

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CAMBRIDGE INDUSTRIES USA INC.,
Petitioner

v.

APPLIED OPTOELECTRONICS, INC.,
Patent Owner

Case No. IPR2025-00433
U.S. Patent No. 9,523,826

**DECLARATION OF DR. ANDREW G. KIRK IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 9,523,826**

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TABLE OF EXHIBITS

Exhibit	Short Name	Description
Ex. 1001	'826 Patent	U.S. Patent No. 9,523,826
Ex. 1002	'826 File History	File History of U.S. Patent No. U.S. Patent No. 9,523,826
Ex. 1003	Kirk Declaration	Declaration of Dr. Kirk
Ex. 1004	Kirk CV	<i>Curriculum Vitae</i> of Dr. Kirk
Ex. 1005	Wu	Chinese Patent No. CN201820017
Ex. 1006	—	Wu English translation
Ex. 1007	Mizue	U.S. Patent No. 7,201,520
Ex. 1008	Scheduling Order	Scheduling Order dated August 7, 2024, in <i>Applied Optoelectronics, Inc. v. Cambridge Industries USA, Inc.</i> , No. 3:24-cv-01010-JD (N.D. Cal.)

DECLARATION OF DR. ANDREW G. KIRK

I, Andrew G. Kirk, do hereby declare and say as follows:

I. Introduction

1. My name is Dr. Andrew G. Kirk, and I have been retained as a technical expert by counsel for Petitioner Cambridge Industries USA Inc. (“CIG USA”) to address certain issues regarding U.S. Patent No. 9,523,826 (“the ’826 Patent”).

2. I have personal knowledge of the facts contained in this Declaration, am of legal age, and am otherwise competent to testify.

3. Unless otherwise stated, the matters contained in this Declaration are of my own personal knowledge and, if called as a witness, I could and would testify completely and truthfully with regard to the matters set forth herein.

4. My opinions are based on my years of education, research, and experience, as well as my study of the relevant materials. A list of materials I considered is included at the beginning of this Declaration.

5. I reserve all available rights to supplement this Declaration if further information becomes available, or if I am asked to consider additional information. This Declaration represents only those opinions I have formed to date.

6. Further, I reserve all available rights to consider and comment on any additional expert statements or testimony of Patent Owner’s expert(s) in this matter.

7. I am being compensated at my usual consulting rate of \$400 per hour for my time spent working on issues in this matter. My compensation does not depend on the outcome of this matter or the opinions I express.

II. Qualifications

8. A true and correct copy of my curriculum vitae is submitted herewith as Ex. 1004.

9. I have over 30 years of experience in communications and signal processing. I am currently a Professor in the Department of Electrical & Computer Engineering, Photonics Systems Group, at McGill University in Montreal, Canada. I graduated with Honors from University of Bristol, United Kingdom in 1989 with an B.Sc. in Physics and went on to receive a Ph.D. from King's College, London, in 1992 in Physics. The title of my thesis was "Diffractive optical elements within parallel optical systems" I conducted Post-Doctoral research in reconfigurable optical interconnects for parallel processing applications at the University of Tokyo as a JGF Research Fellow and in design, analysis, and packaging of parallel optical interconnects in an HCM Fellowship at Vrije Universiteit Belgium, Brussels.

10. In 1996, I joined McGill University as an Assistant Professor in the Department of Electrical and Computer Engineering, and in 2002, I was promoted to Associate Professor.

11. In 2006, I became Associate Dean for Research and Graduate

Education, Faculty of Engineering, and in 2011 was promoted to Professor in the Department of Electrical and Computer Engineering. My teaching responsibilities include courses in fiber-optic communications, free-space optical systems, optoelectronics, quantum optics, thermodynamics, and professional engineering.

12. I was awarded a William Dawson Scholar research chair by McGill in 2000, which was renewed in 2005. In 2011, I was appointed as a James McGill Professor (term ended in 2018). I was appointed as Department Chair in 2011 and again from 2013 to 2018 and served as Dean of the Faculty of Engineering (in an Interim position from 2011-2013). I have obtained academic appointments as a Visiting Researcher at the University of Glasgow (UK), University of Sydney (Australia), Universidad Politécnica de Valencia (Spain) and Lady Davis Institute of the Jewish General Hospital, Montreal.

13. My responsibilities as a member of the Photonics Systems Group included leading a \$800,000 research program involving approximately 5 faculty members and supervising 6 doctoral and post-doctoral students.

14. In addition to the activities, education, and professional experience listed above, I have been involved in several research projects that contribute to my expertise relating to fiber-optic communications.

15. I have received numerous awards such as James McGill Professor, the William and Reah Seath Award for Engineering Innovation and the NSERC

Synergy Award (as part of a team). I am a Member of the SYTACom Research Center. I have contributed to advances in the design of integrated optical wavelength demultiplexers and switches, to microelectromechanical optical systems, optical sensor devices and signal processing for optical sensors.

16. My research interests include passive and active components for fiber-optic communications systems, optical packaging techniques and optical sensor devices. I have extensive experience researching and teaching about optics and photonics, optical signal processing and packaging. I also have experience with optical transceiver modules, including pluggable-type modules.

17. To date, I have published book chapters on optical Interconnects and reviews in the area of fiber optic communications systems. In addition, I have published more than 150 papers in conference proceedings and more than 100 peer-reviewed journal papers. I am also a named inventor on three patents including fiber-optic communications.

18. I have previously consulted for several major companies in the field of optical fiber communications technology, including Nortel, JDSU, Corning and Accelight Networks.

19. Through my work, I have earned the respect of the optical communication and electrical engineering community more broadly. I served as an Elected Member of the Board of Governors of the IEEE Photonics Society and as

Chair of the IEEE Photonics Society Nanotechnology Committee. I have served as Board Member for several technical organizations including PROMPT-Quebec, CQRDA and CRIAQ.

III. Scope of the Engagement

20. I have been retained by Eversheds Sutherland (US) LLP on behalf of CIG USA to provide various analyses and opinions. Among other tasks, I have been asked to address the technology claimed in the '826 Patent and to evaluate whether certain claims of the '826 Patent would have been regarded as lacking novelty or would have been obvious to a person of ordinary skill in the art.

21. All of the opinions I express in this Declaration have been made from the standpoint of a person of ordinary skill in the relevant art at the time of the invention of the '826 Patent, which I am informed is, for purposes of the '826 Patent, is October 2, 2013.

22. I have been asked to identify the level of skill in the art pertinent to the '826 Patent. It is my opinion that a person of ordinary skill in the art pertinent to the '826 Patent would have had at least a bachelor's degree in electrical engineering, computer engineering, or similar discipline and had approximately two years of experience with optical communications and networks. Additional graduate education might substitute for experience. A person with a different degree but with additional relevant experience could still qualify if the additional

experience compensates for the different educational background. Such a POSITA would have had knowledge of design considerations known in the optical industry and would have been familiar with then-existing products and solutions and would have understood how to search available literature for relevant publications.

23. A POSITA in October 2013 would have been familiar with hot pluggable optical transceiver modules. The '826 Patent concerns itself with specific features that a pluggable optical module would have to be compatible with a socket, as well as features that fasten and secure the module in an aligned position with respect to a socket upon insertion of the module into the socket, and features to release the module from the fastened position within the socket. Thus, a POSITA in October 2013 would have been familiar with both hot pluggable optical transceiver modules as well as the features that align the module with a socket, and those that secure and release the module in relation to a socket.

24. I consider myself a person of ordinary skill in the art as of at least the earliest claimed priority date (October 2, 2013) and for many years before that.

25. My opinions regarding the level of ordinary skill in the art are based on, among other things, my more than 30 years of experience in optical networks and components therefor, my understanding of the basic qualifications that would be relevant to an engineer or scientist tasked with investigating optical networks and components therefor, my knowledge and experience with the capabilities of such

systems by 2013, and my familiarity with the backgrounds of colleagues, both past and present. Although my qualifications and experience exceed those of the hypothetical person having ordinary skill in the art defined above, my analysis and opinions regarding the '826 Patent have been based on the perspective of a person of ordinary skill in the art as of around October 2013. I am able to take on that perspective based on my experience as I have worked with individuals who had this level of experience in the 2013-time frame and am familiar with their level of knowledge.

26. My opinions are also based on the information I have reviewed as of the date of this Declaration. In connection with my analysis, I have reviewed the exhibits listed in the above list of exhibits, as well as each of the items referenced herein. I attest that the foregoing exhibits are true and accurate copies that I downloaded. My opinions directed to the invalidity of the challenged claims are based, at least in part, on the following patents and publications:

- **“Wu”** Ex. 1005, which is Chinese Patent No. CN 201820017U, filed on October 19, 2010, issued on May 4, 2011, and its English language translation, Ex. 1006.
- **“Mizue”** Ex. 1007, which is U.S. Patent No. 7,201,520, filed on May 27, 2004, and issued on April 10, 2007.

IV. Legal Standards

27. For purposes of this Declaration, counsel for CIG USA have instructed me to make the following assumptions:

28. Claims are construed from the perspective of a person of ordinary skill in the art (“POSITA”) as of the effective filing date of the patent application. Persons of ordinary skill in the art are deemed to read the claims in the context of the entire patent, including the specification and prosecution history. In other words, the terms are not considered in a vacuum.

29. It is my understanding that information that satisfies one of the categories of prior art set forth in 35 U.S.C. § 102 may be used in an invalidity analysis under §§ 102 or 103. If information is not properly classified as prior art under one of the subsections of § 102 of the Patent Act, then it may not form the basis of an anticipation or obviousness determination. It is also my understanding that, for *inter partes* review, applicable prior art is limited to patents and printed publications.

30. I am informed and understand that a patent claim is invalid under 35 U.S.C. § 102 if a single item of prior art discloses all of the limitations set forth in a patent claim, arranged as set forth in the claim. I understand that a POSITA may take into account technical knowledge that would have been well known to those of skill in the relevant art when considering the disclosures of a patent and that

applying such knowledge to the disclosure of a reference still qualifies as anticipation. I understand from counsel that this is sometimes referred to as “single reference obviousness,” but in this case the motivation to combine comes from the single reference itself when properly interpreted by those of skill in the art.

31. I am also informed that a patent claim is invalid under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a POSITA to which the subject matter pertains. Obviousness, I am informed, is determined based on the scope and content of the prior art, the differences between the prior art and the claim, the level of ordinary skill in the art, and secondary indications of non-obviousness to the extent they exist.

32. I understand that whether there are any relevant differences between the prior art and the claimed invention is to be analyzed from the view of a POSITA at the time of the invention. A POSITA is a hypothetical person who is presumed to be aware of all of the relevant art at the time of the invention. The POSITA is not an automaton and may be able to fit together the teachings of multiple patents (or other printed publications) by employing ordinary creativity and the common sense that familiar items may have obvious uses in another context or beyond their primary purposes.

33. In analyzing the relevance of the differences between the claimed invention and the prior art, I understand that I must consider the impact, if any, of such differences on the obviousness or non-obviousness of the invention as a whole, not merely some portion of it. The POSITA faced with a problem is able to apply his or her experience and ability to solve the problem and also look to any available prior art to help solve the problem.

34. I understand that an invention would have been obvious if a POSITA, facing the wide range of needs created by developments in the field, would have seen an obvious benefit to the solutions tried by the patent applicant. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, it would have been obvious to a POSITA to try the known options. If a technique has been used to improve one device, and a POSITA would recognize that it would improve similar devices in the same way, using the technique would have been obvious.

35. I understand that I do not need to look for precise teachings in the prior art directed to the subject matter of the claimed invention. I understand that I may consider the inferences and creative steps that a POSITA would have employed in reviewing the prior art at the time of the invention. For example, if the claimed invention combines elements that were known in the prior art and if the combination yields results that were predictable to a POSITA at the time of the invention, then

this would make it more likely that the claim was obvious. On the other hand, if the combination of known elements yields unexpected or unpredictable results, or if the prior art teaches away from combining the known elements, then this would make it more likely that the claim that successfully combined those elements was not obvious. I understand that hindsight must not be used when comparing the prior art to the invention during an obviousness analysis.

