

**CERTIFICATION AND REQUEST FOR PRIORITIZED EXAMINATION
UNDER 37 CFR 1.102(e) (Page 1 of 1)**

First Named Inventor:	Kim Man WONG	Nonprovisional Application Number (if known):	
Title of Invention:	OPTICAL CONNECTORS WITH REVERSABLE POLARITY AND METHOD OF USE		

APPLICANT HEREBY CERTIFIES THE FOLLOWING AND REQUESTS PRIORITIZED EXAMINATION FOR THE ABOVE-IDENTIFIED APPLICATION.

1. The processing fee set forth in 37 CFR 1.17(i), the prioritized examination fee set forth in 37 CFR 1.17(c), and if not already paid, the publication fee set forth in 37 CFR 1.18(d) have been filed with the request. The basic filing fee, search fee, examination fee, and any required excess claims and application size fees are filed with the request or have been already been paid.
2. The application contains or is amended to contain no more than four independent claims and no more than thirty total claims, and no multiple dependent claims.
3. The applicable box is checked below:

I. ☒ Original Application (Track One) - Prioritized Examination under § 1.102(e)(1)

- i. (a) The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a). This certification and request is being filed with the utility application via EFS-Web.
---OR---
(b) The application is an original nonprovisional plant application filed under 35 U.S.C. 111(a). This certification and request is being filed with the plant application in paper.
- ii. An executed oath or declaration under 37 CFR 1.63 is filed with the application.

II. ☐ Request for Continued Examination - Prioritized Examination under § 1.102(e)(2)

- i. A request for continued examination has been filed with, or prior to, this form.
- ii. If the application is a utility application, this certification and request is being filed via EFS-Web.
- iii. The application is an original nonprovisional utility application filed under 35 U.S.C. 111(a), or is a national stage entry under 35 U.S.C. 371.
- iv. This certification and request is being filed prior to the mailing of a first Office action responsive to the request for continued examination.
- v. No prior request for continued examination has been granted prioritized examination status under 37 CFR 1.102(e)(2).

Signature	/Jonathan Pollmann/	Date	2021-03-12
Name (Print/Typed)	Jonathan Pollmann	Practitioner Registration Number	71,702
Note: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the form of the signature. If necessary, submit multiple forms for more than one signature, see below*.			
☐ *Total of _____ forms are submitted.			

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		OPTICAL CONNECTORS WITH REVERSIBLE PLARITY AND METHOD OF USE		
First Named Inventor/Applicant Name:		Kim Man WONG		
Filer:		Jonathan G. Pollmann/Meagan Fitzpatrick		
Attorney Docket Number:		SO9300US04		
Filed as Small Entity				
Filing Fees for Track I Prioritized Examination - Nonprovisional Application under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	80	80
UTILITY SEARCH FEE	2111	1	350	350
UTILITY EXAMINATION FEE	2311	1	400	400
REQUEST FOR PRIORITIZED EXAMINATION	2817	1	2100	2100
Pages:				
Claims:				
Miscellaneous-Filing:				
PROCESSING FEE, EXCEPT PROV. APPLS.	2830	1	70	70

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				3000

Electronic Acknowledgement Receipt

EFS ID:	42168515
Application Number:	17200134
International Application Number:	
Confirmation Number:	1767
Title of Invention:	OPTICAL CONNECTORS WITH REVERSIBLE PLARITY AND METHOD OF USE
First Named Inventor/Applicant Name:	Kim Man WONG
Customer Number:	152878
Filer:	Jonathan G. Pollmann/Meagan Fitzpatrick
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Attorney Docket Number:	SO9300US04
Receipt Date:	12-MAR-2021
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Payment Type	DA
Payment was successfully received in RAM	\$ 3000
RAM confirmation Number	E20213BF33381554
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Application.pdf	212228	yes	34
			10c339550ad3d10df3d730a37e2b32cf3a180a14		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	27	
	Claims		28	33	
	Abstract		34	34	
Warnings:					
Information:					
2	Application Data Sheet	ADS.PDF	1257198	no	10
			27094add881de881aceac46b0165d117a7ce58b9		
Warnings:					
Information:					
3	Drawings-only black and white line drawings	Drawings.pdf	1046557	no	22
			470d9fca2ced0932820246062cbc3dd84b6f4acb		
Warnings:					
Information:					
4	Oath or Declaration filed	GniadekDec.pdf	737646	no	1
			7e3914626afef4a73e447e95914c47735c456b36		
Warnings:					
Information:					
5	Oath or Declaration filed	MaDec.pdf	722113	no	1
			b1c3f7f904b31a0e72d4b4830c899a00cf9b9253		

Warnings:					
Information:					
6	Oath or Declaration filed	TakanoDec.pdf	739181	no	1
			8d148e9ef07ade0dd51d23c751c9499ea720e235		
Warnings:					
Information:					
7	Oath or Declaration filed	WongDec.pdf	721782	no	1
			e7507d2a8b356a81771335d9aa8fab7e3a8262e2		
Warnings:					
Information:					
8	TrackOne Request	Track1.PDF	140302	no	2
			386a9456274aa3d2a315083dec1bb6157ba781e6		
Warnings:					
Information:					
9	Fee Worksheet (SB06)	fee-info.pdf	38707	no	2
			1ae6023e4cfe4dd70ef8f81cb248466e06bc949c		
Warnings:					
Information:					
Total Files Size (in bytes):			5615714		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE

Cross-Reference to Related Patent Applications:

[0001] The present application is a continuation of the U.S. Application 16/297,607 filed on March 9, 2019, titled “OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE”, which is a Continuation of PCT/US18/16049 filed on January 30th, 2018, titled “Optical Connectors with Reversible Polarity”, which claims priorities to United States Provisional Patent Applications No. 62/452,147 filed January 30, 2017, No. 62/457,150 filed February 9, 2017, No. 62/463,898 filed February 27, 2017, No. 62/463,901 filed February 27, 2017, No. 62/485,042 filed April 13, 2017, No. 62/546,920, filed August 17, 2017, and No. 62/581,961 filed November 6, 2017; the disclosures of which are incorporated herein by reference in their entireties.

Field of the Invention:

[0002] The present disclosure relates generally optical connectors with reversible polarity.

Background:

[0003] The prevalence of the Internet has led to unprecedented growth in communication networks. Consumer demand for service and increased competition has caused network providers to continuously find ways to improve quality of service while reducing cost.

[0004] Certain solutions have included deployment of high-density interconnect panels. High-density interconnect panels may be designed to consolidate the increasing

volume of interconnections necessary to support the fast-growing networks into a compacted form factor, thereby increasing quality of service and decreasing costs such as floor space and support overhead. However, room for improvement in the area of data centers, specifically as it relates to fiber optic connections, still exists. For example, manufacturers of connectors are always looking to reduce the size of the devices, while increasing ease of deployment, robustness, and modifiability after deployment. In particular, more optical connectors may need to be accommodated in the same footprint previously used for a smaller number of connectors in order to provide backward compatibility with existing data center equipment. For example, one current footprint is known as the small form-factor pluggable footprint (SFP). This footprint currently accommodates two LC-type ferrule optical connections. However, it may be desirable to accommodate four optical connections (two duplex connections of transmit/receive) within the same footprint. Another current footprint is the quad small form-factor pluggable (QSFP) footprint. This footprint currently accommodates four LC-type ferrule optical connections. However, it may be desirable to accommodate eight optical connections of LC-type ferrules (four duplex connections of transmit/receive) within the same footprint.

[0005] In communication networks, such as data centers and switching networks, numerous interconnections between mating connectors may be compacted into high-density panels. Panel and connector producers may optimize for such high densities by shrinking the connector size and/or the spacing between adjacent connectors on the panel. While both approaches may be effective to increase the panel connector density, shrinking the connector size and/or spacing may also increase the support cost and diminish the quality of service.

[0006] In a high-density panel configuration, adjacent connectors and cable assemblies may obstruct access to the individual release mechanisms. Such physical obstructions may impede the ability of an operator to minimize the stresses applied to the cables and the connectors. For example, these stresses may be applied when the user reaches into a dense group of connectors and pushes aside surrounding optical fibers and connectors to access an individual connector release mechanism with his/her thumb and forefinger. Overstressing the cables and connectors may produce latent defects, compromise the integrity and/or reliability of the terminations, and potentially cause serious disruptions to network performance.

Accordingly, there is a need for smaller fiber optic connectors that will meet the needs of future developments in smaller SFPs and are reconfigurable for flexible deployment.

Summary of the Invention:

[0007] In a first aspect, the present disclosure provides a reversible polarity fiber optic connector including at least first and second optical ferrules and a connector housing at least partially surrounding the first and second optical ferrules. The housing has a first exterior wall positioned above the first and second optical ferrules and a second exterior wall positioned beneath the first and second optical ferrules. A latch coupling is positioned on each of the first and second exterior walls of the housing. A removable latch may engage either the first or second exterior wall latch coupling on the connector housing. Positioning the removable latch on the first exterior wall yields a fiber optic connector with a first polarity and positioning the removable latch on the second exterior wall yields a fiber optic connector with a second, opposite polarity.

[0008] In another aspect, the present disclosure provides a reversible polarity fiber optic connector with exchangeable arms for changing connector type. Thus, a common connector body may be formed into different connector types. The connector includes at least first and second optical ferrules and a common connector housing at least partially surrounding the first and second optical ferrules. The housing has a first exterior wall positioned above the first and second optical ferrules and a second exterior wall positioned beneath the first and second optical ferrules. A coupling surface is positioned on each of the first and second exterior walls of the common connector housing. To create a connector, a removable arm engages either the first or second exterior wall coupling surface; the removable arm includes either a latch or a latch recess depending upon the type of optical connector to be formed. Further, positioning the removable arm on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable arm on the second exterior surface of the housing yields a fiber optic connector with a second, opposite polarity.

