

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

**PETITION FOR INTER PARTES REVIEW
OF U.S. PATENT NO. 11,880,075**

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EXHIBIT LIST

Exhibit No.	Description
1001	U.S. Patent 11,880,075
1002	Prosecution History U.S. Patent Application 18/483,949
1003	Declaration of Edward M. Cady, Jr.
1004	U.S. Pat. No. 7,284,912 (“Suzuki”)
1005	JP 3886619 (“JP610”)
1006	JP 2001-305391 (“JP391”)
1007	JP 2573482 (“Shimozu”)
1008	U.S. Patent 5,222,168 (“Saito”)
1009	CN201740886U (“Chen”)
1010	U.S. Patent 6,224,268 (“Manning”)
1011	U.S. Patent 6,419,399 (“Loder”)
1012	U.S. Patent 7,347,634 (“Günther”)
1013	U.S. Pat. App. Publ. No. US 2012/0141072 (“Katagiyama”)
1014	ITC Claim Chart
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

Exhibit No.	Description
1019	U.S. Patent 6,918,704
1020	Prosecution History U.S. Patent Application 61/789,499
1021	Prosecution History U.S. Patent Application 14/214,931
1022	Prosecution History U.S. Patent Application 15/855,750
1023	Prosecution History U.S. Patent Application 16/214,317
1024	Prosecution History U.S. Patent Application 17/145,864
1025	Prosecution History U.S. Patent Application 17/857,300
1026	Stay Order
1027	Claim listing for U.S. Patent No. 11,880,075

I. INTRODUCTION

Senko Advanced Components, Inc. (“Senko” or “Petitioner”) requests *inter partes* review, seeking cancellation of Claims 1-21 of U.S. Patent 11,880,075 (“the ‘075 Patent”; EX1001) assigned to US Conec Ltd. (“PO”). In support of this Petition is a declaration by Edward Cady—a respected expert in the field of fiber optic connector design. EX1003: ¶¶1-5.

II. IDENTIFICATION OF CHALLENGE

A. Asserted Prior Art

The ‘075 Patent alleges priority to Provisional Application No. 61/789,499, filed March 15, 2013.

The following references were published more than one year before the March 15, 2013 earliest potential priority date and constitute prior art under pre-AIA §102(b):

- U.S. Patent 7,284,912 (“Suzuki”), EX1004
- JP 3886619 (“JP610”), EX1006
- JP 2001-305391 (“JP391”), EX1005
- JP 2573482 (“Shimozu”), EX1007
- U.S. Patent 5,222,168 (“Saito”), EX1008
- CN201740886U (“Chen”), EX1009
- U.S. Patent 6,224,268 (“Manning”), EX1010
- U.S. Patent 6,419,399 (“Loder”), EX1011

- U.S. Patent 7,347,634 (“Günther”), EX1012
- U.S. Pat. App. Publ. US 2012/0141072 (“Katagiyama”), EX1013

B. Statutory Grounds for Challenge

Petitioner advances the following grounds of unpatentability.

Ground	References	Basis	Claims Challenged
1	Suzuki, Shimozu	§103	1-9, 11-13, 15, 17, 19-20
2	Suzuki, Shimozu, Saito	§103	3-5, 16, 18, 21
3	Suzuki, Shimozu, JP391	§103	10
4	Suzuki, Shimozu, Katagiyama	§103	14
5	Suzuki, Shimozu, Chen	§103	1-9, 11-13, 15, 17, 19-20
6	Suzuki, Shimozu, Saito, Chen	§103	3-5, 16, 18, 21
7	Suzuki, Shimozu, JP391, Chen	§103	10
8	Suzuki, Shimozu, Katagiyama, Chen	§103	14
9	JP610, Manning, Loder	§103	1-13, 15-21
10	JP610, Manning, Günther	§103	11
11	JP610, Manning, Loder, Katagiyama	§103	14
12	JP391, Saito	§103	1-13, 15-21
13	JP391, Saito, Katagiyama	§103	14

EX1001: 4:32-35; EX1003: ¶28. The projections (320) and (322) further have different widths so as to act as polarity keys. EX1001: 4:39-44; EX1003: ¶29.

B. Background of the Art

The prior art references in this Petition each pertain to fiber optic connection systems and are in the same field of endeavor with each other and the '075 Patent. EX1003: ¶30-35.

1. Suzuki

Suzuki discloses an “optical fiber interconnect system” using a push-push latching mechanism. EX1004: Abstract, 5:62-7:5, Figs. 7a-7f; EX1003: ¶¶36-39.

Of relevance to this Petition—Suzuki’s connector includes an MT ferrule (7), a housing (9), and a boot (4). EX1004: 4:34-50, 5:4-7, Figs. 2-3; EX1003: ¶40. The Suzuki connector further includes a “dual pin” (11) for actuating a push-push flipper and latching the connector within an adapter. EX1004: 5:46-61; EX1003: ¶41.

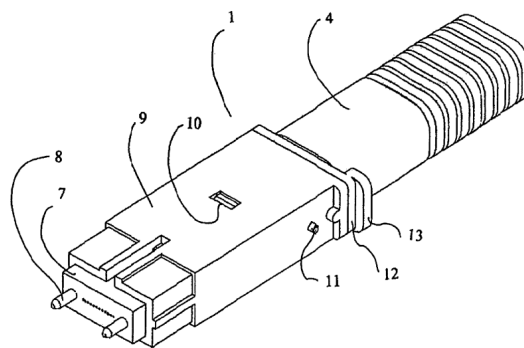
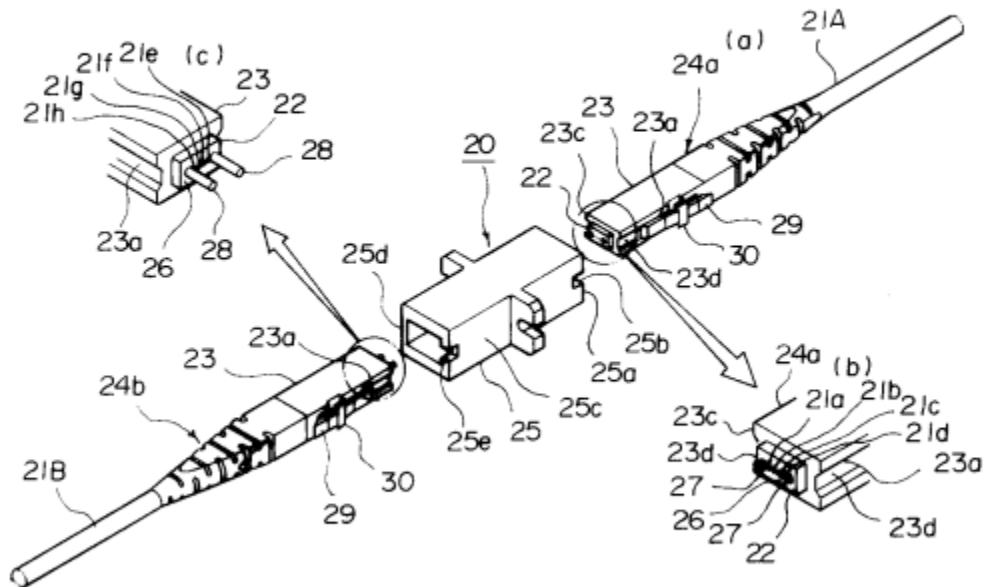


Fig. 2

EX1004: Fig. 2.

2. JP610

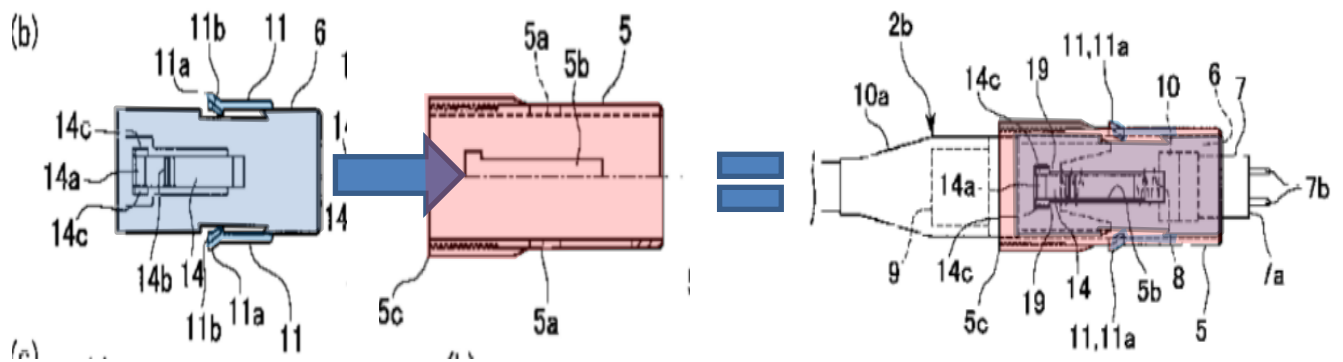
JP610 discloses a fiber optic connector comprising a “plug housing” (23) (*i.e.*, a ferrule holder), an MT ferrule (22) housed in the plug housing, and a “release lever” (29) (*i.e.*, a latching mechanism). EX1005: [0010]-[0012]; EX1003: ¶42.



EX1005: Fig. 1.

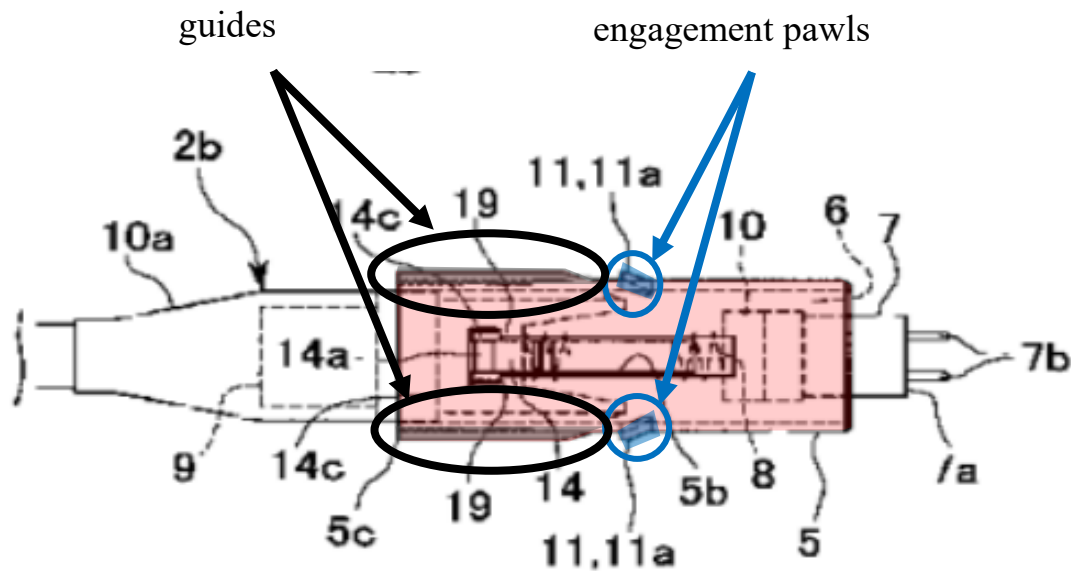
3. JP391

JP391 discloses an optical connector system including a connector. The connector comprises an inner sleeve (6) (blue below) and outer sleeve (5) (red below) which collectively act as a ferrule holder. EX1006: [0009], [0011], Fig. 5(b); EX1003: ¶43.



EX1006: Figs. 7(b), 6(a), 5(b) (annotated); EX1003: ¶43.

The JP391 connector includes guides (unlabeled) and engagement pawls (11)—*i.e.*, latches—on its top and bottom sides. EX1006: [0011]; EX1003: ¶¶44-47.

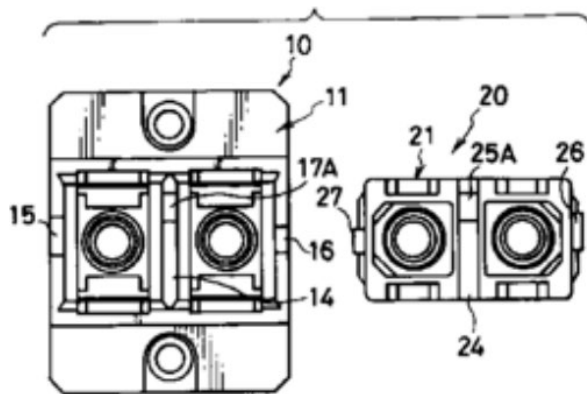


EX1006: Fig. 5(b) (annotated); EX1003: ¶44.

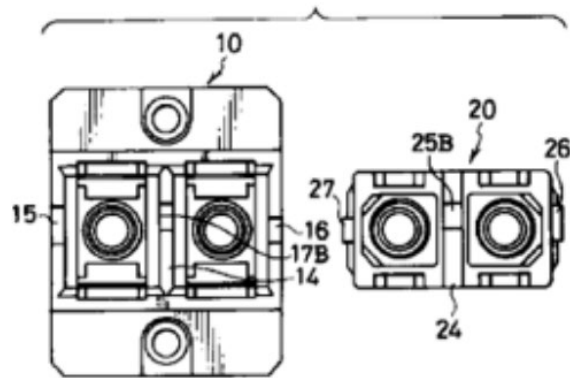
4. Shimozu

Shimozu discloses a double-core optical connector comprising a connector plug. EX1007: [Claim 1]; EX1003: ¶48. Shimozu teaches using two identification guides (26, 27) on the connector plug and corresponding mating keyways (15, 16) in the adapter. EX1007: [0011]; EX1003: ¶49.

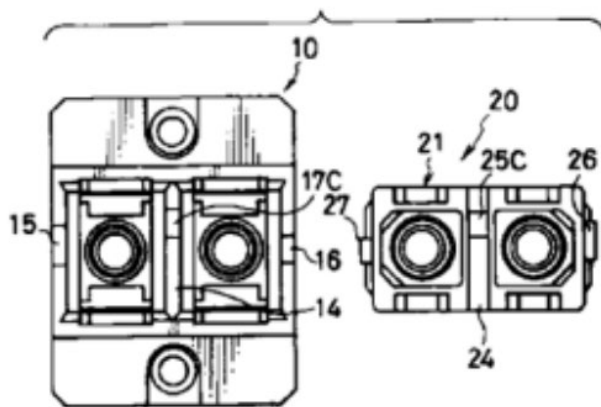
[FIG. 2]



[FIG. 3]



[FIG. 4]

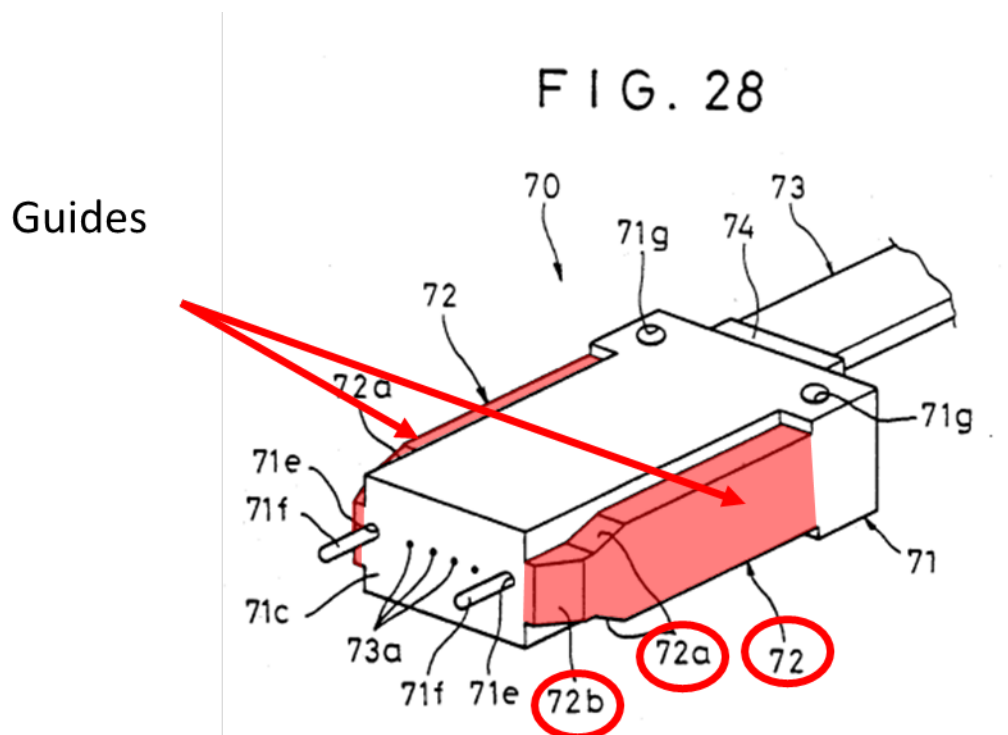


EX1007: Figs. 2-4.

Specifically, Shimozu teaches sizing the widths of the two identification guides—and their corresponding keyways—differently to ensure proper polarity. EX1007: [0012], [0014]; EX1003: ¶50.

5. Saito

Saito discloses a number of fiber optic ferrule embodiments using chamfered surfaces to assist in aligning them as they are inserted into adapters. EX1008: Abstract, 10:41-11:35, Figs. 2, 7, 12, 20, 24-26, 28; EX1003: ¶51-56. For example, the embodiment depicted in Figure 28 includes guides (72) having chamfered surfaces (72a and 72b) to align the ferrule both width and height wise. EX1008: 11:56-64; EX1003: ¶¶57-58.



EX1008: Fig. 28 (annotated); EX1003: ¶58.

6. Chen

Chen discloses a fiber optic connector. EX1009: [0001], [0027], Fig. 3A and 3B; EX1003: ¶¶59-60. The Figure 3B embodiment of the Chen connector has a projection and a cantilever latch (7) on its top side. EX1009: [0033], Fig. 3B; EX1003: ¶¶61-62.

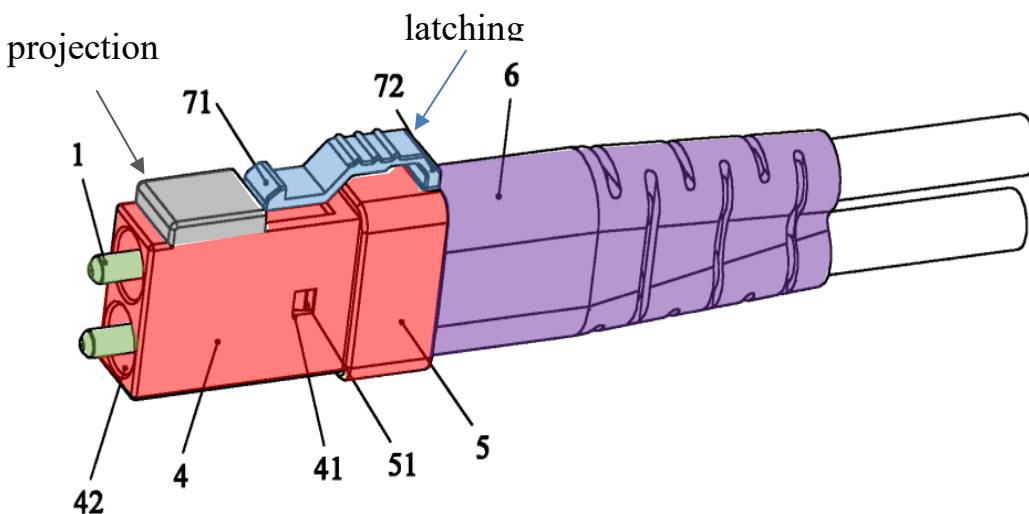
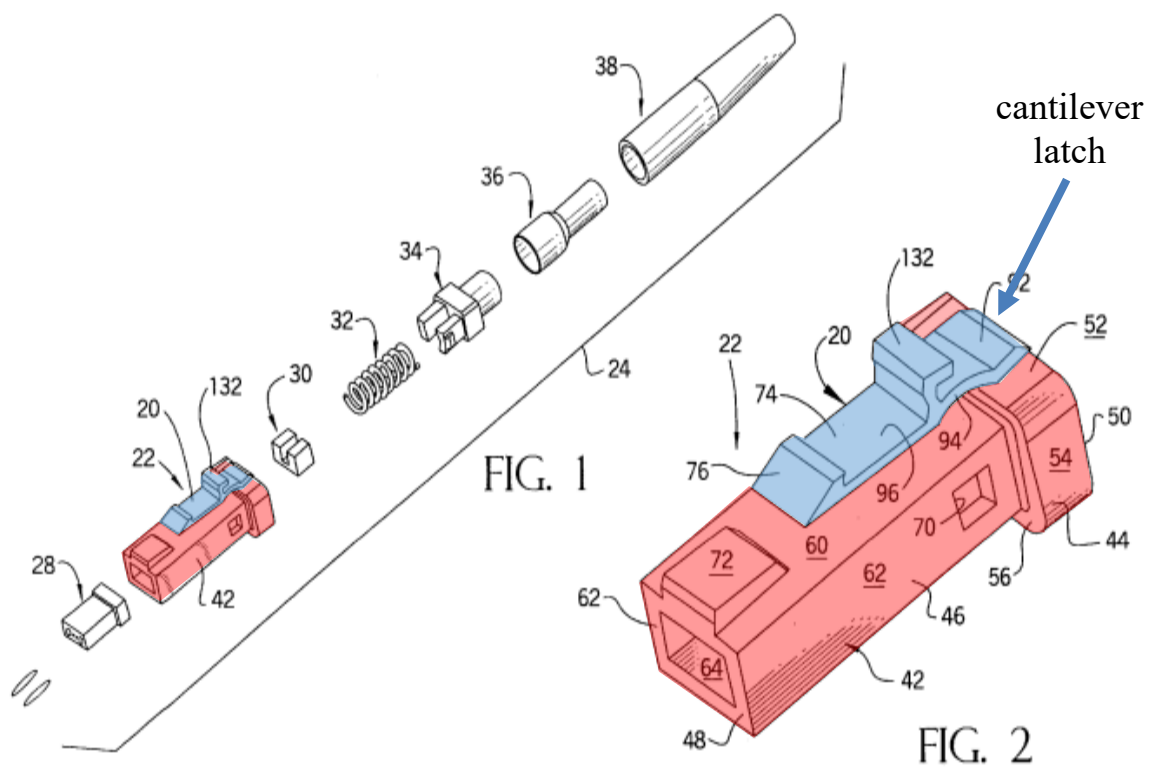


图 3B

EX1009: Figure 3B(annotated); EX1003: ¶62.

7. Manning

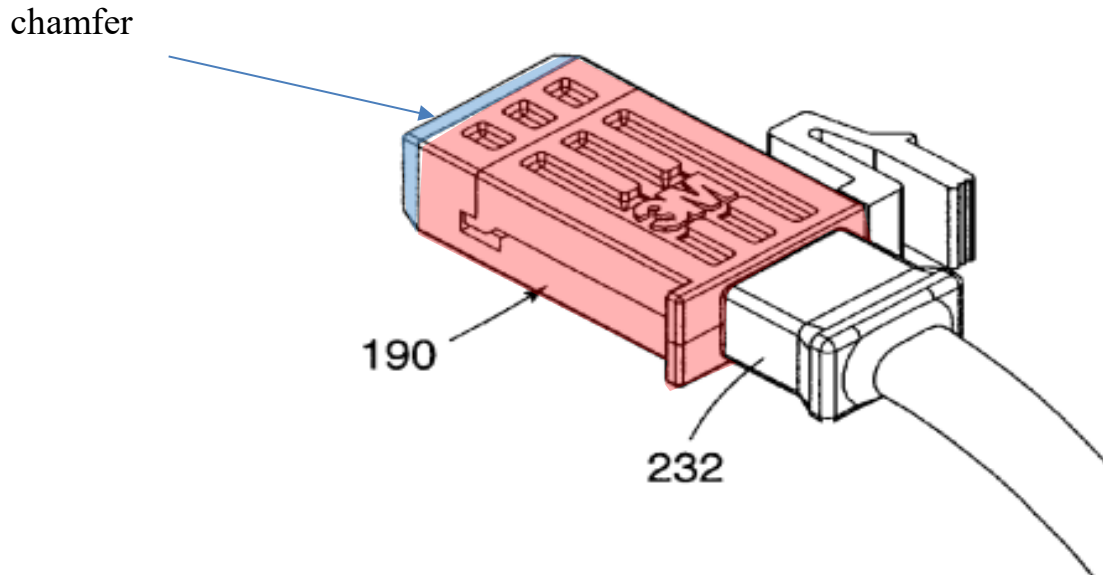
Manning discloses a fiber optic connector incorporating a “forward-facing, aft-attached” cantilever latching mechanism designed to prevent loose cables from getting tangled on the latch. EX1010: abstract; 1:30-39, 2:1-12; EX1003: ¶63.



EX1010: Figs. 1, 2 (annotated); EX1003: ¶63.

8. Loder

Loder discloses a fiber optic connector system. EX1011: Abstract; EX1003: ¶64. Of relevance, Loder depicts its connector as having chamfered edges at the front end of the ferrule holder:

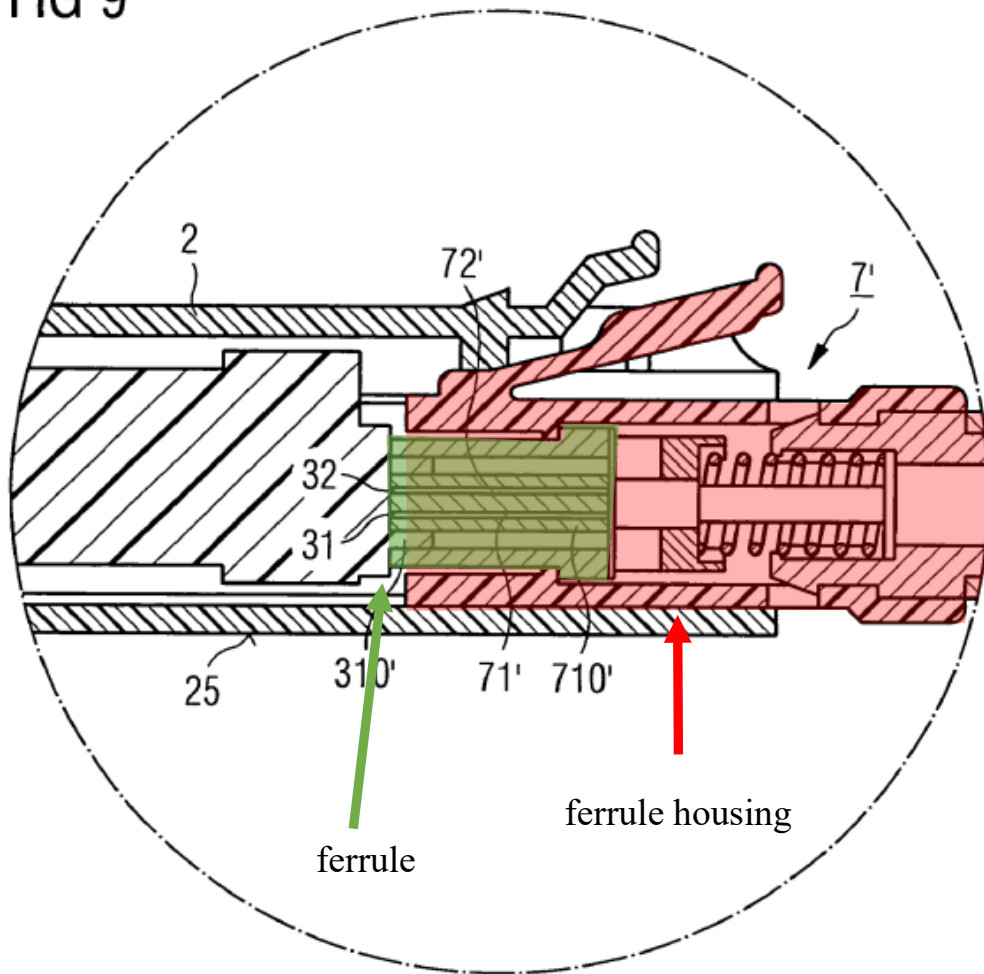


EX1011: Fig. 12 (annotated); EX1003: ¶65.

9. Günther

Günther discloses optoelectronic systems that include optical plugs. EX1012: Abstract. Of relevance to this Petition, Figures 8 and 9 depict optical plugs in which a spring biased multi-fiber ferrule (710') is contained within a ferrule housing. EX1012: 9:24-37, Figs 8, 9; EX1003: ¶¶66-67.

FIG 9



EX1012: Fig 9 (annotated); EX1003: ¶67.

10. Katagiyama

Katagiyama discloses an optical connector comprising a spring biased ferrule slidably disposed in a housing. EX1013: [0001]; EX1003: ¶69.

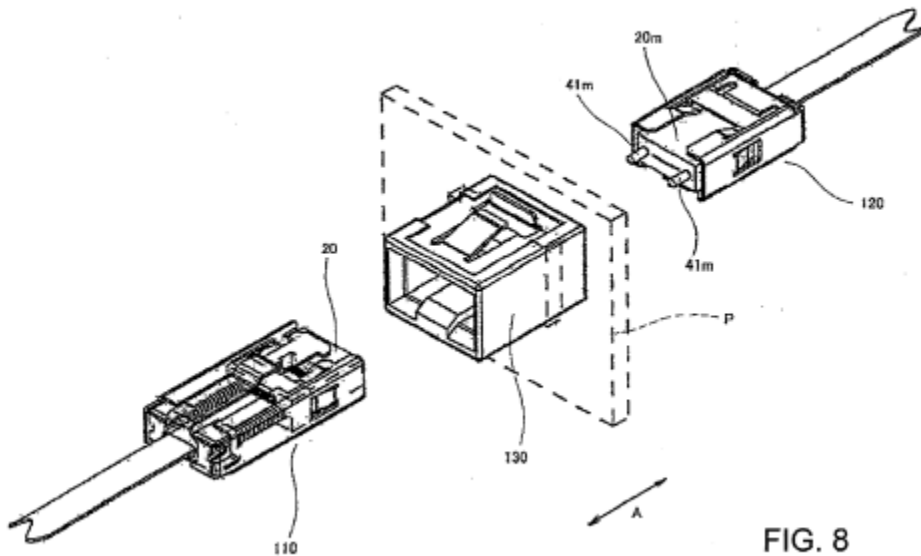


FIG. 8

EX1013: Fig. 8.

Katagiyama teaches the ferrule can be flush with or protrude from a front end of the housing. EX1013: Claim 9; EX1003: ¶69.

C. Level of Ordinary Skill

The person having ordinary skill in the art (“POSA”) would have: (1) at least a bachelor’s degree in mechanical engineering, electrical engineering, physics, or a related field and three years of experience in fiber optics and fiber optic connectors; (2) a master’s degree in 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. EX1003: ¶20.

The level of ordinary skill is not determinative here, as those of less or more skill would also find the claims obvious. EX1003: ¶21.

IV. CLAIM CONSTRUCTION

In an IPR, the Board gives claim terms their ordinary meaning as understood by a POSA. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005); 37 C.F.R. §42.100(b).

A. “Latching Mechanism”

Petitioner identifies the claim term “latching mechanism”—as recited throughout the claims—as invoking 35 U.S.C. §112(¶6) means-plus-function claiming, as “mechanism” is a nonce-substitute for the word “means.” In identifying the structure corresponding to the “latching mechanism,” the ‘075 Patent specification only discloses a cantilever latch extending from the ferrule holder housing. EX1001: 4:32-35, Fig. 5A; EX1003: ¶¶71-74.

In the parallel ITC proceeding, PO has effectively taken the position that the recited “latching mechanism” is not limited to the structure disclosed in the specification and its equivalents. Specifically, PO’s infringement contentions identify a stationary component located within an opening of a sliding outer housing as meeting the limitation. *See e.g.*, EX1014: 14-17.

Grounds 1-4 apply PO’s anticipated claim construction arguments, while Grounds 5-13 are applicable under either construction.

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

A. Independent Claim 1

1. [1.p]¹

Suzuki discloses “[a]n optical fiber interconnect system comprising a connector for carrying an array of optical fibers.” EX1004: Abstract; EX1003: ¶79. The connector is disclosed as being capable of handling “multi-channel MT standard ferrules”—*i.e.*, multi-fiber ferrules. EX1004: 2:54-56, *see also* EX1004: 1:23-28, 1:53-54, 2:39-44, Figs. 2-3; EX1003: ¶80.

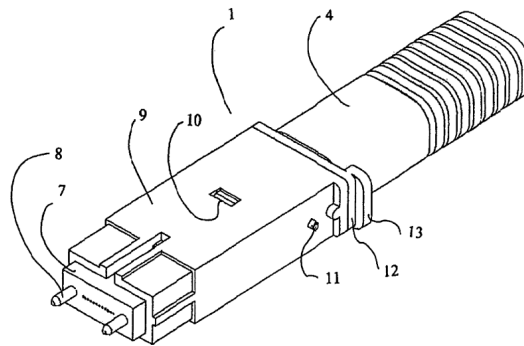


Fig. 2

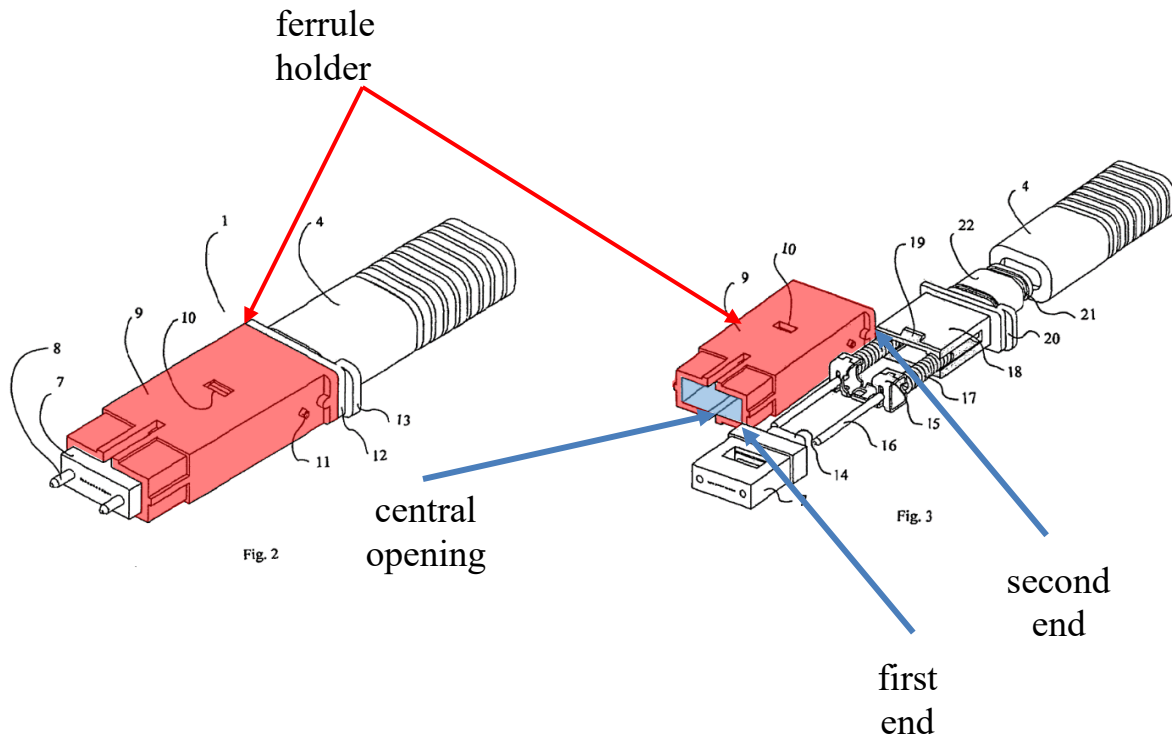
EX1004: Fig. 2.

Suzuki discloses [1.P].

¹ Petitioner’s headings (1.P, etc.) correspond to the claim limitations outlined in the Claim Listing (EX1026).

2. [1.a]

Suzuki discloses a “housing (9)” —*i.e.*, a ferrule holder. EX1004: 4:33-39; EX1003: ¶82. Figure 3 shows Suzuki’s housing/ferrule holder (9) as having a central opening extending longitudinally from a first end to a second end. EX1003: ¶83.



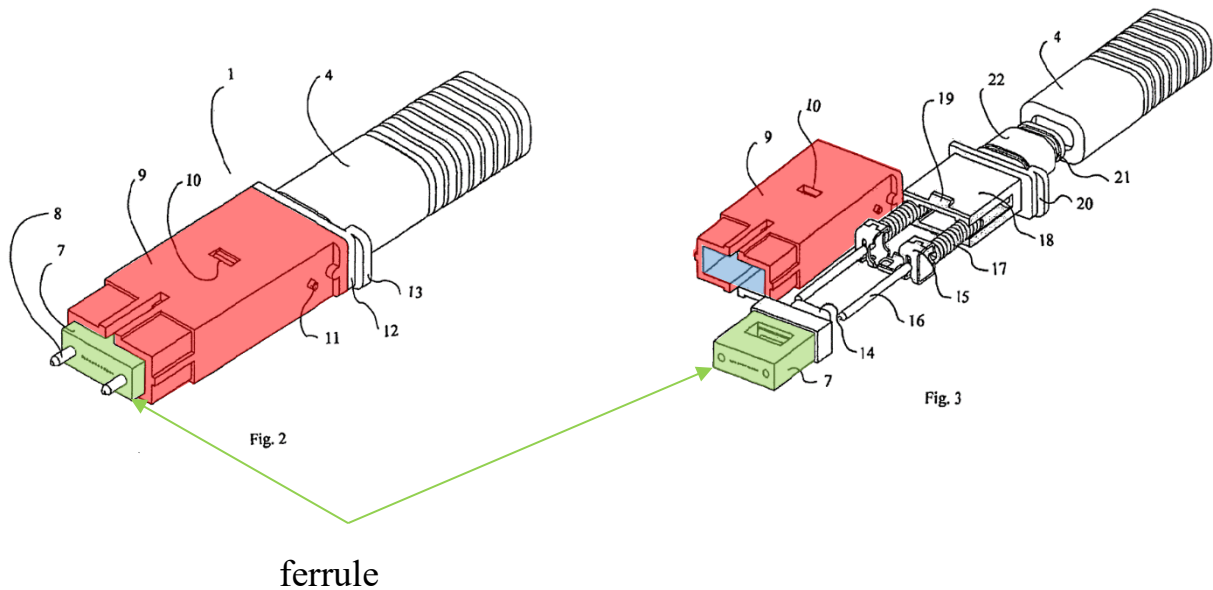
EX1004: Figs. 2 and 3 (annotated); EX1003: ¶83.

