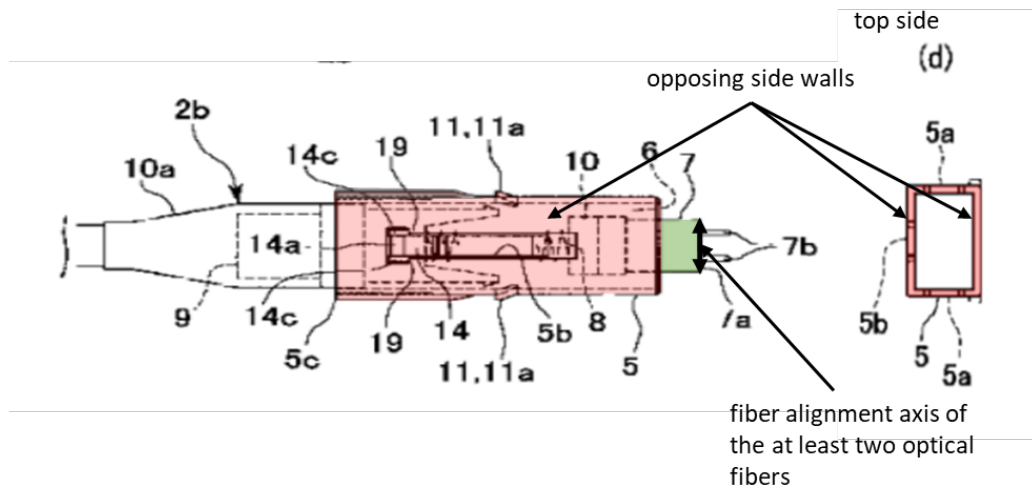


EX1006: Fig. 5(d) (annotated).

479. Therefore, JP391 meets [1.e.1].

[1.e.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the multi-fiber ferrule

480. Those of skill in the art would recognize that the alignment axis of the multiple optical fibers within the end face of an MT-type optical connector ferrule is height wise as depicted in Figure 5(b) of JP391. As such, the alignment axis of the multiple optical fibers within the end face is parallel to the opposing side walls.

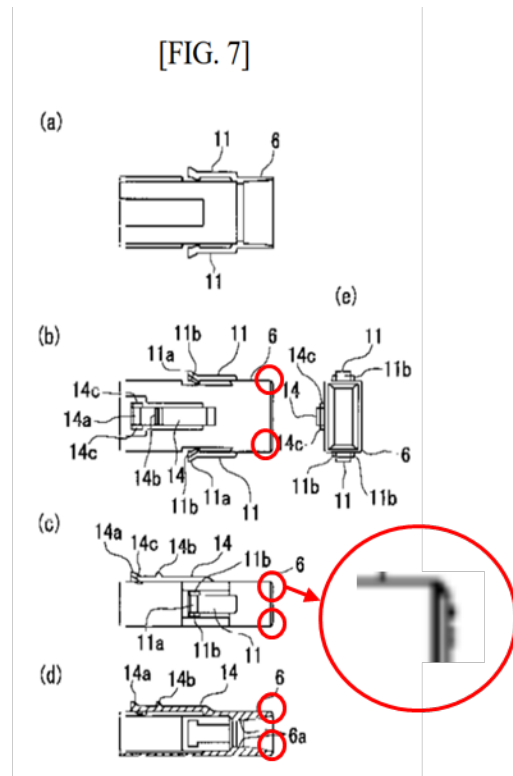
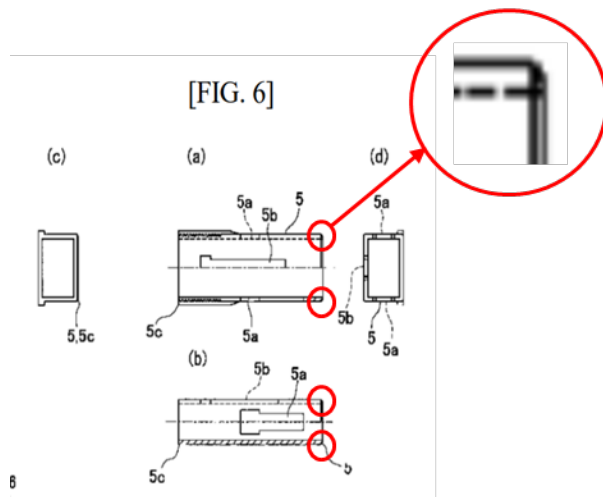


EX1006: Fig. 5(b+d) (annotated).

481. Therefore, JP391 meets [1.e.2].

[1.f] wherein a front end of the ferrule holder has a lead-in or a chamfer

482. Although not discussed within the specification, the front end of both the sleeve-shaped plug frame (5) and the sleeve-shaped slide frame (6) of the JP391 connector are depicted as having cut off corners—*i.e.*, chamfered corners—in Figures 6 and 7 respectively. Notably, Figure 7(e) uses angled lines at the corners of the sleeve-shaped slide frame (6) to depict chamfering at the lead end of the connector.

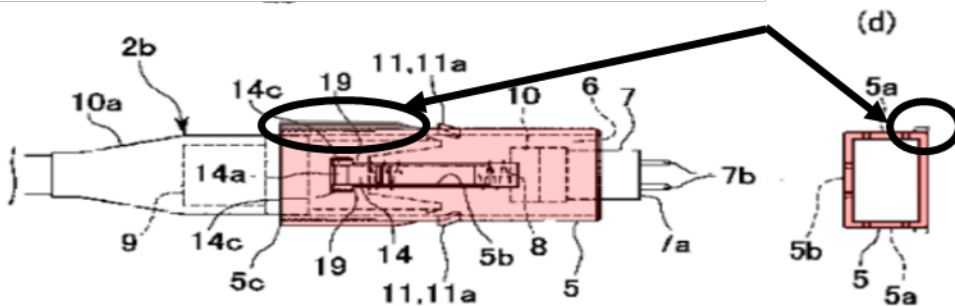


EX1006: Fig. 6 and 7 (annotated).

483. Therefore, JP391 meets [1.f].

[1.g] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side

484. Although not discussed within the specification, the sleeve-shaped plug frame (5) of the JP391 connector is depicted in the figures as having a first projection on the outside surface on the top side of the connector body that extends longitudinally.

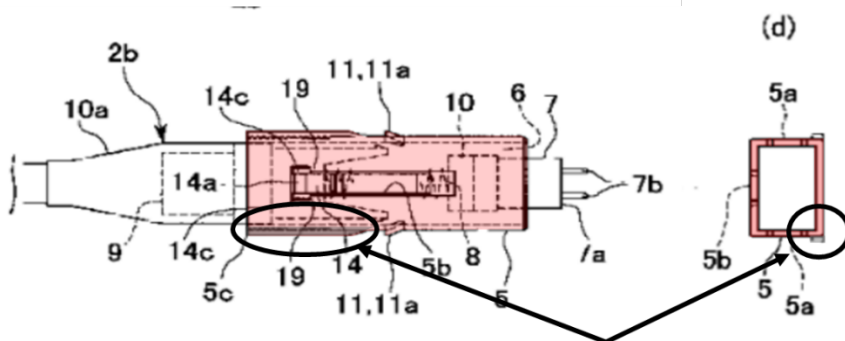


EX1006: Fig. 5 (b+d) (annotated).

485. Therefore, JP391 meets [1.g].

[1.h] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side

486. Although not discussed within the specification, the sleeve-shaped plug frame (5) of the JP391 connector is depicted in the figures as having a second projection on the outside surface on the bottom side of the connector body that extends longitudinally.



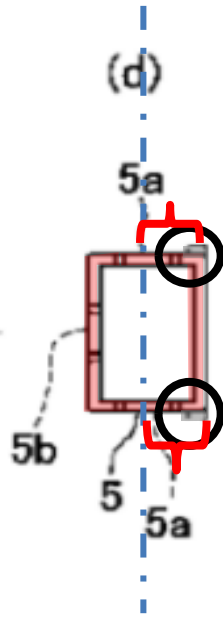
EX1006: Fig. 5 (b+d) (annotated).

487. Therefore, JP391 meets [1.h].

[1.i] wherein the first projection has a different shape than the second projection

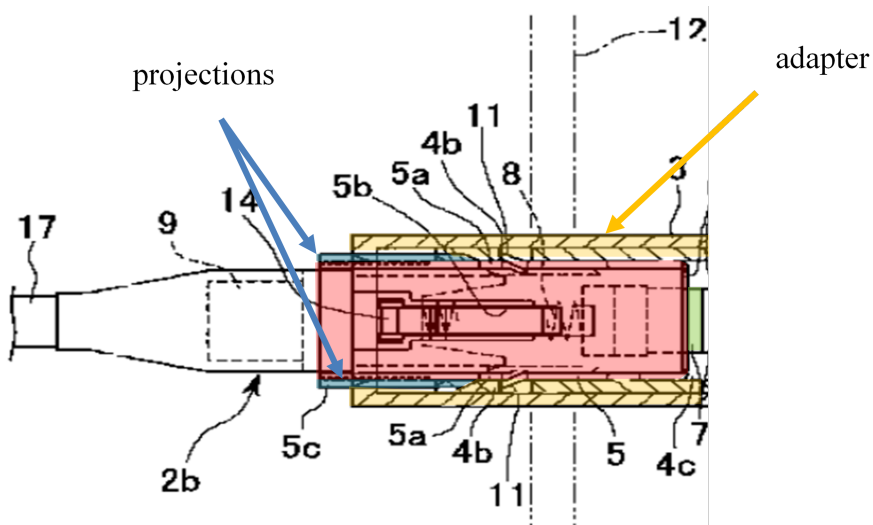
488. The first and second projections of the JP391 connector appear to be the same shape, but it would have been obvious to use different-sized and/or shaped projections to provide a key for polarity as disclosed in Shimozu.

489. Although not discussed by JP391, those of skill in the art would recognize that the first and second projections of the JP391 connector are provided to act as polarity keys. Specifically, both the first and second projections are depicted as being offset horizontally in the same direction when viewed from either end of the connector. The corresponding adapter (3) would likewise have keyway slots to receive the projections. Because the projections and corresponding keyways are offset, the projections and keyways would only match if the fiber optic connector were inserted in one orientation and would be blocked from full insertion if the fiber optic connector were attempted to be installed upside down.



EX1007: Fig. 6(d) (annotated)

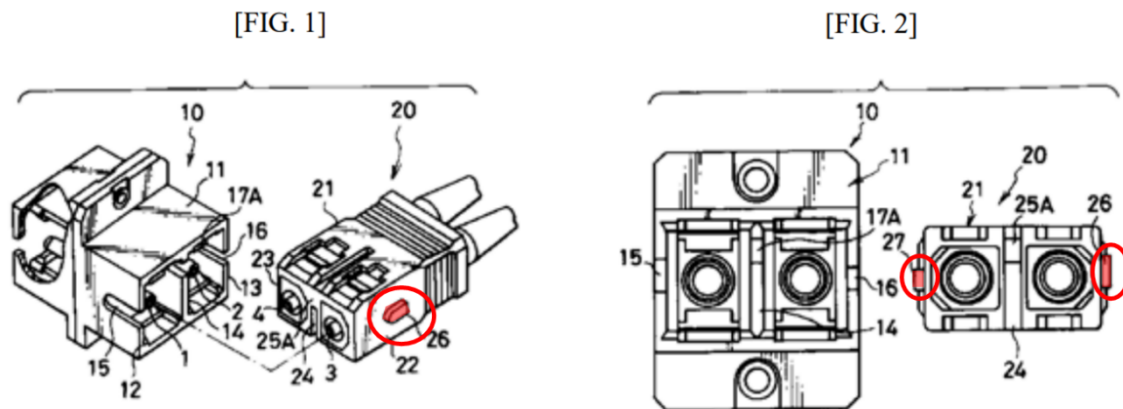
front end view of sleeve-shaped plug frame (5)



EX1007: Fig. 3 (annotated)

connector inserted in adapter

490. Like JP391, Shimozu discloses connectors with projections—identification guides (26 and 27)—extend longitudinally along two opposing sides.



EX1007: Figs 1 and 2 (annotated).

491. Instead of offsetting the projections, Shimozu teaches sizing the widths of the identification guides (26 and 27)—and their corresponding keyways (15 and 16)—differently to prevent the “incorrect insertion.” EX1007: [0012] (“A width of the identification guide key 26 is larger than a width of the identification guide key 27.”), [0014] (“When attempting to mate this in the opposite direction, for example, attempting to mate the double-core optical connector plug 20 with the double-core optical connector adapter 10 in a direction reversed from the position illustrated in FIG. 1, the respective guide keyway and guide key cannot fit together, and thus mating is not possible.”).

492. Specifically, sizing the first and second projections differently—as taught by Shimozu—and offsetting first and second projections—as taught by

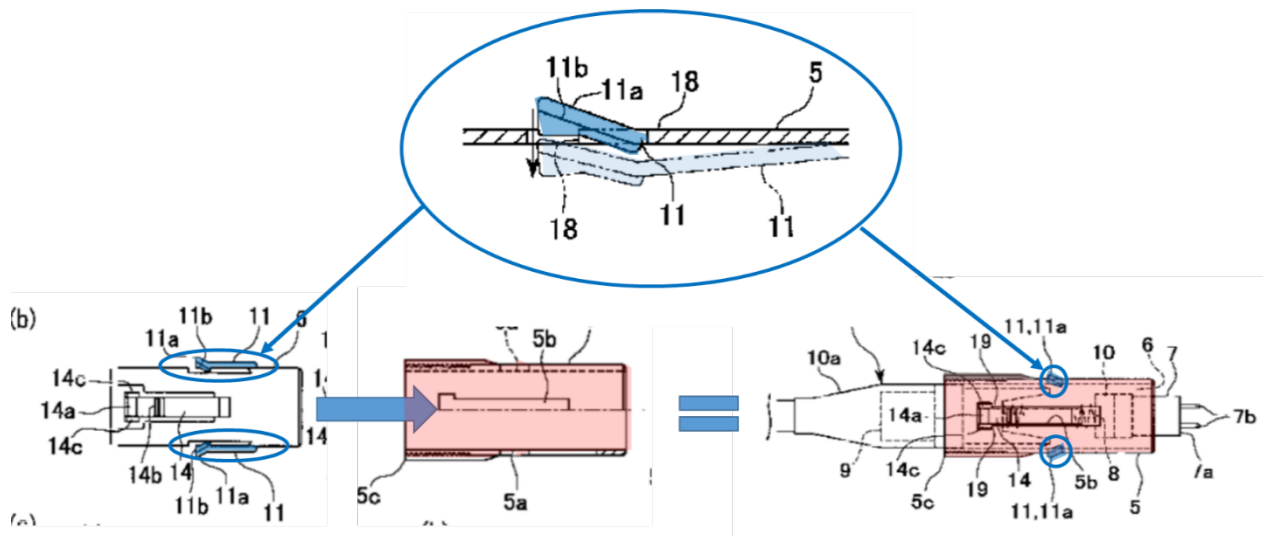
JP391—serves to provide the same function of providing keys and corresponding keyways that prevent the fiber optical connector to be installed upside down.