[0009] In another aspect, the present disclosure provides a reversible polarity fiber optic connector with a push-pull tab. The connector includes at least first and second optical ferrules and has a connector housing at least partially surrounding the first and second optical ferrules. A first exterior wall is positioned above the first and second optical ferrules and a second exterior wall is positioned beneath the first and second optical ferrules. A first aperture is in the first exterior wall of the housing and a second aperture is in the second exterior wall of the housing. A removable push-pull tab includes a protrusion for positioning within either of the first or second apertures in the first and second exterior walls, respectively, of the connector housing. Positioning the removable

push-pull tab with its protrusion within the first aperture yields a fiber optic connector with a first polarity and positioning the removable push-pull tab with its protrusion within the second aperture yields a fiber optic connector with a second, opposite polarity.

[0010] In yet another aspect, the present disclosure provides a reversible polarity fiber optic connector including at least first and second optical ferrules and a connector housing at least partially surrounding the first and second optical ferrules. A first exterior wall is positioned above the first and second optical ferrules and a second exterior wall is positioned beneath the first and second optical ferrules. A removable push-pull tab is provided. A first push-pull tab retainer is positioned on the first exterior wall and a second push-pull tab retainer is positioned on the second exterior wall. Positioning the removable push-pull tab in the retainer on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable push-pull tab in the retainer on the second exterior wall of the housing yields a fiber optic connector with a second, opposite polarity.

Brief Description of the Drawings:

[0011] FIG. 1A is a perspective view of one embodiment of a reversible polarity fiber optic connector according to some aspects of the present disclosure;

[0012] FIG. 1B is a side view of the reversible polarity fiber optic connector of FIG. 3A with the removable latch being removed from the connector housing;

[0013] FIG. 2A is a perspective view of the reversible polarity fiber optic connector of FIG. 1A;

[0014] FIG. 2B is an exploded view of a step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 2A;

[0015] FIG. 2C is an exploded view of a next step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 2A;

[0016] FIG. 2D is a perspective view of the fiber optic connector of FIG. 1A with its polarity **reversed**;

[0017] FIG. 3A is a perspective view of an embodiment of a reversible polarity fiber optic connector with a pull tab according to aspects of the present disclosure;

[0018] FIG. 3B is an exploded view of the reversible polarity fiber optic connector of FIG. 3A;

[0019] FIG. 4A is a perspective view of the polarity of the reversible polarity fiber optic connector of FIG. 3A;

[0020] FIG. 4B is an exploded view of a step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 4A;

[0021] FIG. 4C.1 is an exploded view of positioning the latch in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 4A;

[0022] FIG. 4C.2 is an exploded view of attaching the removed components of FIG. 4B in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 4A;

[0023] FIG. 4D is a perspective view of the reversible polarity fiber optic connector of FIG. 4A with its polarity reversed;

[0024] FIG. 5A is a perspective view of another embodiment of a reversible polarity fiber optic connector with a pull tab according to aspects of the present disclosure;

- [0025]** FIG. 5B is an exploded view of the reversible polarity fiber optic connector of FIG. 5A;
- [0026]** FIG. 6A is a perspective view of the polarity of the fiber optic connector of FIG. 5A;
- [0027]** FIG. 6B is an exploded view of a step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 5A;
- [0028]** FIG. 6C is an exploded view of a next step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 6A;
- [0029]** FIG. 6D is a perspective view of the reversible polarity fiber optic connector of FIG. 6A with its polarity reversed;
- [0030]** FIG. 7A is a perspective view of a common connector housing of a reversible polarity fiber optic connector with exchangeable arms for changing connector type in an embodiment according to aspects of the present disclosure;
- [0031]** FIG. 7B is the front view of the common connector housing of FIG. 7A;
- [0032]** FIG. 7C is the top view of the common connector housing of FIG. 7A;
- [0033]** FIG. 7D is the side view of the common connector housing of FIG. 7A;
- [0034]** FIG. 8A.1 shows how the common connector housing of FIG. 7A is used to create a latch-type connector;
- [0035]** FIG. 8A.2 is an exploded view of FIG. 8A.1;
- [0036]** FIG. 8B.1 shows how the common connector housing of FIG. 7A is used to create a recess-type connector;
- [0037]** FIG. 8B.2 is an exploded view of FIG. 8B.1;

[0038] FIG. 9A is a perspective view of FIG. 8A.1 of the polarity of the latch-type fiber optic connector of FIG. 8A.1;

[0039] FIG. 9B is an exploded view of a step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 8A.1;

[0040] FIG. 9C is an exploded view of a next step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 8A.1;

[0041] FIG. 9D is a perspective view of the reversible polarity fiber optic connector of FIG. 8A.1 with its polarity reversed;

[0042] FIG. 10A is a perspective view of FIG. 8B.1 of the polarity of the recess-type fiber optic connector of FIG. 8B.1;

[0043] FIG. 10B is an exploded view of a step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 8B.1;

[0044] FIG. 10C is an exploded view of a next step in the process of changing the polarity of the reversible polarity fiber optic connector of FIG. 8B.1;

[0045] FIG. 10D is a perspective view of the reversible polarity fiber optic connector of FIG. 8B.1 with its polarity reversed;

[0046] FIGS. 11A and 11B respectively depict exploded and perspective views of a reversible polarity optical connector according to a further embodiment of the disclosure;

[0047] FIGS. 12A-12D depict the operation of the reversible polarity optical connector of FIGS. 11A and 11B;