Suzuki discloses [1.a].

3. [1.b.1]

The connector disclosed by Suzuki has an MT ferrule (7). *See* EX1004: 1:33-35, 1:49-52, 2:39-44, 2:54-56; EX1003: ¶85. The MT ferrule is supported by an “array”/“plurality”/“several” optical fibers. EX1004: Abstract, 1:49-52, 7:36, 8:5;

EX1003: ¶86. As assembled, the MT ferrule is housed within the central opening as shown below:



EX1004: Figs. 2 and 3 (annotated); EX1003: ¶87.

Suzuki discloses [1.b.1].

4. [1.b.2]

The ferrule of Suzuki is exposed from the opening at one end (*i.e.*, “the first end”) of the ferrule holder. EX1004: Fig. 2 (annotated below); EX1003: ¶89.

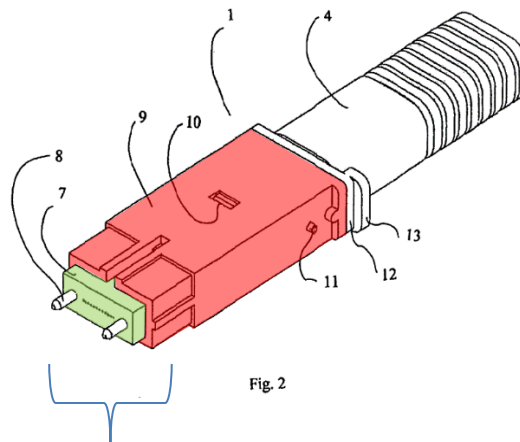


Fig. 2

first end

EX1004: Fig. 2 (annotated); EX1003: ¶89.

Suzuki discloses [1.b.2].

5. [1.b.3]

As shown in Figure 3 of Suzuki, the opening at the end of the ferrule holder from which the ferrule is exposed is in communication with the ferrule holder's central opening:

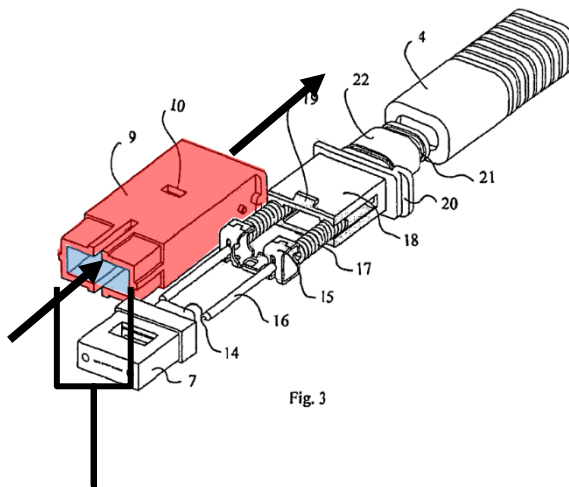


Fig. 3

first end

EX1004: Fig. 3 (annotated); EX1003: ¶91.

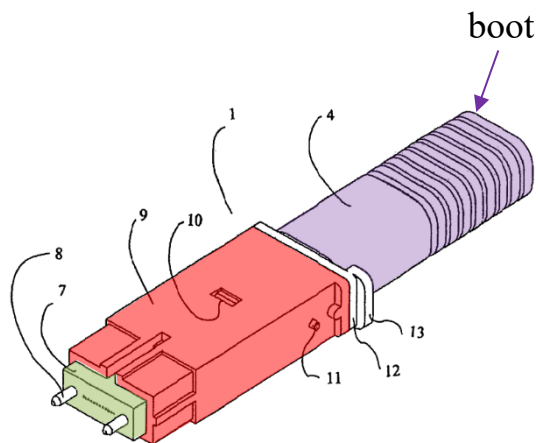
Suzuki discloses [1.b.3].

6. [1.c]

Suzuki discloses the connector can have a boot (4 or 6) with cables or bare ribbons. EX1004: 5:4-7; EX1003: ¶93. Cables and bare ribbons would have at least two optical fibers when used with MT-ferrules. EX1003: ¶94.

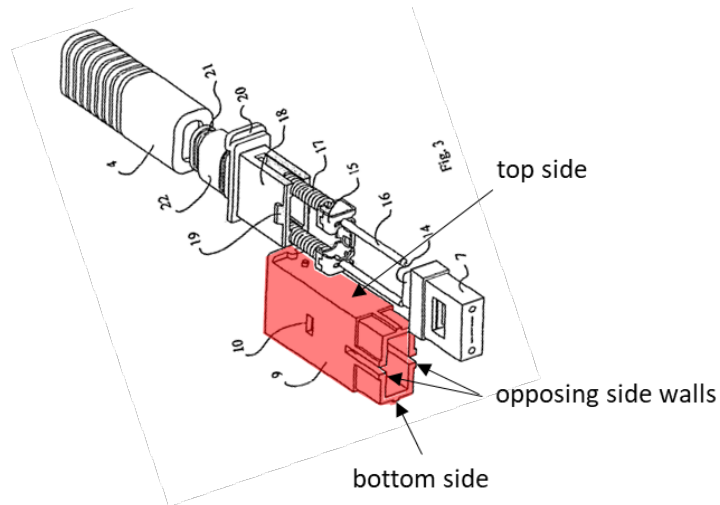
EX1004: Fig. 2 (annotated); EX1003: ¶94.

Suzuki discloses [1.c].



7. [1.d]

The POSA would recognize that connectors within the prior art can be rotated to match the orientation as recited in the claims. EX1003: ¶¶96-97. The top side, a bottom side, and opposing side walls can thus be identified as follows:

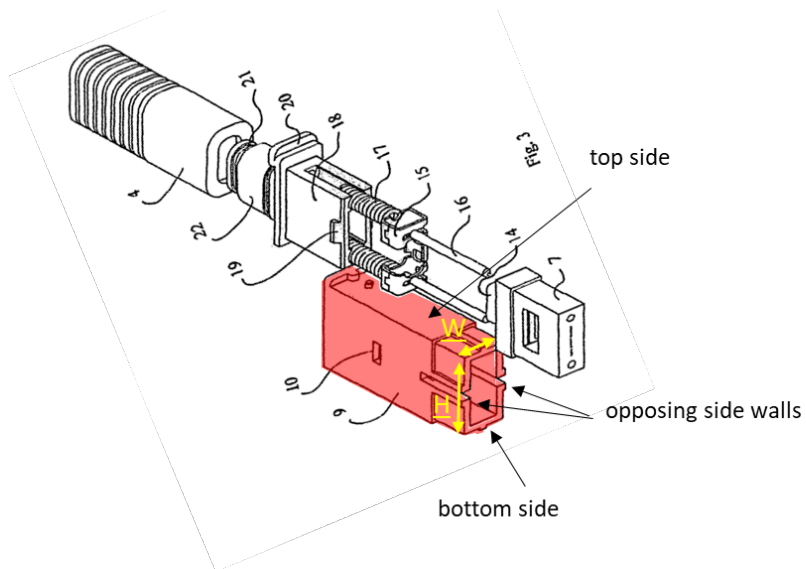


EX1004: Fig. 3 (rotated and annotated); EX1003: ¶98.

Suzuki discloses [1.d].

8. [1.e.1]

In the context of the [1.d] orientation above, the separation between the top and bottom side (H) is greater than the separation between the opposing side walls (W) as shown:

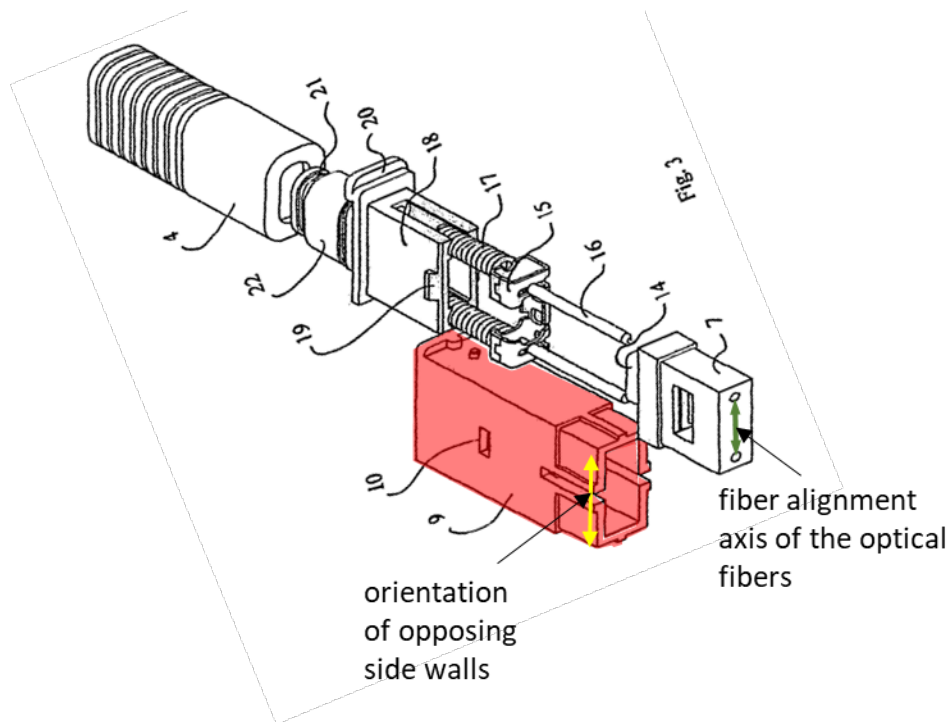


EX1004: Fig. 3 (rotated and annotated); EX1003: ¶¶100-101.

Suzuki discloses [1.e.1].

9. [1.e.2]

The opposing side walls of Suzuki are parallel to the fiber alignment axis of the optical fibers at the end face of the multi-fiber ferrule. EX1003: ¶103.

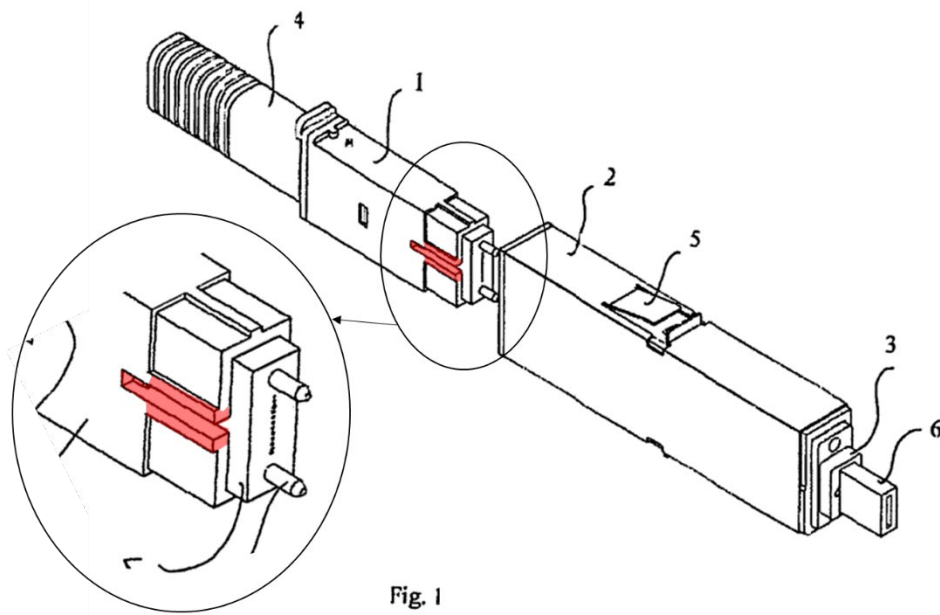


EX1004: Fig. 3 (rotated and annotated); EX1003: ¶103.

Suzuki discloses [1.e.2].

10. [1.f]

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



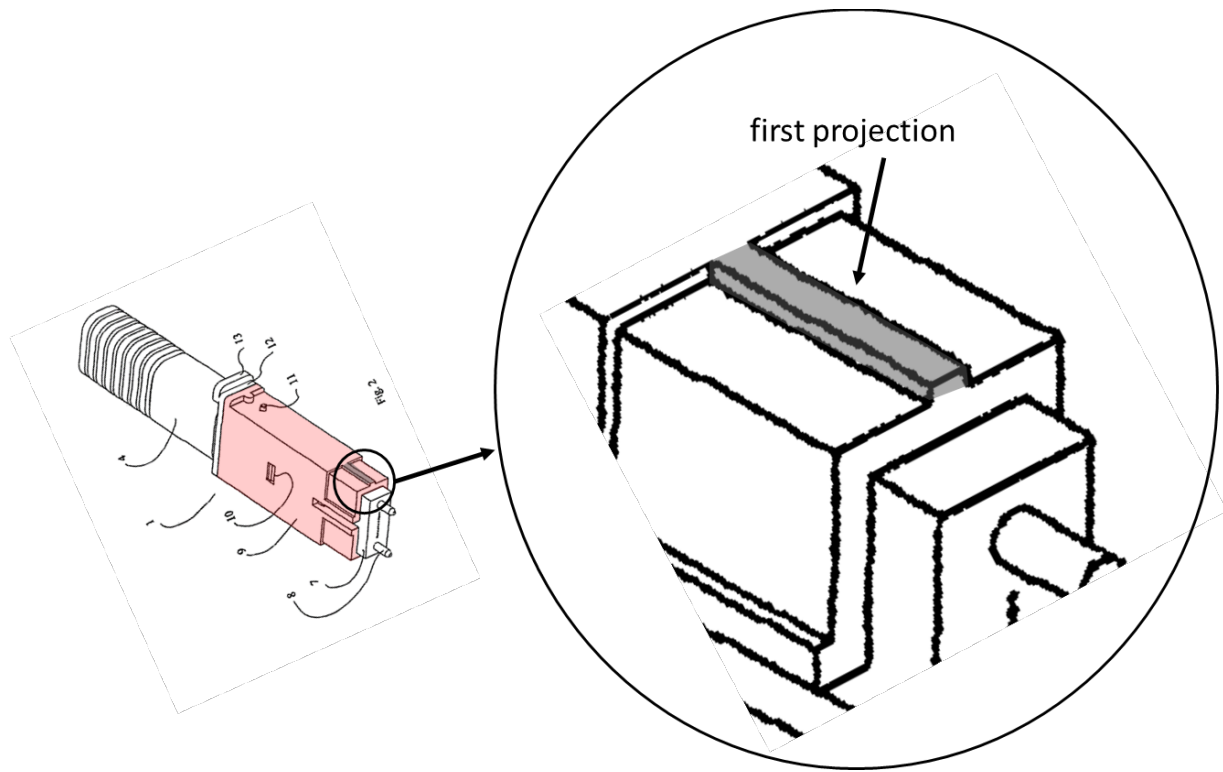
EX1004: Fig. 1 (rotated and annotated); EX1003: ¶105.

The POSA would recognize these elements qualify as “lead-ins” as they are intended to act as guide slots to receive rails inside the adapter for the purpose of aligning the ferrule holder/ferrule. EX1003: ¶¶106-107; *see also* EX1015: 8:58-9:6 (explaining the operation of similar lead-ins), Fig. 3.

Suzuki discloses [1.f].

11. [1.g]

Suzuki’s figures disclose a first projection extending longitudinally rearward from the front opening on the outside surface of the connector body’s top side:

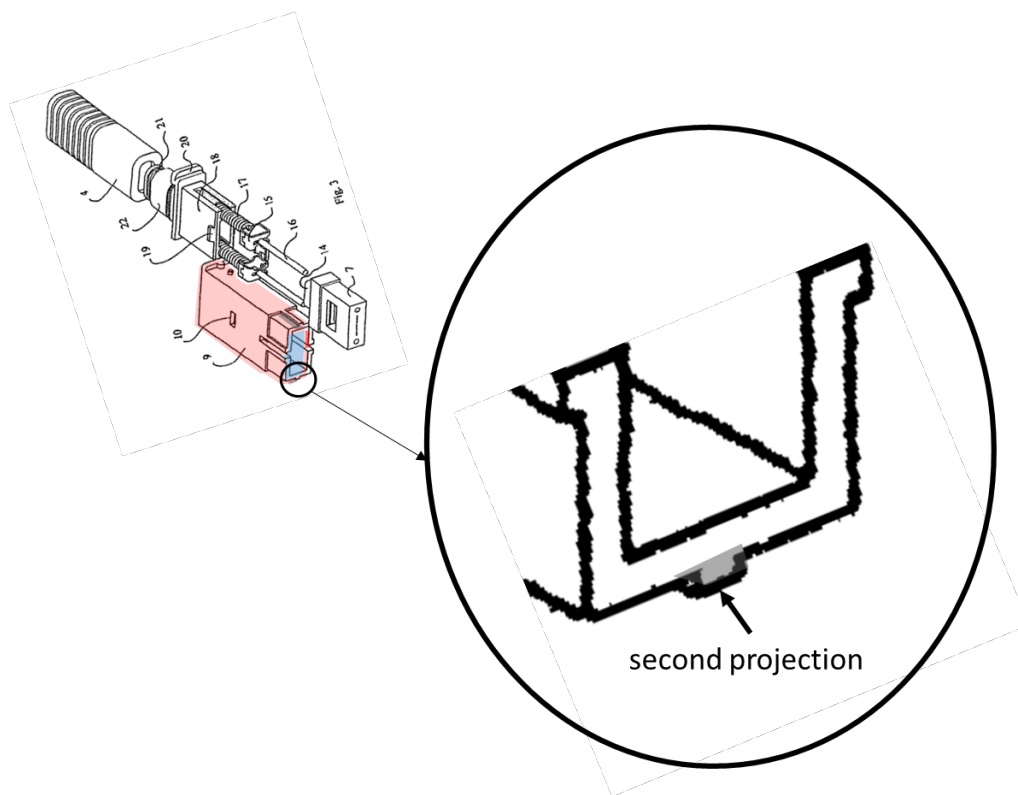


EX1004: Fig. 2 (rotated and annotated); EX1003: ¶109.

Suzuki discloses [1.g].

12. [1.h]

Suzuki's figures disclose a second projection extending longitudinally rearward from the front opening on the outside surface of the connector body's bottom side:



EX1004: Fig. 3 (rotated and annotated); EX1003: ¶111.

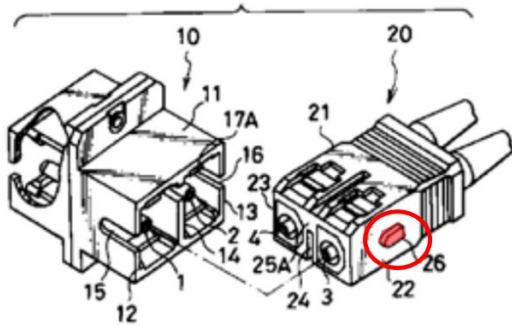
Suzuki discloses [1.h].

13. [1.i]

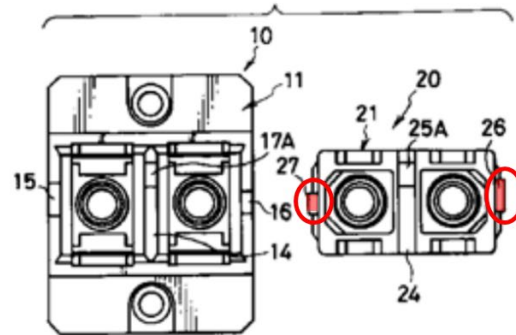
As addressed in [1.g]-[1.h] above, Suzuki's figures depict first and second projections. These first and second projections have the same shape, but it would have been obvious to use different sized/shaped projections to provide polarity keys as disclosed in Shimozu. EX1003: ¶¶113-121.

Like Suzuki, Shimozu discloses connectors with longitudinally extending projections—"identification guides" (26, 27)—along its opposing sides. EX1007: [0012], Figs 1 and 2; EX1003: ¶¶115-117.

[FIG. 1]



[FIG. 2]



EX1007: Figs 1, 2 (annotated); EX1003: ¶116.

Shimozu teaches sizing the widths of the identification guides (26, 27)—and their corresponding keyways (15, 16)—differently as a redundancy feature for preventing 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 ... the respective guide keyway and guide key cannot fit together”); EX1003: ¶¶118-119.

Sizing the first and second projections differently—as taught by Shimozu—was a known technique to improve similar connectors to those of Suzuki that would have yielded predictable results. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (“[I]f a technique has been used to improve one device, and a [POSA] would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”); EX1003: ¶¶120-

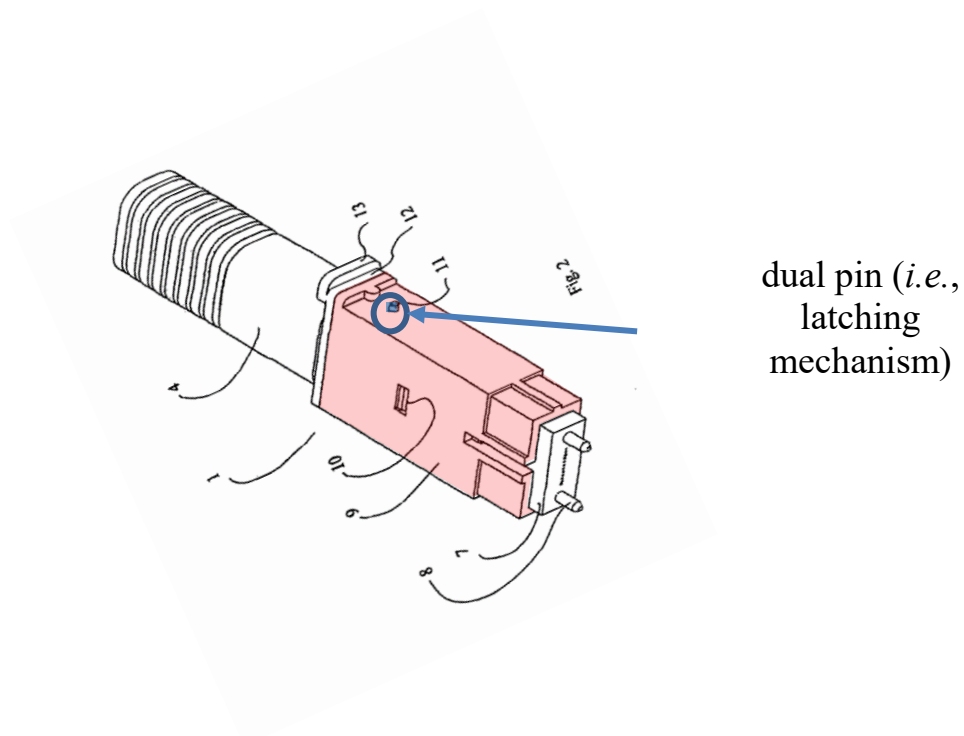
121. As such, sizing the first and second projections of the Suzuki connector differently would have been an obvious improvement.

Suzuki/Shimozu renders [1.i] obvious.

14. [1.j]

The Suzuki connector includes a “dual pin” (11) on the top side of the housing which acts as a latching mechanism.² The dual pin acts as a mechanical actuator (i.e., a mechanism) to latch and unlatch from a mating adapter. EX1004: 5:46-48 (“... 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 (discussing the operation of the dual pin); EX1003: ¶123.

² As raised above, PO has taken the position that the recited “latching mechanism” is not limited to cantilevered latches and their equivalent.

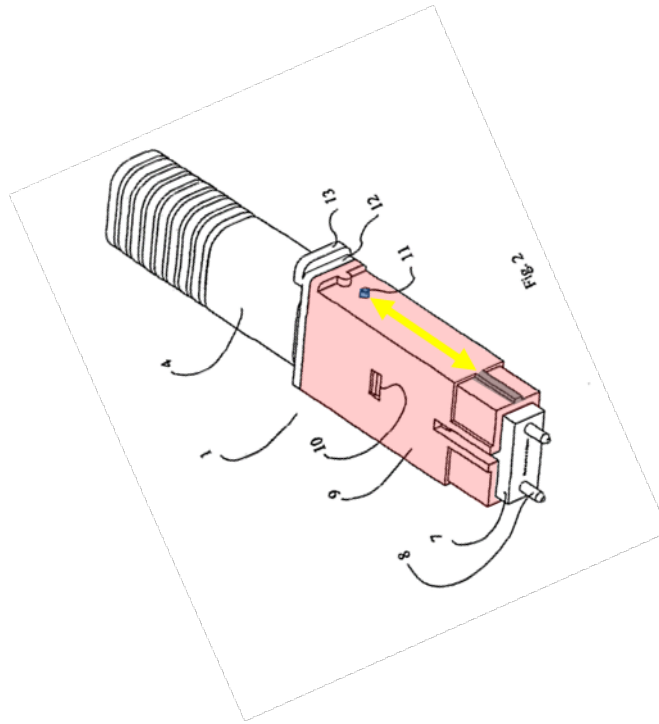


EX1004: Fig. 2 (rotated and annotated); EX1003: ¶123.

Suzuki discloses [1.j].

15. [1.k]

Suzuki's figures show the dual pin/latching mechanism (11) is not directly connected to and is spatially separated from the first and second projections:



EX1004: Fig. 2 (rotated and annotated); EX1003: ¶125.

Suzuki discloses [1.k].

B. Independent Claim 19

1. [19.p]-[19.d.2], [19.f]-[19.h], [19.j]-[19.k]

A number of Claim 19's limitations are identical to those recited by Claim 1 and were disclosed by Suzuki or rendered obvious by Suzuki/Shimozu for the same reasons as discussed with respect to Claim 1.

Claim 1 Limitations	Corresponding Claim 19 Limitations
[1.p]	[19.p]
[1.a]	[19.a]
[1.b.1]	[19.b.1]
[1.b.2]	[19.b.2]
[1.b.3]	[19.b.3]
[1.d]	[19.c]
[1.e.1]	[19.d.1]

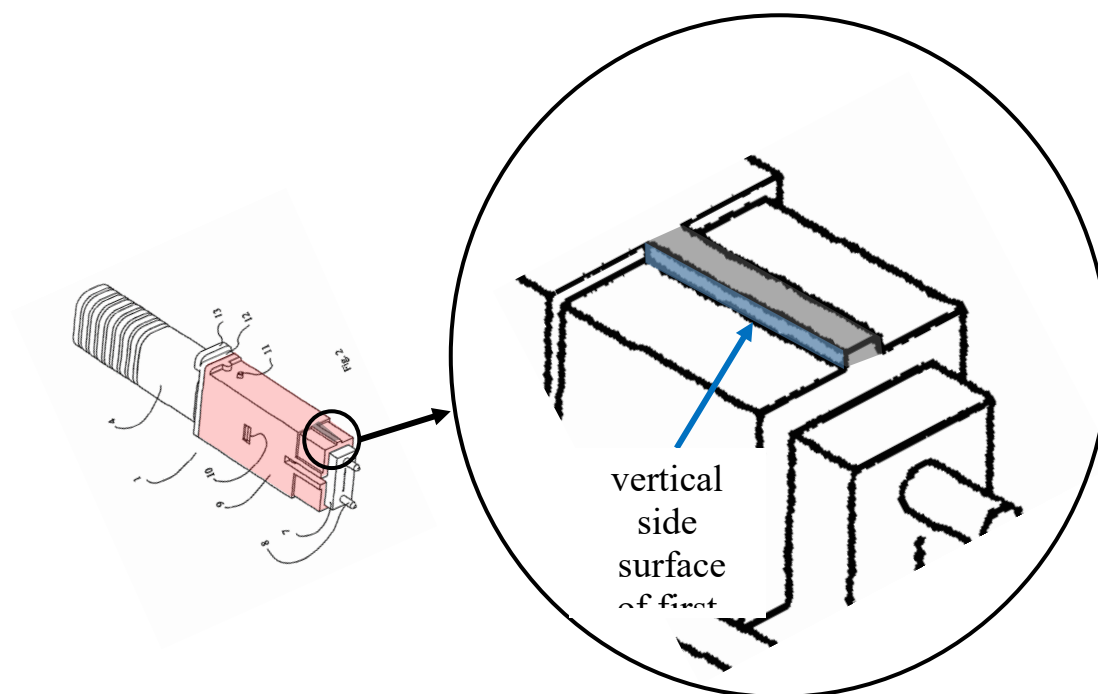
Claim 1 Limitations	Corresponding Claim 19 Limitations
[1.e.2]	[19.d.2]
[1.g]	[19.f]
[1.h]	[19.g]
[1.i]	[19.h]
[1.j]	[19.j]
[1.k]	[19.k]

2. [19.e]

[19.e] of the '075 Patent is similar to [1.f], except that it recites the “front end of the ferrule holder has a lead-in” instead of a “lead-in or a chamfer.” For the reasons discussed with respect to [1.f], Suzuki discloses [19.e].

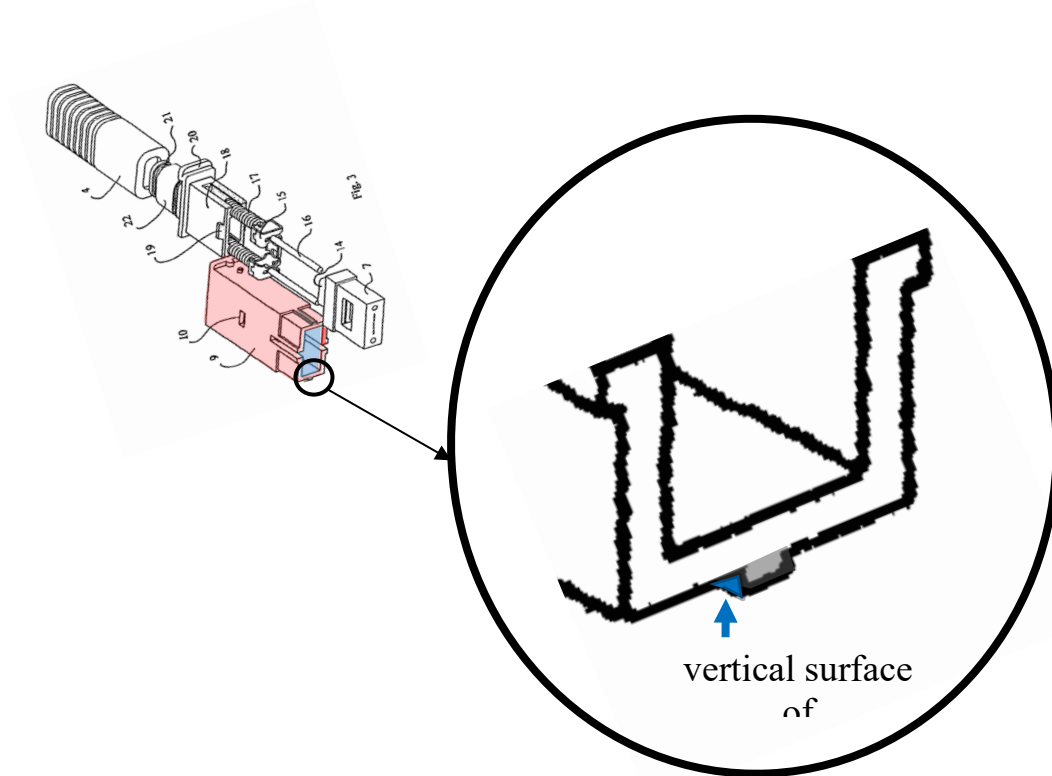
3. [19.i]

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); EX1003: ¶139.

Although cut off by the viewing angle, Figure 3 shows a second projection—the projection on the outside surface on the bottom side—which also has vertical side surfaces. EX1003: ¶140.



EX1004: Fig. 2 (rotated and annotated); EX1003: ¶140.

Notably, the 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” is an intended use and is not entitled to any patentable weight. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997); *see also, Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997).

Regardless, the POSA would recognize Suzuki's first and second projections were intended to provide width-wise alignment of the connector as it is inserted into an adapter by mating with guide grooves internal to the adapter. EX1003: ¶142. The POSA would recognize the first and second projections' vertical side surfaces are intended to control the horizontal direction of movement of the ferrule holder relative to an adapter. EX1003: ¶142.

Suzuki discloses [19.i].

C. Claim 2

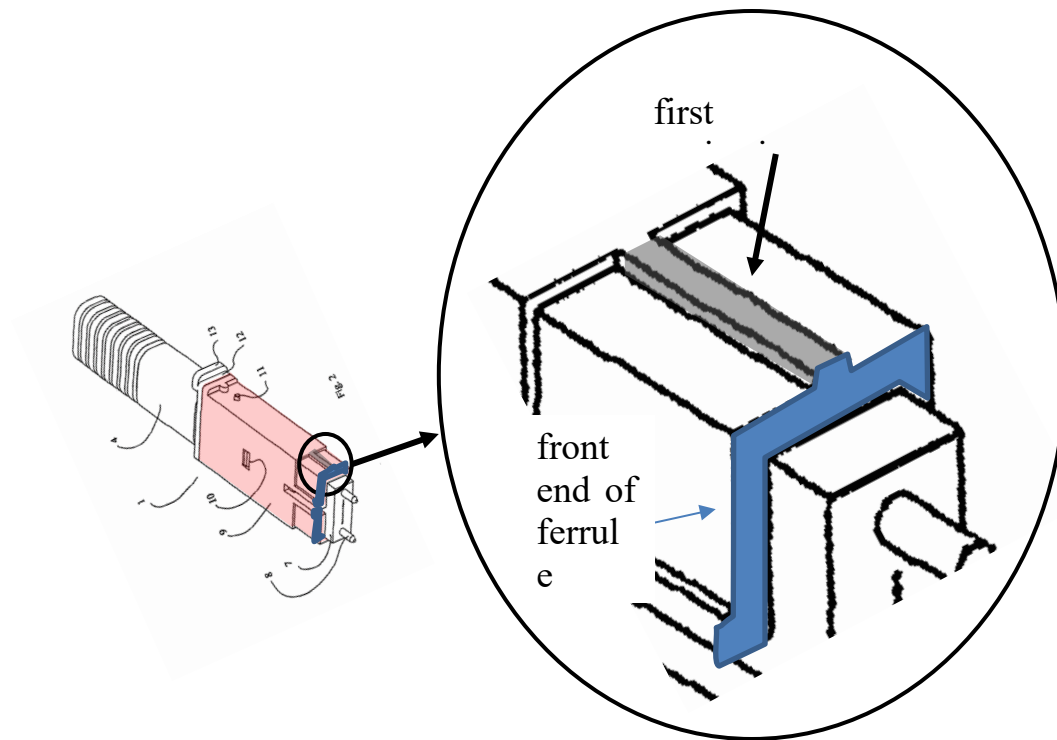
Claim 2 depends from Claim 1 further requiring the multi-fiber ferrule be an MT-type ferrule. Suzuki identifies that its ferrule (7) is an MT ferrule. EX1004: 1:23-28, 1:53-54, 1:63-65, 2:39-44, 2:54-56, 11:33-35; EX1003: ¶¶146-147.

Suzuki/Shimozu renders this claim obvious.

D. Claim 3

Claim 3 depends from Claim 1 further requiring the top surface of the first projection be rearward of the front end of the ferrule holder.

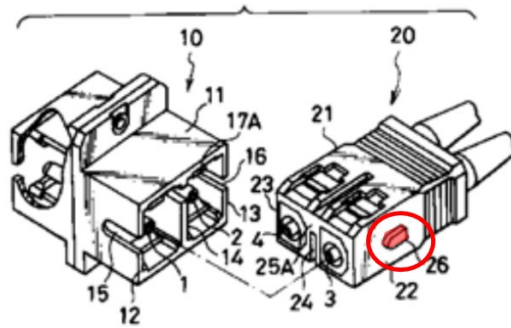
Suzuki's figures show the first projection has a horizontal top surface beginning at the front end of the ferrule holder and extending horizontally rearward. Thus, the top surface of the first projection is rearward of the front end of the ferrule holder. EX1003: ¶¶149-151.



EX1004: Fig. 2 (rotated and annotated); EX1003: ¶150.

Even to the extent the claims require the entire projection be rearward of the front edge, the claim still merely recites old elements according to known arrangements—the guides (26, 27) of Shimozu—to performing the same function they had already been known to perform. EX1003: ¶¶152-154; *see also*, *KSR*, 550 U.S. at 417.

[FIG. 1]



EX1007: Figs 1 (annotated).

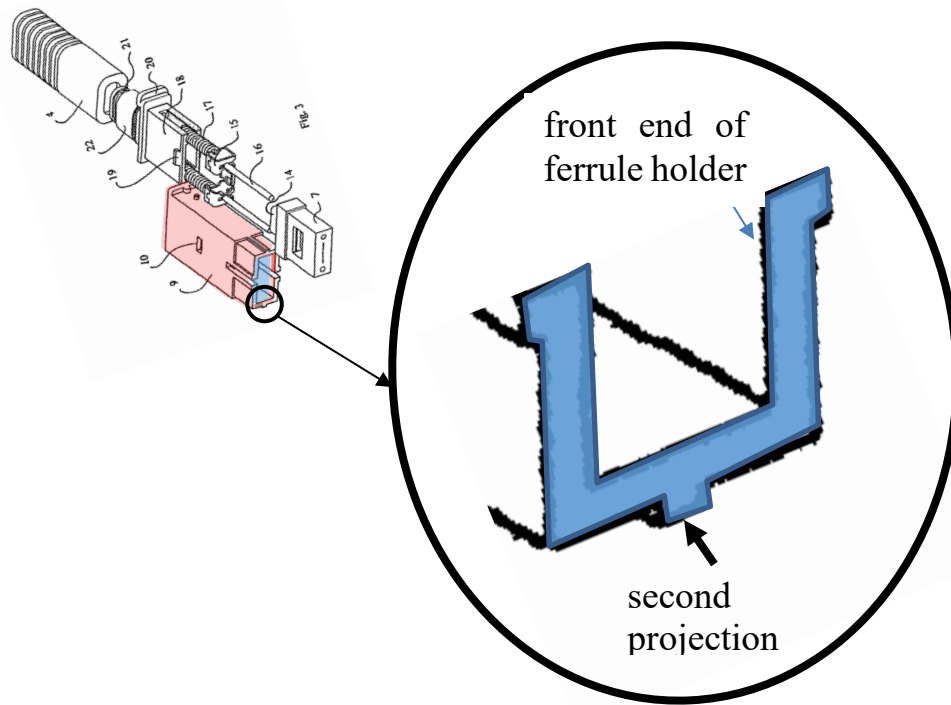
Suzuki/Shimozu renders this claim obvious.