493. Accordingly, one of skill in that art would recognize that it would have been a simple substitution to incorporate the differently sized first and second projections—as taught by Shimozu—in place of the offset first and second projections—as taught by JP391. Such a substitution would yield predictable results, as either configuration would result in the first and second projections only be insertable into corresponding keyways of the adapter when the fiber optic connector is being inserted in the proper orientation.

494. Accordingly, sizing the first and second projections of the connector disclosed by JP391 differently would have been an obvious improvement.

[1.j] a latching mechanism on at least one of the top side and the bottom side

495. The JP391 connector uses “engagement pawl[s]” (11) protruding from both the top and bottom sides of the slide frame (6) and protruding through engagement pawl holes 5a to the outside of the plug frame 5. EX1006: [0012].



496. These engagement pawls (11) are described as latching mechanisms that are designed to engage the “engagement portions” (4a, 4b) of the adapter:

The optical connector plugs 2a, 2b inserted into the housing for connection 4 are stably held in a predetermined position of the housing for connection 4 by the engagement pawl 11 detachably engaging an engagement portion 4a or engagement portion 4b of the housing for connection 4.

EX1006: [0012].

497. Therefore, JP391 meets [1.j].

[1.k] wherein the latching mechanism is unconnected to the first projection and the second projection

498. As disclosed in JP391’s figures, the JP391 connector includes the engagement pawls (11) are not connected to and are spatially separated from the first and second projections of the housing.

[18.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

502. Claim element [18.b.1] of the '075 Patent is verbatim identical to claim element [1.b.1]. As discussed above with respect to Ground 1 in Paragraphs 468 through 469, JP391 discloses [18.b.1].

[18.b.2] the multi-fiber ferrule being exposed at an opening at the first end of the ferrule holder

503. Claim element [18.b.2] of the '075 Patent is verbatim identical to claim element [1.b.2]. As discussed above with respect to Ground 1 in Paragraphs 470 through 471, JP391 discloses [18.b.2].

[18.b.3] the opening at the first end being in communication with the central opening

504. Claim element [18.b.3] of the '075 Patent is verbatim identical to claim element [1.b.3]. As discussed above with respect to Ground 1 in Paragraphs 472 through 473, JP391 discloses [18.b.3].

[18.c] a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers,

505. Claim element [18.c] of the '075 Patent is verbatim identical to claim element [1.c]. As discussed above with respect to Claim 1, element [1.c], JP391 discloses element [18.c].

[18.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls,

506. Claim element [18.d] of the '075 Patent is verbatim identical to claim element [1.d]. As discussed above with respect to Claim 1, element [1.d], JP391 discloses element [18.d].

[18.e.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

507. Claim element [18.e.1] of the '075 Patent is verbatim identical to claim element [1.e.1]. As discussed above with respect to Ground 1 in Paragraphs 479 through 480, JP391 discloses [18.e.1].

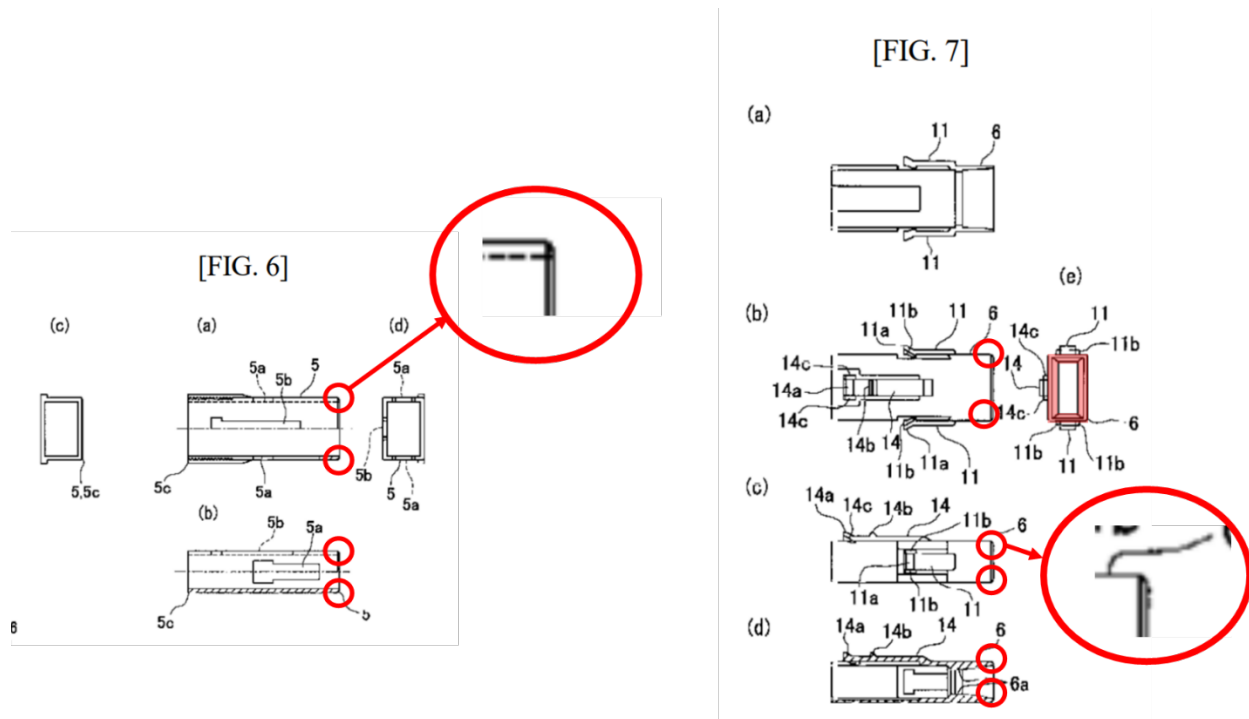
[18.e.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the multi-fiber ferrule

508. Claim element [18.e.2] of the '075 Patent is verbatim identical to claim element [1.e.2]. As discussed above with respect to Ground 1 in Paragraphs 481 through 482, JP391 discloses [18.e.2].

[18.f] wherein a front end of the ferrule holder has chamfer

509. As discussed with respect to Claim 1, element [1.f] in Paragraphs 483-484, JP391's figures disclose that the leading edges of both the sleeve-shaped plug frame (5) and the sleeve-shaped slide frame (6) as having cut off corners to assist

in pre-aligning the ferrule and ferrule holder.



EX1006: Fig. 6 and 7 (annotated).

510. Therefore, JP391 meets [1.f].

[18.g] a first projection extending longitudinally along the top side

511. Claim element [18.g] of the '075 Patent is similar to claim element [1.g], except that it omits the language “on a first outside surface on the top side of the main body.” As discussed above with respect to [1.g] in Paragraphs 485-486, JP391 discloses the [18.g] limitation.

[18.h] a second projection extending longitudinally along the bottom side

512. Claim element [18.h] of the '075 Patent is similar to claim element [1.h], except that it omits the language “on a second outside surface on the bottom

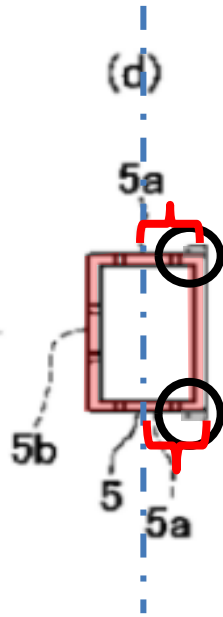
side of the main body.” As discussed above with respect to [1.h], JP391 discloses the [18.h] limitation.

[18.i] wherein the first projections is on a first outside surface of the top side of the main body and has at least one dimension that is different than the second projection on an opposite second outside surface on the bottom side of the main body; and

513. The first projection of the JP391 connector is on an opposite second outside surface from the second projection.

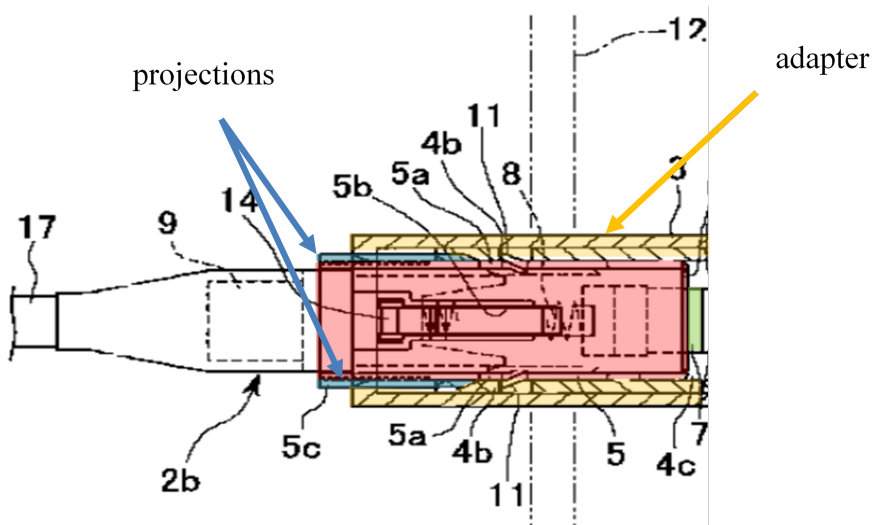
514. The first and second projections of the JP391 connector appear to be the same shape, but it would have been obvious to use different sized and/or shaped projections to provide a key for polarity as disclosed in Shimozu.

515. Although not discussed by JP391, those of skill in the art would recognize that the first and second projections of the JP391 connector are provided to act as polarity keys. Specifically, both the first and second projections are depicted as being offset horizontally in the same direction when viewed from either end of the connector. The corresponding adapter (3) would likewise have key way slots to receive the projections. Because the projections and corresponding keyways are offset, the projections and keyways would only match if the fiber optic connector were inserted in one orientation and would be blocked from full insertion if the fiber optic connector were attempted to be install upside down.



EX1007: Fig. 6(d) (annotated)

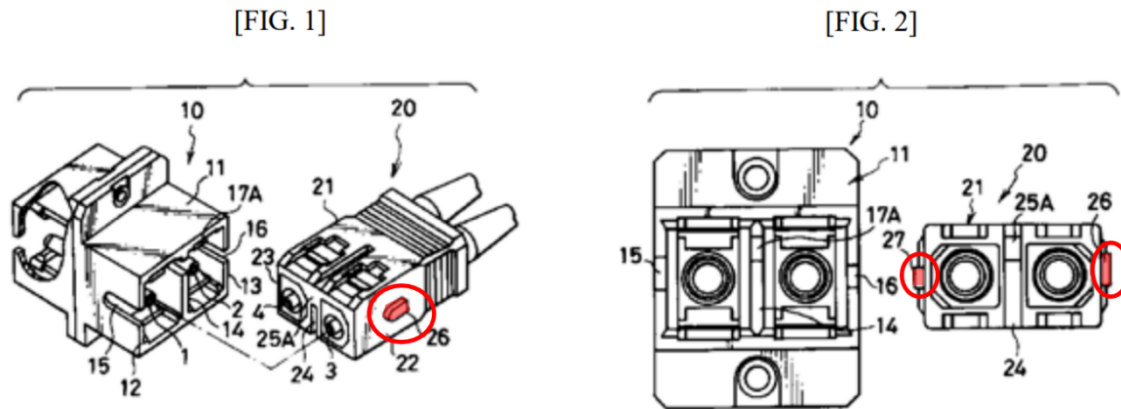
front end view of sleeve-shaped plug frame (5)



EX1007: Fig. 3 (annotated)

connector inserted in adapter

516. Like JP391, Shimozu discloses connectors with projections—identification guides (26 and 27)—extend longitudinally along two opposing sides.



EX1007: Figs 1 and 2 (annotated).

517. Instead of offsetting the projections, Shimozu teaches sizing the widths of the identification guides (26 and 27)—and their corresponding keyways (15 and 16)—differently to prevent the “incorrect insertion.” EX1007: [0012] (“A width of the identification guide key 26 is larger than a width of the identification guide key 27.”), [0014] (“When attempting to mate this in the opposite direction, for example, attempting to mate the double-core optical connector plug 20 with the double-core optical connector adapter 10 in a direction reversed from the position illustrated in FIG. 1, the respective guide keyway and guide key cannot fit together, and thus mating is not possible.”).

518. Specifically, sizing the first and second projections differently—as taught by Shimozu—and offsetting first and second projections—as taught by

JP391—serves to provide the same function of providing keys and corresponding keyways that prevent the fiber optical connector to be installed upside down. Accordingly, one of skill in that art would recognize that it would have been a simple substitution to incorporate the differently sized first and second projections—as taught by Shimozu—in place of the offset first and second projections—as taught by JP391. Such a substitution would yield predictable results, as either configuration would result in the first and second projections only be insertable into corresponding keyways of the adapter when the fiber optic connector is being inserted in the proper orientation.

519. As Shimozu’s method of differentiating the first and second projections was a simple substitution to the method employed by the connector disclosed by JP391 (size v. location of the projections), the combination of JP391 and Shimozu renders this claim limitation obvious.

[18.j] a latching mechanism on at least one of the top side and the bottom side

520. Claim element [18.j] of the ‘075 Patent is verbatim identical to claim elements [1.j]. As discussed above with respect to Claim 1, element [1.j] in Paragraphs 496-498, JP391 discloses element [18.j].

[18.k] wherein the latching mechanism is unconnected to the first projection and the second projection

521. Claim element [18.k] of the '075 Patent is verbatim identical to claim elements [1.k]. As discussed above with respect to Claim 1, element [1.k] in Paragraphs 499-500, JP391 discloses element [18.k].

C. Independent Claim 19

[19.p] A fiber optic connector for a multi-fiber ferrule, comprising:

522. Claim element [19.p] of the '075 Patent is verbatim identical to claim element [1.p]. As discussed above with respect to Claim 1, element [1.p] in Paragraphs 460-463, JP391 discloses element [19.p].

[19.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end

523. Claim element [19.a] of the '075 Patent is verbatim identical to claim element [1.a]. As discussed above with respect to Claim 1, element [1.a] in Paragraphs 464-467, JP391 discloses element [19.a].

[19.b.1] a multi-fiber ferrule housed within the central opening and having at least two optical fibers supported therein

524. Claim element [19.b.1] is verbatim identical to claim element [1.b.1]. For the reasons discussed above in Paragraphs 468 through 469, JP391 discloses element [19.b.1] of the '075 Patent.

[19.b.2] the multi-fiber ferrule being exposed at an opening at the first end of the ferrule holder

525. Claim element [19.b.2] is verbatim identical to claim element [1.b.2]

For the reasons discussed above in Paragraphs 470 through 471, JP391 discloses element [19.b.2] of the '075 Patent.

[19.b.3] the opening at the first end being in communication with the central opening

526. Claim element [19.b.3] is verbatim identical to claim element [1.b.3]

For the reasons discussed above in Paragraphs 472 through 473, JP391 discloses element [19.b.3] of the '075 Patent.

[19.c] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls

527. Claim element [19.c] of the '075 Patent is verbatim identical to claim element [1.d]. As discussed above with respect to Claim 1, element [1.d] in Paragraphs 476-478, JP391 discloses element [19.c] of the '075 Patent.

