UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

EOPTOLINK TECHNOLOGY USA INC.
Petitioner,

v.

APPLIED OPTOELECTRONICS, INC.
Patent Owner.

IPR2026-00094
U.S. Patent No. 10,578,818

PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT 10,578,818

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g. 11[c4] ("the two extending arms are detachably fasten-able with the cage;") 60

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1002	Prosecution History of the '818 patent
1003	U.S. Patent Publication No. 2015/0263453 to Wang et al., published September 17, 2015
1004	U.S. Patent Publication No. 2014/0104808 to Koutrokois, published April 17, 2014
1005	U.S. Patent No. 9,523,826 to Tsai et al., issued December 20, 2016
1006	U.S. Patent Publication No. 2017/0363828 to Zhu et al., published December 21, 2017
1007	Declaration of Dr. Michael Lebby

LISTING OF CLAIMS

Claim Term	Claim Limitation
1[pre]	An optical transceiver, configured to be inserted into a cage in a pluggable manner, comprising:
1[a]	a main body comprising two lateral surfaces and an outer surface between the two lateral surfaces, and the outer surface defining a confined groove;
1[b]	an elastic component disposed in the confined groove; and
1[c1]	a fastening component movably disposed on the main body, the fastening component comprising a linkage arm, two extending arms and a confined portion, wherein the linkage arm is disposed on the outer surface of the main body, wherein the linkage arm comprises an opening in communication with the confined groove of the main body to allow the elastic component to pass through the opening and be disposed in the confined groove,
1[c2]	the two extending arms are connected with the linkage arm, the two extending arms are respectively disposed on the two lateral surfaces,
1[c3]	the confined portion is connected with the linkage arm and extends into the confined groove in order to press the elastic component, and

Claim Term	Claim Limitation
1[c4]	the two extending arms are detachably fasten-able with the cage.
2	The optical transceiver according to claim 1, wherein the outer surface is either a top surface or a bottom surface of the main body.
3	The optical transceiver according to claim 1, wherein the main body comprises a first confined surface forming the confined groove, the confined portion of the fastening component comprises a second confined surface facing toward the first confined surface, and the elastic component is disposed between the first confined surface and the second confined surface.
4	The optical transceiver according to claim 1, wherein a size of the opening is smaller than a length of the elastic component in an uncompressed condition.
5	The optical transceiver according to claim 1, wherein the opening is located between two ends of the linkage arm where the two extending arms are connected.
6	The optical transceiver according to claim 1, wherein the confined portion and the opening of the fastening component are formed by stamping.
7	The optical transceiver according to claim 1, wherein the main body comprises a head portion and an insertion portion

Claim Term	Claim Limitation
	connected with each other, the insertion portion is configured to be inserted into the cage in a pluggable manner, the head portion comprises the outer surface, the two lateral surfaces and an optical fiber terminal.
8	The optical transceiver according to claim 1, further comprising a pivot shaft pivoted on the linkage arm of the fastening component and a bail connected with the pivot shaft.
9	The optical transceiver according to claim 1, wherein the optical transceiver is a QSFP-DD optical transceiver.
10[pre]	An optical transceiver, comprising:
10[a]	a main body comprising two lateral surfaces and an outer surface between the two lateral surfaces, and the outer surface defining two confined grooves spaced apart from each other;
10[b]	two elastic components disposed in the two confined grooves; and
10[c1]	a fastening component movably disposed on the main body, the fastening component comprising a linkage arm, two extending arms and two confined portions, wherein the linkage arm is disposed on the outer surface of the main body, wherein the linkage arm comprises an opening in communication with the confined groove of the main body to

Claim Term	Claim Limitation
	allow the elastic component to pass through the opening and be disposed in the confined groove,
10[c2]	the two extending arms are connected with the linkage arm, the two extending arms are respectively disposed on the two lateral surfaces,
10[c3]	the confined portions are connected with the linkage arm and respectively extend into the two confined grooves in order to press the two elastic components.
11[pre]	An optical transceiver, configured to be inserted into a cage in a pluggable manner, comprising:
11[a]	a main body comprising two lateral surfaces and an outer surface between the two lateral surfaces, and the outer surface defining a confined groove;
11[b]	an elastic component disposed in the confined groove;
11[c1]	a fastening component movably disposed on the main body, the fastening component comprising a linkage arm, two extending arms and a confined portion, wherein the linkage arm is disposed on the outer surface of the main body, and wherein the linkage arm comprises an opening in communication with the confined groove of the main body to allow the elastic component to pass through the opening and be disposed in the confined groove,

Claim Term	Claim Limitation
11[c2]	the two extending arms are connected with the linkage arm, the two extending arms are respectively disposed on the two lateral surfaces,
11[c3]	the confined portion is connected with the linkage arm and extends into the confined groove in order to press the elastic component, and
11[c4]	the two extending arms are detachably fasten-able with the cage; and
11[d]	a pivot shaft pivoted on the linkage arm of the fastening component and a bail connected with the pivot shaft, the bail having a horizontal position to allow the bail to be drawn for removal of the optical transceiver from the cage, and an upright position to allow for installation or removal of optical fibers into the optical transceiver.
12	The optical transceiver of claim 11, wherein the bail is configured to remain in the upright position without application of external force.

I. INTRODUCTION

U.S. Patent No. 10,578,818 ("the '818 patent") discloses and claims a simple and customary component of a fiber optic communication network—a pluggable optical transceiver module—that can be hot-plugged and unplugged from a slot in a host device, such as a host computer, switching hub, network router, or switch box. But as the prior art described in this Petition shows, such pluggable optical transceivers were well known and routinely used in optoelectronic applications long before the effective filing date of the '818 patent.

In fact, Patent Owner previously filed and obtained another patent (U.S. 9,523,826 to Tsai et al., Ex. 1005, "Tsai") that discloses almost everything related to the '818 patent. *Compare* Ex. 1001, Figs. 1-3, 8, *with* Ex. 1005, Figs. 2, 4A-5B, 6. The primary difference between Patent Owner's '826 patent (Tsai) and the '818 patent is the location of two elastic components (springs) in the main body of the transceiver: the '826 patent discloses placement of the springs on the lateral sides of the transceiver's main body, whereas the '818 patent discloses placement of the springs on an outer (top or bottom) surface of the main body. *Compare* Ex. 1001, Fig. 5, *with* Ex. 1005, Fig. 3. The '818 patent also discusses a well-known and conventional method of positioning the springs into confined grooves on the main body by compressing the springs by hand to pass them through openings that are shorter than the length of the springs in their uncompressed state. Ex. 1001, 5:25-37.

But despite the similarities and substantial overlap in subject matter between the ’826 and the ’818 patents, Patent Owner did not claim priority, or any relationship, to the earlier ’826 patent when filing and prosecuting the ’818 patent. In fact, Patent Owner did not even disclose the ’826 patent to the Patent Office during prosecution as prior art. Nevertheless, the examiner did find and correctly applied the publication of the ’826 patent as prior art against the ’818 patent claims. But ultimately, the examiner failed to recognize and apply any of the multitude of prior art references that teach optical transceivers with springs installed on the outer top/bottom surface (instead of on the sides) of the transceiver via openings that are shorter than the lengths of the springs. It is evident from the prior art presented here (Wang and Koutrokois) that existing prior art transceivers included an elastic component (spring) disposed in a confined groove on an outer surface, as well as the other claim elements of the ’818 patent, such as installation of the elastic component through a small opening by compressing it. The challenged claims of the ’818 patent (claims 1-12) are therefore unpatentable and should not have been granted.

A person skilled in the art would have readily known that the transceiver claimed in the ’818 patent is conventional and there would have been strong invalidating prior art against it, including Patent Owner’s own prior ’826 patent. Yet, Patent Owner has pursued enforcement of the ’818 patent against Petitioner in a district court action. In addition, Patent Owner has asserted five other patents, each

covering different components or technologies related to optical transceivers, as part of a calculated licensing strategy aimed at capitalizing on technologies that have been standard practice in optical networking for more than a decade. The Board should therefore review the '818 patent claims based on the prior art and grounds presented in this Petition and find the challenged claims unpatentable.

II. PRIOR ART REFERENCES, GROUNDS, AND PETITIONER'S STIPULATION

A. Prior Art References and Grounds

Claims 1-12 are challenged based on the following prior art references. The prior art grounds are supported by the expert declaration of Dr. Michael Lebby (Ex. 1007).

Prior Art	
Ex. 1003	U.S. Patent Publication No. 2015/0263453 to Wang et al., filed June 5, 2014 and published September 17, 2015 ("Wang"); prior art under 35 U.S.C. § 102(a)(1).
Ex. 1004	U.S. Patent Publication No. 2014/0104808 to Koutrokois, filed October 15, 2012 and published April 17, 2014 ("Koutrokois"); prior art under 35 U.S.C. § 102(a)(1).

Prior Art	
Ex. 1005	U.S. Patent No. 9,523,826 to Tsai et al., filed October 2, 2014 and issued December 20, 2016 ("Tsai"); prior art under 35 U.S.C. § 102(a)(1).

The presented prior art grounds are:

Ground	Claims	Basis Under 35 U.S.C. §§ 102, 103
1	1-3, 5, 7, and 10	Anticipated by Wang
2	4, 6, and 9	Rendered obvious by Wang
3	8, 11, and 12	Rendered obvious by Wang in view of Tsai
4	1-3, 5, 7, and 10	Anticipated by Koutrokois
5	4, 6, and 9	Rendered obvious by Koutrokois
6	8, 11, and 12	Rendered obvious by Koutrokois in view of Tsai

B. Petitioner's Stipulation for the Parallel District Court Action

If the Board institutes IPR based on this Petition (and does not subsequently vacate or withdraw institution), Petitioner will not pursue in the parallel district court litigation (Case No. 5:24-cv-08165-NW (N.D. Cal.)), (i) the specific grounds raised

in this Petition, (ii) any other grounds that reasonably could have been raised under §§ 102 or 103 on the basis of prior art patents or printed publications, or (iii) any ground based on a combination of system prior art and the prior art references asserted in this Petition (identified in Section II.A, above).

III. TECHNICAL BACKGROUND OF THE '818 PATENT

A. The '818 Patent

The '818 patent discloses and claims a pluggable optical transceiver comprising a main body, a fastening component movably disposed on the main body, and an elastic component disposed in a confined groove on an outer surface of the main body. Ex. 1001, Title, Abstract, 1:32-45. The fastening component comprises a linkage arm extending between two extending arms. *Id.* The extending arms are disposed on two lateral (side) surfaces of the main body, and the linkage arm is disposed on the outer surface of the main body. *Id*. The fastening component further includes a confined portion connected to the linkage arm and the confined portion extends into the confined groove to compress the elastic component therein. *Id*., 1:45-48. The elastic component is configured to pass through an opening in the linkage arm during assembly when the elastic component is in a compressed state. *Id*., 5:24-37, Figs. 5-7.

As shown in Figures 4 and 5 of the '818 patent, an exemplary optical transceiver 10*a* is a Quad Small Form-factor Pluggable Double Density (QSFP-DD)

optical transceiver configured to be inserted into a cage in a pluggable manner. Ex. 1007, ¶42; *see also id.*, ¶42 n.2 (explaining QSFP-DD transceivers). Optical transceiver 10*a* includes a **main body 100*a***, a **fastening component 200*a***, a **bail 300*a***, and **two elastic components 400*a***. Ex. 1001, 4:5-16.

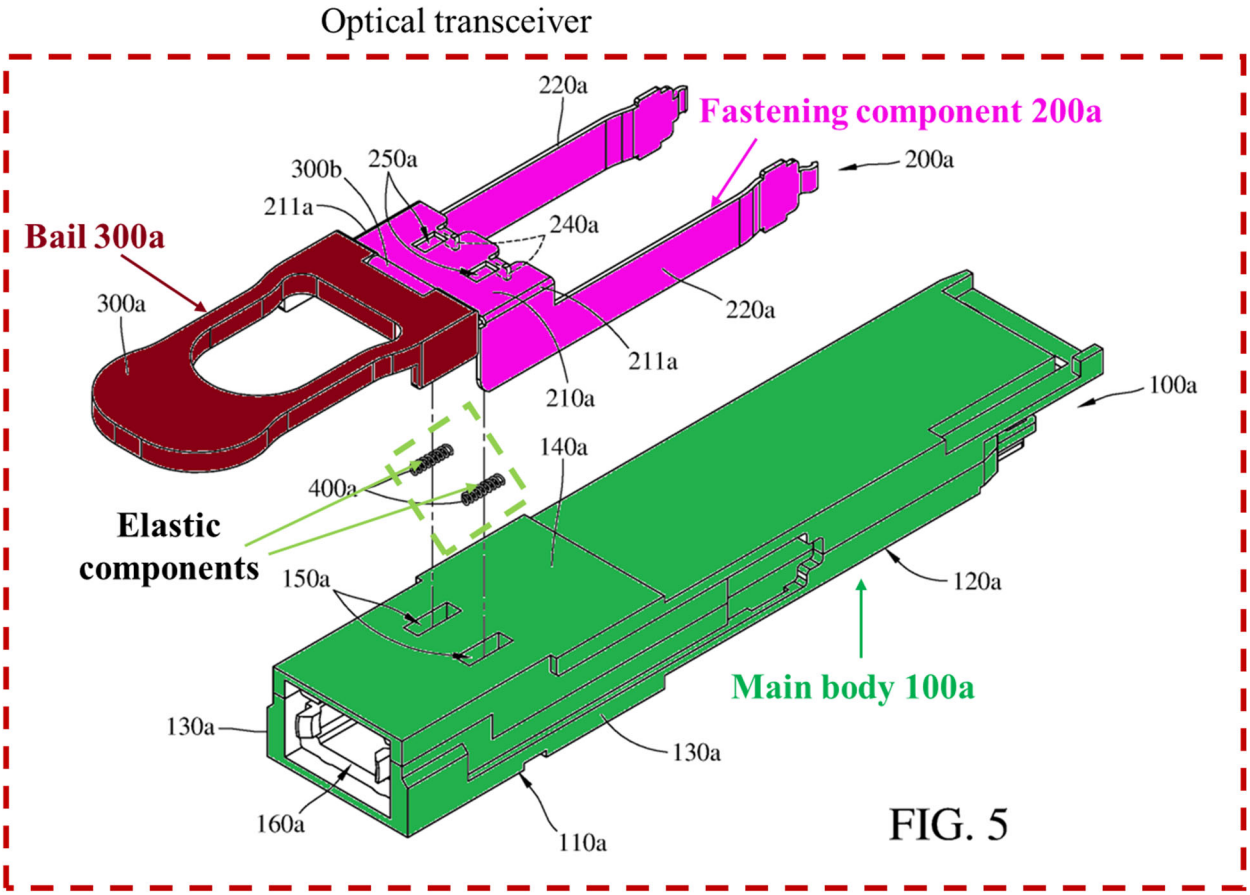
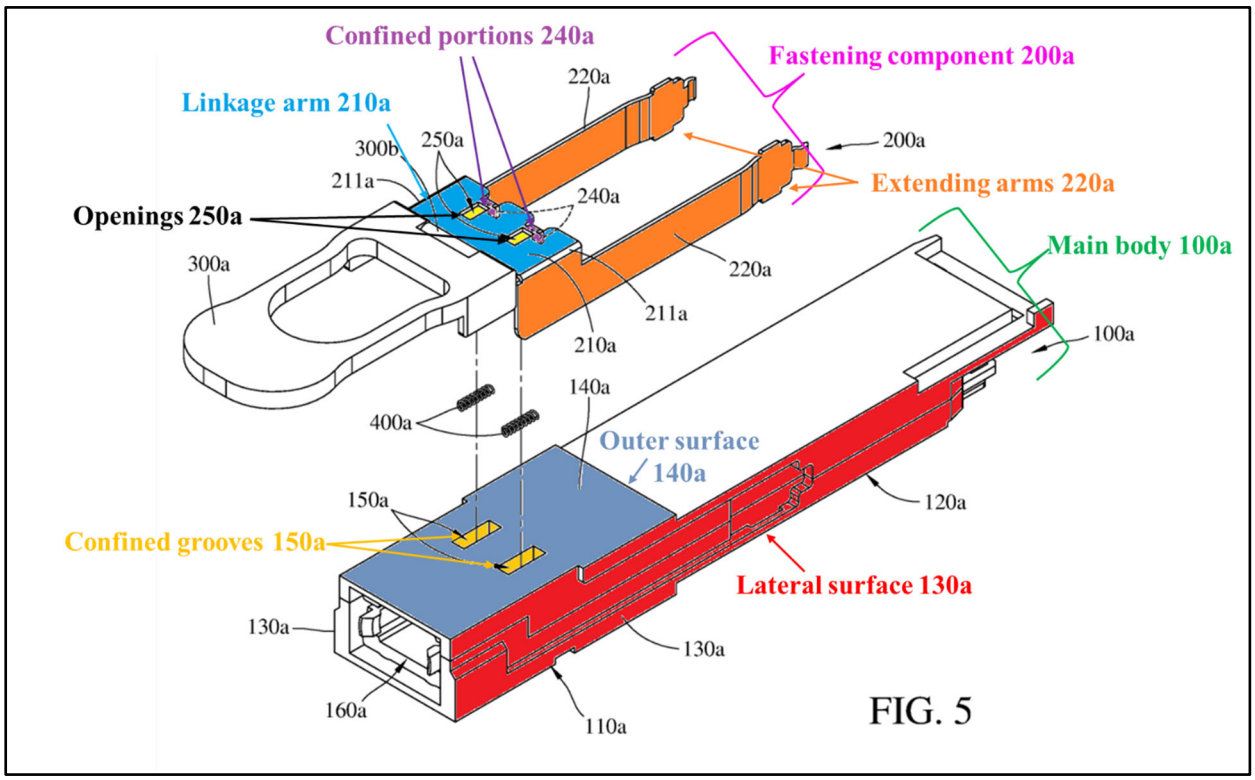


FIG. 5

Ex. 1001, Fig. 5 (annotations added)

Fastening component 200*a* is movably disposed on **main body 100*a*** and is connected to **bail 300a**. Ex. 1001, 4:39-41, 4:59-5:7. As shown in annotated Figure 5, below, fastening component 200a includes **two extending arms 220*a*** with

linkage arm 210*a* therebetween, wherein linkage arm 210*a* includes **two confined portions 240*a*** and **two openings 250*a***. *Id.*, 4:39-58, Fig. 5. Two extending arms 220*a* are movably disposed on **two lateral surfaces 130*a***, respectively, of main body 100*a*. *Id.*, 5:45-47. Extending arms 220*a* are detachably fasten-able with the cage. *Id*. Linkage arm 210*a* is disposed on **outer surface 140*a*** of main body 100*a* such that each opening 250*a* of the linkage arm is connected with a respective **confined groove 150*a*** on the outer surface. *Id*., 5:47-51.



Ex. 1001, Fig. 5 (annotations added)

The two confined portions 240*a* of linkage arm 210*a* extend into respective **confined grooves 150*a***. *Id*., 4:51-54, Fig. 7. Each elastic component 400*a*

positioned in a confined groove 150*a* is compressed by a **first confined surface 170*a*** of main body 100*a* and a **second confined surface 260*a*** of confined portion 240*a*, where first confined surface 170*a* faces second confined surface 260*a*. *Id.*, 5:8-15. When fastening component 200*a* moves relative to main body 100*a*, confined portion 240*a* also moves in confined groove 150*a* such that elastic component 400*a* is compressed. *Id.*, 5:8-18, Fig. 7.

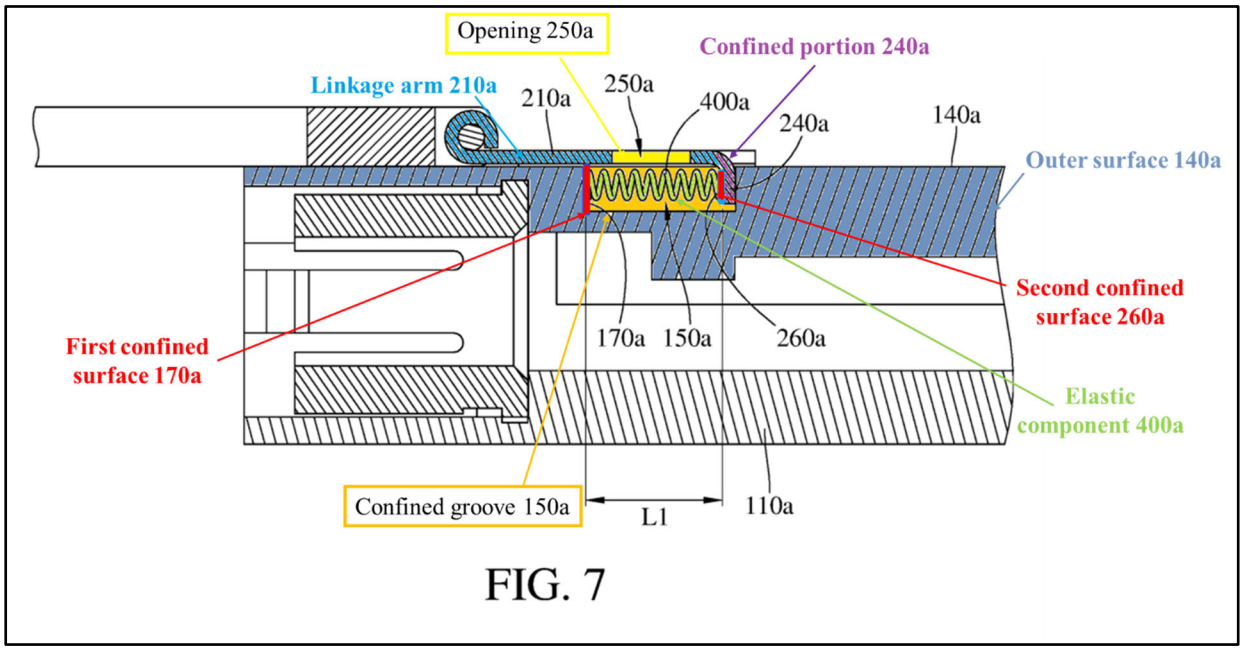


FIG. 7

Ex. 1001, Fig. 7 (annotations added)

The '818 patent also discloses a method of positioning **elastic components 400*a*** in respective **confined groove 150*a*** by compressing elastic components 400*a* and inserting them through openings 250*a* into confined grooves 150*a*. Ex. 1001, 5:25-31. The '818 patent discusses that a size of openings 250*a* is smaller than the length of elastic components 400*a* in an uncompressed state, such that the position

of elastic component 400*a* in confined groove 150*a* is maintained and the elastic component is not compressed by confined portion 240*a* unless fastening component 200*a* is pulled to unplug the transceiver. *Id.*, 5:24-37; *see also id.*, Fig. 7.

B. Prosecution History of the '818 Patent

U.S. Patent Application No. 16/153,685, which issued as the '818 patent, was filed on October 5, 2018. Ex. 1001, cover page. The Patent Office issued a Non-Final Office Action dated June 5, 2019, rejecting pending claims 1-11 as obvious over U.S. Patent Publication No. 2015/0093083 to Tsai et al.[1] in view of U.S. Patent Publication No. 2017/0363828 to Zhu et al. ("Zhu," Ex. 1006). Ex. 1002, pp. 38-46. The examiner found that "[w]hile the teachings of Tsai generally render obvious that [] grooves springs can be disposed on any other suitable/workable surface of the main body 100, including the outer (top) surface thereof, Tsai does not explicitly

[1] Tsai is assigned to Patent Owner Applied Optoelectronics, Inc. and issued as U.S. Patent No. 9,523,826 ("the '826 patent" or "Tsai") on December 20, 2016. Ex. 1005. Patent Owner has asserted the '826 patent against Accelight Technologies, Inc. in the Northern District of California, Case No. 4:24-cv-09041. Accelight Technologies, Inc. has requested *inter partes review* of the '826 patent in IPR2026-00093.

illustrate such arrangement." *Id.*, 42-43 (emphases omitted). The examiner relied on Zhu for the disclosure of springs positioned in the outer (top) surface of the main body. *Id.*

In a Reply filed September 5, 2019, Patent Owner amended each of the independent claims 1 and 11 to incorporate the claim limitation of dependent claim 4 into each independent claim and added new claims 12 and 13. *Id.*, pp. 26-35. Specifically, Patent Owner added the limitation "wherein the linkage arm comprises an opening connected with the confined groove of the main body **to receive the elastic component in the confined groove.**" *Id.*, pp. 26, 28 (emphasis added). Patent Owner argued that the opening disclosed by Tsai "does not allow for mounting/unmounting of the spring 400." *Id*., p. 32 (emphasis in original). Patent Owner further argued that "Zhu is similarly deficient in that the locking component 3 does not include openings for mounting/unmounting a spring 4." *Id*.

A Notice of Allowance issued on November 22, 2019, including an Examiner's amendment to independent claims 1, 11, and 12,[2] whereby the claims recited "and wherein the linkage arm comprises an opening in communication with

[2] Claim 11 was renumbered as claim 10 and claim 12 was renumbered as claim 11 in the '818 patent upon issuance.

the confined groove of the main body to allow the elastic component to pass through the opening and be disposed in the confined groove." *Id*., p. 13.

The Notice of Allowability stated that claims 1, 11, and 12 are allowed because the prior art of record does not disclose that "the linkage arm comprises an opening in communication with the confined groove of the main body to allow the elastic component to pass through the opening and be disposed in the confined groove. … Tsai does not teach that an elastic component 400 is mounted in groove 150 through an opening formed in extending arms by stamping them and creating punched-out portions 240. Zhu uses a circular-shaped elastic component 4 that, even in principle, cannot be passed through openings formed in a linkage arm. Thus, a person of ordinary skill in the art would not be motivated to install the elastic component in Tsai through an opening formed in a linkage arm." *Id.*, p. 15. The '818 patent issued on March 3, 2020. Ex. 1001, cover page.

In allowing the '818 patent, the examiner overlooked prior art references that teach elastic components that could obviously have been compressed to be inserted through small openings into the confined grooves of the transceiver. *See* Ex. 1007, ¶¶99, 146. As discussed below, several prior art references disclose linear elastic components, e.g., springs, that are capable of insertion through small openings in the fastening component into confined grooves in an outer surface of the transceiver's main body. For example, both Wang (Ex. 1003) and Koutrokois (Ex. 1004) disclose

such elastic components that are retained by a fastening component that has openings for insertion of the elastic components into confined grooves of the main body. The examiner failed to find and apply such prior art references, even though the practice of compressing a spring by hand to insert it through a small opening is routine and commonly used in many assembly processes. *Id.*

IV. LEVEL OF ORDINARY SKILL

At the effective filing date of the ’818 patent, a person of ordinary skill in the art (“POSITA”) would have had (1) a bachelor’s degree in electrical or electronic engineering or an equivalent degree, and (2) 2-4 years of work experience in optoelectronics, optical networking, optical communications, or a closely related field. Ex. 1007, ¶39.

V. CLAIM CONSTRUCTION

Claims must be construed only to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). No claim terms of the ’818 patent require claim construction to resolve any disputes in this forum. Ex. 1007, ¶46.

VI. GROUNDS 1, 2, AND 3 BASED ON WANG

A. Wang (Ex. 1003)

Wang discloses a pluggable optical transceiver module 200 that is configured to be inserted and removed from a receptable of a host device 100. Ex. 1003, ¶¶

[0003], [0038]. As Wang explains, each pluggable optical transceiver module "communicates with a printed circuit board of the host device by transmitting and/or receiving electrical signals to and/or from the host device printed circuit board." *Id*., ¶[0003]. "These electrical signals can also be transmitted by or to the module outside the host device as optical and/or electrical signals." *Id.*

Wang discloses an exemplary host device configuration where pluggable optical transceiver module 200 is plugged into cage 102 of host device 100 (*see*, *e.g.*, Ex. 1003, Figures 1A, 1B), such that pluggable optical transceiver 200 electrically connects to the host printed circuit board. *Id*., ¶[0044]. Cage recess 104 allows optoelectronic module 200 to selectively engage cage 102 such that module 200 is prevented from moving within cage 102 until module 200 is intentionally disengaged from cage 102. *Id*. Wang discloses that this configuration is beneficial to maintain the mechanical and electrical connection between module 200 and the host device and "unintentional disconnection may be reduced and potentially eliminated." *Id*.

Pluggable optical transceiver 200 comprises, among other components, housing 208, release slide 202, handle 204 coupled to release slide 202, and resilient members 254 configured to urge release slide 202 into a latched position. *Id.*, ¶¶[0046], [0050], [0072]. Housing 208 comprises a top housing 209 and a bottom housing 210. *Id.*, ¶[0050]. Housing 208 further comprises a pair of ribs 236 located

on the lateral surfaces of the housing. *Id*., ¶[0059]. Housing 208 and ribs 236 form guides 237. *Id.*

Release slide 202 comprises release slide base 238 and a pair of release slide arms 240 extending from release slide base 238. *Id*., ¶[0061]. Release slide 202 includes flanges 242 located on release slide arms 240 and extending inwardly towards each other. *Id*. Release slide arms 240 and flanges 242 are sized and shaped to allow release slide 202 to slide relative to the housing 208. *Id*., ¶[0064].

Housing 208 comprises recesses 256 in which resilient members 254 are at least partially retained. *Id*., ¶[0073]. Fingers 258 extend from release slide base 238 into recesses 256. *Id*. Each resilient member 254 is located in a corresponding recess 256 with a front end of resilient member 254 at or near a front wall of corresponding recess 256, and a rear end of resilient member 254 at or near a front surface of a finger 258. *Id*. "Thus, forward motion of the release slide base 238 relative to the housing when the release slide base 238 is moved from the latched position towards the unlatched position may cause the fingers 258 to compress the resilient members 254 within the recesses 256 against the front walls of the recesses 256. When thus compressed, the compressed resilient members 254 may urge the release slide base 238 from its unlatched position towards its latched position." *Id*.

Figure 1A of Wang, annotated below, shows **optoelectronic module 200** received in **cage 102** of host 100.