[0048] FIGS. 13A-13D depict the process for changing the polarity of the optical connector of FIGS. 11A and 11B;

[0049] FIGS. 14A and 14B respectively depict exploded and perspective views of a reversible polarity optical connector according to a further embodiment of the disclosure;

[0050] FIGS. 15A-15D depict the operation of the reversible polarity optical connector of FIGS. 14A and 14B;

[0051] FIGS. 16A-16D depict the process for changing the polarity of the optical connector of FIGS. 14A and 14B;

[0052] FIGS. 17A-17C respectively depict perspective, partial cross-section, and exploded views of a reversible polarity optical connector according to a further embodiment of the disclosure;

[0053] FIGS. 18A-18D depict the assembly of the push-pull tab to the connector body of the connector of FIGS. 17A-17C;

[0054] FIGS. 19A-19B depict the removal of the push-pull tab from the connector body using a tool;

[0055] FIGS. 20A-20D depict the process for changing the polarity of the optical connector of FIGS. 17A-17C.

[0056] FIGS. 21A-21D depict the process of changing polarity of an optical connector according to an embodiment of the invention.

[0057] FIGS. 22A-22E depict the process for changing the polarity of an optical connector according to an embodiment of the invention.

Detailed Description:

[0058] This disclosure is not limited to the particular systems, devices and methods described, as these may vary. The terminology used in the description is for the

purpose of describing the particular versions or embodiments only, and is not intended to limit the scope.

[0059] As used in this document, the singular forms “a,” “an,” and “the” include plural references unless the context clearly dictates otherwise. Unless defined otherwise, all technical and scientific terms used herein have the same meanings as commonly understood by one of ordinary skill in the art. Nothing in this disclosure is to be construed as an admission that the embodiments described in this disclosure are not entitled to antedate such disclosure by virtue of prior invention. As used in this document, the term “comprising” means “including, but not limited to.”

[0060] The following terms shall have, for the purposes of this application, the respective meanings set forth below.

[0061] The connectors of the present disclosure may be configured for fiber optic transmission or electrical signal transmission. The connector may be any suitable type now known or later developed, such as, for example, a ferrule connector (FC), a fiber distributed data interface (FDDI) connector, an LC connector, a mechanical transfer (MT) connector, a square connector (SC) connector, an SC duplex connector, or a straight tip (ST) connector. The connector may generally be defined by a connector housing. In some embodiments, the housing may incorporate any or all of the components described herein.

[0062] Various embodiments described herein generally provide a remote release mechanism such that a user can remove cable assembly connectors that are closely spaced together without damaging surrounding connectors, accidentally disconnecting surrounding connectors, disrupting transmissions through surrounding connectors, and/or

the like. Various embodiments also provide narrow pitch LC duplex connectors and narrow width multi-fiber connectors.

[0063] As discussed herein, current connectors may be improved by various means, such as, for example, reducing the footprint, increasing the structural strength, enabling polarity changes, etc. Various embodiments disclosed herein offer improvements over the current state of the art, as will be further discussed below.

[0064] In some embodiments, the fiber optic connector may be a narrow pitch duplex LC connector including two LC connectors. In some embodiments, such as that shown, the two LC connectors may comprise a single combined unit. In alternative embodiments, the LC connectors may be separate members, wherein an air gap exists between the two members, or wherein the two separate members are located adjacent and flush to each other (i.e., no air gap exists). In some embodiments, each of the LC connectors includes a respective ferrule and a respective extending member or modular arm. The connector may have a pitch of 4.8 mm, defined as the axis-to-axis distance between the central axes of the LC connectors. In other embodiments, the connector pitch may be less than that of the pitch of conventional connectors, for example less than 6.25 mm and less than about 5.25 mm. In some embodiments, the pitch may be about 4.8 mm or less.

[0065] In current designs, if a fiber optic connector, particularly a duplex connector, needs to have the ferrules rotated or swapped, for example, for exchanging transmit and receive optical fibers, it can be a time consuming and difficult process. Generally, if a duplex connector needs to be rotated, current systems require twisting the individual LC connector tips 180 degrees. However, this process also twists the fibers that enter the connector tip. Twisting the fiber at any stage of the connection can cause wear

and/or damage to the delicate fibers. Thus, most systems involve an alternative solution, wherein the duplex connector is partially or completely disassembled in order to access the ferrules or fibers and manually relocate them within the duplex connector. However, swapping ferrules side to side is a delicate operation. In order to prevent damage to the internal fibers, great care must be taken. Thus, this operation usually requires specialized tools and preparation time to perform safely and accurately.

[0066] Therefore, embodiments as described herein, allow for easy, quick, and safe swapping of the left and right side ferrules in a connector. Thus, embodiments discussed herein allow for a change in polarity of the duplex connector without twisting the fibers or performing any complex disassembly of the duplex connector.

[0067] FIGS. 1A and 1B depict a fiber optic connector with reversible polarity according to one aspect of the present disclosure. As shown in FIG. 1A, a reversible polarity fiber optic connector may include first and second optical ferrules 110a and 110b and a connector housing 120 at least partially surrounding the first and second optical ferrules. A removable latch 130 is depicted in FIG. 1A in its assembled state and in FIG. 1B removed from the connector housing 120.