36. I understand that obviousness may be shown by demonstrating that it would have been obvious to modify what is taught in a single piece of prior art to create the patented invention. Obviousness may also be shown by demonstrating that it would have been obvious to combine the teachings of more than one item of prior art. I understand that a claimed invention may be obvious if some teaching, suggestion, or motivation exists that would have led a POSITA to combine the invalidating references. I also understand that this suggestion or motivation may come from sources such as explicit statements in the prior art, or from the knowledge of a POSITA. Alternatively, any need or problem known in the field at the time and addressed by the patent may provide a reason for combining elements of the prior art. I also understand that when there is a design need or market pressure, and there are a finite number of predictable solutions, persons of ordinary skill may be motivated to apply both their skill and common sense in trying to combine the known options in order to solve the problem.

37. I understand that absent evidence of an invention date prior to the filing date of a patent, the invention date of the patent is presumed to be its filing date. A prior invention requires a complete conception of the invention and a reduction to practice of that invention. The patent owner has the burden of establishing by clear and convincing evidence a date of conception earlier than the filing date of the patent.

V. Technical Background

38. In this technical background, I describe the pertinent technology as it existed as of October 2013, the earliest alleged priority date of the '826 Patent.

39. The '826 Patent generally relates to an optical transceiver module configured to be inserted into a slot in an optical communication system. The module has specific characteristics that enable hot pluggability and flexible interchangeability within a larger communication architecture, as well as features to align the module when inserted into a socket, fasten the module to secure its position within the socket, and release the module when removing the module from the socket. Such arrangements, and the use thereof, were well-known to persons of skill in the art (POSITAs) of optical transceiver module design at the time the application that matured into the '826 Patent was filed.

40. As I will describe, all these ideas were well known to a POSITA at the time of the alleged invention.

a. Pluggable Optical Transceiver Modules

41. An optical-to-electrical interface is where electrical and fiber cables are connected to one another via an optical transceiver module. To allow the electrical and fiber cables to communicate with one another, the optical transceiver module converts between optical and electrical signals. Ex. 1001, 5:21-6:23.

42. For example, a transceiver module includes an optical transmitter and optical receiver. *Id.* The transmitter receives electrical signals and converts them to optical signals. The receiver receives optical signals and converts them to electrical signals. The transmitter and receiver, which together form the transceiver, thus send signals back and forth across the electrical-to-optical interface, allowing communication between the electrical components and optical fibers. *Id.*

43. Traditionally, optical transceiver modules were unable to be freely interchanged between sockets in a communication network or architecture. But as optical networks garnered increased popularity, the market requirement to grow the capacity of network equipment required that the versatility and mobility of the components of network equipment improve. This requirement manifested itself in a need to improve the versatile compatibility of the optical transceiver modules to be quickly interchangeable between sockets, which led to the creation of hot pluggable optical transceiver modules device.

44. Pluggable optical transceiver modules are fiber optic modules that

use fiber optic technology to transmit and receive data, converting the data from optical form to electronic form or from electronic form to optical form. Optical transceiver modules are typically components of a wired communication network. In particular, pluggable optical transceiver modules are components that are integrated into a modern high speed communication network when inserted into a corresponding socket, thereby facilitating an electrical-to-mechanical interface. Features to align and secure optical modules in the sockets to allow for a functional electrical-to-mechanical interface were well-known.

45. As I demonstrated herein, a POSITA in 2013 would have been aware that the structural and functional features recited in claims 1-7 of the '826 Patent were well-known in the communications industry prior to the earliest effective filing date of the '826 Patent, October 2, 2013.

VI. The '826 Patent

46. The '826 Patent is generally directed pluggable optical transceiver module configured to be inserted into a slot in an optical communication system. Ex. 1001, Abstract. Specifically, the '826 Patent includes a main body and a sliding component, wherein the main body has two side surfaces and two sliding slots, and the main body is configured to be inserted into the slot. *Id.* The '826 Patent further discloses that the sliding component features a linkage arm and two extending arms that are connected to the linkage arm, with each extending arm having a second

fastening part. *Id.* Additionally, the '826 Patent discloses that the two extending arms are slidably positionable to a fastening position and a releasing position. *Id.*

47. I have been asked to evaluate Claims 1-7 of the '826 Patent. I have reproduced these challenged claims on the following pages:

Claim	Recitation
[1a]	A pluggable optical transceiver module, for being inserted into a plugging slot of a socket, the socket comprising two first fastening parts located in the plugging slot, the pluggable optical transceiver module comprising:
[1b]	a main body having two side surfaces that are opposite to each other and two sliding slots located at the two side surfaces, respectively, wherein the main body is configured to be inserted into the plugging slot, wherein the main body has at least one limiting space and two bottom surfaces forming the two sliding slots, respectively, the two bottom surfaces are parallel to the two side surfaces, the at least one limiting space is located at one of the two side surfaces;
[1c]	a sliding component comprising a linkage arm and two extending arms, wherein the two extending arms are connected to two ends of the linkage arm, respectively, each extending arm has a second fastening part, the main body is between the two extending arms, the two extending arms are slidably disposed on the two sliding slots to have a fastening position and a releasing position, the two first fastening parts are fastened to the two second fastening parts when the two extending arms are located at the fastening position, and the two second fastening parts press the two first fastening parts, respectively, to make the two first fastening parts be farther away from each other when the two extending arms are located at the releasing position, wherein each extending arm has a limited part configured to move in the at least one limiting space; and
[1d]	an elastic component, wherein the main body has a first limiting surface and a second limiting surface forming the limiting space, the first limiting surface is closer to the head part than the second limiting surface, and the elastic component is located in the limiting space and between the first limiting surface and the limited part and is covered by the extending arm such that the elastic component is confined by the main body and the sliding component.

Claim	Recitation
[2]	The pluggable optical transceiver module according to claim 1, wherein the main body comprises a head part and an inserted part connected to each other, the inserted part is configured to be inserted into the socket, the two side surfaces are located at two sides of the head part and the inserted part opposite to each other, respectively, wherein both the two sliding slots extend from the head part towards the inserted part, and the two extending arms are able to slide relative to the two sliding slots to have the fastening position which is farther away from the head part and the releasing position which is closer to the head part.
[3]	The pluggable optical transceiver module according to claim 2, wherein each second fastening part has a fastening surface, and a distance between one side of the fastening surface which is close to the side surface and the head part is less than a distance between another side of the fastening surface which is far away from the side surface and the head part.
[4]	The pluggable optical transceiver module according to claim 2, wherein the head part has at least one optical fiber terminal.
[5]	The pluggable optical transceiver module according to claim 1, further comprising two elastic components, wherein the number of the at least one limiting surface is two the main body has two first limiting surfaces and two second limiting surfaces forming the two limiting spaces together, respectively, the two first limiting surfaces are closer to the head part than the two second limiting surfaces, the two elastic components are located in the two limiting spaces, respectively, and each elastic component is between the first limiting surface and the limited part.
[6]	The pluggable optical transceiver module according to claim 1, wherein the pluggable optical transceiver module further comprises a pull handle pivoted on the linkage arm of the sliding component.

Claim	Recitation
[7a]	A pluggable optical transceiver module, comprising:
[7b]	a main body having a head part and an inserted part that are connected to each other, wherein the main body further comprises opposite two side surfaces and two sliding slots which are located at two sides of the head part and the inserted part opposite to each other, respectively, the two sliding slots are located at the two side surfaces, and the two sliding slots extend from the head part to the inserted part, respectively, wherein the main body has at least one limiting space and two bottom surfaces forming the two sliding slots, respectively, the two bottom surfaces are parallel to the two side surfaces, the at least one limiting space is located at one of the two side surfaces;
[7c]	a sliding component comprising a linkage arm and two extending arms, wherein the linkage arm is connected between the two extending arms, each extending arm has a second fastening part, the main body is between the two extending arms, the two extending arms are able to slide relative to the two sliding slots to have a fastening position which is farther away from the head part and a releasing position which is closer to the head part, wherein each extending arm has a limited part configured to move in the at least one limiting space; and
[7d]	an elastic component, wherein the main body has a first limiting surface and a second limiting surface forming the limiting space, the first limiting surface is closer to the head part than the second limiting surface, and the elastic component is located in the limiting space and between the first limiting surface and the limited part and is covered by the extending arm such that the elastic component is confined by the main body and the sliding component.

VII. Prosecution History

48. Patent Owner filed Application No. 14/504,500 (the “’500 Application”) on October 2, 2014, claiming priority to Taiwanese patent application 102135723, filed October 2, 2013. Ex. 1001, cover.

49. Prosecution of the ’826 Patent involved very little back and forth between the Patent Owner and the Patent Examiner. *See generally*, Ex. 1002. After

completion of the filing formalities for the '500 Application, a Non-final Office action was mailed on March 31, 2016, rejecting application claims 1-4 and 9 as anticipated by U.S. Patent Application Publication US 2011/0081114 to Togami et. al (“Togami”). Ex. 1002, pp. 83-87. The Non-final Office action also rejected application claims 5-8 as obvious over Togami in view of U.S. Patent 7,201,520 (“Mizue”). Ex. 1002, pp. 88–90.

50. In an Amendment filed August 1, 2016, Patent Owner canceled application claims 5 and 6 and amended application claims 1 and 9 to incorporate the limitations of as-filed application claims 5 and 6. Patent Owner further amended application independent claims 1 and 9 to clarify that the “elastic component is confined by the main body and the sliding component.” Ex. 1002, pp. 67-70. The Amendment also amended application claims 7 and 8 to depend from application claim 1, rather than canceled application claim 5. Ex. 1002, p. 68.

51. A Notice of Allowance was mailed on August 12, 2016. The Notice of Allowance included a Notice of Allowability, which stated: “The prior art of record, which is the most relevant prior art known, does not disclose or render obvious the pluggable optical transceiver module defined in claim 1 or the pluggable optical transceiver module defined in claim 9, **wherein the elastic component is located in the limiting space and between the first limiting surface and the limited part and is covered by the extending arm such that the**

elastic component is confined by the main body and the sliding component in combination with *all* of the limitations of claim 1 or of claim 9, respectively.” Ex. 1002, p. 49 (emphasis in original)

52. The Issue Fee was paid on November 14, 2016, and the ’826 Patent issued on December 20, 2016.

VIII. Claim Construction

51. I am informed by counsel for CIG USA that in an *Inter Partes Review*, claims should be construed “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. §282(b).” 37 C.F.R. §42.100(b) (Nov. 13, 2018). Unless otherwise specified in the patent under review, the terms should receive their respective plain and ordinary meaning as understood by a person of ordinary skill in the art under *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005).

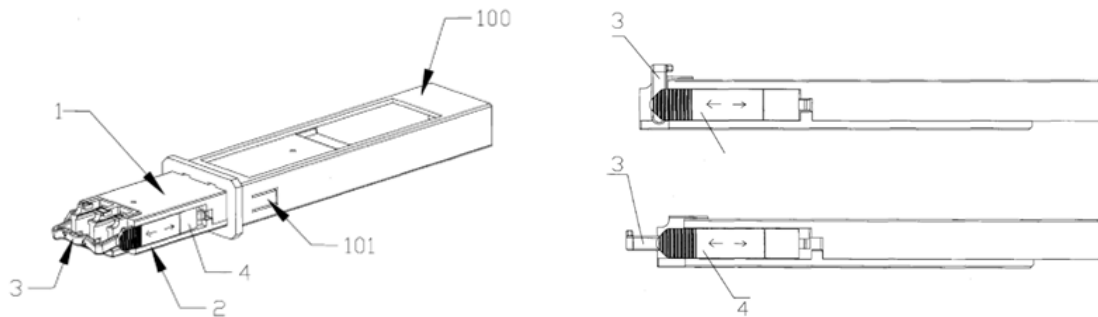
52. It is my opinion that the claim terms of the ’826 Patent are mostly functional and would not be recognized by a POSITA as having plain and ordinary meanings apart from the disclosure of the ’826 Patent. However, it is also my view that the claim terms can be reasonably well understood when mapped to the disclosure provided in the specification of the ’826 Patent, as demonstrated below, and thus no special constructions are required.