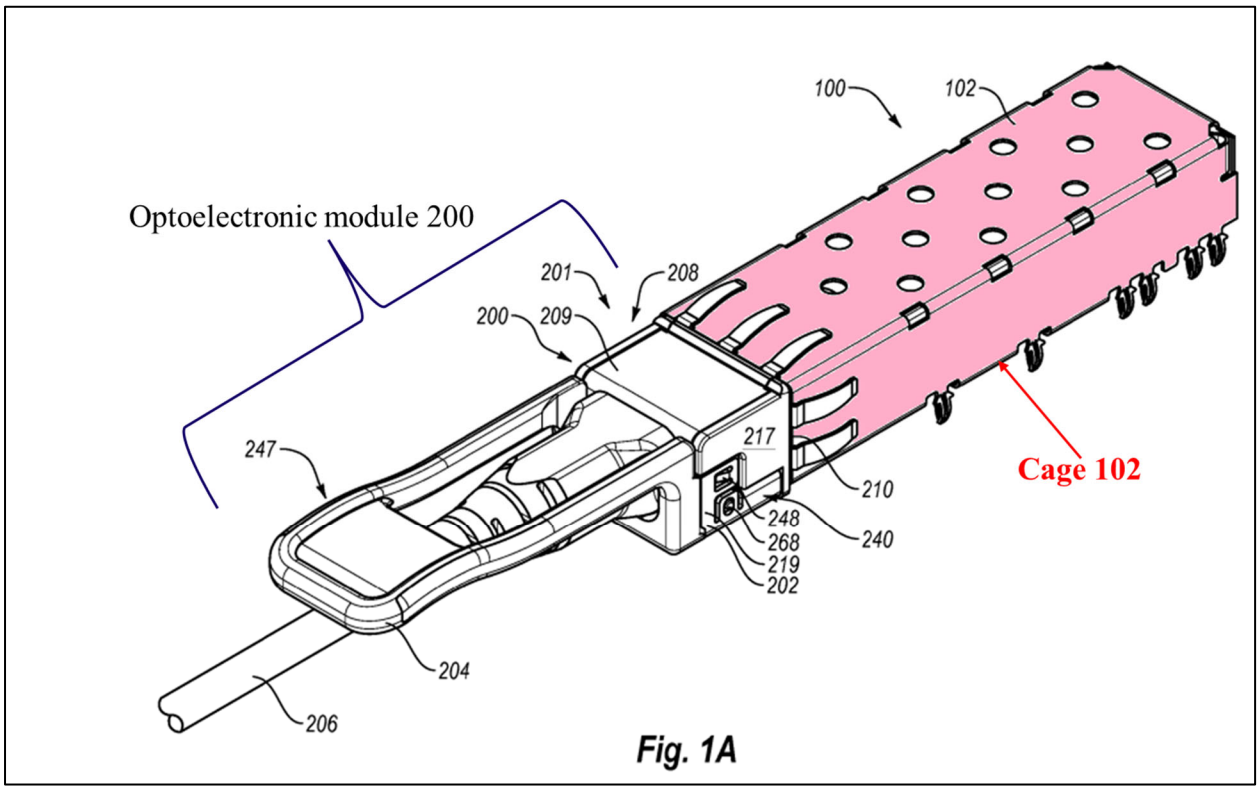


Fig. 1A

Ex. 1003, Fig. 1A (annotations added)

Figure 2B of Wang, annotated below, shows optical transceiver module 200 having **release slide 202** (fastening component), **housing 208** (main body), and **EMI shield 211**.

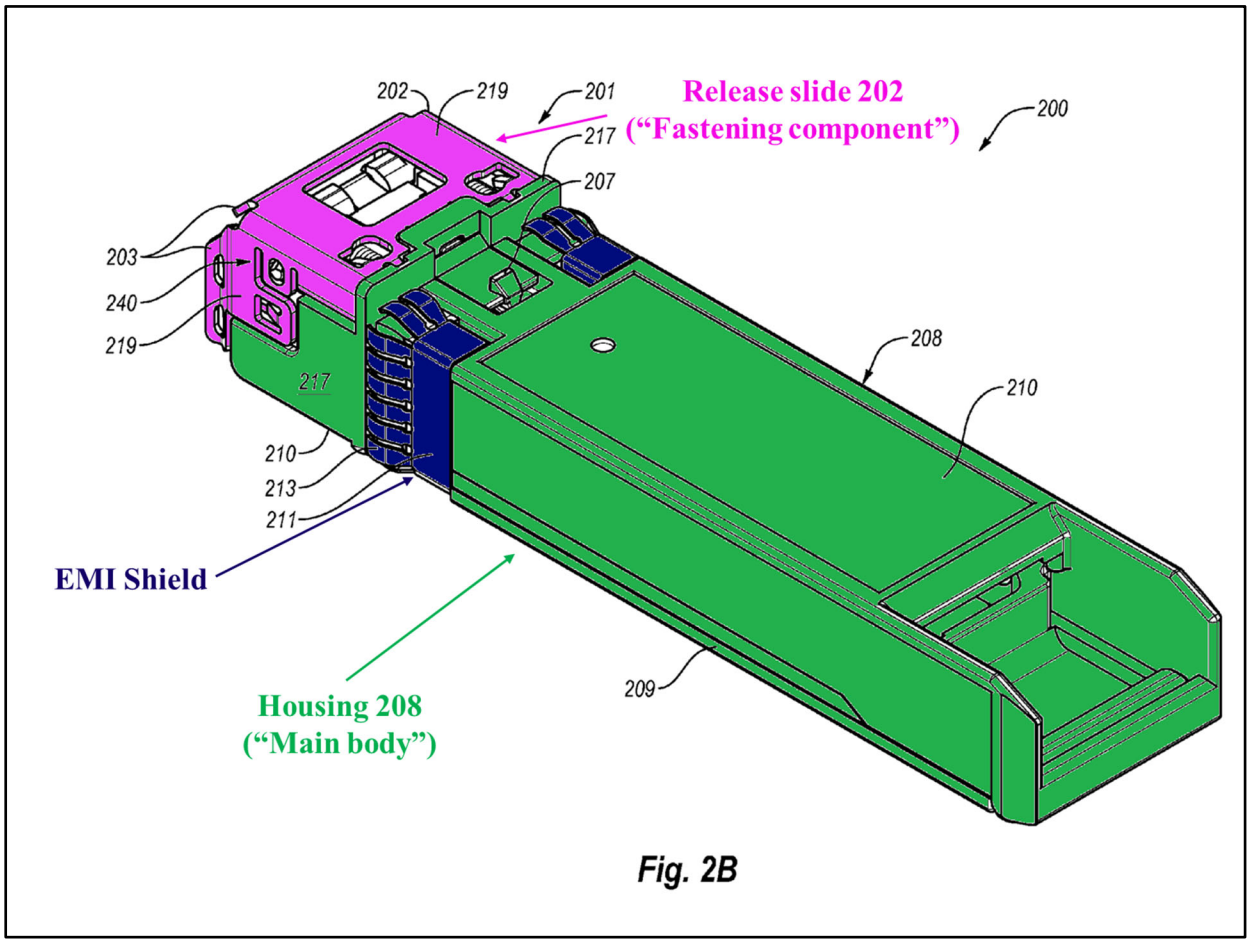
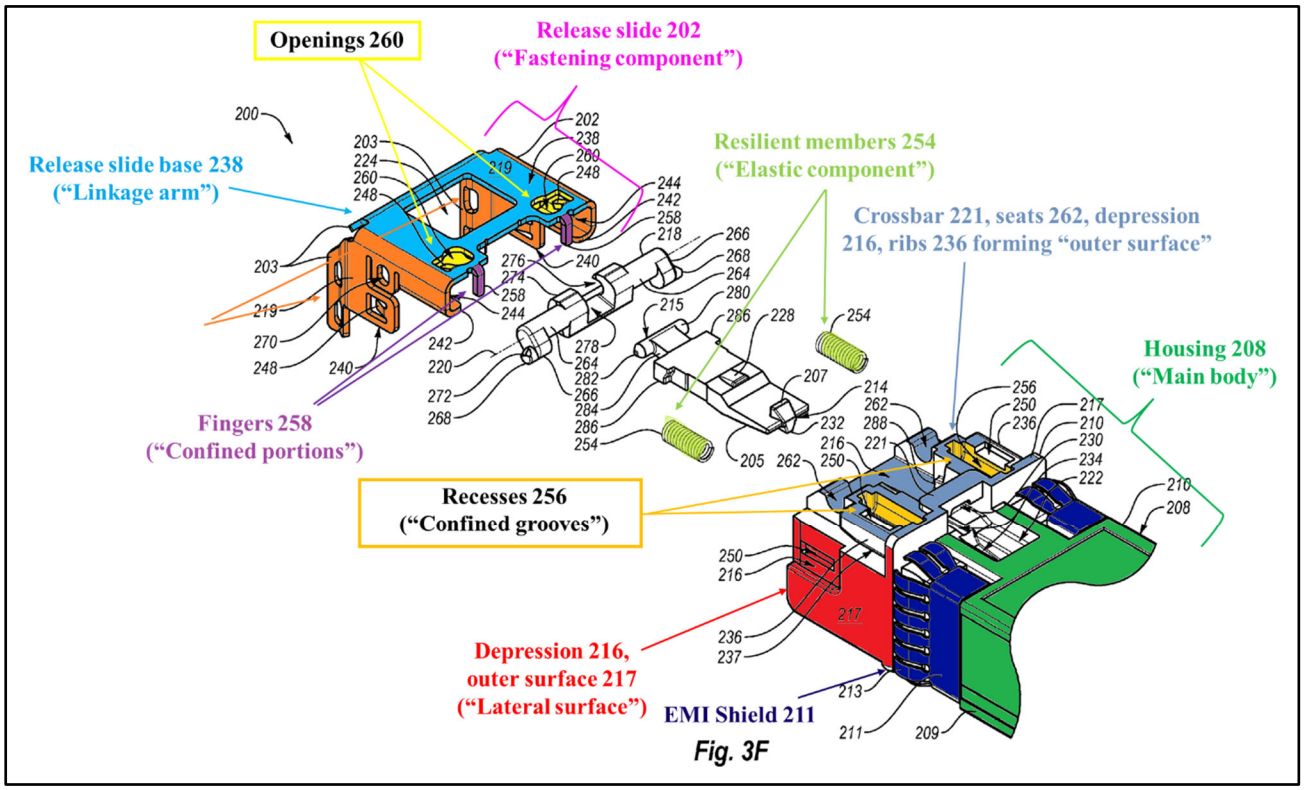


Fig. 2B

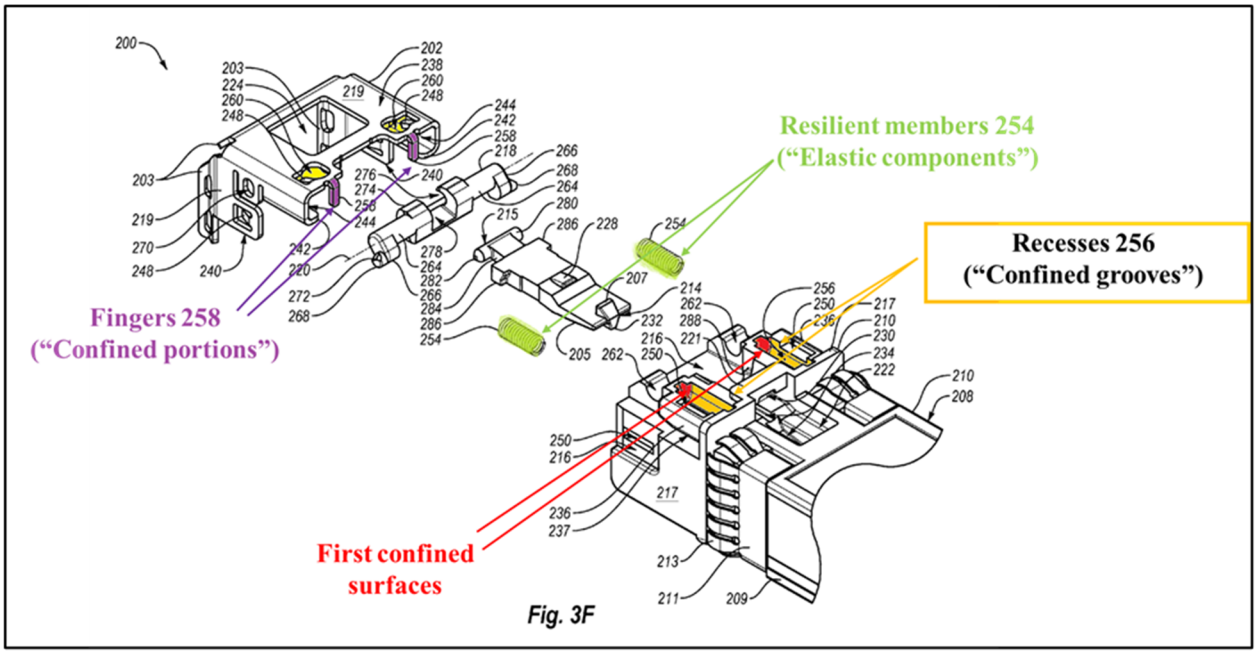
Ex. 1003, Fig. 2B (annotations added)

Figure 3F of Wang, annotated below, shows **release slide 202** comprising **release slide arms 240**, **release slide base 238** having **openings 260** formed therein, and **fingers 258**; and **housing 208** having **EMI shield 211** and comprising 1) a crossbar 221, seats 262, a depression 216, and ribs 236 which together form an **outer surface**, 2) depression 216 and outer surface 217 forming a **lateral surface**, and **recesses 256** in which **resilient members 254** are received.

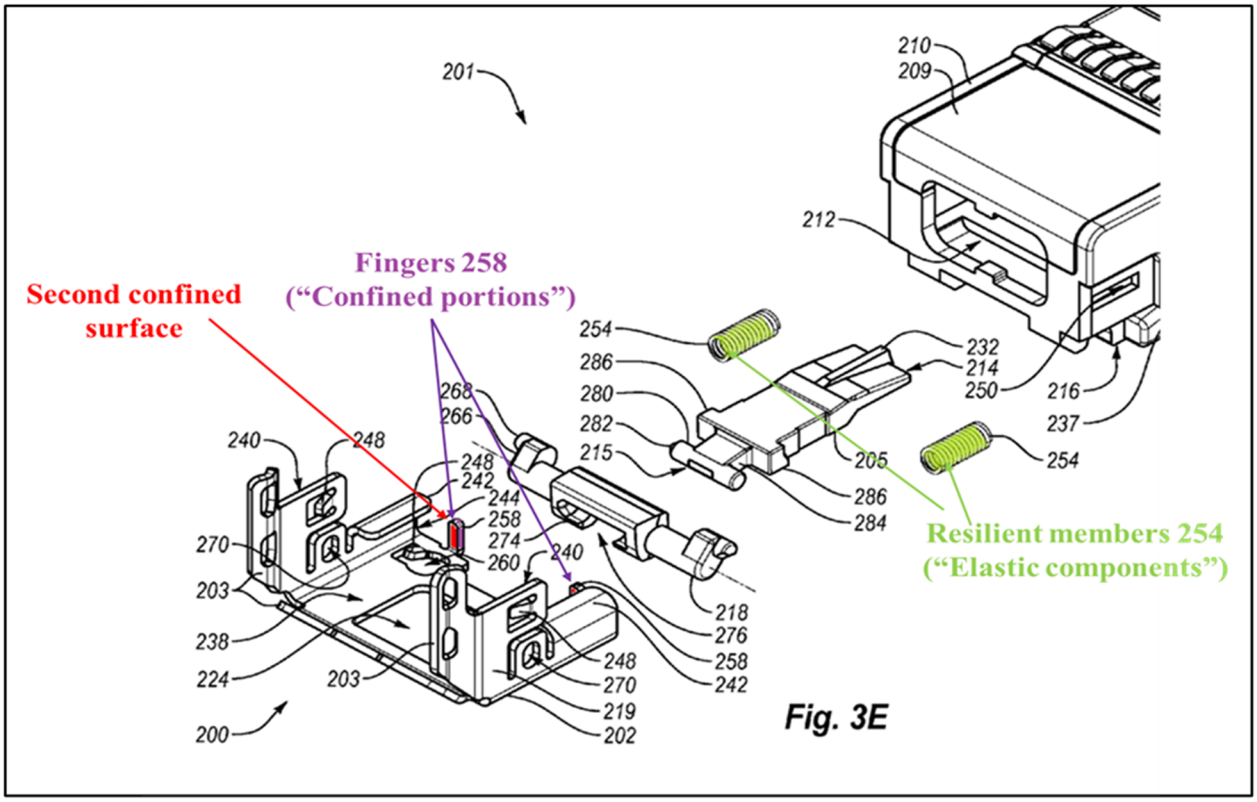


Ex. 1003, Fig. 3F (annotations added)

Figures 3E and 3F of Wang, annotated below, show **resilient members 254**, **recesses 256** each having a **first confined surface**, and **fingers 258** each having a **second confined surface**.



Ex. 1003, Fig. 3F (annotations added)



Ex. 1003, Fig. 3E, excerpted (annotations added)

B. Ground 1: Wang Anticipates Claims 1-3, 5, 7, and 10

1. Independent claim 1

Wang discloses each and every limitation of claim 1.

a. 1[preamble] ("An optical transceiver, configured to be inserted into a cage in a pluggable manner")

Wang discloses an optical transceiver (optoelectronic module 200) configured to be inserted into a cage 102 in a pluggable manner, as shown in Figure 1A (annotated below). Ex. 1003, ¶¶[0038], [0044], Figs. 1A, 1B. Wang discloses that Figures 1A and 1B show "a portion of an example host device 100 with an example optoelectronic module 200 in a latched configuration located at least partially inside the host device 100." *Id.*, ¶[0038]. Wang further discloses that "[t]he host device 100 may include a cage 102 (shown, e.g., in FIG. 1A and FIG. 1B) configured to be connected to a host printed circuit board (not shown). The cage 102 at least partially receives the optoelectronic module 200 when the optoelectronic module 200 is inserted into the cage 102 and is mechanically and electrically connected to the host device 100." *Id.*, ¶[0044].

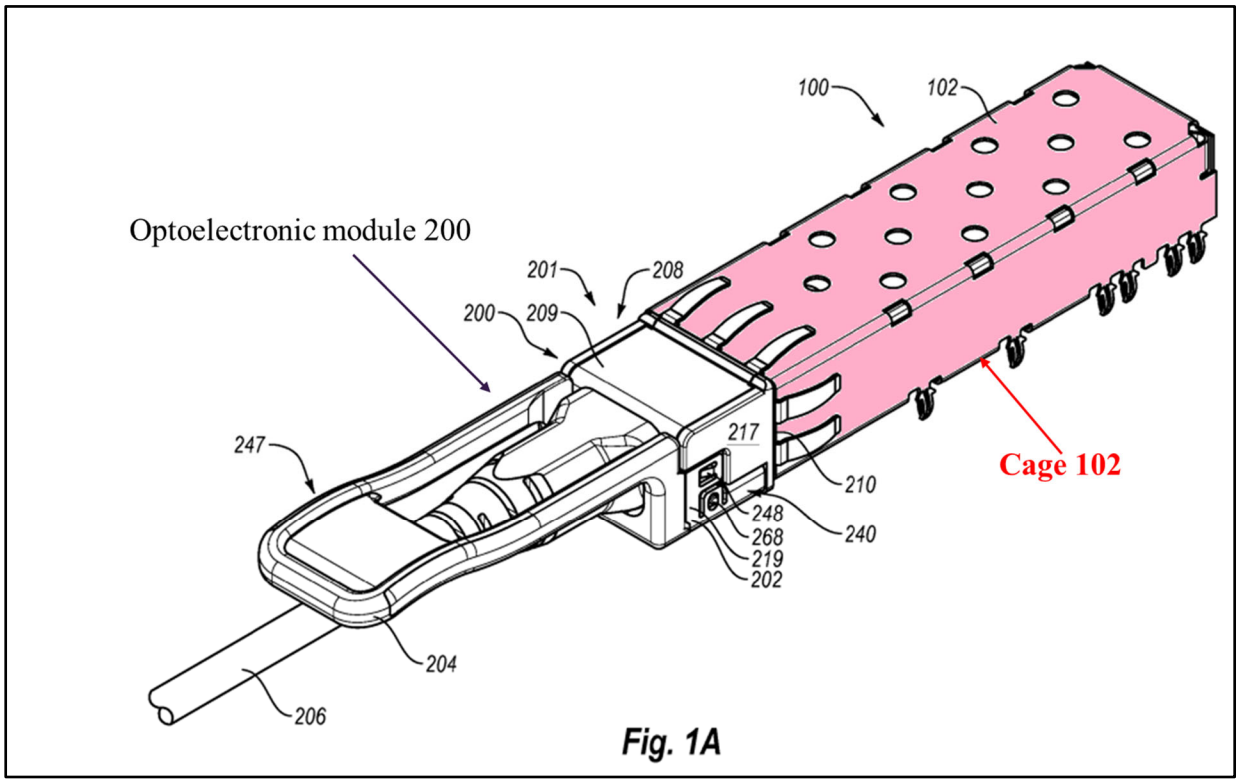


Fig. 1A

Ex. 1003, Fig. 1A (showing optoelectronic module 200 and cage 102) (annotations added)

b. 1[a] ("a main body comprising two lateral surfaces and an outer surface between the two lateral surfaces, and the outer surface defining a confined groove")

Wang discloses that the optical transceiver (optoelectronic module 200) comprises a main body (housing 208), which includes two lateral surfaces (each formed by a depression 216 and an outer surface 217) and an outer surface (formed by crossbar 221, seats 262, depression 216, ribs 236) between the two lateral surfaces. Ex. 1003, ¶¶[0059], [0063]-[0064], [0068], [0073]-[0074], [0077], [0090], Fig. 3F. The lateral surfaces and the outer surface of the main body (housing 208)

are annotated in Figure 3F, below. The outer surface defines confined grooves (recesses 256). *Id.* ¶[0073], Fig. 3F.

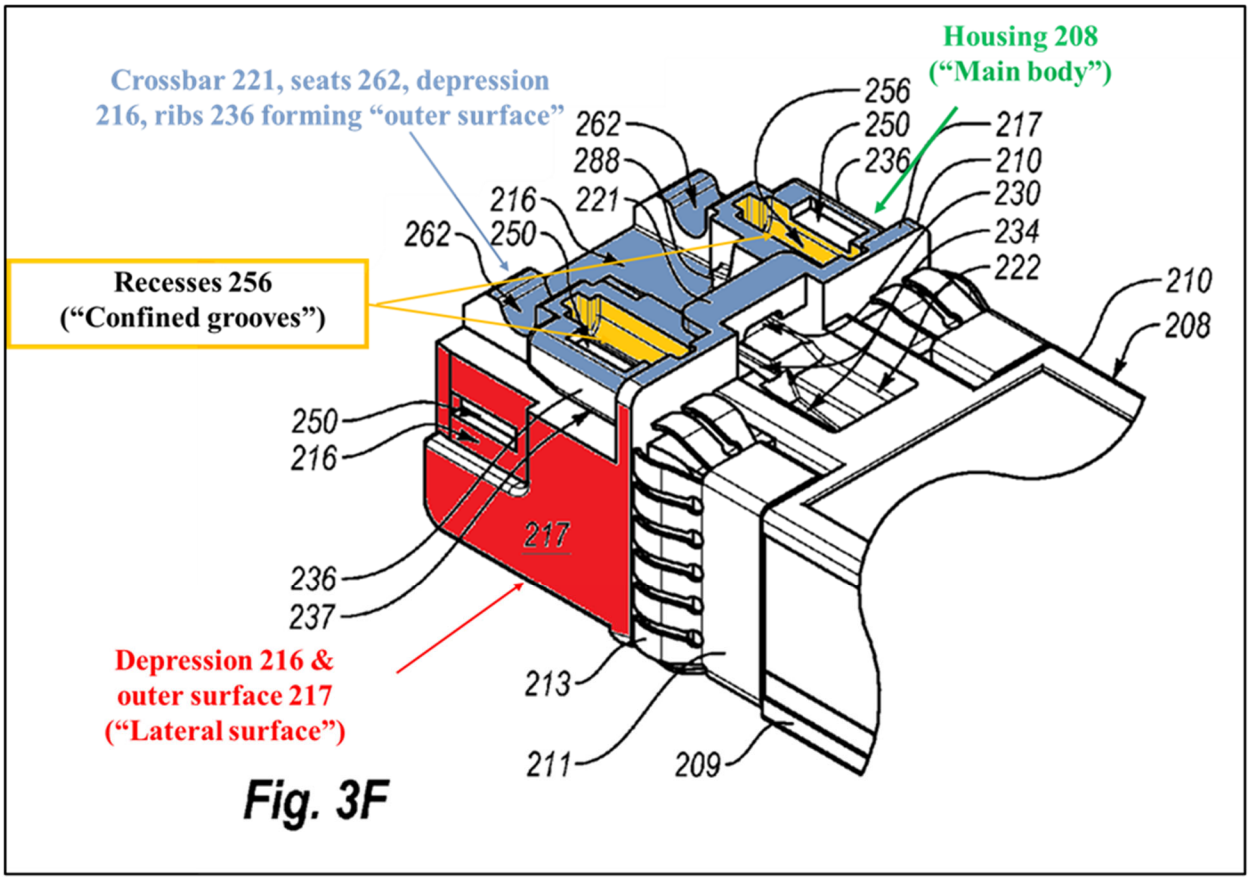
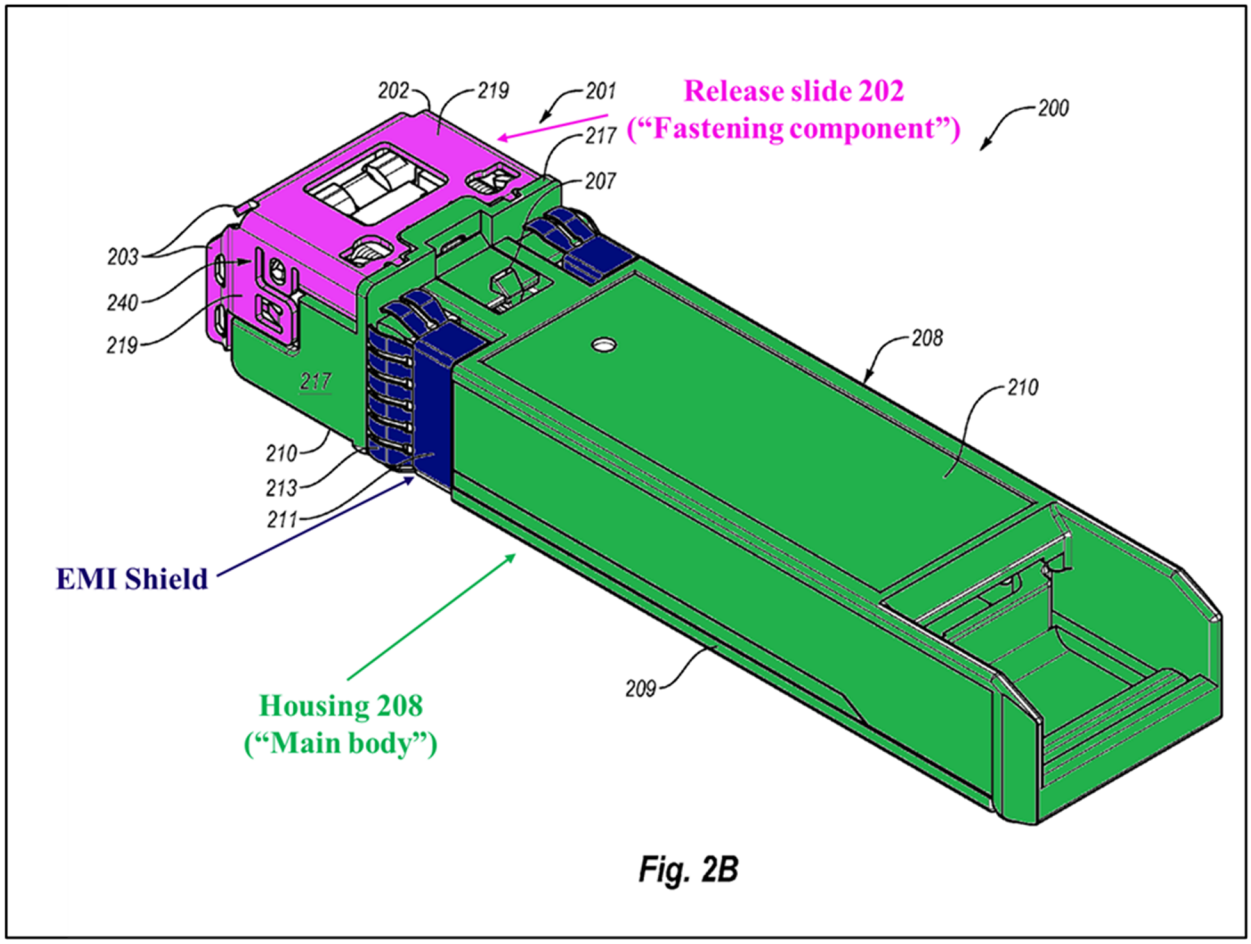


Fig. 3F

Ex. 1003, Fig. 3F, excerpted (showing **housing 208** comprising two **lateral surfaces**, each formed by depression 216 and outer surface 217, and an **outer surface** formed by ribs 236, crossbar 221, seats 262 and depression 216 and including **recesses 256**) (annotations added)

Optoelectronic module 200 also includes release slide 202 and resilient members 254. Ex. 1003, ¶¶[0046], [0072]. Recesses 256, formed on the outer (top) surface of housing 208, receive and retain resilient members 254. *Id.*, ¶¶[0073]-