[0068] FIG. 1B is a side view of the reversible polarity fiber optic connector of FIG. 1A with the removable latch 130 being separated from the connector housing. As shown, the connector housing 120 may have a first exterior wall 121a positioned above the first and second optical ferrules and a second exterior wall 121b positioned beneath the first and second optical ferrules. A latch coupling 122 is positioned on each of the first and second exterior walls of the housing. The removable latch 130 may include a protrusion 131 for engaging the housing latch coupling 122. In particular, the latch coupling 122 may

include angled walls that interact with slanted edges of the protrusion 131 to prevent accidental disassembly of the latch 130. Although the latch coupling 122 is depicted as a recess on the housing accommodating a latch protrusion, these elements may be reversed with the latch including a recess and the housing including a protrusion. Other mechanical coupling mechanisms may be used to interconnect the housing and the removable latch. For example, an embodiment may involve a coupling system wherein the removable latch is inserted into a recess in the connector housing and twisted (e.g., 90°, 180°, etc.) to secure the latch to the recess. Alternative coupling may use a more complex shape. For example, a u-shaped recess in the connector housing may engage a cooperatively-shaped projection in the latch that is inserted and fed through the u-shape until secure. It should thus be understood, that any system or method of coupling may be used to attach the removable latch to the connector housing, including various locations (e.g., sliding from the front, sides, back, bottom, top, etc.).

[0069] FIGS. 2A-2D depict the process for changing the polarity of the fiber optic connector of FIG. 1A from a first polarity, FIG. 2A to a second, opposite polarity, FIG. 2D. The removable latch 130 may be removed from the latch coupling on the first exterior wall of the connector housing, FIG. 2B, positioned adjacent the second exterior wall on beneath the ferrules, FIG. 2C, and then coupled with the latch coupling on the second exterior wall of the connector housing to yield a connector 100R, FIG. 2D, having the opposite polarity of connector 100. In this manner, transmit and receive optical fibers may be reversed without necessitating any fiber twist or complex repositioning of the optical ferrules.

[0070] In typical embodiments, the latch of the connector housing is required to be flexible. Thus, when a latch and a connector housing (e.g., duplex connector) are built as one unified member (as is currently done), the fiber optic connector is built of a similar flexible or less rigid material. Building the connector housing out of a plastic or polymeric material, limits the amount of rigidity that it can have. Thus, as fiber optic connectors continue to reduce in size, the strength of the housing has been reduced. Therefore, it would be advantageous to build the connector housing out of a more robust material while still allowing the latch to remain flexible. In order to accomplish this, in some embodiments according to aspects of the present disclosure, the connector housing may be manufactured out of a very rigid or strong material (e.g., steel, graphene, carbon, metal alloys, or any material of suitable properties). Because the connector housing and the removable latch need only interlock with each other, the removable latch may still be made out of a more flexible material. Thus, the removable nature of the latch disclosed herein allow for a more robust and secure overall design when dealing with the shrinking footprint of fiber optic connectors.

[0071] FIG. 3A is a perspective view of another embodiment of a reversible polarity fiber optic connector 300. As shown, the reversible polarity fiber optic connector may further comprise a pull tab 340 for engaging a removable latch 330. The pull tab 340 depresses the latch 330 as the tab is pulled in a direction away from the fiber optic ferrules.

[0072] FIG. 3B is an exploded view of the reversible polarity fiber optic connector of FIG. 3A. As shown, the pull tab 340 may comprise a first opening 341 and a second opening 344. The first opening 341 is configured to allow the connector housing and the removable latch to pass through while the second opening is configured to

accommodate the tip of the latch. The pull tab may further comprise a first deformable portion 342 and a second deformable portion 344. In operation, the first deformable portion 342 cooperates with the second deformable portion 344 to depress the removable latch when the pull tab is pulled in a direction away from the ferrules.

[0073] FIGS. 4A-4D depict the process for changing the polarity of the fiber optic connector 300 from a first polarity, FIG. 4A to a second polarity 300R, FIG. 4D. The pull tab 340 may be disengaged from the connector housing 320 and the removable latch 330 on the first exterior wall of the connector housing, FIG. 2B. The removable latch is then detached from the latch coupling on the first exterior wall of the connector housing, FIG. 4C.1. Next, the removable latch is engaged with the latch coupling on the second exterior wall of the connector housing, beneath the ferrules, FIG. 4C.2. Finally, the pull tab 340 is positioned surrounding the connector housing and engaging the removable latch tip, resulting in the assembled optical connector 300R having polarity opposite to that of connector 300, FIG. 4D.

[0074] FIG. 5A and 5B are a perspective view and exploded view, respectively, of another embodiment of a reversible polarity fiber optic connector 500. The connector 500 includes a connector housing 520, a latch 530, and a pull tab 540. On the first and second exterior walls of connector housing 520 are latch couplings that include a groove 522. A recess 521 is also provided in the housing. The latch 530 includes a protrusion 531 that is received within groove 522. The latch further includes a projection 532 that is received in the housing between the optical ferrules. The pull tab 540 includes an opening 541 for engaging the removable latch 530. A front protrusion 542 is configured to depress

the removable latch 530 when the pull tab is pulled in a direction away from the ferrule side of the optical connector.