IX. Prior Art References

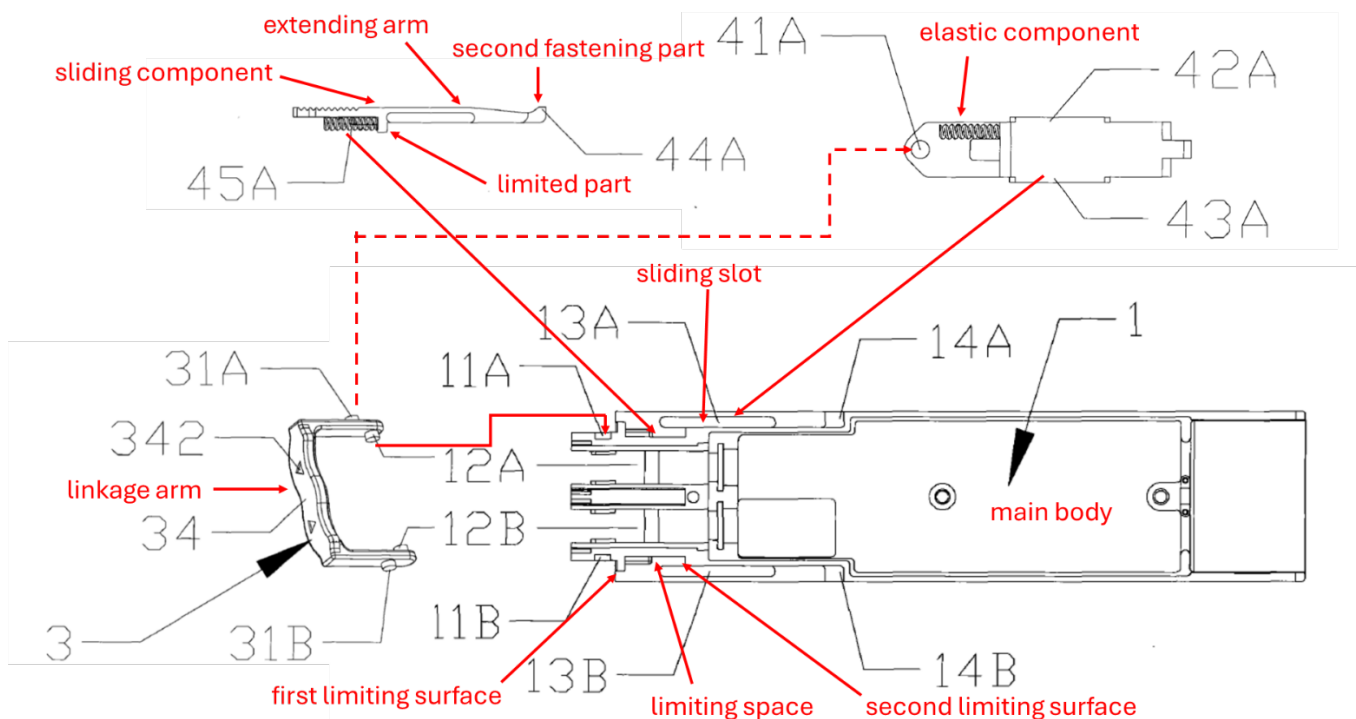
a. Wu Overview

53. Chinese Patent No. CN201820017 (“Wu”), Exhibit 1005, 1006 (English translation), is entitled “XFP optical transceiver integrated module,” was filed on October 19, 2010, and published on May 4, 2011. Ex. 1006, Abstract. I understand from counsel for CIG USA that Wu qualifies as prior art under 35 U.S.C. §102(a). Wu was not applied in a prior art rejection by the Patent Examiner during prosecution of the ’826 Patent.

54. Wu teaches a small form-factor, hot pluggable, integrated, optical transceiver module. Ex. 1005; Ex. 1006, Abstract. The module includes extending arms that slide in slots in either side of the module. The extending arms are joined to a rotatable handle, and each extending arm has a fastening part that engages a détente in a cage. Each of the extending arms is biased by a spring confined in a limiting space between the extending arm and two limit surfaces and is used to secure the module to the cage when the handle is operated. Ex. 1005, FIGS. 1-5; Ex. 1006, ¶¶ [0005], [0007], [0029]-[0031], [0033]-[0034], [0037]-[0038]. FIGS. 2, 8a and 8b of Ex. 1005 are reproduced on the following page.



55. An annotated composite of FIGS. 3, 5a, 5b and 6 is provided below, illustrating how the features of the Claim 1 of the '826 Patent correspond to the disclosure of Wu.



b. Mizue Overview

56. U.S. Patent No. 7,201,520 ("Mizue"), Exhibit 1007, was filed on May 27, 2004, and issued on April 10, 2007. I understand from counsel for CIG USA

that the Mizue patent qualifies as prior art under at least 35 U.S.C. §102(a)(2). Mizue was cited and considered by the Examiner in a Non-Final Office action during prosecution of the '826 Patent, but only as a secondary reference in combination with Togami. Ex. 1002, pp. 88–92.

57. During prosecution of the '826 Patent, the Patent Examiner cited to Mizue as disclosing “at least one limiting space (26p; see Figure 8) may be at each of the two side surfaces of a main body (26; see Figures 7 and 8) within sliding slots that receive extending arms (20a) of a sliding component (20), wherein each extending arm (20a) has a limited part (20g) configured to move in the at least one limitation space (26p) in cooperation with a spring (30) to secure the sliding component (20) within the slots of the main body (26) and prevent unintentional disconnection of the transceiver module from the socket (see Figures 7 and 8, and column 7, lines 4- 62 of Mizue et al.” Ex. 1002, p, 88. For the reasons I explain herein, a POSITA would have understood that Mizue anticipates, the '826 Patent.

58. Mizue teaches an optical module that is designed to be plugged into a slot a cage mounted on a host board. Ex. 1007, Abstract. The optical module of Mizue includes an optical subassembly that includes an optical device, such as a semiconductor laser diode or a semiconductor photodiode, a housing, a receptable body, and an actuator. Ex. 1007, 1:41-44.

59. As illustrated in annotated FIGS. 7 (below) and 9 (the following page), showing correspondence to the claim terms of the '826 Patent, Mizue discloses a pluggable optical module with a main body having sliding slots on its side surfaces and a sliding component having two extending arms joined by a linkage arm. Each of the extending arms slides in a sliding slot and includes a fastening part that engages the module cage. The main body defines a limiting space having first and second limiting spaces. Each extending arm includes a limited part that extends into the limiting space and engages a spring disposed therein. The spring is confined in the limiting space by the outer housing of the module. The sliding component is connected to a bail for engaging and disengaging the module into a cage that includes a first fastening component. *See* Ex. 1007, 3:19-4:36, 7:4-67.

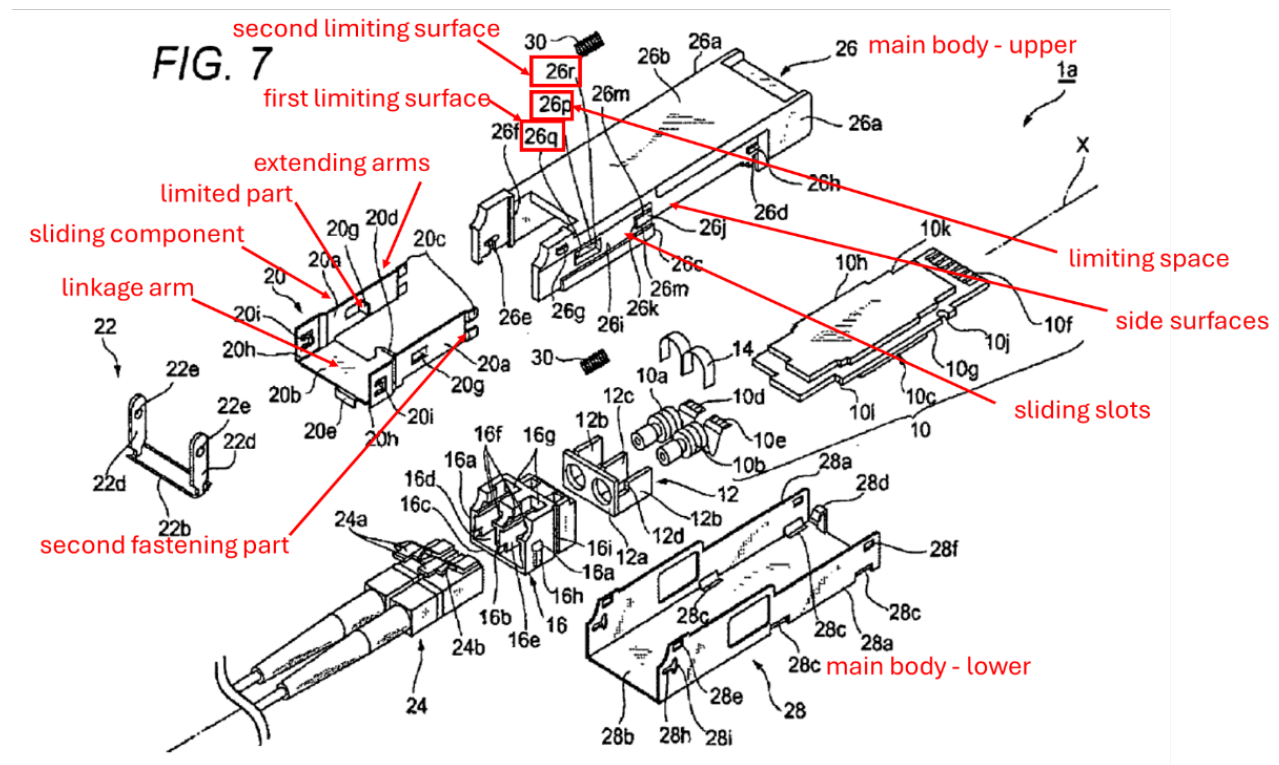
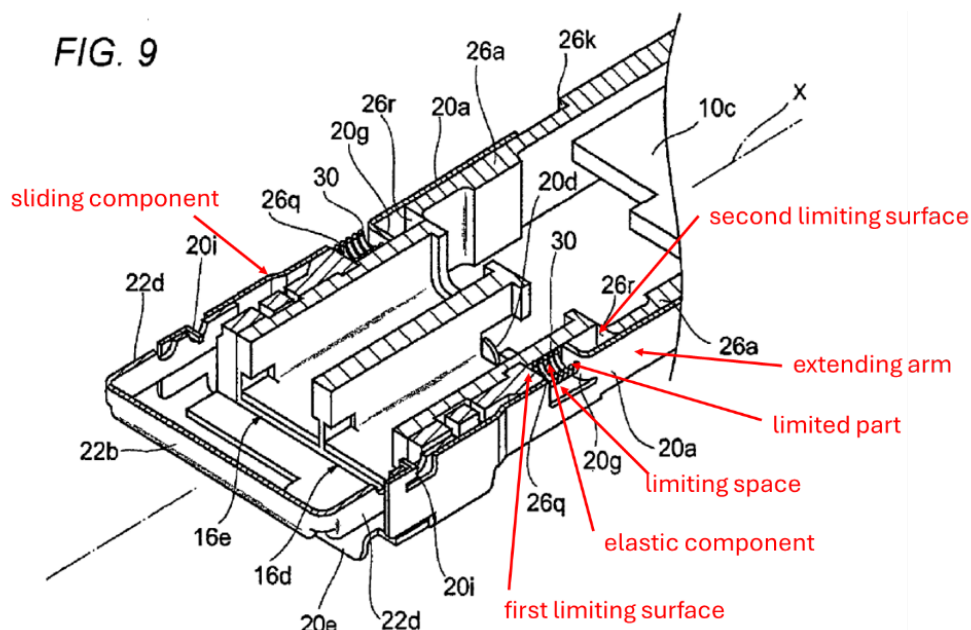


FIG. 9

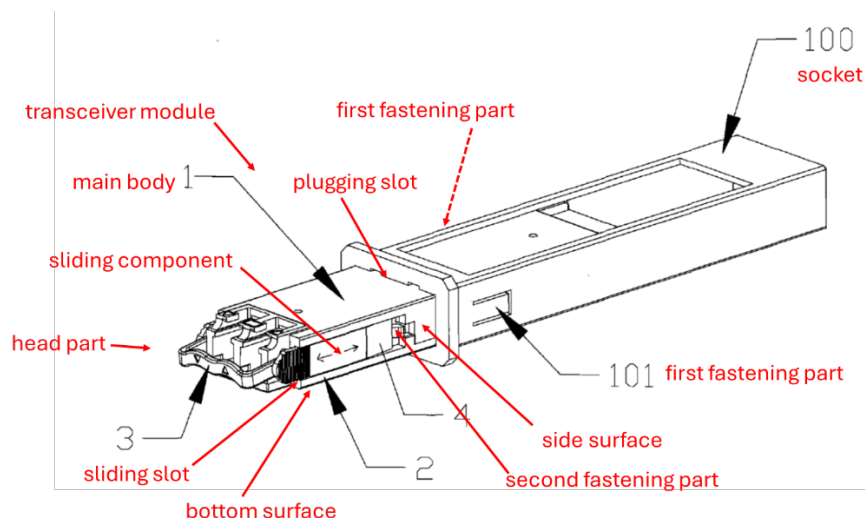


Ground	Reference	Claims
Ground 1	Wu	1-7
Ground 2	Mizue	1-7

a. Ground 1: Wu Anticipates Claims 1-7.