[19.d.1] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls

528. Claim element [19.d.1] is verbatim identical to claim element [1.e.1]

For the reasons discussed above in Paragraphs 479 through 480, JP391 discloses element [19.d.1] of the '075 Patent.

[19.d.2] the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the multi-fiber ferrule

529. Claim element [19.d.2] is verbatim identical to claim element [1.e.2]

For the reasons discussed above in Paragraphs 481 through 482, JP391 discloses element [19.d.2] of the '075 Patent.

[19.e] wherein a front end of the ferrule holder has a lead-in

530. Claim element [19.e] of the '075 Patent is similar to claim element [1.f], except that it recites that the “front end of the ferrule holder has a lead-in” instead of a “lead-in or a chamfer.”

531. The specification of the '075 Patent never uses the term “lead-in.” Rather the only written support for the front end of the ferrule holder having a lead-in is the figures of '075 Patent's disclosure of the edges of the ferrule holder being chamfered.

532. Accordingly, those of skill in the art would recognize that chamfers on the front edges of the ferrule holder would meet the claimed “lead-in.” For the reasons discussed above with respect to [1.f] in Paragraphs 483-484, JP391 discloses [19.e].

[19.f] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side

533. Claim element [19.f] of the '075 Patent is verbatim identical to claim element [1.g]. As discussed above with respect to Claim 1, element [1.g] in Paragraphs 485-486, JP391 discloses element [19.f].

[19.g] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side

534. Claim element [19.g] of the '075 Patent is verbatim identical to claim element [1.h]. As discussed above with respect to Claim 1, element [1.h] in Paragraphs 487-488, JP391 discloses element [19.g].

[19.h] wherein the first projection has a different shape than the second projection

535. Claim element [19.h] of the '075 Patent is verbatim identical to claim element [1.i]. As discussed above with respect to Claim 1, element [1.i] in Paragraphs 489-495, JP391 /Shimozu renders [19.h] obvious.

[19.i] wherein the first and the second projections each have a vertical side surface to align the ferrule holder with a vertical wall to control a horizontal direction of movement of the ferrule holder relative to an adapter

536. JP391's figures depict the first projection—the projection on the outside surface on the top side of the connector body—as having vertical side surfaces.

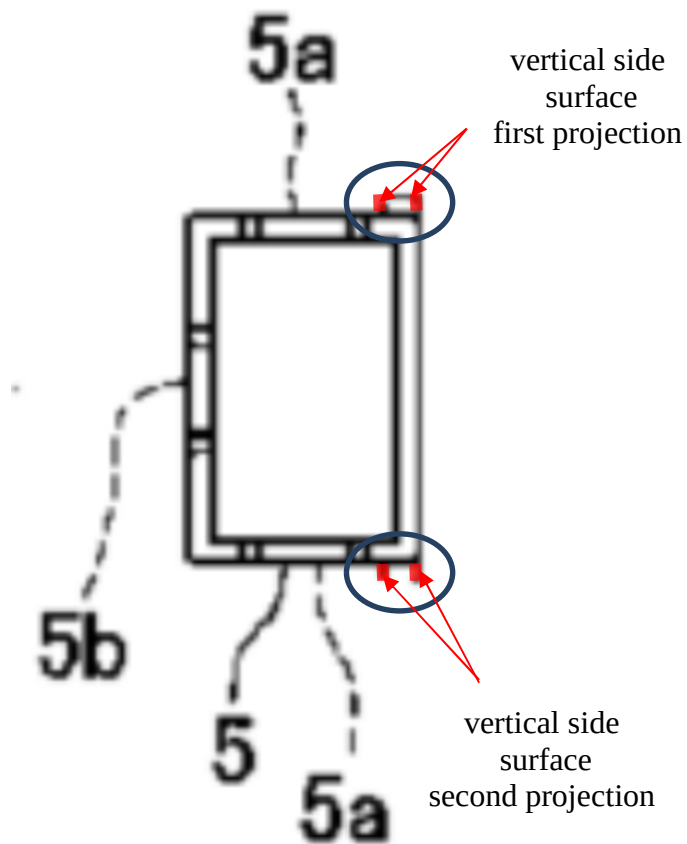


Fig. 6d (annotated).

537. Notably this limitation’s recitation that the vertical side surface “align[s] the ferrule holder with a vertical wall to control a horizontal direction of movement of the ferrule holder relative to an adapter” merely recites an intended use—and as such I understand that it is not entitled to any patentable weight.

538. Regardless, those of skill in the art would recognize the first and second projections would be capable of providing width-wise alignment of the connector as it is inserted into an adapter by mating with guide grooves inside the corresponding adapter. Accordingly, those of skill in the art would understand that

vertical side surfaces of the first and second projections are capable of controlling the horizontal direction of movement of the ferrule holder relative to an adapter.

539. Therefore, JP391 meets this litigation.

[19.j] a latching mechanism on at least one of the top side and the bottom side

540. Claim element [19.j] of the '075 Patent is verbatim identical to claim elements [1.j]. As discussed above with respect to Claim 1, element [1.j], in Paragraphs 496-498, JP391 discloses element [19.j].

[19.k] wherein the latching mechanism is unconnected to the first projection and the second projection

541. Claim element [19.k] of the '075 Patent is verbatim identical to claim elements [1.k]. As discussed above with respect to Claim 1, element [1.k], in Paragraphs 499-500, JP391 discloses element [19.k].

D. Independent Claim 21

[21.p] A fiber optic connector for an MT-type ferrule, comprising:

542. Claim element [21.p] is similar to [1.p], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. JP391 identifies the ferrule used in the disclosed fiber optic connector as being an “MT-type optical connector ferrule.” EX1006: [0010] (“The optical connector ferrule 7, which is the MT type optical connector ferrule...”). For the reasons discussed above with respect to [1.p] in Paragraphs 460-463, JP391 discloses [21.p].

[21.a] a ferrule holder having a central opening extending longitudinally from a first end to a second end

543. Claim element [21.a] is similar to [1.a], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. JP391 identifies the ferrule used in the disclosed fiber optic connector as being an “MT-type optical connector ferrule.” EX1006: [0010] (“The optical connector ferrule 7, which is the MT type optical connector ferrule...”). For the reasons discussed above with respect to [1.a] in Paragraphs 464-467, JP391 discloses [21.a].

[21.b] an MT-type ferrule housed within the central opening and having at least two optical fibers supported therein the MT-type ferrule being exposed at an opening at the first end of the ferrule holder the opening at the first end being in communication with the central opening.

544. Claim element [21.b.1]-[21.b.3] is similar to [1.b.1]-[1.b.3], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. JP391 identifies the ferrule used in the disclosed fiber optic connector as being an “MT-type optical connector ferrule.” EX1006: [0010] (“The optical connector ferrule 7, which is the MT type optical connector ferrule...”). For the reasons discussed above with respect to [1.b.1]-[1.b.3] in Paragraphs 468-473, JP391 discloses [21.b.1]-[21.b.3].

[21.c] a boot extending rearward of the ferrule holder and configured to support the at least two optical fibers

545. Claim element [21.c] is similar to [1.c], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. JP391 identifies the ferrule

used in the disclosed fiber optic connector as being an “MT-type optical connector ferrule.” EX1006: [0010] (“The optical connector ferrule 7, which is the MT type optical connector ferrule....”). For the reasons discussed above with respect to [1.c] in Paragraphs 474-475, JP391 discloses [21.c].

[21.d] wherein the ferrule holder has a main body with a top side and a bottom side joined by two opposing side walls

546. Claim element [21.d] is similar to [1.d], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. JP391 identifies the ferrule used in the disclosed fiber optic connector as being an “MT-type optical connector ferrule.” EX1006: [0010] (“The optical connector ferrule 7, which is the MT type optical connector ferrule...”). For the reasons discussed above with respect to [1.d] in Paragraphs 476-478, JP391 discloses [21.d].

[21.e] wherein a separation between the top side and the bottom side is more than a separation between the opposing side walls the opposing side walls being parallel to a fiber alignment axis of the at least two optical fibers at an end face of the MT-type ferrule

547. Claim element [21.e] is similar to [1.e], except that it more narrowly specifies the multi-fiber ferrule as an MT-type ferrule. JP391 identifies the ferrule used in the disclosed fiber optic connector as being an “MT-type optical connector ferrule.” EX1006: [0010] (“The optical connector ferrule 7, which is the MT type optical connector ferrule...”). For the reasons discussed above with respect to [1.e] in Paragraphs 479-482, JP391 discloses [21.e].

[21.f] wherein a front end of the ferrule holder has a chamfer

548. Claim element [21.f] is verbatim identical to claim element [18.f]. As discussed above with respect to [18.f] in Paragraphs 510-511, JP391 discloses [21.f].

[21.g] a first projection on a first outside surface on the top side of the main body and extending longitudinally along the top side

549. Claim element [21.g] of the '075 Patent is verbatim identical to claim elements [1.g]. As discussed above with respect to Claim 1, elements [1.g] in Paragraphs 485-486, JP391 discloses elements [21.g] of the '075 Patent.

[21.h] a second projection on a second outside surface on the bottom side of the main body and extending longitudinally along the bottom side

550. Claim element [21.h] of the '075 Patent is verbatim identical to claim elements [1.h]. As discussed above with respect to Claim 1, elements [1.h] in Paragraphs 487-488, JP391 discloses elements [21.h] of the '075 Patent.

[21.i] wherein the first projection has a different height or a different width than the second projection

551. The claim element [21.i] is similar to [1.i], except that it more narrowly limits the “different shape[d]” first projection and the second projection to having “a different height or a different width.” As discussed above with respect to Claim 1, element [1.i] in Paragraphs 489-495, the combination of JP391 and Shimozu renders [21.i] obvious.

[21.j] a latching mechanism on at least one of the top side and the bottom side

552. Claim element [21.j] of the '075 Patent is verbatim identical to claim elements [1.j]. As discussed above with respect to Claim 1, elements [1.j] in Paragraphs 496-498, JP391 discloses element [21.j] of the '075 Patent.

[21.k] wherein the latching mechanism is unconnected to the first projection and the second projection

553. Claim element [21.k] of the '075 Patent is verbatim identical to claim elements [1.k]. As discussed above with respect to Claim 1, elements [1.k] in Paragraphs 499-500, JP391 discloses element [21.k] of the '075 Patent.

E. Claim 2 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule is an MT type ferrule.

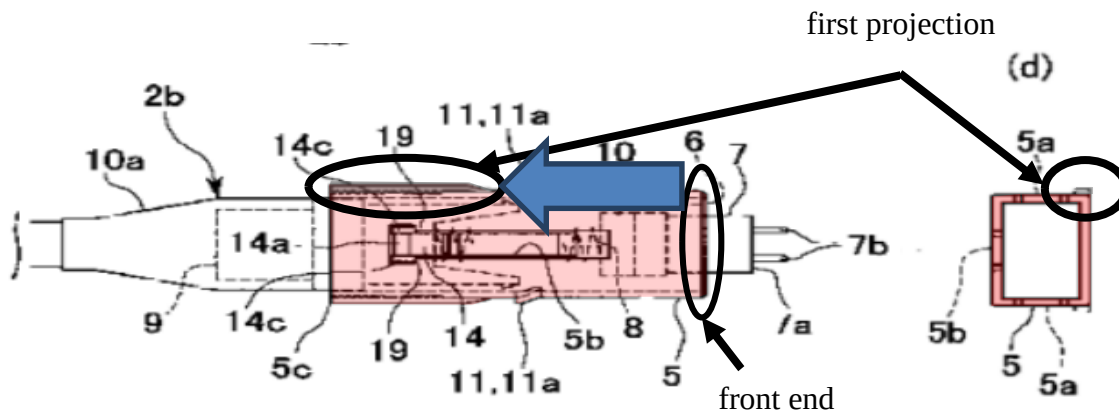
554. Claim 2 depends from Claim 1 adding the limitation that the multi-fiber ferrule is an MT type ferrule. This additional limitation is disclosed by JP391 in that JP391 identifies the ferrule used in the disclosed fiber optic connector as being an "MT-type optical connector ferrule." EX1006: [0010].

555. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

F. Claim 3 - The fiber-optic connector according to claim 1, wherein a top surface of the first projection is rearward of the front end of the ferrule holder

556. Claim 3 depends from Claim 1 adding the limitation that the top surface of the first projection is rearward of the front end of the ferrule holder.

557. This additional limitation is met by JP391 in that the JP391 connector is depicted in the figures as having its first projection on the outside surface on the top side of the connector body is rearward of the front end of the ferrule holder.



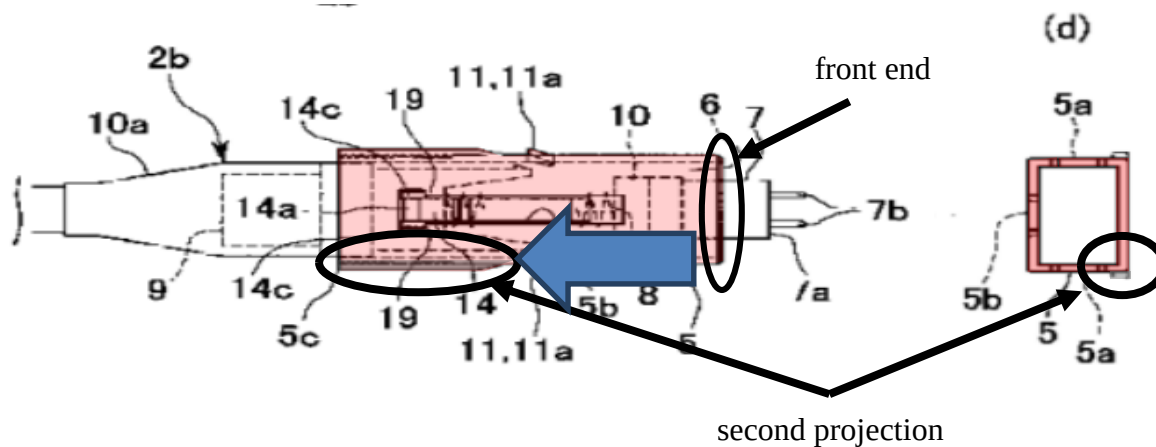
EX1006: Fig. 5 (b+d).

558. Accordingly, the combination of JP391 and Shimozu renders this claim obvious.

G. Claim 4 - The fiber-optic connector according to claim 1, wherein a horizontal top surface of the second projection is rearward of the front end of the ferrule holder.

559. Claim 4 depends from Claim 1 adding the limitation that the top surface of the second projection is rearward of the front end of the ferrule holder. This claim limitation is nonsensical in that the second projection—which is recited as being on the bottom side in the [1.h] claim limitation—would have an exposed horizontal bottom surface rather than a horizontal top surface. To the extent the claim is construed such that it would be met by any exposed horizontal surface of the second projection limitation, this limitation is met by JP391 in that the JP391

connector is depicted in the figures as having its first projection on the outside surface on the top side of the connector body is rearward of the front end of the ferrule holder.



EX1006: Fig. 5 (b+d).