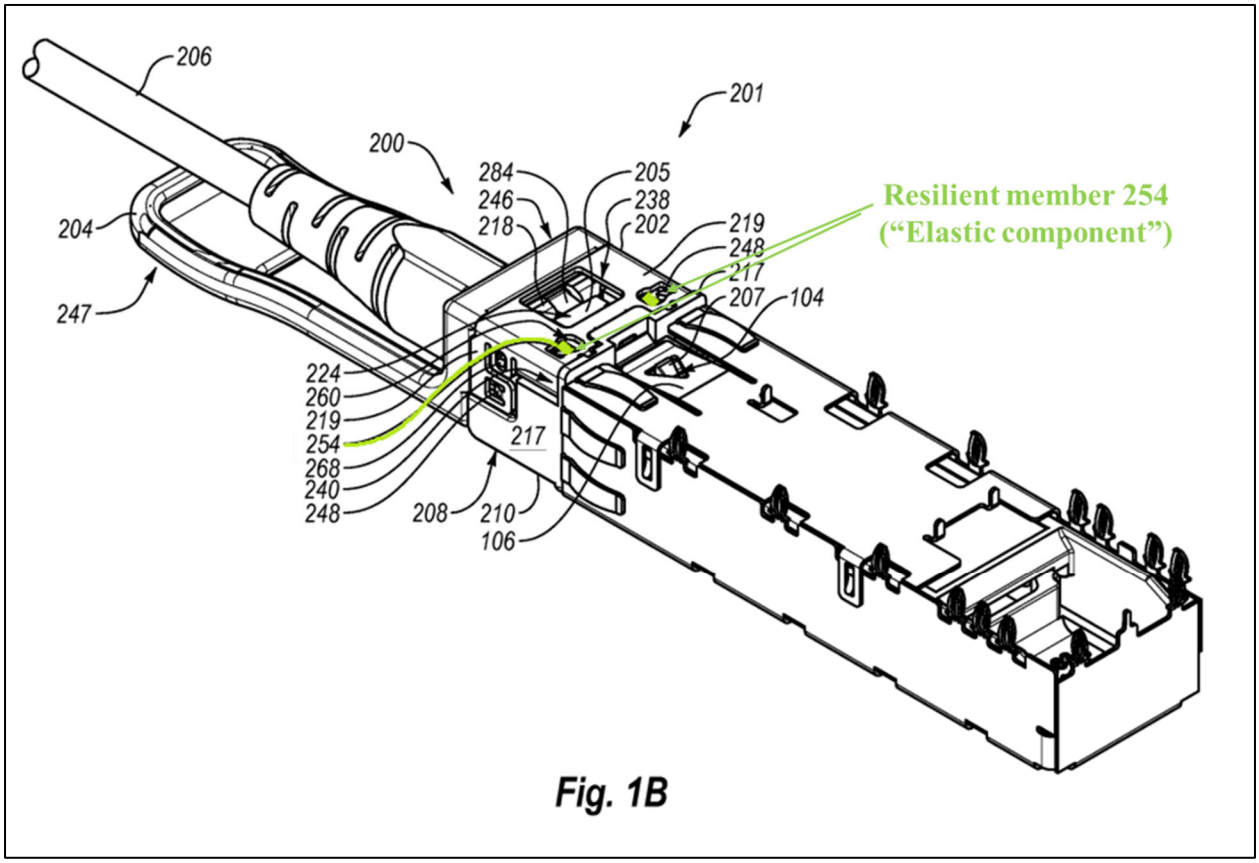
[0074]. As shown in annotated Figure 2B, below, optoelectronic module 200 may include conductive electromagnetic interference (EMI) shield 211 located at least partially around housing 208. *Id.*, ¶[0051]. EMI shield 211 may also include conductive fingers 213 to form an electrically conductive connection with cage 102. *Id.*



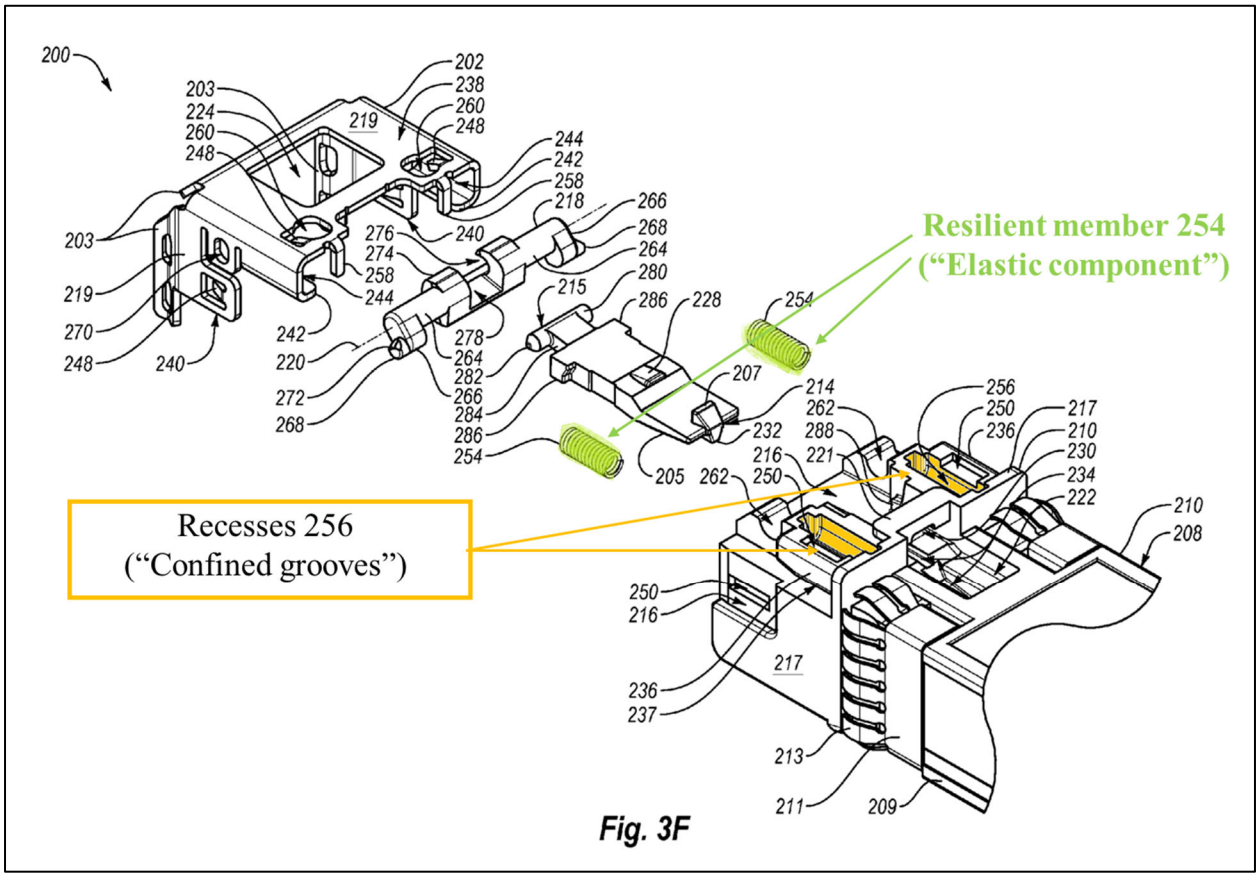
Ex. 1003, Fig. 2B (showing **housing 208** with **release slide 202** disposed thereon and **EMI shield 211** around it) (annotations added)

c. 1[b] ("an elastic component disposed in the confined groove")

Wang discloses that optoelectronic module 200 comprises an elastic component (resilient member 254) disposed in the confined groove (a recess 256). Ex. 1003, ¶[0073] ("In some embodiments, **the resilient members 254 may be located at least partially within recesses 256** (FIG. 3F) formed in the housing 208.") (emphasis added), Figs. 1B, 3F.



Ex. 1003, Fig. 1B (showing **resilient members 254** in an assembled configuration) (annotations added)



Ex. 1003, Fig. 3F (showing exploded view of optoelectronic module 200 with **resilient members 254** to be disposed in the confined grooves (**recesses 256**) when assembled) (annotations added)

d. 1[c1] ("a fastening component movably disposed on the main body, the fastening component comprising a linkage arm, two extending arms and a confined portion, wherein the linkage arm is disposed on the outer surface of the main body, wherein the linkage arm comprises an opening in communication with the confined groove of the main body to allow the elastic

component to pass through the opening and be disposed in the confined groove")

Wang discloses that optoelectronic module 200 comprises a fastening component (release slide 202) disposed on the main body (housing 208). Ex. 1003, ¶[0049]. The fastening component (release slide 202) comprises a linkage arm (release slide base 238), two extending arms (release slide arms 240), and a confined portion (a finger 258). *Id.*, ¶¶[0061], [0073]. The linkage arm is disposed on the outer surface (formed by ribs 236, crossbar 221, seats 262, and depression 216) of the main body (housing 208). *Id.*, ¶¶[0060], [0073], [0077], [0090]. Linkage arm (release slide base 238) comprises two openings 260 in communication with the confined grooves (recesses 256) of the main body (housing 208) to allow each elastic component (resilient member 254) to pass through a corresponding opening 260 and be disposed in the confined groove during assembly. *Id.*, ¶¶[0002], [0048], [0063]-[0064], [0072]-[0075], Figs. 2B, 3F.

Specifically, Wang discloses that "the release slide 202 may include openings 260 sized to receive the resilient members 254 such that the resilient members 254 may be assembled into the optoelectronic module 200 assembly with the release slide 202 positioned on the housing 208." *Id.*, ¶[0075].

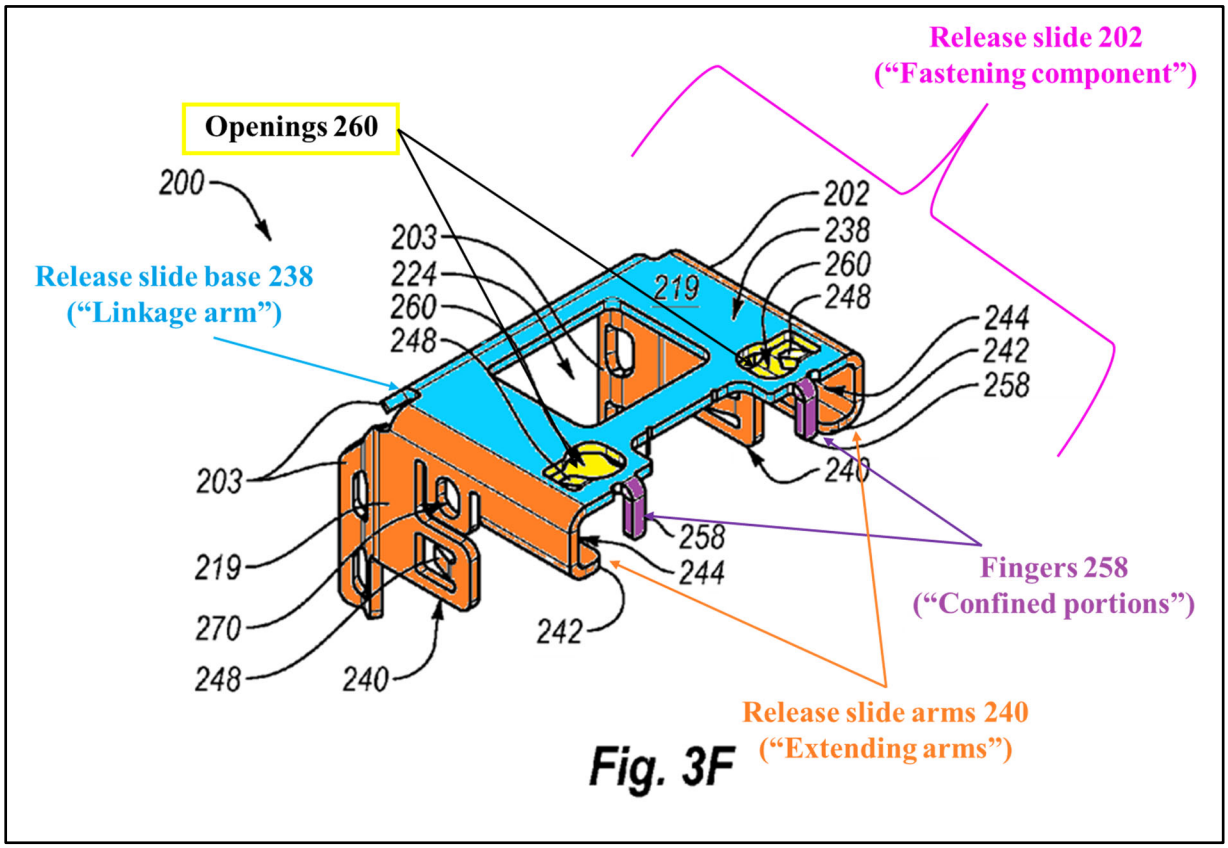


Fig. 3F

Ex. 1003, Fig. 3F, excerpted (showing **release slide 202 (fastening component)** comprising two **extending arms (release slide arm 240)** and a **linkage arm (release slide base 238)** having **openings 260** between the extending arms, and **fingers 258** connected to the linkage arm) (annotations added)

A POSITA would have understood that release slide 202 is movably disposed on main body 208 because it is configured to "slide relative to the housing 208." Ex. 1003, ¶[0064]; *see also id.*, ¶¶[0049], Figs. 3A-3D; Ex. 1007, ¶78.

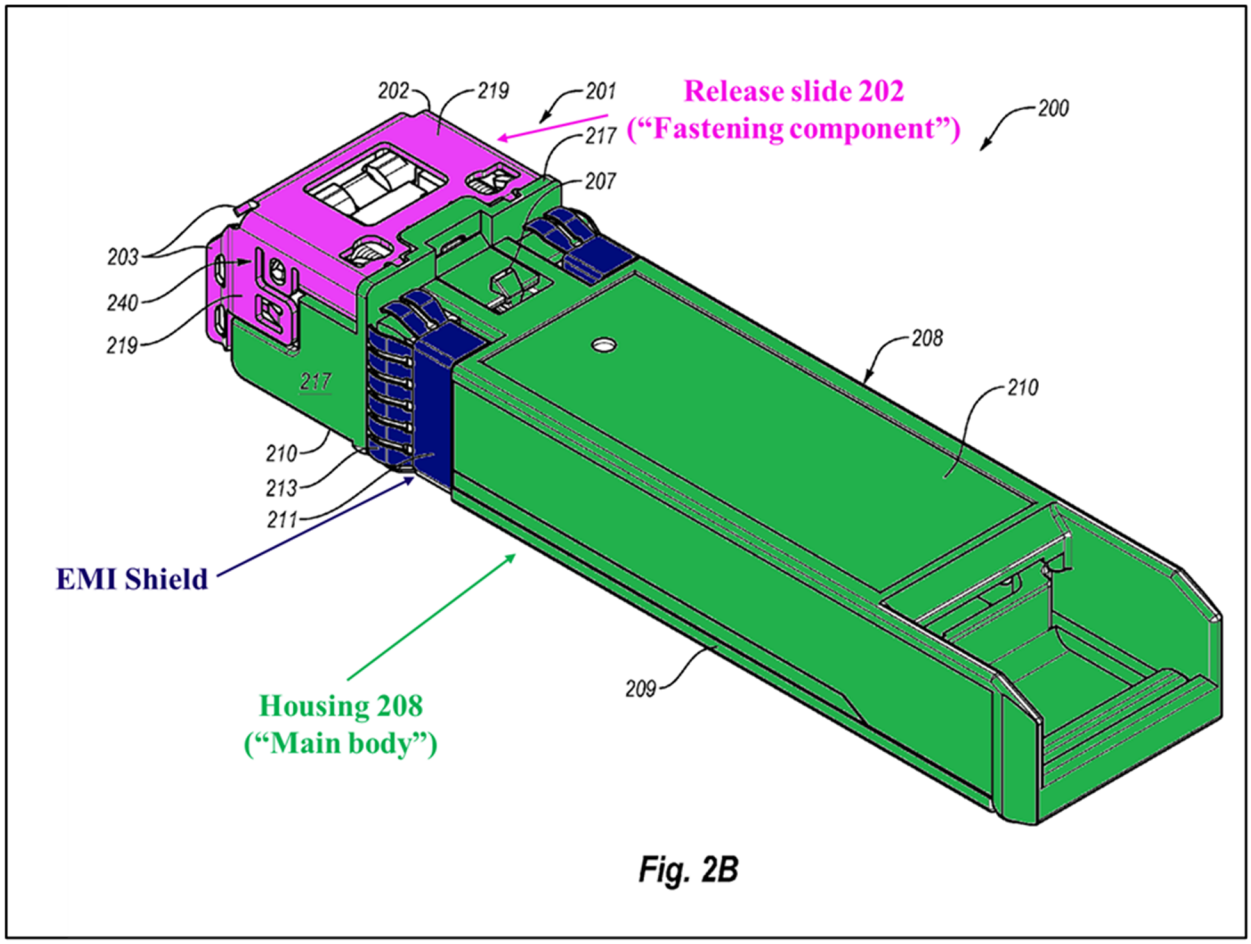
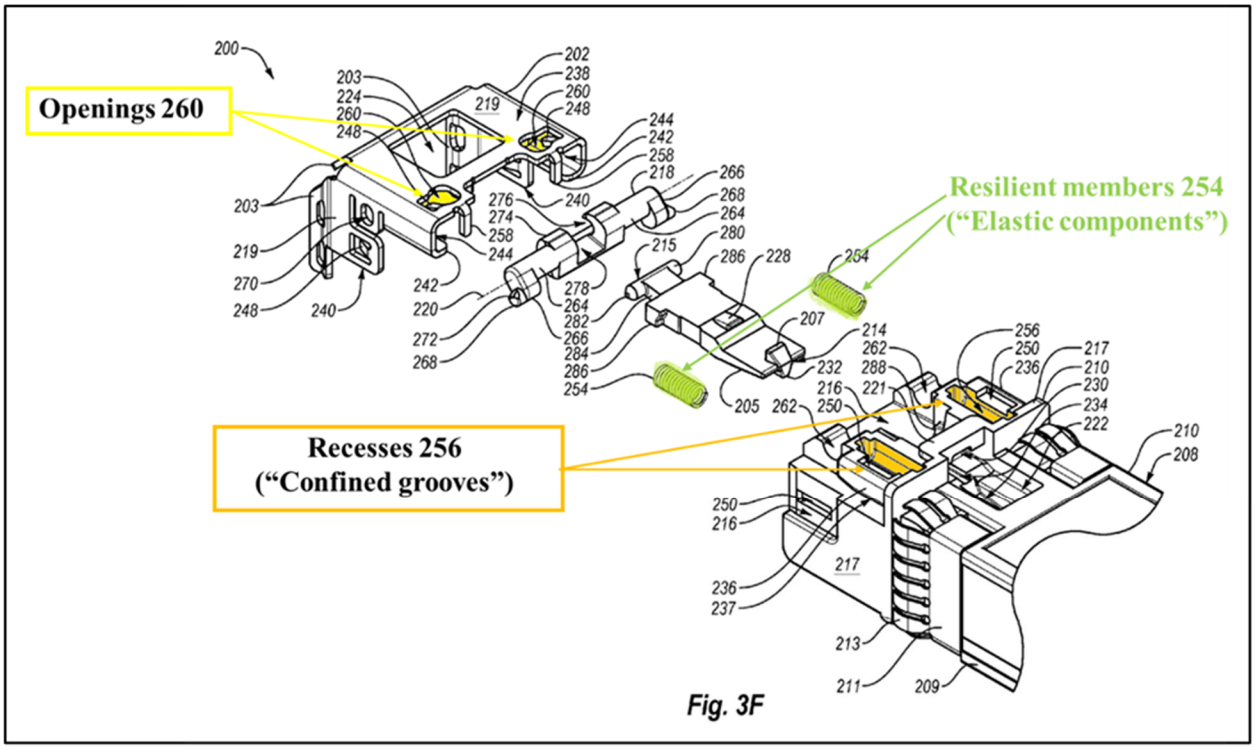


Fig. 2B

Ex. 1003, Fig. 2B (showing **release slide 202** disposed on the outer surface of **housing 208**) (annotations added)



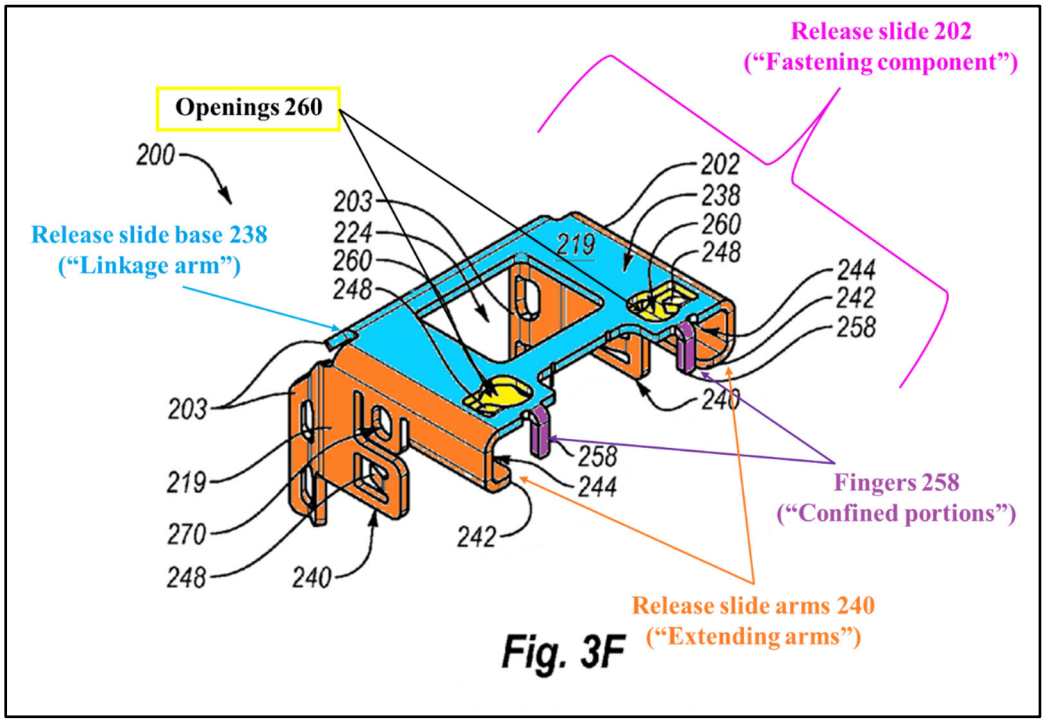
Ex. 1003, Fig. 3F (showing exploded view of optoelectronic module 200 with **resilient members 254**, which are confined in **recesses 256** when optoelectronic module 200 is assembled, and **openings 260** through which resilient members 254 are passed during the assembly process) (annotations added)

e. 1[c2] ("the two extending arms are connected with the linkage arm, the two extending arms are respectively disposed on the two lateral surfaces")

Wang discloses that the two extending arms (release slide arms 240) are connected with the linkage arm (release slide base 238). Ex. 1003, ¶[0061], Fig. 3A-3B, 3E-3F. The two extending arms are respectively disposed on the two lateral

surfaces (each formed by depression 216 and outer surface 217) of the main body, as shown in annotated Figure 3F, below. *Id.*, ¶¶[0063], [0068], Fig. 3A, 3B, 3F.

Specifically, the extending arms (release slide arms 240) are positioned on the depressions 216 of the lateral surfaces of the main body (housing 208), in a movably sliding relationship with the lateral surfaces, as shown in Figure 3B. Ex. 1003, ¶¶[0063], [0068]. Wang describes that the depression may be sized so that the outer surfaces (219) of the release slide and the outer surfaces (217) of the housing are substantially flush, further supporting efficient and secure assembly of the fastening mechanism. *Id.*, ¶¶[0034]-[0036], [0068], Fig. 3F.



Ex. 1003, Fig. 3F, excerpted (showing **release slide arms 240** connected with **release slide base 238**) (annotations added)

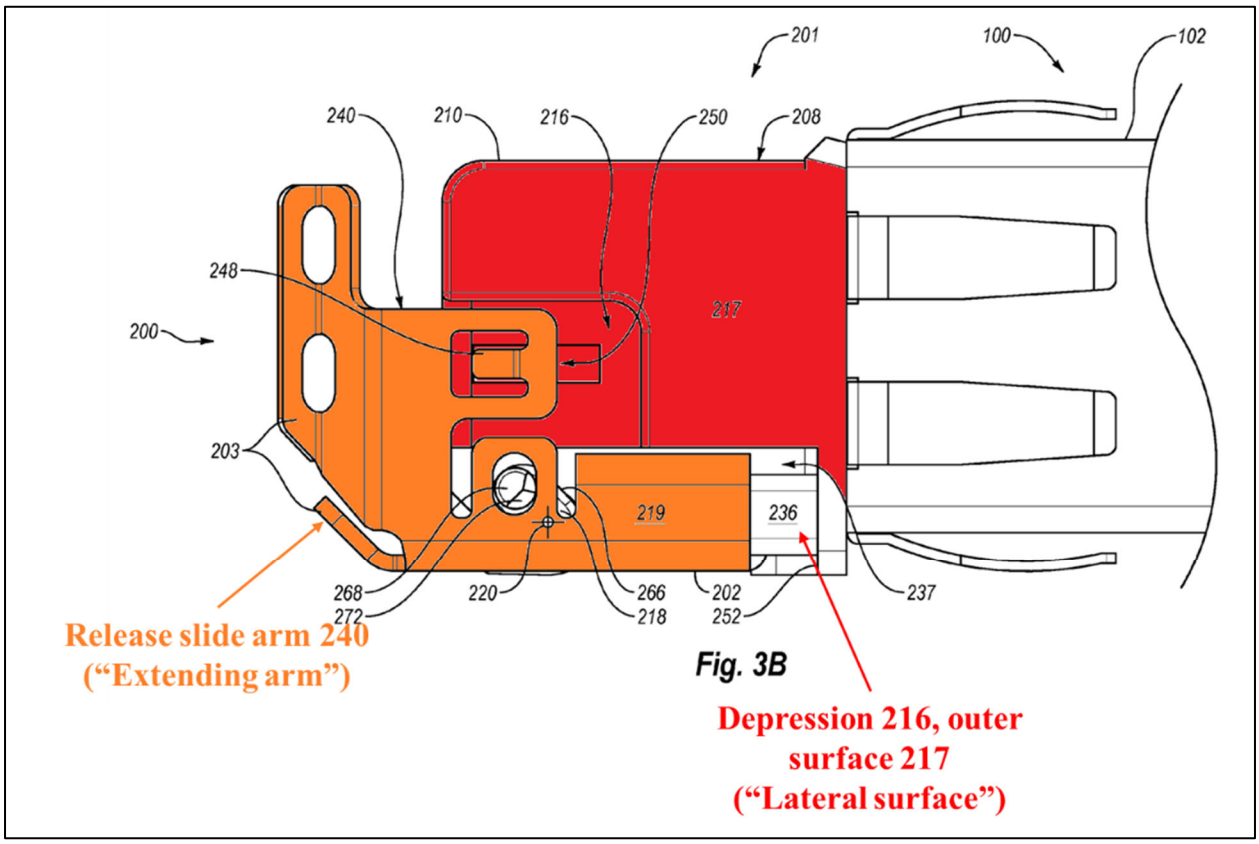


Fig. 3B

Ex. 1003, Fig. 3B (showing **release slide arm 240** disposed on depression 216 of a **lateral surface**) (annotations added)

f. 1[c3] ("the confined portion is connected with the linkage arm and extends into the confined groove in order to press the elastic component")

Wang discloses that each confined portion (finger 258) is connected with the linkage arm (release slide base 238) and extends into a respective confined groove (recess 256) to press the elastic component (resilient member 254). Ex. 1003, ¶[0073].

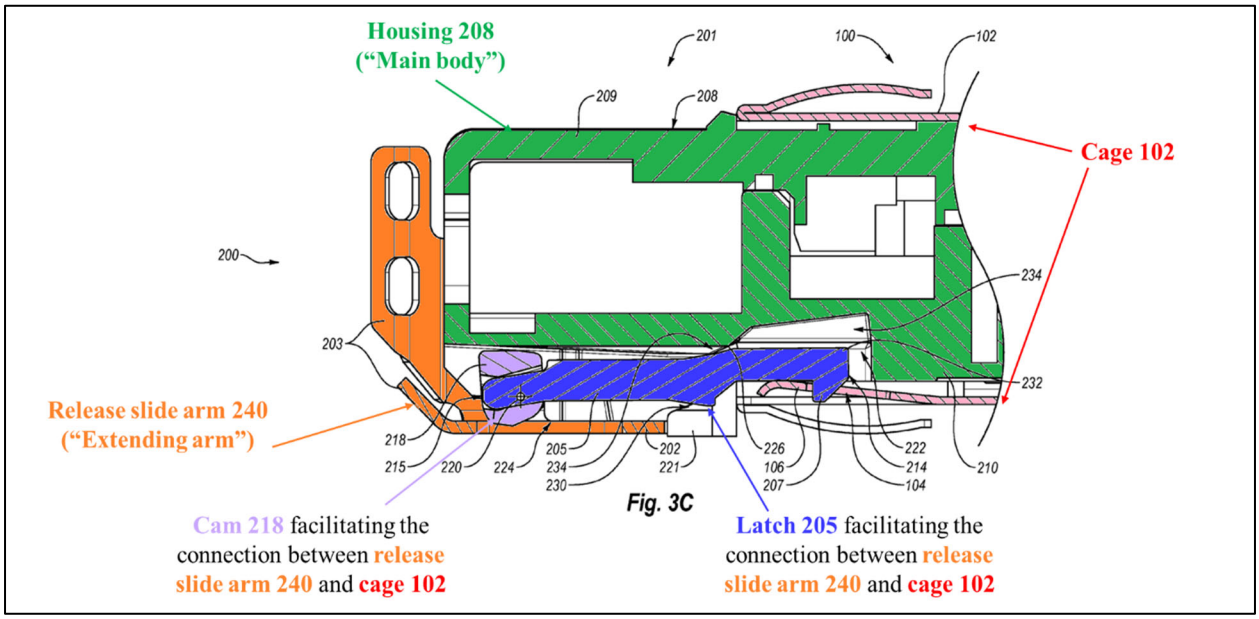
Specifically, Wang discloses that "each resilient member 254 may be located in the corresponding recess 256 with a front end of the resilient member 254 at or near a front wall of the corresponding recess 256 and a rear end of the resilient member 254 at or near a front surface of a finger 258 … that extends upward from the release slide base 238. Thus, forward motion of the release slide base 238 relative to the housing when the release slide base 238 is moved from the latched position towards the unlatched position may **cause the fingers 258 to compress the resilient members 254 within the recesses 256 against the front walls of the recesses 256**." *Id*. (emphasis added).

g. 1[c4] ("the two extending arms are detachably fasten-able with the cage.")

Wang discloses that the two extending arms (release slide arms 240) are detachably fasten-able with cage 102 via cam 218 and latch 205, which includes engagement pin 207. Ex. 1003, ¶[0076] ("[An] engagement pin 207 may be located on a first end section 214 … of latch 205. The latch 205 may also include a second end section 215 … that interfaces with the cam 218. The **cam 218 may interface with the release slide 202 such that the cam 218 rotates about a cam axis 220 as the release slide 202 is moved relative to the housing 208** [between the latched and unlatched positions]."") (emphasis added); *see also id.*, ¶¶[0078], [0082]-[0087], Figures 3A-3F. "The engagement pin 207 [of latch 205] is configured to engage the

cage recess 104 when the optoelectronic module 200 is in the latched configuration. By engaging the cage recess 104, the engagement pin 207 may generally prevent the optoelectronic module 200 from moving significantly within the cage 102 until the engagement pin 207 and the cage recess 104 are intentionally disengaged from each other … in the unlatched configuration." *Id.*, ¶[0052].