- i. Claim 1: [1a] A pluggable optical transceiver module, for being inserted into a plugging slot of a socket, the socket comprising two first fastening parts located in the plugging slot, the pluggable optical transceiver module comprising:**

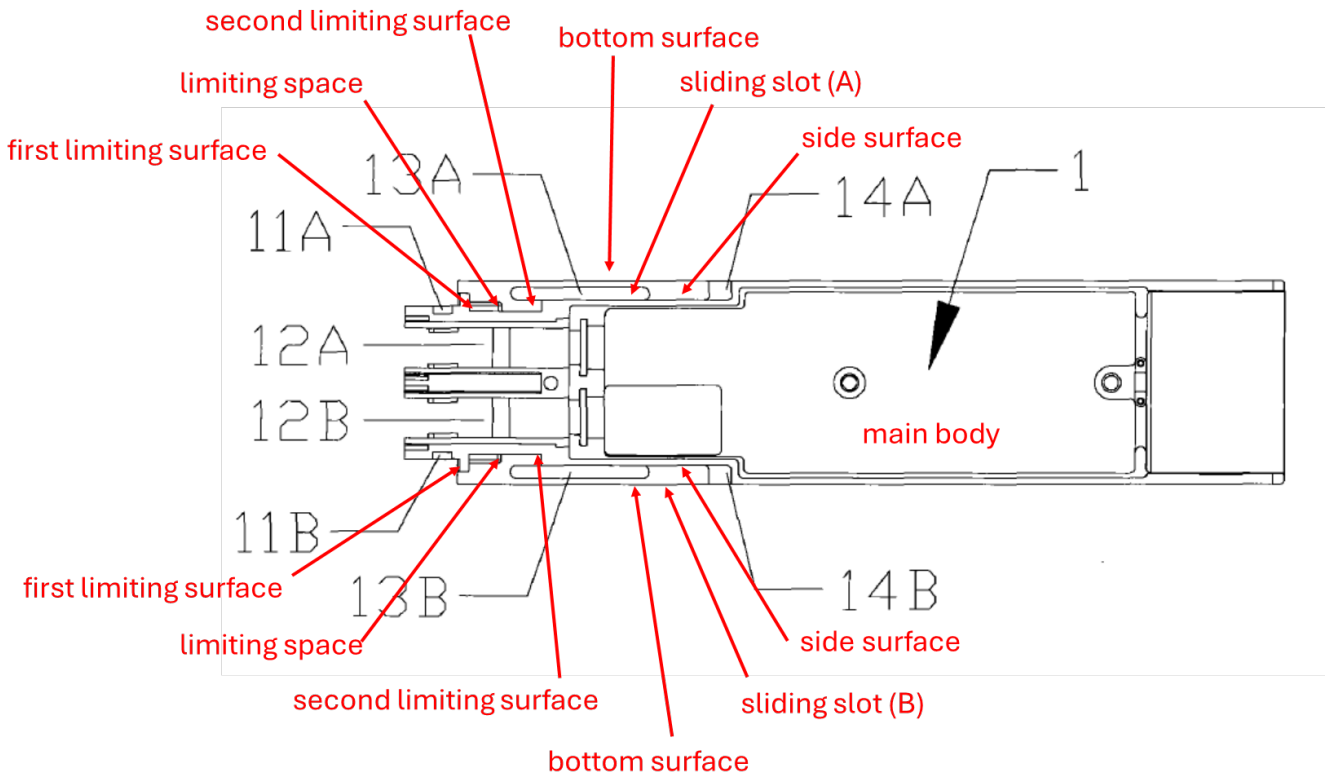
60. Wu discloses a pluggable optical transceiver module (1) configured to be inserted into a plugging slot of a socket (100). The socket (100) comprises two first fastening parts (101) located in the plugging slot that secure the module in the plugging slot. *See* Ex. 1005, FIGS. 1, 2 (annotated on following page); Ex. 1006, Abstract, ¶¶ [0005], [0029], [0037]-[0038].



Ex. 1005, FIG. 2 (annotated)

ii. **Claim 1: [1b] a main body having two side surfaces that are opposite to each other and two sliding slots located at the two side surfaces, respectively, wherein the main body is configured to be inserted into the plugging slot, wherein the main body has at least one limiting space and two bottom surfaces forming the two sliding slots, respectively, the two bottom surfaces are parallel to the two side surfaces, the at least one limiting space is located at one of the two side surfaces;**

61. Wu discloses that the pluggable optical transceiver module (1) includes a main body configured to be inserted into the plugging slot as illustrated above. *See* Ex. 1005, FIGS. 1-3; Ex. 1006, ¶¶ [0005], [0029], [0038]-[0039]. The main body has two side surfaces that are opposite to each other, each having a respective sliding slot located thereon. *Id.* The main body also has two bottom surfaces that are parallel to the two side surfaces and a limiting space located on each of the two side surfaces. *See* Ex. 1005, FIG. 3 (annotated on following page); Ex. 1006, ¶¶ [0007], [0030]-[0031], [0033].

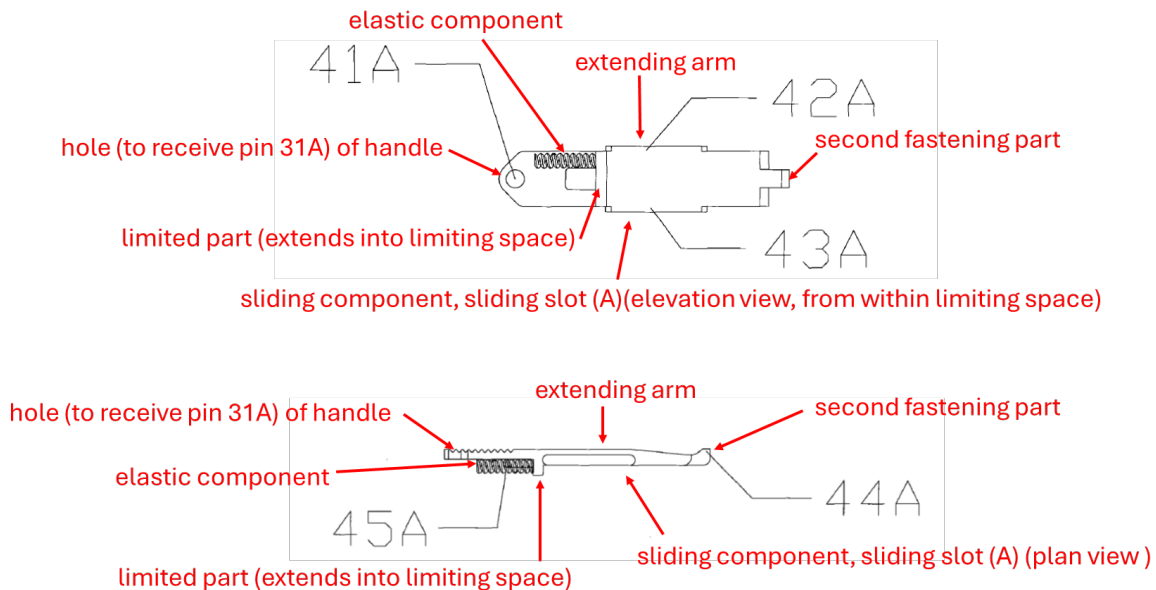


Ex. 1005, FIG. 3 (annotated)

iii. **Claim 1: [1c] a sliding component comprising a linkage arm and two extending arms, wherein the two extending arms are connected to two ends of the linkage arm, respectively, each extending arm has a second fastening part, the main body is between the two extending arms, the two extending arms are slidably disposed on the two sliding slots to have a fastening position and a releasing position, the two first fastening parts are fastened to the two second fastening parts when the two extending arms are located at the fastening position, and the two second fastening parts press the two first fastening parts, respectively, to make the two first fastening parts be farther away from each other when the two extending arms are located at the releasing position, wherein each extending arm has a limited part configured to move in the at least one limiting space; and;**

62. In my opinion, the sliding component comprises the two extending arms (disposed in the sliding slots on either side of the main body) together with

handle 3, which corresponds to the linkage arm. *See* Ex. 1005, FIGS. 1-3; Ex. 1006, ¶¶ [0033]-[0034], [0037]. As depicted in FIGS. 5a and 5b, reproduced below, each extending arm has a second fastening part for engaging the first fastening part in the socket. Ex. 1005, FIGS. 5a, 5b; Ex. 1006, ¶ [0033].



Ex. 1005, FIGS. 5a and 5b (annotated)

63. To my understanding, the two extending arms of Wu are slidably disposed in the sliding slots on either side of the main body (see FIG. 3, above) and have a fastening position and a releasing position. Ex. 1005, FIGS. 1 and 2; Ex. 1006, ¶¶ [0033]-[0034], [0037]-[0038]. When the extending arms are located at the fastening position, the two second fastening parts are fastened to the two first fastening parts of the socket. *Id.* When two second fastening parts press the two first fastening parts, the two first fastening parts are farther away from each other than when the two extending arms are located at the releasing position. *Id.* Such

operation of a pluggable module would have been well-known to a POSITA before the earliest effective filing date of the '826 Patent in October 2013.