[0075] FIGS. 6A-6D depict the process for changing the polarity of the fiber optic connector 500 from a first polarity, FIG. 6A to a second polarity, FIG. 6D. The pull tab 540 is disengaged from the connector housing and the removable latch 530 on the first exterior wall of the connector housing, FIG. 6B, and the removable latch is decoupled from the latch coupling on the first exterior wall of the connector housing. Then the removable latch may be coupled with the latch coupling on the second exterior wall of the connector housing, beneath the optical ferrules in FIG. 6C, and the pull tab 540 is engaged with the connector housing and the removable latch on the second exterior wall of the connector housing to create reverse polarity connector 500R, FIG. 6D.

[0076] It is of interest within the optical connectivity industry to have multiple styles of optical connectors for multiple purposes and/or multiple implementation styles. Thus, in order to more easily provide flexibility, a solution is needed that allows for on-the-fly, in-the-field, or in manufacturing modification of the connector. The below embodiment provides a universal type fiber optic connector which has a unique housing design that allows for different latches or arms to be attached.

[0077] FIG. 7A is a perspective view of a common connector housing 720 of a reversible polarity fiber optic connector 700 with exchangeable arms for changing connector type in an embodiment according to aspects of the present disclosure. As shown, the reversible polarity fiber optic connector may comprise first and second optical ferrules 710a and 710b and the common connector housing 720 at least partially surrounding the first and second optical ferrules.

[0078] FIG. 7B, 7C and 7D are the front view, top view and side view, respectively, of the common connector housing 720. As shown, the common connector housing may have a first exterior wall 725a positioned above the first and second optical ferrules and a second exterior wall 725b positioned beneath the first and second optical ferrules. The connector housing 720 may further have a coupling surface 724 positioned on each of the first and second exterior walls and include a receiving track 726 in the coupling surface.

[0079] FIG. 8A.1 shows the common connector housing 720 used to create a latch-type connector 700 and FIG. 8B.1 shows the common connector housing 720 used to create a recess-type connector 800. Both of connectors 700 and 800 include a removable arm 730 or 830 for engaging either of the first and second exterior wall coupling surfaces 724 on the connector housing, FIGS. 8A.2 and 8B.2 respectively. The removable arms 730 and 830 may each respectively include a projection 735 or 835 for engaging in the receiving track 726 of the coupling surface 724, FIGS. 8A.2 and 8B.2 respectively. As with the previous embodiments, positioning the removable arm on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable arm on the second exterior surface of the housing yields a fiber optic connector with the opposite polarity.

[0080] Still referring to FIG. 8A.2 and 8B.2 respectively the removable arms may include either a latch or a recess: removable arm 730 includes a latch 733 while removable arm 830 includes a recess 834. Thus, a latch-type connector 700 is created through assembly of the removable latch arm to the common connector body 720 as shown in FIG.

8A.1 and a recess-type connector 800 is created through assembly of the removable recess arm to the common connector body 720 as shown in FIG. 8B.1.

[0081] The fiber optic connector may further include a pull tab. When a removable arm with a latch 730 is positioned on the coupling surface of the common connector housing 720 to create a latch-type connector 700, the pull tab 740 is a separate element from the removable arm, FIG. 8A.2. When a removable arm includes a recess 830 is positioned on the coupling surface of the common connector housing 720 to create a recess-type connector 800, the pull tab 840 is integrated with the removable arm, FIG. 8B.2.

[0082] FIGS. 9A-9D depict the process for changing the polarity of the latch-type fiber optic connector from a first polarity 700, FIG. 9A to a second polarity 700R, FIG. 9D. The sub-assembly of the removable arm 730 and the pull tab 740 may be decoupled from the coupling surface 724 of the first exterior wall of the connector housing, FIG. 9B. Then the sub-assembly of the removable arm 730 and the pull tab 740 may be coupled with the coupling surface of the second exterior wall of the connector housing, FIG. 9C, creating the opposite polarity connector 700R.

[0083] FIGS. 10A-10C depicts the process for changing the polarity of the recess-type fiber optic connector 800 from a first polarity, FIG. 10A to a second polarity, FIG. 10D. The removable arm 830 with a recess and a pull tab as an integral structure may be decoupled from the coupling surface 724 of the first exterior wall of the connector housing, FIG. 10B. Then the removable arm may be coupled with the coupling surface 724 of the second exterior wall of the common connector housing 720, FIG. 10C to create opposite polarity optical connector 800R, FIG. 10D.

[0084] FIGS. 11A and 11B depict a further embodiment 1100 of the reversible polarity optical connectors of the present disclosure. As shown in FIG. 11A or FIG. 12A, a push-pull tab 1130 may interconnect with either a first exterior wall 1110 of housing 1105 or with a second exterior wall 1115 of housing 1105. Ferrules 1120 and 1125 are at least partially surrounded by housing 1105 and may be LC connectors in an embodiment. As in previous embodiments, the push-pull tab may include a tab recess 1145, as shown in FIG. 12A or FIG. 11A. Alternatively, push-pull tab 1130 may include a latch (not shown). Various features of the push-pull tab 1130 are provided to assist in affixing the push-pull tab to the first exterior wall 1110 or the second exterior wall 1115 of the housing 1105. This includes push-pull tab clips 1135 that clip onto the optical connector, optionally in a boot region, and protrusion 1140 that fits within a first aperture, 1109A, beneath the housing exterior wall 1110 or a second aperture, 1109B, beneath housing exterior wall 1115 (to be discussed in more detail below), and projection 1131 for inserting into the housing between ferrules 1120 and 1125. Each of these features is fully reversible such that the push-pull tab is easily removed and repositioned on the opposite exterior wall to change polarity of the connector.