When release slide 202 is pushed to latch optoelectronic module 200 with cage 102, cam 218 rotates and engagement pin 207 of latch 205 engages the cage recess 104. *Id*., ¶¶[0049], [0087]; *see also id.*, Fig. 3C; Ex. 1007, ¶84. When release slide 202 is pulled to unlatch optoelectronic module 200 from cage 102, the cam 218, which interfaces with extending arms 240 of release slide 202, is "rotated from its latched position to its unlatched position," and this causes cam 218 to "urge the second end section 215 of the latch 205 outwards," such that engagement pin 207 of latch 205 disengages from cage recess 104 and this allows optoelectronic module 200 to be removed from cage 102. Ex. 1003, ¶[0083], *see also id*., ¶¶[0049], [0078], [0084], Fig. 3A; Ex. 1007, ¶84.



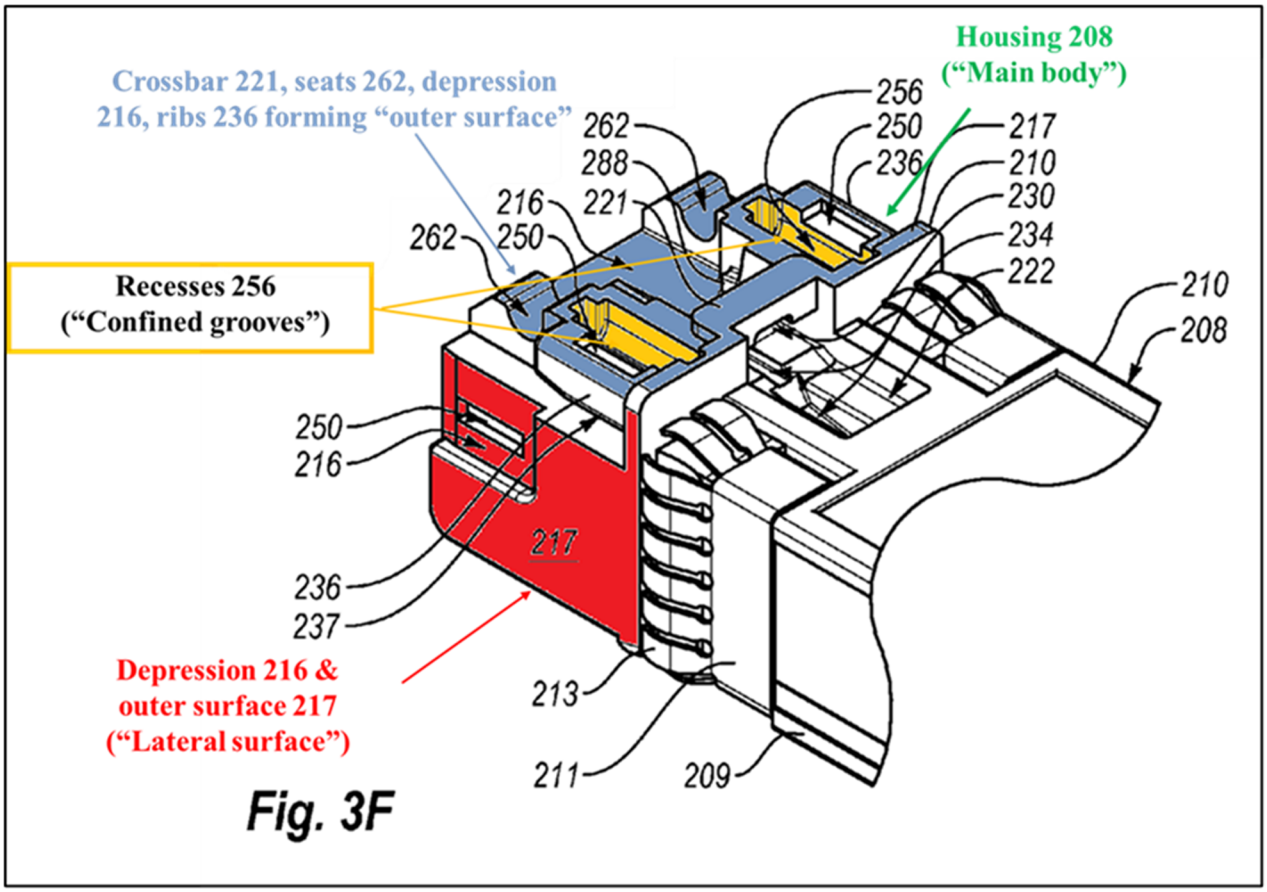
Ex. 1003, Fig. 3C (showing **release slide arms 240** detachably fastened with **cage 102** via **cam 218** and **latch 205**) (annotations added)

Therefore, as engagement pin 207 of latch 205 fastens and unfastens from cage 102 when optoelectronic module 200 goes from the latched to the unlatched configuration, release slide arms 240 (extending arms) of release slide 202 are also fastened and unfastened from the cage because the arms connect with latch 205 via cam 218. Ex. 1007, ¶85. Thus, the two extending arms are detachably fasten-able with the cage. *Id.*; *see also* Ex. 1003, Figs. 3C, 3D.

2. Claim 2 ("The optical transceiver according to claim 1, wherein the outer surface is either a top surface or a bottom surface of the main body.")

As show in Figure 3F, Wang discloses where the outer surface (crossbar 221 depression 216, seats 262, ribs 236) is either a top surface or a bottom surface of the

main body (housing 208) depending on the orientation of the module 200. Ex. 1003, ¶[0050], Fig. 3F.



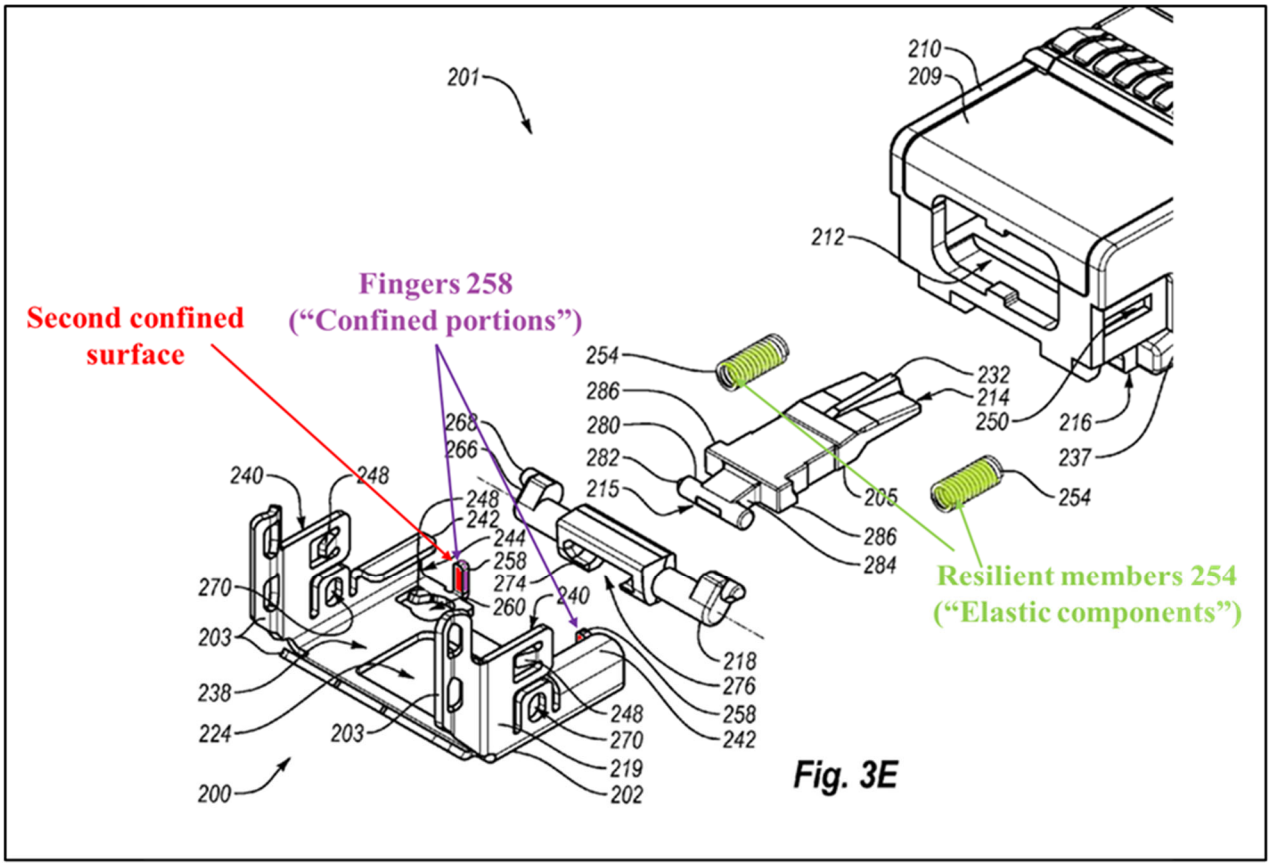
Ex. 1003, Fig. 3F, excerpted (showing **housing 208** comprising an **outer surface**, as either a top or bottom surface depending on orientation of the optical transceiver) (annotations added)

3. Claim 3 ("The optical transceiver according to claim 1, wherein the main body comprises a first confined surface forming the confined groove, the confined portion of the fastening component comprises a second confined surface facing toward the first confined surface, and the elastic

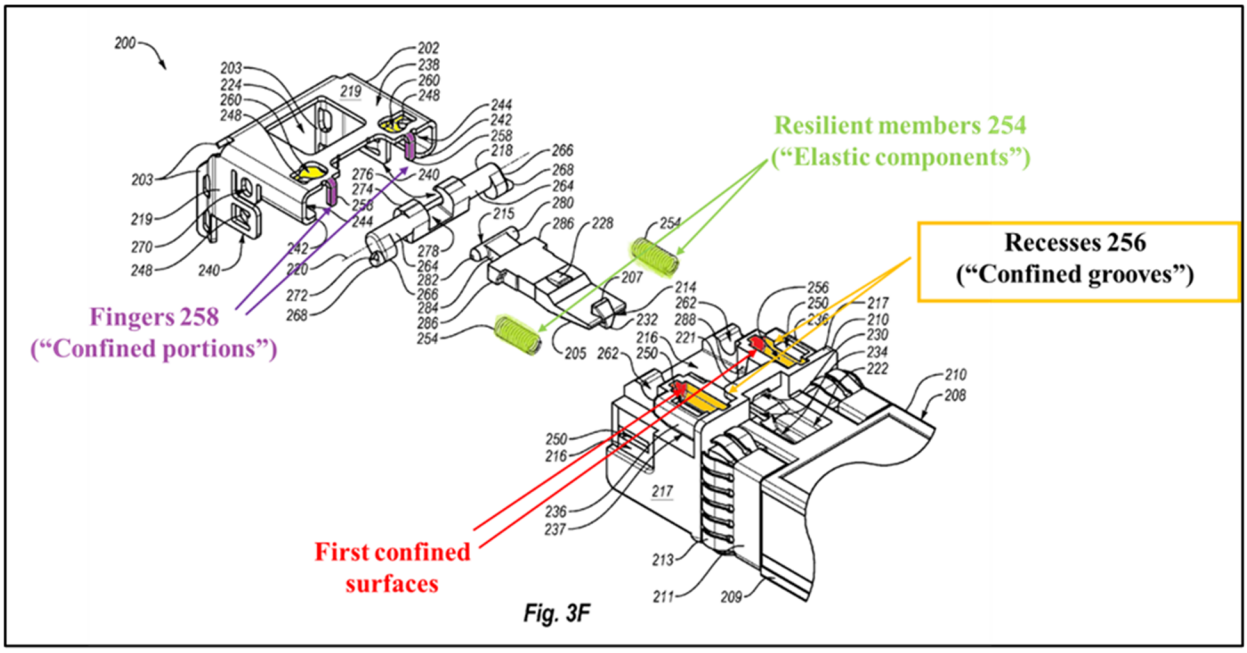
component is disposed between the first confined surface and the second confined surface.")

Wang discloses that the main body (housing 208) comprises a first confined surface (front wall of each confined groove (recess 256)), and a front surface of each confined portion (finger 258) of the fastening component (release slide 202) comprises a second confined surface facing toward the first confined surface, and the elastic component (resilient member 254) is disposed between the first and second confined surfaces. Ex. 1003, ¶[0074] ("[E]ach resilient member 254 may be located in the corresponding recess 256 with a front end of the resilient member 254 at or near a front wall of the corresponding recess 256 and a rear end of the resilient member 254 at or near a front surface of a finger 258 (FIGS. 3E and 3F) that extends upward from the release slide base 238."), Fig. 4B.

Specifically, Wang discloses that each finger 258 extends into one of the recesses 256. *Id.*, ¶¶[0073]-[0074]. When release slide base 238 (linkage arm) of fastening component 202 is pulled from the latched position towards the unlatched position, a surface of finger 258 that forms the second confined surface compresses resilient member 254 against the front wall, i.e., the first confined surface, of recess 256. *Id*., ¶[0074]. When thus compressed, resilient member 254 urges the release slide base 238 from its unlatched position towards its latched position. *Id*., ¶¶[0073]-[0074], Figs. 3E-3F.



Ex. 1003, Fig. 3E, excerpted (showing **fingers 258,** each having a **second confined surface** that compresses one end of each **resilient member 254**) (annotations added)



Ex. 1003, Fig. 3F (showing a **recess 256** having a **first confined surface** that compresses an end of each **resilient member 254**, and each **finger 258** compresses the other end of the resilient member) (annotations added)

4. Claim 5 ("The optical transceiver according to claim 1, wherein the opening is located between two ends of the linkage arm where the two extending arms are connected.")

Wang discloses that each opening (opening 260) is located between two ends of the linkage arm (release slide base 238) where the two extending arms (release slide arms 240) are connected. Ex. 1003, Fig. 3F.

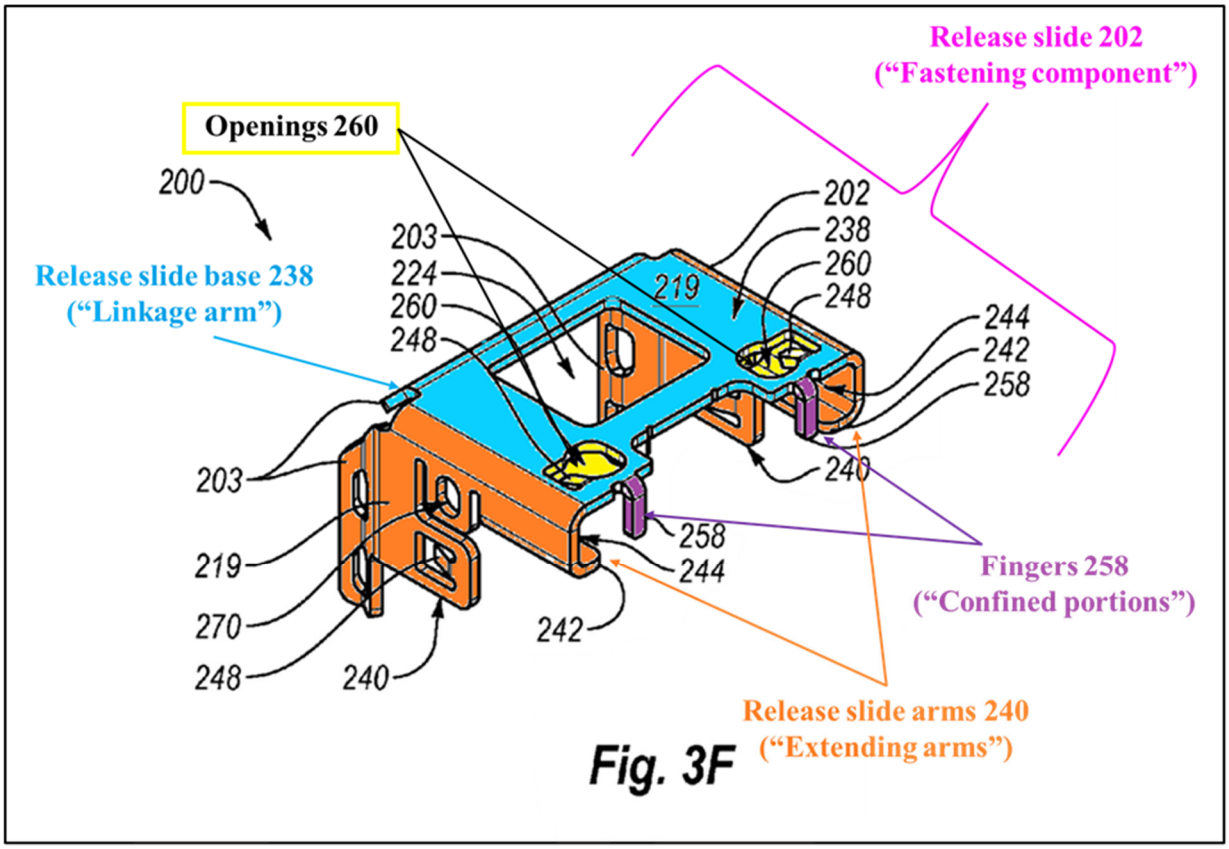


Fig. 3F

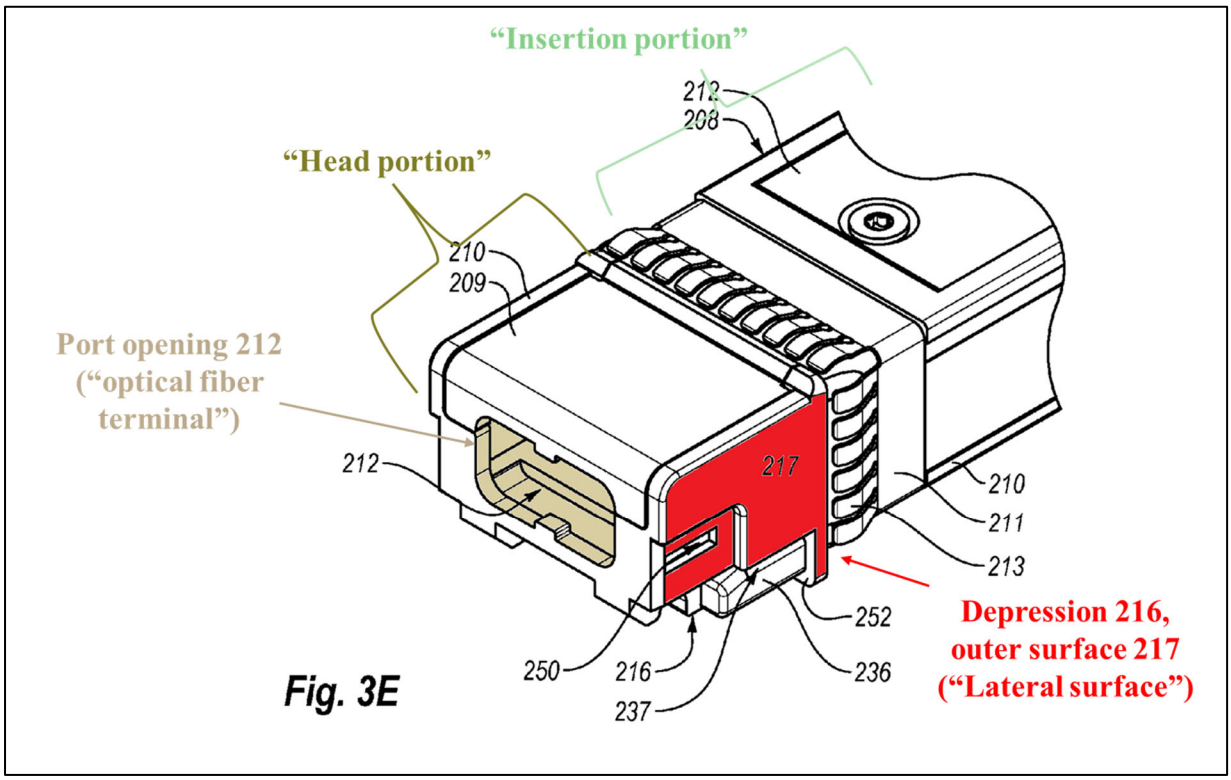
Ex. 1003, Fig. 3F, excerpted (showing **openings 260** located on the **release slide base 238 (linkage arm)** between the two ends where the two **release slide arms 240 (extending arms)** connect to the linkage arm) (annotations added)

5. Claim 7 ("The optical transceiver according to claim 1, wherein the main body comprises a head portion and an insertion portion connected with each other, the insertion portion is configured to be inserted into the cage in a pluggable manner, the head portion comprises the outer surface, the two lateral surfaces and an optical fiber terminal")

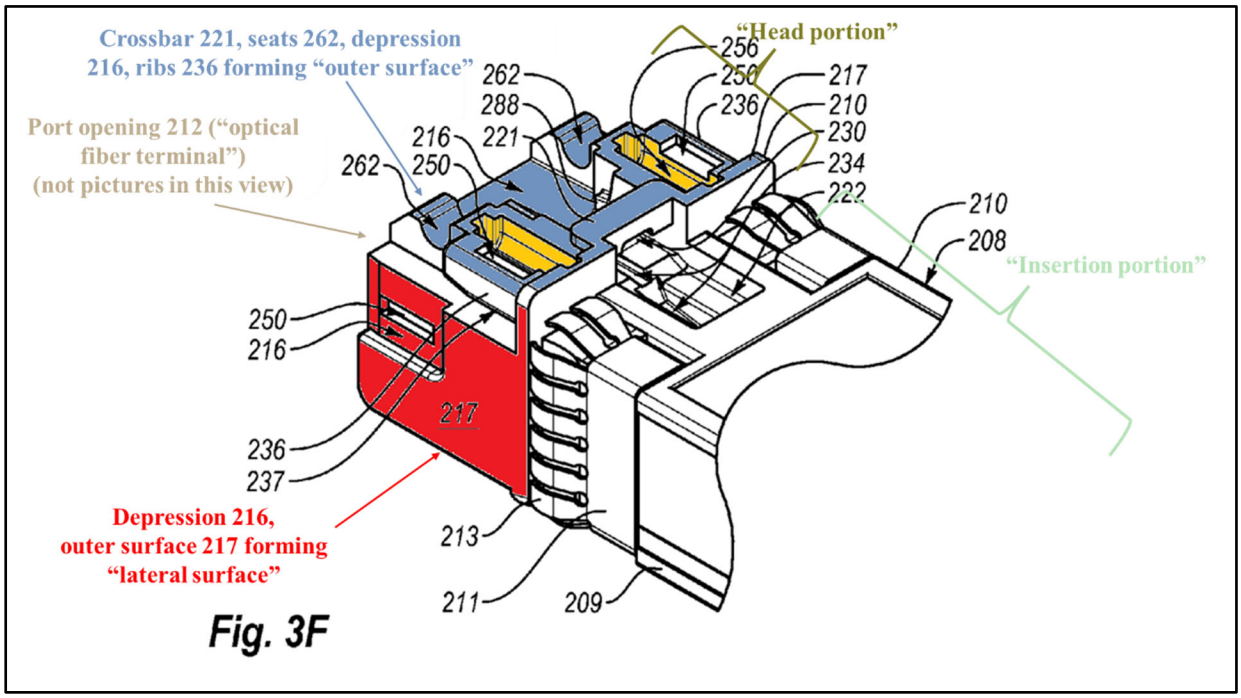
Wang discloses that the main body (housing 208) comprises a head portion (front end section 201) and an insertion portion (top housing 209 and bottom housing

210) connected with each other. Ex. 1003, ¶¶[0050]-[0053]. The insertion portion (top housing 209 and bottom housing 210) is configured to be inserted into the cage (102) in a pluggable manner, wherein the head portion (front end section 201) comprises the outer surface (formed by ribs 236, crossbar 221, seats 262 and depression 216), the two lateral surfaces, and an optical fiber terminal (port opening 212 for cable 206). *Id.*, ¶¶[0041], [0087], Figs. 1A-2B, 3E, 3F; *see also id.*, ¶[0043] (referring to optoelectronic module 200 as a "pluggable" module).

Wang discloses that optoelectronic module 200 is inserted into cage 102 "while the optoelectronic module 200 is in the latched configuration." *Id.*, ¶[0087], Fig. 3C. Wang further discloses that fiber optic cable 206 is coupled with an optical fiber terminal (port opening 212) provided in the head portion of optoelectronic module 200. *Id.*, ¶¶[0038], [0041], Figs. 1A, 1B.



Ex. 1003, Fig. 3E, excerpted (showing **insertion portion** and **head portion** that comprises port opening 212 and depressions 216 and outer surfaces 217 forming the **lateral surfaces** of the head portion) (annotations added)



Ex. 1003, Fig. 3F, excerpted (showing **insertion portion** and **head portion** that comprises **lateral surfaces** and an **outer surface**) (annotations added)

6. Independent claim 10

Wang discloses each and every limitation of claim 10.

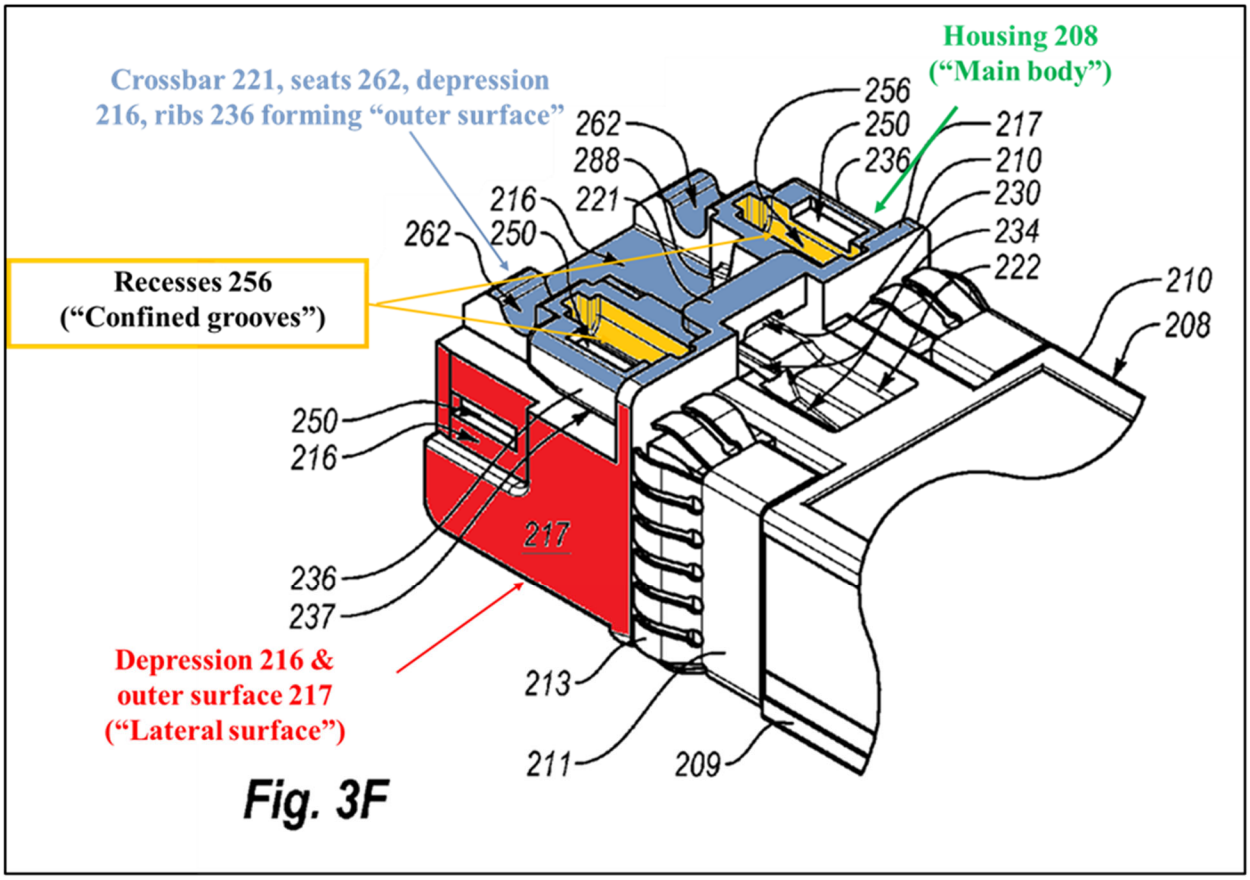
a. 10 [preamble] ("An optical transceiver, comprising")

As discussed regarding the preamble of claim 1, Wang discloses an optoelectronic module 200 (optical transceiver). *See* Section VI.B.1.a, above.

b. 10[a] ("a main body comprising two lateral surfaces and an outer surface between the two lateral surfaces, and the outer surface defining two confined grooves spaced apart from each other")

As discussed regarding claim term 1[a], Wang's optoelectronic module 200 comprises a main body (housing 208), which includes two lateral surfaces (each

formed by a depression 216 and an outer surface 217) and an outer surface (formed by crossbar 221, seats 262, depression 216, ribs 236) between the two lateral surfaces. *See* Section VI.B.1.b, above. The outer surface defines two confined grooves (recesses 256) that are spaced apart from each other, each containing an elastic component (resilient member 254). *Id.*; Ex. 1003, ¶[0073], Fig. 3F.