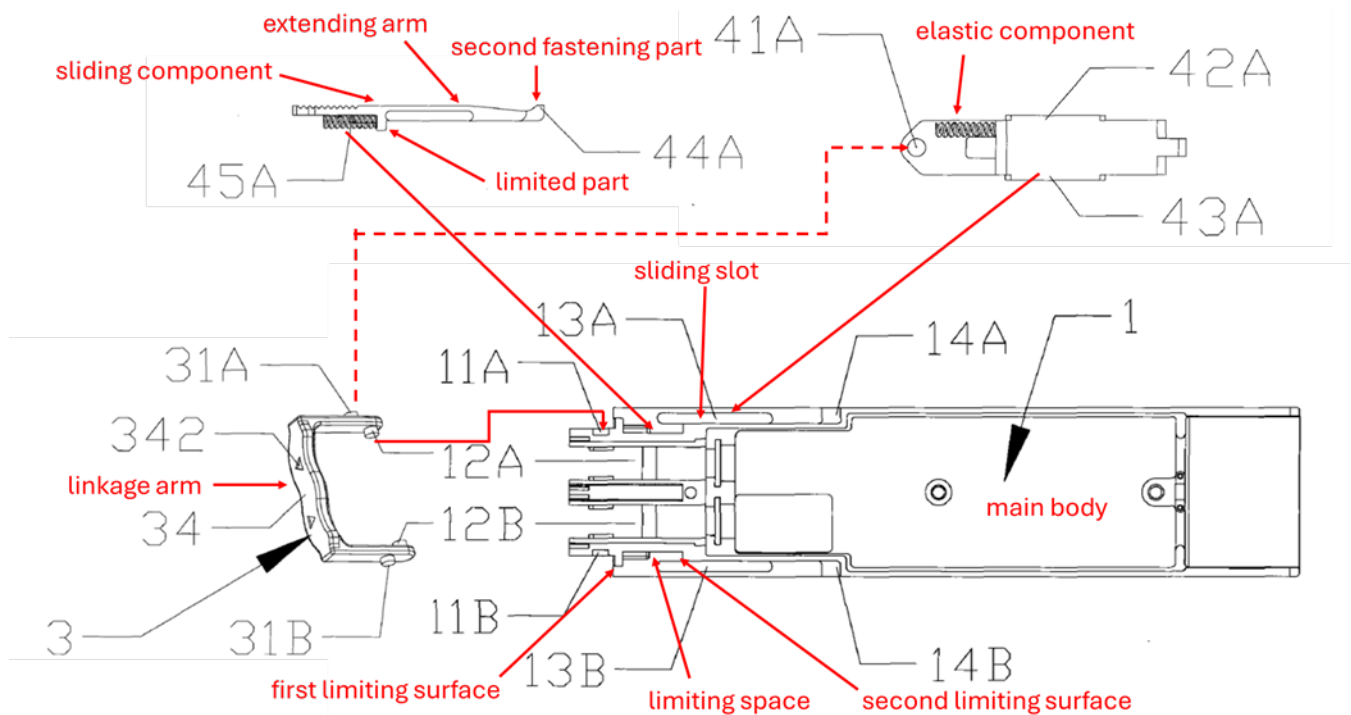
64. Further, in my opinion, a POSITA would have understood, and as indicated in the annotated versions of FIGS. 5a and 5b of Wu set forth above, the extending arm depicted in FIG. 5b is inserted in sliding slot (A) (see annotated version of FIG. 3 above), so that the elastic component and limited space are disposed in the limiting space. Ex. 1006, ¶¶ [0013], [0030]-[0031], [0033].

iv. Claim 1: [1d] an elastic component, wherein the main body has a first limiting surface and a second limiting surface forming the limiting space, the first limiting surface is closer to the head part than the second limiting surface, and the elastic component is located in the limiting space and between the first limiting surface and the limited part and is covered by the extending arm such that the elastic component is confined by the main body and the sliding component.

65. As discussed in the preceding paragraphs for Claim 1, Wu discloses the pluggable optical transceiver module (1) that includes an elastic component (45) disposed in the limiting space. *See* Ex. 1005, FIG. 3; Ex. 1006 ¶¶ [0033], [0037]-[0038]. Each of the limiting spaces is formed in the main body by a first limiting surface and a second limiting surface, wherein the first limiting surface is closer to a head part than the second limiting surface. *Id.*

66. And as further illustrated in the annotated composite of FIGS. 3, 5a, 5b and 6 of Wu on the following page, the elastic component is located in the limiting space between the first limiting surface and the limited part and is covered

by the extending arm (FIGS. 5a and 5b). Ex. 1005, FIGS. 5a, 5b; Ex. 1006 ¶¶ [0030], [0033]-[0034], [0037]-[0038]. As required by the Claim 1 of the '826 Patent, the elastic component is confined by the main body and sliding component.

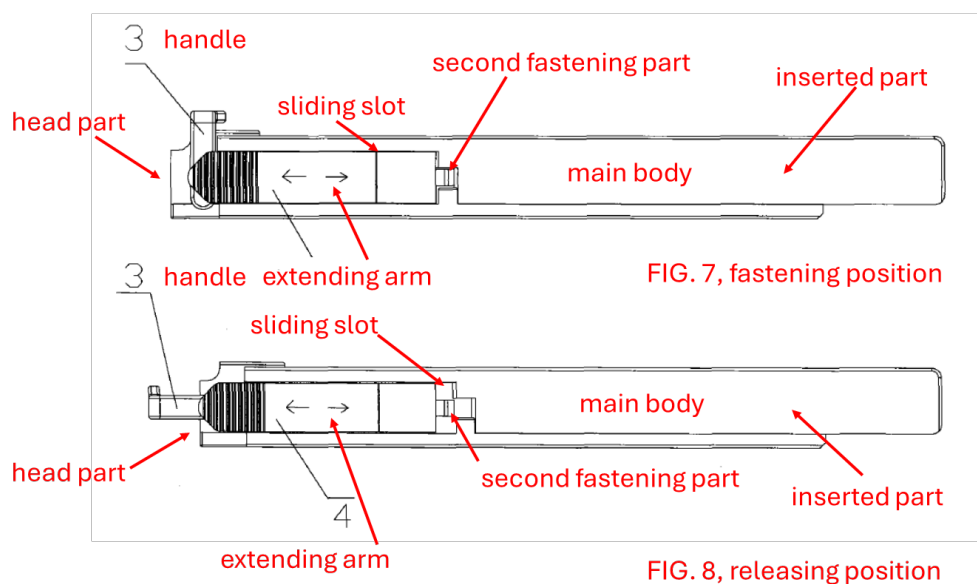


Ex. 1005, FIGS. 3. 5a, 5b, 6 (annotated composite)

v. **Claim 2:** The pluggable optical transceiver module according to claim 1, wherein the main body comprises a head part and an inserted part connected to each other, the inserted part is configured to be inserted into the socket, the two side surfaces are located at two sides of the head part and the inserted part opposite to each other, respectively, wherein both the two sliding slots extend from the head part towards the inserted part, and the two extending arms are able to slide relative to the two sliding slots to have the fastening position which is farther away from the head part and the releasing position which is closer to the head part.

67. In my opinion, the main body of Wu has a head part connected to an inserted part, such that the inserted part is inserted in the socket. See Ex. 1005,

FIGS. 1, 2; Ex. 1006, ¶¶ [0005], [0033], [0037]-[0038]. The two side surfaces are located at two sides of the head part and the inserted part opposite to each other, respectively. *Id.* Both of the two sliding slots extend from the head part towards the inserted part, and the two extending arms (FIGS. 5a and 5b) are configured to slide relative to the two sliding slots (4) to move between the fastening position, wherein the extending arms are farther away from the head part, and the releasing position, wherein the extending arms are closer to the head part. *See* Ex. 1005, FIGS. 7, 8 (annotated below); Ex. 1006, ¶¶ [0005], [0033], [0037]-[0039].

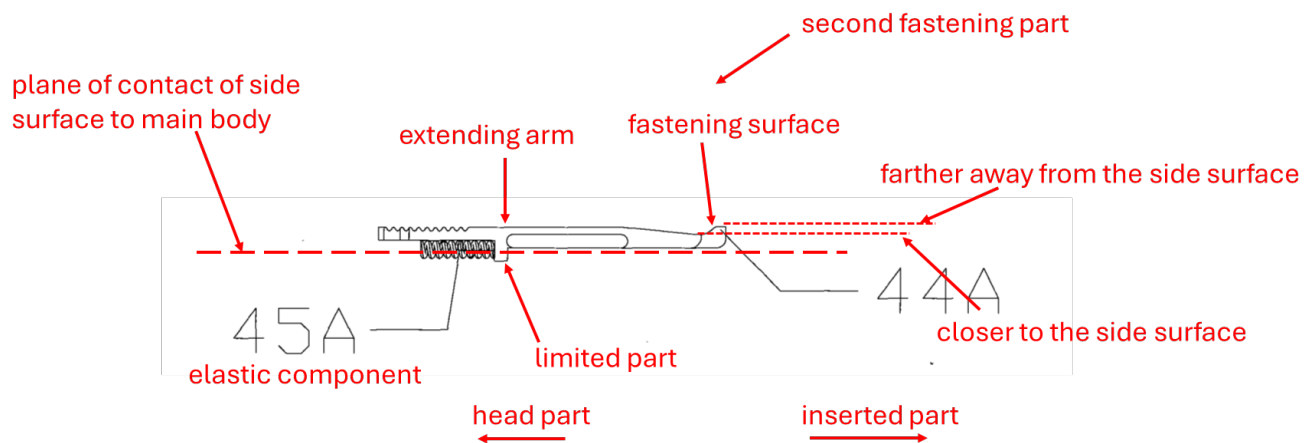


68. For the device of Claim 1, *see supra*, Sections X.a.i-iv. Accordingly, in my opinion, a POSITA would have understood that Wu anticipates Claim 2.

vi. Claim 3: The pluggable optical transceiver module according to claim 2, wherein each second fastening part has a fastening surface, and a distance between one side of the fastening surface which is close to the side surface and the head part is less than a distance between another side of the fastening surface which is far away from

the side surface and the head part.

69. In my opinion, Wu discloses each second fastening part has a fastening surface. *See* Ex. 1005, FIG. 1-3, 5(b); Ex. 1006, ¶¶ [0033], [0038]. A distance between one side of the fastening surface, which is close to the side surface and the head part, is less than a distance between another side of the fastening surface, which is far away from the side surface and the head part. *Id.* I have illustrated these aspects of the second fastening part in an annotated version of FIG. 5b of Wu, below.



70. It is my further opinion that, even if Patent Owner were to argue for a different interpretation of Claim 3, given that form follows function, any alternative interpretation would represent a simple matter of design choice for the configuration of the second fastening part of the extending arm of Wu. For the device of Claim 2, *see supra*, Sections X.a.i-v.

71. Thus, a POSITA would have understood that Wu anticipates Claim 3.

vii. Claim 4: The pluggable optical transceiver module according to claim 2, wherein the head part has at least one optical fiber terminal.

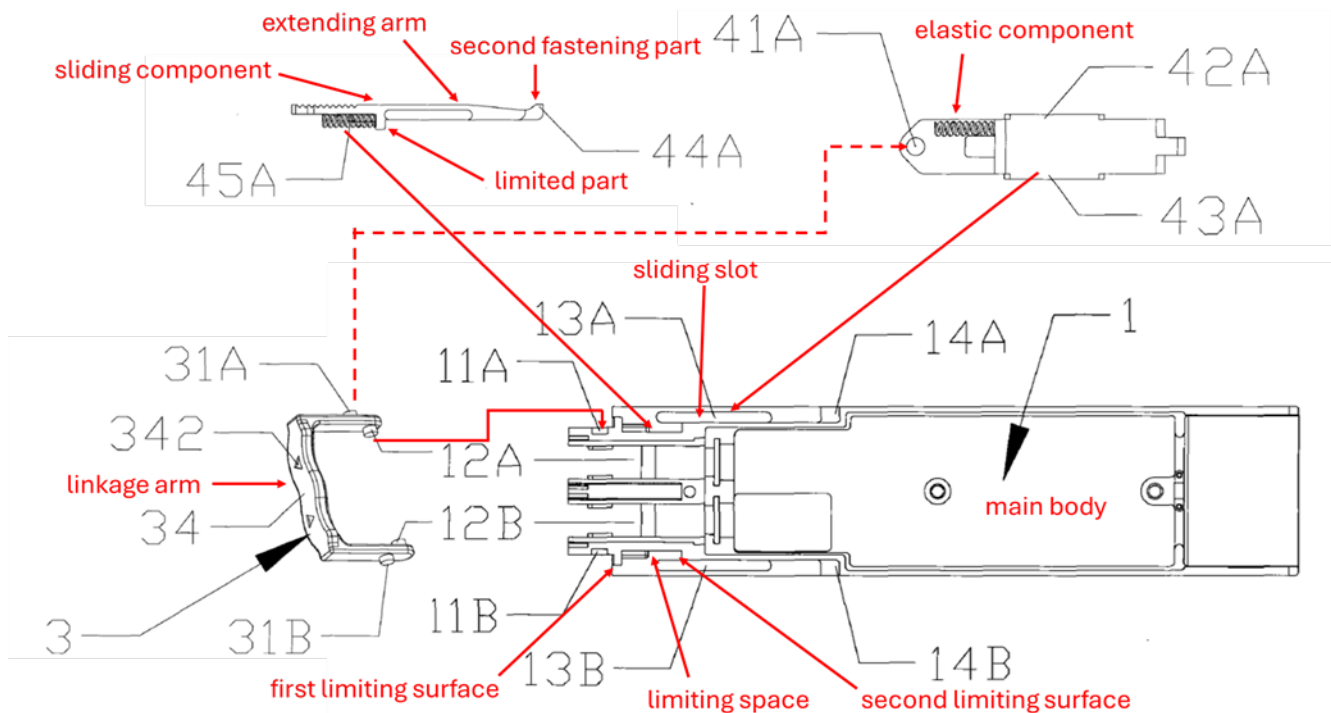
72. A POSITA would have understood that Wu discloses that its head part includes slots into which optical fiber receptacles are disposed to receive an optical fiber. *See* Ex. 1005, FIGS. 1-3; Ex. 1006; ¶¶ [0030]-[0031]. For the device of Claim 2, *see supra*, Sections X.a.i-v.