E. Claim 4

Claim 4 depends from Claim 1 further requiring the top surface of the second projection be rearward of the front end of the ferrule holder.

The POSA would understand the second projection on the bottom side of the Suzuki connector to mirror first projection on its top side. As discussed with respect to Claim 3, the top surface of the first projection is rearward of the front end of the ferrule holder, or it would be obvious to make it so in view of Shimozu. EX1003:

¶¶156-162.



EX1004: Fig. 2 (rotated and annotated); EX1003: ¶158.

Accordingly, the POSA would understand Suzuki's second projection to have an exposed horizontal bottom surface that begins at the front end of the ferrule holder and extends horizontally rearward. EX1003: ¶159. Thus, the bottom surface of the second projection of the Suzuki connector is rearward of the front end of the ferrule holder. EX1003: ¶¶158-160.

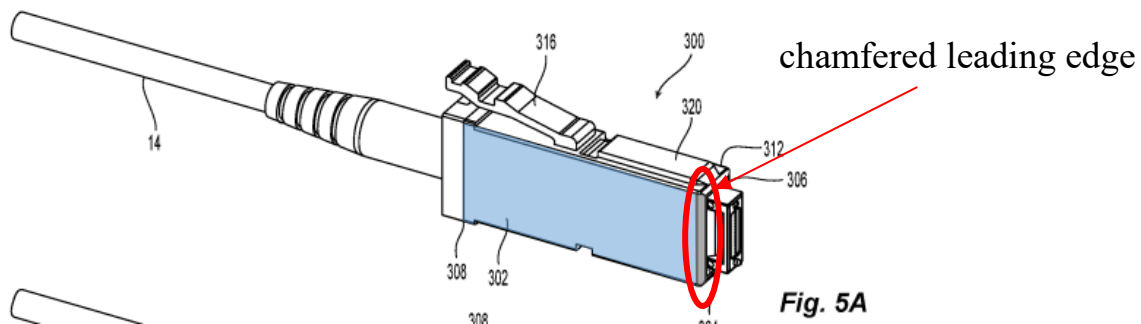
Suzuki/Shimozu renders this claim obvious.

F. Claim 5

Claim 5 depends from Claim 1 adding a limitation that a top surface of each of the first projection and second projection is rearward of the front end of the ferrule holder. Claim 5 adds the same limitations of Claims 3 and 4, and as such would have been obvious in view of Suzuki/Shimozu for the reasons explained in Claims 3 and 4. EX1003: ¶¶164-165.

G. Claim 6

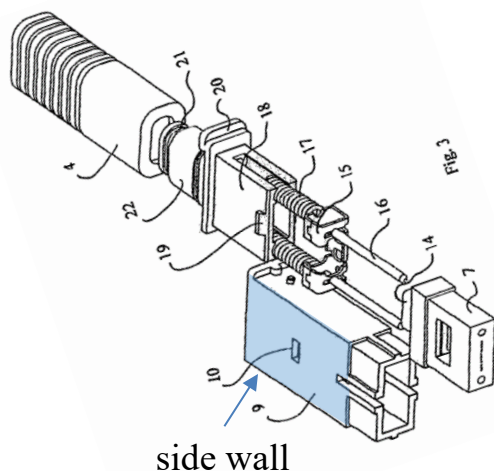
Claim 6 depends from Claim 1 adding a limitation that the opposing sidewalls are smooth and solid. Notably, the only disclosures within the '075 Patent regarding the relative smoothness and/or solidness of the opposing sidewalls is from the figures. EX1003: ¶166.



EX1001: Fig. 5A (annotated); EX1003: ¶166.

As seen in Figure 5A, the sidewalls have chamfered leading edges. EX1003: ¶167. Accordingly, the specification only provides written support to the extent that only a portion of the opposing sidewalls is required to be smooth and solid.

As seen in the figures, the opposing walls of the Suzuki connector are smooth outside of the lead-in:



EX1004: Fig. 3 (rotated and annotated); EX1003: ¶168.

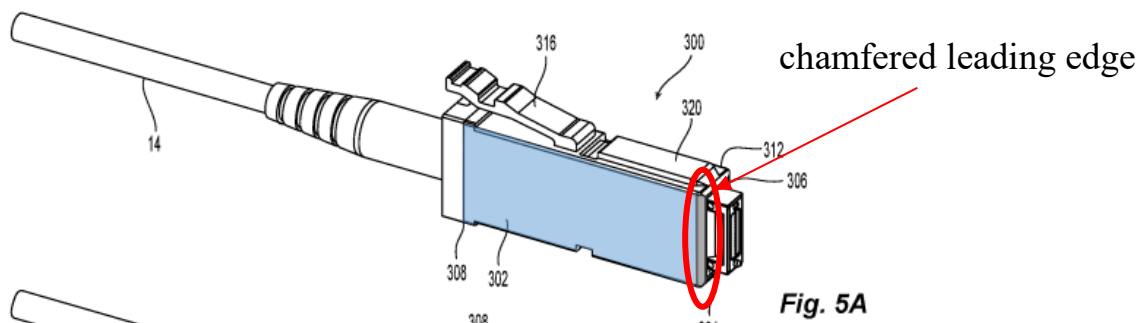
Further, the opposing sidewalls of the Suzuki connector are depicted as being solid with the exception of the openings (10), which are only present to allow latches (19) of the rear housing to catch from the interior of the ferrule holder. EX1004: 4:55-59; EX1003: ¶169. While it would have been a design need to latch the rear housing to the connector, the POSA would have recognized there were only two locations (the opposing sides or the top and bottom sides) on which the opposing latches/latch openings could be located. EX1003: ¶170. As there were finite predictable solutions as to where to locate the latches/latch openings, it would have been an obvious variation of the Suzuki connector to locate the latches/latch

openings on the top and bottom sides of the connector, leaving the opposing sidewalls of the Suzuki connector completely solid. EX1003: ¶171; *KSR*, 550 U.S. at 421 (stating it is obvious to pursue the known options when there are a finite number of identified, predictable solutions).

Suzuki/Shimozu renders this claim obvious.

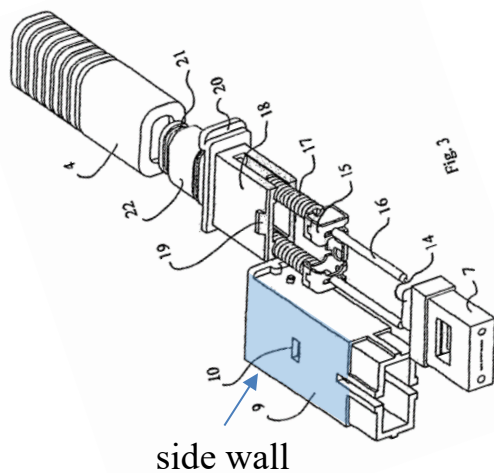
H. Claim 7

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. As the sidewalls are depicted as having chamfered leading edges, the specification only provides written support to the extent that only a portion of the opposing sidewalls is required to be flat. EX1003: ¶173.



EX1001: 5A (annotated); EX1003: ¶173.

As seen in the figures, the opposing walls of the Suzuki connector are flat outside of the lead-in. EX1003: ¶¶174-175.



EX1004: Fig. 3 (rotated and annotated); EX1003: ¶175.

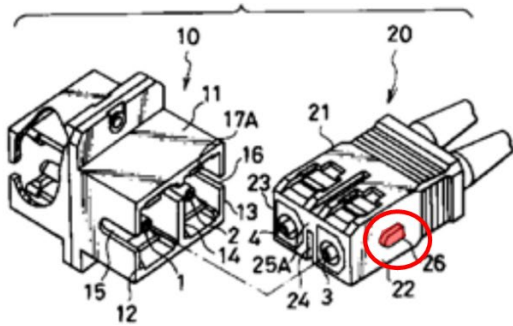
Suzuki/Shimozu renders this claim obvious.

I. Claim 8

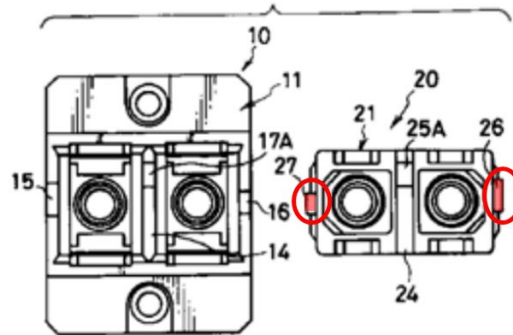
Claim 8 depends from Claim 1, further limiting the “different shape[d]” first projection and the second projection to having different widths.

The modification to the connector of Suzuki with respect to [1.i], would have met this narrower limitation in that Shimozu discloses sizing the widths of its identification guides (26, 27)—and their corresponding keyways (15, 16)—differently to prevent the “incorrect insertion.” EX1007: [0012], [0014]; EX1003: ¶¶177-183.

[FIG. 1]



[FIG. 2]



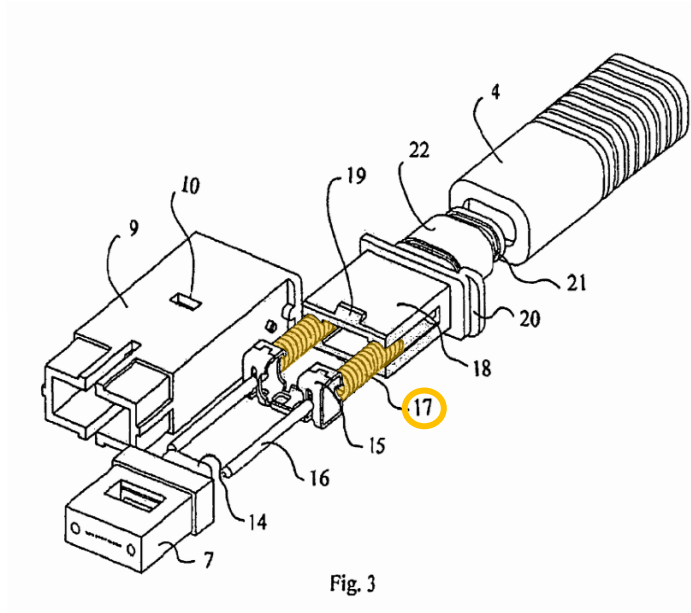
EX1007: Figs. 1, 2 (annotated); EX1003: ¶179.

As discussed with respect to [1.i], Suzuki/Shimozu renders Claim 8 obvious.

J. Claim 9

Claim 9 depends from Claim 1 further requiring the fiber-optic connector include a spring biasing the multi-fiber ferrule towards the front end of the ferrule holder.

Suzuki discloses that “two coil springs serv[e] to bias the ferrule forward within the connector housing.” EX1004: 3:36-42; EX1003: ¶¶184-185. As depicted in Figure 3, the springs (17) are positioned rearward of the ferrule (7):

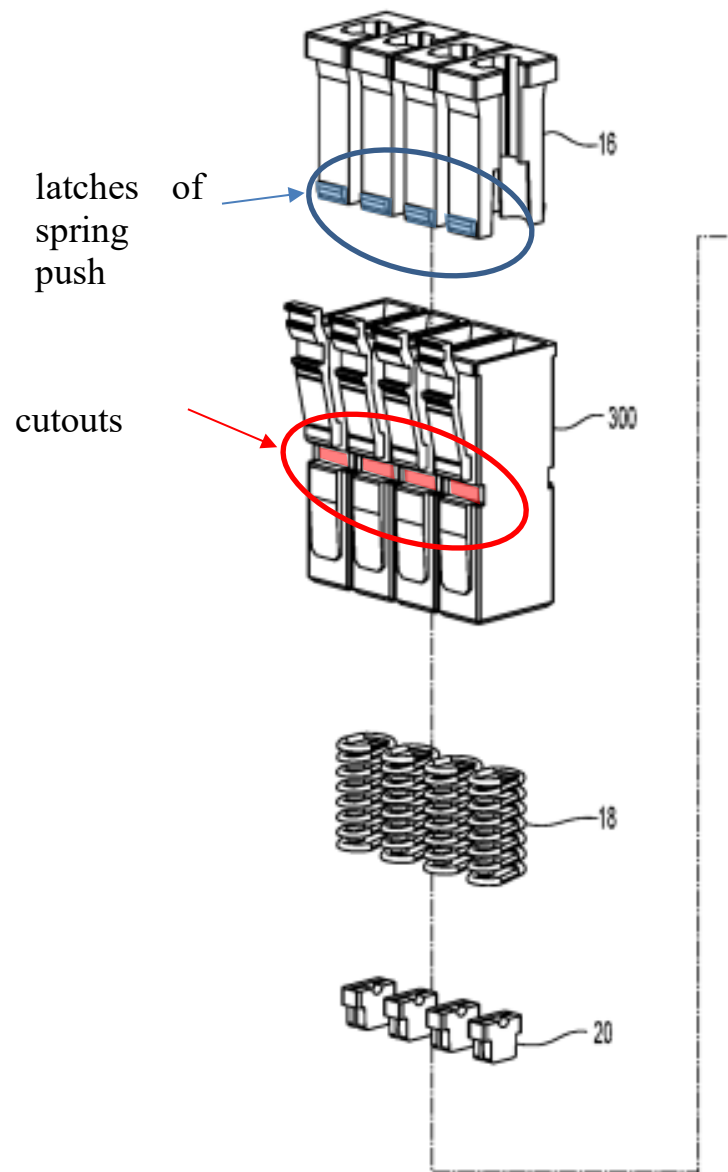


EX1004: Fig. 3 (annotated); EX1003: ¶186.

Suzuki/Shimozu renders this claim obvious.

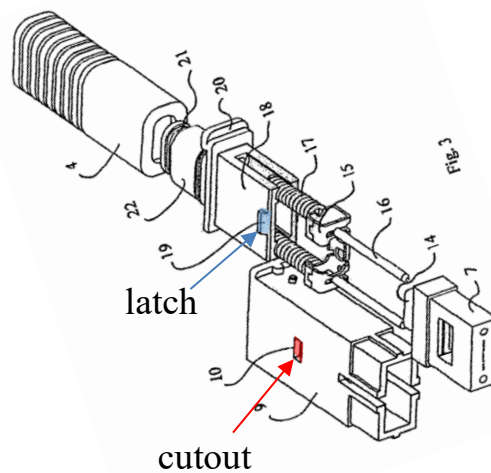
K. Claim 11

Claim 11 depends from Claim 1 adding a limitation that the top and bottom sides of the ferrule holder include cutouts. Although not discussed within the specification, Fig. 2 of the '075 Patent discloses cutouts in the ferrule holder (300) for receiving latches on the spring push (16) to hold the ferrule holder assembly together. EX1003: ¶¶188-189.



EX1001: Fig. 2 (annotated); EX1003: ¶189.

Suzuki discloses similar latch openings (10)—*i.e.*, cutouts—for receiving the latches (19) of the rear housing to hold the assembly together. EX1004: 4:55-59, Fig. 3; EX1003: ¶190.



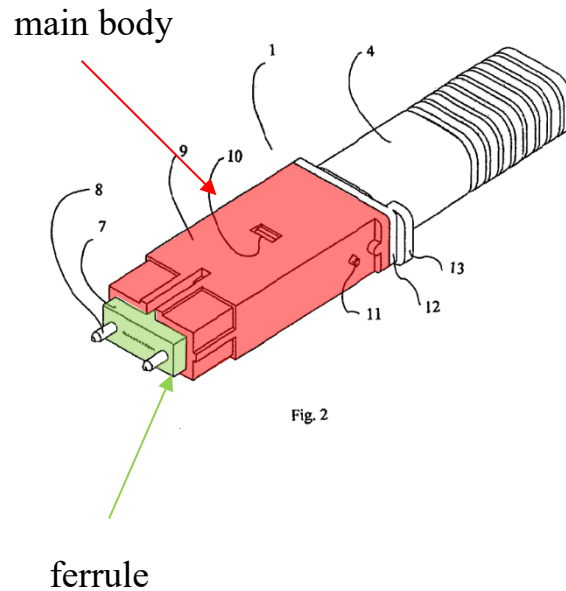
EX1004: Figure 3 (annotated); EX1003: ¶190.

While there was a design need to latch the rear housing to the connector body, the POSA would have recognized that there were only two locations (the opposing sides or the top and bottom sides) on which the opposing latches/latch openings could be located. *Compare*, EX1004: Fig. 3, EX1012: Fig. 9; EX1003: ¶191. As there were a finite set of predictable solutions as to where to locate the latches/latch openings, it would have been an obvious variation of the Suzuki connector to locate the latches/latch openings on the top and bottom sides of the connector. EX1003: ¶192; *KSR*, 550 U.S. at 421 (stating it is obvious to pursue the known options when there are a finite number of identified, predictable solutions).

Suzuki/Shimozu renders this claim obvious.

L. Claim 12

Claim 12 depends from Claim 1 further requiring the ferrule extend forward of the main body. Suzuki's ferrule is depicted as extending forward of the main body:

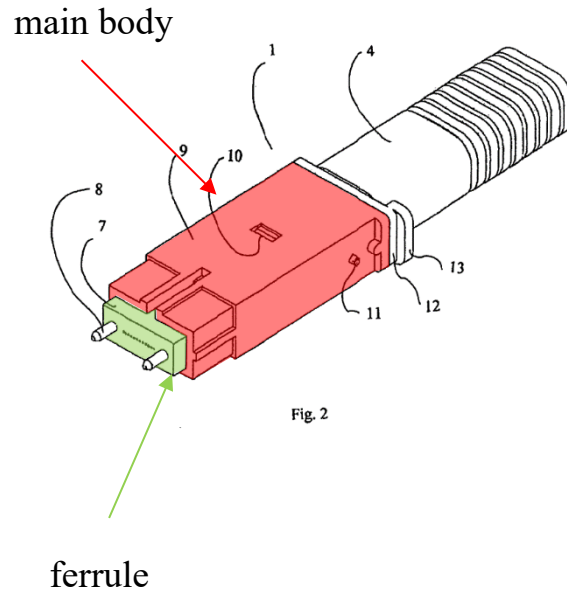


EX1004: Figure 2 (annotated); EX1003: ¶194.

Suzuki/Shimozu renders this claim obvious.

M. Claim 13

Claim 13 depends from Claim 1 further requiring the ferrule extend beyond the main body. Suzuki's ferrule is depicted as extending beyond the front face of the main body:



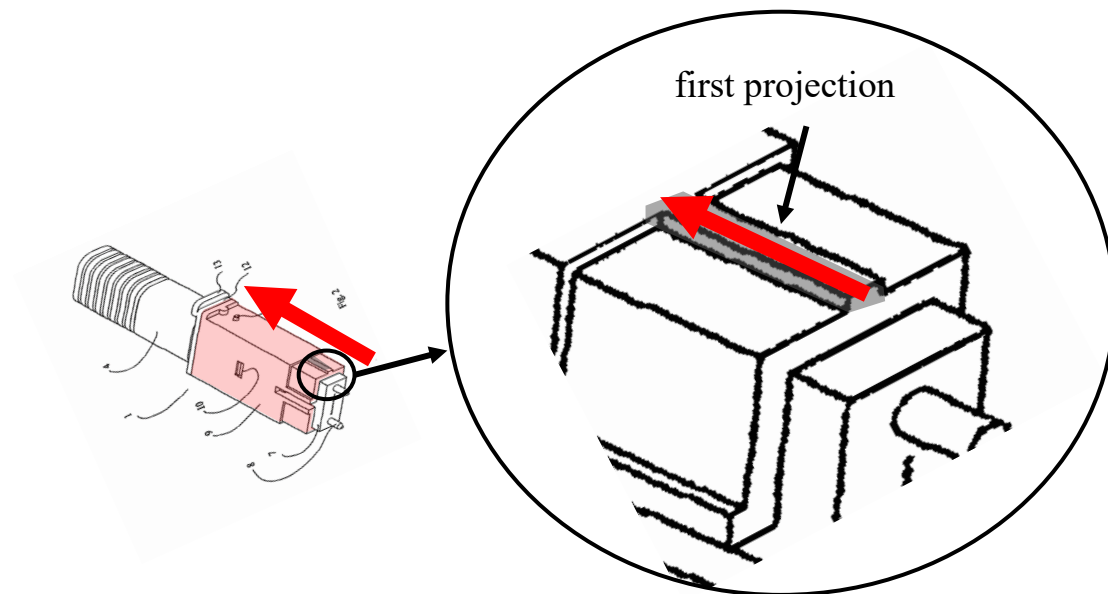
EX1004: Figure 2 (annotated); EX1003: ¶¶196-197.

Suzuki/Shimozu renders this claim obvious.

N. Claim 15

Claim 15 depends from Claim 1 further requiring at least one of the first or second projections extend along a length of the ferrule holder. Notably, the only relevant disclosures regarding the extension of the first and second projections is in the '075 Patent's figures—which depict the projections extending in the same direction as the ferrule holder, but not for the entire length of the ferrule holder. EX1003: ¶199. Accordingly, the POSA would understand the limitation to only require the projections extend in the same direction as the length of the ferrule holder. EX1003: ¶200.

Suzuki's figures show that the top projection extends in the same direction as the ferrule holder.



EX1004: Figure 2 (annotated); EX1003: ¶200.

Suzuki/Shimozu renders this claim obvious.

O. Claim 17

Claim 17 depends from Claim 1, adding a limitation requiring the first and the second projections have vertical side surfaces. This additional limitation is the same as in [19.i], and is disclosed by Suzuki for the same reasons.

Suzuki/Shimozu renders this claim obvious.

P. Claim 20

Claim 20 depends from Claim 19 further requiring the fiber optic connector include a boot extending in a rearward direction from the ferrule holder and

supporting at least two optical fibers. This additional limitation is the same as in [1.c], and is disclosed by Suzuki for the same reasons.

Suzuki/Shimozu renders this claim obvious.

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

A. Independent Claim 18

1. [18.p.]-[18.e.2], [18.j]-[18.k]

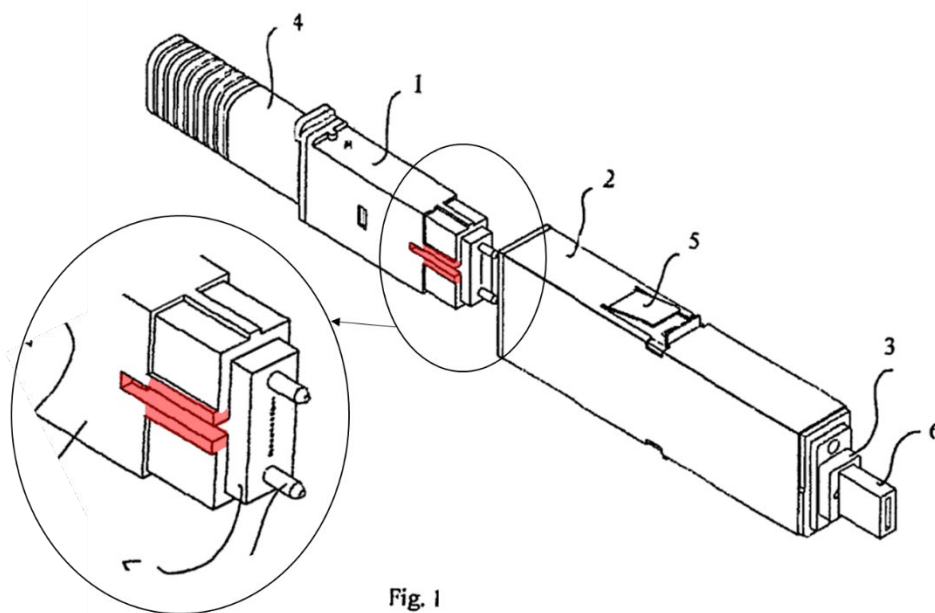
A number of Claim 18's limitations are identical to those recited by Claim 1 and were disclosed by Suzuki or rendered obvious by Suzuki/Shimozu for the same reasons as discussed in Ground 1 above with respect to Claim 1.

Claim 1 Limitations	Corresponding Claim 18 Limitations
[1.p]	[18.p]
[1.a]	[18.a]
[1.b.1]	[18.b.1]
[1.b.2]	[18.b.2]
[1.b.3]	[18.b.3]
[1.c]	[18.c]
[1.d]	[18.d]
[1.e.1]	[18.e.1]
[1.e.2]	[18.e.2]
[1.j]	[18.j]
[1.k]	[18.k]

2. [18.f]

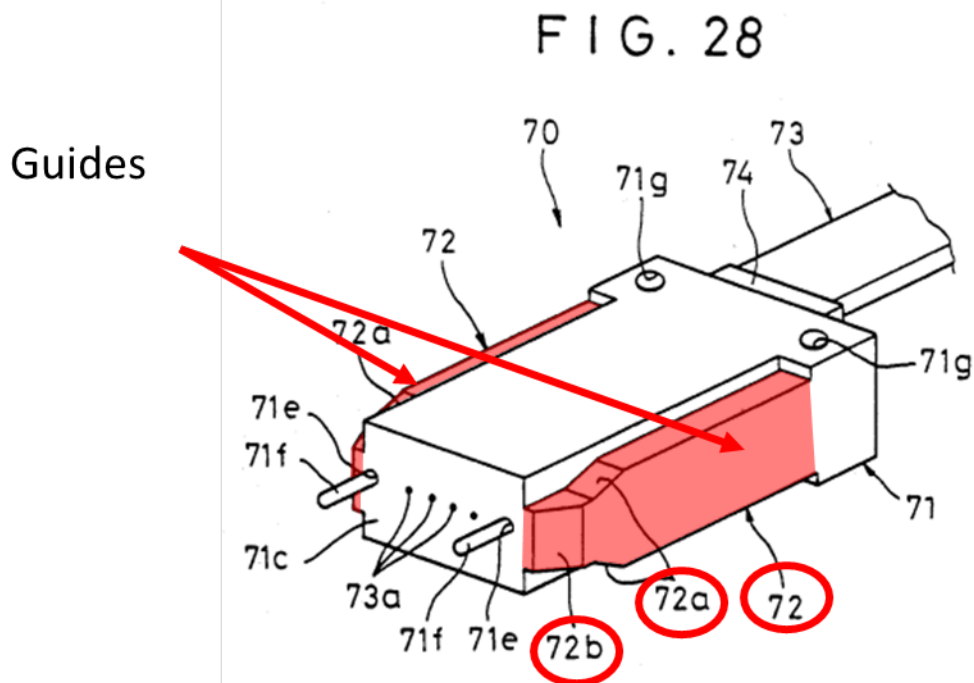
As discussed with respect to Ground 1, [1.f] above, Suzuki's figures disclose a lead-in to assist in vertically aligning the ferrule holder/ferrule within the adapter.

EX1003: ¶216.



EX1004: Figure 1 (annotated); EX1003: ¶216.

Still, the use of chamfers for aligning ferrule holders/ferrules was well known. For example, Saito uses alignment guides (72) in a manner that is equivalent to Suzuki's first and second projections. EX1003: ¶217. Saito further discloses the use of tapered/chamfered surface (72a, 72b) to position/align the ferrule in both the vertical and widthwise orientation. EX1008: 11:56-64; EX1003: ¶218.



Saito: Figure 28; EX1003: ¶218.

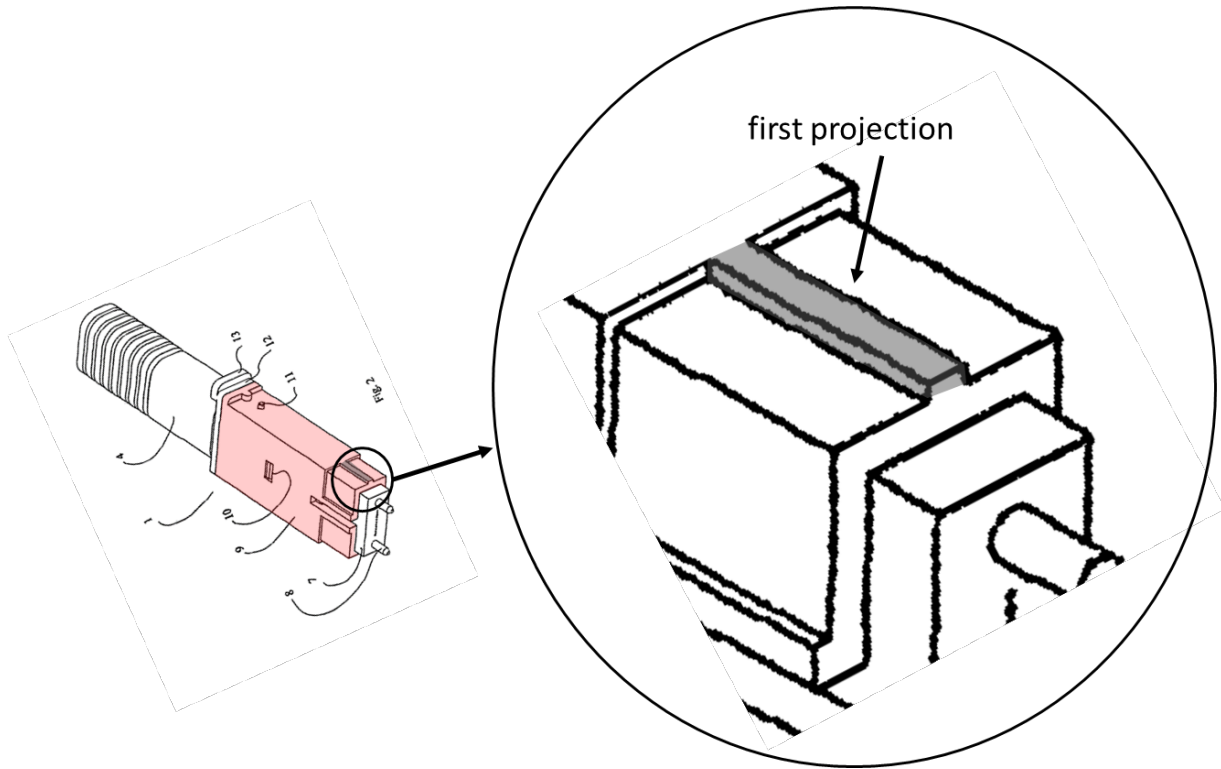
Adding chamfered surfaces to the first and second projections—as taught by Saito—was a known technique to improve similar connectors to those of Suzuki that would have yielded predictable results—assisting in aligning and guiding the ferrule holders into the adapter. EX1003: ¶219; *KSR*, 550 U.S. at 417.

Accordingly, adding chamfered surfaces to the first and second projections of the Suzuki ferrule holders as disclosed by Saito would have been an obvious improvement. EX1003: ¶219.

Suzuki/Shimozu/Saito renders [18.f] obvious.

3. [18.g]

Suzuki's figures disclose a first projection on the top outer surface of the connector body that extends longitudinally rearward from the front opening:

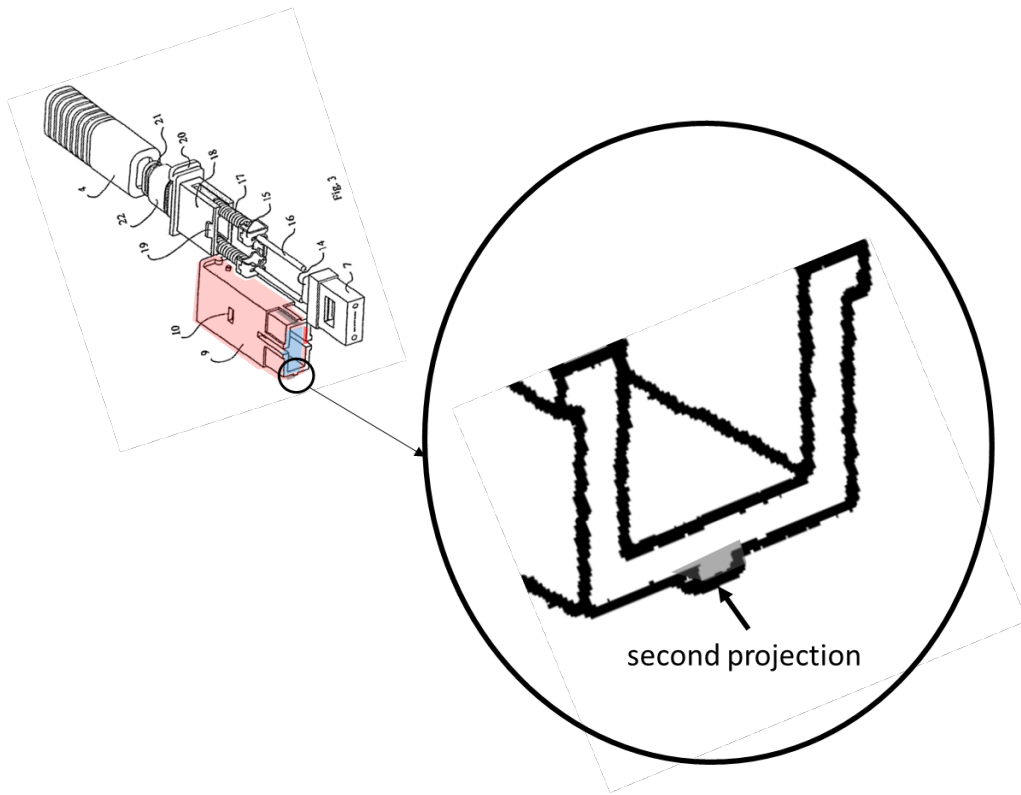


EX1004: Fig. 3; EX1003: ¶221.

Suzuki discloses 1.g.

4. [18.h]

Suzuki's figures disclose a second projection on the bottom outer surface of the connector body that extends longitudinally rearward from the front opening:

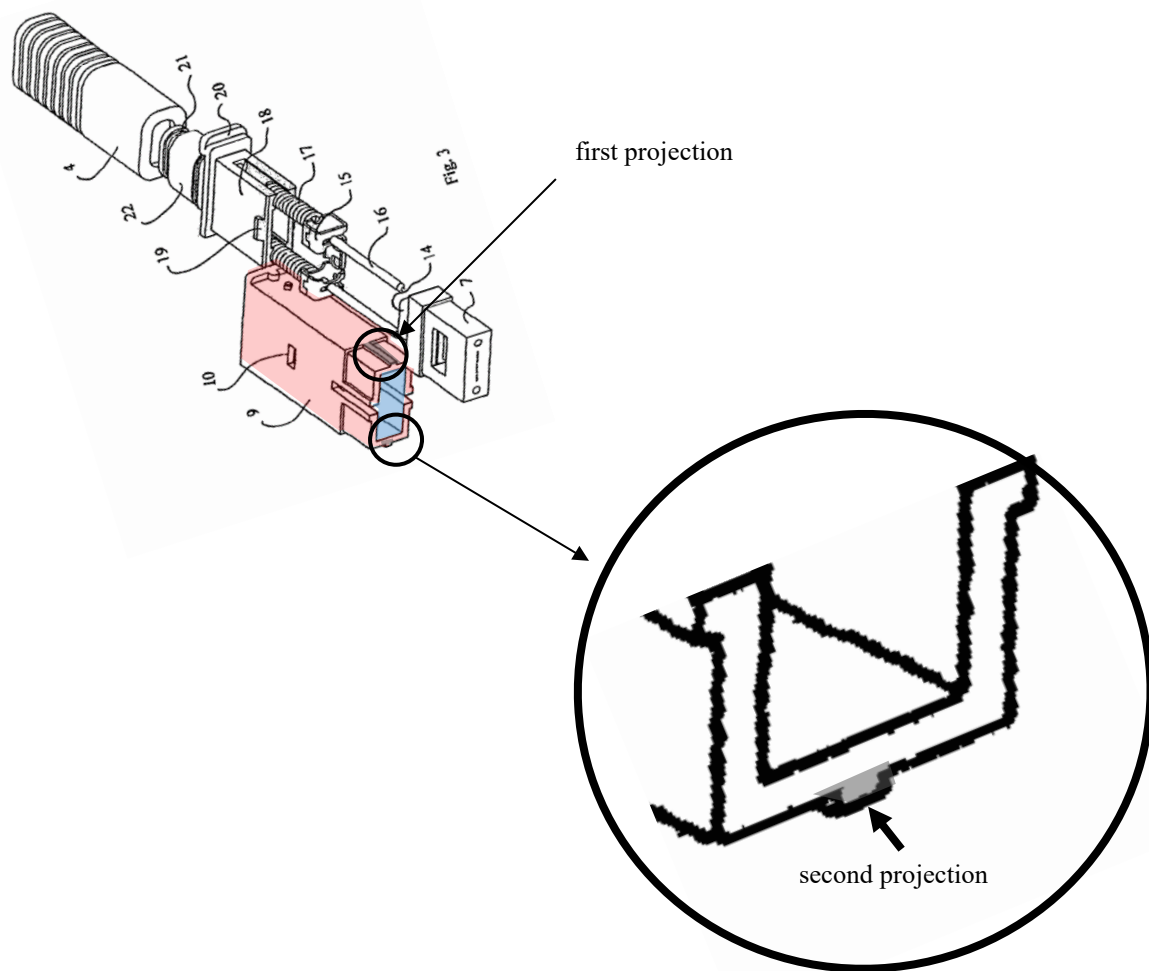


EX1004: Fig. 3 (annotated); EX1003: ¶223.

Suzuki discloses 1.h.