Ex. 1003, Fig. 3F, excerpted (showing **housing 208** comprising two **lateral surfaces** and an **outer surface** including two **recesses 256** spaced apart from each other) (annotations added)

c. 10[b] ("two elastic components disposed in the two confined grooves")

As discussed regarding claim term 1[b], Wang discloses that the optical transceiver (optoelectronic module 200) comprises an elastic component (resilient member 254) disposed in the confined groove (recess 256). Ex. 1003, ¶[0073], Figs. 1B, 3F; *see also* Section VI.B.1.c, above. As further shown in Figures 1B and 3F, the number of elastic components and confined grooves is two, and each elastic component is disposed in a respective confined groove. Ex. 1003, ¶[0073] ("In some embodiments, the **resilient members 254 may be located at least partially within recesses 256** (FIG. 3F) formed in the housing 208. Alternately or additionally, each resilient member 254 may be located in the corresponding recess 256 with a front end of the resilient member 254 at or near a front wall of the corresponding recess 256 and a rear end of the resilient member 254 at or near a front surface of a finger 258.") (emphasis added).

d. 10[c1] ("a fastening component movably disposed on the main body, the fastening component comprising a linkage arm, two extending arms and two confined portions, wherein the linkage arm is disposed on the outer surface of the main body, wherein the linkage arm comprises an opening in communication with the confined groove of the main body to allow the elastic

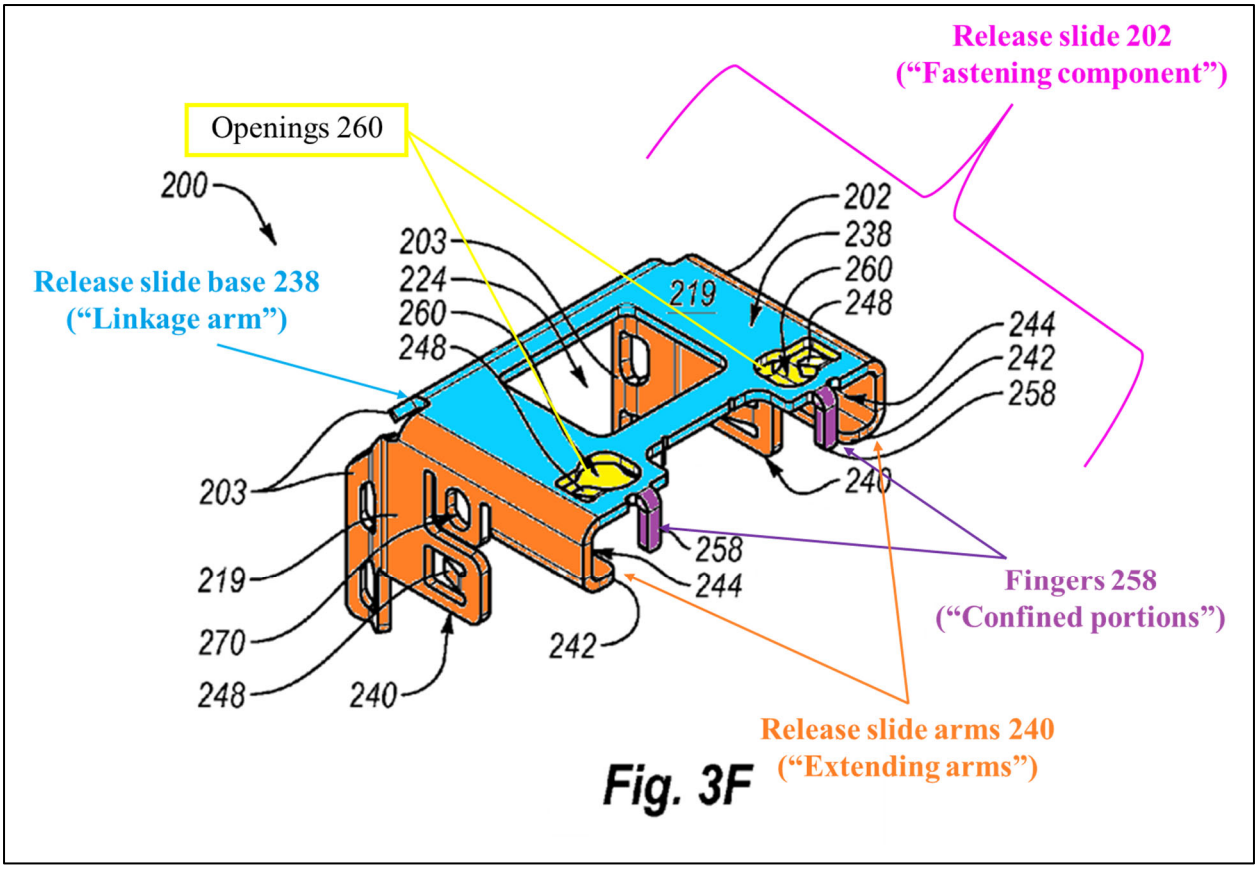
component to pass through the opening and be disposed in the confined groove")

Claim term 10[c1] is identical to claim term 1[c1], except it recites two confined portions. As discussed regarding 1[c1], Wang discloses that optoelectronic module 200 comprises a fastening component (release slide 202) disposed on the main body (housing 208). Ex. 1003, ¶[0049]. The fastening component (release slide 202) comprises a linkage arm (release slide base 238), two extending arms (release slide arms 240), and two confined portions (fingers 258). *Id.*, ¶¶[0061], [0073]. The linkage arm is disposed on the outer surface (formed by formed by ribs 236, crossbar 221, seats 262, and depression 216) of the main body (housing 208). *Id.*, ¶¶[0060], [0073], [0077], [0090]. Linkage arm (release slide base 238) comprises two openings 260 in communication with the confined grooves (recesses 256) of the main body (housing 208) to allow each elastic component (resilient member 254) to pass through a corresponding opening 260 and be disposed in the confined groove during assembly. *Id.*, ¶¶[0002], [0048], [0063]-[0064], [0072]-[0075], Figs. 1B, 2B, 3F; *see also* Section VI.B.1.d, above.

e. 10[c2] ("the two extending arms are connected with the linkage arm, the two extending arms are respectively disposed on the two lateral surfaces")

Claim term 10[c2] is identical to claim term 1[c2]. As discussed regarding 1[c2], Wang discloses that the two extending arms (release slide arms 240) are

connected with the linkage arm (release slide base 238). Ex. 1003, ¶[0061], Fig. 3A-3B, 3E-3F. The two extending arms are respectively disposed on the two lateral surfaces (each formed by depression 216 and outer surface 217) of the main body, as shown in annotated Figure 3F, below. *Id*., ¶¶[0063], [0068], Fig. 3F, 3B; *see also* Section VI.B.1.e, above.



Ex. 1003, Fig. 3F, excerpted (annotations added)

f. 10[c3] ("the confined portions are connected with the linkage arm and respectively extend into the two

confined grooves in order to press the two elastic components")

Wang discloses that the confined portions (finger 258) are connected with the linkage arm (release slide base 238) and each confined portion extends into a respective confined groove (recess 256) to press the elastic component (resilient member 254) disposed therein. Ex. 1003, ¶[0073]; *see also* Section VI.B.1.f, above.

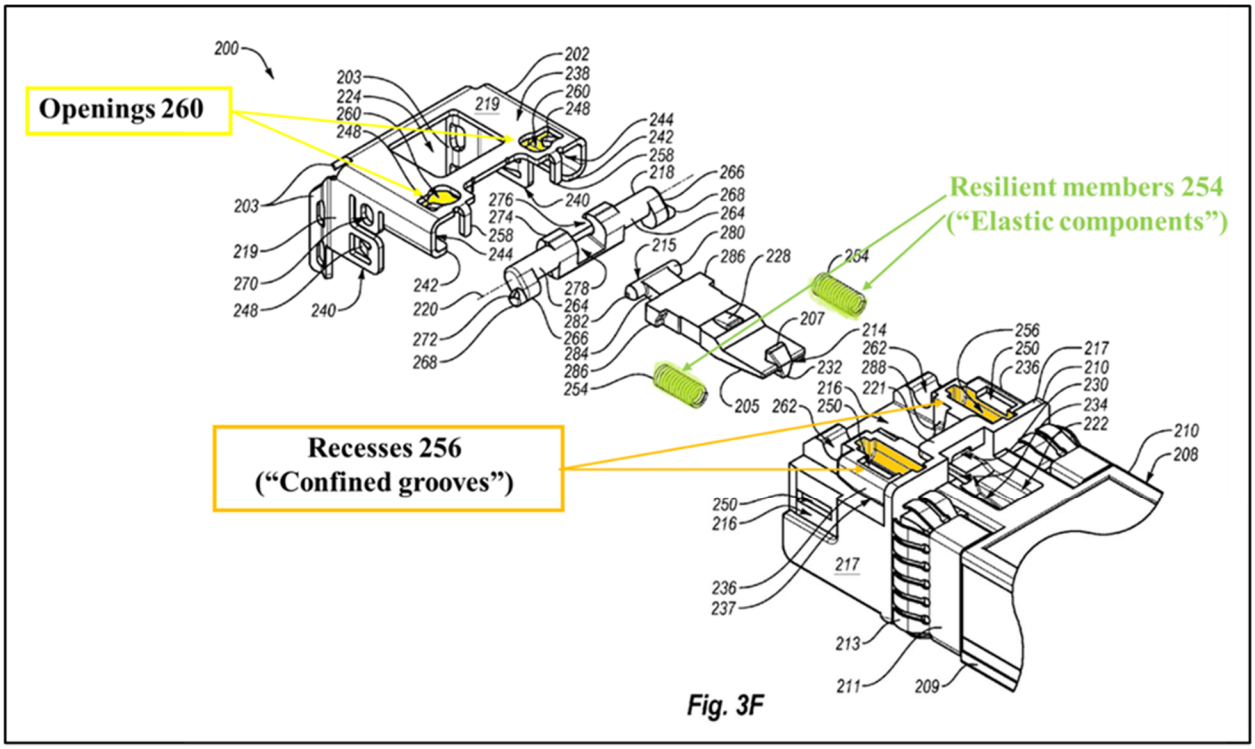
C. Ground 2: Wang Renders Claims 4, 6, and 9 Obvious

1. Claim 4 ("The optical transceiver according to claim 1, wherein a size of the opening is smaller than a length of the elastic component in an uncompressed condition.")

Wang discloses that "release slide 202 may include **openings 260 sized to receive the resilient members 254** such that the resilient members 254 may be assembled into the optoelectronic module 200 assembly **with the release slide positioned on the housing 208**." Ex. 1003, ¶[0075] (emphases added). Wang further discloses that the elastic components (resilient members 254) reside in the recesses 256 in an uncompressed state and that they are compressed when release slide base 238 is moved from latched to unlatched position. *Id.*, ¶¶[0073], [0074]; Ex. 1007, ¶99. Based on Wang's disclosure that the elastic components (resilient members 254) are assembled "with the release slide positioned on the housing 208" and that the elastic components reside in the recesses 256 in an uncompressed state, a POSITA would have found it obvious that a size of each opening (opening 260) would

certainly be smaller than a length of the elastic component in an uncompressed condition, otherwise the elastic component would fall out through the opening. Ex. 1007, ¶99. A POSITA would have further found it obvious that each elastic component is pressed into a compressed state and slid in through an opening 206 to reside in a recess 256 in an uncompressed state because that is a routine and conventional practice in many assembly processes. *Id.*

Additionally, a POSITA would reasonably have been able to infer from the relative sizes of openings 260 and the elastic components (resilient members 254) in Wang's disclosure that the size of openings 260 is smaller than the length of the elastic components (resilient members 254) in an uncompressed condition. *Id.*, Figs. 3E, 3F; Ex. 1007, ¶100.



Ex. 1003, Fig. 3F (showing size of **resilient members 254** relative to **openings 260**) (annotations added)

To be sure, the Federal Circuit has found that reliance on patent drawings not drawn to scale to determine the dimensions of claim elements is improper. But the Federal Circuit has explained that "patent drawings may be useful in shedding light about the general shapes and relative sizes of elements of the claimed invention, as well as their spatial relations to one another." *Regents of Univ. of Cal. v. Satco Prods., Inc.*, No. 2023-1356, 2024 WL 4972639, at *3 (Fed. Cir. Dec. 4, 2024) (emphasis added) (citing *Synopsys, Inc. v. ATopTech, Inc.*, 685 F. App'x 951, 954 (Fed. Cir. 2017) (discussing the layout of elements in a patent drawing)); *Monterey Rsch., LLC*

v. STMicroelectronics, Inc., No. 2022-1411, 2023 WL 7037383, at *3 (Fed. Cir. Oct. 26, 2023) (finding no error in Board's reliance on patent drawings for the "general shapes of the claimed active regions"). Here, Wang's drawings provide the size of resilient members 254 relative to the length of openings 260. Ex. 1007, ¶101. Accordingly, a POSITA would have been able to determine through simple observation that the size of openings 260 is smaller than the length of resilient members 254 (elastic components) in an uncompressed condition. *Id.*

2. Claim 6 ("The optical transceiver according to claim 1, wherein the confined portion and the opening of the fastening component are formed by stamping.")

Wang discloses that the confined portions (fingers 258) and the openings (openings 260) of the fastening component are formed by stamping. Ex. 1003, ¶¶[0046], [0073]-[0075].

Specifically, Wang discloses that "optoelectronic module 200 may include a release slide 202. Optionally, the optoelectronic module 200 may include the handle 204 coupled to the release slide 202. The release slide 202 may be formed in various ways, including, but not limited to, being stamped from sheet metal." *Id.*, ¶[0046]. Because release slide 202 comprises the confined portions (fingers 258) and openings 260, it would have been obvious to a POSITA that those parts are also formed by stamping. *Id.*, ¶¶[0073]-[0075]; Ex. 1007, ¶103.

3. Claim 9 ("The optical transceiver according to claim 1, wherein the optical transceiver is a QSFP-DD optical transceiver")

As a POSITA would have known, a QSFP-DD transceiver is a hot-pluggable module for high-speed data networking, supporting data rates of 200G, 400G, and 800G by providing eight electrical lanes for data transmission, i.e., double that of the prior QSFP28 generation. Ex. 1007, ¶104. Wang discloses that optoelectronic module 200 may be configured for optical signal transmission and reception at a variety of data rates including "**100 Gb/s** or higher." Ex. 1003, ¶[0041] (noting that module 200 supports data transmission at 100 Gb/s per lane) (emphasis added). Wang further discloses that optoelectronic module 200 may be configured to support "1x, 2x, 4x, **8x**, and 16x Fibre Channel." *Id.*, ¶[0042] (noting module 200 supports 8 lanes of data transmission) (emphasis added). Additionally, Wang discloses that module 200 may be configured in a variety of different form factors and is compliant with different MSAs including "Small form-factor pluggable (SFP+) multi-source agreement (MSA)." *Id.*, ¶[0043]. From these disclosures, it would have been obvious to a POSITA that optoelectronic module 200 includes a QSFP-DD transceiver because it can provide eight data lanes, with each lane operating at 100 Gbps. Ex. 1007, ¶104.

D. Ground 3: Wang in View of Tsai Renders Claims 8, 11, And 12 Obvious

1. Tsai (Ex. 1005)

Tsai is directed to a pluggable optical transceiver module configured to be inserted into a plugging slot of a socket. Ex. 1005, Title, Abstract, 1:57-58, 2:47-58. Pluggable optical transceiver module 10 of Tsai comprises, among other things, a **main body 100** having head part 110 and inserted part 120, **sliding component 200**, **pull handle 300**, and two **elastic components 400**, as shown in Figures 1 and 3 (below). *Id.*, 2:59-3:1.

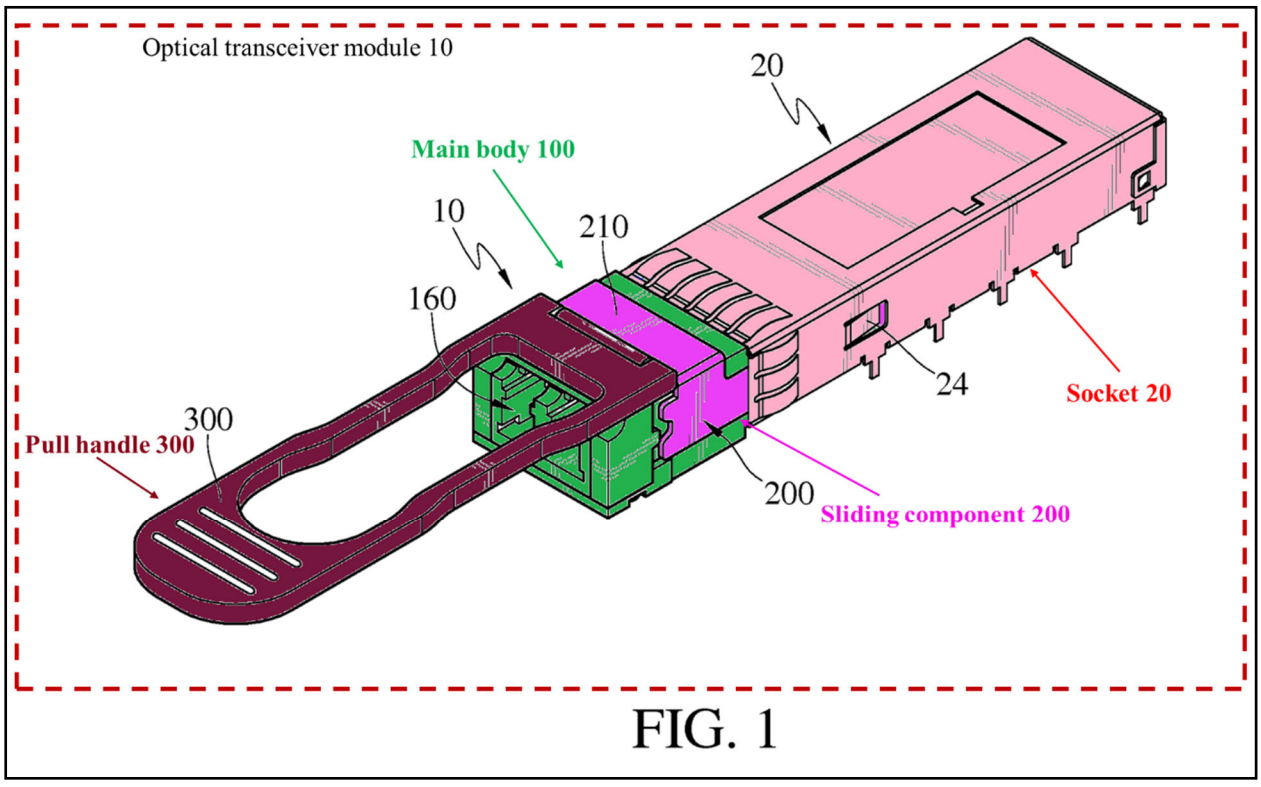


FIG. 1

Ex. 1005, Fig. 1 (annotations added)

As described in Tsai, "[t]he main body 100 has two side surfaces 130, two sliding slots 140 and two limiting spaces 150. … The two sliding slots 140 are located at the two side surfaces 130, respectively, and extend from the head part 110 to the inserted part 120. Each sliding slot 140 has a bottom surface 141 which is, but not limited to, parallel to the side surface 130. … The two limiting spaces 150 are located at the bottom surfaces 141 of the two sliding slots 140, respectively. Each limiting space 150 has a first limiting surface 151 and a second limiting surface 152 … [that] are connected to the bottom surface 141. The first limiting surface 151 is closer to the head part 110 than the second limiting surface 152." *Id.*, 3:1-17.

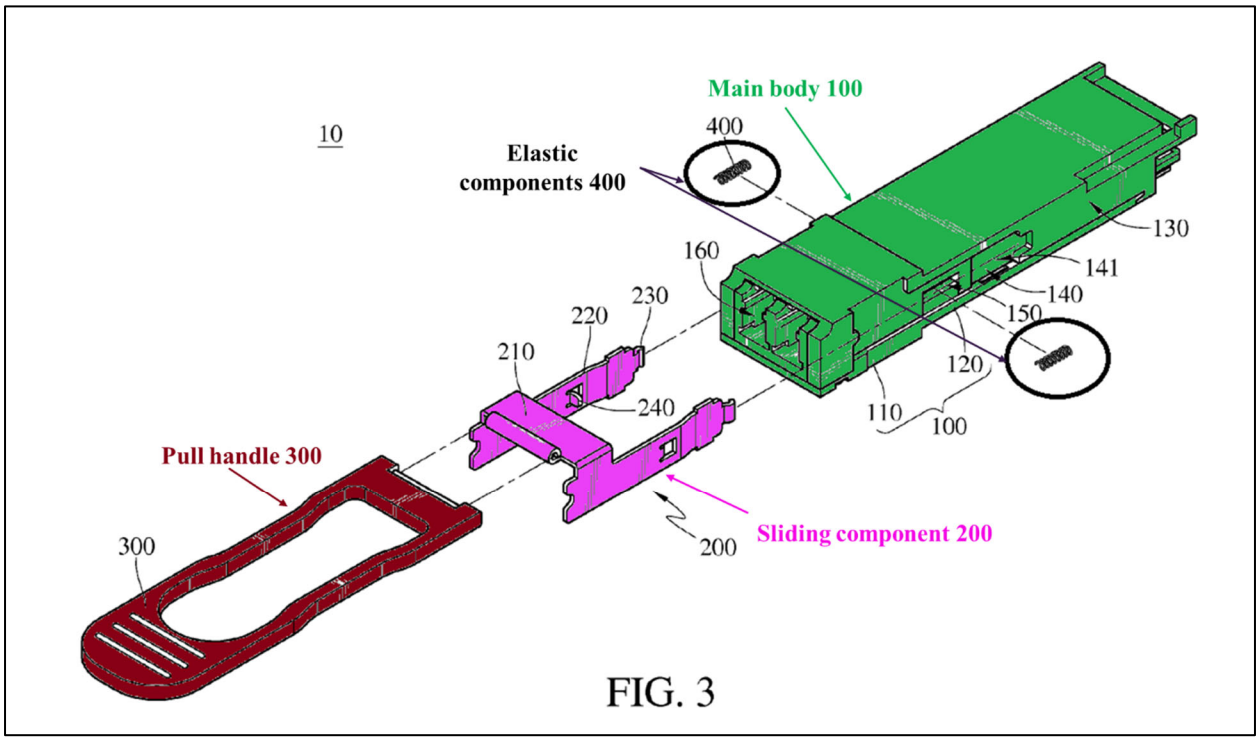


FIG. 3

Ex. 1005, Fig. 3 (annotations added)

As shown in Figure 3, above, sliding component 200 includes two extending arms 220 and linkage arm 210. Ex. 1005, 3:29-30. Two extending arms 220 are slidably disposed on two sliding slots 140 of main body 100. *Id.*, 3:18-56. The sliding component can slide relative to main body 100 to have a fastening position and a releasing position. *Id.* Pull handle 300 can pivot about sliding component 200 to slide sliding component 200 between the fastening position and the releasing position. *Id.*, 3:57-63. Each elastic component 400 is disposed in a respective limiting space 150. *Id.*, 4:13-24. When pluggable transceiver 10 is inserted into plugging slot 22 of socket 20, two first fastening parts 24 of slot 22 are fastened to two second fastening parts 230 on extending arms 220 (of sliding component 200) and two elastic components 400 are pressed onto two limited parts 240 of extending arms 220, and thereby pluggable optical transceiver module 10 is located in a stable position in plugging slot 22. *Id.*, 4:25-42, Fig. 5B (annotated below).

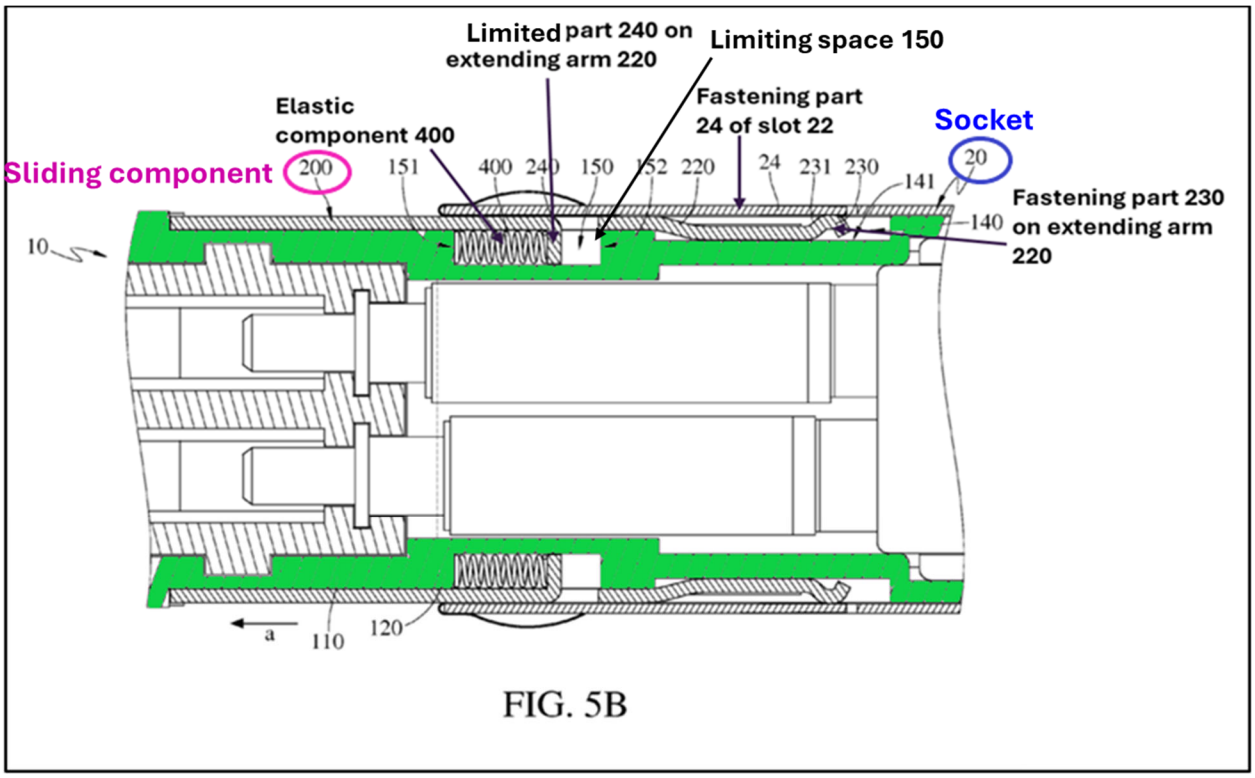


FIG. 5B

Ex. 1005, Fig. 5B (annotated to show (1) engagement of **sliding component 200** with plugging slot 22 of **socket 20** via fastening parts 230 and 24 on extending arm 220 and slot 22, respectively; and (2) engagement of limited part 240 with elastic component 400 disposed in limiting space 150 on the side surface of **main body 100**)

2. A POSITA would have been motivated to modify Wang to have a pivot shaft in view of Tsai and would have reasonably expected success in doing so

The '818 patent and Tsai[3] are commonly assigned to Patent Owner and have a common inventor (Che-Shou Yeh). Exs. 1001 and 1005, cover pages. Just as the '818 patent and Wang, Tsai is directed to a pluggable optical transceiver. Ex. 1007, ¶105. The main difference between Wang and Tsai is the location of two elastic components (springs) in the main body of the transceiver: Tsai discloses placement of the springs on the lateral sides of the transceiver's main body, whereas Wang discloses their placement on an outer (top or bottom) surface of the main body. *Compare* Ex. 1003, Fig. 1B, *with* Ex. 1005, Fig. 3; Ex. 1007, ¶105. Because of the similarities in subject matter between Wang and Tsai, a POSITA would have considered them together when designing or developing a pluggable optical transceiver. Ex. 1007, ¶105.

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[3] The U.S. patent publication of the '826 patent (Tsai) was applied by the examiner during prosecution. Section III.B, above. Unlike during prosecution where Tsai was applied as a primary reference, here Tsai is applied as a secondary reference regarding only a pivot shaft that is pivoted on the linkage arm of the transceiver (as recited in claims 8, 11, and 12).

As discussed in Section VI.B.1, above, Wang discloses every limitation of independent claim 1. Wang also discloses every limitation of independent claim 11, except that the bail is connected to a pivot shaft that is "pivoted on the linkage arm of the fastening component." Ex. 1001, claim 11, 8:9-15; Section VI.D.4., below. Tsai discloses the "pivot shaft" limitation, as discussed below. Ex. 1007, ¶106. It would have been obvious to design Wang's handle 204 so that it pivots on the linkage arm of release slide 202 (fastening component) to prevent breakage or damage of the pull handle if bent downwards or upwards when being pushed or pulled, and thus to give more flexibility when plugging/unplugging the transceiver module. *Id.* In fact, Wang itself recognizes the need for flexibility of the pull handle when inserting or extracting the module from the cage. Ex. 1003, ¶[0047]. As Tsai additionally teaches, the ability to pivot the pull handle (to a position above the head part of the transceiver) helps with insertion and removal of optical connectors from the transceiver. Ex. 1005, 4:58-5:2. Thus, a POSITA would have been motivated to design Wang's handle 204 in view of Tsai's pull handle 300 (that is pivoted on Tsai's linkage arm) to allow Wang's handle to pivot on the linkage arm to 1) prevent breakage or damage of the pull handle when the transceiver module is inserted or disengaged from the socket, and 2) facilitate insertion/removal of optical connectors into the transceiver by pivoting the handle out of the way during that process. Ex. 1007, ¶106.

Given the similarities in design, structure, operation, and function between Wang and Tsai, a POSITA would also have reasonably expected success in modifying Wang's pull handle in view of Tsai and would have been able to do so with little experimentation and optimization. *Id.*, ¶107. Indeed, modification of Wang in view of Tsai would have only required routine engineering skills and the basic knowledge of a POSITA. *Id.*

3. Claim 8 ("The optical transceiver according to claim 1, further comprising a pivot shaft pivoted on the linkage arm of the fastening component and a bail connected with the pivot shaft.")

Wang discloses each limitation of independent claim 1. *See* Section VI.B.1. Wang further discloses a handle 204 (bail) connected to the release slide base 238 (linkage arm) of release slide 202 (fastening component). Ex. 1003, Fig. 1B (showing section 246 of handle 204 connected to release slide base 238 via section 203), ¶¶[0046], [0048]. Tsai discloses pull handle 300 (bail) that is connected to a pivot shaft pivoted on linkage arm 210 of fastening component 200. Ex. 1005, 4:58-5:2, Figs. 1-3, 6. A POSITA would have been motivated to modify Wang in view of Tsai to have a pivot shaft on Wang's linkage arm 238 and to connect bail 204 to the pivot shaft to pivot the bail up or down relative to the head part of Wang's optical transceiver module. *See* Section VI.D.2, above.