560. Accordingly, the combination of JP391 and Shimozu renders this claim obvious.

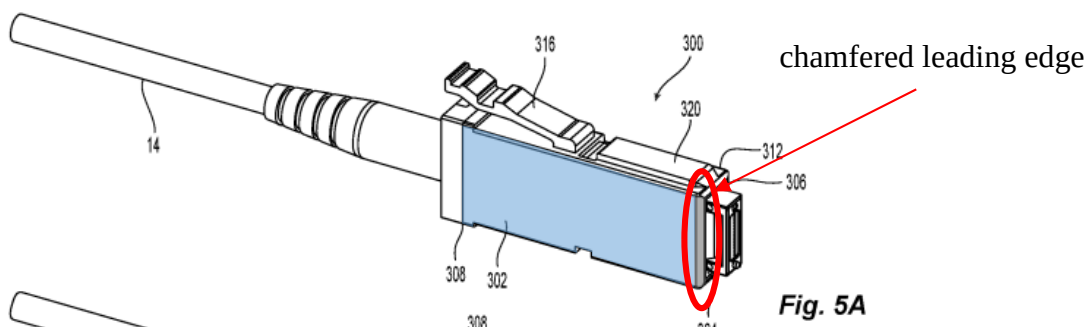
H. Claim 5 - the fiber-optic connector according to claim 1, wherein a top surface of each of the first projection and the second projection is rearward of the front end of the ferrule holder.

561. Claim 5 depends from Claim 1 adding a limitation that a top surface of each of the first projection and the second projection is rearward of the front end of the ferrule holder. Like Claim 4, this claim limitation is nonsensical in that the second projection—which is recited as being on the bottom side in the [1.h] claim limitation—would have an exposed horizontal bottom surface rather than a horizontal top surface.

562. To the extent the claim is construed such that a top surface of the second projection would be met by any exposed horizontal surface of the second projection limitation, this limitation would have been obvious in view of the JP391/Shimozu combination for the reasons explained in Claims 3 and 4.

I. Claim 6 - The fiber-optic connector according to claim 1, wherein the opposing sidewalls are smooth and solid.

563. Claim 6 depends from Claim 1 adding a limitation that the opposing sidewalls are smooth and solid. Notably, the only relevant disclosures regarding the relative smoothness and/or solidness of the opposing sidewalls is from the figures.



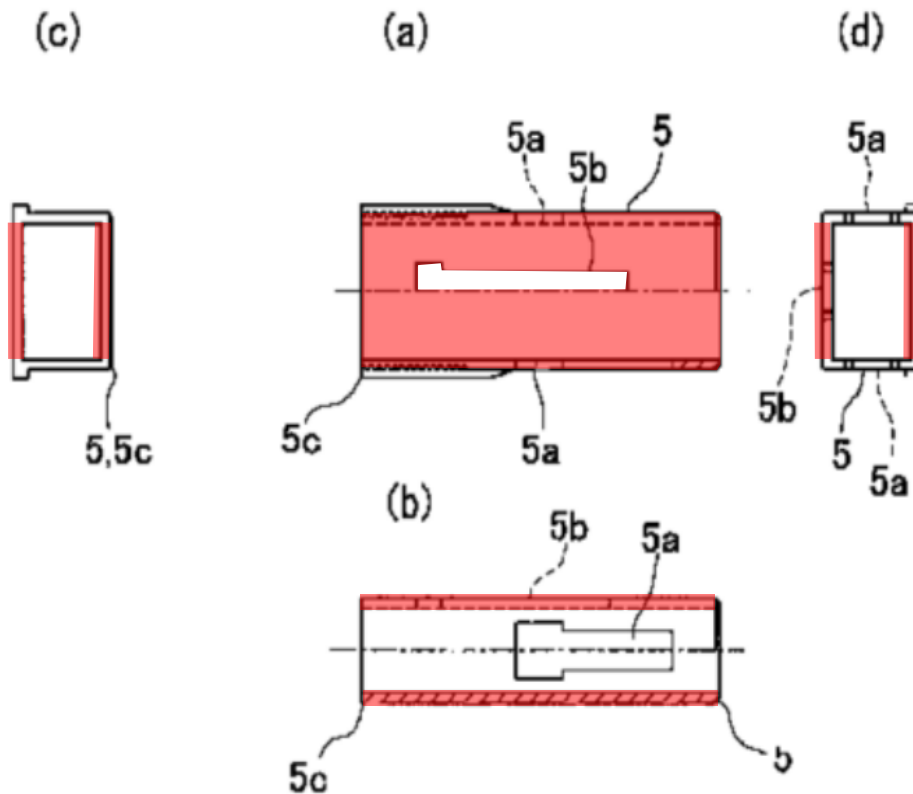
EX1001: Fig. 5A (annotated).

564. As seen in Figure 5A above, the sidewalls have chamfered leading edges. As such the specification only provides written support to the extent that only a portion of the opposing sidewalls is required to be smooth and solid.

565. As discussed above, the “sleeve-shaped plug frame” (5) provides the outer surfaces of the ferrule holder. As seen from the back (Fig. 6c), front (Fig.

6d), and top (Fig. 6b) views have flat—*i.e.*, smooth—opposing sidewalls (highlighted red in figures below).

[FIG. 6]



EX1006: Fig. 6 (annotated).

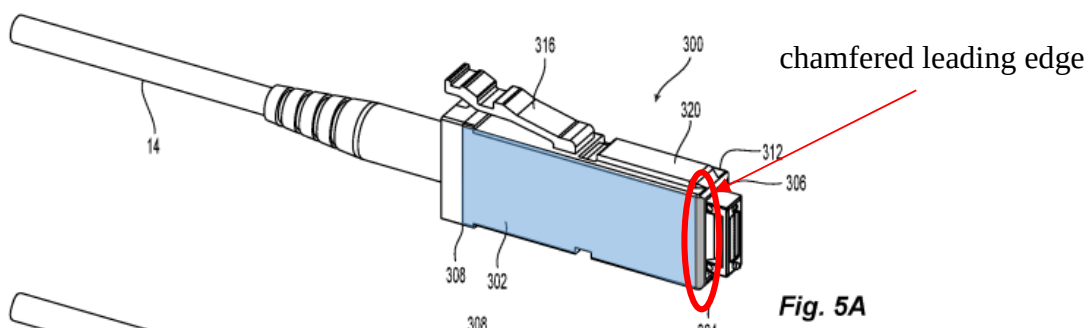
566. As demonstrated by the partial cutaway of Figure 6(a) and further depicted in Figure 6(d), one of the two opposing sidewalls is depicted as being solid, while the other opposing sidewall has a cut out (5b)—“identified as an engagement pawl hole”—to allow one of the engagement pawls to extend through.

567. Those of skill in the art would recognize that this sidewall engagement pawl and engagement pawl hole (5b) could be omitted without altering the function of the fiber optic connector as the fiber optic connector also includes engagement pawl on the top and bottom surfaces of the ferrule housing. In fact, those of skill in the art would recognize that by omitting the sidewall engagement pawl, the fiber optic connectors would be less costly and simpler to manufacture as the engagement pawl represent additional material and represent additional components that must be maintained within close tolerances.

568. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

J. Claim 7- The fiber-optic connector according to claim 1, wherein the opposing sidewalls are flat.

569. Claim 7 depends from Claim 1 adding a limitation that the opposing sidewalls are smooth and solid. Notably, the only relevant disclosures regarding the relative flatness of the opposing sidewalls is from the figures.

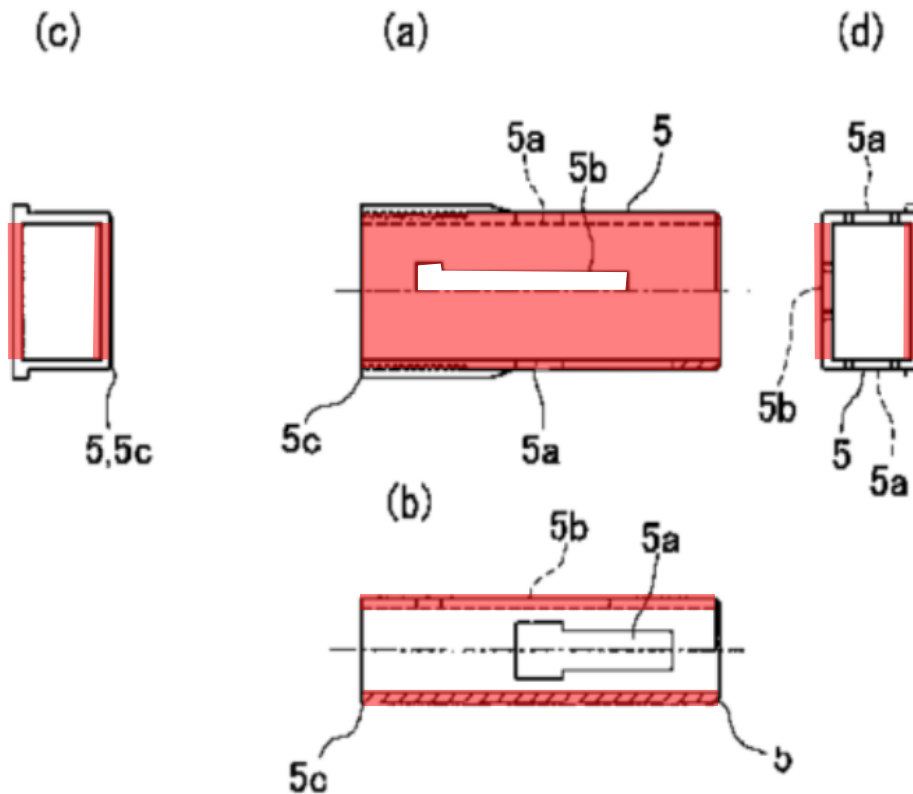


EX1001: Fig. 5A (annotated).

570. As seen in Figure 5A above, the sidewalls have chamfered leading edges. As such the specification only provides written support to the extent that only a portion of the opposing sidewalls is required to be flat.

571. As seen in Fig. 6 of JP391, outside of the lead in the opposing walls of the JP391 connector are flat.

[FIG. 6]



EX1006: Fig. 6 (annotated).

572. Further, as discussed with respect to Claim 6 immediately above it would have been obvious to omit the sidewall engagement pawl and engagement pawl hole (5b).

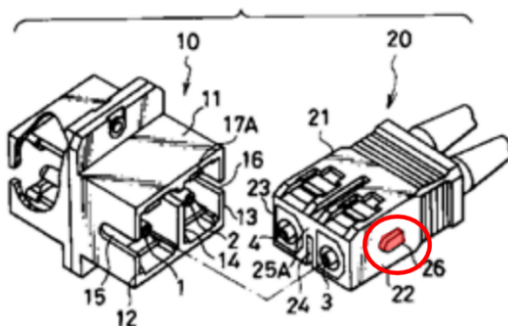
573. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

K. Claim 8 - The fiber-optic connector according to claim 1, wherein the first projection and the second projection have different widths.

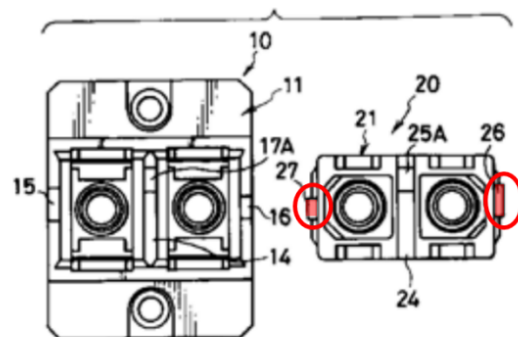
574. Claim 8 depends from Claim 1, further limiting the “different shape[d]” first projection and the second projection to having different widths.

575. The modification to the connector of JP391 as addressed above with respect to claim element [1.i], would have further met the narrower limitation of Claim 8 in that Shimozu discloses sizing the widths of its identification guides (26 and 27)—and their corresponding keyways (15 and 16)—differently to prevent the “incorrect insertion.” EX1007: [0012], [0014].

[FIG. 1]



[FIG. 2]



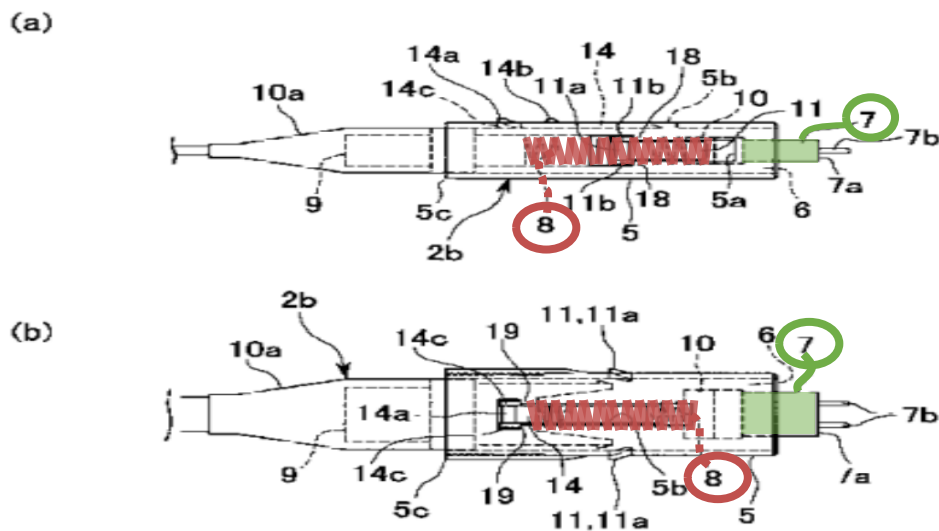
EX1007: Figures 1 and 2 (annotated).

576. As discussed above with respect to Claim 1, element [1.i] in Paragraphs 489-495, the combination of JP391 and Shimozu renders Claim 8 obvious.

L. Claim 9 - The fiber-optic connector according to claim 1, further comprising: a spring positioned rearward of the multi-fiber ferrule and configured to bias the multi-fiber ferrule towards the front end of the ferrule holder.

577. Claim 9 depends from Claim 1 adding the limitation that the fiber-optic include a spring biasing the multi-fiber ferrule towards the front end of the ferrule holder. This additional limitation is disclosed by JP391 in that the JP391 connector “incorporates a spring 8 to bias the optical connector ferrule 7 forward in the insertion direction into the optical connector adapter 3.” EX1006: [0009] Notably, as depicted in Figure 5 of JP391, the spring (8) is position rearward of the ferrule (7). EX1006: [0009] (“the spring 8 that is counter-forced by the spring push 9 attached to the optical connector plug 2b (specifically, the slide frame 6), but due to a biasing force of the spring 8 is not pushed out forward in the connection direction from an engagement position of a stopper portion 6a (see FIG. 7(d)) provided at the slide frame 6 tip end (connection direction tip end) and does not come out from the slide frame 6 tip end”).

[FIG. 5]



EX1006: Fig. 5 (annotated).

578. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

M. Claim 10 - The fiber-optic connector according to claim 9, wherein the spring at least partially surrounds the at least two optical fibers.