[0085] As best seen in FIGS. 12B and 12D, push-pull tab protrusion 1140 may be inserted into first aperture 1109A of housing 1105 through a first exterior housing aperture 1107A. Alternatively, in the reverse-polarity configuration, the push-pull tab protrusion 1140 may be inserted into second housing aperture 1109B through second exterior housing aperture 1107B. When the push-pull tab 1130 is moved forward, the protrusion slides within the aperture 1109A or 1109B, as shown in FIG. 12B. To maintain the push-pull tab in a forward-biased position, tab position spring 1150 is provided. During insertion or

removal of the protrusion 1140, tab position spring 1150 is compressed, depicted in FIG. 12B. When the position spring 1150 is in its relaxed (uncompressed) position, FIGS. 12C and 12D, the protrusion 1140 is slid forward within the aperture 1109A or 1109B.

[0086] To change polarity of the optical connector 1100, FIGS. 13A-13D, the push-pull tab 1130 is removed by withdrawing the protrusion 1140 from the housing 1105 through exterior housing aperture 1107A along with detaching clips 1135 and decoupling projection 1131, thus releasing the push-pull tab from the first exterior housing wall 1110 (FIG. 13B). The push-pull tab is moved toward second exterior housing wall 1115 and the protrusion 1140 is inserted into aperture 1109B through exterior housing aperture 1107B in FIG. 13C. Projection 1131 is fitted between ferrules 1120 and 1125 and clips 1135 are affixed to the connector. The resultant connector 1100R of 13D is of opposite polarity to the connector 1100 of FIG. 13A.

[0087] Various alternatives to the protrusion 1140 of optical connector 1100 may be used in the optical connectors of this disclosure. For example, the protrusion may be provided by the connector housing with receiving elements provided in the push-pull tab. Variations to the shape of the projection and apertures may be made without affecting the function of the reversible-polarity connector.

[0088] Another alternative embodiment is depicted in FIGS. 14A and 14B in which a hook-shaped protrusion 1440 is provided for engagement within the connector housing. As in the previous embodiment, the push-pull tab 1430 includes a tab recess 1445, connector-attachment clips 1435 and projection 1431 for positioning between ferrules 1420 and 1425. In FIG. 14B, the push-pull tab 1430 is positioned on first exterior housing wall 1410 and has a first polarity. In this position, the hook-shaped protrusion

1440 engages a housing projection 1460, held in a forward-biased position by push-pull tab position spring 1465, as seen in FIGS. 15B and 15D. To release the protrusion 1440, push-pull tab position spring 1465 is compressed in FIG. 15C such that housing projection 1460 is retracted sufficiently to allow removal of protrusion 1440 through the housing 1405, FIG. 15D. FIG. 15A depicts connector with pull tab 1430 fully assembled.

[0089] To change polarity of the optical connector 1400 from the first polarity of FIG. 16A, the push-pull tab 1430 is removed by withdrawing the protrusion 1440 from the housing 1405 through the housing along with detaching clips 1435 and decoupling projection 1431, thus releasing the push-pull tab from the first exterior housing wall 1110 (FIG. 16B). The push-pull tab is moved toward second exterior housing wall 1415 and the protrusion 1440 is inserted into the housing 1405. Projection 1431 is fitted between ferrules 1420 and 1425 and clips 1435 are affixed to the connector in FIG. 16C. The resultant connector 1400R of FIG. 16D is of opposite polarity to the connector of FIG. 16A.

[0090] Protrusions from a push-pull tab may be inserted into a housing via features other than a housing aperture. Such a connector is depicted in FIG. 17 and features a deformable housing region to allow entry of a push-pull tab protrusion during affixing of the push-pull tab to the connector housing. As seen in FIG. 17A, the connector 1700 includes a connector housing 1705 which may optionally include a back body housing portion 1709 for connecting with a housing front portion 1707 (FIG. 17C). The back body housing portion 1709 includes a deformable region 1780, seen in the partial cross-section of FIG. 17B and the perspective view of FIG. 17C. The push-pull tab 1730 includes a protrusion 1740 with a projection 1741 extending therefrom.

[0091] Turning to FIG. 18A, to affix the push-pull tab to the connector housing, the protrusion 1740 penetrates the deformable region 1780 (FIG. 18B) causing the deformable region to yield and accept entry of the protrusion 1740 into the housing. As the projection 1741 enters the housing as depicted in FIG. 18C, the deformable region 1780 returns to its original position (FIG. 18D), securing the push-pull tab 1730 to the connector housing.