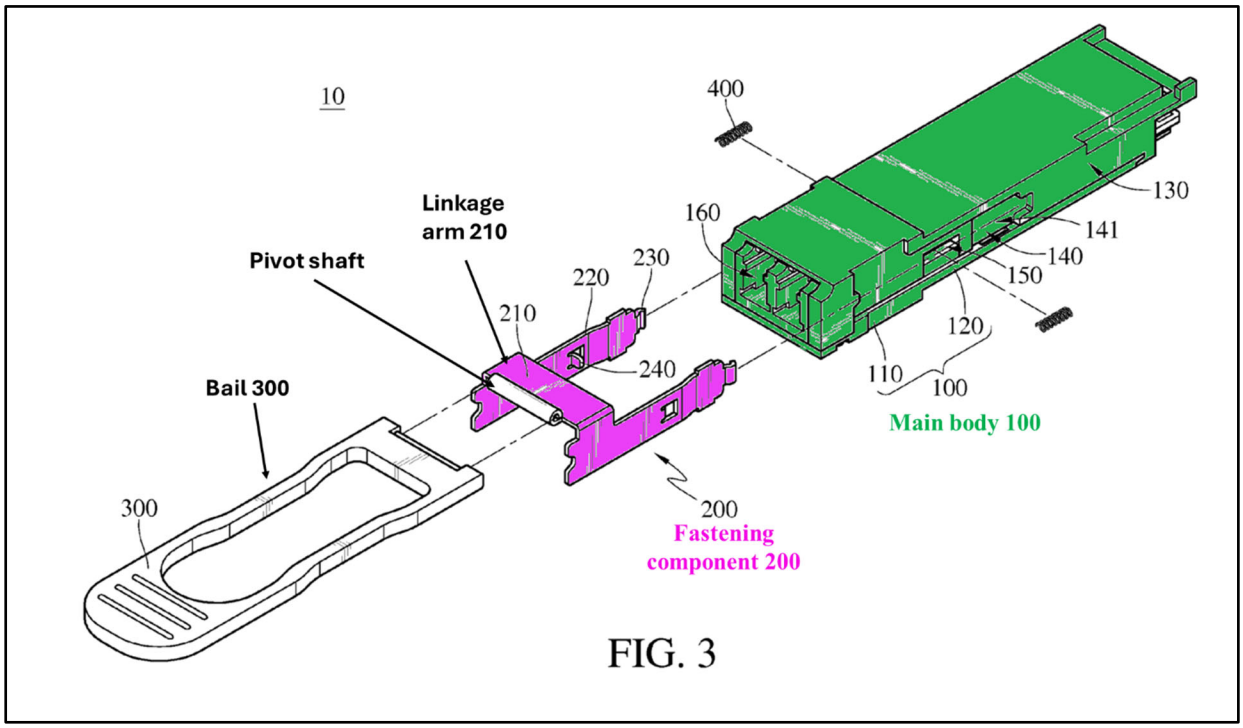


FIG. 3

Ex. 1005, Fig. 3 (annotations added)

4. Independent claim 11

Wang discloses every limitation of claim 11.

a. 11[Preamble] ("An optical transceiver, configured to be inserted into a cage in a pluggable manner,")

The preamble of claim 11 is identical to the preamble of claim 1, which is disclosed by Wang. *See* Section VI.B.1.a, above.

b. 11[a] ("a main body comprising two lateral surfaces and an outer surface between the two lateral surfaces, and the outer surface defining a confined groove;")

Claim term 11[a] is identical to claim term 1[a], which is disclosed by Wang. *See* Section VI.B.1.b, above.

c. 11[b] ("an elastic component disposed in the confined groove")

Claim term 11[b] is identical to claim term 1[b], which is disclosed by Wang. *See* Section VI.B.1.c, above.

d. 11[c1] ("a fastening component movably disposed on the main body, the fastening component comprising a linkage arm, two extending arms and a confined portion, wherein the linkage arm is disposed on the outer surface of the main body, wherein the linkage arm comprises an opening in communication with the confined groove of the main body to allow the elastic component to pass through the opening and be disposed in the confined groove,")

Claim term 11[c1] is identical to claim term 1[c1], which is disclosed by Wang. *See* Section VI.B.1.d, above.

e. 11[c2] ("the two extending arms are connected with the linkage arm, the two extending arms are respectively disposed on the two lateral surfaces,")

Claim term 11[c2] is identical to claim term 1[c2], which is disclosed by Wang. *See* Section VI.B.1.e, above.

f. 11[c3] ("the confined portion is connected with the linkage arm and extends into the confined groove in order to press the elastic component,")

Claim term 11[c3] is identical to claim term 1[c3], which is disclosed by Wang. *See* Section VI.B.1.f, above.

g. 11[c4] ("the two extending arms are detachably fasten-able with the cage;")

Claim term 11[c4] is identical to claim term 1[c4], which is disclosed by Wang. *See* Section VI.B.1.g, above.

h. 11[d] ("a pivot shaft pivoted on the linkage arm of the fastening component and a bail connected with the pivot shaft, the bail having a horizontal position to allow the bail to be drawn for removal of the optical transceiver from the cage, and an upright position to allow for installation or removal of optical fibers into the optical transceiver.")

Wang discloses a handle 204 (bail) connected to release slide base 238 (linkage arm) of release slide 202 (fastening component). Ex. 1003, Fig. 1B (showing section 246 of handle 204 connected to release slide base 238 via section 203), ¶¶[0046], [0048]. Tsai discloses pull handle 300 (bail) connected to a pivot shaft provided on linkage arm 210 of sliding component 200 (fastening component). Ex. 1005, 4:58-5:2, Figs. 1-3, 6.

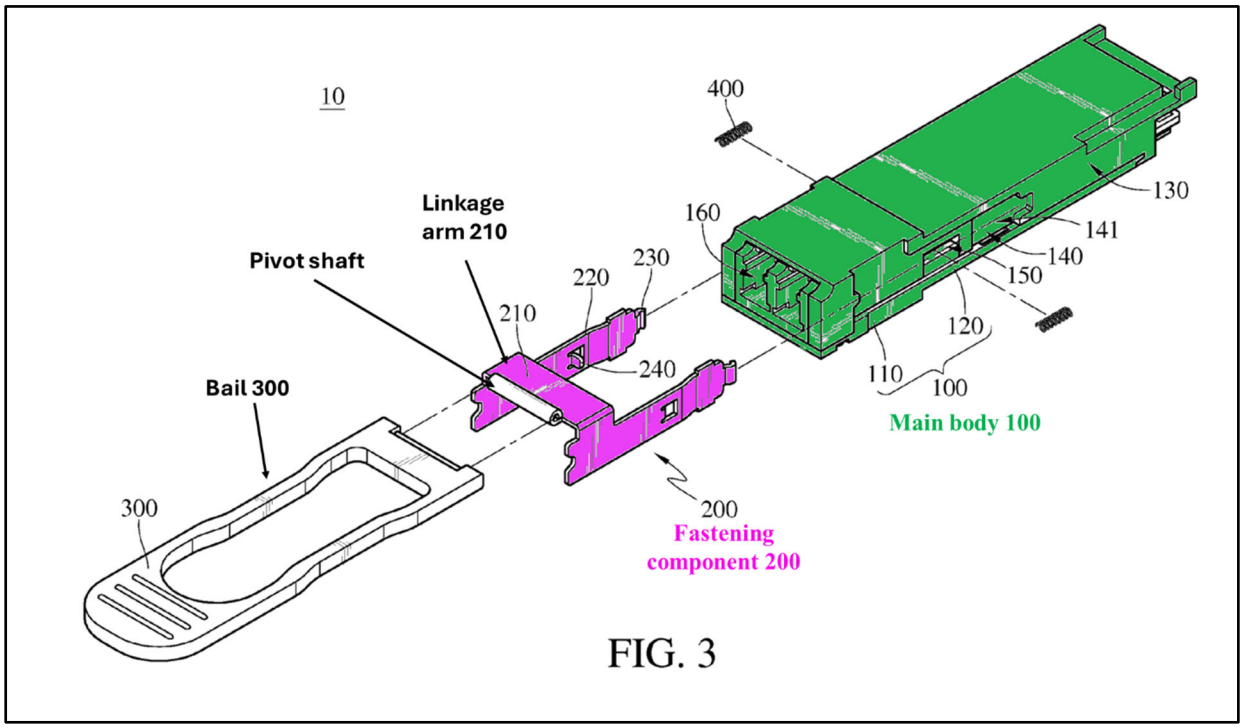


FIG. 3

Ex. 1005, Fig. 3 (annotations added)

Tsai additionally discloses that pulling handle 300 (bail) has a horizontal position (shown in Figures 1 and 2), to allow the bail to be pulled for removal of the optical transceiver module 10 from socket 20 (cage), and an upright position (shown in Figure 6) to allow for installation or removal of optical fiber connectors into the optical transceiver module. Ex. 1005, 4:58-5:2, 5:8-16.

A POSITA would have been motivated to modify Wang in view of Tsai to have a pivot shaft on Wang's linkage arm 238 and to connect bail 204 to the pivot shaft to pivot the bail up or down relative to the head part of Wang's optical transceiver module. *See* Section VI.D.2, above. It would have been obvious to a

POSITA that in Wang modified in view of Tsai, bail 204 would have a horizontal position and an upright position. Ex. 1007, ¶118.

5. Claim 12 ("The optical transceiver of claim 11, wherein the bail is configured to remain in the upright position without application of external force.")

Tsai discloses that pulling handle 300 (bail) has an upright position (shown in Figure 6) to allow for installation or removal of optical fiber connectors into the optical transceiver module. Ex. 1005, 4:63-5:2. Tsai further discloses that "the pull handle is pivoted about the sliding component so that the pull handle is located in front of the main body or **on the top of the main body**. … The pull handle does not interfere with the optical fiber plug **when located on the main body**." *Id.*, 5:8-16 (emphases added). This would indicate to a POSITA that the bail (pull handle 300) of Tsai is configured to remain in the upright position **on top of the main body** without application of external force. Ex. 1007, ¶119. It would have been obvious to a POSITA that in Wang modified in view of Tsai, bail 204 would have been configured to remain in the upright position without application of external force. *Id.*

VII. GROUNDS 4, 5, AND 6 BASED ON KOUTROKOIS

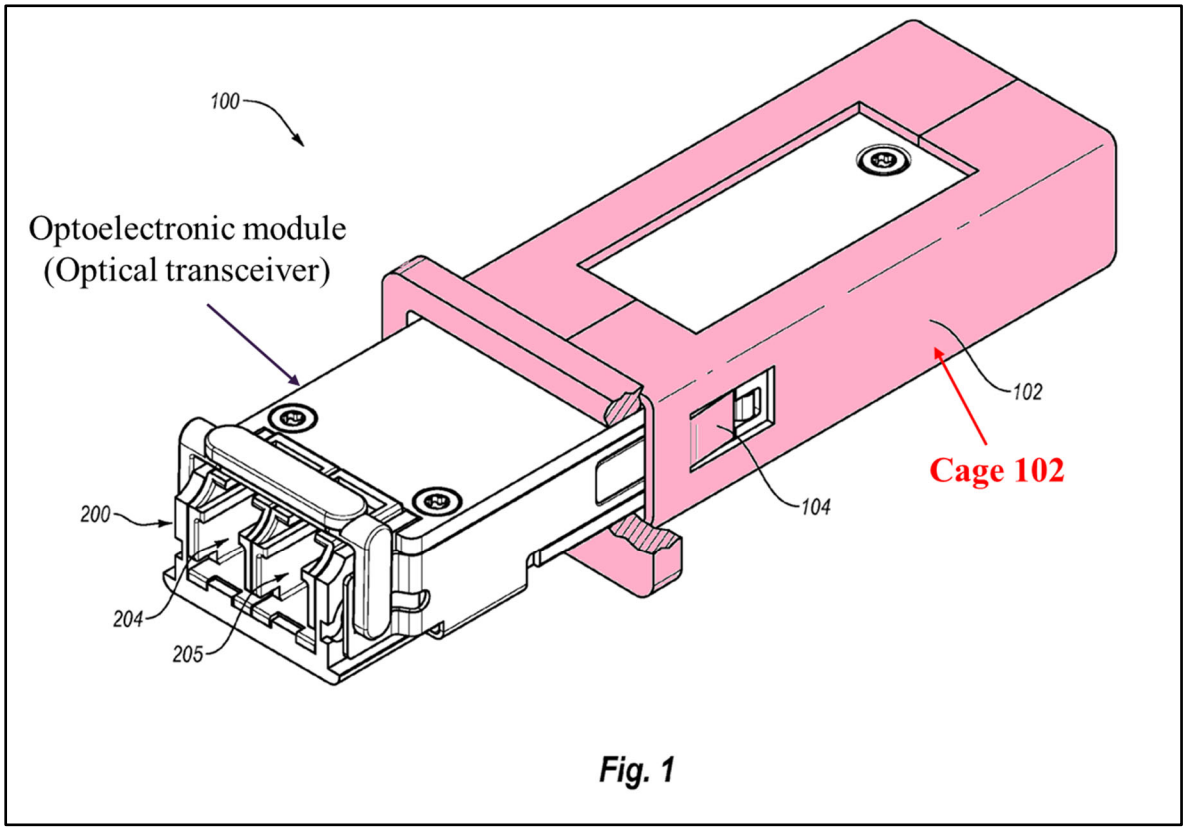
A. Koutrokois (Ex. 1004)

Koutrokois discloses an optoelectronic module 300 configured to be inserted into a cage of a host device in a pluggable manner. Ex 1004, ¶[0048]. Koutrokois

discloses that "optoelectronic module 300 may selectively engage a host device cage in a manner similar to the optoelectronic module 200 of FIGS. 1 and 3A-3E." *Id*.; *see also id.*, ¶[0050] (discussing fastening component 340 of module 300 in relation to driver 220), Fig. 4A. Thus, Koutrokois teaches that optoelectronic module 300 is configured to engage with cage 102 of host device 100, via a latching mechanism disclosed in Figures 3A-3F. *Id*., Figs. 1, 3A-3E; Ex. 1007, ¶59. Indeed, a POSITA would have readily envisaged that the latching mechanism of optoelectronic module 300 as well as the structure, function, and operation of driver 220 would have been the same as that of optoelectronic module 200. Ex. 1007, ¶59; *see Kennametal, Inc. v. Ingersoll Cutting Tool Co*., 780 F.3d 1376, 1381 (Fed. Cir. 2015) ("[A] reference can anticipate a claim even if it does not expressly spell out all the limitations arranged or combined as in the claim, if a person of skill in the art, reading the reference, would at once envisage the claimed arrangement or combination.") (citation and quotation marks omitted); *Blue Calypso, LLC v. Groupon, Inc*., 815 F.3d 1331, 1343-44 (Fed. Cir. 2016) (explaining that in *Kennametal*, "we noted that a reference need not always include an express discussion of the actual combination to anticipate. … Instead, a reference may still anticipate if that reference teaches that the disclosed components or functionalities may be combined and one of skill in the art would be able to implement the combination. … Thus, in *Kennametal,* we found

… that the reference anticipated the claims even without a particular disclosure of the specific combination recited in the disputed claims.") (citations omitted).

Figure 1 of Koutrokois, annotated below, shows optoelectronic module 200 received in cage 102.



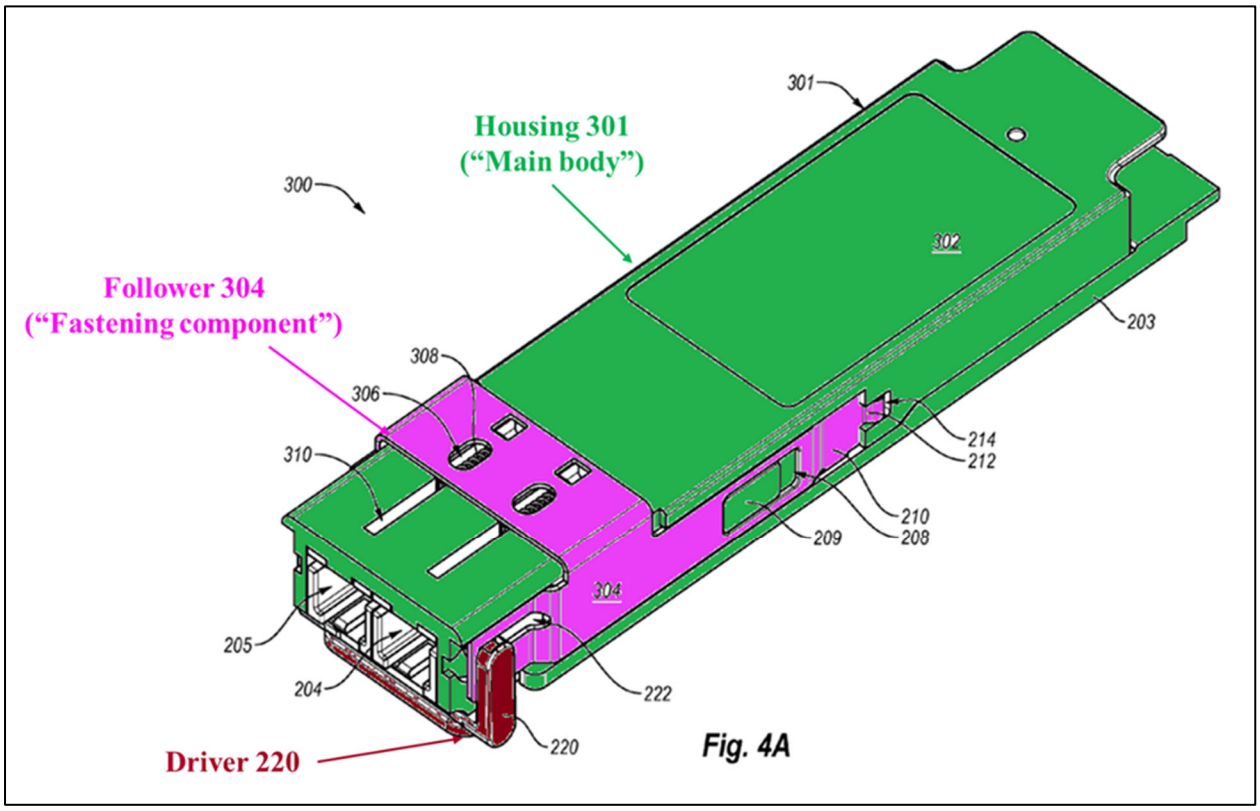
Ex. 1004, Fig. 1 (annotations added)

Optoelectronic transceiver module 300 comprises a main body, i.e., housing 301, having top housing 203 and bottom housing 302, and follower 304 "configured to be slidingly positioned relative to the housing 301." Ex. 1004, ¶[0049]. Bottom

housing 302 further includes assembly slots 310 and channels 314 configured to engage with features of follower 304. *Id.* ¶¶[0050]-[0051], Figs. 4A, 4C.

Follower 304 comprises a pair of extending arms that facilitate engagement with cage 102 of the host device. *Id.*, ¶[0048], Figs. 4A-4C. These arms are positioned on opposite lateral sides of main housing 301. *Id.*, ¶¶[0048]-[0051], Figs. 4A, 4C.

Figure 4A of Koutrokois, annotated below, shows optoelectronic module 300 having **follower 304** (fastening component), **housing 301** (main body), and **driver 220** (bail).

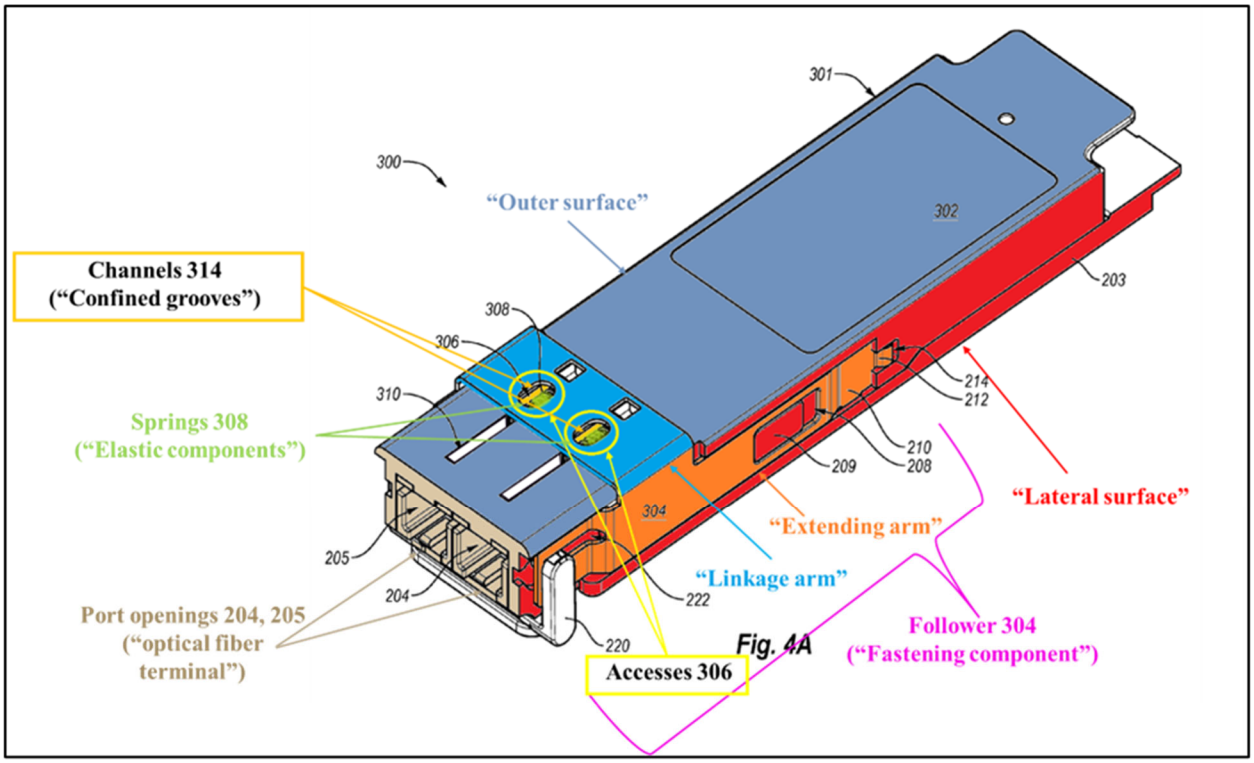


Ex. 1004, Fig. 4A (annotations added)

Springs 308 (elastic components) are loaded into channels 314 via accesses 306 formed in follower 304. *Id*. Springs 308 urge follower 304 toward the latched position when compressed by respective engaging members 312 as follower 304 moves from the latched to the unlatched position. *Id.*, ¶[0050].

Optoelectronic module 300 comprises a head portion having optical transmit and receive ports (204 and 205) formed therein. *Id*., Fig. 4A, ¶[0028]. An insertion portion of optoelectronic module 300 is inserted into cage 102. *Id*., ¶[0029]. The ports support a wide range of data rates and wavelengths, and the module is compatible with various communication protocols and form factors. *Id*., ¶[0028].

Figure 4A of Koutrokois, annotated below, shows **follower 304** comprising two **extending arms** and a **linkage arm** having **accesses 306** formed thereon; and **housing 301** comprising **port openings 204, 205**, an **outer surface**, **lateral surfaces**, and **channels 314** (confined grooves) in which **springs 308** are received. Ex. 1007, ¶66.



Ex. 1004, Fig. 4A (annotations added)

B. Ground 4: Koutrokois Anticipates Claims 1-3, 5, 7, and 10

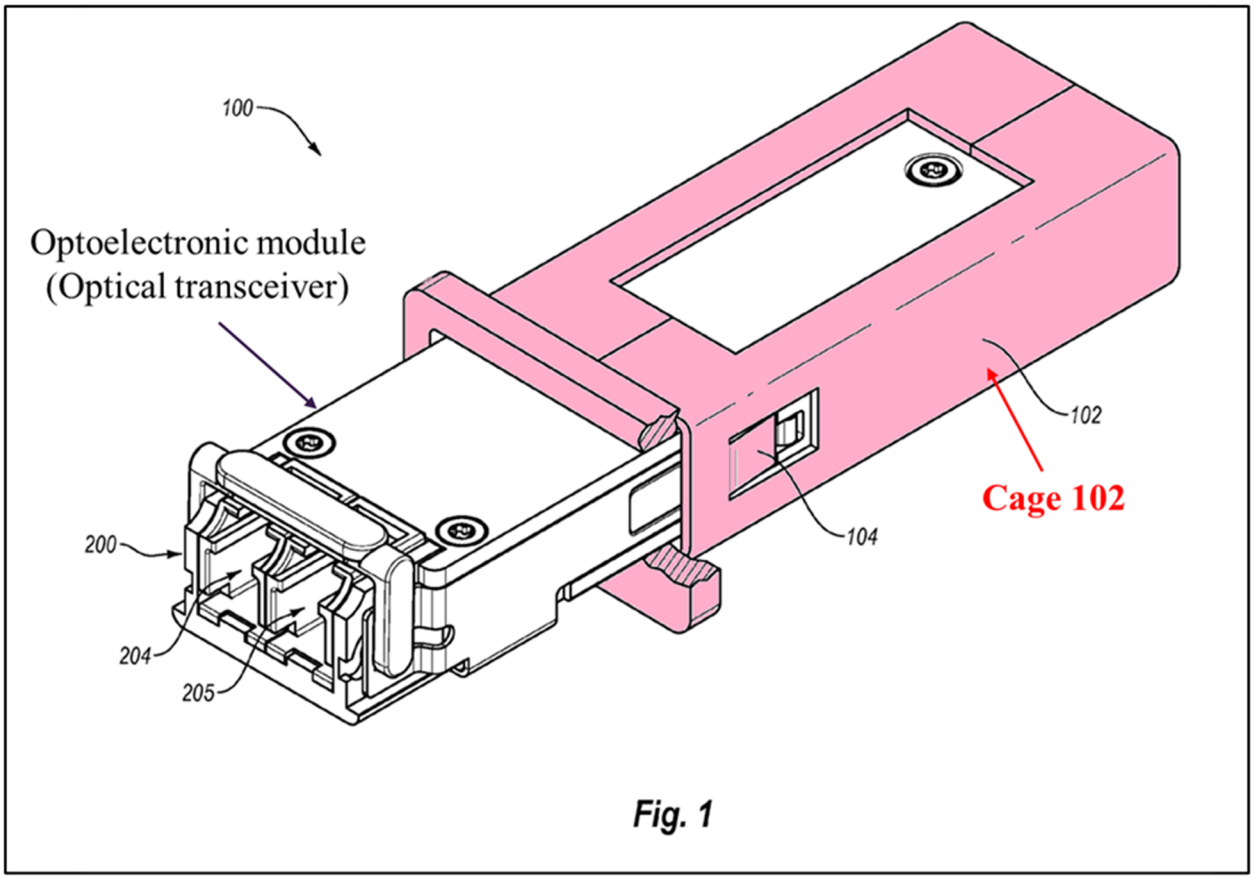
1. Independent claim 1

Koutrokois discloses every limitation of claim 1.

a. 1[preamble]

Koutrokois discloses that "optoelectronic module 300 may selectively engage a host device cage in a manner similar to the optoelectronic module 200 of FIGS. 1 and 3A-3E." Ex. 1004, ¶[0049]. Koutrokois further discloses that "host device 100 may include a cage 102 configured to be connected to a host printed circuit board (not shown). The cage 102 is configured to at least partially receive the optoelectronic module 200." *Id.*, ¶[0029]. Thus, Koutrokois discloses that

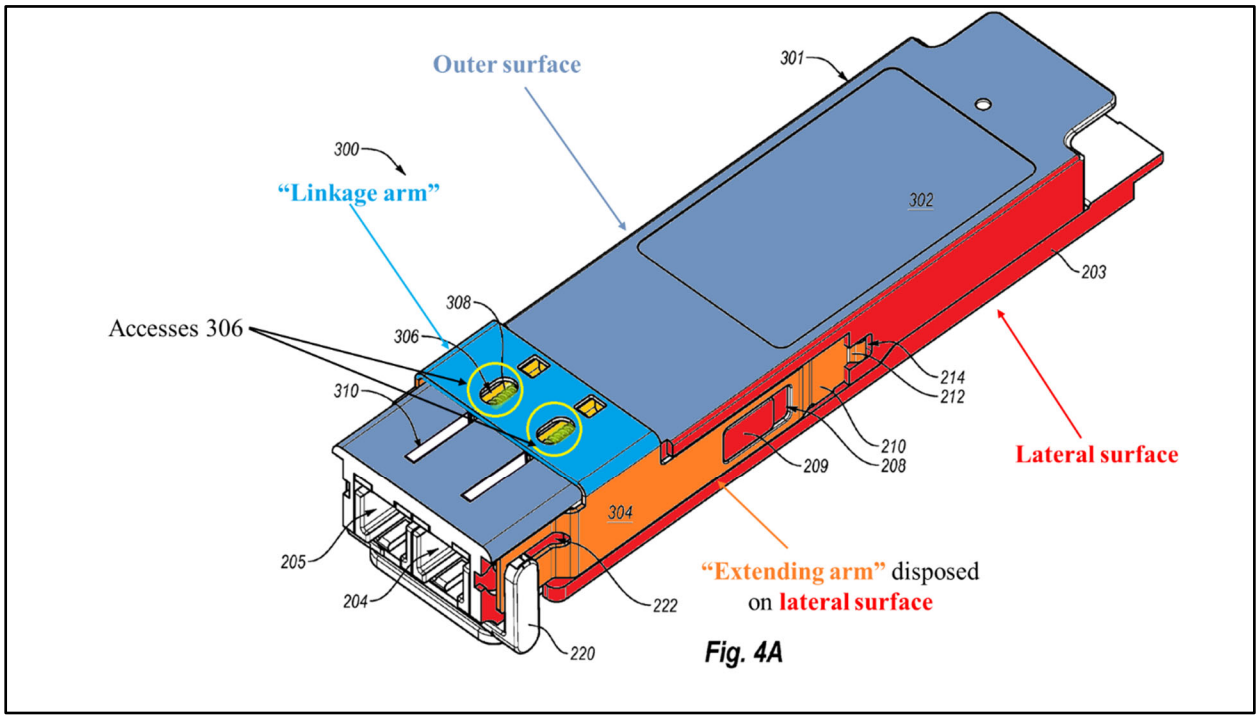
optoelectronic module 300 (optical transceiver) is configured to be inserted into cage 102 of host device 100 in a pluggable manner. *Id.*, ¶[0048].



Ex. 1004, Fig. 1 (annotations added)

b. Claim term 1[a]

Koutrokois discloses that the optical transceiver (optoelectronic module 300) comprises a main body (housing 301) comprising two lateral surfaces and an outer surface between the two lateral surfaces, and the outer surface (bottom housing 302) defines two confined grooves (channels 314) in which springs 308 are retained. Ex. 1004, ¶[0050], Fig. 4A, 4C.