73. According, in my opinion, a POSITA would have understood that Wu anticipates Claim 4.

viii. Claim 5: The pluggable optical transceiver module according to claim 1, further comprising two elastic components, wherein the number of the at least one limiting surface is two the main body has two first limiting surfaces and two second limiting surfaces forming the two limiting spaces together, respectively, the two first limiting surfaces are closer to the head part than the two second limiting surfaces, the two elastic components are located in the two limiting spaces, respectively, and each elastic component is between the first limiting surface and the limited part..

74. As discussed *supra*, Wu discloses that the pluggable optical transceiver module (1) includes two elastic components (45), with each elastic component disposed in a corresponding limiting space defined by respective first and second limiting surfaces. *See* Ex. 1005, FIGS. 3, 5b; Ex. 1006, ¶¶ [0013], [0033], [0037]-[0038]. The two first limiting surfaces are closer to the head part than the two second limiting surfaces, and each elastic component is disposed between the first limiting surface and the limited part. *Id.* For the device of Claim

1, *see supra*, Sections X.a.i-iv.



75. Thus, a POSITA would have understood that Wu anticipates Claim 5.

ix. Claim 6: The pluggable optical transceiver module according to claim 1, wherein the pluggable optical transceiver module further comprises a pull handle pivoted on the linkage arm of the sliding component.

76. It is my opinion that Wu discloses the pluggable optical transceiver module includes a pull handle pivoted on the linkage arm of the sliding component. In my previous analysis, I identified the linkage arm as the handle that links the two extending arms to form the claimed sliding member. *See supra*, Section X.a.iii. Each extending arm includes a finger grip disposed near the head part, which may be grasped to remove the optical module from the socket, thus defining a “pull handle.” *See supra*, Section X.a.v. In my opinion, as required by Claim 6, the pull

handle of Wu is pivoted (pins 32A of the handle 34) on the linkage arm of the sliding member. *See* Ex. 1005, FIG. 1, 2, 6; Ex. 1006, ¶¶ [0034]-[0035], [0037]-[0038]. For the other elements of Claim 1, *see supra*, Sections X.a.i-iv.

77. A POSITA would have understood that Wu anticipates Claim 6.

x. Claim 7: [7a] A pluggable optical transceiver module, comprising:

78. The preamble of Claim 7 of the '826 Patent is similar to the preamble of Claim 1 but omits the socket having first fastening parts. Wu anticipates the limitations of element [7a] for the same reasons as described above for Claim [1a].

See supra, ¶¶ X.a.i.

xi. Claim 7: [7b] a main body having a head part and an inserted part that are connected to each other, wherein the main body further comprises opposite two side surfaces and two sliding slots which are located at two sides of the head part and the inserted part opposite to each other, respectively, the two sliding slots are located at the two side surfaces, and the two sliding slots extend from the head part to the inserted part, respectively, wherein the main body has at least one limiting space and two bottom surfaces forming the two sliding slots, respectively, the two bottom surfaces are parallel to the two side surfaces, the at least one limiting space is located at one of the two side surfaces.

79. Claim element [7b] requires the limitations of claim element [1b] of Claim 1, while further requiring the limitations of Claim 5. In my opinion, Wu discloses all of the limitations of claim element [7b] for the reasons explained above for claim element [1b] and Claim 5. *See supra*, Sections X.a.ii and viii.

xii. Claim 7: [7c] a sliding component comprising a linkage arm and two extending arms, wherein the linkage arm is connected between the two extending arms, each extending arm has a second fastening part, the main body is between the two extending arms, the two extending arms are able to slide relative to the two sliding slots to have a fastening position which is farther away from the head part and a releasing position which is closer to the head part, wherein each extending arm has a limited part configured to move in the at least one limiting space.

80. Claim element [7c] requires the limitations of claim element [1c] of Claim 1, while further requiring the limitations of Claim 3. In my opinion, Wu discloses all of the limitations of claim element [7c] for the reasons explained above for claim element [1c] and Claim 3. *See supra*, Sections X.a.iii and vi.

xiii. Claim 7: [7d] an elastic component, wherein the main body has a first limiting surface and a second limiting surface forming the limiting space, the first limiting surface is closer to the head part than the second limiting surface, and the elastic component is located in the limiting space and between the first limiting surface and the limited part and is covered by the extending arm such that the elastic component is confined by the main body and the sliding component.

81. Claim element [7d] corresponds to claim element [1d] of Claim 1. In my opinion, Wu discloses all of the limitations of claim element [7d] for the reasons explained above for claim element [1d]. *See supra*, Section X.a.iv.

82. A POSITA would have understood that Wu anticipates Claim 7.

b. Ground 2: Mizue anticipates Claims 1-7.

i. Claim 1: [1a] A pluggable optical transceiver module, for being inserted into a plugging slot of a socket, the socket comprising two first fastening parts located in the plugging slot, the pluggable optical transceiver module comprising:

84. Mizue discloses a pluggable optical transceiver module (1) configured to be inserted into a plugging slot of a socket that includes two first fastening parts located in the plugging slot. *See* Ex. 1007, FIGS. 2, 3, 1:34-58.

ii. **Claim 1: [1b] a main body having two side surfaces that are opposite to each other and two sliding slots located at the two side surfaces, respectively, wherein the main body is configured to be inserted into the plugging slot, wherein the main body has at least one limiting space and two bottom surfaces forming the two sliding slots, respectively, the two bottom surfaces are parallel to the two side surfaces, the at least one limiting space is located at one of the two side surfaces;**

85. Mizue discloses, in the embodiment of FIGS. 7-9, that the pluggable optical transceiver module includes a main body having two side surfaces that are opposite to each other and two sliding slots located at the two side surfaces, respectively. *See* Ex. 1007, FIGS. 7 and 9, reproduced below with annotations.

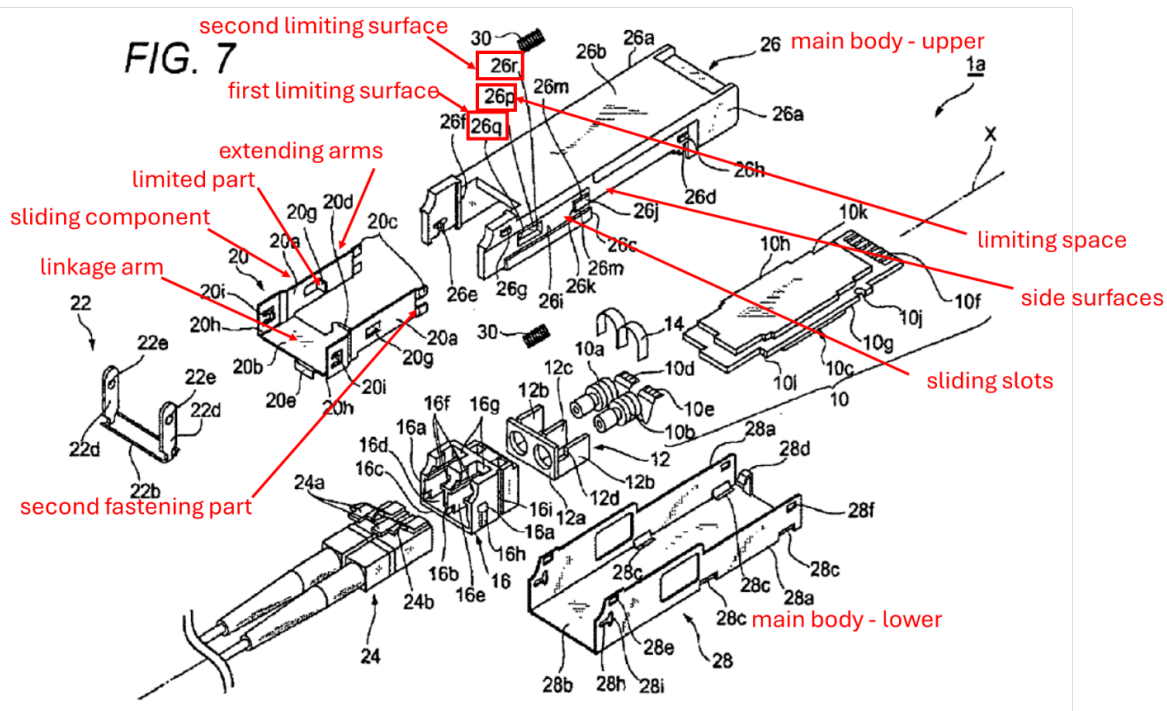
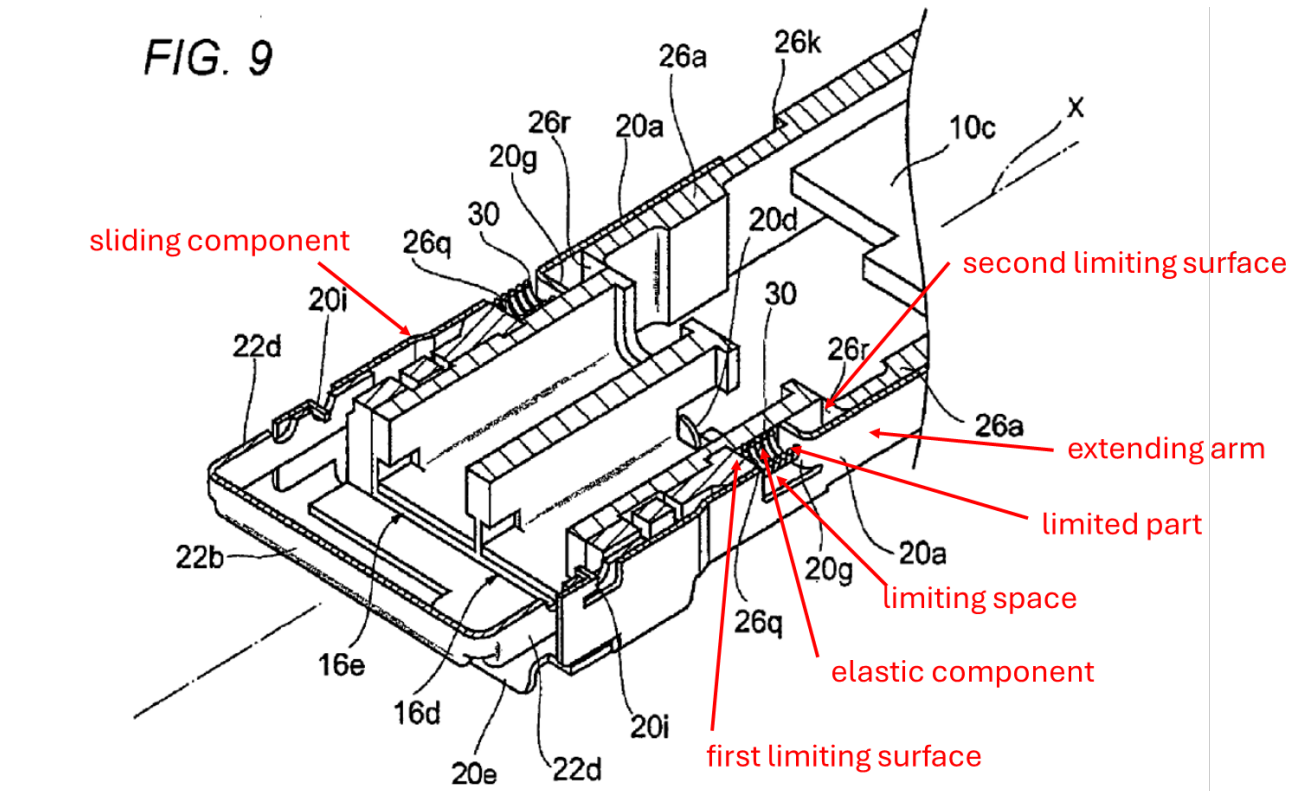