5. [18.i]

Suzuki's figures depict the first projection on a first outside surface and a second projection on an opposite second outside surface. EX1003: ¶225.



EX1004: Fig. 3 (annotated); EX1003: ¶225.

As discussed with respect to Ground 1, [1.i], varying at least one dimension between the first and second projections—as taught by Shimozu—was a known technique to improve similar connectors to those of Suzuki that would have resulted in a predictable improvement—improved error proofing and prevention from inserting the connector in the reverse orientation. *KSR*, 550 U.S. at 417; EX1003:

¶226. As such, sizing the first and second projections of the Suzuki connector differently would have been an obvious improvement. EX1003: ¶226.

Suzuki/ Shimozu renders [18.i] obvious.

B. B. Independent Claim 21

1. [21.p]-[21.e.2]

[21.p]–[21.e.2] are similar to [1.p]–[1.e.2], except that they more narrowly specify the multi-fiber ferrule as an MT-type ferrule. The Suzuki ferrule (7) is likewise identified as being an MT style multi-fiber ferrule. EX1004: 1:23-28, 1:53-54, 1:63-65, 2:39-44, 2:54-56, 11:33-35; EX1003: ¶¶230-231. For the reasons discussed in Ground 1 with respect to [1.p]–[1.e.2], Suzuki discloses [21.p]–[21.e.2].

2. [21.f]

[21.f] is identical to [18.f]. As discussed with respect to [18.f], Suzuki/Shimozu renders [21.f] obvious.

3. [21.g]-[21.h]

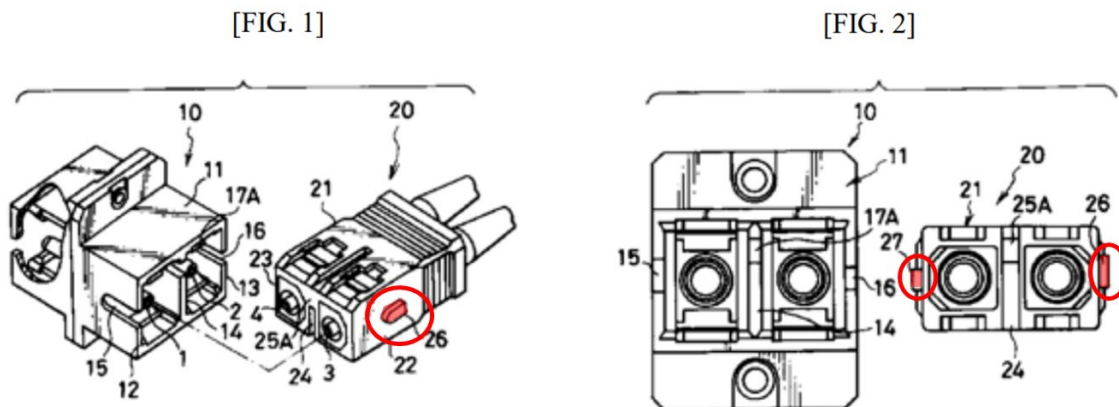
[21.g]–[21.h] are identical to [1.g]–[1.h]. For the reasons discussed in Ground 1 with respect to [1.g]–[1.h], Suzuki discloses [21.g]–[21.h].

4. [21.i]

[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.” The modification to the Suzuki connector as addressed in Ground 1 with respect to [1.i] would have further met the narrower limitation of [21.i] in that

Shimozu discloses sizing the widths of identification guides (26, 27)—and their corresponding keyways (15, 16)—differently to prevent the “incorrect insertion.”

EX1007: [0012], [0014]; EX1003: ¶¶260-261.



EX1007: Figures 1 and 2 (annotated); EX1003: ¶261.

For the reasons discussed in Ground 1 with respect to [1.i], Suzuki/Shimozu renders [21.i] obvious.

5. [21.j]-[21.k]

[21.j]-[21.k] are identical to 1.j]-[1.k]. For the reasons discussed in Ground 1 with respect to [1.j]-[1.k], Suzuki discloses [21.j]-[21.k].

C. Claim 16

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

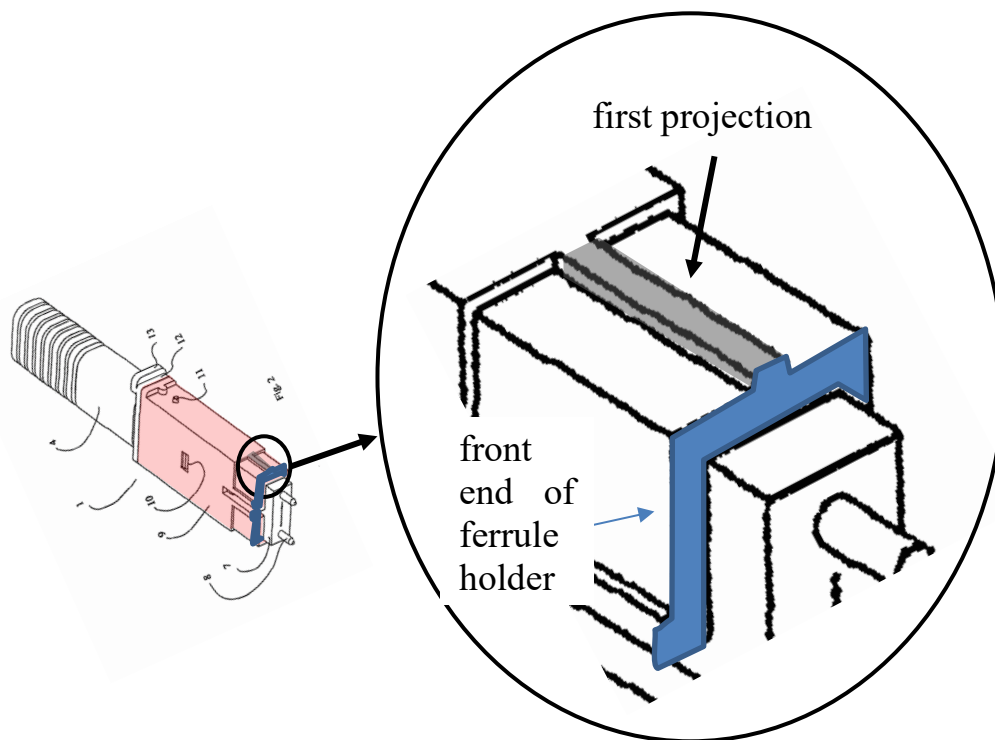
Neither the first or second projections of the Suzuki connector are disclosed as having a chamfered front end or a lead-in, but for the reasons discussed with regard to [18.f] above, it would have been obvious to modify the first and second

projections to include chamfers as disclosed in Saito to assist in aligning and guiding the ferrule holders into the adapter.

Suzuki/Shimozu/Saito renders this claim obvious.

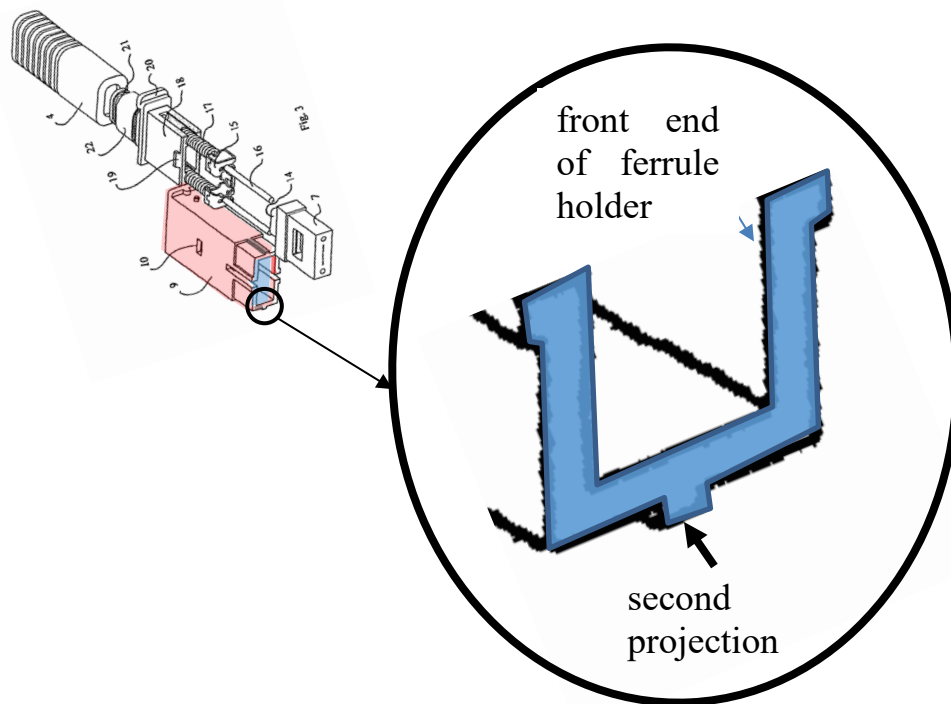
D. Claim 3-5

As discussed in Ground 1, Claim 3, the first projection of Suzuki has a horizontal top surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 2 (annotated); EX1003: ¶¶265-269.

Also as discussed in Ground 1, Claim 4, the second projection of Suzuki has an exposed horizontal bottom surface that begins at the front end of the ferrule holder and extends horizontally rearward.



EX1004: Fig. 3 (annotated); EX1003: ¶¶271-275.

Also as discussed in Ground 1, Claim 5 add both of these limitations in the same claim.

To the extent that PO argues that the “surface ... is rearward of the front end of the ferrule holder” limitations exclude surfaces that share an edge with the front end of the ferrule holder, these limitations were still obvious over Suzuki in view of Shimozu or Saito.

As discussed with respect to [18.f], 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/ferrules into an adapter. *KSR*, 550 U.S. at 417; EX1003: ¶¶268, 274, 280.

It thus would have been obvious to add chamfered surfaces to the leading faces of the first and second projections. As a result of adding these chamfers, the tapered surfaces would have offset the horizontal surfaces rearward from the front end of the ferrule holder. EX1003: ¶¶269, 275, 281.

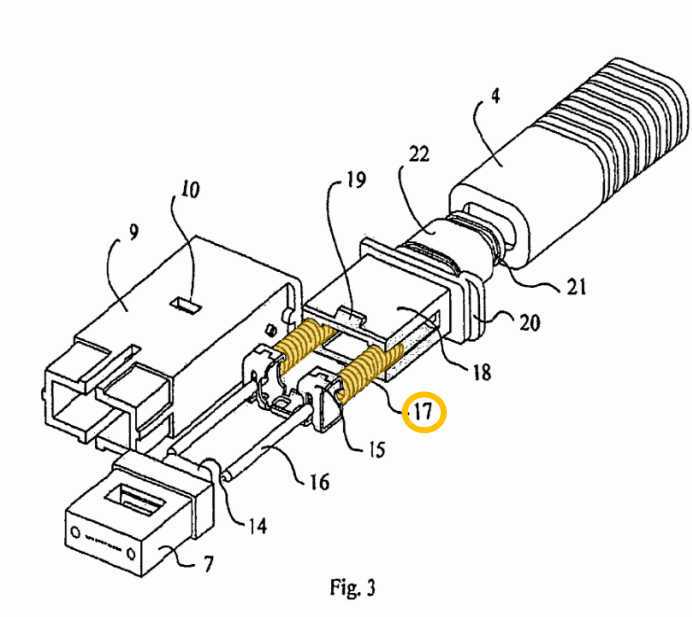
Suzuki/Shimozu/Saito further renders Claims 3-5 obvious.

VII. GROUND 3: Obvious Over Suzuki in View of Shimozu and JP391

A. Claim 10

Claim 10 depends from Claim 9 further requiring that the spring biasing the multi-fiber ferrule at least partially surrounds the optical fibers.

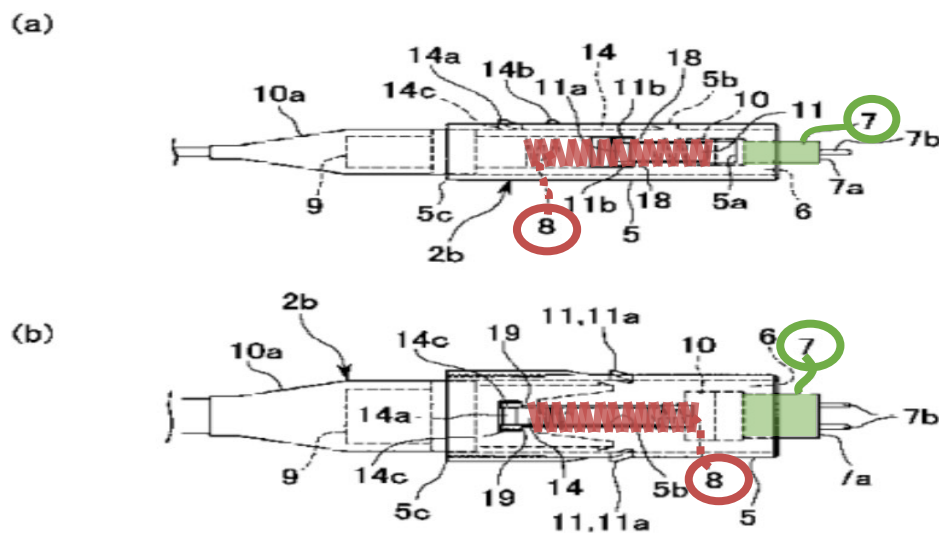
Because Suzuki relies on two equally off-centered coil springs, the springs would not necessarily surround the optical fibers. EX1004: 3:36-42; EX1003: ¶¶286-287.



EX1004: Fig. 3 (annotated); EX1003: ¶287.

Other spring configurations were known in the art. EX1003: ¶288. For example, JP391 uses a single centered spring (8). EX1006: [0009]; EX1003: ¶288.

[FIG. 5]



Although the routing of the optical fibers is not addressed by JP391, the POSA would have routed the optical fibers along the most direct path—*i.e.*, through the spring (8). EX1003: ¶¶289-290.

(a)

Diagram (a) shows a cross-sectional view of a medical device. A blue arrow indicates flow from left to right through a central passage. A red spring is located in the middle of the device. A green component is at the right end. Various parts are labeled with numbers: 10a, 14a, 14b, 14c, 11a, 11b, 18, 5b, 10, 11, 7, 7a, 7b, 6, 5a, 5, 11b, 18, 5c, 2b, 9, 5, 11b, 18, 5a, 6, 7a, 7b. A red circle highlights the number 8, and a green circle highlights the number 7.

(b)

Diagram (b) shows a cross-sectional view of a medical device, similar to (a) but with a different internal structure. A blue arrow indicates flow from left to right through a central passage. A red spring is located in the middle of the device. A green component is at the right end. Various parts are labeled with numbers: 10a, 14c, 19, 11, 11a, 10, 6, 7, 7b, 7a, 5b, 11, 11a, 5c, 2b, 9, 5, 11b, 18, 5a, 6, 7a, 7b. A red circle highlights the number 8, and a green circle highlights the number 7.

The spring configurations of Suzuki and JP391 are “the simple substitution of one known element for another” in that the components were nearly identical (two smaller springs compared to a single larger spring) and functioned the same in that

both spring configurations bias the ferrule forward in the insertion direction. *KSR*, 550 U.S. at 401; EX1003: ¶291.

Suzuki/Shimozu/JP391 renders this claim obvious.

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

A. Claim 14

Claim 14 depends from Claim 1 further requiring the multi-fiber ferrule be flush with the front end of the main body. This additional limitation was known in the art. For example, Katagiyama disclosed “the front end of the ferrule [can be] flush with or protrude[] from a front end of the housing.” EX1013: Claim 9; EX1003: ¶¶293-294.

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. *KSR*, 550 U.S. at 401.

Suzuki/Shimozu/Katagiyama renders Claim 14 obvious.

IX. GROUNDS 5-8: Obvious as Over Suzuki as Addressed in Grounds 1-4 in Further View of Chen

To the extent that the claim term “latch mechanism” as recited in each dependent claim of the ‘075 Patent is construed as being a means-plus-function limitation—and thus limited to a cantilevered latch—cantilevered latches were ubiquitous within the art. EX1016: Figs. 1-4 (latch 18); EX1017: Fig. 1 (latches 120, 220); EX1018: Figs. 1-5 (latch 50); EX1003: ¶¶297-298.

For example, the Figure 3B embodiment of Chen discloses a cantilevered latch along the top side of a connector having a similar geometry as Suzuki. EX1009: Fig. 3B; EX1003: ¶299. Specifically, this embodiment discloses an elongated projection (unlabeled) and latching mechanism on the top side of the connector which are unconnected. EX1003: ¶299.

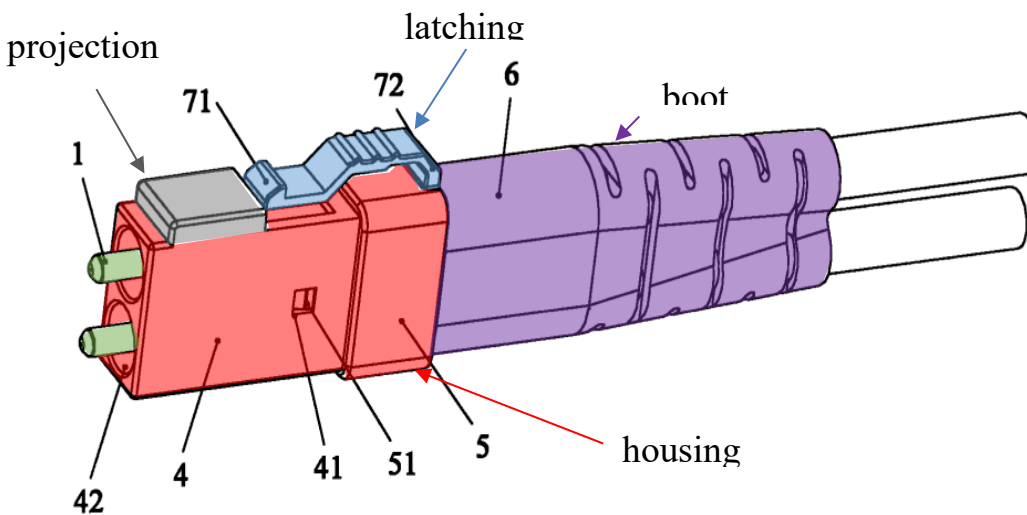


图 3B

EX1009: Figure 3B; EX1003: ¶299.

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. EX1003: ¶300. First, cantilever latching mechanisms are simpler mechanisms, with fewer components making them easier and less expensive to manufacture. EX1003: ¶300. Additionally, some

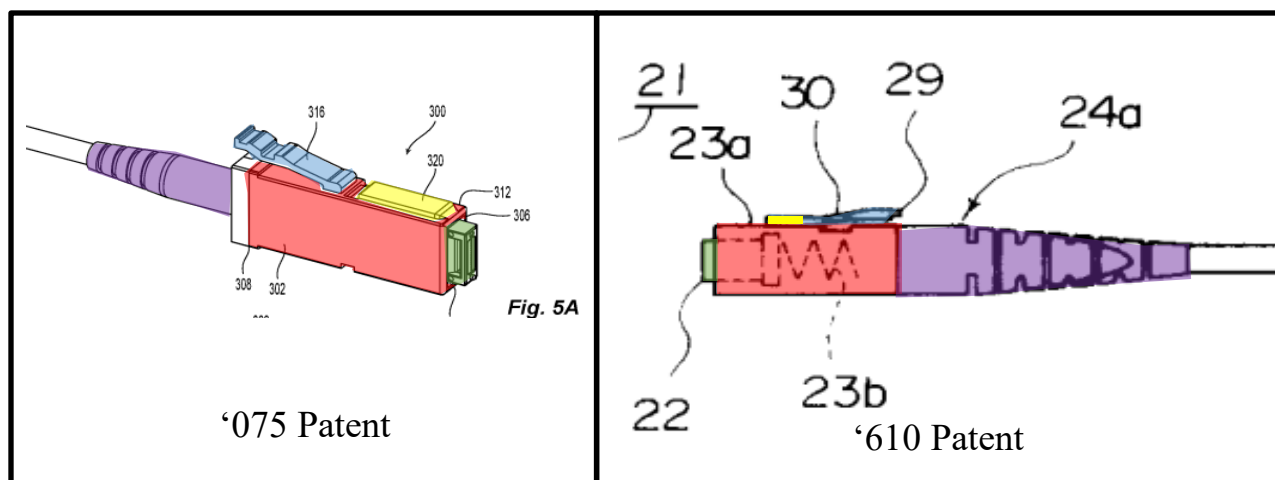
customers prefer cantilever latching mechanisms as they are not susceptible to unintentional releases. EX1003: ¶300.

Cantilevered latching mechanisms were compatible with the shuttering mechanism taught by Suzuki and would require minimal modification of the Suzuki connector to implement. EX1003: ¶301. As the dimensions of the Suzuki and Chen connector bodies are similar, the POSA would recognize the Suzuki connector has sufficient room on its top surface to accommodate the latch. EX1003: ¶301. And as cantilevered latches were already ubiquitous within the art, the success in implementing such a modification would have been predictable. EX1003: ¶301.

Claims 1-9, 11-13, 15, 17, and 19-20 would have been obvious in view of the Suzuki/Shimozu of Ground 1 further modified in view of Chen (Ground 5); Claims 3-5, 16, 18, and 21 would have been obvious in view of the Suzuki/Shimozu/Saito of Ground 2 further modified in view of Chen (Ground 6); Claim 10 would have been obvious in view of the Suzuki/Shimozu/JP391 of Ground 3 further modified in view of Chen (Ground 7) and Claim 14 would have been obvious in view of the Suzuki/Shimozu/Katagiyama of Ground 3 further modified in view of Chen (Ground 8).

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

JP610 discloses a closely similar ferrule holder to that claimed in the '075 Patent. EX1003: ¶303.

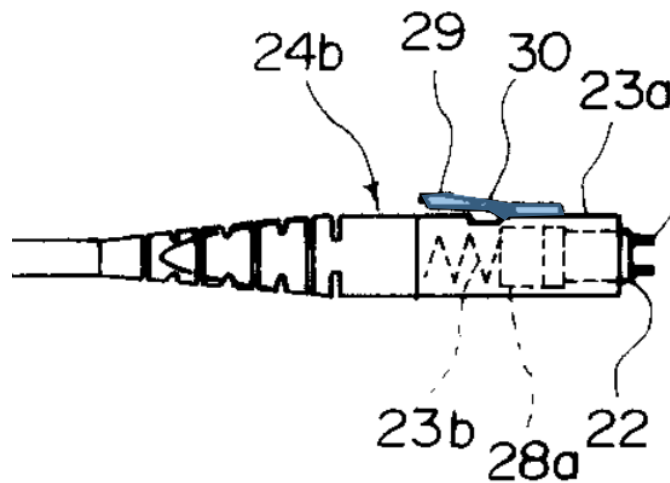


EX1001: Fig. 5A; EX1005: Fig. 2; EX1003: ¶303.

As addressed below, JP610 discloses substantially all of the ‘075 Patent claim limitations, with the latching mechanism and projection being unitary—rather than unconnected—as one of the few exceptions. But JP610 is not wed to the unitary latching mechanism/projection, as JP610 explicitly acknowledges that “it is possible to ... change the shape of the release lever or the engagement piece.” EX1005: [0019]; EX1003: ¶304. As such, it would have been obvious to substitute the JP610 connector’s latch structure with other well-known latch structures. EX1003: ¶305.

A. Motivation to Modify JP610 Connector in View of Manning

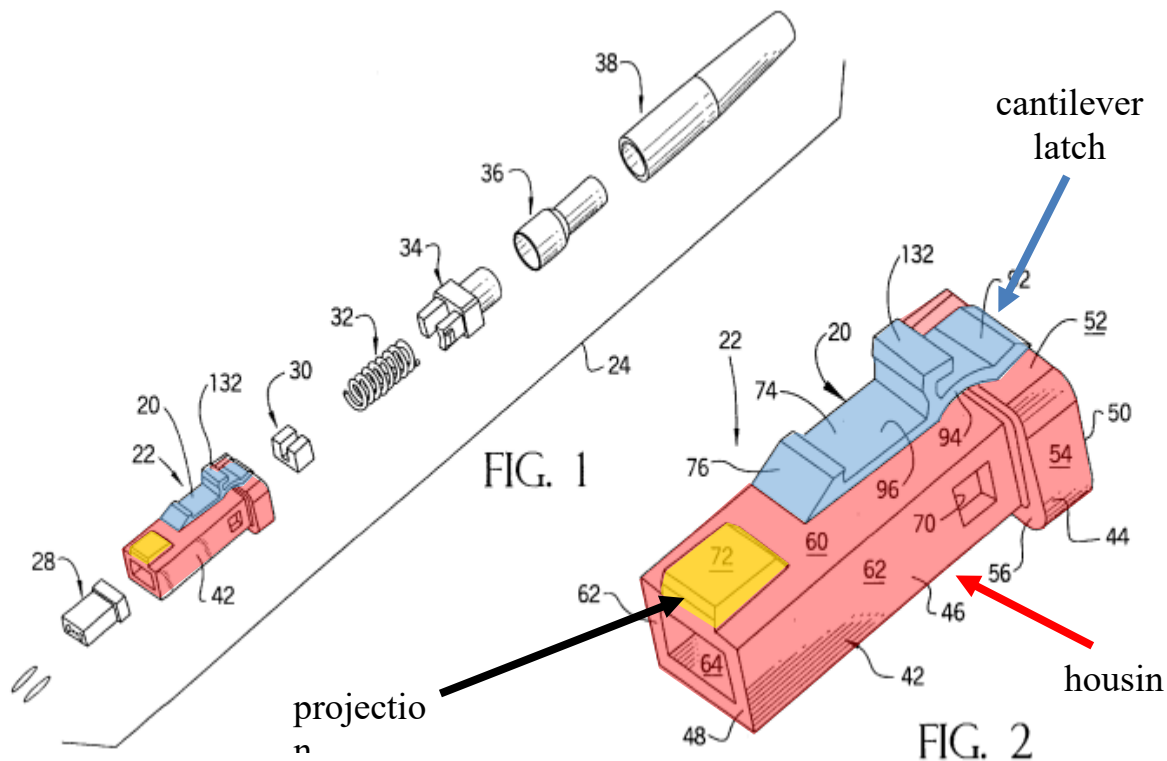
The ferrule holder disclosed in JP610 included a rearward extending cantilevered latch—identified as a “release lever” (29). EX1005: [0013]; EX1003: ¶306.



EX1005: Figure 2; EX1003: ¶306.

It was recognized in the art that such latch configurations can be prone to entanglement with wires and cables. EX1010: 1:30-39; EX1003: ¶307. Accordingly, it was known to introduce forward facing latches such as those described in Manning. EX1010: 2:1-12, Figure 2; *see also* EX1009: Fig. 3B; EX1019: Fig. 1; EX1003: ¶307. 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; EX1003: ¶308. Additionally, in implementing a forward facing latch structure, a projection or key would be “spaced slightly forward of the forwardmost end of the beam” to act as a shroud to prevent wires from getting tangled with the latch. EX1010: 6:18-20, 10:17-29; EX1003:

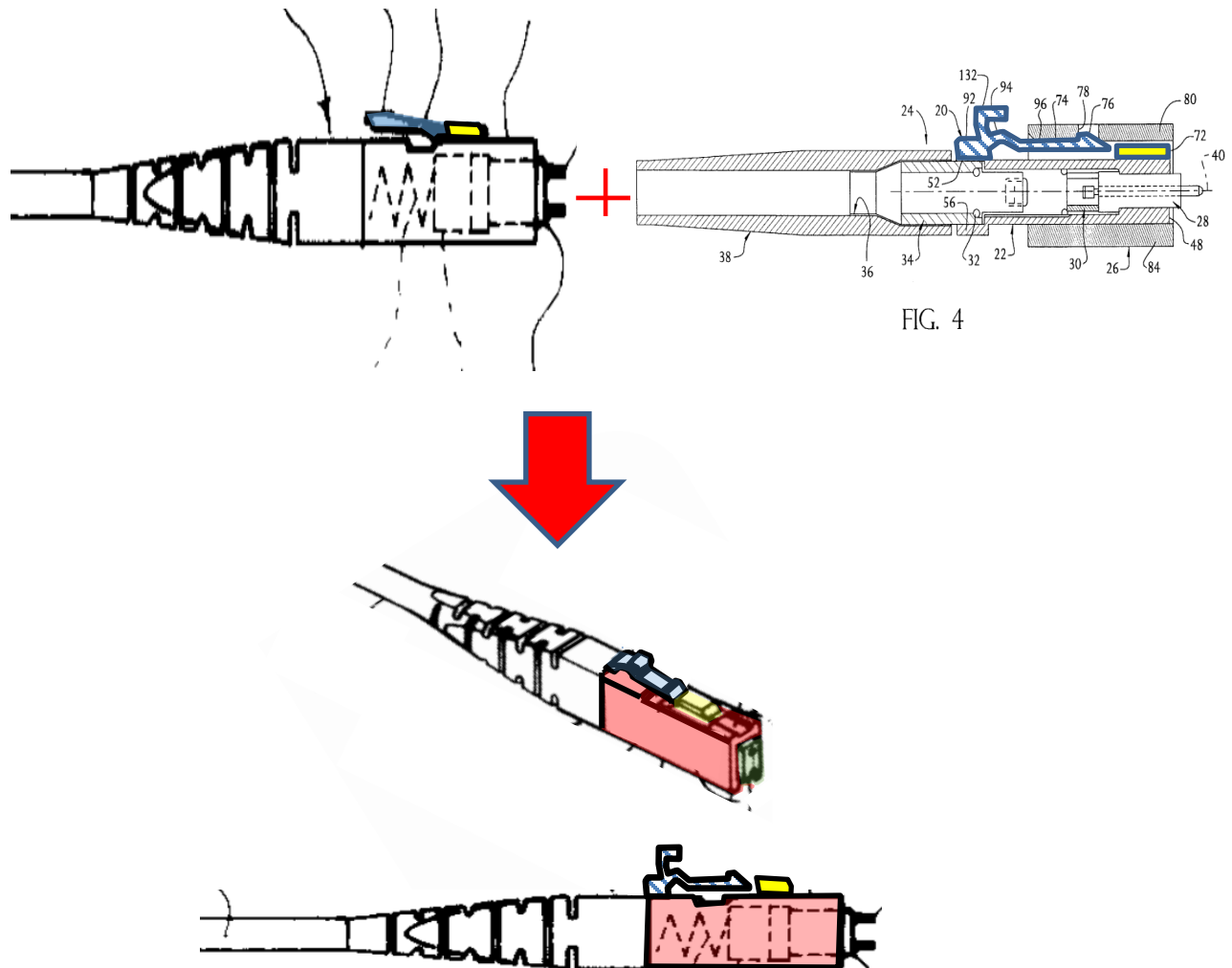
¶309. Manning demonstrates the projection/forward facing latch arrangement as follows:



EX1010: Figs. 1, 2; EX1003: ¶310.

Accordingly, it would have been an obvious improvement to modify the JP610 connector housing by incorporating the forward facing latch structure—while retaining the leading projection of the original latching mechanism to act as a shroud and key—as taught by Manning to prevent the latch from becoming entangled with loose wires or cables. EX1003: ¶311; *KSR*, 550 U.S. at 417. The POSA would

recognize that such a modification would have been a “simple substitution” of latching mechanisms as shown below.³ *KSR*, 550 U.S. at 401.



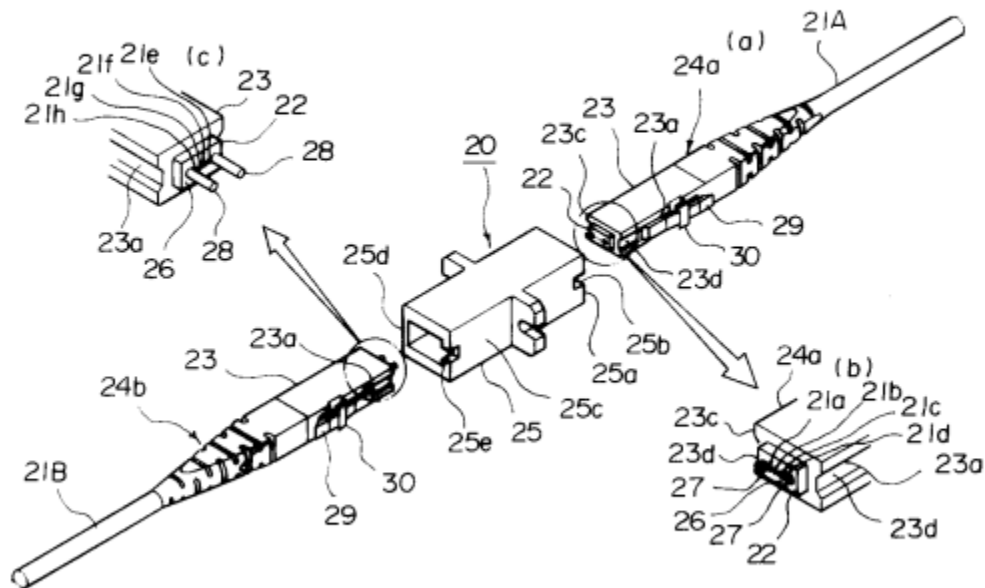
³ As demonstrated by Chen and U.S. Patent 6,918,704, the POSA would have recognized that Manning’s latch structure could be reduced in size to fit housings with a similar profile as the connector disclosed in JP610. EX1009: Fig. 3B; EX1019: Fig. 1; EX1003: ¶312.

EX1003: ¶311 (modified from EX1005: Figs. 1(a), 2; EX1010: Fig. 4)

B. Independent Claim 1

1. [1.p]

JP610 discloses “optical connector plugs composed of a multi-core optical connector ferrule, in which optical fibers terminate.” EX1005: [0007]; EX1003: ¶313. Specifically, the multi-fiber ferrule of JP610 is disclosed as a MT type ferrule. EX1005: [0010]; EX1003: ¶313.

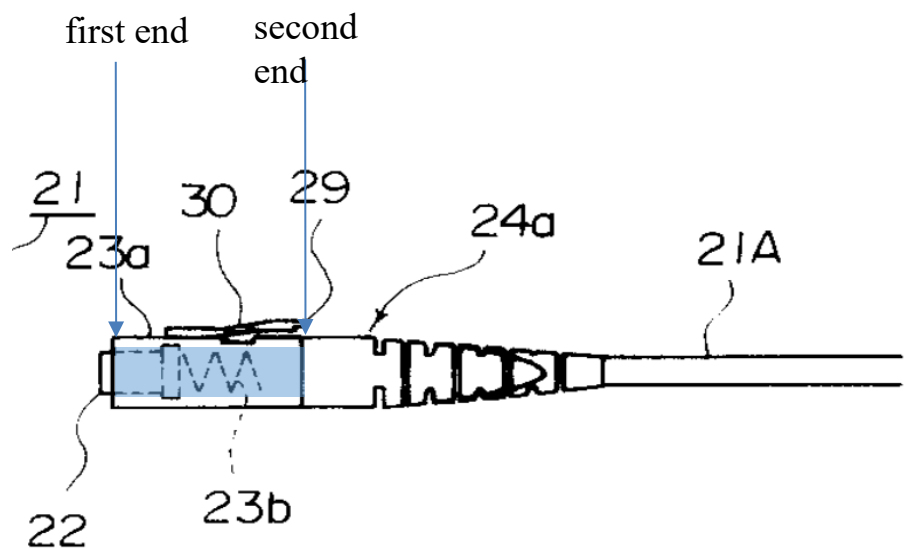


EX1005: Fig. 1.

JP610 discloses [1.P].

2. [1.a]

The JP610 optical connector has a “plug housing” (23)—*i.e.*, a ferrule holder—having a “rectangular cross section.” EX1005: [0011]; EX1003: ¶315. 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]; EX1003: ¶316.

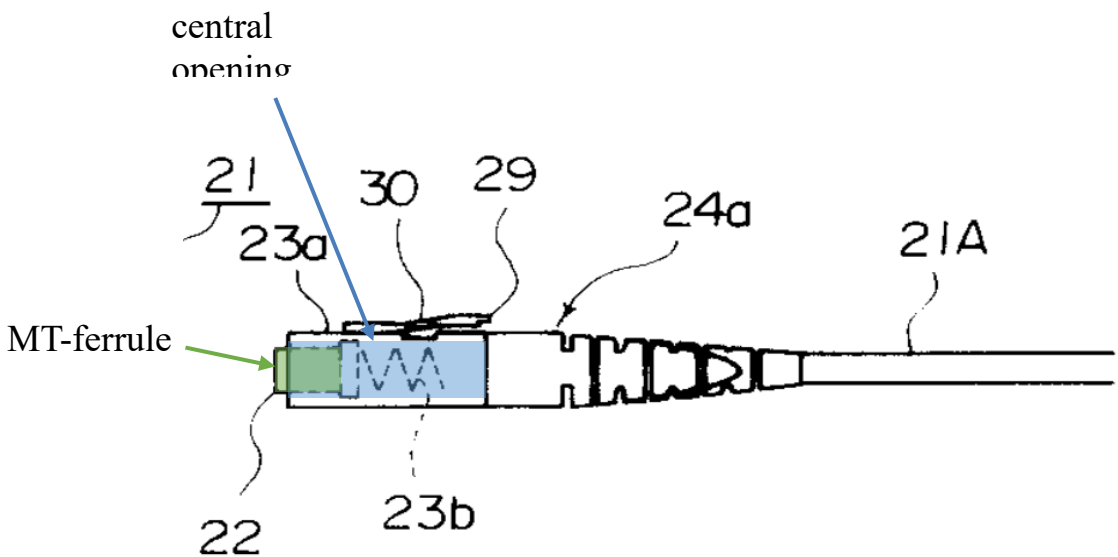


EX1005: Figs. 2 (excerpted and annotated); EX1003: ¶316.

JP610 discloses [1.a].