Ex. 1004, Fig. 4A (showing housing 301 comprising **lateral surfaces** and an **outer surface**) (annotations added)

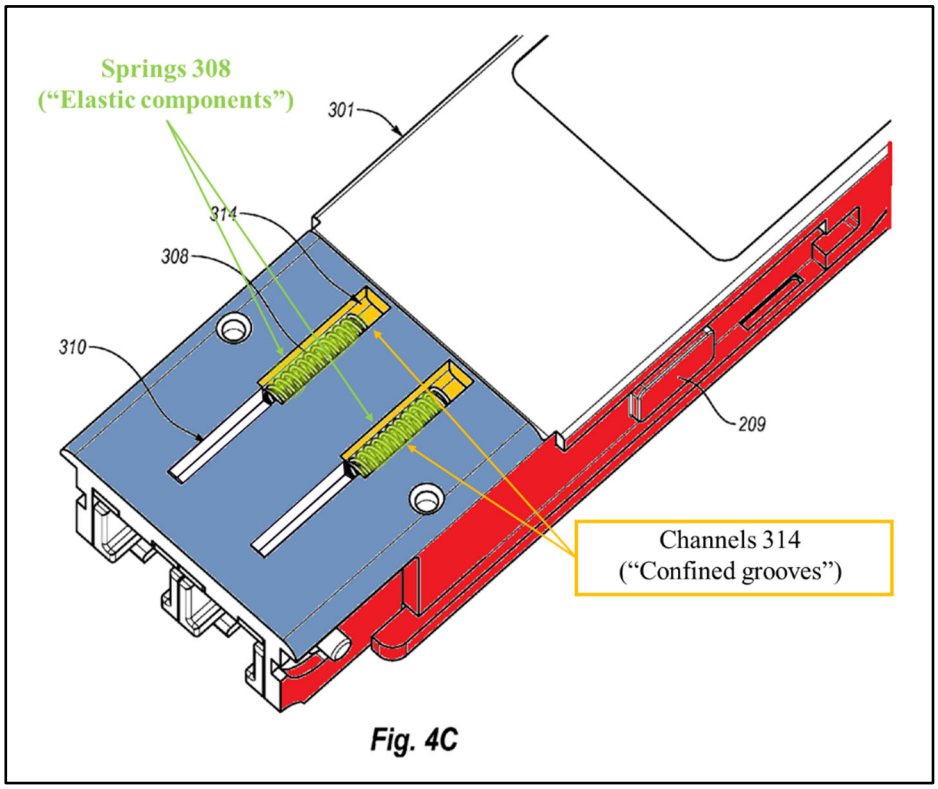


Fig. 4C

Ex. 1004, Fig. 4C (showing the **outer surface** having two **confined grooves** (channels 314) with **springs 308** disposed therein) (annotations added)

c. Claim term 1[b]

Koutrokois discloses that optoelectronic module 300 comprises two elastic components (springs 308), each disposed in one of the confined grooves (channels 314). Ex. 1004, ¶[0050], Fig. 4C (annotated above). Specifically, Koutrokois discloses that "**[s]prings 308 may be positioned in the channels 314 between the engaging members 312 and the housing 301** such that the springs 308 urge the follower 304 toward the first [latching] position." *Id*.

d. Claim term 1[c1]

Koutrokois discloses that optoelectronic module 300 comprises a fastening component (follower 304) movably disposed on the main body (housing 301). Ex. 1004, ¶[0049], Fig. 4A. The fastening component (follower 304) comprises a linkage arm, two extending arms, and two confined portions (engaging members 312) that are received within channels 314 (confined grooves) of housing 301. *Id*., ¶[0050] ("[T]he engaging members 312 may be configured to be slidingly received within channels 314 of the housing 301. Springs 308 may be positioned in the channels 314 between the engaging members 312 and the housing 301 such that the springs 308 urge the follower 304 toward the first position.").

A POSITA would have understood that the fastening component (follower 304) is movably disposed on the main body (housing 301) because it is configured to be "slidingly positioned relative to the housing 301." Ex. 1004, ¶[0049]; *see also id.*, ¶[0050] (discussing movement of follower 304 between first and second positions); Ex. 1007, ¶126.

Koutrokois further discloses that the linkage arm is disposed on the outer surface (bottom housing 302) of the main body (housing 301). Ex. 1004, Fig. 4A. The linkage arm comprises openings (accesses 306) in communication with the confined grooves (channels 314) of the main body (301). *Id*., ¶[0050], Fig. 4A. These openings allow the elastic components (springs 308) to pass through the openings

(accesses 306) and be disposed in the confined grooves (channels 314). *Id.*, ¶[0051], Figs. 4A-4B.

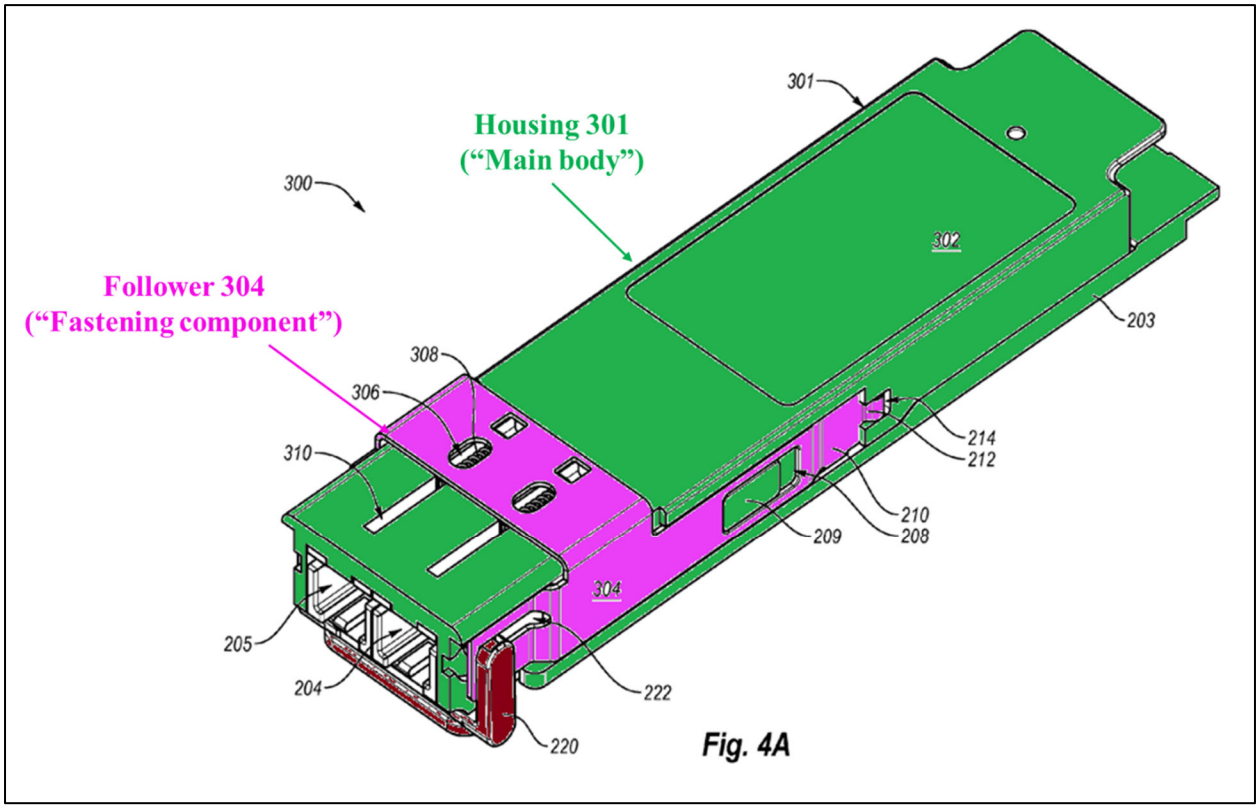
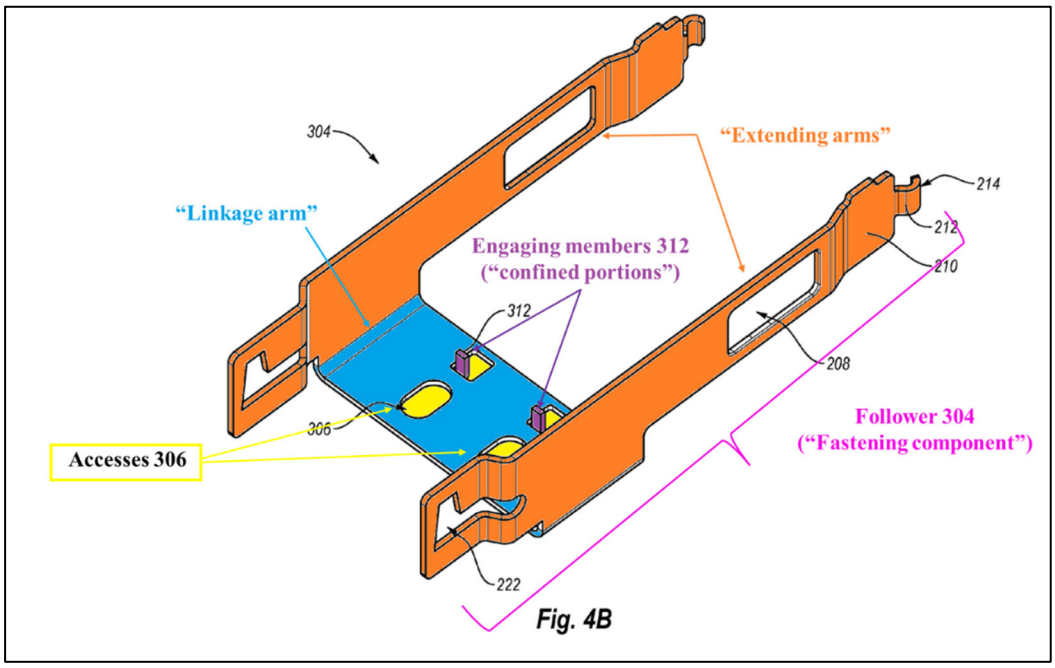


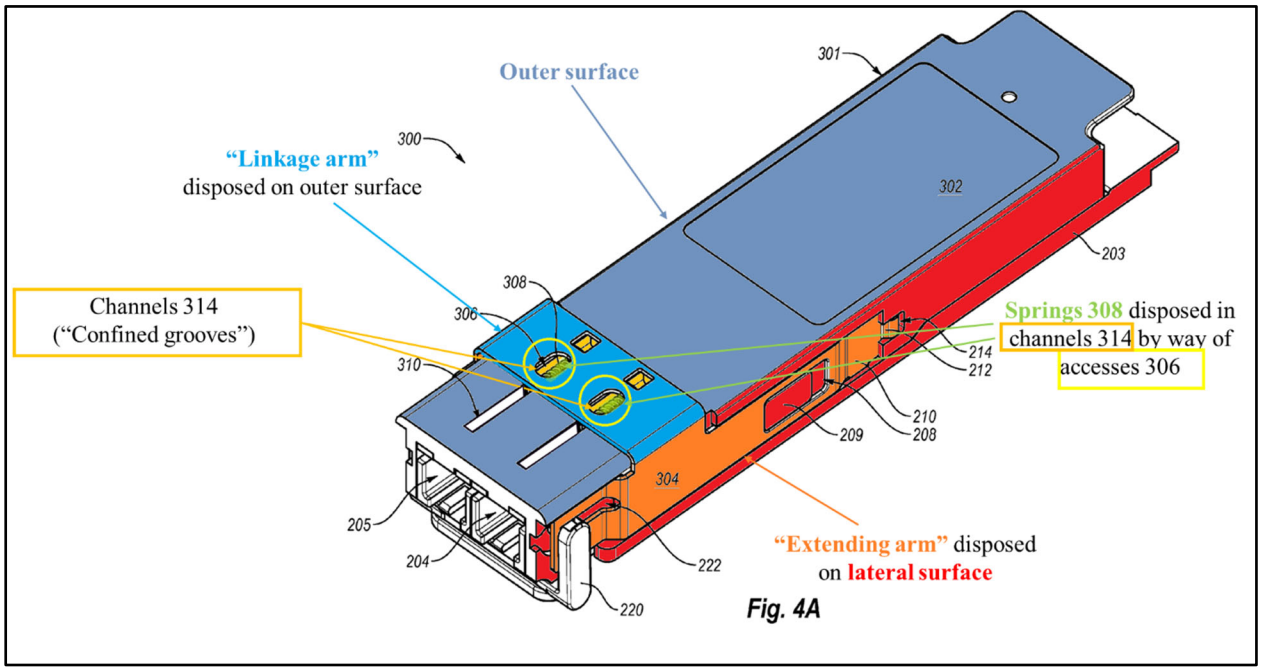
Fig. 4A

Ex. 1004, Fig. 4A (showing **follower 304** moveably disposed on **housing 301**) (annotations added)



Ex. 1004, Fig. 4B (showing **follower 304** comprising **two extending arms** and a **linkage arm** having **accesses 306** between the two extending arms, and **engaging members 312** formed in the linkage arm) (annotations added)

Koutrokois discloses that, when the linkage arm is disposed on bottom housing 302 (outer surface) of housing 301, accesses 306 formed in the linkage arm are in communication with channels 314 of the main body. *Id.*, ¶[0051]. This configuration enables "the springs 308 [to] be positioned in the channels 314 by way of the access 306." *Id.*

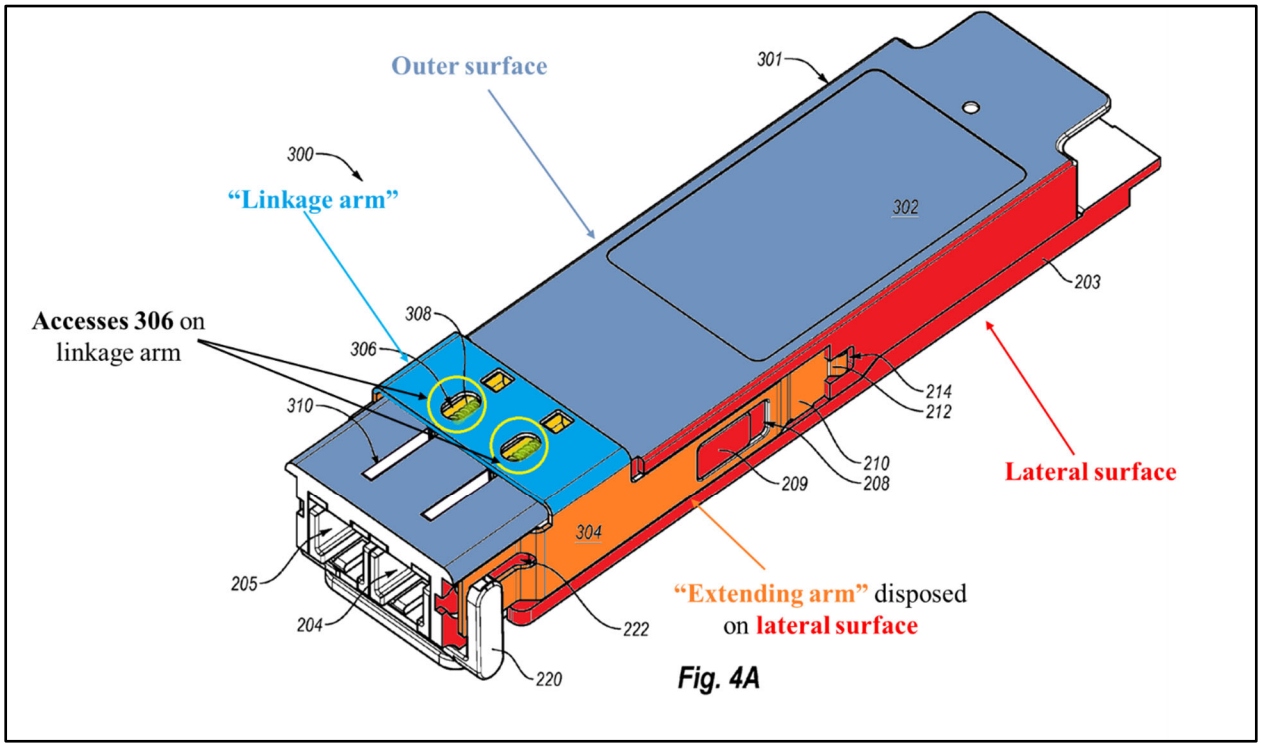


Ex. 1004, Fig. 4A (showing **springs 308** confined in **channels 314** formed on the **outer surface** of main body 301 and accesses 306 formed in **linkage arm** of follower 304 through which springs 308 are passed during assembly, wherein the linkage arm is disposed on the **outer surface** and the **extending arms** are disposed on the **lateral surfaces**) (annotations added)

e. Claim term 1[c2]

Koutrokois discloses that the two extending arms are connected with the linkage arm, and the two extending arms are respectively disposed on the two lateral surfaces of the main body (housing 301). Ex. 1004, ¶¶[0048]-[0050], Figure 4A.

Specifically, Koutrokois discloses that follower 304 (having two extending arms connected with the linkage arm, as shown below) is configured to be "slidingly positioned relative to the housing 301." *Id.*, ¶[0049].

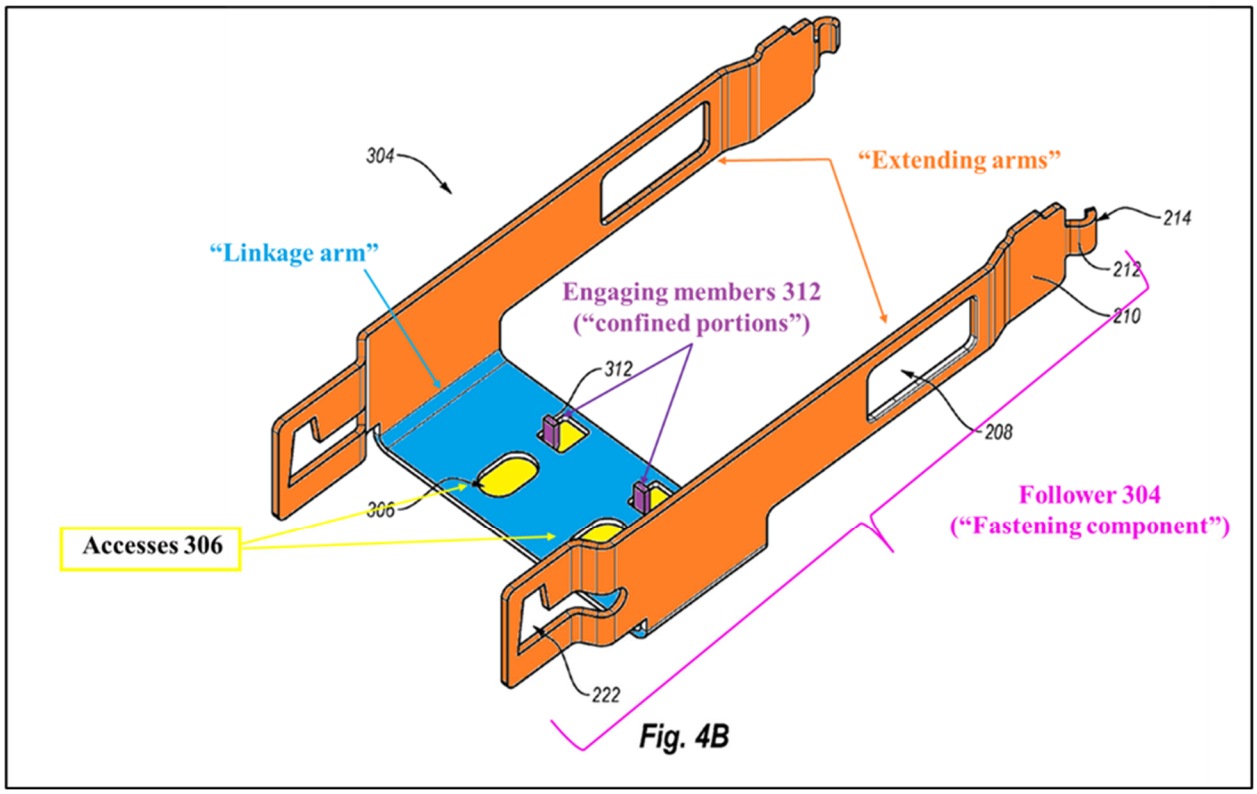


Ex. 1004, Fig. 4A (showing **extending arms** connected with **linkage arm**, wherein the **linkage arm** is disposed on the **outer surface** and the extending arms are disposed on the **lateral surfaces**) (annotations added)

f. Claim term 1[c3]

Koutrokois discloses that each confined portion (engaging member 312) is connected with the linkage arm and extends into a respective confined groove (channel 314) to compress the elastic component (spring 308) and thereby urge the follower 304 towards the first (latched) position. Ex. 1004, ¶[0050] ("engaging

members 312 may be configured to be slidingly received within channels 314 of the housing 301. **Springs 308 may be positioned in the channels 314 between the engaging members 312 and the housing 301** such that the springs 308 urge the follower 304 toward the first position. For example, as disclosed in FIG. 4A, the **springs 308 may be resiliently compressed when the follower 304 is in the first position**, and thus may urge the follower 304 toward the first position to promote the follower 304 and driver 220 to stay securely in the latched position until the driver 220 is purposefully rotated. **As the follower 304 is urged toward a second position by rotating the driver 220, the force exerted by the springs 308 is overcome, causing the springs 308 to compress further and continue to urge the follower 304 toward the first position**.") (emphases added), Figs. 4A-4C.



Ex. 1004, Fig. 4B (showing **follower 304** comprising **two extending arms** with a **linkage arm** therebetween, and **engaging members 312 (confined portions)** connected to the linkage arm) (annotations added)

g. Claim term 1[c4]

Koutrokois discloses that "optoelectronic module 300 may selectively engage a host device cage in a manner similar to the optoelectronic module 200 of FIGS. 1 and 3A-3E." Ex. 1004, ¶[0048]. Thus, Koutrokois teaches that optical transceiver 300 is configured to engage with cage 102 of host device 100 via a latching mechanism disclosed in Figures 3A-3E. *Id*. Regarding the latching mechanism of optoelectronic module 200, which a POSITA would have understood applies to

optoelectronic module 300 (Ex. 1007, ¶¶59, 132), Koutrokois discloses that "follower [extending] arms include recesses 210. The recesses 210 and the housing 201 are configured such that the leaf springs of the host device cage (as disclosed in FIG. 1) may fit at least partially within the recesses 210 [of the extending arms] when the optoelectronic module 200 is in the latched configuration." Ex. 1004, ¶[0033]. Further, "[t]he bottom housing 202 includes shoulders 216 adjacent to the recesses 210. … When the optoelectronic module 200 is in the latched configuration, as shown in FIG. 3A, the engagement of the shoulders 216 and the leaf springs act to prevent the optoelectronic module 200 from moving significantly within a host device cage." *Id.*, ¶[0034]. "When the optoelectronic module 200 is moved from a latched configuration to an unlatched configuration, the fingers 214 and ramped surfaces 212 [of the extending arms] act to move the leaf springs such that the optoelectronic module 200 may be removed from the host device cage," thereby unfastening/detaching the extending arms from the host device cage. *Id.*, ¶[0038].

Thus, Koutrokois discloses that the extending arms of the fastening component are detachably fastened with the cage via engagement of the leaf springs of the cage with recesses 210 of the extending arms. *Id.*, ¶¶[0033]-[0034], [0038].

2. Claim 2

Koutrokois discloses that the outer surface (bottom housing 302) is a bottom surface of the main body (housing 301). Ex. 1004, ¶[0049], Fig. 4A. Specifically,

"the optoelectronic module 300 includes a housing 301 that may include a bottom housing 302 and a top housing 203." Ex. 1004, ¶[0049]. The bottom housing 302 serves as the outer surface.

3. Claim 3

Koutrokois discloses that the main body (housing 301) comprises a first confined surface forming each confined groove (channel 314). Ex. 1004, ¶[0050], Fig. 4C. Each confined portion (engaging member 312) of the fastening component (follower 304) comprises a second confined surface facing toward the first confined surface. *Id*. The elastic component (spring 308) is disposed between the first and second confined surfaces. *Id.*, ¶[0050], Figures 4A-4C.

Specifically, Koutrokois discloses that "[s]prings 308 may be positioned in the channels 314 between the engaging members 312 and the housing 301 such that the springs 308 urge the follower 304 toward the first position." *Id*. Each spring 308 is resiliently compressed between a surface of engaging member 312 of the follower (the second confined surface) and a surface of channel 314 of housing 301 (the first confined surface) such that the compressive force of springs 308 urges the follower towards the first (latched) position. *Id*.

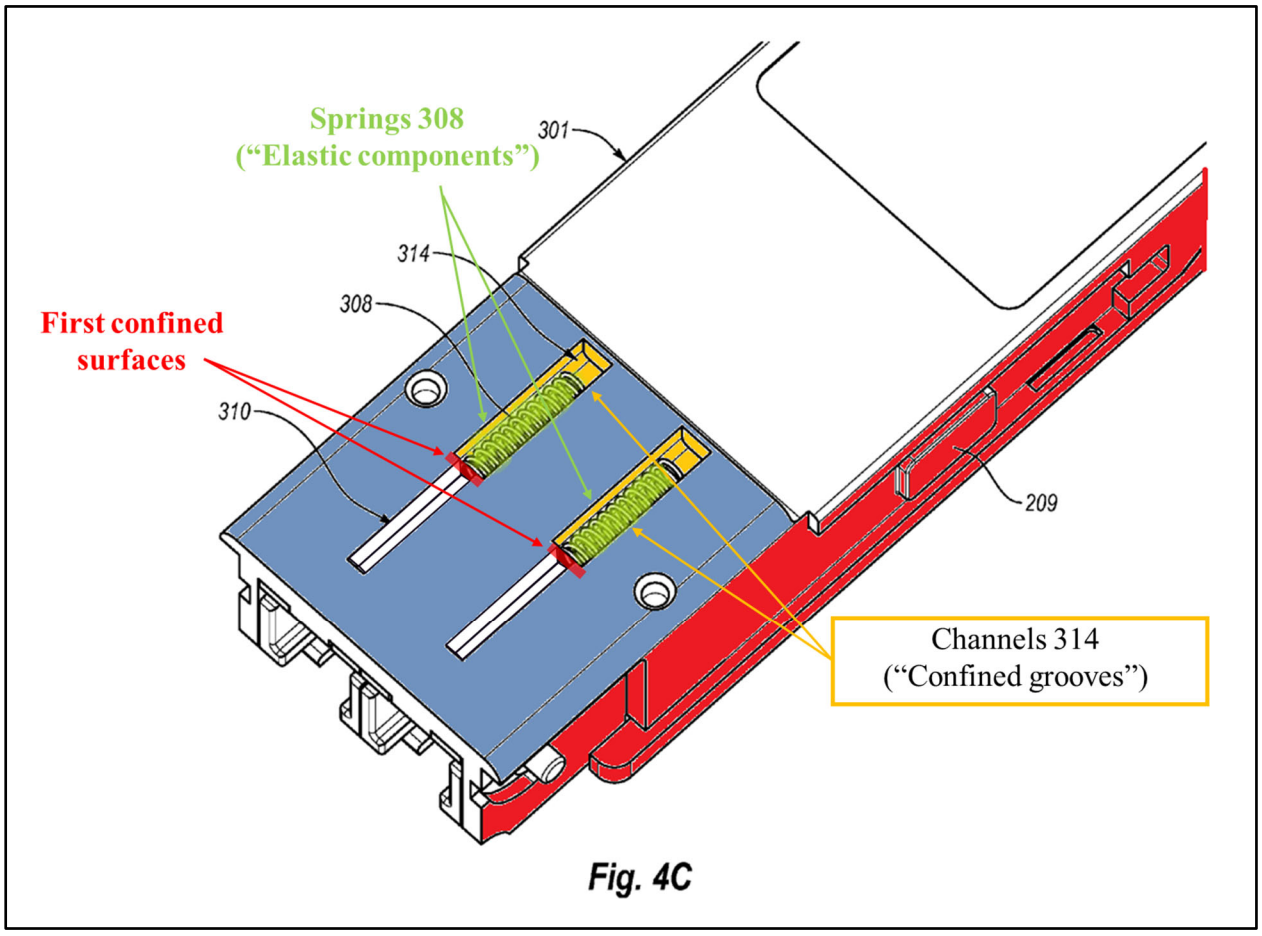


Fig. 4C

Ex. 1004, Fig. 4C (showing **channels 314** of housing 301, each having a **first confined surface** configured to compress one end of each **spring 308**) (annotations added)