FIG. 9



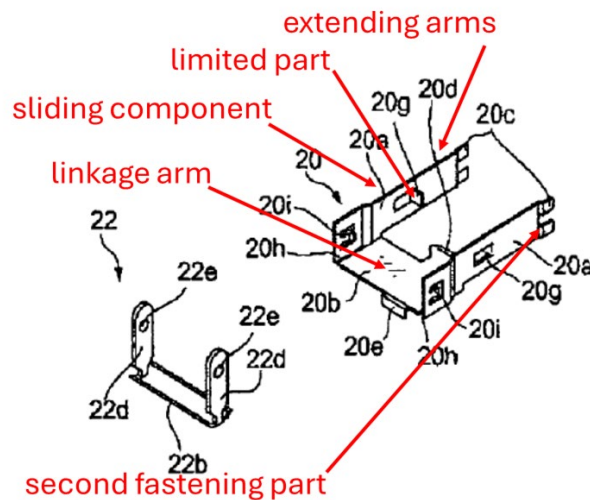
Ex. 1007, FIG. 9 (annotated)

See also, Ex. 1007, 5:11-65, 7:4-67. The main body has two bottom surfaces (corresponding to bottom wall 28b) parallel to the side surfaces of the upper body (26), which together with the sidewalls (26a) of upper body (26) form two sliding slots, one on either side of the upper body (grooves 26i). *Id.*, 5:34-45. The main body is designed to be inserted into the plugging slot. *Id.* In addition, each side surface of the upper body includes a limiting space (26p) with an elastic component disposed therein (spring 30). *Id.*, 7:27:37.

iii. **Claim 1: [1c] a sliding component comprising a linkage arm and two extending arms, wherein the two extending arms are connected to two ends of the linkage arm, respectively, each extending arm has a second fastening part, the main body is between the two**

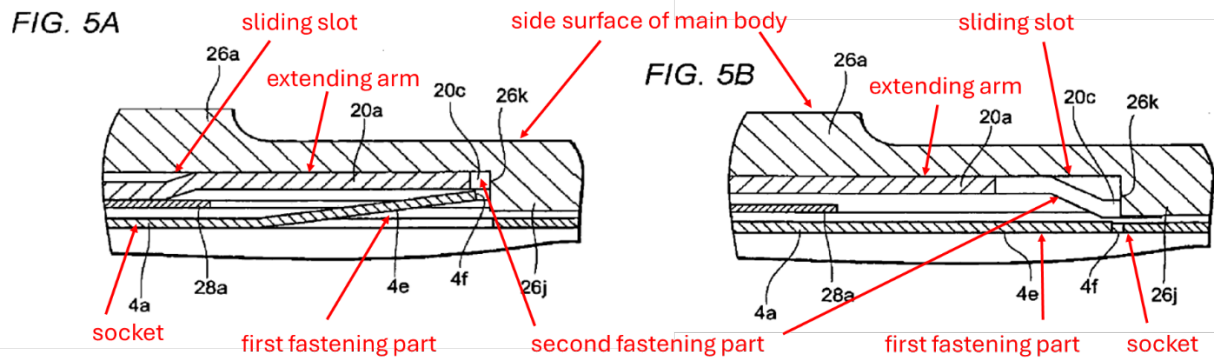
extending arms, the two extending arms are slidably disposed on the two sliding slots to have a fastening position and a releasing position, the two first fastening parts are fastened to the two second fastening parts when the two extending arms are located at the fastening position, and the two second fastening parts press the two first fastening parts, respectively, to make the two first fastening parts be farther away from each other when the two extending arms are located at the releasing position, wherein each extending arm has a limited part configured to move in the at least one limiting space; and

86. Mizue discloses a sliding component (actuator 20) includes a linkage arm (center portion 20b) and two extending arms (20a), such that the main body is located between the extending arms. *See* Ex. 1007, FIG. 7 and annotated partial view, below, 5:46-65.

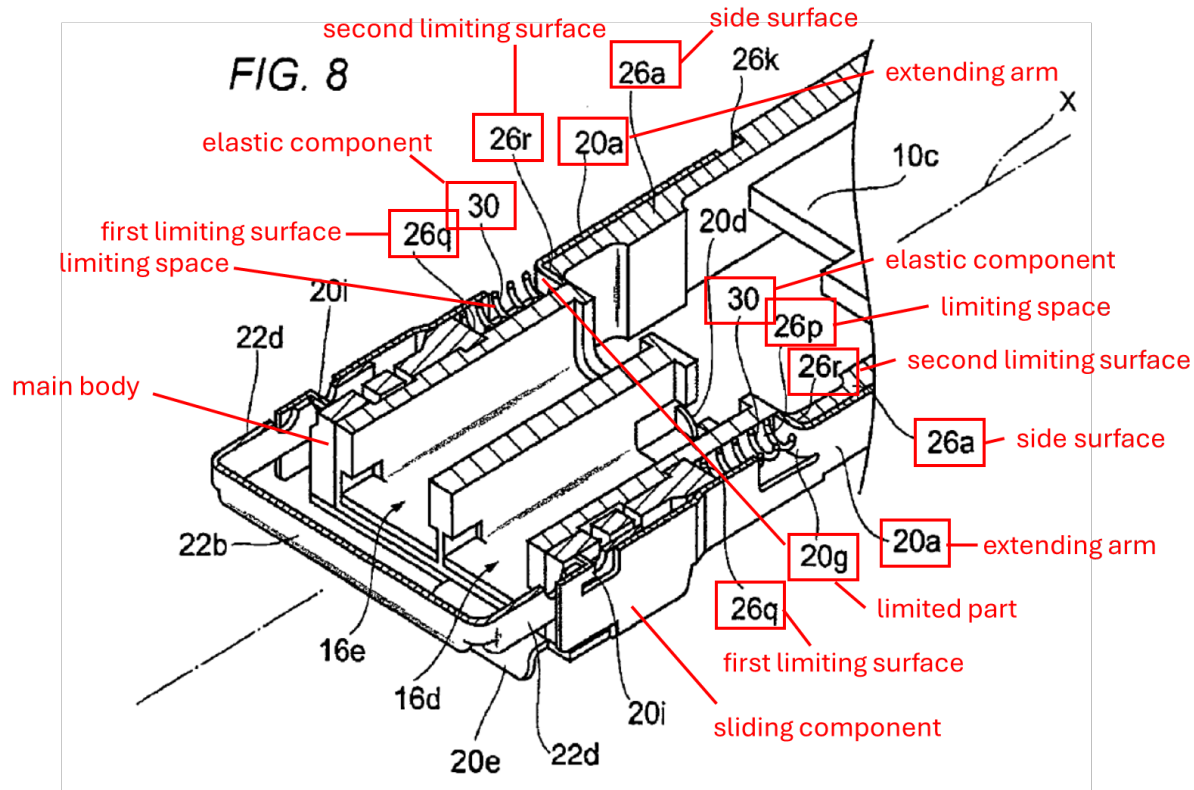


See also, Ex. 1007, 7:27-37. The two extending arms are connected to two ends of the linkage arm, respectively, and each extending arm has a second fastening part (forked slab 20c). *Id.*, 7:46-65. The two extending arms are slidably disposed in the two sliding slots to have a fastening position and a releasing position. *Id.*

87. A POSITA would understand that Mizue discloses the first and second fastening parts engage when the two extending arms are located at the fastening position, and the two second fastening parts press the two first fastening parts, respectively, to make the two first fastening parts be farther away from each other when the two extending arms are located at the releasing position. *See* Ex. 1007, FIGS. 5a (fastened) and 5b (released)(below), 7:27-37.



88. Mizue discloses that each extending arm (20a) has a limited part (20g) that extends into the limiting space (groove 26p). *See* Ex. 1007, FIGS. 8, 9, 7: 27-37 (“The actuator 20 further provides another flange 20g in the arm 20a. The other flange 20g is cut from the arm 20a and bent inward such that the surface of the other flange 20g extends along a direction intersecting the axis X. On the other hand, the side wall 26a of the upper body 26 further provides another groove 26p into which the other flange 20g of the actuator is inserted. ... A spring 30 is inserted between the other flange 20g and one of the inner surface 26q of the groove 26p.”), *see also* Ex. 1007, FIG. 8, annotated on following page.



Ex. 1007, FIG. 8 (annotated)

iv. **Claim 1:** [1d] an elastic component, wherein the main body has a first limiting surface and a second limiting surface forming the limiting space, the first limiting surface is closer to the head part than the second limiting surface, and the elastic component is located in the limiting space and between the first limiting surface and the limited part and is covered by the extending arm such that the elastic component is confined by the main body and the sliding component.

89. Mizue discloses the pluggable transceiver module includes an elastic component (spring 30). *See* Ex. 1007, FIGS. 8, 9, 7:27-37. The main body has a first limiting surface (26q) and a second limiting surface (26r) forming the limiting space (26p), wherein the first limiting surface (26q) is closer to the head part than the second limiting space (26r). *Id.* The elastic component (spring 30) is located

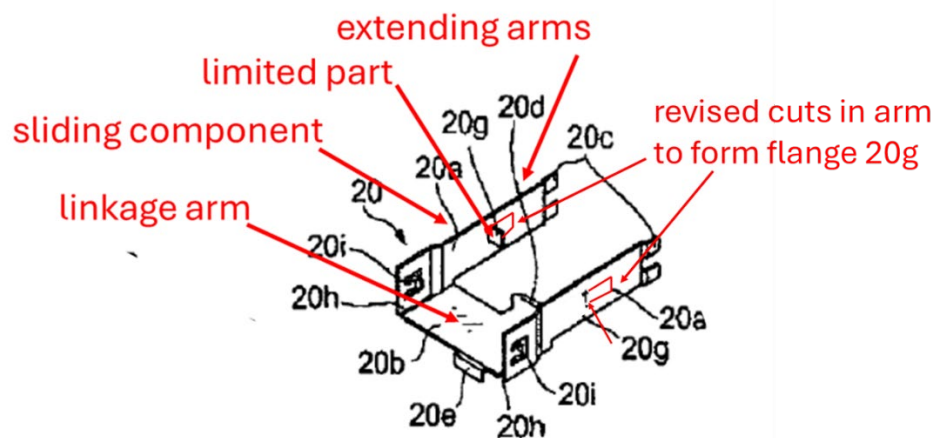
in the limiting space (26p) between the first limiting space (26q) and the limited part (20g). *Id.*, FIGS. 8, 9, 7: 33-35 (“upper body 26 further provides another groove 26p into which the other flange 20g of the actuator is inserted. The other groove 26p has a pair of inner surfaces 26q and 26r, both extending in the direction intersecting the axis X. A spring 30 is inserted between the other flange 20g and one of the inner surface 26q of the groove 26p.”).

90. In my opinion, Mizue discloses that elastic component (spring 30) is at least partially covered by the extending arm (arm 20a) such that the elastic component is confined by the main body (26a) and the sliding component. Moreover, it is plain from the relative lengths of the spring 30 and the opening in arm 20a created to form the limited part (flange 20g) that the spring could not exit the limiting space (26p) through that opening. Ex. 1007, FIG. 8. Accordingly, in my opinion, the elastic component of Mizue is indeed confined in the limiting space (26p) by arm (20a). Moreover, as can be seen in FIG. 3 of Mizue, the lower portion of the main body covers the sliding component, further preventing loss of the elastic component.

91. I disagree with the Patent Owner’s argument, as set forth at page 6 of the Reply to Office action of March 31, 2016, that “the spring 30 is exposed and not covered by the arm 20a. See Mizue, FIG. 9. As such, the proposed combination would not result in an elastic component being ‘covered by the

extending arm such that the elastic component is confined by the main body and the sliding component,' as recited in amended independent claims 1 and 9.” Ex. 1002, p. 71. As stated above, FIGS. 8 and 9 show that the spring is much longer than the opening formed in arm 20a to create the limited part (flange 20g).