3. [1.b.1]

The JP610's connector is disclosed as housing an MT type ferrule—*i.e.*, a multi-fiber ferrule. EX1005: [0010], Figs. 1, 2; EX1003: ¶318. JP610 further discloses that the MT ferrule depicted in the figures supports four fibers (21a-21d, 21e-21h), but that other fiber configurations were contemplated. EX1005: [0009], [0014]. Fig. 1; EX1003: ¶¶318-319.

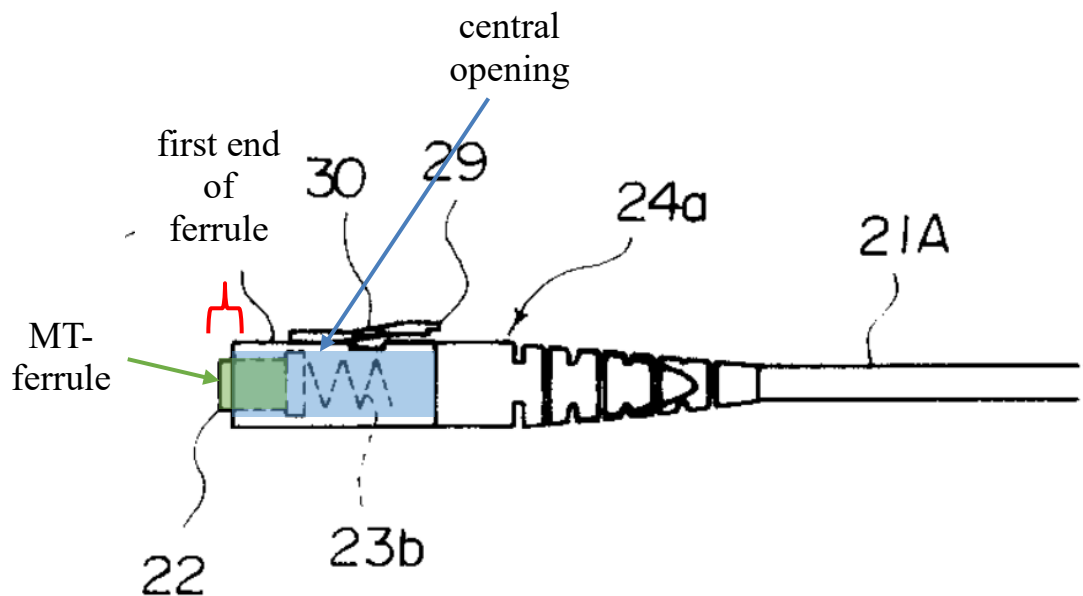


EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶318.

JP610 discloses [1.b.1].

4. [1.b.2]

As shown in Figure 2, the JP610 MT-type ferrule is exposed from the opening at one end (*i.e.*, “the first end”) of the ferrule holder:

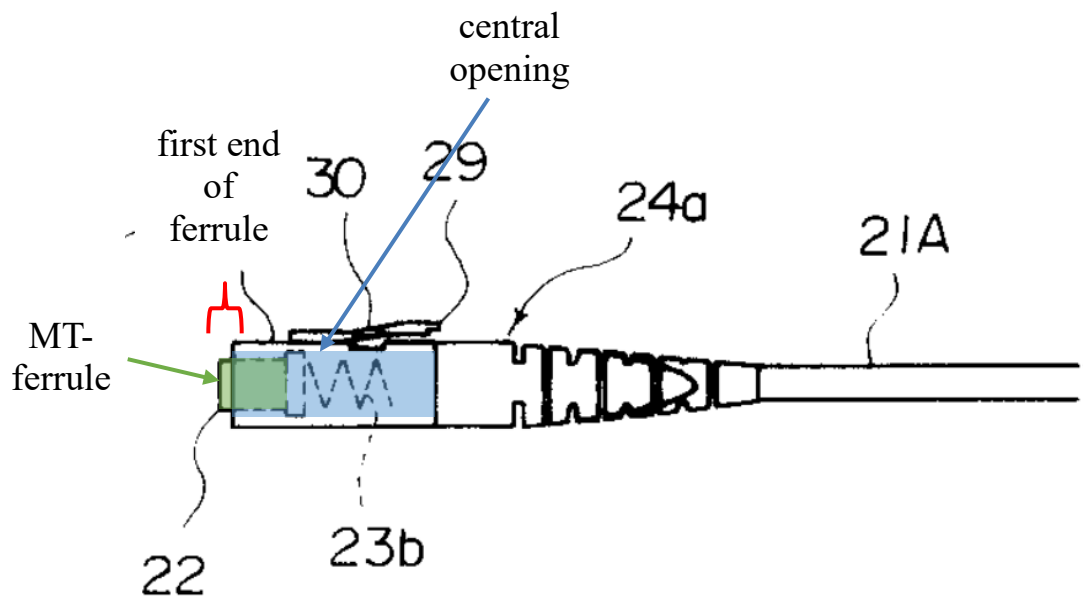


EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶321.

JP610 discloses [1.b.2].

5. [1.b.3]

The POSA would recognize the 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 extend from the boot and terminate at the ferrule. EX1003: ¶323.

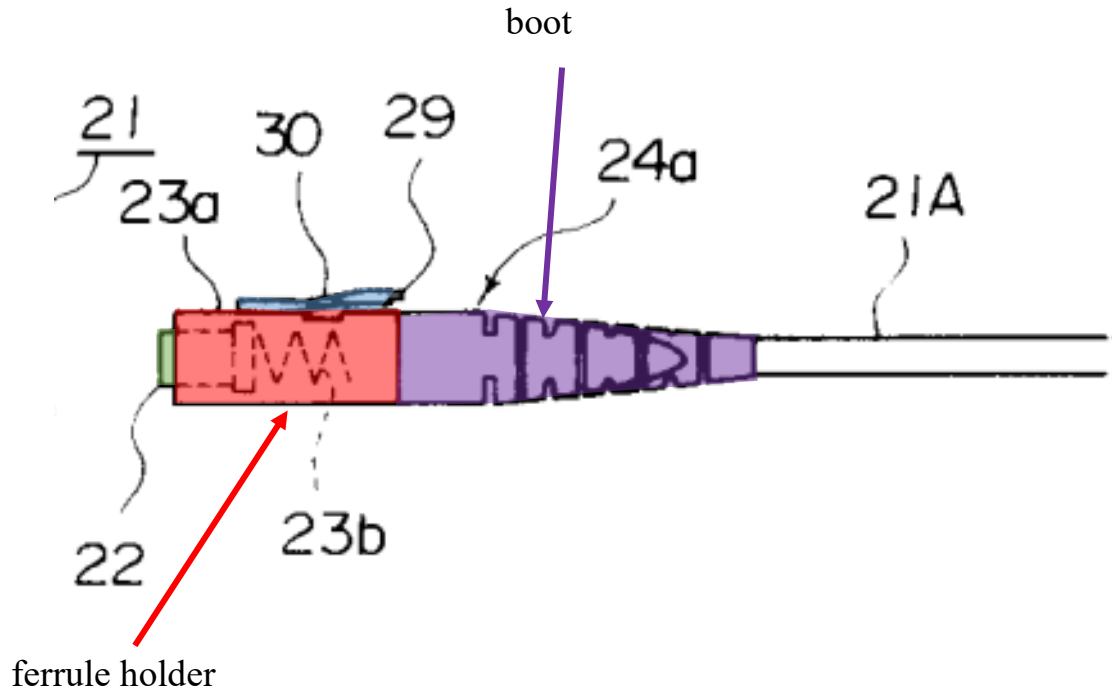


EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶323.

JP610 discloses [1.b.3].

6. [1.c]

JP610's figures depict a boot extending in a rearward direction from the ferrule holder and supporting the optical fiber (21):



EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶¶325-326.

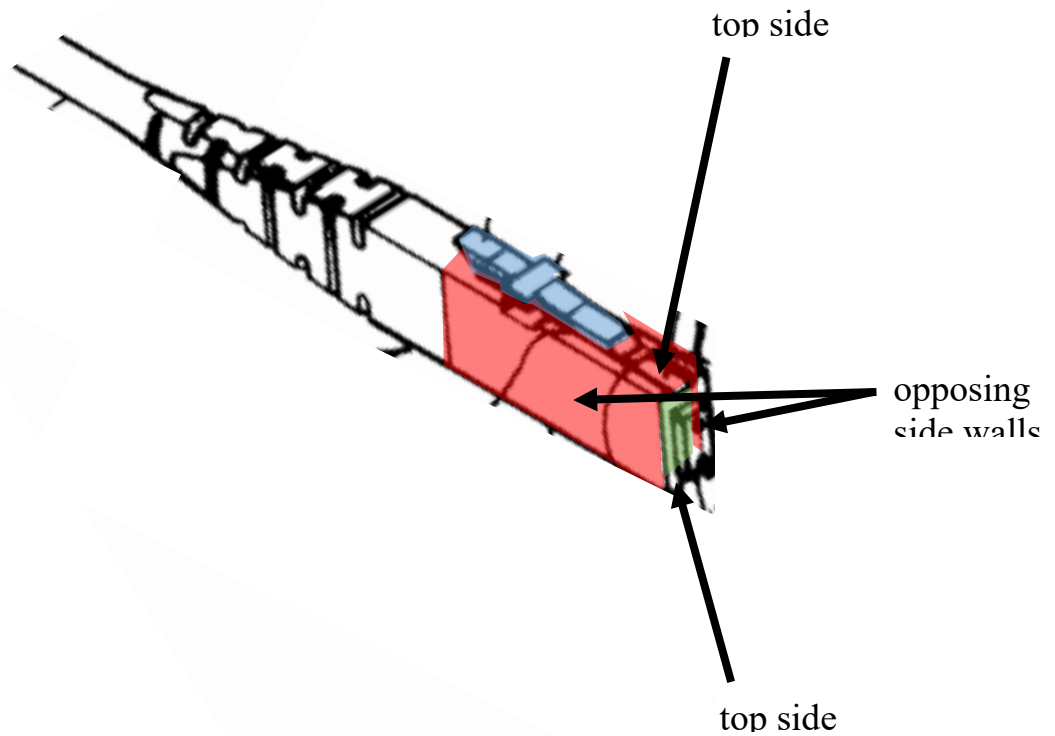
JP610 discloses further that the optical fiber (21) being supported by the boot contains the four fibers (21a-21d, 21e-21h) terminating at the face of the ferrule.

EX1005: [0009], [0014]. EX1005: [0014], [0016], Figs. 1, 2; EX1003: ¶326.

JP610 discloses [1.c].

7. [1.d]

The POSA would recognize that connectors within the prior art can be rotated to match the orientation as recited in the '075 Patent claims. EX1003: ¶328. The top side, a bottom side, and opposing side walls can thus be identified as follows:

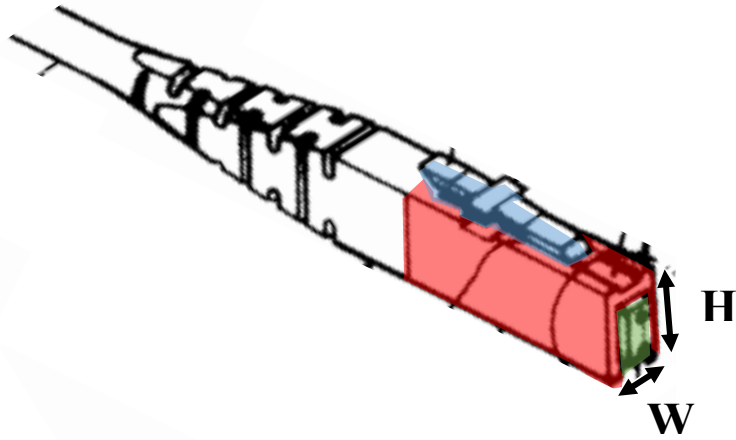


EX1005: Fig. 1(a) (excerpted and annotated); EX1003: ¶329.

JP610 discloses [1.d].

8. [1.e.1]

In the context of the [1.d] orientation above, the separation between the top and bottom sides (H) is more than a separation between the opposing side walls (W) as shown below:

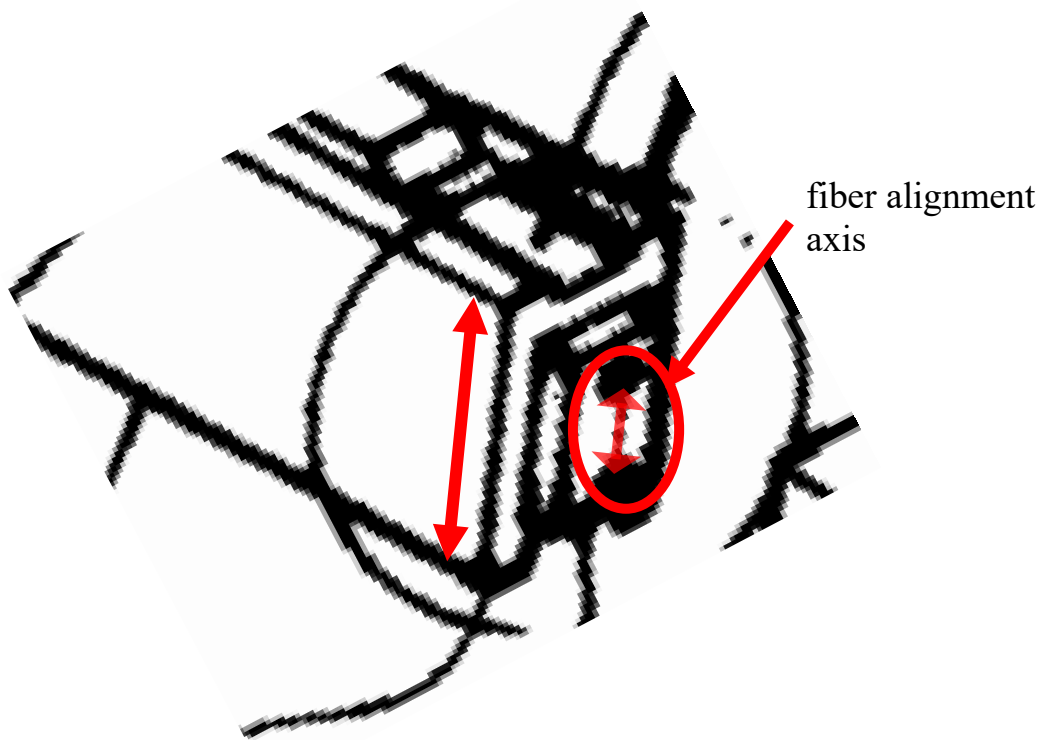


EX1005: Fig. 1(a) (excerpted and annotated); EX1003: ¶331.

JP610 discloses [1.e.1].

9. [1.e.2]

In the context of the [1.d] orientation 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 as shown below:



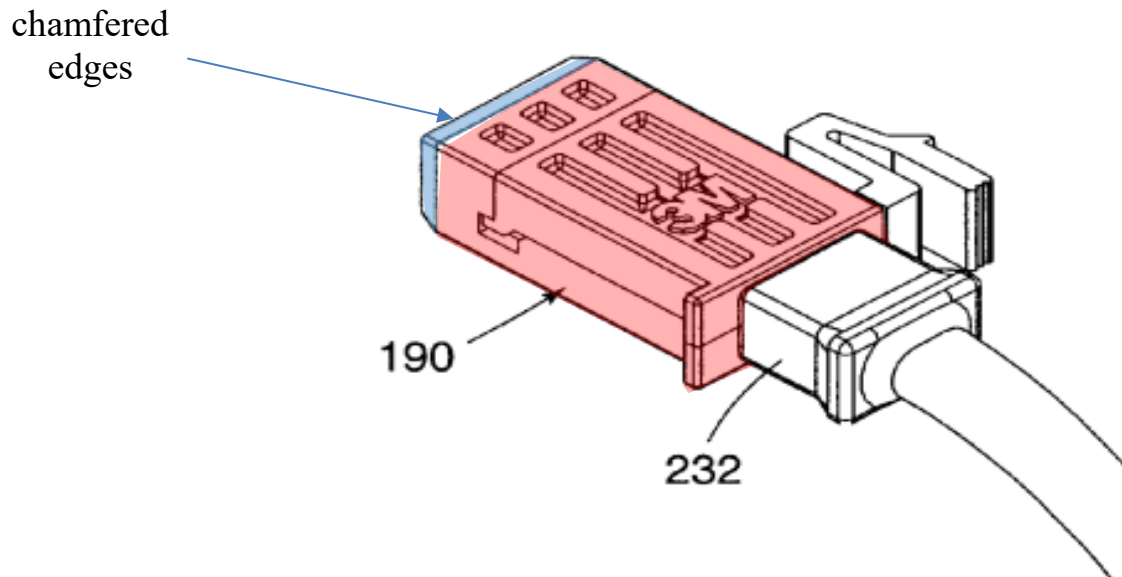
EX1005: Fig. 1(a) (excerpted and annotated); EX1003: ¶333.

JP610 discloses [1.e.2].

10. [1.f]

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. EX1003: ¶335.

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



EX1011: Fig. 12; EX1003: ¶336.

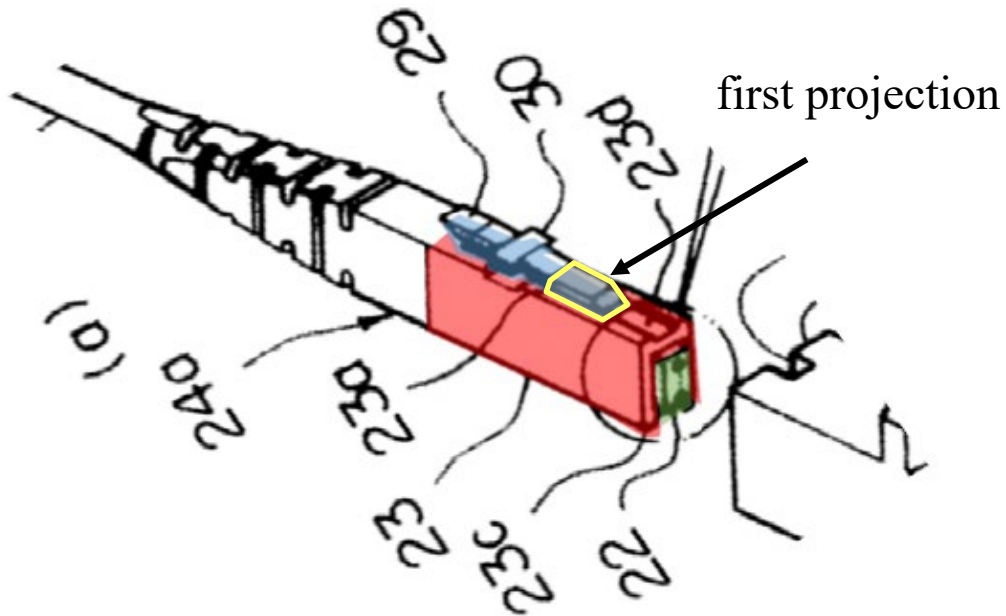
Adding chamfered surfaces at the edge of the ferrule holders—as disclosed by Loder—was a known technique used to improve similar connectors to that of JP610 that would have resulted in a predictable improvement—assist in aligning and guiding the ferrule holders into the adapter. EX1003: ¶337; *KSR*, 550 U.S. at 417. Accordingly, the POSA would have viewed the addition of chamfered surfaces at the front edge of the ferrule holder as a simple and obvious improvement to JP610 connector. EX1003: ¶337.

JP610 in view of Loder renders [1.f] obvious.

11. [1.g]

JP610 includes a first projection in the form of fulcrum of the release lever/latch (29) on the outside surface on the top side of the main body and extending longitudinally. 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.”); EX1003: ¶339.



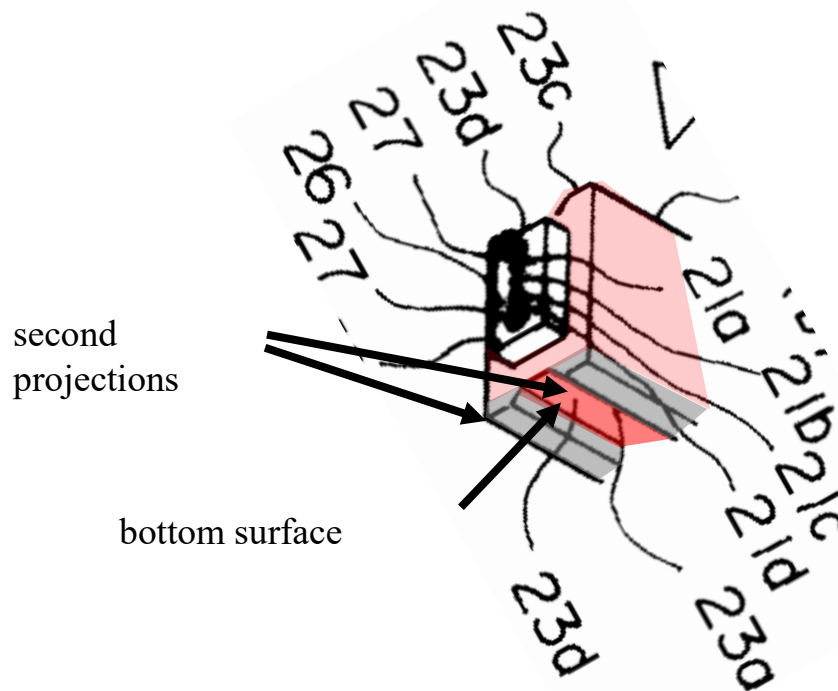
EX1005: Fig. 1(a) (excerpted and annotated); EX1003: ¶339.

JP610 discloses [1.g].

12. [1.h]

As depicted in Figures 1(b) and 1(c), the JP610 connector housing had a groove 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 [1.d] orientation. EX1005: [0013], Claim 3. The projections on the side opposite of the JP610 latching mechanism meets the second projection

limitation in that they extend longitudinally along the surface of the side designated as the bottom according to the [1.d] orientation above.

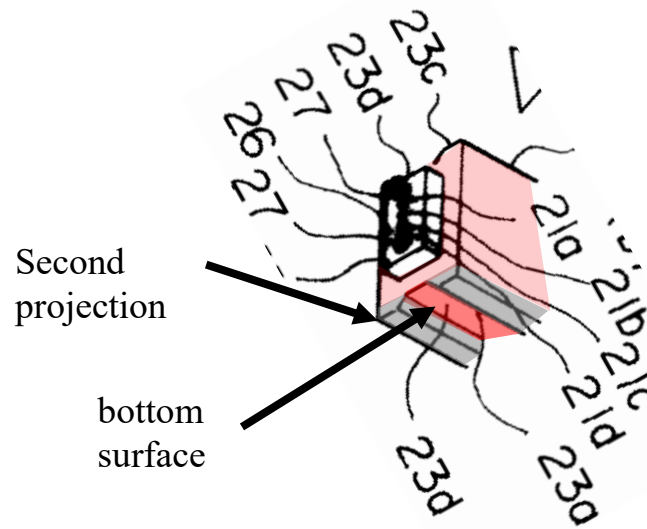
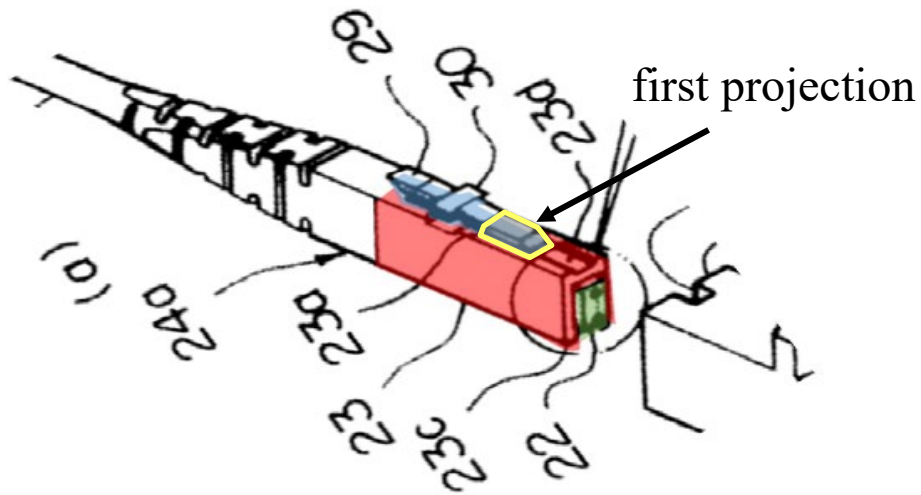


EX1005: Fig. 1(b) (excerpted and annotated); EX1003: ¶341.

JP610 discloses [1.h].

13. [1.i]

As illustrated below, the first projection on to the top side has a “different shape” than the second projection:



EX1005: Figs. 1(a), 1(b) (excerpted and annotated); EX1003: ¶343.

At a minimum, the first projection is wider than the second projection as readily observed from the drawings. EX1003: ¶344. Any such dimensional

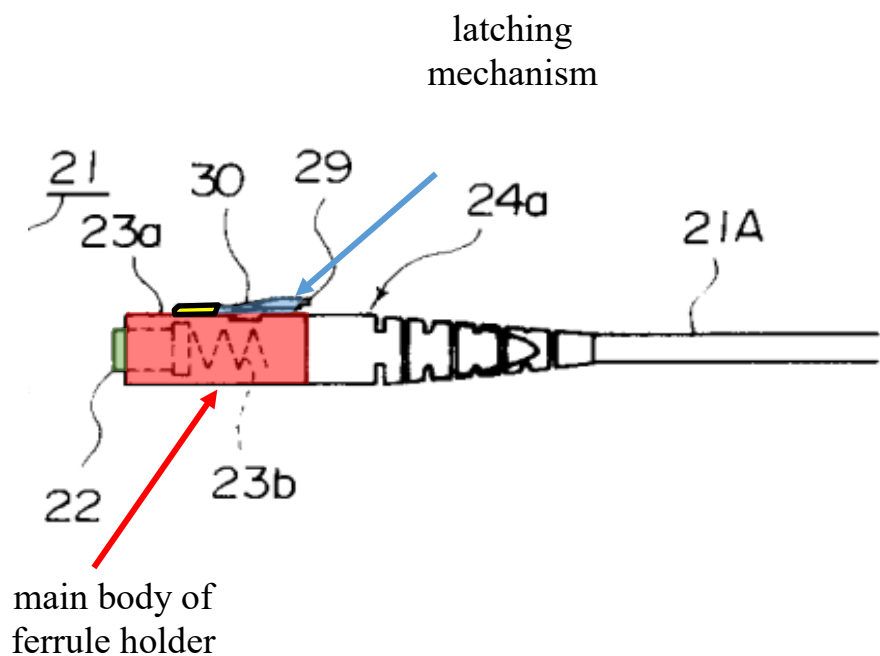
difference gives the first projection a “different shape” than the second projection.

EX1003: ¶344.

JP610 discloses [1.i].

14. [1.j]

The JP610 connector includes “a release lever” (29)—*i.e.*, a cantilever latching arm. EX1005: [0012]; EX1003: ¶346. In the context of the [1.d] orientation above, JP610 discloses a latching mechanism on the top side of the connector’s main body:



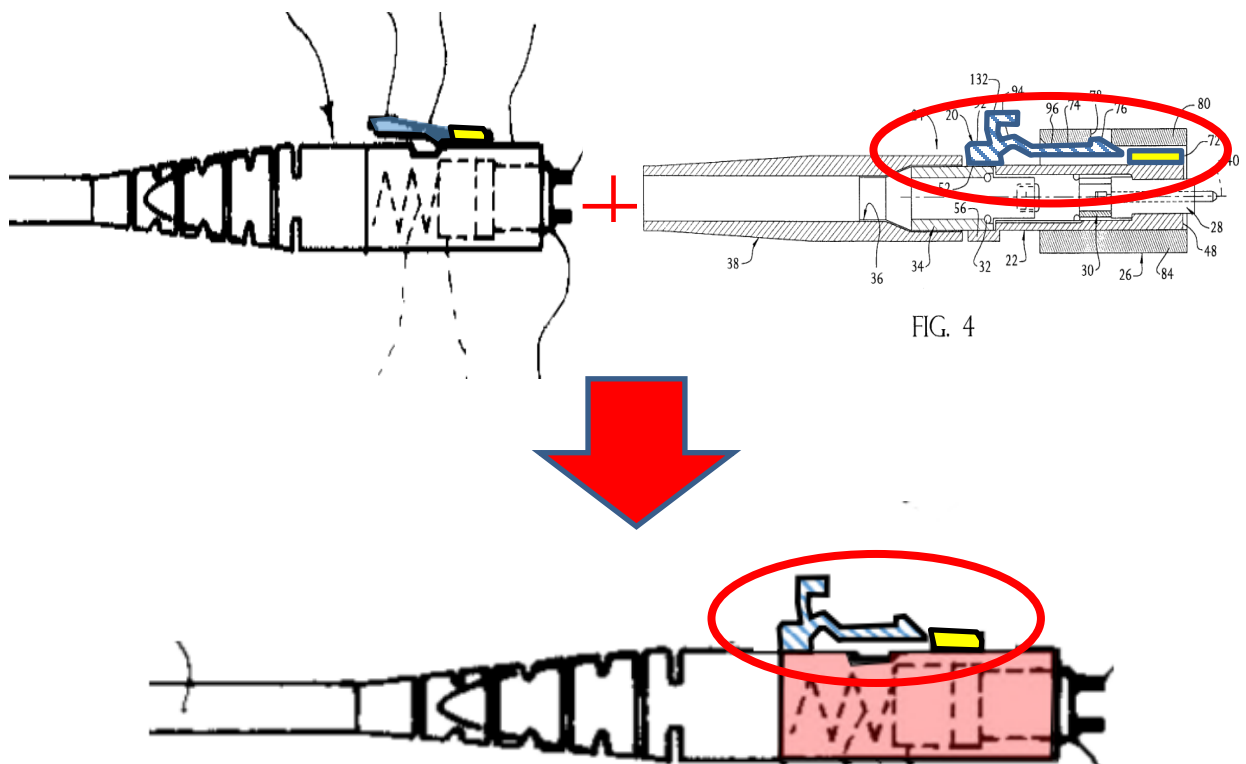
EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶347.

JP610 discloses [1.j].

15. [1.k]

The latch mechanism of JP610 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. EX1003: ¶349.

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 disclosed in JP610 with the forward projecting latching mechanism disclosed by Manning as shown in the figures below for the reasons given above in Section IX(A). EX1003: ¶350.



EX1003: ¶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); EX1003: ¶351. 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. EX1003: ¶351.

JP610/Manning renders [1.k] obvious.

JP610 in view of Manning and Loder renders Claim 1 of the ‘075 Patent obvious.

C. Independent Claim 18

1. [18.p.]-[18.e.2], [18.j]-[18.k]

A number of Claim 18’s limitations are identical to those recited by Claim 1 and were disclosed by JP610 or rendered obvious by JP610/Manning for the same reasons as discussed with respect to Claim 1.

Claim 1 Limitations	Corresponding Claim 18 Limitations
[1.p]	[18.p]
[1.a]	[18.a]
[1.b.1]	[18.b.1]
[1.b.2]	[18.b.2]
[1.b.3]	[18.b.3]
[1.c]	[18.c]
[1.d]	[18.d]
[1.e.1]	[18.e.1]
[1.e.2]	[18.e.2]
[1.j]	[18.j]
[1.k]	[18.k]

2. [18.f]

[18.f] is similar to [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.” EX1003: ¶362. For the reasons discussed with respect to [1.f], JP610/Loder renders [18.f] obvious.

3. [18.g]

[18.e] is similar to [1.e], except that it omits the language “on a first outside surface on the top side of the main body.” EX1003: ¶363. As discussed with respect to [1.g], JP610 discloses [18.g].

4. [18.h]

[18.h] is similar to [1.h], except that it omits the language “on a second outside surface on the bottom side of the main body.” EX1003: ¶364. As discussed with respect to [1.h], JP610 discloses the [18.h].

5. [18.i]

[18.i] is similar to [1.i], but adds:

- the “first projection is on a first outside surface of the top side of the main body,” which was addressed in [1.g];
- “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

- 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].

EX1003: ¶¶365-366.

As discussed with respect to [1.g]-[1.i], JP610 discloses the [18.i]. EX1003: ¶367.

D. Independent Claim 19

1. [19.p]-[19.d.2], [19.f]-[19.h], [19.j]-[19.k]

A number of Claim 19’s limitations are identical to those recited by Claim 1 and were disclosed by JP610 or rendered obvious by JP610/Manning for the same reasons as discussed with respect to Claim 1.

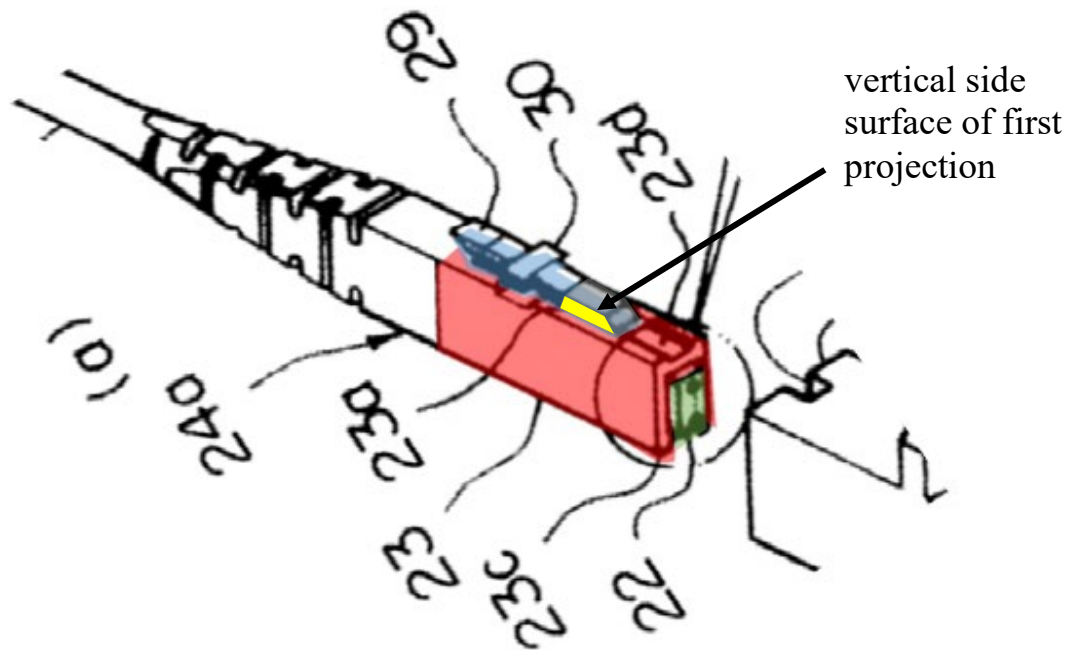
Claim 1 Limitations	Corresponding Claim 19 Limitations
[1.p]	[19.p]
[1.a]	[19.a]
[1.b.1]	[19.b.1]
[1.b.2]	[19.b.2]
[1.b.3]	[19.b.3]
[1.d]	[19.c]
[1.e.1]	[19.d.1]
[1.e.2]	[19.d.2]
[1.g]	[19.f]
[1.h]	[19.g]
[1.i]	[19.h]
[1.j]	[19.j]
[1.k]	[19.k]

2. [19.e]

[19.e] is similar to [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.” EX1003: ¶380. The specification of the ‘075 Patent never uses the term “lead-in.” EX1003: ¶381. Rather, the only written support for the front end of the ferrule holder having a lead-in is the figures’ depiction of the ferrule holder’s edges being chamfered. EX1003: ¶381. Accordingly, the POSA would recognize that chamfers on the front edges of the ferrule holder would meet the claimed “lead-in.” EX1003: ¶382. For the reasons discussed with respect to [1.f], JP610/Loder renders [19.e] obvious. EX1003: ¶382.

3. [19.i]

As addressed with respect to [1.g] above, the JP610 connector includes a first projection in the form of fulcrum of the release lever/latch (29) on the outside surface on the top side of the main body and extending longitudinally. EX1005: [0012]; EX1003: ¶386. This projection includes vertical side surfaces on each side.



EX1005: Figs. 1(a) (excerpted and annotated); EX1003: ¶386.

As addressed with respect to [1.h] above, the connector of JP610 includes second projection(s) on the bottom surface of the connector which have vertical side surfaces:

into an adapter by mating with guide grooves inside the corresponding adapter. EX1003: ¶390. Accordingly, the POSA 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. EX1003: ¶391.

JP610 discloses [19.i].

E. Independent Claim 21

1. [21.p] through [21.e.2]

[21.p]–[21.e.2] are similar to [1.p]–[1.e.2], except that they more narrowly specify the multi-fiber ferrule as an MT-type ferrule. EX1003: ¶397. The ferrule of JP610 is identified as being an “MT connector.” EX1005: [0010]; EX1003: ¶397. For the reasons discussed with respect to [1.p]–[1.e.2], JP610 discloses [21.p]–[21.e.2]. EX1003: ¶¶397-408.

2. [21.f]

[21.f] is identical to [18.f]. As discussed with respect to [18.f], JP610/Loder renders [21.f] obvious.

3. [21.g] through [21.h]

[21.g]–[21.h] are identical to [1.g]–[1.h]. As discussed with respect to [1.g]–[1.h], JP610 discloses the [21.g]–[21.h].

4. [21.i]

[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.” EX1003: ¶412. As discussed with respect to [1.i], JP610 discloses [21.i]. EX1003: ¶412.

5. [21.j] through [21.k]

[21.j]–[21.k] is identical to [1.j]–[1.k]. As discussed with respect to [1.j]–[1.k], JP601 discloses [21.j] and JP610/Manning renders [21.k] obvious.