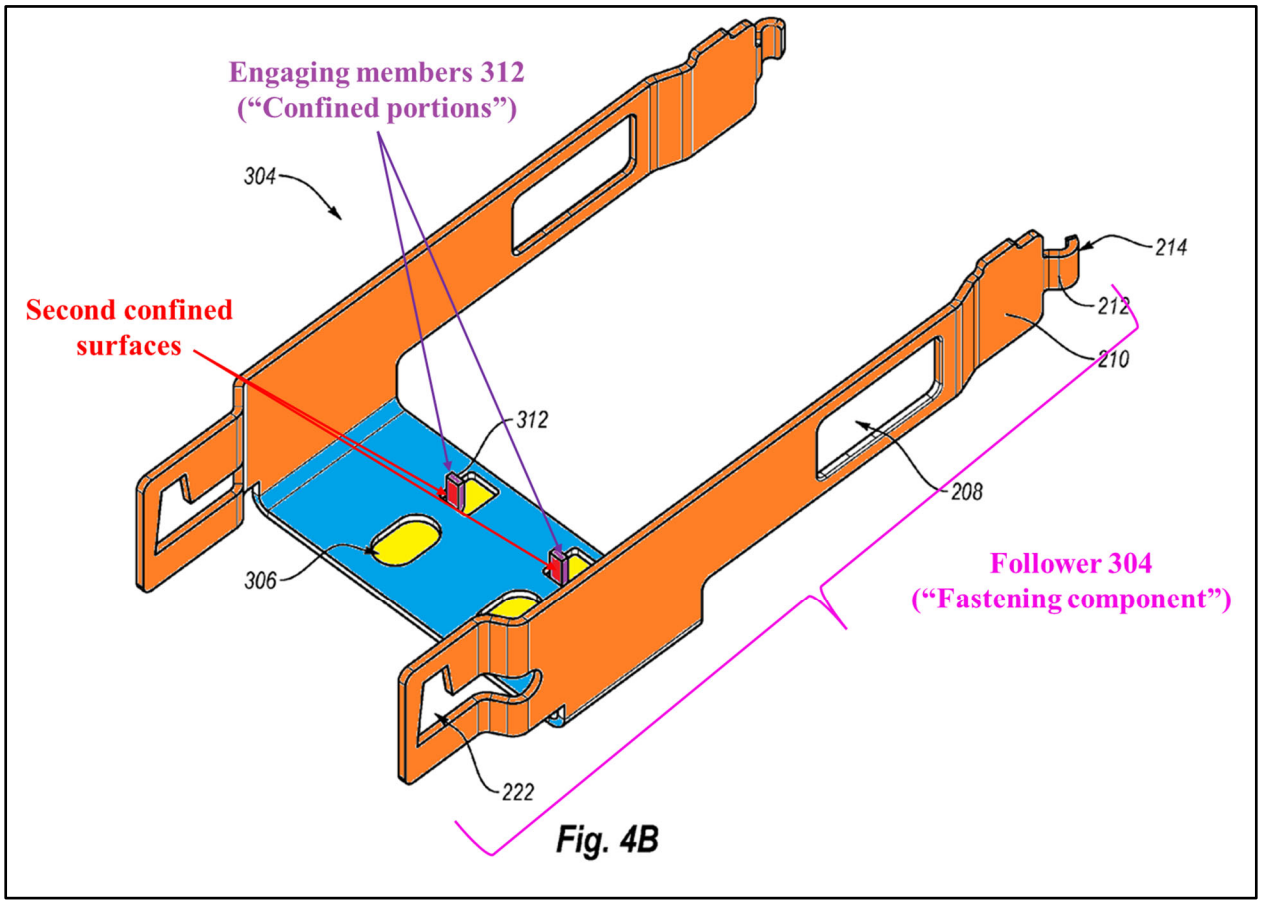
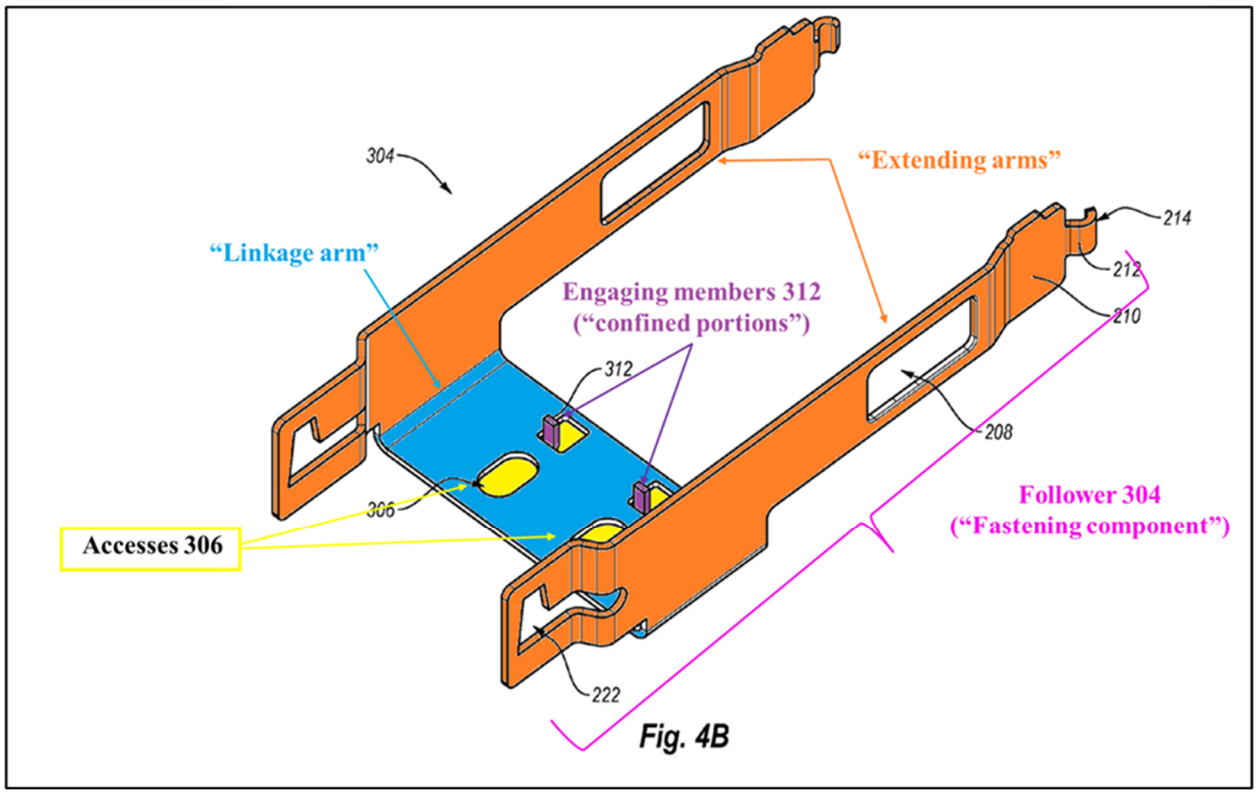


Fig. 4B

Ex. 1004, Fig. 4B (showing **engaging members 312,** each having a **second confined surface** configured to compress the other end of each **spring 308**) (annotations added)

4. Claim 5

Koutrokois discloses that the openings (accesses 306) are located between two ends of the linkage arm where the two extending arms are connected. Ex. 1004, ¶[0050], Fig. 4B.

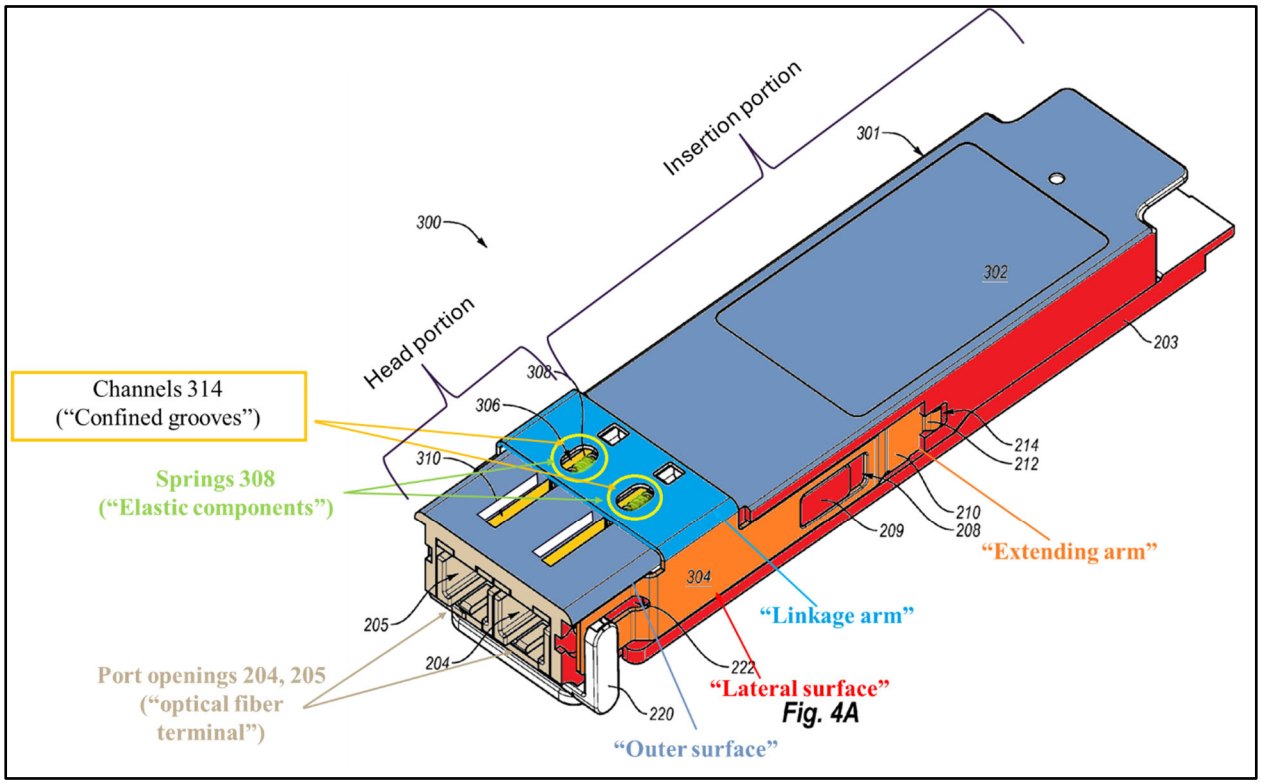


Ex. 1004, Fig. 4B (showing **accesses 306** located on the **linkage arm** between two ends of linkage arm where the extending arms are connected) (annotations added)

5. Claim 7

Koutrokois discloses that the main body (housing 301) comprises a head portion (front portion of optoelectronic module 300) and an insertion portion connected with each other. Ex. 1004, Figs. 4A, 4C. Koutrokois further discloses that "optoelectronic module 300 may selectively engage a host device cage in a manner similar to the optoelectronic module 200 of FIGS. 1 and 3A-3E." Ex. 1004, ¶[0048]. Thus, a POSITA would have understood that optical transceiver 300 is configured to engage with cage 102 of host device 100 in the same manner as shown in Figure

1 with respect to optoelectronic module 200. Ex. 1007, ¶138. Thus, a POSITA would have understood that the insertion portion is configured to be inserted into the cage (cage 102) in a pluggable manner. *Id.*; Ex. 1004, ¶¶[0028], [0029], Fig. 1. The head portion comprises the outer surface (bottom housing 302), the two lateral surfaces and an optical fiber terminal (transmit port 204 and receive port 205). *Id.*, ¶[0048], Figs. 4A, 4C.



Ex. 1004, Fig. 4A (showing head portion comprising **port openings 204, 205,** the **outer surface** on which the **linkage arm** is disposed, and the **lateral surfaces** on which the **extending arms** are disposed) (annotations added)

6. Independent claim 10

Koutrokois discloses every limitation of claim 10.

a. Claim 10 [preamble]

As discussed regarding the preamble of claim 1, Koutrokois discloses an optoelectronic module 300 (optical transceiver). *See* Section VII.B.1.a, above.

b. Claim term 10[a]

As discussed regarding claim term 1[a], Koutrokois's optical transceiver (optoelectronic module 300) comprises a main body (housing 301), which includes two lateral surfaces and an outer surface (between the two lateral surfaces). *See* Section VII.B.1.b, above. The outer surface defines two confined grooves (channels 314) that are spaced apart from each other, each containing an elastic component (spring 308). Ex. 1004, ¶[0050], Figs. 4A, 4C; *see also* Section VII.B.1.b, above.

c. Claim term 10[b]

As discussed regarding claim term 1[b], Koutrokois discloses that optoelectronic module 300 comprises two elastic components (springs 308) disposed in respective confined grooves (channels 314). Ex. 1004, ¶[0050], Figs. 4A, 4C; *see also* Section VII.B.1.c, above.

d. Claim term 10[c1]

Claim term 10[c1] is identical to claim term 1[c1], except it recites two confined portions. As discussed regarding 1[c1], Koutrokois discloses that

optoelectronic module 300 comprises a fastening component (follower 304) disposed on the main body (housing 301). *See* Section VII.B.1.d, above. The fastening component comprises a linkage arm and two extending arms, and two confined portions (engaging member 312). *Id.*; Ex. 1004, ¶[0050]. The linkage arm is disposed on the outer surface of the main body. *See* Section VII.B.1.d, above. The linkage arm comprises two openings (accesses 306) in communication with the confined grooves (channels 314) of the main body to allow each elastic component (spring 308) to pass through a corresponding opening (access 306) and be disposed in the confined groove during assembly. Ex. 1004, ¶¶[0050], [0051], Figs. 4A, 4C; *see also* Section VII.B.1.d, above.

e. Claim term 10[c2]

Claim term 10[c2] is identical to claim term 1[c2]. As discussed regarding 1[c2], Koutrokois discloses that the two extending arms are connected with the linkage arm. Ex. 1004, Figs. 4A, 4B; *see also* Section VII.B.1.e, above. The two extending arms are respectively disposed on the two lateral surfaces of the main body. *See* Section VII.B.1.e, above.

f. Claim term 10[c3]

Koutrokois discloses that the confined portions (engaging members 312) are connected with the linkage arm and each confined portion extends into a respective

confined groove (channel 314) to press the elastic component (spring 308) disposed therein. Ex. 1004, ¶[0050]; *see also* Section VII.B.1.f, above.

C. Ground 5: Koutrokois Renders Claims 4, 6, and 9 Obvious

1. Claim 4

Koutrokois discloses that "springs 308 may be positioned in the channels 314 by way of the access 306." Ex. 1004, ¶[0051]. Based on Koutrokois's disclosure that springs 308 are assembled with follower 304 on housing 301, a POSITA would have found it obvious that the size of each opening (access 306) would certainly be smaller than the length of the elastic component in an uncompressed condition, otherwise the elastic component would fall out through the opening. Ex. 1007, ¶146. A POSITA would have further found it obvious that each elastic component is pressed into a compressed state and slid in through an access 306 to reside in a channel 314 in an uncompressed or slightly compressed state. *Id.*

Additionally, a POSITA would reasonably have been able to infer from the relative sizes of the openings (accesses 306) and the elastic components (springs 308) that the size of the openings is smaller than the length of the elastic components in an uncompressed condition. *Compare* Ex. 1004, Figs. 4A and 4B (showing accesses 306), *with* Ex. 1004, Fig. 4C (showing springs 308); Ex, 1007, ¶147. Indeed, the Federal Circuit has explained that "patent drawings may be useful in shedding light about the general shapes and relative sizes of elements of the claimed

invention, as well as their spatial relations to one another." *Regents of Univ. of Cal.*, 2024 WL 4972639, at *3 (emphasis added) (citation omitted); *Monterey Rsch.,* 2023 WL 7037383, at *3. Here, Koutrokois's drawings provide the length of springs 308 relative to the size of accesses 306. Ex. 1007, ¶148. Accordingly, a POSITA would have been able to determine through simple observation that the size of the openings is smaller than the length of the elastic components in an uncompressed condition. *Id*.

2. Claim 6

Koutrokois discloses that optoelectronic module 300 may "include a fastening mechanism generally corresponding to the fastening mechanism 234 disclosed in FIGS. 3A-3E." Ex. 1004, ¶[0048]. Given the similarities and overlap between Koutrokois's optoelectronic modules 200 and 300, a POSITA would have found it obvious that follower 206 of module 200 is analogous to follower 306 of module 300. *See id.*; Ex. 1007, ¶149. Koutrokois discloses that "driver 220 and the follower 206 may be formed in various ways, including, but not limited to, being stamped from metal or molded from hard plastic." Ex. 1004, ¶[0032]. Therefore, it would have been obvious to a POSITA that follower 306, which comprises engaging members 312 and accesses 306, are formed by stamping. Ex. 1007, ¶149. That is, Koutrokois discloses that the confined portions (engaging members 312) and the

openings (accesses 306) of the fastening component (follower 304) are formed by stamping. *Id.*

3. Claim 9

A QSFP-DD transceiver is a hot-pluggable module for high-speed data networking, supporting data rates of 200G, 400G, and 800G by providing eight electrical lanes for data transmission. Ex. 1007, ¶150. Koutrokois discloses that optoelectronic module 200/300 can be configured for signal transmission and reception at a variety of data rates including "**100 Gb/s or higher**." Ex. 1004, ¶[0028] (noting that module 200/300 supports data transmission at 100 Gb/s per lane) (emphasis added). Koutrokois further discloses that optoelectronic module 200/300 can be configured to support "1x, 2x, 4x, **8x**, and 16x Fibre Channel." *Id.* (noting that module 200/300 supports 8 lanes of data transmission) (emphasis added). Additionally, Koutrokois discloses that the optoelectronic module may be configured in a variety of different form factors and is compliant with different MSAs including "Small form-factor pluggable (SFP+) multi-source agreement (MSA)." *Id*. From these disclosures, it would have been obvious to a POSITA that optoelectronic module 200/300 would have included a QSFP-DD transceiver because it can provide eight data lanes, with each lane operating at 100 Gbps. Ex. 1007, ¶150.

D. Ground 6: Koutrokois in View of Tsai Renders Claims 8, 11, and 12 Obvious

1. A POSITA would have been motivated to modify Koutrokois to have a pivot shaft in view of Tsai and would have reasonably expected success in doing so

Tsai and Koutrokois are both directed to a pluggable optical transceiver. Ex. 1007, ¶151. The primary difference between Koutrokois and Tsai is the location of two elastic components (springs) in the main body of the transceiver: Tsai discloses placement of the springs on the lateral sides of the transceiver's main body, whereas the Koutrokois discloses their placement on an outer (top or bottom) surface of the main body. *Compare* Ex. 1004, Fig. 4C, *with* Ex. 1005, Fig. 3; Ex. 1007, ¶151. Because of the similarities in subject matter between Koutrokois and Tsai, a POSITA would have considered them together when designing or developing a pluggable optical transceiver. Ex. 1007, ¶151.

As discussed in Section VII.B.1, above, Koutrokois discloses every limitation of independent claim 1. Koutrokois also discloses every limitation of independent claim 11, except that the bail is connected to a pivot shaft that is "pivoted on the linkage arm of the fastening component." Ex. 1001, claim 11, 8:9-15. Tsai discloses the "pivot shaft" limitation, as discussed below. Ex. 1007, ¶152. It would have been a matter of obvious design choice to design Koutrokois's driver 220 (bail) so that it pivots on the linkage arm of the fastening component (follower 304) via a pivot shaft

(protrusions 218) (instead of pivoting/rotating on the extending arm of the fastening component). Ex. 1004, ¶¶[0039], [0040], Figs. 3A-3D; Ex. 1007, ¶152. Nowhere does the '818 patent disclose that pivoting on the limiting arm is critical, results in a difference in function, or achieves unexpected results as opposed to pivoting on the extending arms of the fastening component. Ex. 1007, ¶152. Accordingly, it would have been obvious to a POSITA as a matter of design choice to design Koutrokois's driver 220 in view of Tsai's pull handle 300 to allow Koutrokois's driver 220 to pivot on the linkage arm to 1) prevent breakage or damage of the pull handle when the transceiver module is inserted or disengaged from the cage, and 2) facilitate insertion/removal of optical connectors into the transceiver by pivoting the handle out of the way during that process. *See In re Rice*, 341 F.2d 309, 314 (C.C.P.A. 1965) ("Appellants have failed to show that the [differences in the claimed invention], as compared to [the prior art reference], result in a difference in function or give unexpected results."); *In re Kuhle*, 526 F.2d 553, 555 (C.C.P.A. 1975) ("Use of such a means of electrical connection in lieu of those used in the references solves no stated problem and would be an obvious matter of design choice within the skill of the art."); Ex. 1007, ¶152.

Given the similarities in design, structure, operation, and function between Koutrokois and Tsai, a POSITA would also have reasonably expected success in modifying Koutrokois's driver 220 in view of Tsai and would have been able to do

so with little experimentation and optimization. Ex. 1007, ¶153. Indeed, modification of Koutrokois in view of Tsai would have only required routine engineering skills and the basic knowledge of a POSITA. *Id.*

2. Claim 8

Koutrokois further discloses a driver 220 (bail) that pivots between a latched and unlatched position on the extending arm of the fastening component (follower 304) via a pivot shaft (protrusions 218). Ex. 1004, ¶¶[0039], [0040], Figs. 3A-3D. Tsai discloses a pull handle 300 (bail) that is connected to a pivot shaft provided on linkage arm 210 of fastening component 200. Ex. 1005, 4:58-5:2, Figs. 1-3, 6. As discussed above, a POSITA would have found it an obvious design choice to have a pivot shaft on Koutrokois's linkage arm and to connect bail 220 to the pivot shaft to pivot the bail up or down relative to the head part of Koutrokois's optical transceiver module. *See* Section VII.D.1, above.

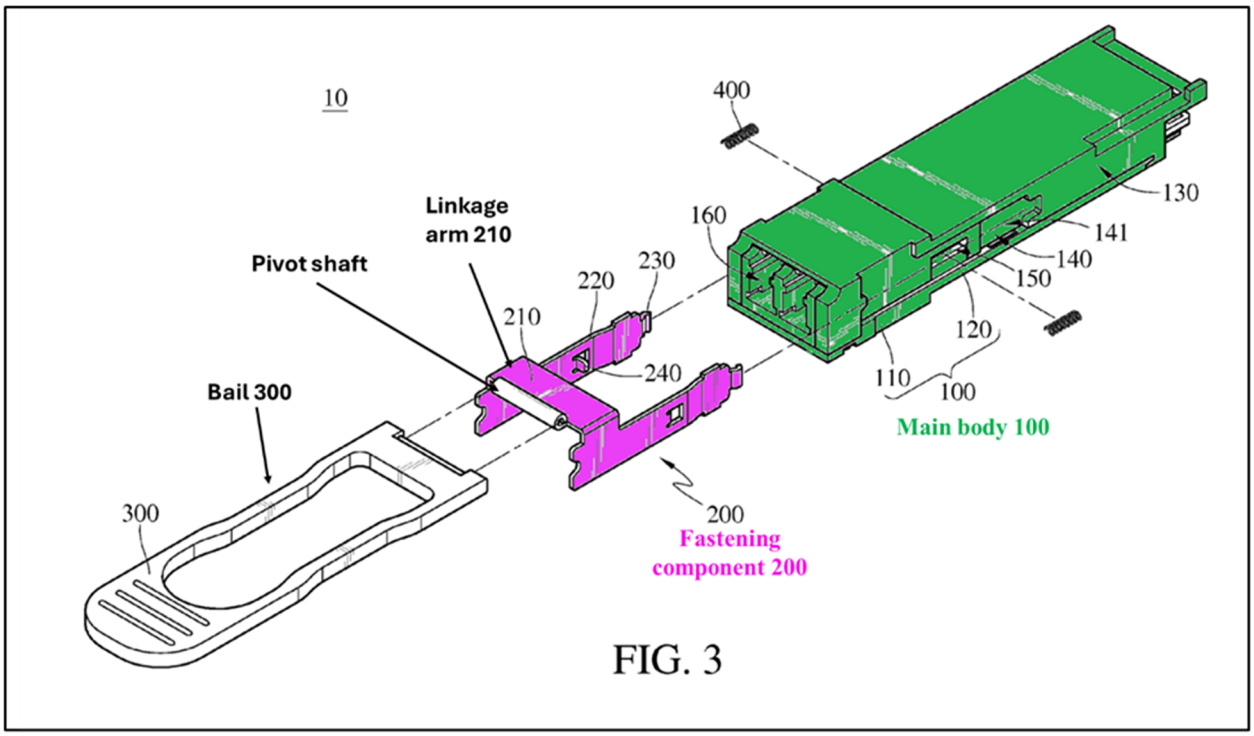


FIG. 3

Ex. 1005, Fig. 3 (annotations added)

3. Independent claim 11

Koutrokois discloses every limitation of claim 11.

a. Claim 11[Preamble]

The preamble of claim 11 is identical to the preamble of claim 1, which is disclosed by Koutrokois. *See* Section VII.B.1.a, above.

b. Claim term 11[a]

Claim term 11[a] is identical to claim term 1[a], which is disclosed by Koutrokois. *See* Section VII.B.1.b, above.

c. Claim term 11[b]

Claim term 11[b] is identical to claim term 1[b], which is disclosed by Koutrokois. *See* Section VII.B.1.c, above.

d. Claim term 11[c1]

Claim term 11[c1] is identical to claim term 1[c1], which is disclosed by Koutrokois. *See* Section VII.B.1.d, above.

e. Claim term 11[c2]

Claim term 11[c2] is identical to claim term 1[c2], which is disclosed by Koutrokois. *See* Section VII.B.1.e, above.

f. Claim term 11[c3]

Claim term 11[c3] is identical to claim term 1[c3], which is disclosed by Koutrokois. *See* Section VII.B.1.f, above.

g. Claim term 11[c4]

Claim term 11[c4] is identical to claim term 1[c4], which is disclosed by Koutrokois. *See* Section VII.B.1.g, above.

h. Claim term 11[d]

Koutrokois discloses driver 220 (bail) that pivots between a latched and unlatched position on the extending arm of the fastening component (follower 304) via a pivot shaft (protrusions 218). Ex. 1004, ¶¶[0039], [0040], Figs. 3A-3D. Tsai discloses pull handle 300 (bail) that is connected to a pivot shaft provided on linkage

arm 210 of sliding component 200 (fastening component). Ex. 1005, 4:58-5:2, Figs. 1-3, 6.

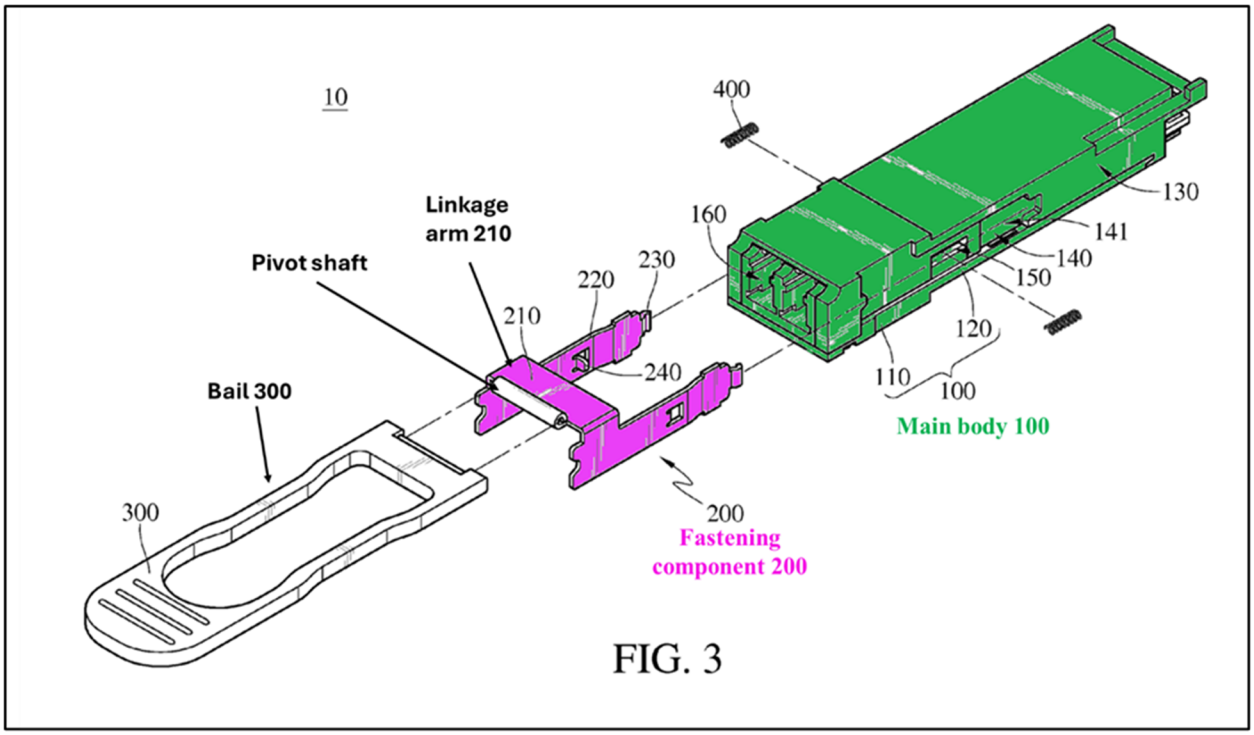


FIG. 3

Ex. 1005, Fig. 3 (annotations added)

Tsai additionally discloses that pulling handle 300 (bail) has a horizontal position (shown in Figures 1 and 2), to allow the bail to be pulled for removal of the optical transceiver module 10 from socket 20 (cage), and an upright position (shown in Figure 6) to allow for installation or removal of optical fiber connectors into the optical transceiver module. Ex. 1005, 4:58-5:2, 5:8-16. Koutrokois's bail 220, although pivoted on the extending arms instead of the linkage arm, has a horizontal position (shown in Figure 3D) to allow the optical module to be unlatched, and an upright position (shown in Figure 3A) when the optical transceiver module is latched

with the cage. Ex. 1004, ¶¶[0039], [0040]. When Koutrokois is modified in view of Tsai, Koutrokois's bail would pivot up or down relative to the head part of the optical transceiver module. Ex. 1007, ¶163.

4. Claim 12

Tsai discloses that pulling handle 300 (bail) has an upright position (shown in Figure 6) to allow for installation or removal of optical fiber connectors into the optical transceiver module. Ex. 1005, 4:63-5:2. Tsai further discloses that "the pull handle is pivoted about the sliding component so that the pull handle is located in front of the main body or on the top of the main body. … The pull handle does not interfere with the optical fiber plug when located on the main body." *Id*., 5:8-16. This would indicate to a POSITA that the bail (pull handle 300) of Tsai is configured to remain in the upright position on top of the main body without application of external force. Ex. 1007, ¶164. The same would apply to Koutrokois's bail 220 modified in view of Tsai. *Id.*

VIII. MANDATORY NOTICES

A. Real Parties-in-Interest

The real parties-in-interest for this Petition are Eoptolink Technology USA Inc. and Eoptolink Technology Inc., Ltd.

B. Related Matters

To Petitioner's knowledge, the '818 patent is involved in the following:

Name	Number	Court	Filed
Applied Optoelectronics, Inc. v. Eoptolink Technology USA Inc.	5:24-cv-08165	N.D. Cal.	Nov. 19, 2024

C. Lead and Back-Up Counsel

Lead Counsel	Back-Up Counsel
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D. Service Information

Please address correspondence to counsel at the email addresses above. Petitioner consents to service by e-mail.

IX. STANDING

The ’818 patent is eligible for IPR and Petitioner is not barred or estopped from requesting IPR challenging the patent claims on the grounds identified herein.

X. CONCLUSION

For the foregoing reasons, claims 1-12 of the ’818 patent should be cancelled.

Dated: November 5, 2025

Respectfully submitted,

/*Arpita Bhattacharyya*/
Arpita Bhattacharyya, Reg. No. 63,681
Counsel for Petitioner

CERTIFICATION UNDER 37 C.F.R. § 42.24(d)

Pursuant to 37 C.F.R. § 42.24(a)(1)(i), the undersigned hereby certifies that the foregoing **Petition for *Inter Partes* Review** contains 13,903 words, excluding the parts of this Petition that are exempted under 37 C.F.R. § 42.24(a), as measured by the word-processing system used to prepare this paper.

/Arpita Bhattacharyya/
Arpita Bhattacharyya, Reg. No. 63,681
Counsel for Petitioners

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(a), the undersigned certifies that on November 5, 2025, a copy of the foregoing Petition for *Inter Partes* Review, the associated power of attorney, and Exhibits 1001-1007 were served by FedEx Priority Overnight on the correspondence address of record indicated in the Patent Office's website for U.S. Patent No. 10,578,818:

APPLIED OPTOELECTRONICS, INC.
13115 Jess Pirtle Blvd.
Sugar Land, TX 77478

Courtesy copies were provided to Patent Owner's litigation counsel via email at the following addresses:

Jo Dale Carothers, JCarothers@weintraub.com
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Date: November 5, 2025

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