92. Further, in my opinion, it would have been abundantly plain to a POSITA that the Patent Owner’ alleged “defect” in Mizue could be remedied, as a simple matter of design choice, by making the U-shaped cut in the wall of arm 20a from the direction of the inserted part, as indicated in the annotated excerpt from FIG. 7 of Mizue below.

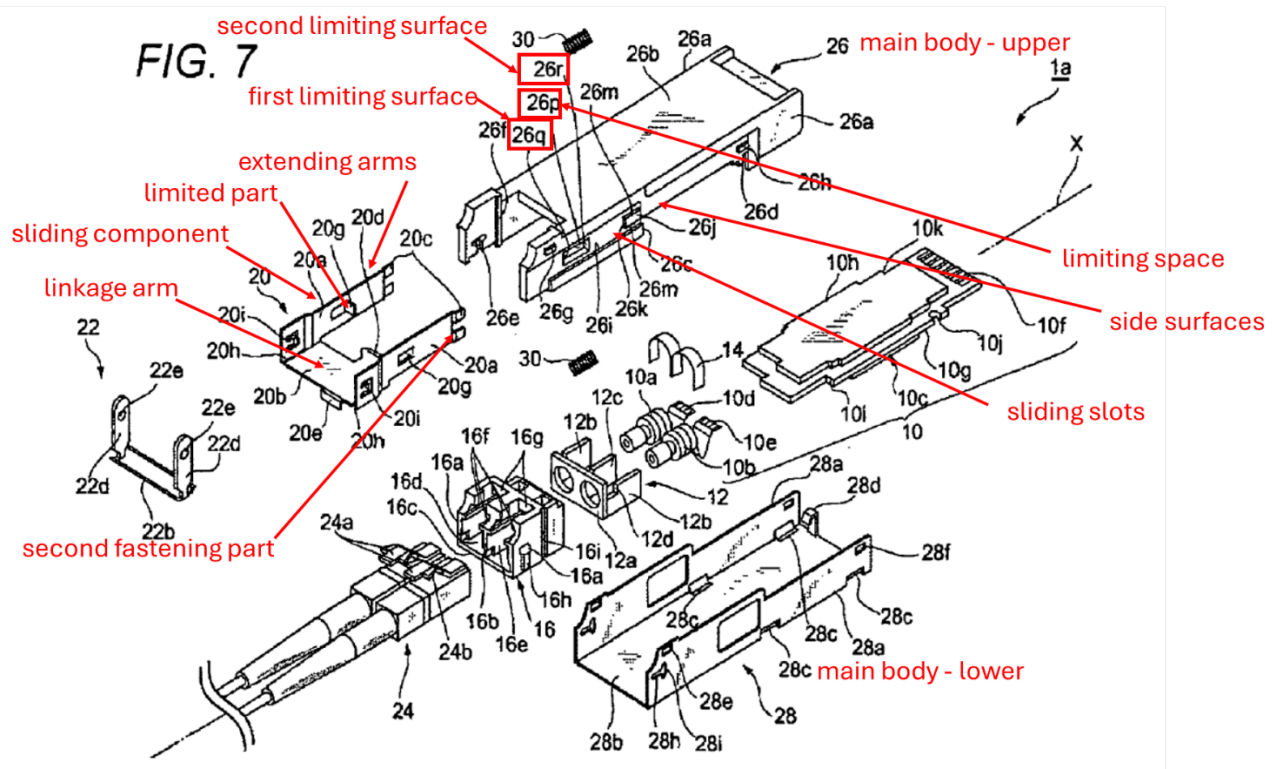


Ex. 1007, FIG. 7 (partial with proposed alteration)

Such a modification of Mizue, which in my opinion would have been well within the skill of a POSITA, would result in the arm 20a **completely** covering the limited space to **completely** confine the elastic component. Thus, in my opinion, a POSITA would have understood that Mizue anticipates Claim 1.

v. **Claim 2:** The pluggable optical transceiver module according to claim 1, wherein the main body comprises a head part and an inserted part connected to each other, the inserted part is configured to be inserted into the socket, the two side surfaces are located at two sides of the head part and the inserted part opposite to each other, respectively, wherein both the two sliding slots extend from the head part towards the inserted part, and the two extending arms are able to slide relative to the two sliding slots to have the fastening position which is farther away from the head part and the releasing position which is closer to the head part.

93. In my opinion, Mizue discloses that the main body includes a head part and an inserted part connected to each other, such that the inserted part is configured to be inserted into the socket. *See* Ex. 1007, FIGS. 2, 3, 3:19-24. The two side surfaces are located at two sides of the head part and the inserted part opposite to each other, respectively, as shown in FIG. 7. *Id.*

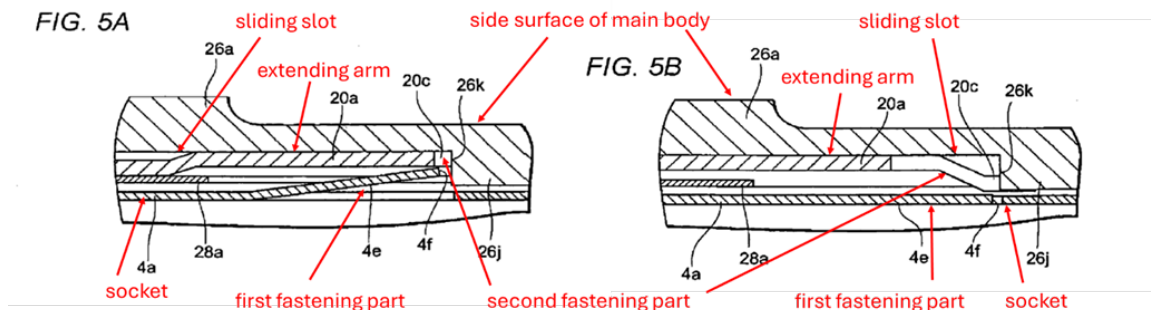


94. Both of the two sliding slots extend from the head part towards the inserted part, and the two extending arms are able to slide relative to the two sliding slots to achieve the fastening position, which is farther away from the head part, and the releasing position, which is closer to the head part. *See* Ex. 1007, FIGS. 5A, 5B, 7, 5:46-65. For the device of Claim 1, *see supra*, Sections X.b.i-vi.

95. Accordingly, in my opinion, a POSITA would have understood that Mizue anticipates Claim 2.

vi. Claim 3: The pluggable optical transceiver module according to claim 2, wherein each second fastening part has a fastening surface, and a distance between one side of the fastening surface which is close to the side surface and the head part is less than a distance between another side of the fastening surface which is far away from the side surface and the head part.

96. In my opinion, Mizue discloses each second fastening part has a fastening surface. *See* Ex. 1007, FIGS. 5A, 5B, 5:66-6:10, 7:38-47. A distance between one side of the fastening surface, which is close to the side surface and the head part, is less than a distance between another side of the fastening surface, which is far away from the side surface and the head part. *Id.*, FIGS. 5A, 5B.



For the device of Claim 2, *see supra*, Sections X.b.i-v.

97. Accordingly, in my opinion a POSITA would have understood that Mizue anticipates Claim 3.

vii. Claim 4: The pluggable optical transceiver module according to claim 2, wherein the head part has at least one optical fiber terminal.

98. A POSITA would have understood that Mizue discloses that its head part has slots into which optical fiber receptacles are disposed to receive an optical fiber. *See* Ex. 1007, FIGS. 4, 7, 4:24-41. For the device of Claim 2, *see supra*, Sections X.b.i-v.

99. Thus, a POSITA would have understood that Mizue anticipates Claim 4.

viii. Claim 5: The pluggable optical transceiver module according to claim 1, further comprising two elastic components, wherein the number of the at least one limiting surface is two the main body has two first limiting surfaces and two second limiting surfaces forming the two limiting spaces together, respectively, the two first limiting surfaces are closer to the head part than the two second limiting surfaces, the two elastic components are located in the two limiting spaces, respectively, and each elastic component is between the first limiting surface and the limited part.

100. As discussed *supra*, Mizue discloses that the pluggable optical transceiver module includes two elastic components, with each elastic component disposed in a corresponding limiting space defined by respective first and second limiting surfaces. *See* Ex. 1007, FIGS. 7-9, 7:14-37. The two first limiting

surfaces are closer to the head part than the two second limiting surfaces, and each elastic component is disposed between the first limiting surface and the limited part. *Id.* For the device of Claim 1, *see supra*, Sections X.b.i-iv.

101. A POSITA would have understood that Mizue anticipates Claim 5.

ix. Claim 6: The pluggable optical transceiver module according to claim 1, wherein the pluggable optical transceiver module further comprises a pull handle pivoted on the linkage arm of the sliding component.

102. Mizue discloses the pluggable optical transceiver module includes a pull handle (bail 22) pivoted on the linkage arm (20b) of the sliding component (actuator 20). *See* Ex. 1007, FIG. 7, 7:4-13, 7:20-54. For the other elements of the device of Claim 1, *see supra*, Sections X.b.i-iv.

103. A POSITA would have understood that Mizue anticipates Claim 6.

x. Claim 7: [7a] A pluggable optical transceiver module, comprising:

104. The preamble of Claim 7 of the '826 Patent is similar to the preamble of Claim 1 but omits the socket having first fastening parts. Mizue anticipates the limitations of element [7a] for the same reasons as described above for Claim [1a]. *See supra*, Section X.b.i.

xi. Claim 7: [7b] a main body having a head part and an inserted part that are connected to each other, wherein the main body further comprises opposite two side surfaces and two sliding slots which are located at two sides of the head part and the inserted part opposite to each other, respectively, the two sliding slots are located at the two side surfaces, and the two sliding slots extend from the head part to the

inserted part, respectively, wherein the main body has at least one limiting space and two bottom surfaces forming the two sliding slots, respectively, the two bottom surfaces are parallel to the two side surfaces, the at least one limiting space is located at one of the two side surfaces.

105. Claim element [7b] requires the limitations of claim element [1b] of Claim 1, while further requiring the limitations of Claim 5. In my opinion, Mizue discloses all of the limitations of claim element [7b] for the reasons explained above for claim element [1b] and Claim 5. *See supra*, Sections X.b.ii and viii.-37.

xii. Claim 7: [7c] a sliding component comprising a linkage arm and two extending arms, wherein the linkage arm is connected between the two extending arms, each extending arm has a second fastening part, the main body is between the two extending arms, the two extending arms are able to slide relative to the two sliding slots to have a fastening position which is farther away from the head part and a releasing position which is closer to the head part, wherein each extending arm has a limited part configured to move in the at least one limiting space.

106. Claim element [7c] requires the limitations of claim element [1c] of Claim 1, while further requiring the limitations of Claim 3. In my opinion, Mizue discloses all of the limitations of claim element [7c] for the reasons explained above for claim element [1c] and Claim 3. *See supra*, Sections X.b.iii and vi.

xiii. Claim 7: [7d] an elastic component, wherein the main body has a first limiting surface and a second limiting surface forming the limiting space, the first limiting surface is closer to the head part than the second limiting surface, and the elastic component is located in the limiting space and between the first limiting surface and the limited part and is covered by the extending arm such that the elastic component is confined by the main body and the sliding component.

107. Claim element [7d] corresponds to claim element [1d] of Claim 1. In my opinion, Mizue discloses all of the limitations of claim element [7d] for the reasons explained above for claim element [1d]. *See supra*, Section X.b.iv.

108. For the foregoing reasons, it is my opinion that a POSITA would have understood that Mizue anticipates Claim 7

X. Revision or Supplementation

83. In this report, I have presented my opinions regarding the invalidity of the challenged claims of the '826 Patent based on the information available to me. My opinions are subject to change in view of opinions provided by the Patent Owner or its expert, or any additional information that I may receive. I reserve the right to supplement my opinions accordingly.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false

statements and the like so made are punishable by fine or imprisonment, or both,
under Section 1001 of Title 18 of the United States Code.

Executed January 14, 2025 at Montreal Canada.



Dr. Andrew G. Kirk