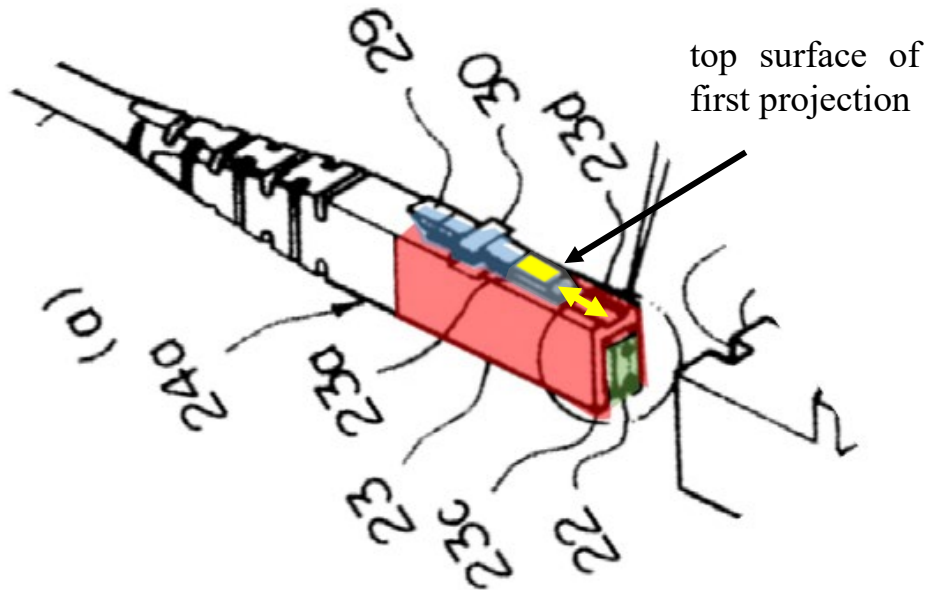
F. Claim 2

Claim 2 depends from Claim 1 further requiring the multi-fiber ferrule be an MT type ferrule. This additional limitation is disclosed by JP610 in that the ferrule is identified as an MT-type ferrule. EX1005: [0010]; EX1003: ¶415.

JP610/Manning/Loder renders this claim obvious.

G. Claim 3

Claim 3 depends from Claim 1 further requiring the top surface of the first projection be rearward of the front end of the ferrule holder. This limitation is disclosed by JP610, as shown in Figure 1(a):



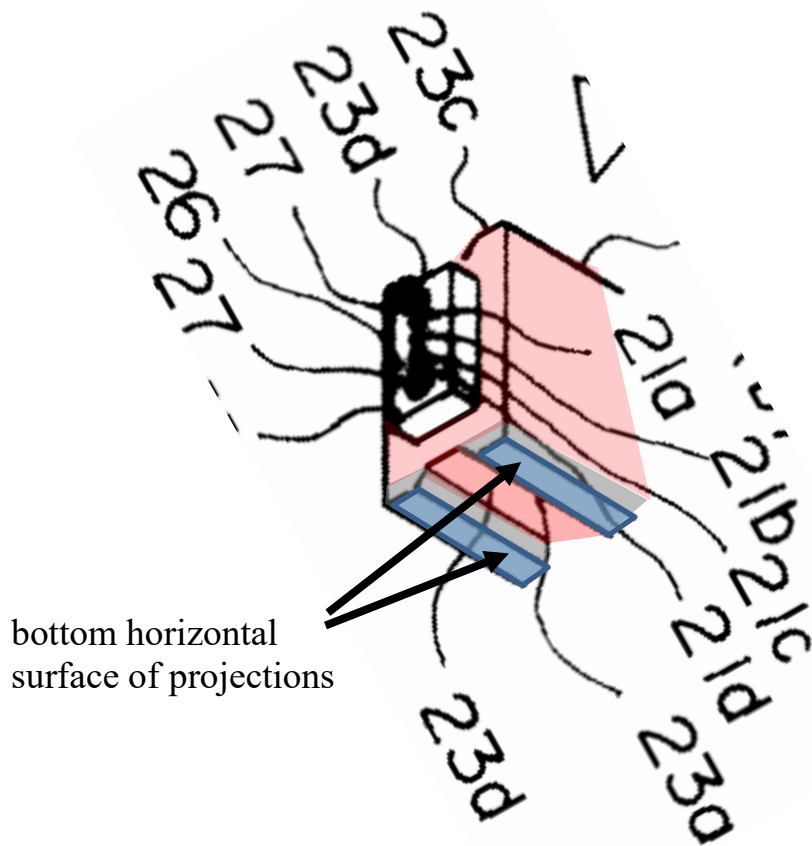
EX1005: Figs. 1(a) (excerpted and annotated); EX1003: ¶¶417-419.

JP610/Manning/Loder renders this claim obvious.

H. Claim 4

Claim 4 depends from Claim 1 further requiring the top surface of the second projection be rearward of the front end of the ferrule holder. EX1003: ¶421. 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. EX1003: ¶421.

Specifically, the set of second projections of JP610 connector have horizontal bottom surfaces that begins at the front end of the ferrule holder and extend horizontally rearward.



EX1005: Fig. 1(c) (excerpted and annotated); EX1003: ¶422.

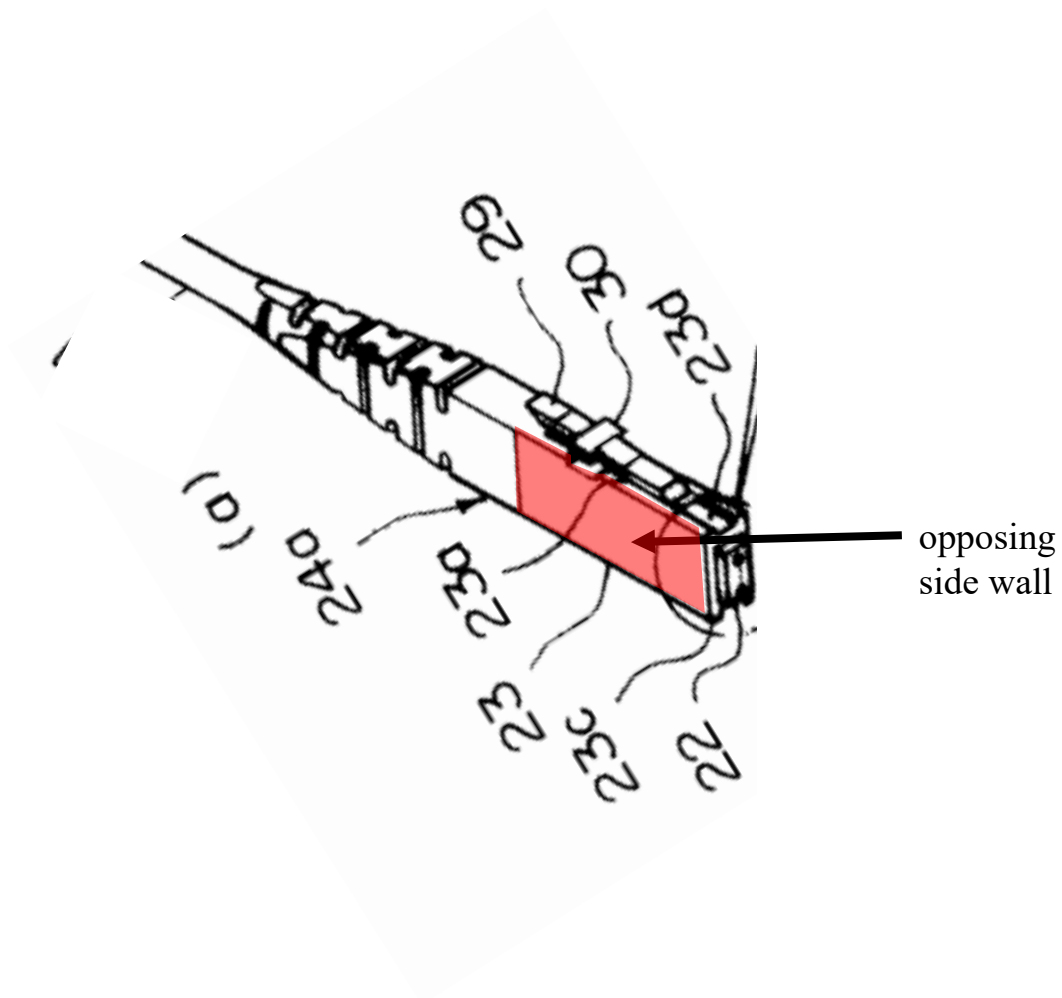
Further, by adding chamfers surrounding the face of the ferrule holder as addressed in [1.g], the chamfer would separate the face of the ferrule holder and the horizontal bottom surface of the projection such that the horizontal bottom surface of the projection would be rearward of the front end of the ferrule holder. EX1003: ¶423.

I. Claim 5

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. EX1003: ¶424. Claim 5 adds the same limitations of Claims 3 and 4, and as such would have been obvious in view of JP610/Manning/Loder for the same reasons explained in Claims 3 and 4. EX1003: ¶424.

J. Claim 6

Claim 6 depends from Claim 1 adding a limitation that the opposing sidewalls are smooth and solid. EX1003: ¶425. As shown Figure 1(a), JP610 depicts the opposing sidewalls as being smooth and solid:

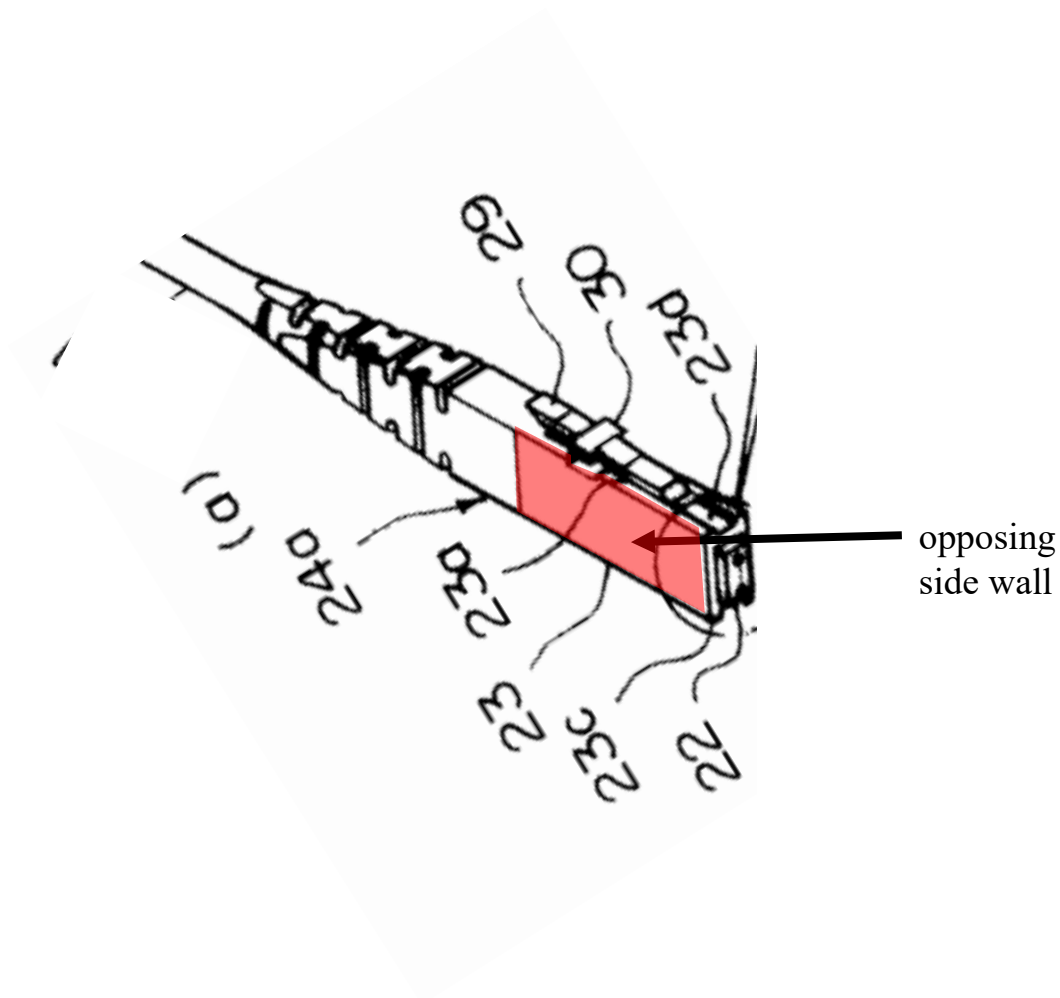


EX1005: Fig. 1(a) (excerpted and annotated); EX1003: ¶425.

JP610/Manning/Loder renders this claim obvious.

K. Claim 7

Claim 7 depends from Claim 1 adding a limitation that the opposing sidewalls are flat. EX1003: ¶427. As shown in Figure 1(a), JP610 depicts the opposing sidewalls as being flat:

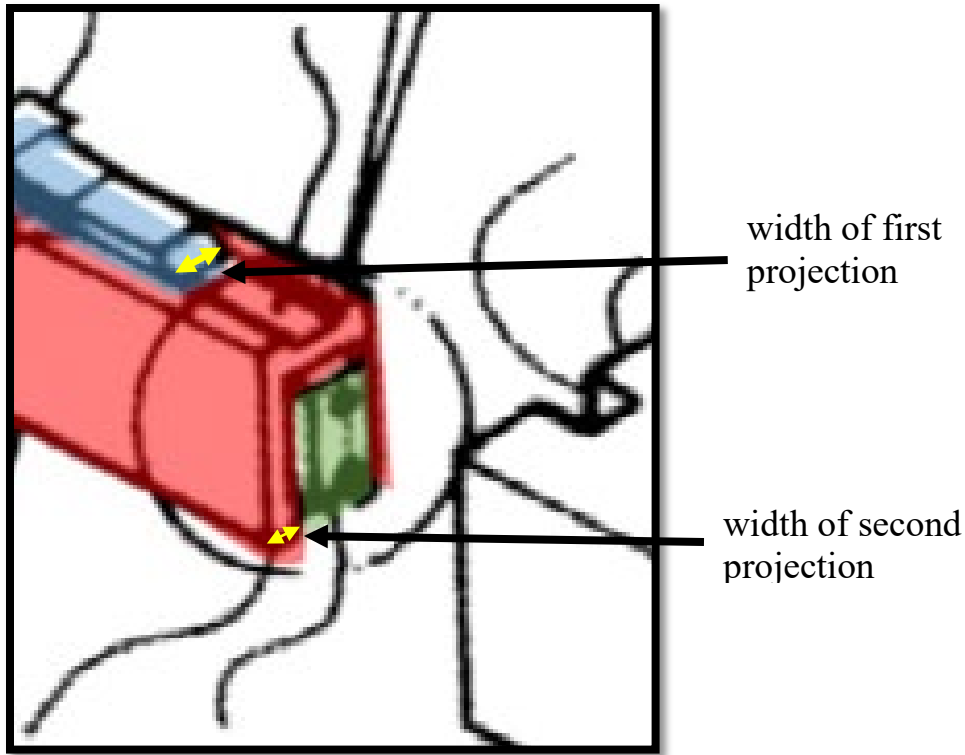


EX1005: Fig. 1(a) (excerpted and annotated); EX1003: ¶427.

JP610/Manning/Loder renders this claim obvious.

L. Claim 8

Claim 8 depends from Claim 1, further limiting the “different shape[d]” first projection and the second projection to having different widths. EX1003: ¶429. As disclosed in the figures, the first projection of JP610 connector is wider than the second projection:

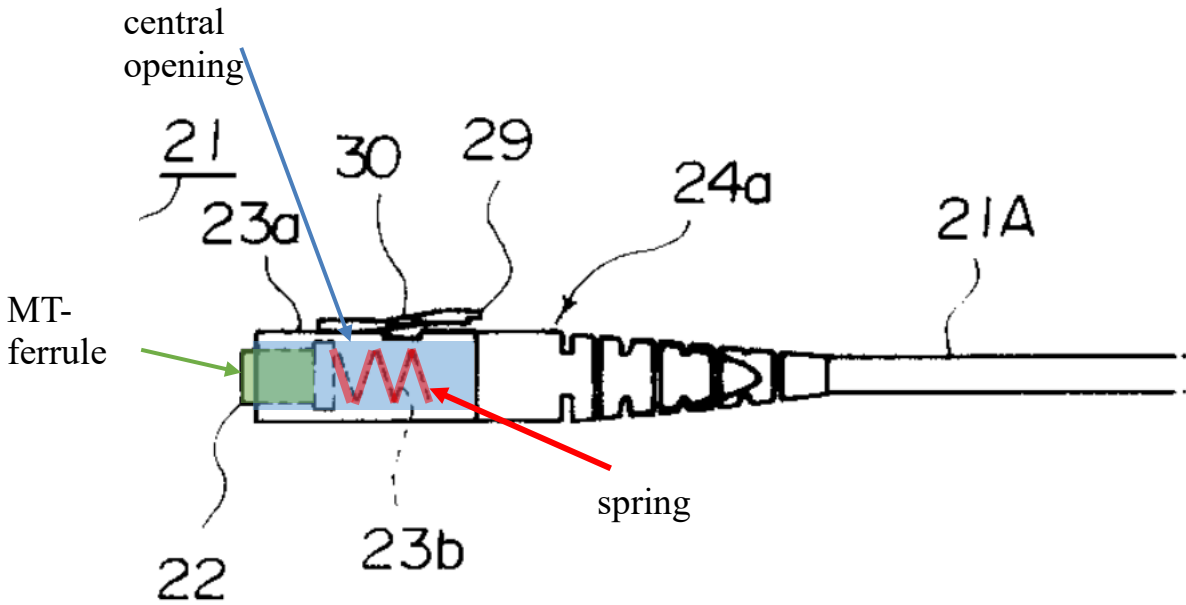


EX1005: Fig. 1(a) (excerpted and annotated); EX1003: ¶429.

JP610/Manning/Loder renders this claim obvious.

M. Claim 9

Claim 9 depends from Claim 1 further requiring that the fiber-optic include a spring biasing the multi-fiber ferrule towards the front end of the ferrule holder. EX1003: ¶431. JP610 discloses “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]; EX1003: ¶431. Notably as depicted in Figure 1, the spring is position rearward of the ferrule (22):



EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶432.

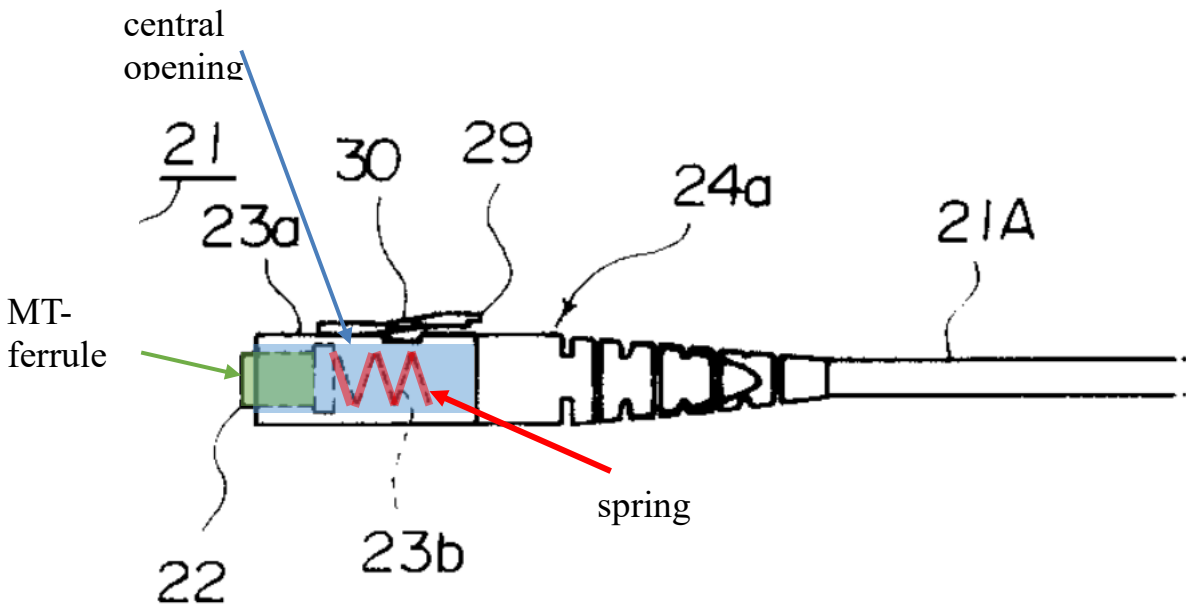
JP610/Manning/Loder renders this claim obvious.

N. Claim 10

Claim 10 depends from Claim 9 further requiring the spring at least partially surround the optical fibers. EX1003: ¶434.

Although the routing of the optical fibers is not addressed by JP610, the POSA would understand the claimed routing whereby the spring at least partially surrounds the optical fibers is obvious, if not inherent. EX1003: ¶435. The optical fibers are necessarily routed from the fiber optic cable (21A) to the ferrule. EX1003: ¶435. As depicted in Figure 2, the spring is centered between the cable and the ferrule.

EX1003: ¶435. The POSA would have routed the optical fibers along the most direct path—*i.e.*, through the spring. EX1003: ¶435.

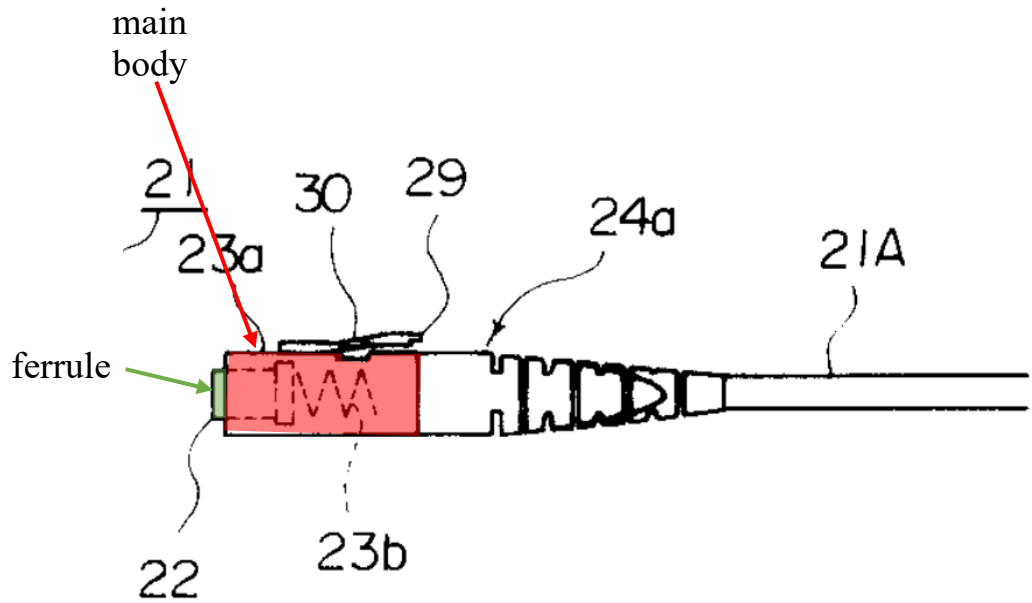


EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶435.

JP610/Manning/Loder renders this claim obvious.

O. Claim 12

Claim 12 depends from Claim 1 further requiring the ferrule extend forward of the main body. As disclosed in the figures, the JP610 ferrule (22) extends forward of the main body:

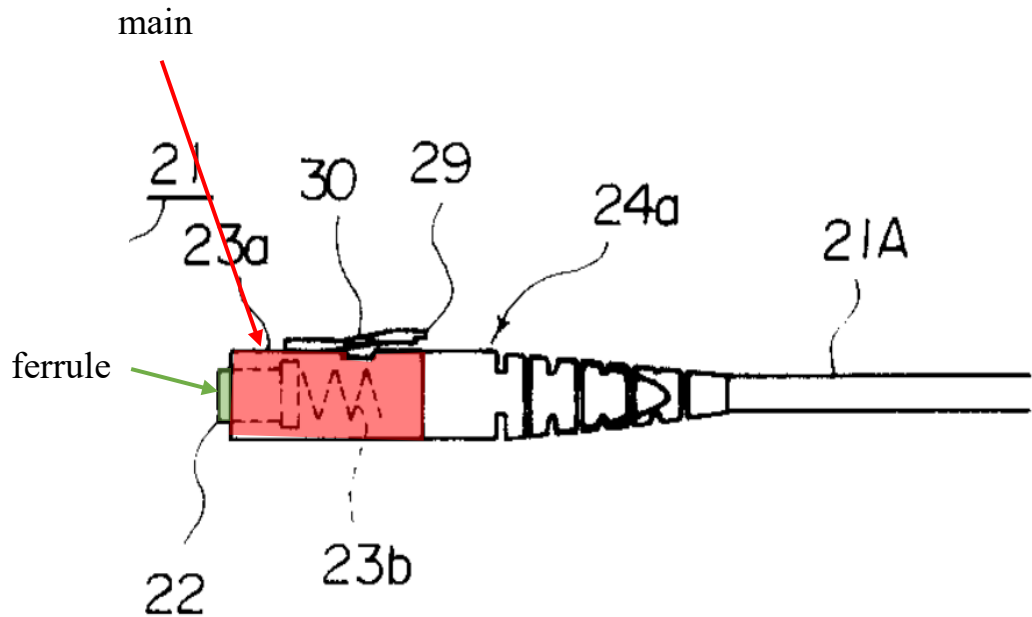


EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶437.

JP610/Manning/Loder renders this claim obvious.

P. Claim 13

Claim 13 depends from Claim 1 further requiring the ferrule extend beyond the main body. EX1003: ¶439. As disclosed in the figures, the JP610 ferrule (22) extends beyond the main body:



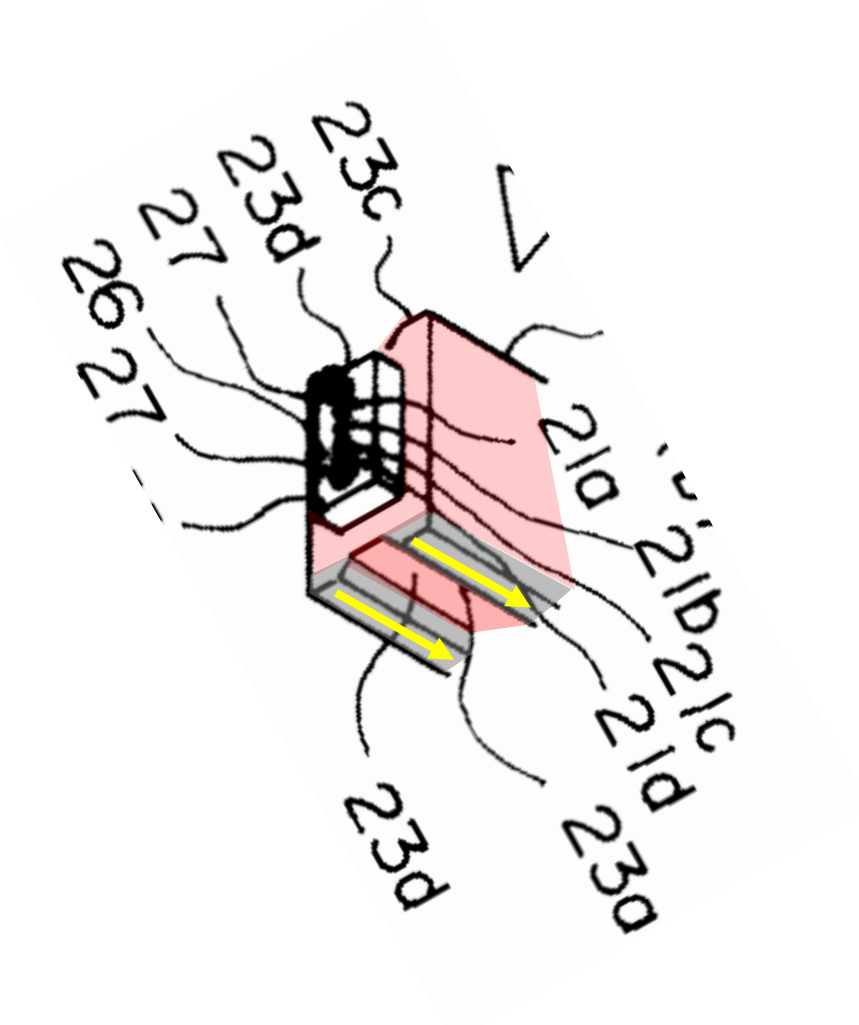
EX1005: Fig. 2 (excerpted and annotated); EX1003: ¶439.

JP610/Manning/Loder renders this claim obvious.

Q. Claim 15

Claim 15 depends from Claim 1 further requiring at least one of the first projection or the second projection extend along a length of the ferrule holder. EX1003: ¶441. Notably, the only relevant disclosures regarding the extension of the first and second projections is in the figure—which depict the projections extending lengthwise—but not the entire length. EX1003: ¶442. Accordingly, the POSA would understand the limitation to require the projections extends in the same

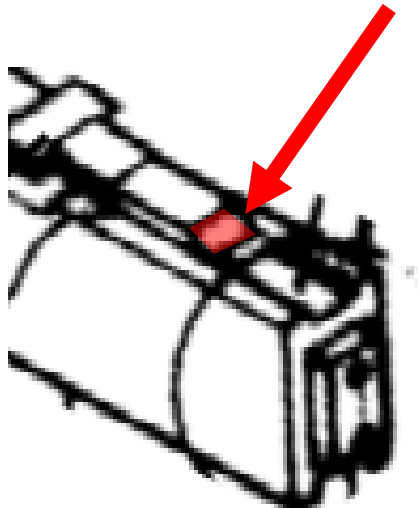
As disclosed in the figures, the second pair of projections of JP610 extends
extend along a length of the ferrule holder:



JP610/Manning/Loder renders this claim obvious.

R. Claim 16

Claim 16 depends from Claim 1 adding a limitation requiring one of the first and the second projections have a chamfered front end or lead-in. As disclosed in the figures, the first projection of JP610 has a chamfered front face:



EX1005: Fig. 1(a) (excerpted and annotated); EX1003: ¶445.

JP610/Manning/Loder renders this claim obvious.

S. Claim 17

Claim 17 depends from Claim 1 adding a limitation requiring the first and the second projections have vertical side surfaces. This additional limitation is the same as in [19.i], and is disclosed by JP610 for the same reasons.

JP610/Manning/Loder renders this claim obvious.

T. Claim 20

Claim 20 depends from Claim 19 further requiring the fiber optic connector include a boot extending in a rearward direction from the ferrule holder and

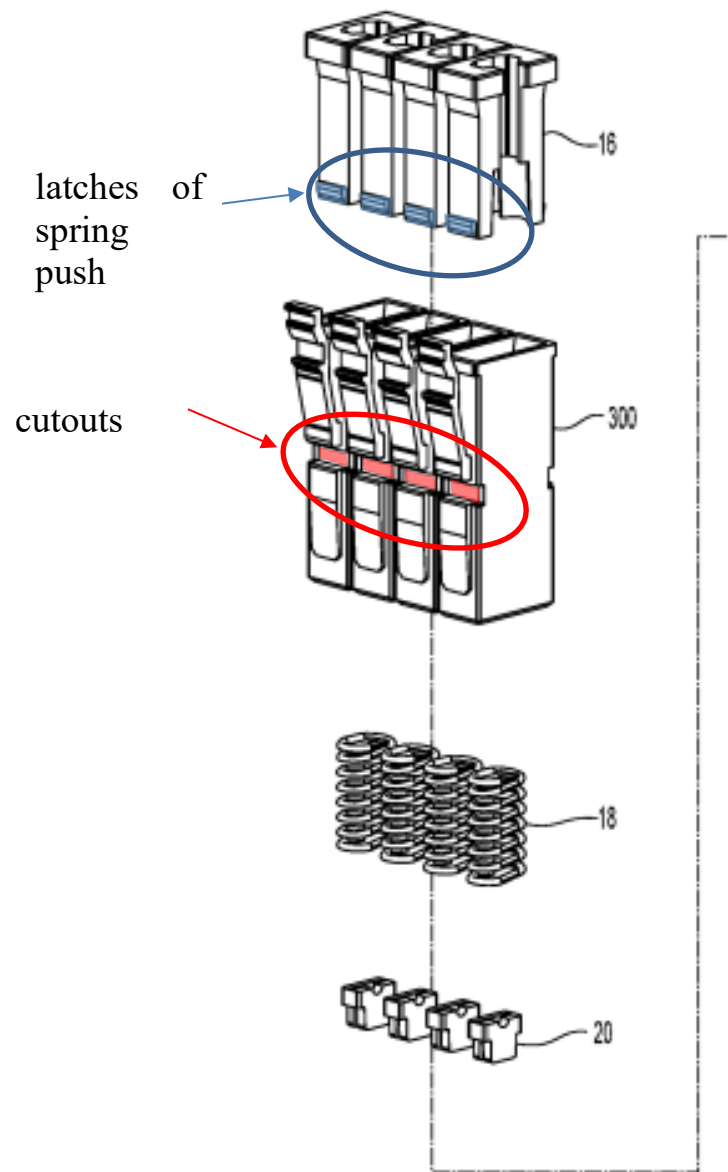
supporting the optical fibers. This additional limitation is the same as in [1.c], and is disclosed by JP610 for the same reasons.

JP610/Manning/Loder renders this claim obvious.

XI. GROUND 10: Obvious Over JP391 in View of Shimozu and Günther

A. Claim 11

Claim 11 depends from Claim 1 adding a limitation that the top side and the bottom side of the ferrule holder include cutouts. As discussed above, the '075 Patent discloses cutouts in the ferrule holder (300) for receiving latches on the spring push (16) to hold the ferrule holder assembly together. EX1003: ¶450.

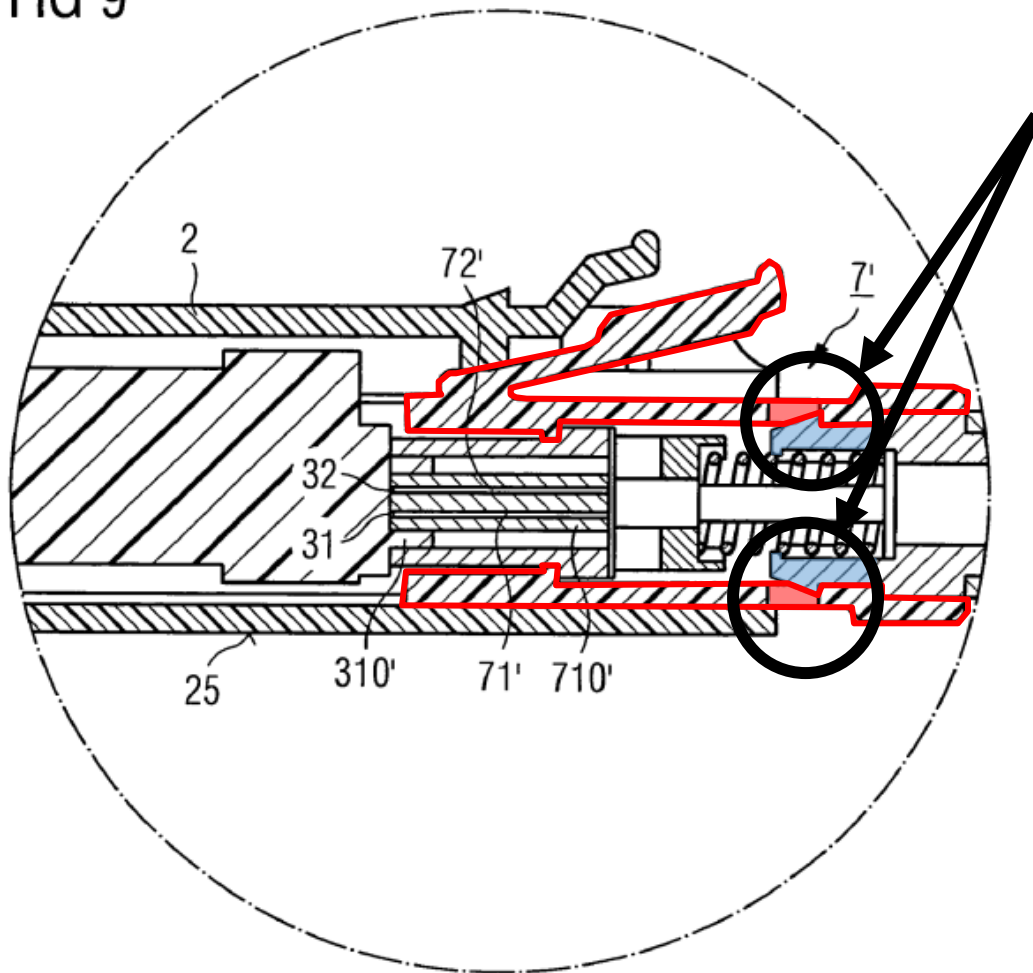


EX1001: Fig. 2.

JP610 is silent with respect to how its ferrule holder assembly is held together, but latching the spring push to cutouts within the ferrule body was a common method. EX1003: ¶451; *see also*, EX1012: Fig. 9; EX1004: 4:55-59, Fig.

3. For example, Figure 9 of Günther discloses the use of cutouts on the top surface and bottom surface of the ferrule body (circled below):

FIG 9



EX1012: Fig. 9 (annotated); EX1003: ¶452.

Although JP610 was silent as to how the plug assembly was held together, the latch/cutaway of Günther was a known and highly predictable method to connect the components (the ferrule holder and spring push) together. EX1003: ¶453; *Ruiz v.*

A.B. Chance Co., 357 F.3d 1270, 1276 (Fed. Cir. 2004) (finding the nature of the problem to be solved would have led a POSA to choose an appropriate load bearing member and a compatible attachment). Accordingly, it would have been obvious to implement the latch/cutaway of Günther as the method to connect the components (the ferrule holder and spring push) together.

JP610/Manning/Loder/Günther renders this claim obvious.

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

A. Claim 14

Claim 14 depends from Claim 1 further requiring the multi-fiber ferrule be flush with the front end of the main body. 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; EX1003: ¶¶455-456.

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. EX1003: ¶457; *KSR*, 550 U.S. at 401.

JP610/Shimozu/Katagiyama renders Claim 14 obvious.