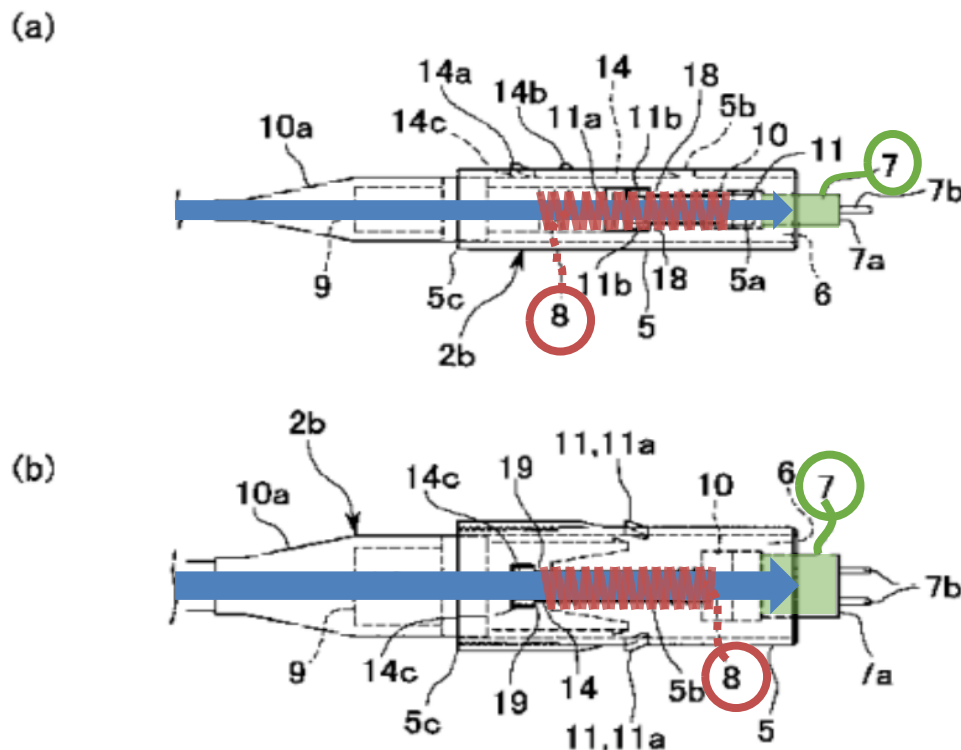
579. Claim 10 depends from Claim 9 adding the limitation that the spring at least partially surrounds the optical fibers.

580. As addressed above, one of skill in the art would recognize that the MT-type optical connector ferrule of the JP391 would be inherently supported by at least two optical fibers.

581. Although the routing of the optical fibers is not addressed by JP391, those of skill in the art would understand the claimed routing whereby the spring at

least partially surrounds the optical fibers obvious, if not inherent. The optical fibers are necessarily routed from the fiber optic cable to the ferrule. As depicted in Figure 5, the spring (8) is centered between the cable and the ferrule. Those of skill in the art would expect the optical fibers to be routed through the spring (8) as it would be the most direct path.

[FIG. 5]



EX1006: Fig. 5 (annotated).

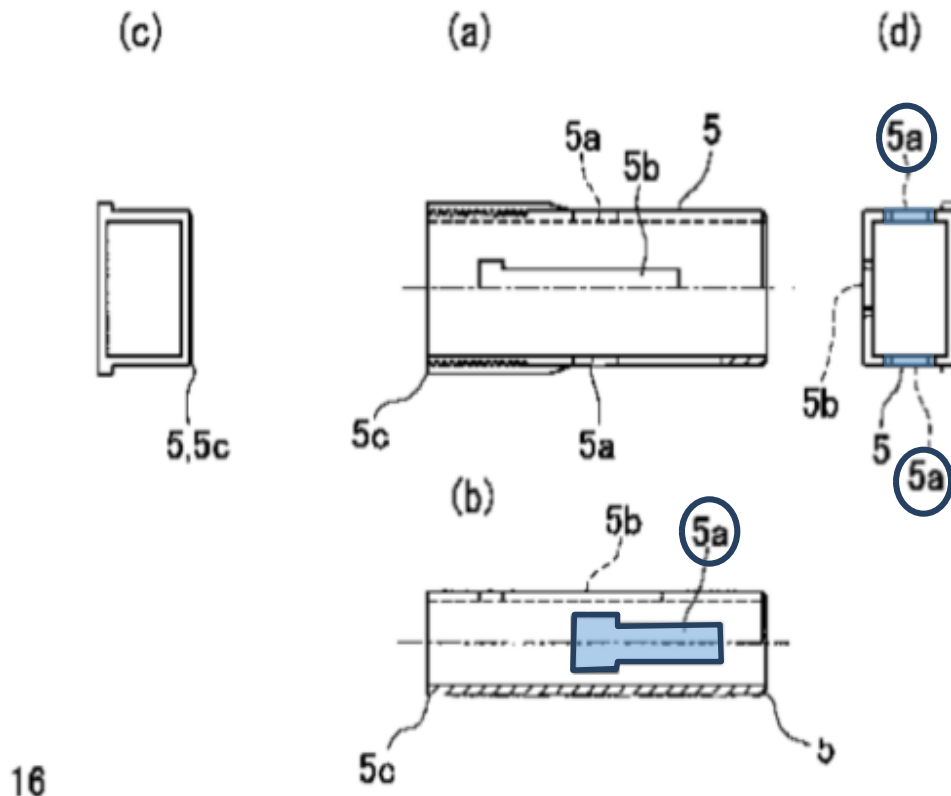
582. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

N. **Claim 11 - The fiber-optic connector according to claim 1, further comprising: a cutout in each of the top side and the bottom side.**

583. Claim 11 depends from Claim 1 adding a limitation that in each of the top side and the bottom side have a cutout. This additional limitation is disclosed by JP391.

584. JP391 discloses that the plug frame 5 has engagement pawl holes 5a in the top side and bottom side. EX1006: [0012], [0023], [0024].

[FIG. 6]



EX1006: Fig. 6 (annotated).

585. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

O. Claim 12 - The fiber-optic connector according to claim 1, wherein a portion of the multi-fiber ferrule extends forward of the main body.

586. Claim 12 depends from Claim 1 adding the limitation that the ferrule extends forward of the main body. This additional limitation is disclosed by JP391 in that the ferrule (7) is depicted in the JP391's figures as extending forward of the main body.

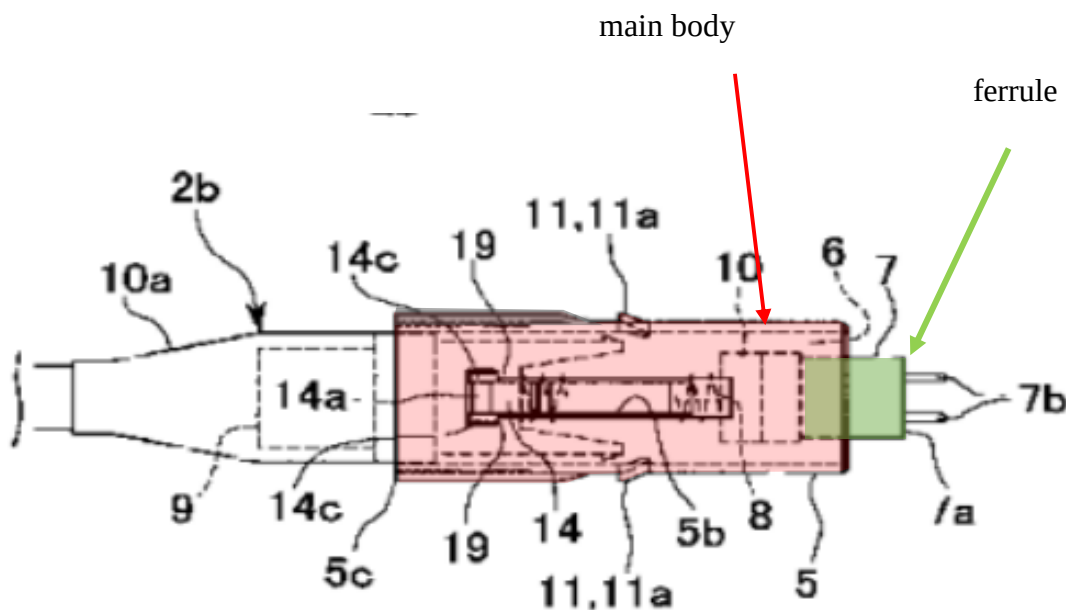
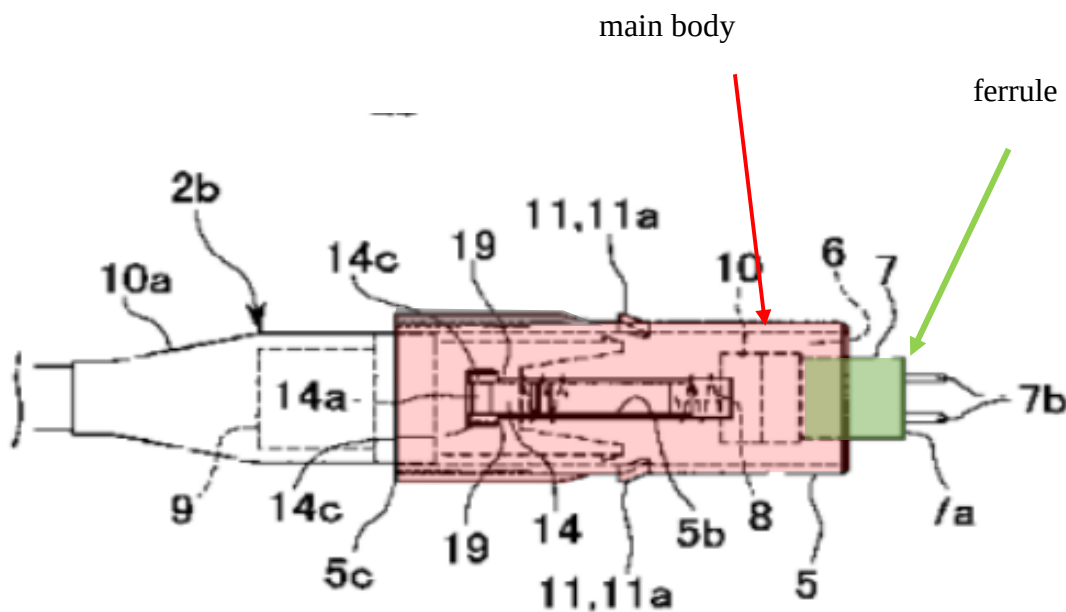


Fig. 5b (annotated).

587. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

P. Claim 13 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule extends beyond the main body.

588. Claim 12 depends from Claim 1 adding the limitation that the ferrule extends forward of the main body. This additional limitation is disclosed by JP391 in that the ferrule (7) is depicted in the JP391's figures as extends beyond the main body.



EX1006: Fig. 5b (annotated).

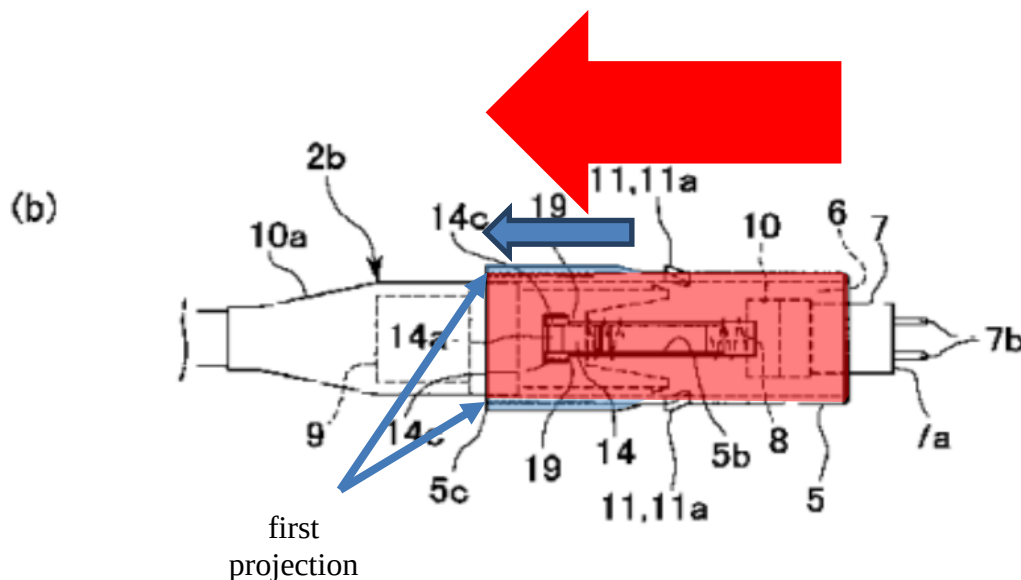
589. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

Q. Claim 15 - The fiber-optic connector according to claim 1, wherein at least one of the first projection or the second projection extends along a length of the ferrule holder.

590. Claim 15 depends from Claim 1 adding the limitation that at least one of the first projection or the second projection extends along a length of the ferrule

holder. Notably, the only relevant disclosures regarding the extension of the first and second projections is in the figure—which depict the projections extending in the same direction—but not the entire length—as the ferrule holder. Accordingly, the person of ordinary skill in the art would understand the limitation to require the projections extend in the same direction as the length of the ferrule holder, rather than to suggest that the projection is required to extend the full length of the ferrule holder.

591. This additional limitation was disclosed by the figures of JP391. For example, Figure 5b of JP391 shows that both the first projection and the second projection extend in the same direction as the ferrule holder.

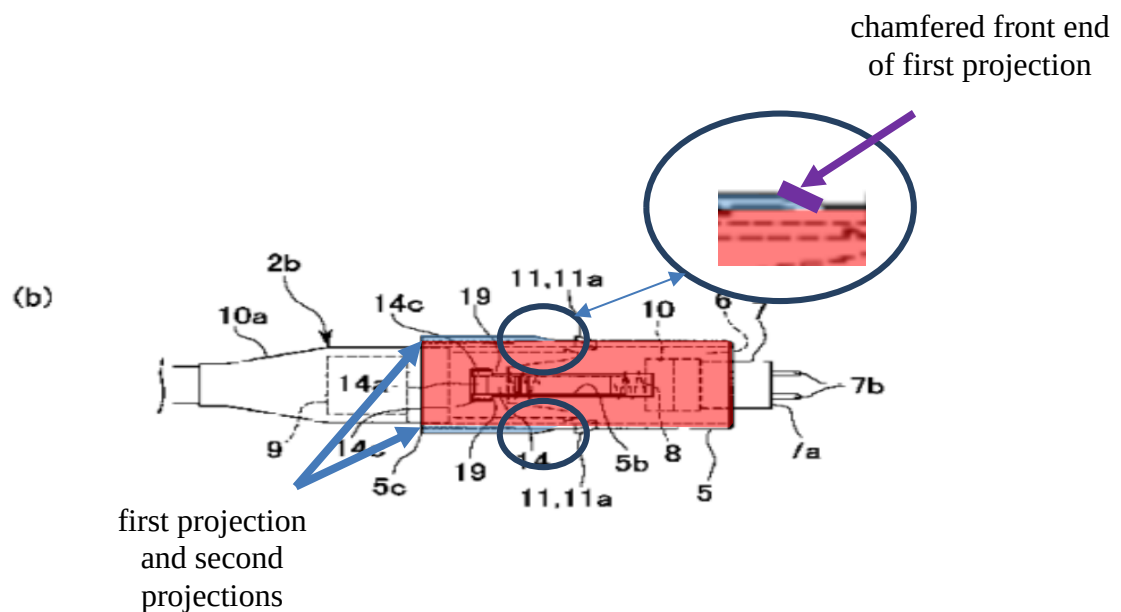


EX1006: Fig. 5b (annotated).

592. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

R. Claim 16 - The fiber-optic connector according to claim 1, wherein at least one of the first projection or the second projection has a chamfered front end or a lead-in.

593. Claim 16 depends from Claim 1 adding the limitation regarding at least one of the first projection or the second projection has a chamfered front end or a lead-in. This additional limitation was disclosed by the figures of JP391, as both the first and the second projections have chamfered front ends.



EX1006: Fig. 5b (annotated).

594. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

S. Claim 17 - The fiber-optic connector according to claim 1, wherein the first and the second projections each have a vertical side surface to align the ferrule holder with a vertical wall to

control a horizontal direction of movement of the ferrule holder relative to an adapter.

595. Claim 17 depends from Claim 1 adding a limitation regarding the first and the second projections having vertical side surfaces. This additional limitation is the same as the limitation in claim element [19.i]. As discussed above with respect to claim element [19.i] in Paragraphs 537-540, the JP391/Shimozu combination renders this claim obvious.

T. Claim 20 - The fiber optic connector of claim 19, further comprising: a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers.

596. Claim 20 depends from Claim 19 adding the limitation that fiber optic connector includes a boot extending in a rearward direction from the ferrule holder and supporting the at least two optical fibers. This additional limitation is verbatim identical to claim element [1.c]. As discussed above with respect to Claim 1, element [1.c] in Paragraphs 474-475, JP391 discloses this additional element.

597. Therefore, the combination of JP391 and Shimozu renders this claim obvious.

XIV. GROUND 13: Obvious Over JP391 in View of Shimozu and Katagiyama.

A. Claim 14 - The fiber-optic connector according to claim 1, wherein the multi-fiber ferrule is flush with the front end of the main body.

598. Claim 14 depends from Claim 1 adding the limitation that the multi-fiber ferrule is flush with the front end of the main body.

599. This additional limitation was known in the art. For example, Katagiyama disclosed that “the front end of the ferrule [can be] flush with or protrude[] from a front end of the housing.” EX1013: Claim 9.

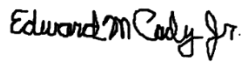
600. Modifying the JP391 connector such that the ferrule would be flush with the front end of the housing is merely a simple substitution of one known element for another to obtain the same predictable result.

601. Therefore, the combination of JP391, Shimozu, and Katagiyama renders Claim 14 obvious.

602. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross examination in this post grant review and that cross examination will take place within the United States. If cross examination is required of me, I will be available for any such cross examination.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 19th day of June, 2024.

By Edward M. Cady, Jr.:  _____

Appendix A

Edward M. Cady, Jr.

Ed Cady is an independent consultant providing Interconnect technical and business advisement. He has substantial experience and expertise in the Supercomputer, HPC, Communications, Cloud, DataCenters, PC, Storage, Memory, Mobile, Video-AV, Consumer, Industrial, Automotive, and Medical market segments. He has recently focused on helping customers with M&A, Business Development, Technology Research, Product/Process Development, Prior Art Research, Patent litigation, and Expert Witness work. Ed is an industry expert concerning optical and copper connectors, cables, cable assemblies, and harnesses supporting 5 levels of interconnections in electronic active equipment systems.

Highlights

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- Strong knowledge and expertise of Interconnect standards and related Market segments. Has had a strong involvement in many IO standards connector proposals, design-in campaigns, specifications, and new product development.
- Participated in various BoFs, MSAs, Consortia, and Standards organizations including QSFP-DDMSA, SFF-1002, SFF-1020, OCP, COBO, CCIX, CXL, USB, Gen-Z, InfiniBand, FibreChannel, SSA, IEEE802.3 Ethernet, SAS/SATA, PCI-SIG, VESA, HDMI, MIPI, MOST, IEEE1394 FireWire, IEEE1596 SCI, PCMCIA, PICMG, VITA, SMPTE, and JEDEC. Has a strong network of current and past participating experts in all these groups.
- Has held full-time positions with Data General, Apollo Computer, HP, Sequent Computer, Contex, Berg, FCI, Meritec, Siemon, and Volex. Consulted 4 years with Luxshare-ICT ECS group and partly with their Automotive, Antenna, Consumer, and Wireless groups
- For Luxshare-ICT, generated new customer engagement and product revenues; drove new business for connectors, pluggable cables, connectors, and modules. Provided & supported observing, monitoring, and reporting on new DataCenter optical and Twinax-based IO standards and products as well. Supported Tech Marketing for new WiFi, power, camera, sensor, and radar network opportunities.
- Focused on IP chip product development at CrossPort Networks for USB 3.2, 4.0, and 5.0 hub and fabric switch interconnects.
- Has assisted in the development of industry and consortia standard, semi-custom, and full custom Automotive, Military connectors, and cables as well as many very high-speed copper and optical interconnect products, especially during his tenure with FCI/Berg and Luxshare

Skills

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- Analysis & development of new interconnects and related IP, patents, licenses, markets, customers & applications; technologies, processes & products; components, subassemblies & suppliers. Experienced patent litigation expert

witness regarding Prior Art Research, Declarations, Depositions, and court testimony.

- Initiating new customer/supplier relationships and collecting voices of same.
- Connecting and performing validation with customers' customers & end-users.
- Analysis, monitoring of various competitors & creating competitive strategy.
- Analysis & alignment of industry, customer & corporate product roadmaps.
- Initiate & co-develop new product concepts/designs, strategies, business cases, prototypes, and training modules. Tiger Team leadership and new technology and product evangelist. New customer and supplier advocate.
- Support legal counsel with key market information, defend and support the business on the very front lines.
- High-level knowledge & experience with Interconnects, IO interfaces within server, storage, memory, video, communications active equipment; power distribution systems, system packaging, computer architectures, and HPC/Datacenter systems. Rich knowledge and experience with interconnects relative to processes, testing, materials, SI, FA, regulatory matters, quality systems, sourcing strategies, and electrical, photonic, mechanical and industrial design.
- Generation of: RFIs, RFPs, RFQs, NRE & POs; Product briefs, datasheets, specifications, releases & samples; Live demos, plugfest verifications & standards design-ins; Industry interfaces, equipment, form-factor & topology trends; Industry customer & corporate product roadmaps/lifecycles; Biz/tech alliances/BOF with Chip-ATE-OEM companies.
- Utilization of: Management skills for cross-matrix team mentoring/coaching, positive/supportive corporate and alliance goals; Spheres of influence, bully-pulpits, blogging, articulates, media articles, media interviews & white papers; Relationships with industry analysts, media & expert leaders; Intuitive/probability analysis of major industry inflection points & market disruptive changes.

Job Experience

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July 2016 – March 2020 **Luxshare-ICT – Technical Marketing Director CV-19 layoff**

- Consulting and representing Luxshare member at IEEE802.3, Ethernet Alliance, IBTA, GenZ, CCIX, CXL, COBO, PCIe and other consortia IO standards groups. Representative for QSFP-DD, uQSFP, OSFP & other MSAs. The representative at OFC, ECOC, FMS, DesignCon, CSC & other High-Speed IO conferences. Supported interconnect development of CXL, OIF, FC, OpenCAPI, SAS, NVLink & other IOs. Generated customer & supplier partnerships and key customer RFIs, RFPs, and design solutions. Initiated & drove Live Demo exhibition opportunities.
- Develops/Drives GoTo Market plans. Provides technology, topologies, form factors, devices & interconnect roadmaps, market trends, and customer CTO level seminars. Develops Marcom documents for new products. Provides pioneering FAE support for DACs, AOCs, AOMs, OBOs, and new internal & POD cabling solutions. Provides various training sessions to Luxshare's NP developers and management teams. Provided evangelistic support to GenZ leadership like HPE & Dell's new SFF TA 1002 interconnects. Coached with SENKO to get their CS/SN optical connectors on 8 IO industry standards.

- Supports Business case development, Market Analysis, and competitor analysis. Generates VoC from multiple market segments and customer types.

Jan 2024 – current 2024 **Cady Research – Interconnect Consultant**

Published on www.connectortips.com several new technology technical articles on new connector, cable, and module products, both copper and optical. Have had over 70 articles and seminars published in various technical media venues in recent years. Have had several Patent Litigation projects completed successfully. Some may be starting soon. Developing cross-industry roadmaps for clients.

Sept 2015 – December 2023 **CrossPort Networks – Product Development**

- Consultant; USB 3.2, 4.2 & 5.0 hub and fabric switch.
- General leadership support of a new start-up company focused on new USB3.1/3.2, USB4 hubs, docks, switches, and PCIe 4.0 switches. The development includes boxes, PCBs, Chips and other related new interconnects.
- Helped to generate IP and patents.

April 2013 - July 2015 **Cady Research – Interconnect Consultant**

- Provided stealth mode marketing, product design & business development support for copper ZLink PCBA, “FinRails”, new backplanes, midplanes, baseboards, and related connectors. Provided PATSI stealth mode marketing, product/process design for new fiber circuit boards, and generation of new customers, partners, IP, and applications as well as potential investors and buyers. Consulting for Z-Plane Inc, and PATSI. Generation of 30+ Blogs with ConnectorTips, more with others.

2011- 2013 **Volex – Strategic Technical Marketing & Business Development Director**

- Initiated and drove business cases and NPI plans for new High-Speed copper and optical interconnection products. Conceived, co-developed, and co-evaluated new interconnect applications, technologies, processes, testing, materials, components, cables, connectors, housings, and embedded passive and active devices. Frequently represented Volex at various industry conferences, plugfests, standards bodies, trade associations, live demo booths, media events & customer onsite technical roadmap alignments.
- Performed as a combined technologist, technical marketer & application engineer relative to copper and optical cabling, connector & module products for Datacenter, Datacom, Telecom, Industrial, Medical, and Consumer markets/customers. Worked with industry Birds of a Feather groups to design-in technologies & products for new Super-Computers, Servers, Storage & Communication systems, Video Systems/Interfaces, Transportation, Smart Phones, Tablets, Notebooks, Sensor networks and Patient Monitoring systems.
- Supported the development of Duckhead over-molded connectors and cables for Notebooks as well as Power Cords for all types of computers & Telcom equipment.

- Generated RFIs, RFPs, RFQs & POs from Alcatel/Lucent, Arista, Brocade, Bull Computer, Cray, Dell, Cisco, Eurotech, Ericsson, GE Medical, IBM, Intel, Juniper, Mellanox, Microsoft, NetApp, QLogic, Seagate, Xyratex etc. Co-developed QSFP AOC, HDminiSAS cable, Kinnect cable, Optical Midplane & Hydra cabling products. Generated several custom application families, installation & manufacturing concepts. Led product design-in and generation of \$15M new product sales and next-generation multiple product development.
- Initiated & co-developed various partnerships with APM, Kotura, Leoni, LightWire, Valdor, USConec, Nexans and others. Worked closely as member with Ethernet Alliance, IEEE802.3, IBTA, SAS, STA & SFF organizations and with CIM, Bishop, CIR, Fleck, Light Counting, Ovum, and AT Kearney. Co-developed new product business cases, industry & corporate roadmaps, and the acquisition of APM optical assets.
- Developed detailed market and competitor analysis for multiple market segments. Co-developed corporate product families & market penetration strategies. Developed product design concepts, briefs, datasheets, specifications, web pages, training modules, white papers and market trends reports.
- Trained executive management, sales/account management, field application and design engineers concerning new interconnects, active Telecom/Datacom systems equipment, datacenters, video networks, mobile devices relative to various topologies, IO interfaces, formfactors and high speed electrical and optical components.

2009 – 2011 The Siemon Company – OEM Business, General Manager; Strategic and Technical Marketing Director

- Initiated and generated the business plan for, and led the development of the Siemon Interconnect Solutions group, focusing on OEM and Enterprise high-speed point-to-point interconnect products. Mentored management and key peers on the High-Speed Interconnect business/industry. Created and led a core team by hiring top level signal-integrity engineers and sales engineer/manager experts. Provided new technologies, solutions, and applications training to Siemon product management, marcom, and salespeople. Initiated and co-led new supplier partnerships like Luxtera relative to AOC products.
- Initiated and drove the Siemon high-speed copper and optical cabling roadmap and provided major input/support to New Products Development and sourcing. Initiated and co-generated Marketing Specifications, Component Specs, Product Datasheets, Press releases, training articulation, white papers, corporate/guest Blogs, and guest articles in different industry media. Developed, and presented new products/roadmaps to Enterprise & OEM customers as well as all Siemon Sales teams. See www.siemon.com/sis for the website and former retail store we created.
- Generated and presented internal comparative and analytical presentations on IO ICs, IO active equipment, Interfaces, Topologies, Interconnects, form factors, performance metrics and applications relative to the voice of the customer, market trends, forecasting, solutions, and new product vetting like custom M12 Ethernet, RJ45 Cat7, Cat8 and Cat 8.2 Tera infrastructure cabling systems and customs for Industrial Automation equipment companies like Rockwell Automation.

- Co-led the creation/management of the SIS website, online store and marketing booth for DesignCon. Generated and assisted in training the Enterprise division concerning point-to-point and HSI cabling and related marketing/sales/applications. Initiated and led new Tier 2/3 customer penetration with new SFP+, QSFP+, CXP, AOCs, MTP-24f and several other interconnect products.
- Actively represented Siemon at IEEE802.3, Ethernet Alliance, InfiniBand, FibreChannel, SAS, and OIF meetings. Developed and managed the SIS booth for DesignCon. Cruised & harvested SuperComputing, Interop, InfoCom conferences and directed cruising of several other industry conferences and standards. Monitored and liaison with HDBaseT, DiVA, CameraLink, HDMI, USB, SATA, PCI-E, RapidIO, LightPeak and other IO organizations.
- Provided actionable analysis of Convergent flatter networks/cabling and expanding Storage systems, Video Camera and Digital Signage network cabling market segments. Provide actionable analysis of Server, Communications, Industrial and Military networks/interconnects. Provided front end Siemon face to the industry and related mindshare generation. Initiated contact with first/new SIS customers & led New Product ramp up @ \$6M and going to \$22M annual revenues. Regular OEM business revenue growth grew about 15% & 18% during the last two years with the average margin level rising about 12% from 2008.