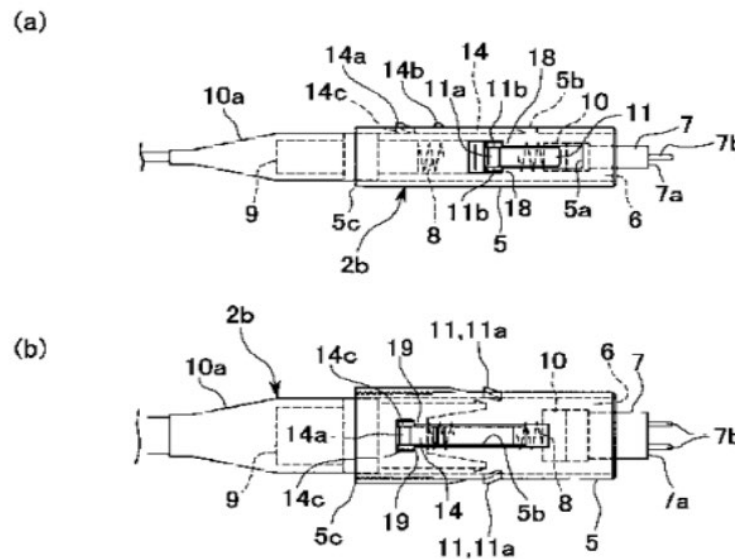
XIII. GROUND 12: Obvious Over JP391 in View of Shimozu

A. Independent Claim 1

1. [1.p]

JP391 discloses an optical connector plug and adapter. EX1006: Abstract; EX1003: ¶459. JP391's "optical connector plugs" (2a, 2b) correspond to the claimed "fiber optic connector for a multi-fiber ferrule." EX1003: ¶460. Specifically, JP391 identifies the ferrule used in its connector as being an MT-type ferrule—*i.e.*, a well-known multi-fiber ferrule. EX1006: [0010]; EX1003: ¶461.

[FIG. 5]

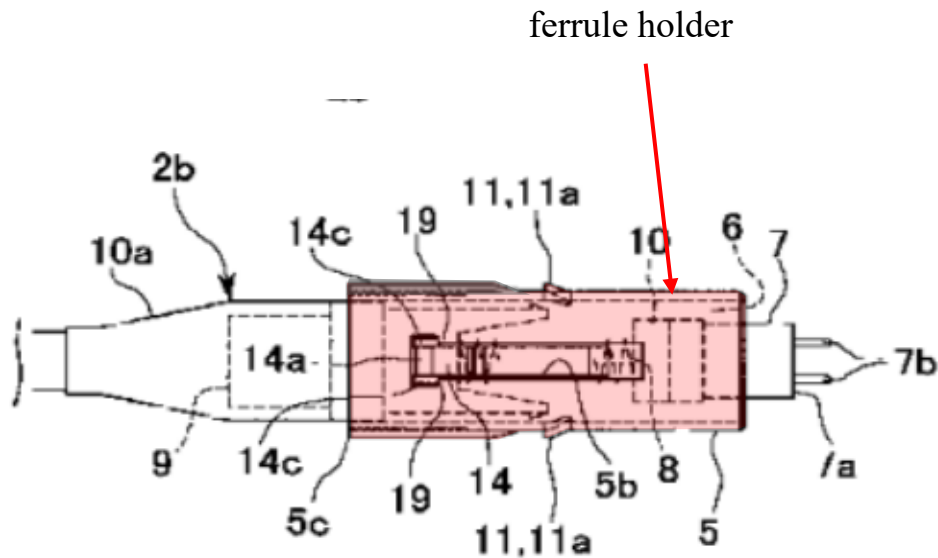


EX1006: Fig. 5(a+b); EX1003: ¶461.

JP391 discloses [1.P].

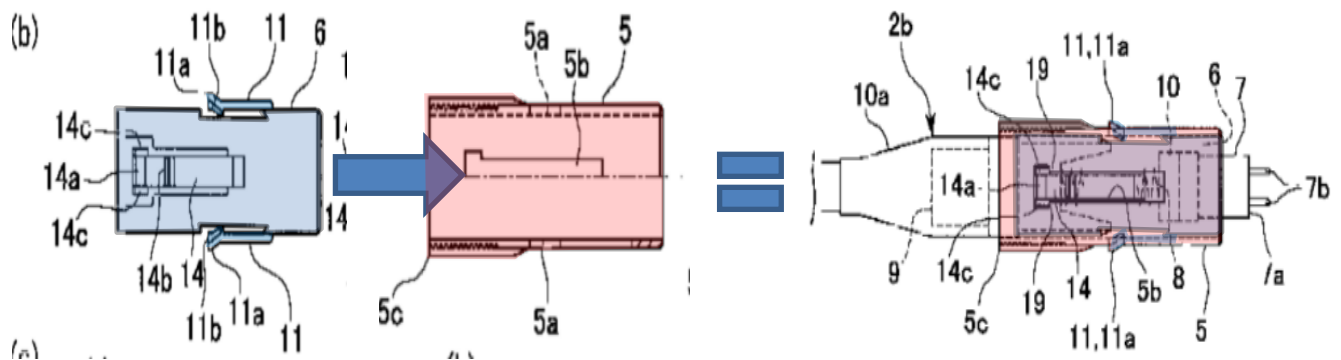
2. [1.a]

The optical connector disclosed by JP391 has 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 ‘075 Patent. EX1006: [0009]; EX1003: ¶463.



EX1006: Fig. 5(b) (annotated); EX1003: ¶463.

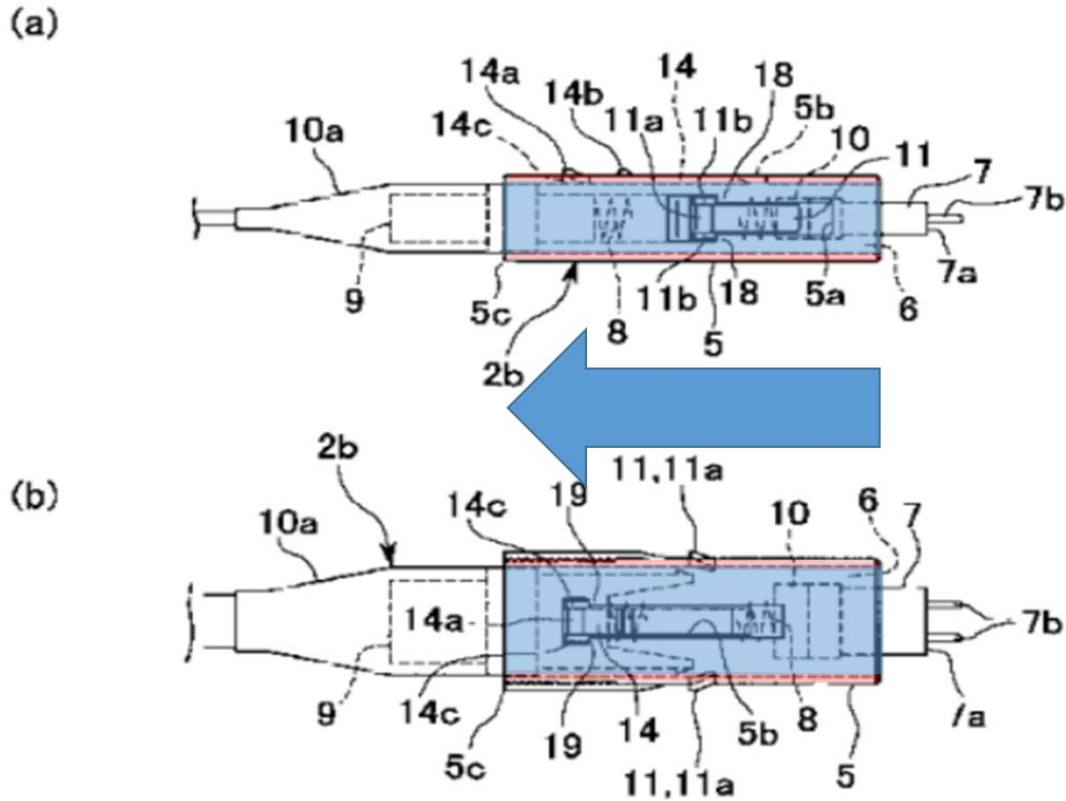
Specifically, the sleeve-shaped slide frame (shown isolated in Figure 7) slides inside the sleeve-shaped plug frame (shown isolated in Figure 6). EX1003: ¶464.



EX1006: Figures 7(b), 6(a), 5(b) (annotated); EX1003: ¶464.

Notably, both the slide frame and the plug frame are described as being “sleeve-shaped”—i.e., having a central opening. EX1006: [0029]; EX1003: ¶465. 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 as demonstrated:

[FIG. 5]



EX1006: Fig. 5(a+b) (annotated); EX1003: ¶465.

JP391 discloses [1.a].

3. [1.b.1]

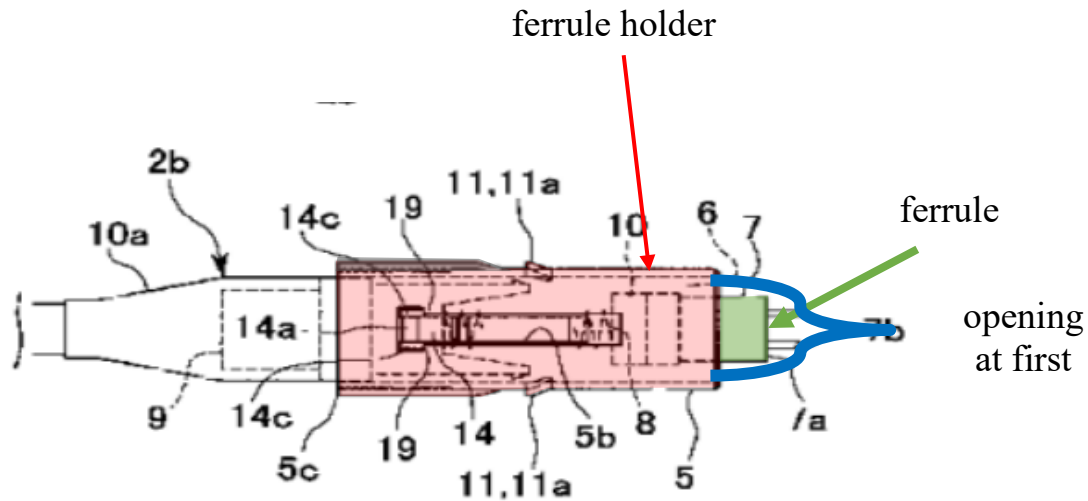
JP391's optical connector has a ferrule (7) housed within the central opening of the sleeve-shaped slide frame (6). EX1003: ¶467. JP391 identifies the ferrule used in the disclosed fiber optic connector as being "MT-type optical connector ferrule"—*i.e.*, a multi-fiber ferrule. EX1006: Par [0010]; EX1003: ¶467. The POSA

[FIG. 5]



4. [1.b.2]

109



EX1006: Fig. 5(b) (annotated); EX1003: ¶469.

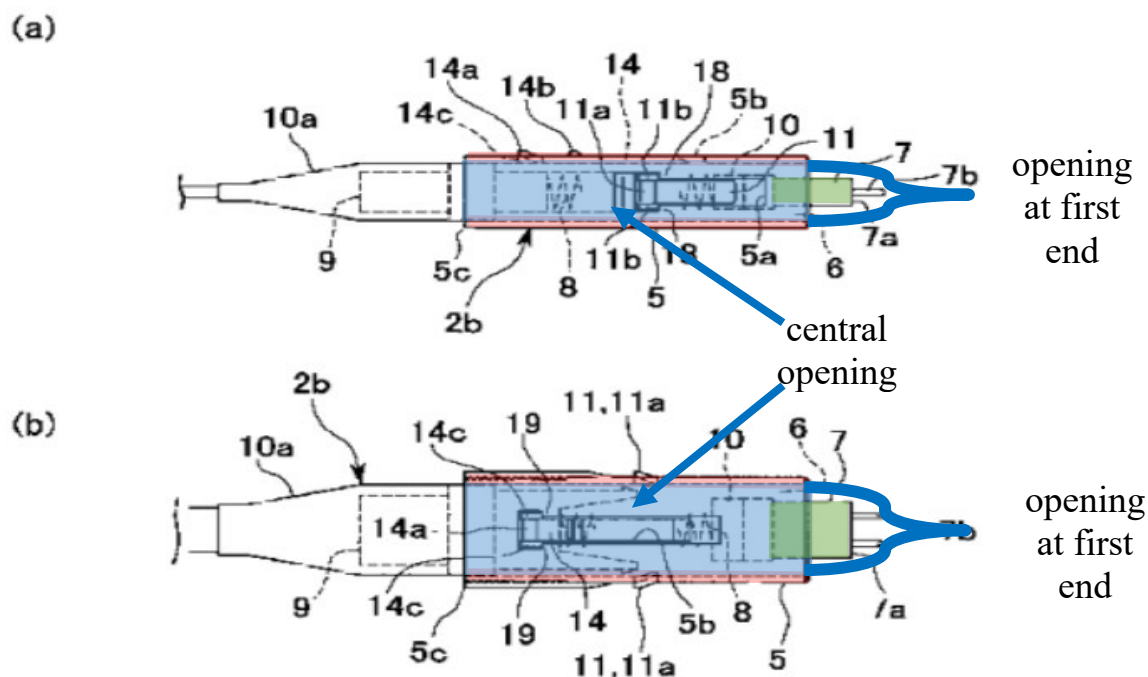
JP391 discloses [1.b.2].

5. [1.b.3]

As shown in Figure 5, the opening at the end of the JP391 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).

EX1003: ¶471.

[FIG. 5]

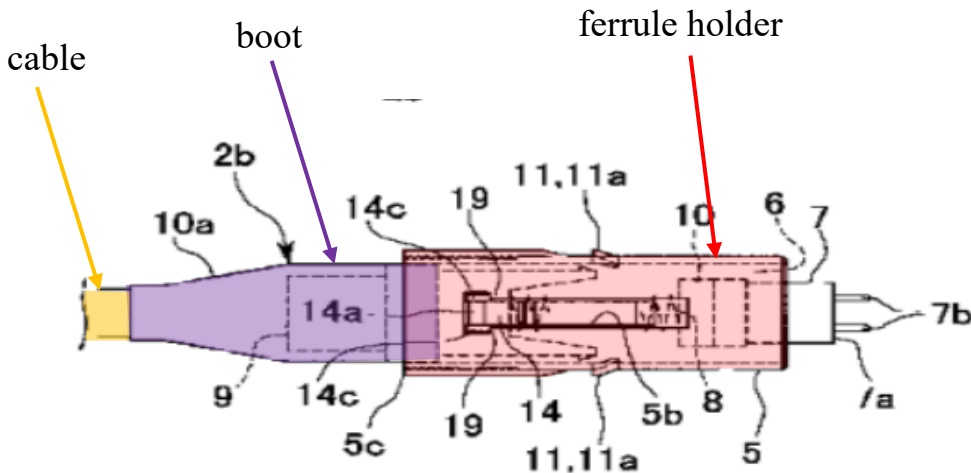


EX1006: Fig. 5(a+b) (annotated); EX1003: ¶471.

JP391 discloses 1.b.3.

6. [1.c]

The JP391 optical connector 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: [0009]; EX1003: ¶473. As shown in Figure 5, the boot supports the fiber optic cable—which a POSA would recognize inherently carries at least two optical fibers which ultimately terminate in the MT-ferrule. EX1003: ¶473.



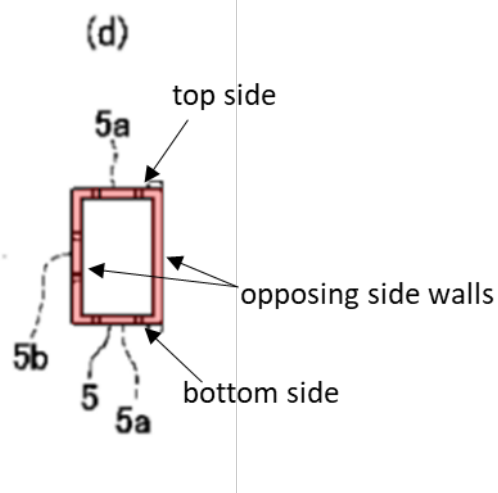
EX1006: Fig. 5(b) (annotated); EX1003: ¶473.

JP391 discloses [1.c].

7. [1.d]

The POSA would recognize that connectors within the prior art can be rotated to match the orientation as recited in the '075 Patent claims. EX1003: ¶475.

The JP391 connector's ferrule holder has a main body—the combination of the sleeve-shaped slide frame (6) and sleeve-shaped plug frame (5)—having top side, bottom side, and opposing side walls joining the top and bottom sides. EX1003: ¶476. Figure 6(d)—showing the view from the lead end of the connector—is annotated below to identify the sides of the sleeve-shaped plug frame. EX1003: ¶476.

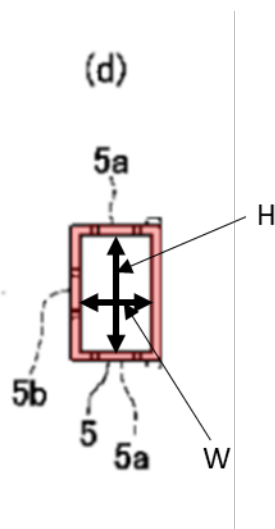


EX1006: Fig. 5(d) (annotated); EX1003: ¶476.

JP391 discloses [1.d].

8. [1.e.1]

In the context of the [1.d] orientation above, the separation between the top and bottom sides (H) is more than the separation between the opposing side walls (W) as shown in Figure 6(d):

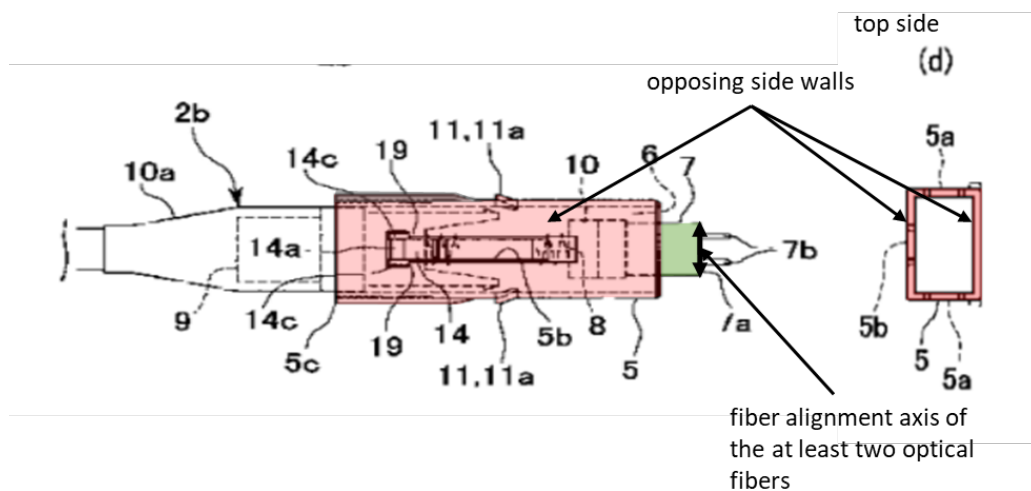


EX1006: Fig. 5(d) annotated; EX1003: ¶478.

JP391 discloses [1.e.1].

9. [1.e.2]

The POSA 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 JP391 Figure 5(b). EX1003: ¶480. As such, the alignment axis of the multiple optical fibers within the end face is parallel to the opposing side walls. EX1003: ¶480.

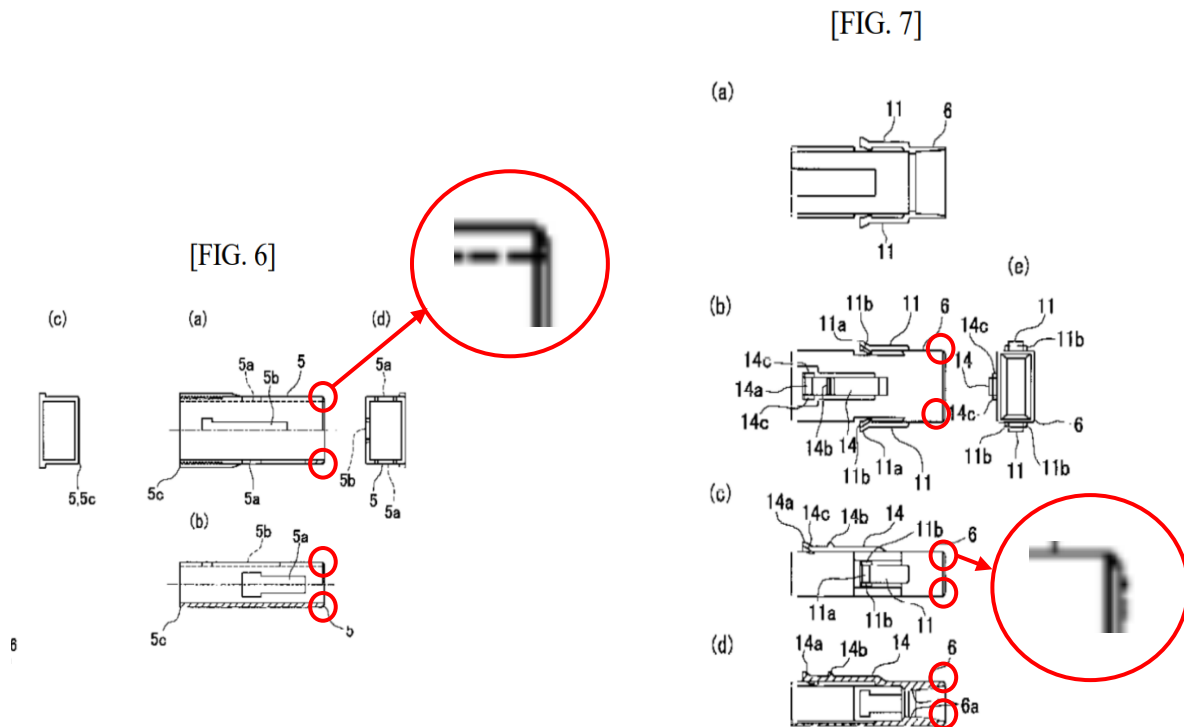


EX1006: Fig. 5(b+d); EX1003: ¶480.

JP391 discloses [1.e.2].

10. [1.f]

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. EX1003: ¶482.

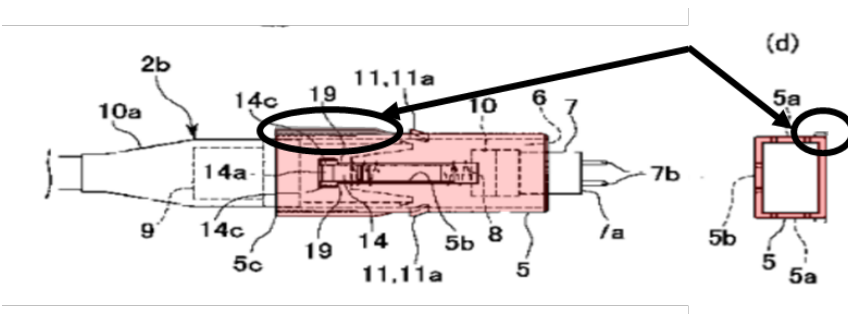


EX1006: Fig. 6, 7 (annotated); EX1003: ¶482.

JP391 discloses [1.f].

11. [1.g]

JP391's sleeve-shaped plug frame (5) is depicted in the figures as having a longitudinally extending first projection on the outside surface of the top side of the connector body. EX1003: ¶484.

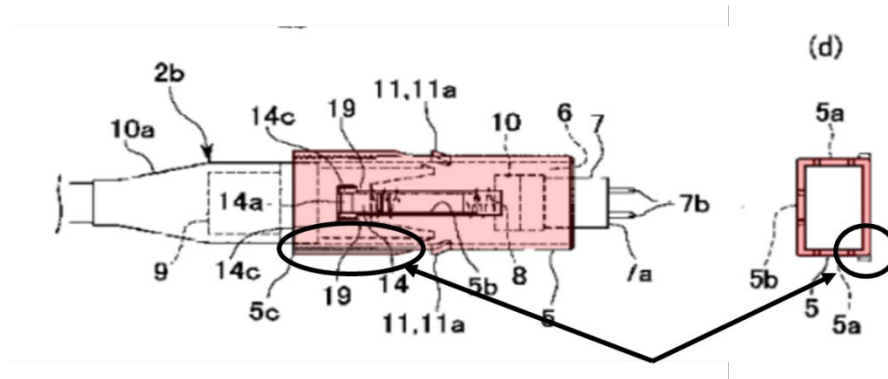


EX1006: Fig. 5 (b+d) (annotated); EX1003: ¶484.

JP391 discloses [1.g].

12. [1.h]

JP391's sleeve-shaped plug frame (5) is depicted in the figures as having a longitudinally extending second projection on the outside surface on the bottom side of the connector body. EX1003: ¶486.



EX1006: Fig. 5 (b+d); EX1003: ¶486.

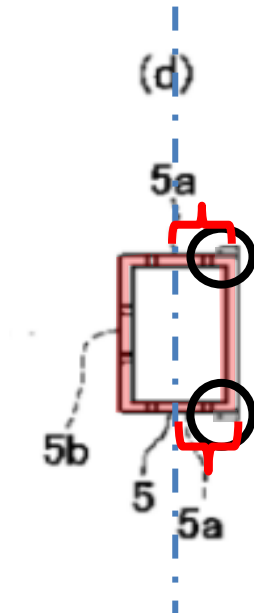
JP391 discloses [1.h].

13. [1.i]

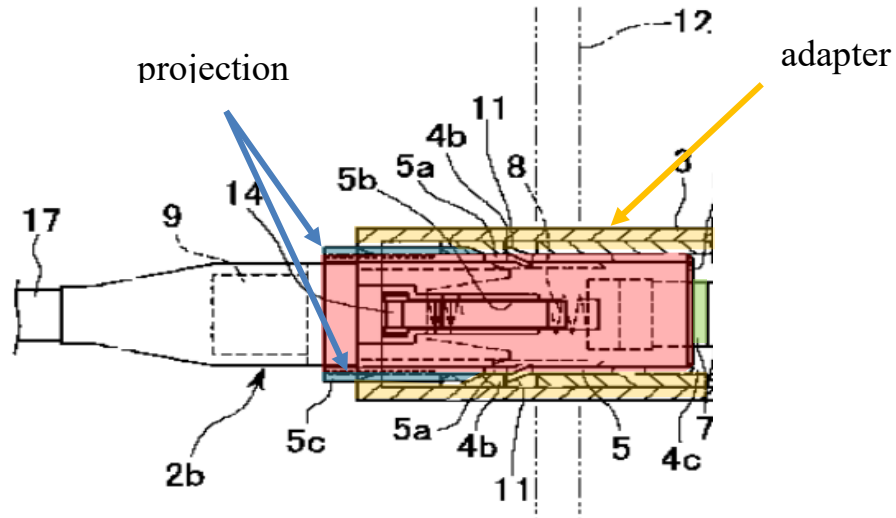
JP391's first and second projections have the same shape, but it would have been obvious to use different sized and/or shaped projections to provide a key for polarity as disclosed in Shimozu. EX1003: ¶488.

The POSA would recognize that JP391's first and second projections are provided to act as polarity keys. EX1003: ¶489. Specifically, both the first and second projections are depicted as being off-set horizontally in the same direction when viewed from either end of the connector. EX1003: ¶489. The corresponding adapter would likewise have key way slots to receive the projections. EX1003:

¶489. Because the projections and corresponding keyways are offset, the projections and keyways would only align if the fiber optic connector were inserted in the correct orientation. EX1003: ¶489.



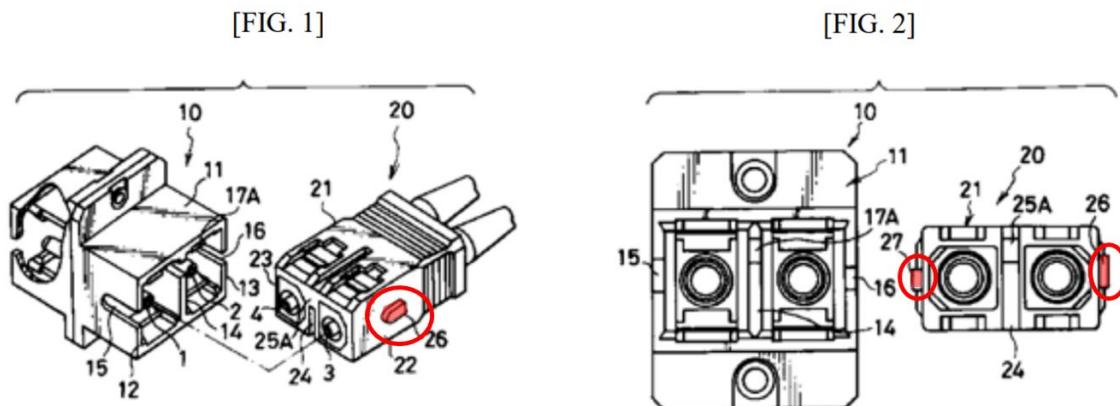
front end view of sleeve-shaped plug frame (5)



connector inserted in adapter

EX1006: Figures 6(d), 3 (annotated); EX1003: ¶489.

Like JP391, Shimozu discloses connectors with projections—identification guides (26, 27)—extending longitudinally along two opposing sides. EX1003: ¶490.



EX1007: Figs 1 and 2 (annotated); EX1003: ¶490.

Instead of offsetting the projections, Shimozu teaches sizing the widths of the identification guides—and their corresponding keyways—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, ... mating is not possible.”); EX1003: ¶491.

Specifically, sizing the first and second projections differently—as taught by Shimozu—and offsetting first and second projections—as taught by JP391—serve the same function of providing keys and corresponding keyways that prevent the connector from being installed upside down. EX1003: ¶492. The POSA would recognize that it was 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. EX1003: ¶493. Such a substitution would yield predictable results, as both configurations 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. EX1003: ¶493; *Agrizap, Inc. v. Woodstream Corp.*, 520 F.3d 1337, 1344 (Fed. Cir. 2008) (finding the substitution of a resistive electrical switch in place of a mechanical pressure switch to be a “textbook case” of combining familiar elements according to known methods to yield predictable results).

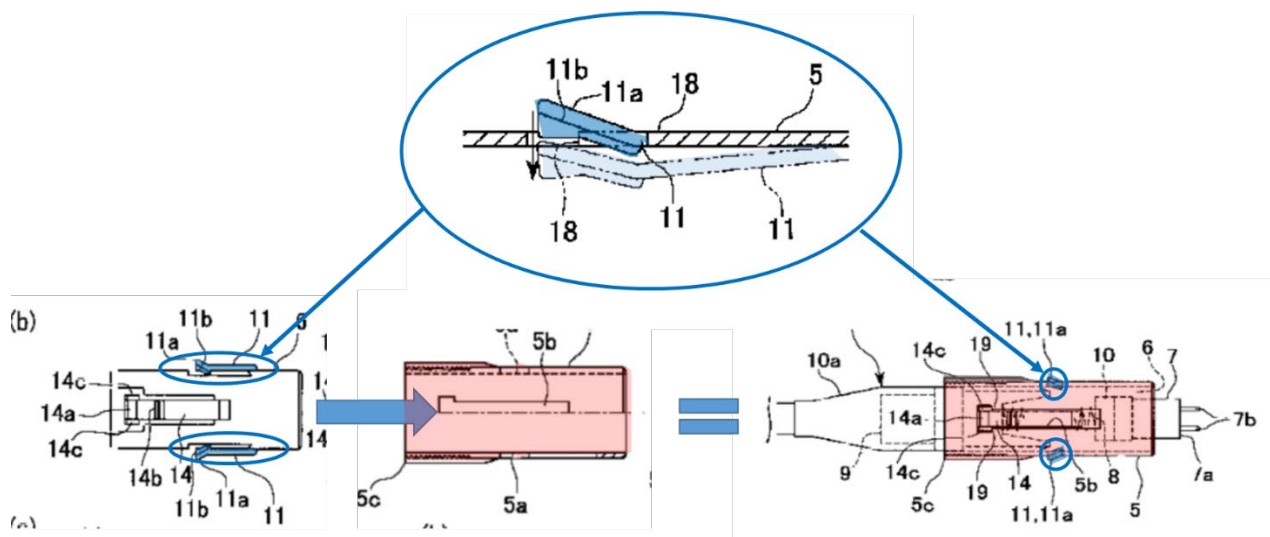
Sizing JP391’s first and second projections differently would have been an obvious improvement.

Suzuki/Shimozu renders [1.i] obvious.

14. [1.j]

JP391's connector uses "engagement pawl[s]" (11) protruding from both the top and bottom sides of the slide frame (6) and through engagement pawl holes (5a) to the outside of the plug frame (5) to connect with the corresponding adapter.

EX1006: [0012]; EX1003: ¶495.



EX1006: Figures 7(b), 6(a), 5(b) (annotated); EX1003: ¶495.

These engagement pawls (11) are latching mechanisms designed to engage the "engagement portions" (4a, 4b) of the adapter:

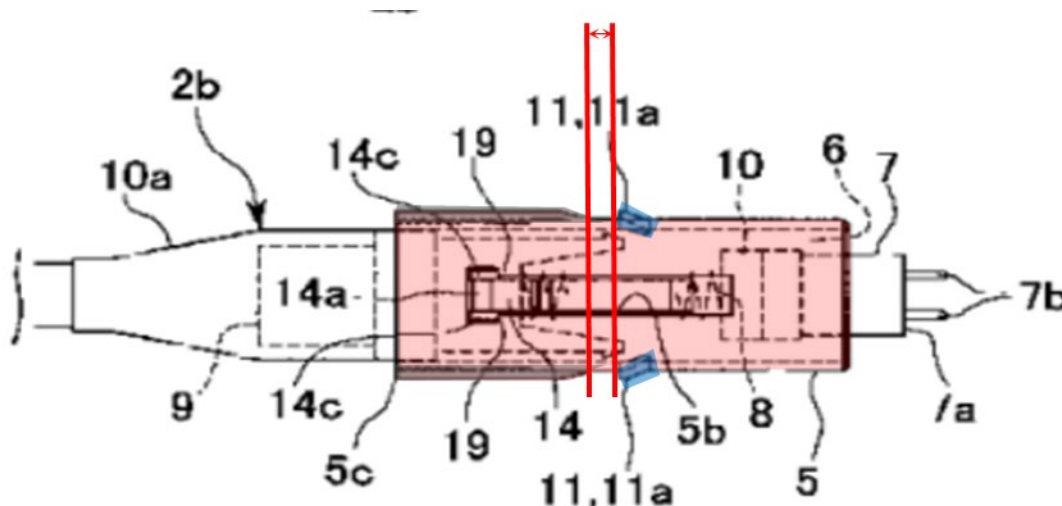
The optical connector plugs 2a, 2b ... are stably held in a predetermined position of the housing for connection 4 by the engagement pawl 11 detachably engaging an engagement portion 4a or engagement portion 4b of the housing

EX1006: [0012]; EX1003: ¶496.

JP391 discloses [1.j].

15. [1.k]

JP391's figures depict that the engagement pawls (11) are not connected to and are spatially separated from the first and second projections of the housing:



EX1006: Fig. 5(b) (annotated); EX1003: ¶498.

JP391 discloses [1.k].

B. Independent Claim 18

1. [18.p.]-[18.e.2], [18.j]-[18.k]

A number of Claim 18's limitations are identical to those recited by Claim 1 and were disclosed by JP391 for the same reasons as discussed with respect to Claim 1.

Claim 1 Limitations	Corresponding Claim 18 Limitations
[1.p]	[18.p]
[1.a]	[18.a]
[1.b.1]	[18.b.1]
[1.b.2]	[18.b.2]
[1.b.3]	[18.b.3]

[1.c]	[18.c]
[1.d]	[18.d]
[1.e.1]	[18.e.1]
[1.e.2]	[18.e.2]
[1.j]	[18.j]
[1.k]	[18.k]

2. [18.f]

[18.f] is similar to [1.f], except that it recites the “front end of the ferrule holder has a chamfer” instead of a “lead-in or a chamfer.” EX1003: ¶509. For the reasons discussed with respect to [1.f], JP391 disclosed [18.f].

3. [18.g]

[18.g] is similar to [1.g], except that it omits the language “on a first outside surface on the top side of the main body.” As discussed with respect to [1.g], JP391 discloses [18.g].

4. [18.h]

[18.h] is similar [1.h], except that it omits the language “on a second outside surface on the bottom side of the main body.” As discussed with respect to [1.h], JP391 discloses [18.h].

5. [18.i]

JP391’s first projection is on an opposite outside surface of the connector from the second projection. EX1003: ¶513.

The first and second projections of the JP391 connector appear have the same dimensions. EX1003: ¶514. But as discussed with respect to [1.i], varying at least

the width between the first and second projections—as taught by Shimozu—was a known technique used to improve a connector to that 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°). EX1003: ¶¶515-518; *KSR*, 550 U.S. at 417.

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). EX1003: ¶519.

Suzuki/Shimozu renders [18.i] obvious.

C. Independent Claim 19

1. [19.p]-[19.d.2], [19.f]-[19.h], [19.j]-[19.k]

A number of Claim 19’s limitations are identical to those recited by Claim 1 and were disclosed by JP391 or rendered obvious by JP391/Shimozu for the same reasons as discussed with respect to Claim 1.

Claim 1 Limitations	Corresponding Claim 19 Limitations
[1.p]	[19.p]
[1.a]	[19.a]
[1.b.1]	[19.b.1]
[1.b.2]	[19.b.2]
[1.b.3]	[19.b.3]
[1.d]	[19.c]
[1.e.1]	[19.d.1]
[1.e.2]	[19.d.2]
[1.g]	[19.f]
[1.h]	[19.g]
[1.i]	[19.h]

[1.j]	[19.j]
[1.k]	[19.k]

2. [19.e]

[19.e] is similar to [1.f], except that it recites the “front end of the ferrule holder has a lead-in” instead of a “lead-in or a chamfer.” The ‘075 Patent specification never uses the term “lead-in.” Rather the only written support for the “lead-in” limitation is the depiction of the ferrule holder as having chamfered edges within the figures. Accordingly, the POSA would recognize that chamfers on the front edges of the ferrule holder would meet the claimed “lead-in.” For the reasons discussed with respect to [1.f], JP391 discloses [19.e].

3. [19.i]

JP391’s figures depict the first projection—the projection on the top side of the connector body—as having vertical side surfaces:

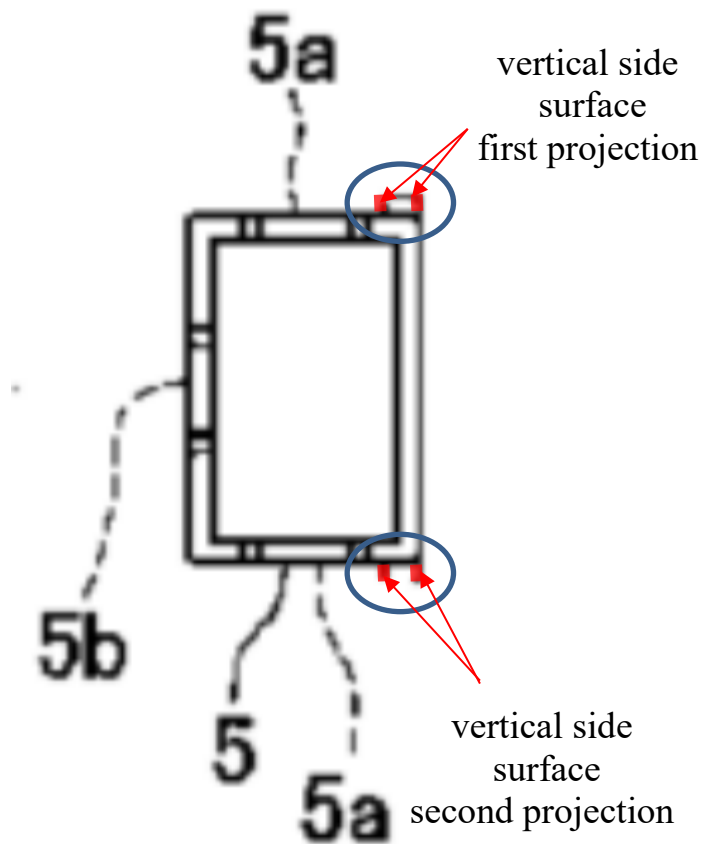


Fig. 6d (annotated); EX1003: ¶536.

Notably, the 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” is an intended use and is not entitled to any patentable weight. *Schreiber*, 128 F.3d at 1477; *see also, Rowe*, 112 F.3d at 478.

Regardless, the POSA would recognize JP391’s 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. EX1003: ¶538. Accordingly, the POSA would understand the 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. EX1003: ¶538.

JP391 discloses [19.i].

D. Independent Claim 21

1. [21.p]–[21.e.2]

[21.p]–[21.e.2] are similar to [1.p]–[1.e.2], except they more narrowly specify an MT-type ferrule. JP391 identifies its ferrule as being an “MT-type optical connector ferrule.” EX1006: [0010]; EX1003: ¶¶542-547. For the reasons discussed with respect to [1.p]–[1.e.2], JP391 discloses [21.p]–[21.e.2].

2. [21.f]

[21.f] is identical to [18.f]. As discussed with respect to [18.f], JP391 discloses [21.f].

3. [21.g]–[21.h]

[21.g]–[21.h] are identical to [1.g]–[1.h]. As discussed with respect to [1.g]–[1.h], JP391 discloses [21.g]–[21.h].

4. [21.i]

[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 with respect to [1.i], Suzuki/Shimozu renders [21.i] obvious.

5. [21.j]-[21.k]

[21.j]-[21.k] are identical to [1.j]-[1.k]. As discussed with respect to [1.j]-[1.k], JP391 discloses [21.j]-[21.k].

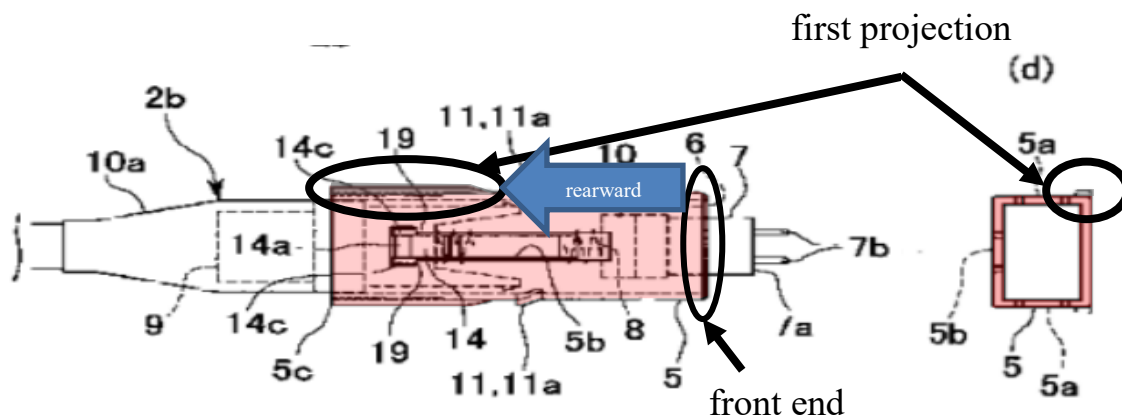
E. Claim 2

Claim 2 depends from Claim 1 further requiring the multi-fiber ferrule be an MT type ferrule. JP391 identifies as being an “MT-type optical connector ferrule.”
EX1006: [0010]; EX1003: ¶554.

JP391/Shimozu renders this claim obvious.

F. Claim 3

Claim 3 depends from Claim 1 further requiring the top surface of the first projection be rearward of the front end of the ferrule holder. This additional limitation is disclosed by JP391’s figures as shown below:

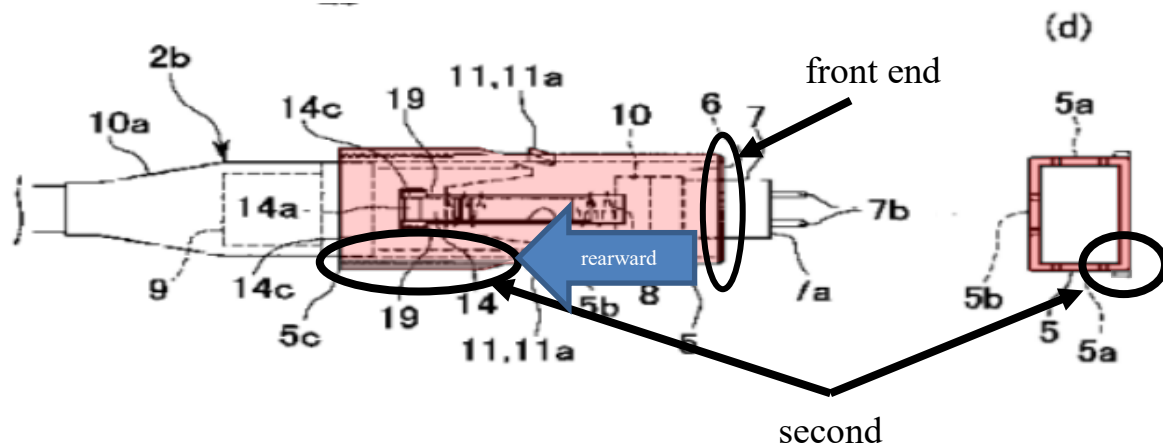


EX1006: Fig. 5 (b+d) (annotated); EX1003: ¶¶556-557.

JP391/Shimozu renders this claim obvious.

G. Claim 4

Claim 4 depends from Claim 1 further requiring the top surface of the second projection be rearward of the front end of the ferrule holder. EX1003: ¶559. To the extent the claim is construed such that it would be met by any exposed horizontal surface of the second projection limitation, this additional limitation is disclosed by JP391's figures as shown below:



EX1006: Fig. 5 (b+d) (annotated); EX1003: ¶559.

JP391/Shimozu renders this claim obvious.

H. Claim 5

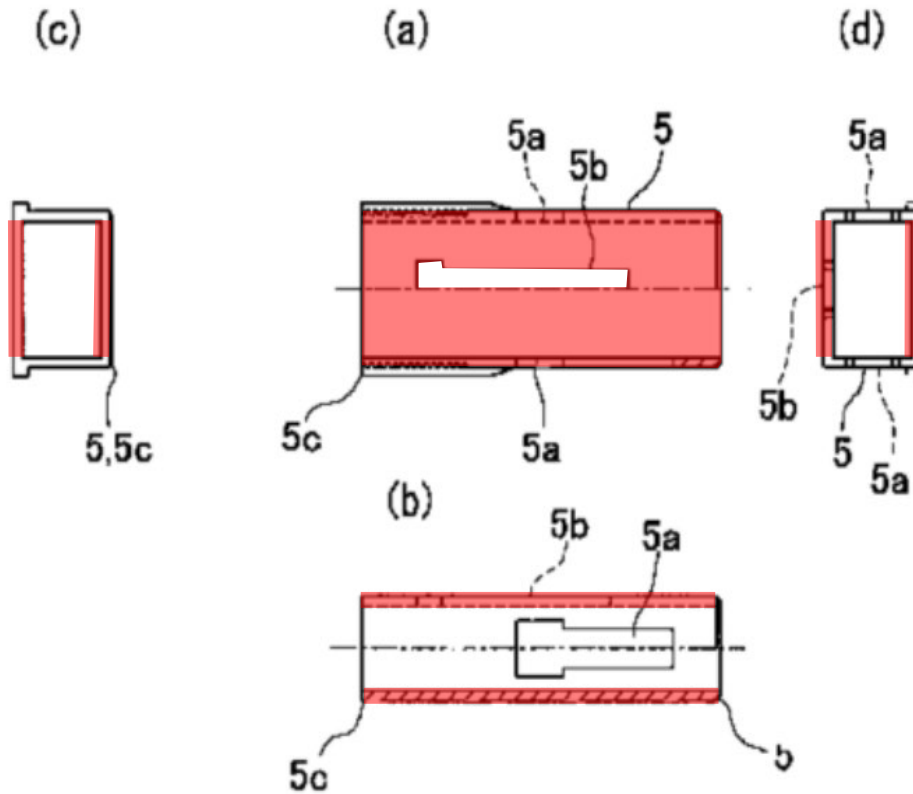
Claim 5 depends from Claim 1 adding a limitation that a top surface of each of the first projection and the second projection is rearward of the front end of the ferrule holder. EX1003: ¶561. Claim 5 adds the same limitations of Claims 3 and 4, and as such would have been obvious in view of JP391/Shimozu for the same reasons explained in Claims 3 and 4. EX1003: ¶562.

I. Claim 6

Claim 6 depends from Claim 1 adding a limitation that the opposing sidewalls are smooth and solid. As addressed with respect to Ground 1 (*contra* Section V.G.), the specification only provides written support to the extent that only a portion of the opposing sidewalls is required to be smooth and solid.

As discussed above, the “sleeve-shaped plug frame” (5) provides the outer surfaces of the ferrule holder. EX1003: ¶¶563-565. As seen from the back, front, and top views (Figs. 5, 6c, and 6d), the opposing sidewalls have flat—*i.e.*, smooth—(highlighted red in figures below):

[FIG. 6]



EX1006: Fig. (annotated); EX1003: ¶565.

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 cutout (5b) to allow one of the engagement pawls to extend through. EX1003: ¶566.

The POSA 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 pawls on

the top and bottom surfaces of the ferrule housing. EX1003: ¶567. In fact, the POSA 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 represents additional material and represents additional components that must be maintained within close tolerances. EX1003: ¶567.

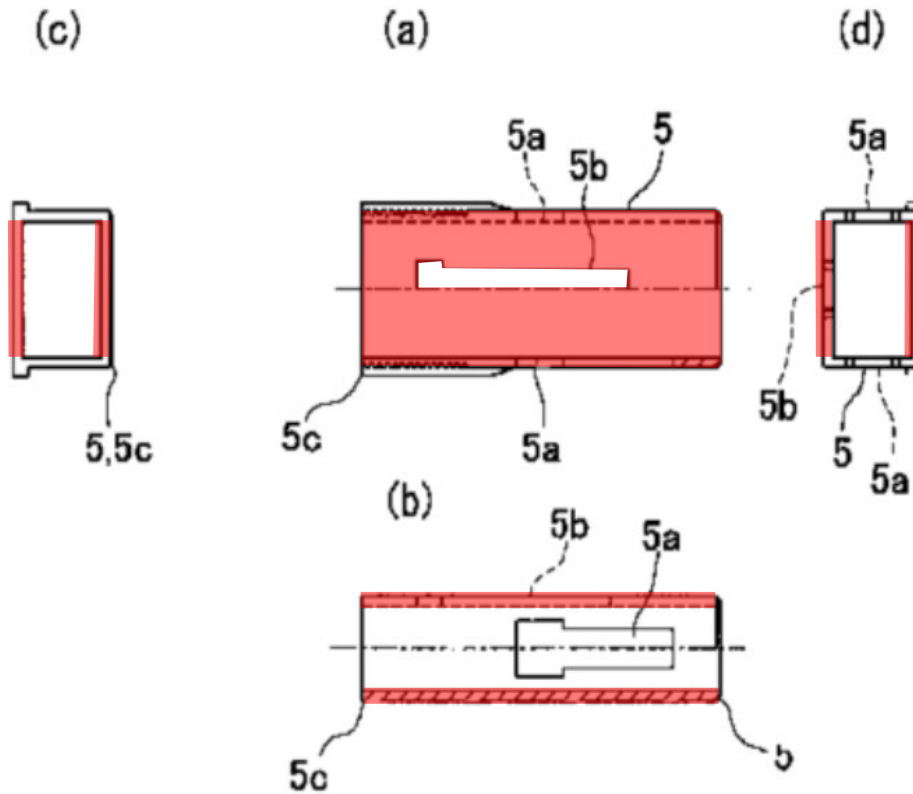
JP391/Shimozu renders this claim obvious.

J. Claim 7

Claim 7 depends from Claim 1 adding a limitation that the opposing sidewalls are flat. As discussed with respect to Claim 7, the specification only provides written support to the extent that only a portion of the opposing sidewalls is required to be flat.

As seen in Fig. 6 of JP391, outside of the lead-in the opposing walls of the JP391 connector are flat. EX1003: ¶571.

[FIG. 6]



EX1006: Fig. (annotated); EX1003: ¶571.

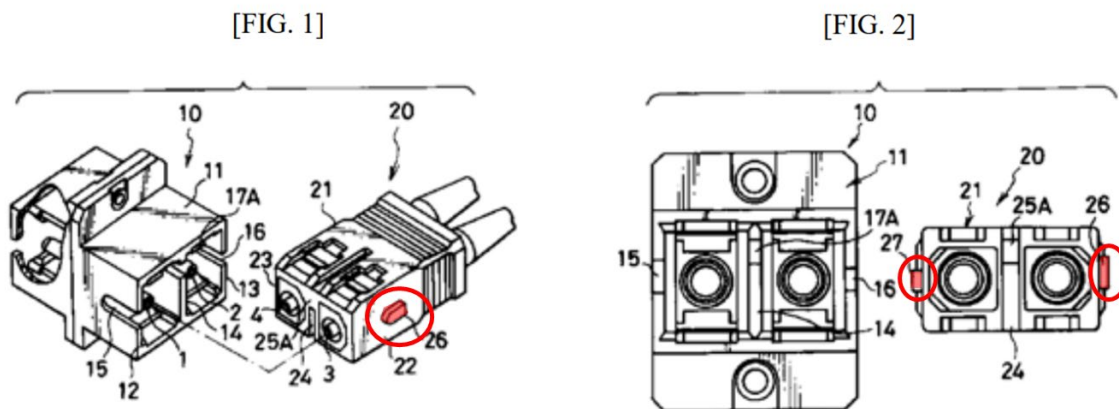
Further, as discussed with respect to Claim 6 immediately above, it would have been obvious to omit JP391's sidewall engagement pawl and engagement pawl hole (5b). EX1003: ¶572.

JP391/Shimozu renders this claim obvious.

K. Claim 8

Claim 8 depends from Claim 1, further limiting the "different shape[d]" first projection and the second projection to having different widths.

The modification to the JP391 connector addressed above with respect [1.i] would have further met the narrower limitation of Claim 8 in that Shimozu discloses sizing the widths of its identification guides (26, 27)—and their corresponding keyways (15, 16)—differently to prevent the “incorrect insertion.” EX1007: [0012], [0014]; EX1003: ¶¶574-575.



EX1007: Figures 1 and 2 annotated; EX1003: ¶575.

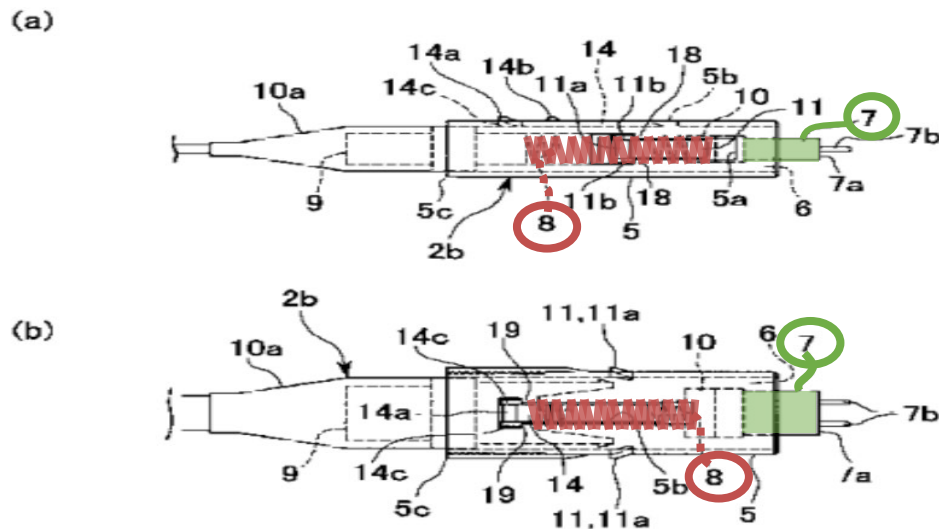
As discussed with respect to [1.i], JP391/Shimozu renders Claim 8 obvious.

L. Claim 9

Claim 9 depends from Claim 1 further requiring the connector includes 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 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]; EX1003: ¶577. As depicted in

Figure 5, JP391's spring is positioned rearward of the ferrule. EX1006: Fig. 5, [0009]; EX1003: ¶577.

[FIG. 5]



EX1006: Fig. 5; EX1003: ¶577.

JP391/Shimozu renders this claim obvious.

M. Claim 10

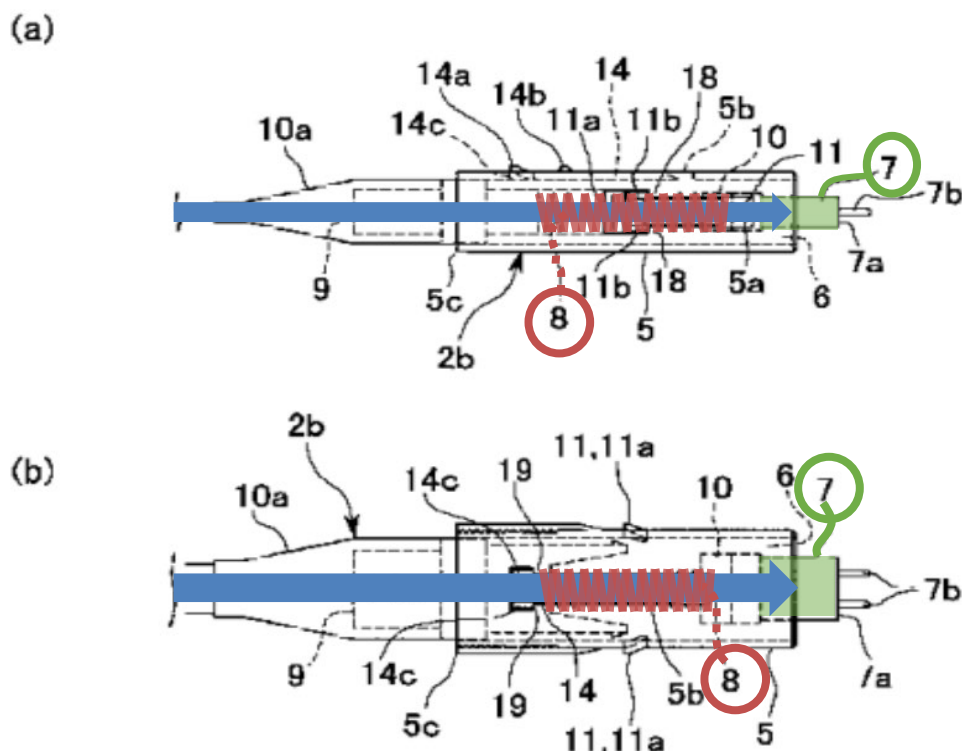
Claim 10 depends from Claim 9 further requiring the spring at least partially surrounds the optical fibers.

As addressed above, the POSA would recognize the MT-type ferrule of the JP391 would be inherently supported by at least two optical fibers. EX1003: ¶580.

Although JP391 is silent as the routing of the optical fibers, the POSA would understand the claimed routing whereby the spring at least partially surrounds the optical fibers is obvious, if not inherent. EX1003: ¶581. The optical fibers are

necessarily routed from the fiber optic cable to the ferrule. EX1003: ¶581. As depicted in Figure 5, the spring (8) is centered between the cable and the ferrule. EX1003: ¶581. The POSA would have routed the optical fibers along the most direct path—*i.e.*, through the spring (8). EX1003: ¶581.

[FIG. 5]



EX1006: Fig. 5 (annotated); EX1003: ¶581.

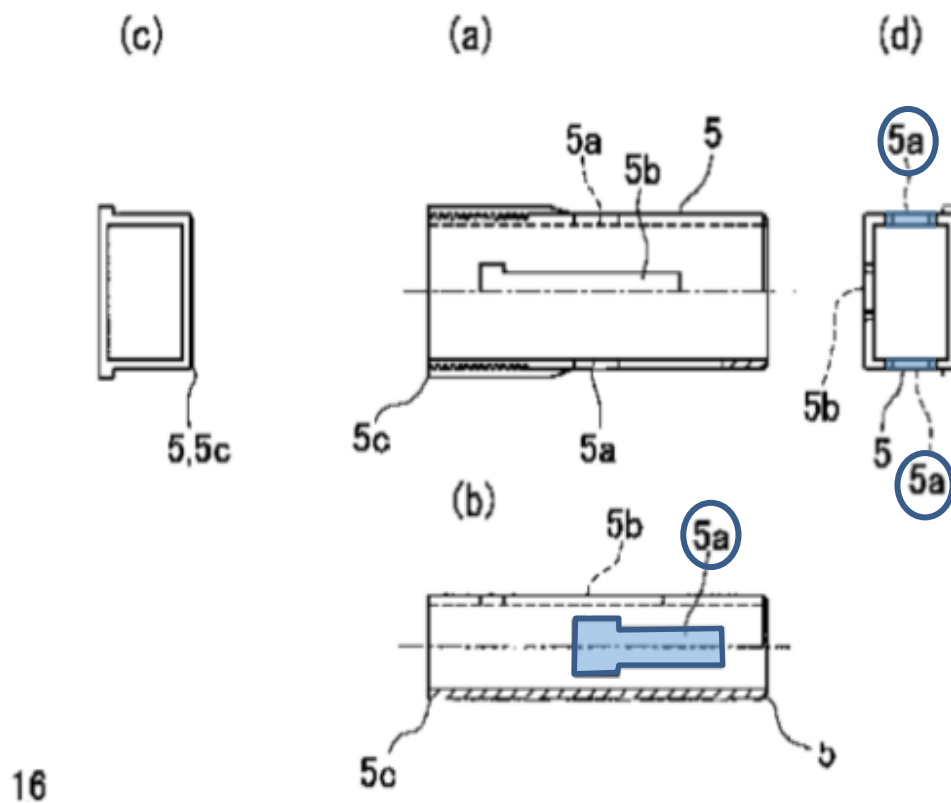
JP391/Shimozu renders this claim obvious.

N. Claim 11

Claim 11 depends from Claim 1 adding a limitation that each of the top side and the bottom side have a cutout. JP391 discloses engagement pawl holes (5a) in

the top side and bottom side of the plug frame (5). EX1006: [0012], [0023], [0024];
EX1003: ¶¶583-584.

[FIG. 6]

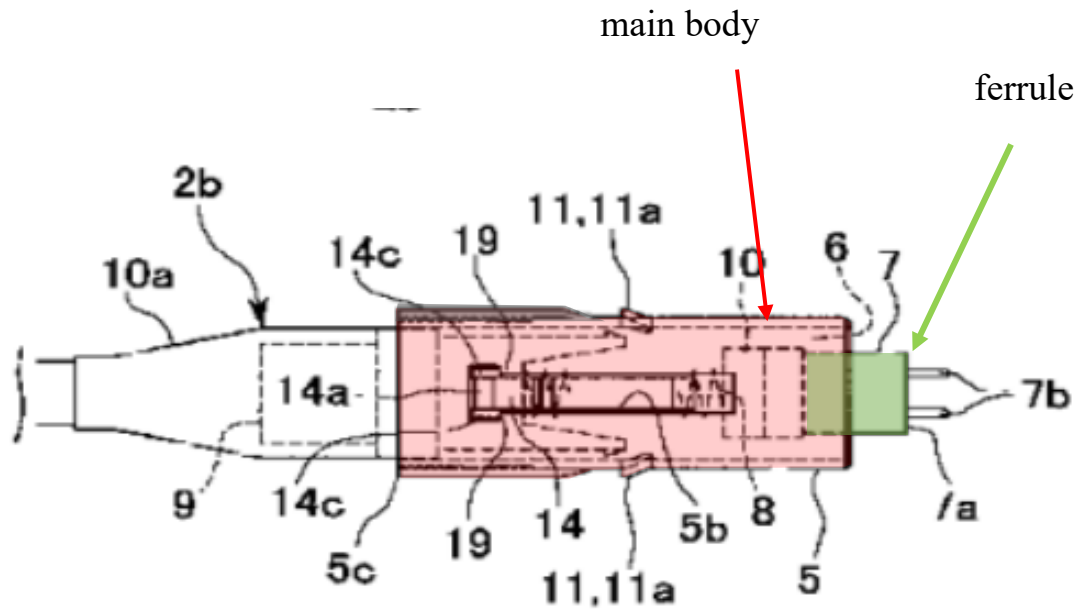


EX1006: Fig. 6 (annotated); EX1003: ¶584.

JP391/Shimozu renders this claim obvious.

O. Claim 12

Claim 12 depends from Claim 1 further requiring the ferrule extend 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.

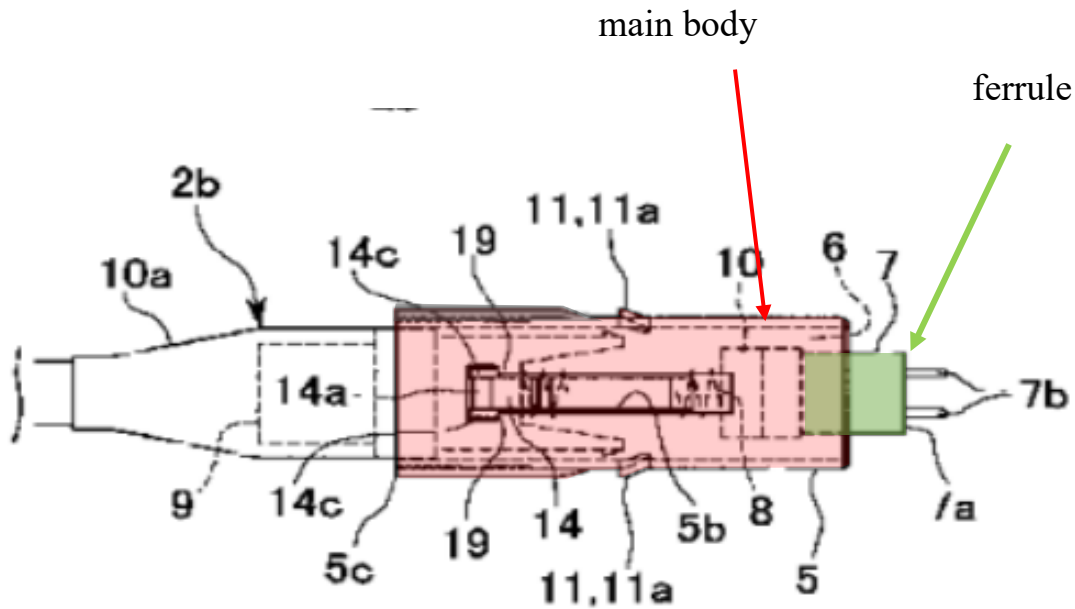


EX1006: Fig. 5b (annotated); EX1003: ¶586.

Suzuki/Shimozu renders this claim obvious.

P. Claim 13

Claim 13 depends from Claim 1 further requiring the ferrule extend beyond the main body. EX1003: ¶588. As disclosed in the figures, the JP391 ferrule (7) extends beyond the main body:



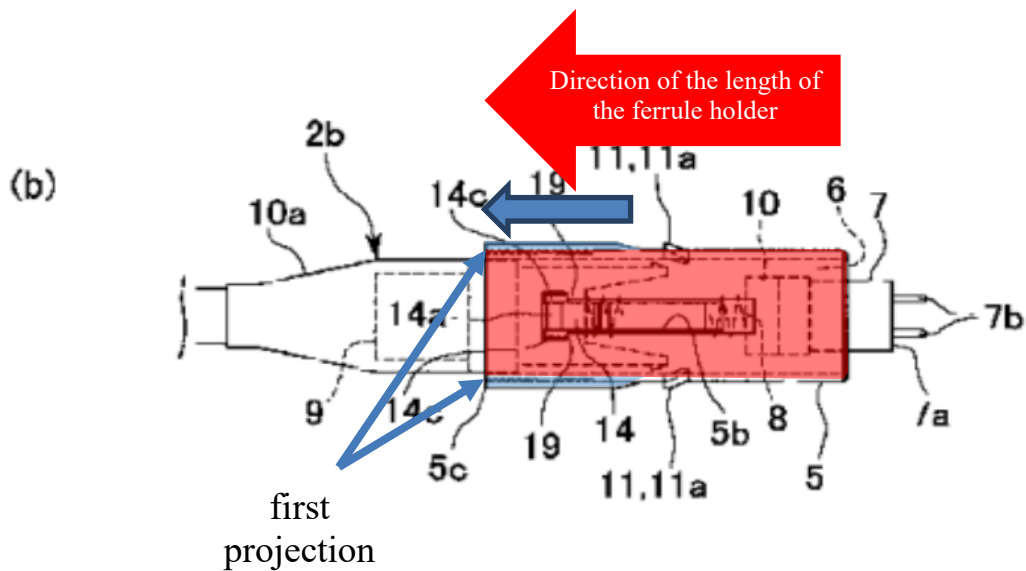
EX1006: Fig. 5b (annotated); EX1003: ¶588.

JP391/Shimozu renders this claim obvious.

Q. Claim 15

Claim 15 depends from Claim 1 further requiring at least one of the first projection or the second projection extend along a length of the ferrule holder. EX1003: ¶590. The only disclosure regarding the extension of the first and second projections is in the figures—which depict the projections extending lengthwise—but not the entire length. EX1003: ¶590.

Figure 5b of JP391 shows that both the first projection and the second projection extend in the same direction as the ferrule holder.

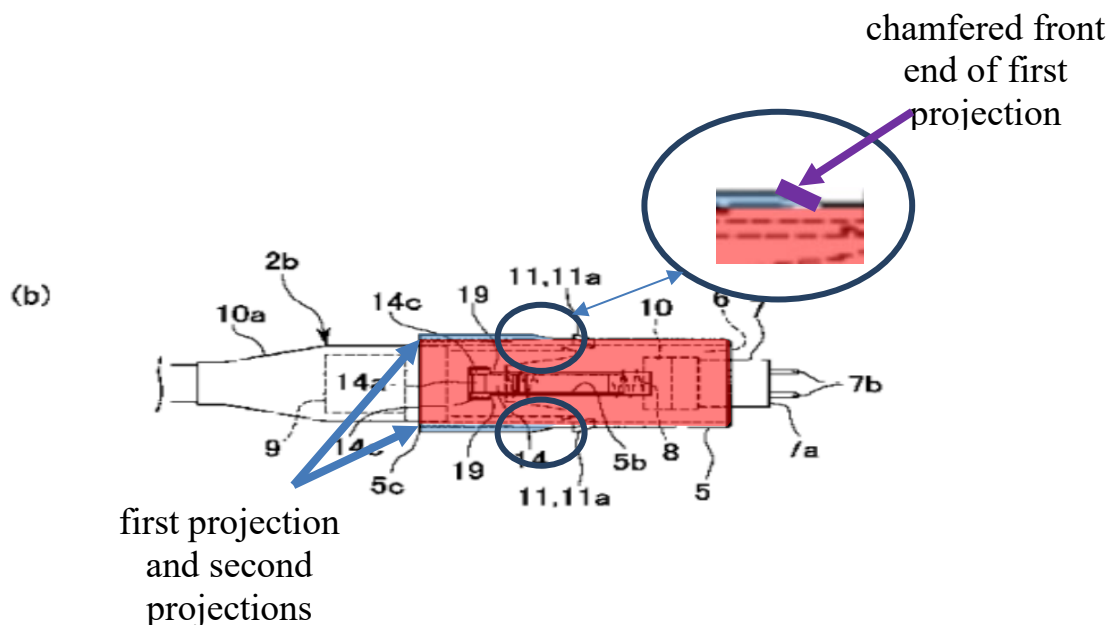


EX1006: Fig. 5b (annotated); EX1003: ¶591.

JP391/Shimozu renders this claim obvious.

R. Claim 16

Claim 16 depends from Claim 1 adding a limitation requiring at least one of the first or second projections have a chamfered front end or a lead-in. As disclosed by JP391's figures, both the first and the second projections have chamfered front ends:



EX1006: Fig. 5b (annotated); EX1003: ¶593.

JP391/Shimozu renders this claim obvious.

S. Claim 17

Claim 17 depends from Claim 1 adding a limitation requiring the first and the second projections have vertical side surfaces. This additional limitation is the same as in [19.i]. As discussed above with respect to [19.i], JP391/Shimozu renders this claim obvious.

T. Claim 20

Claim 20 depends from Claim 19 further requiring the fiber optic connector include a boot extending in a rearward direction from the ferrule holder and supporting at least two optical fibers. This additional limitation is identical to [1.c]. As discussed with respect to [1.c], JP391 discloses this additional element.

JP391/Shimozu renders this claim obvious.

XIV. GROUND 13: Obvious Over JP391 in View of Shimozu and Katagiyama

A. Claim 14

Claim 14 depends from Claim 1 further requiring the multi-fiber ferrule be flush with the front end of the main body. 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; EX1003: ¶¶598-600.

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. EX1003: ¶¶600-601.

JP391/Shimozu/Katagiyama renders Claim 14 obvious.

XV. SECONDARY CONSIDERATIONS

To date PO has not identified any secondary considerations of non-obviousness. To the extent that PO raises secondary considerations, such evidence will be insufficient to overcome the strong showing of obvious presented in this petition. *Newell Cos., Inc. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988) (secondary considerations “do not control the obviousness conclusion”); *Asyst Techs., Inc. v. Emtrak, Inc.*, 544 F.3d 1310, 1316 (Fed. Cir. 2008) (“[A]s we have often held, evidence of secondary considerations does not always overcome a strong prima facie showing of obviousness.”).

XVI. THE BOARD SHOULD NOT DENY INSTITUTION

PO's attempts to enforce the '075 Patent in Federal District Court are already stayed. EX1026. Accordingly, the *Fintiv* factors favor institution. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (P.T.A.B. Mar. 20, 2020) (precedential).

The Board should not deny institution under 35 U.S.C. §325(d) because as none of the asserted patents were previously consider or of record in any of the related prosecutions.

XVII.MANDATORY NOTICES UNDER 37 C.F.R. §42.8(A)(1)

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

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

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

The '075 Patent is involved a civil action in *US Conec Ltd. v. Senko Advance Co., Ltd. et al*, 2-24-cv-00202, currently pending in the United States District Court for the Eastern District of Texas. The '075 Patent is also being asserted by US Conec Ltd. in *Fiber-Optic Connectors, Adapters, Jump Cables, Patch Cords, Products Containing the Same, and Components Thereof*, Inv. No. 337-TA-3733 before the International Trade Commission.

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

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

LEAD COUNSEL	BACK-UP COUNSEL
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D. Service Information (37 C.F.R. §42.8(b)(4))

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

E. Payment Information Under 37 C.F.R. §§42.15(a) and 42.103(a)

The *inter partes* review fees have been submitted herewith pursuant to 37 C.F.R. §42.103(a) and 42.15(a).

XVIII. GROUND FOR STANDING

The '075 Patent claims a March 15, 2013 priority date and thus is a transitional patent. Petitioner is not barred or estopped from petitioning for *inter partes* review and was not served with a complaint or counterclaim alleging infringement of the '075 Patent more than one year before filing this Petition.

XIX. CONCLUSION

For these reasons, *inter partes* review of claims 1-21 of the '075 Patent is requested.

Dated: June 20, 2024

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

CERTIFICATE OF SERVICE

Under 37 C.F.R. § 42.6(e), the undersigned certifies that on June 20, 2024, a copy of the PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 11,880,075 was served via FedEx pursuant to 37 C.F.R. § 42.105 on the following attorneys of record for Patent Owner:

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/Kurt F. James/
Kurt F. James, Reg. No. 33,716
Lead Counsel for Petitioner

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

Under 37 C.F.R. § 42.24(d), the undersigned certifies that this Petition for *Inter Partes* Review complies with the type-volume limitation of § 42.24(b)(1) because it contains 13,989 words, excluding the parts of the Petition exempted by § 42.24(a).

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

/Kurt F. James/
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