2001- 2008 Meritec – Strategic Marketing & Applications Director

- Led increased annual sales run rate from \$6M to \$24+M in the first three years with new products, applications, and customers. Turned around a free-falling product and revenue situation and led the company to a higher growth rate than the industry average. Kept Meritec alive and growing with new customers, partnerships, and product revenues during the 2001-2 recession. Won SGI Numa cable business which has been Meritec's largest customer for 8 years and achieved \$9M during peak years. Established new market awareness of Meritec as a primary player within the high-speed cabling marketplace which facilitated new business with Tier 1 & 2 customers each year. See www.meritec.com for many products that resulted.
- Initiated and directed Cinch Technology/IP transfer worth \$3M in 2008.
- Initiated and drove NX, NX+ product development, and sales worth \$1.5M in 2008.
- Coached and mentored Meritec's top management, Signal Integrity dept, Business Unit (Product) Managers, and Product Engineering. Drove corporate modeling/measurement technology and design level from 500Mbps to 20Gbps per circuit. Drove wire termination processing technology from hand soldering and resistance welding processes to hot-bar soldering, green and blue laser welding and hydrogen micro-flame ROHS soldering. Saved \$2+ million by having chip partners do SI testing of new products.
- Initiated, and co-generated several new cabling product families including, CircularCX-4, QSFP, MiniSAS LSZH, MicroSpeed, MicroGigaCN, SFF Mini-Multi-Lanes, and IB CXP. Generated several new product families and design-ins worth \$1.5M in 2008 including eMDR, eCP-50, PCI-Express, eHSSDC-2, DF-19, FI-X, SATA2, SAS2, and enhanced 2mm cables and connectors.
- Generated dozens of new customers including Rackable, Appro, Voltaire, Raytheon, Toshiba, Nvision, Credence, EMC, Mercury Computer, Mellanox, SuperMicro,

Alcatel/Lucent, Verari etc. Contributed to HDMI, XAUI-1/2/3, InfiniBand 5&10G, ATCA Zone 3, SAS-2, FibreChannel 8G, Ethernet 10/40/100G industry standards, and co-develop valued added solutions.

- Initiated and co-generated partnerships & virtual sales teams with Mellanox, Xilinx, Fujitsu, Cinch, ERNI, AVX, Leoni, Hitachi, Elma, Toshiba, NEC, and Sharp. Initiated and supported relationships and some business with Gennum, Siemon, Bell Stewart, and Tyco.
- Cruised and collected multiple customers at Interop, SuperComputing, Bus & Board, NAB and DesignCon, then drove and support design-ins and co-marketing/sales opportunities.
- Co-marketing evangelistic leadership with customers like Intel, Dell, HP, Agilent, NEC at Developer's Forums and technology symposia like InfiniBandta, T10, STA, SID, Bus & Board, PICMG, PCI-SIG, FCIA, NAB, and DesignCon. Generated industry white papers, key account presentations and participated on symposium panels and webinars. Drove the major website upgrade which lead to higher internet sales growth.

1997-2001 FCI – Technical Marketing Manager (FCI acquired Berg)

- Collaborated with OEM architects & technical marketing in the development & positioning of interconnect technology/hardware for key consortia and open standards. Mentored and collaborated with FAEs and SI engineers. Provided support to corporate Counsel with Prior Art searching and Patent Litigation. Generated targeted customer strategies, corporate products, and industry roadmaps.
- Drove new alliances and partnerships with Madison, Picolite, Fujitsu, Tyco, Molex, AMD, Intel, DPT. Coached NGIO/FIO=InfiniBand merger and spec harmonization. Primary active player at InfiniBand, FibreChannel, Ethernet, SerialATA, HyperTransport, SCSI, HIPPI, SCI, DVI and 1394 standards meetings.
- Led development and design-in of new products into several IO standards and new customers including ATT Wireless, Agilent, Giganet, Eurologic, Qlogic, Adaptec, Tandem, HAL, Vixel, Brocade, Gadzoox, Dolphin, EMC and Ncube. Lead generator of \$ 25-35 million in new sales per annum. Lead generator of \$ 40-60 million in new opportunities each year. Advised NTT on their Proposal for adding the optical MU connector as a media option for FibreChannel. I led this effort behind the scenes and at NCITS T11 standards meeting and it was approved which helped FibreChannel business to expand in Asia market segment.
- Initiator/Evangelist for BGA DDR edge connectors, MSA MegArray, GBIC/SFP/XGP cages & modules, double-stack VHDCI, Shielded Circular and Rectangular Shelled RJ45 conns/cables, 1000BaseT NetJacks, HSSDC-2, DVI-2, SATA, MicroGigaCN and Metral 4K product solutions. Expanded MegArray/GigaArray product family generated over \$550million after seven years.

1993-1997 Berg – Technical Marketing Manager, Field Application Engineer (Berg acquired Context)

- Led TigerTeam for Intel platforms penetration with MegArray, PowerBlade, HSSDC1, HSSDC2, NetJack, Metral, SCA, VHDCI, Metagig, PCMCIA, CONAN,

Micropax new product family generations. Design-in @ \$30-50million in new sales for each product. MegArray generated @ \$250million within four years.

- Provide key accounts, like Lucent, Nortel, IBM, Intel, SUN, HP, Compaq, and Cisco with technology roadmaps, new product concepts, and applications. Drove multiple design-ins worth \$50+ million. Generated market development strategies, competitor analysis, and market segment trends for management. Trained Product Marketing, Product Engineering, and Sales with new technology trends, product info, and customerbase analysis. Submitted first design of LC optical connector.

**1991-1993 Contex – VP, Cable Assembly Marketing/Applications
(Contex was a primary supplier to HP, Sequent, Nortel, Lucent)**

- Penetration of new accounts included Nortel, IBM, DEC, Compaq, SGI, Motorola, Unisys, SUN with new products and services. Annual generation of \$10-20million new revenues with new & existing accounts like HP, Sequent and Apple. Provided key accounts and corporate management with market development strategies, technology trends/forecasting and new product concepts. Focused sales & engineering on both frontlog/backlog sales generations. Lead member of 1394, PCMCIA, VESA, SSA, FibreChannel, SCSI & SFF standards bodies. Increased value-added level and profit margins with new products like SCSI over-molded terminators. Led high speed teams.
- Pioneered new custom video interconnect with Tek, Planar, GVG. Developed new connector and cabling products with Molex, AMP & JAE. Led Contex transformation into becoming an over-molded, cable assembly industry leader. Co-led Due/Diligence during Berg buyout.

1990-1991 Sequent Computer – Senior Staff Component Engineer (IBM acquired Sequent for its software and let go the hardware team after a period of consulting)

- Connectorization and cabling of high MTBF Servers, Switches, RAID.
- Mentored System Packaging engineering from product concept through FCS;
- Performed interconnect technology experiments with Architects, Signal Integrity gurus. Created hot-plug modular copper/optical I/O and power interconnect solutions. Produced system packaging and interconnect technology roadmaps, metrics comparisons, and customer surveys.
- Led early implementation of LGA, SCSI-3, FibreChannel, SCI, 100BaseT and TokenRing-2. Championed & developed online design/component information systems with AMP EADS, Aspect Development, ProEng, Mentor Graphics, and Tek. Provide corporate technical liaison with Intel and customer base. Saved \$3+Million by reducing Sequent's supplier base.

1988-1990 HP – Principal Interconnect Engineer (HP acquired Apollo and later broke it up)

- Connectorization & wiring of Mainframes, Workstations, DeskTop, PDAs; corporate commodity technical member & TQRDC supplier evaluator; first Zpack, SCSI-2 user; pioneer user of Z-axis connector systems; developed HIPPI, TokenRing, Ethernet

optical & copper interconnect systems; co-leader of failure analysis labs. Co-leader of DfX and concurrent engineering processes; new products program co-leader.

1985-1988 Apollo Computer – Principal Component Engineer (Apollo was a Data General spinoff)

- Connectorization & wiring of Workstations; research/development of novel interconnect systems; pioneer user of SMT SIMM, FDDI optics, I/O coil cords, EISA/VME backplanes, MCM, QFP & PGA sockets; co-developer of CAE/CAD/CIM package for level 2-6 interconnect; developer of state of the art qualification systems with Contech Research & McKenzie Engineering; developed novel EMC & Safety solutions with FCC & UL; Creator & leader of corporate commodity team; co-leader competitor lab; saved \$3million in part costs & NRE; reduced supplier base by 50%

1984-1985 Lockheed Sanders – Interconnect Engineering Contractor

- Two high-speed IO military weapons special interconnection projects.

1977-1984 Data General – Manager, Interconnect Engineering (Data General was a DEC spinoff)

- Managed cross-matrix teams, new product design of backplanes, connectorization, wiring & harnesses within Micro&Mini-computers, Laptops, and Storage systems; first user Fujitsu Consyde backplane connector systems, ATT ST fiberoptic system, DIN Mezzanines; generated 4000+ assemblies, qualified 6000+ components; generated design/quality/documentation standards; supervised 10+ employees & managed \$700k budget; TigerTeam leader, “Hardy Boy” in The Soul of a New Machine by Tracy Kidder Pulitzer Prize Winner; alpha site leader for McAuto CAD; captive cabling team leader in charge of annual \$12M of production and \$20M purchased assemblies. Key leader of Eagle MV engineering product development team that achieved a new level of time to market and performance jump up. Co-led skunkworks laptop and workstation prototype successful builds.

1973-1977 3M/Linolex – Manager, Cable Assy Engineering & Mfg

- Flat ribbon harnesses, PCB/cabling adapters, IDC connectors, discrete wire cables, and harnesses; captive cabling & final assembly computer manufacturing engineering supervisor. Led connectorization and cabling of Mini-Computers. Did some Field Application engineering projects. Helped corporate 3M develop new raw cables and new connector products. Designed several PCBs for new products.

1971-1973 GenRad – Supervisor, Connector/Cabling Design, & Mfg

- Rigid, semi-rigid & flexible coax; flex circuits; power distribution harnesses; 600+ wire I/O distribution harnesses; custom sockets & mezzanine connectors for test instrumentation; captive cabling production team leader. Led connectorization and cabling of leading-edge ATE products.

Industry Activities

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- Consultant work for STA, FCIA, PICMG, Ethernet Alliance, IBta; Efficere Technologies, Wilder-Tech, Morgan Connector, Morgan Labs & Octavian Scientific copper interconnect companies; Valdor, EShield, PATSI optical interconnect companies; Ovum, CIR, LightCounting, market research companies
- Ghost analyst with RBC, Gartner, iSupply analysts
- Technical Director for TurboTools.com; an interconnect EDA software co.
- Legal Expert Witness and Prior Art researcher for several Patent Attorneys, OEMs, and Interconnect companies.
- Virtual Design Platform member with Mellanox, Intel, HPE, IBM and HPE SGI, etc.
- ANSI industry expert for new engineering words/definitions, acronyms, schematics
- 10+yrs published article writer and author with www.ConnectorTips.com contributing 100+ online leading-edge optical and copper interconnection articles and some new ones coming on the first page soon.
- 18yrs Interconnect Blogger
- 35yrs Columnist, Advisory Editor, Ghost and Guest Blogger with Connection Specifier Magazine, InterconnectionWorld ezine, Cabling Installation & Maintenance magazine.
- 22yrs Author, Co-writer with ConnectorSupplier, EBN, EET, IICIT, EDN.
- 22yrs Co-editor, Co-writer, Ghost-writer, technical contributor with VESA, USB, IEEE-1394, PCMCIA, IEEE-802.3-Ethernet, T11-FiberChannel, T9-HIPPI, T10-SCSI/SAS, SATA, SATA Express, IEEE-1586, T11-HIPPI, SMPTE, NGIO, FIO, InfiniBand, PCI Express, PICMG, VITA, CCIX, Gen-Z, COBO, SFP msa, SFP-DD msa, microQSFP msa, OSFPmsa & QSFP-DDmsa. Frequent liaison representative between multiple IO organizations.

40yrs Birds of a Feather collaborator, entrepreneur, stealth marketing

24yrs Speaker; IICIT, Fleck Connection Congress, Nepcon, Electro, Wescon

35yrs Presenter; OEM Marketing, Technology Councils, Materials Teams

45yrs Trainer; Multi-level Suppliers, Sales/Marketing/Engineering, TigerTeams

24yrs Analyst; ServerIO Forum, IBta, IDF, ITC, GEA, FCIA, SNIA, and OCP

independent industry expert

25yrs Marketeer; booth management at EA Interop, EA Supercomputing, EA OFC, IBta, IDF, NAB, N+I, PCI-SIG, Comdex, SID, and DesignCon

Education

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- 50+ years of diverse High Tech, Leading-Edge Systems Packaging Industry Experience.
- 160 credits as math/chem/English/fiberoptics major with Boston University, UMASS, and UofArizona.
- 40+ post-graduate credits of Management/MBA/MTA with Northeastern U thru Data General onsite program.
- 15 years of onsite corporate Management courses, Data General, HP, Apollo, Sequent, and Volex.
- 4yrs of Toastmasters with total program achievement at DataGeneral.

- Multiple Advance Component Qualification courses with Max Peel, and Joe McKenzie.
- Did college internships at DEC, Matrix Research, BowMar as an industrial designer and backplane wire-wrap & RF Twinax harness manufacturing engineer.
- 4yrs evening Technical School for machining, drafting, technical writing, assembler, prototyping, field troubleshooting, and failure analysis courses.
- Continuous industry reading of publications, industry websites, and competitor literature.
- Home office virtual and global mobile worker since 1992.

Key New Product & Process Development Milestones & Design-ins

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DEC –Wirewrap Backplanes for PDP mainframes; industrial design/enviro test cabinets

3M Linolex – first .125" IDC ribbon/discrete connectors & cables

3M Linolex – first .100" IDC ribbon harnesses

Data General – first ST optical connector user with ATT

Data General – first FCC-compliant shielded over-molded connectors & cables

Data General – first FCC-compliant backshell cables with AMP

Data General – first twist n' flat cables/harnesses

Data General – first SCSI laminated flat-to-round cables

Data General – first DIN stacked Mezzanine data plane (no Backplane)

Data General – first .1"x.1" backplane conns & cables with Fujitsu Consyse

Data General – automated, hot air knife reflow soldering systems for BPs & HSIO data cables

Data General – first .1"x.1" IDC shielded IO cables, hand & automation assembly tools

Data General – first commercial HIPPI 800 connectors & cables

Data General – first IPI-1, SCSI-1 connectors & cables

Data General – first V.35 over-molded cables

Apollo – first workstation video combo cables

Apollo – first shielded I/O coiled cords.

Apollo – first over-molded DIN & IPI-2 cables

Apollo – second SIM user after Wang/ first angled SIM user

Apollo – first EISA angled connectors with Burndy

Apollo – first SCSI-2 user

Apollo – first interstitial PGA socket user with McKenzie

HP – first over-molded VHDCI connectors and cables

HP – first Zpack backplane connector user with AMP

HP – first Betaphase compression connector user

HP – first X-ray Fluorescence Gun user for measuring plating types/thicknesses

Sequent – first SCSI-3 user; over-molded Y cables, angled cables, terminators

Sequent – first embedded terminator with LED SCSI-3 cables

Sequent – first custom SCI with SRTS SCSI-3 conns

Contex – first hammerhead SCSI-3, SCSI-3/SCA adapters

Contex – first custom SCI with MDR for SUN

Contex – first custom NUMA-2 with MDR for SGI, Data General

Contex – first HSSI-2 cable assy supplier w/Cisco

Contex – first over-molded T1/E1 harnesses w/Nortel
 Contex – first EBBI cable assy supplier; w/IBM, Molex
 Contex – first VHDCI cable assy supplier; std creator w/DEC
 Contex – first PCMCIA ca assy supplier; std leader w/3COM, JAE
 Contex – first SSA ca assy supplier; std leader w/IBM, ITTCanon
 Contex – first FC ca assy supplier w/ 9pHSD for IBM
 Contex – co-leader VESA P&D std w/SGI, Molex
 Contex – IEEE-1394 PHY standards leader w/ Apple, Molex
 Berg – first LC optical connector design; before Lucent
 Berg – first MPO silicon style design-in w Bell Labs acquisition
 Berg – custom GbE using over-molded 1394-1995 connectors for Cisco
 Berg – custom PCI extender using 80p Amplitite for Intel
 Berg – co-leader SCA standard; first SCSI-3 to SCA flex assys
 Berg – first press-fit SCA
 Berg – FibreChannel Tape 80p SCA proposal w/HP, StorageTek
 Berg – IEEE-1596 SCI design-in using 50p VHDCI w/DG, Dolphin
 Berg – HIPPI-6400 stds design-in w/Micropax for SGI, Raytheon
 Berg – design-in of first overmolded SMZ harnesses for Lucent
 Berg – FibreChannel stds HSSDC-1 design-in for SUN, AMP
 Berg – IEEE802.3z 1 GbE design-in with HSSDC-1 for HP, Intel
 Berg – custom HSSDC-1 SAN for, cLAN, ServerNet-2, S/P
 Berg – custom HSSDC-1 VOD for Ncube, GVG, SeaChange
 Berg – custom HSSDC-1 SDI design-ins, Panasonic, Tektronix
 Berg – custom HSSDC-1 ByNet design-in with NCR
 Berg – second VESA/P&D ca assy supplier for IBM
 Berg – initiator of DVI-1 w/Intel, Molex
 Berg – RIO design-in with HPC & Micropax cables for IBM
 Berg – Synfinity design with Micropax cables for Fujitsu
 Berg – SebringRing-2 design-in with quad VHDCI for Intel
 Berg – F-16 design-in with Metral conns, cables for Intel
 Berg – FibreChannel design-in of SG w/SUN, 3M
 Berg – NGIO design-in with HSSDC-1 conns, cables w/Intel
 Berg – NGIO BP connector design-in with Metral 3K w/Intel
 Berg – initiator of SSI PS design-in with PowerBlade for Intel
 Berg – co-initiator of Pentium Module design-in with MegArray
 FCI – initiator of SSI Memory Module design-in with MegArray
 FCI – initiator of circular & rectangular shelled RJ45 & USB MIL
 FCI – first PCI/HIPPI-6400; dual VHDCI w IBM, Compaq, SGI
 FCI – custom 4-channel FibreChannel with over-molded VHDCI, Quickie
 FCI – InfiniBand BP proposal using Metral 3K w/Intel, SUN, Dell
 FCI – InfiniBand Speedpac true second source
 FCI – InfiniBand 4x, 12x MicroGigaCN true second source
 FCI – InfiniBand link design-in of HSSDC-2, MPO w/Intel, SUN
 FCI – PLX Ring design-in with over-molded 90p VHDCI cables for Intel
 FCI - HyperTransport design-in of MicroGigaCN w/AMD, Fujitsu
 FCI – 10GFC, 10GbE, design-in of MicroGigaCN w/Intel, Fujitsu

FCI – 10G ATM/SONET design-in MicroGigaCN w/Fujitsu
 FCI – XGP design-in of MicroGigaCN w/Stratos, Fujitsu
 FCI – pRapidIO design-in of MicroGigaCN w/Motorola, Fujitsu
 FCI – sRapidIO proposal for MicroGigaCN w/Motorola, Fujitsu
 FCI – IB Switch BP connector proposal using Metral 4K w/Intel
 FCI – IB Reverse FF BP conn proposal using Metral 4K w/Intel
 FCI – HyperTransport design-in of VHDCI w/AMD, Cisco
 FCI – FibreChannel design-in of MU for NTT, Cisco
 FCI – FibreChannel design-in of MPO w/Vixel, US Conec
 FCI – FibreChannel design-in of HSSDC-2 w/Brocade, Tyco
 FCI – FibreChannel 40Gbs (5.0x8) MicroGigaCN proposal
 FCI – USB, FCIA, IB, DVI self-certification programs
 FCI – InfiniBand design-in of MicroGigaCN
 FCI – initiator of internal SATA design-in w/Intel, Molex
 FCI – initiator of external SATA proposals w/Sl, Quantum
 FCI – initiator of DVI-2 standard w/Intel, Molex
 FCI – custom F-16 bus w/160p Micropax for Compaq
 FCI – Xenpak MSA design-in of MegArray & GigaArray w/ Agilent, IBM, Infineon, Picolite, Nortel, Network Elements & Lucent.
 PATSI – woven fabric optical fiber MT backplane design concepts
 PATSI – woven fabric ruggedized MPO/MTP ribbon FO cables
 PATSI – woven fabric active optical ribbon FO cable designs
 PATSI – woven fabric round ribbon designs
 PATSI – woven fabric optical fiber Frontplane harness design
 PATSI – woven fabric optical fiber Dual Star backplane design
 PATSI – woven fabric optical fiber Full Mesh backplane design
 PATSI – woven fabric optical fiber Orthogonal Mid-plane design
 PATSI – woven fabric Plug n Play internal harness design.
 PATSI – woven fiber circuit boards w active optical chip concepts
 Meritec – MicrogigaCN design-in; Raytheon, Lockheed, Northrup
 Meritec – MicrogigaCN design-in with Alcatel's Stackplane IO
 Meritec – first direct-attached XAUI cables.
 Meritec – first RocketIO and Aurora cables with Xilinx
 Meritec – 10G Base CX-4 design-in of MicrogigaCN
 Meritec – first 10G Base CX-4 cables for HP
 Meritec – first 4G & 8G FC, SFP cables for HP
 Meritec – first 10G FC copper Twinax, ribbon cables for QLogic
 Meritec – first angled & z-axis 10G InfiniBand IO cables
 Meritec – first InfiniBand SFP design-in with Mellanox
 Meritec – first 2 + 4 lane SFP copper cable design-ins
 Meritec – semi-private label 2mm cables with ERNI
 Meritec – first ZD prototype cables for ATCA and ERNI
 Meritec – first PCI-E 2.5G MicrogigaCN cables w PLX and OneStopSystems
 Meritec – first SATA testbed connectors for SATA disk drives
 Meritec – first .8mm mezzanine controlled-impedance connectors.
 Meritec – first NumaLink-3 eMDR cables for SGI

Meritec – first SATA/FC smart adapter for EMC
 Meritec – first angled and mirrored PCI-X edge connectors
 Meritec – first PCI-E angled & mirrored edge card connectors.
 Meritec – first PCI-E 16x, 32x full architecture edge card cables
 Meritec – design-in of MicrogigaCN for HyperTransport-1
 Meritec – design-in of MicrogigaCN for SAS-1&2, SATA-2
 Meritec – design-in of 24G per lane 12-Lane MicrogigaCN for Serial RapidIO
 Meritec – first toplatch SFF-8470 & Pwr, SideBand & active design
 Meritec – SFP+ design proposal accepted with Broadcom.
 Meritec – first industry QSFP design-in with Mellanox
 Meritec – first industry stamped contact SFP+ and QSFP designs
 Meritec – first MicroSpeed mezzanine micro-coaxial cables
 Meritec – design-in of MicrogigaCN for IB QDR 10G per pair 4x
 Meritec – first 20G per pair SFF-8470/8473 4x
 Meritec – led design-in of MicrogigaCN for 40/100G Ethernet.
 Meritec – first VPX copper cable IO, modular plug for VITA
 Efficere/WilderTech – best in class SFF-8470, SAS, HDMI, DisplayPort test boards and cables. First 25-28G per lane test boards.
 First PCB-based plugged SFF-8470 cable assembly designs
 First Active Copper SFP, QSFP BoF industry-standard design-in member
 First AMC, uTCA, COM Express expander copper cable designs
 First 10G Cinapse, PogoPin, and Z-axis film circuited semi-rigid, semi-flex plugged cable assemblies and PCB receptacles. Before Winchester SIP and Tensolite HDI
 First Terapipe 50G per pair twin-axial compression connectors and cable assemblies
 First MMDP connector & and cabling design replacing RJ45, SFP+, and QSFP+ connectors in new higher-density server racks. MMDP was the fore-bearer of the new TYPE C connector. Smaller Firewire and other IO
 First 4x Thunderbolt style design for front panel hydra copper and active optical cable assemblies for 10ft racks with 80-160 servers and ToR switch
 Siemon – early RJ45 25GBaseT & TERA 40GBaseT Cat 8 & Cat 8.1 solutions; Circular and rectangular shelled RJ45 assemblies for Industrial Automation companies.
 Siemon – first Luxtera AOC QSFP+ private label product
 Siemon – early 34awg STP 10GBaseT designs for ToR, EoR
 Siemon – early QSFP+ hydra cable to four SFP+ product for ToR
 FiberCircuit LLC – stacked ribbon fiber midplanes; dual-star, full mesh
 FiberCircuit – stacked ribbon fiber backplane designs w/Velcro
 FiberCircuit – woven or stacked ribbon fiber active circuit boards
 FiberCircuit – woven or extruded molded ribbon fiber modules and micro-dataplanes designs.
 FiberCircuit – hybrid Twinax, PCB & fiber circuit midplanes, backplanes, and blades designs; VOC & design concept for new multi-fiber connector like later MXC.
 Volex – over-molded stacked translucent ribbon fiber optical midplane design & and prototype for very new storage and blade arrays with Xyratex/IBM.
 Volex – over-molded stacked ribbon fiber backplane designs for telecom, server, storage & video switches.
 Volex - initiated HDminSAS 12G cable development

Volex – initiated CXP 14G, CXP 28G copper cable development
 Volex – initiated SFP+, QSFP+ 28G copper cables development
 Volex – micro-SFP+, microQSFP+ designs for Mellanox
 Volex – SFP+ active copper 2x & 4x cable assembly design
 Volex – zQSFP+ active optical to four zSFP+ cable concept
 Volex – 100G SFP+ active optical WDM cable concepts for EoR to ToR or MoR or various rings ala Plexxi and PCIe
 ZPlane – ZLink Backplane 100-400+G Cu FinRail concepts
 ZPlane – ZLink Baseboard 12-24G Cu FinRail products for PICMG applications
 ZPlane – ZLink Blade 25-50G Cu FinRail PCBAs prototypes
 ZPlane – ZLink Midplane 100-400G FinRail PCBAs concepts
 CrossPort Networks – first USB3.1 Host to Host Bridge & Switch
 Luxshare – IEEE802.3cd design-in of QSFP-DD, OSFP & uQSFP
 Luxshare – first OSFP Jump Over Chip2IO internal cables.
 Luxshare – first design-in opportunity with GenZ for new 1002 connector& cable selection
 Luxshare – contributed to the first custom over-molded USB Type C connectors and cables
 Senko – coached design-in support of CS and SN optical connectors in 8 standards



I helped with the Link budget, form factors, topologies, reaches, media types, and speed rates in the GenZ PHY committee as well.

One recent type of BIO below:



Ed Cady
Contributing Editor
Design News

Ed Cady is an independent consultant providing Interconnect technical and business advisement. He has substantial experience and expertise in the Super Computer, HPC, Communications, Cloud, Data Centers, PC, Storage, Memory, Mobile, Video-AV, Consumer, Industrial, Automotive and Medical market segments. He is recently focused on helping customers with M&A, Business Development, Technology Research, Product/Process development, Prior Art research, Patent litigation and Expert Witness work.

DesignNews webinar

Summary

3 Simple Steps to Ensure Your Design Uses the Right Connectors and Cables

In today's world of complex and high-speed data devices in communications, automotive harnesses, and industrial equipment networking design, the connectors and cables often determine the overall system performance. But how does an engineer or technician select the correct terminal and connecting hardware for specific environments?

This webinar will address what factors you need to consider when selecting connectors and cables to optimize system design in high-speed communication, autonomous automotive, and modern industrial applications.

Attend this webinar and you will:

- Get an understanding of the role connectors and cables play in overall system performance
- Learn how to select the optimal connector for specific hardware designs in major industries
- Gain insight into the trends occurring in the connector space, especially with high-speed data

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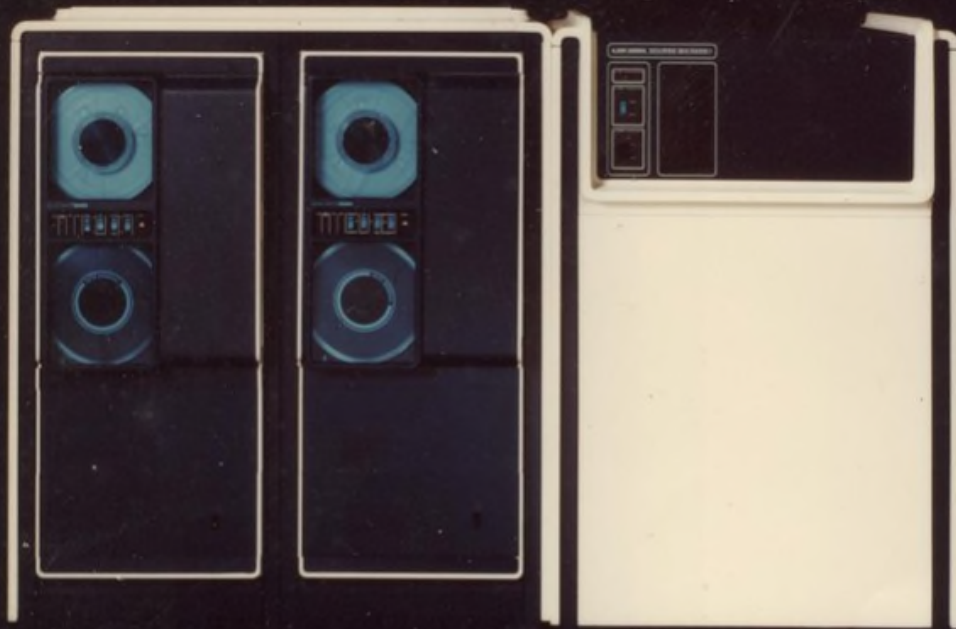


ALLIED
ELECTRONICS & AUTOMATION

July 15 2021
example of a connector webinar I delivered

This is an

ECLIPSE MV/8000 + AOS/VS



WE DID IT RIGHT - 4/29/80

 Data General

this is an example of a ground-breaking industry-leading mini-computer system that I co-led the design and tooling development with my Tiger team wired for power, controls, blowers, backplane, communications, processor, and switch data signaling boards and cables/modules. This Eagle mini-computer system product jumped two generations ahead of all competing products, especially DEC and IBM for several years.