[0092] Removal of the push-pull tab 1730 is depicted in FIGS. 19A and 19B. A removal tool 1900, which may be shaped similar to a small screwdriver, depresses deformable region 1780, allowing projection 1741 to slide along an edge of the deformable region 1780, followed by the protrusion 1740, releasing the push-pull tab 1730.

[0093] To change polarity of the optical connector 1700 from the first polarity of FIG. 20A, the push-pull tab 1730 is removed in FIG. 20B by using the removal tool technique depicted in FIGS. 19A and 19B. The push-pull tab is moved toward the second exterior housing wall and the protrusion 1740 is inserted into the housing 1705 through the deformable region 1780 in FIG. 20C. The resultant connector 1700R of FIG. 20D is of opposite polarity to the connector of FIG. 20A.

[0094] In another aspect of the disclosure, a retaining member may be provided in the connector housing to retain a push-pull tab. As seen in FIGS. 21A-21D, a connector 2100 having a housing 2105 is provided with a housing front portion 2107 and a back portion 2109. FIG. 21A depicts an assembled connector 2100 with housing 2105. FIG. 21B depicts an exploded view of connector 2100 of FIG. 21A. Push-pull tab 2130 has a receiving surface 2132, which during use of connector 2100 provides a surface over which retainer 2111 can slide across during tab movement. Extending from the housing back

portion is a retainer 2111 which may include a pair of retaining clips, as shown, or any other structure configured to retain the push-pull tab 2130, as shown in FIG. 21B. FIG. 21C depicts connector 2100 showing a section view cut given by the arrows and broken line near the proximal end of connector 2100. Optionally, when the retainer 2111 includes clips, the clips may be hook-shaped as seen in the cross-sectional view of FIG. 21D. As shown in FIG. 21D, receiving surface 2132 may be a recess with a protrusion along the edge that engages the hook-shaped edge of the clips.

[0095] FIG. 22A through FIG. 22E depicts the operation of polarity change for connector 2100 of FIG. 21A – FIG. 21D. FIG. 22A depicts connector 2100 with pull-push tab clips 2135 (opposing side not shown) engaged around connector. To operate connector 2100, user can move push-pull tab 2130 forward or toward front of connector or backward or toward rear of connector, and as describe in FIG. 21B above tab moves along connector receiving surface 2123. This engages or releases connector 2100 from a receptacle as is known in the art. To change the polarity of connector 2100 from the polarity depicted in FIG. 22A to the second, opposite polarity of FIG. 22E, the retainer 2111 is removed from receiving surface 2132. Referring to FIG. 22B, lifting push-pull tab 2130 in direction of up-arrow, separates retainer 2111 from receiving surface. As shown in FIG. 22C, push-pull tab clips separate from the connector as the retainer is removed. Continuing with FIG. 22C, push-pull tab 2130 is moved to the opposite housing exterior wall in FIG. 22C. FIG. 22D depicts receiving surface 2132 engages with the retainer 2111. In FIG. 21E the assembled connector 2100R having the opposite polarity to the connector of FIG. 22A is depicted, fully assembled. Retainer 2111 is in contact with receiving surface 2132, and push-pull tab 2130 is secured to connector body, as shown in FIG. 22E.

[0096] In the above detailed description, reference is made to the accompanying drawings, which form a part hereof. In the drawings, similar symbols typically identify similar components, unless context dictates otherwise. The illustrative embodiments described in the detailed description, drawings, and claims are not meant to be limiting. Other embodiments may be used, and other changes may be made, without departing from the spirit or scope of the subject matter presented herein. It will be readily understood that the aspects of the present disclosure, as generally described herein, and illustrated in the Figures, can be arranged, substituted, combined, separated, and designed in a wide variety of different configurations, all of which are explicitly contemplated herein.

[0097] The present disclosure is not to be limited in terms of the particular embodiments described in this application, which are intended as illustrations of various aspects. Many modifications and variations can be made without departing from its spirit and scope, as will be apparent to those skilled in the art. Functionally equivalent methods and apparatuses within the scope of the disclosure, in addition to those enumerated herein, will be apparent to those skilled in the art from the foregoing descriptions. Such modifications and variations are intended to fall within the scope of the appended claims. The present disclosure is to be limited only by the terms of the appended claims, along with the full scope of equivalents to which such claims are entitled. It is to be understood that the terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting.

[0098] With respect to the use of substantially any plural and/or singular terms herein, those having skill in the art can translate from the plural to the singular and/or from

the singular to the plural as is appropriate to the context and/or application. The various singular/plural permutations may be expressly set forth herein for sake of clarity.

[0099] It will be understood by those within the art that, in general, terms used herein, and especially in the appended claims (for example, bodies of the appended claims) are generally intended as “open” terms (for example, the term “including” should be interpreted as “including but not limited to,” the term “having” should be interpreted as “having at least,” the term “includes” should be interpreted as “includes but is not limited to,” et cetera). While various compositions, methods, and devices are described in terms of “comprising” various components or steps (interpreted as meaning “including, but not limited to”), the compositions, methods, and devices can also “consist essentially of” or “consist of” the various components and steps, and such terminology should be interpreted as defining essentially closed-member groups. It will be further understood by those within the art that if a specific number of an introduced claim recitation is intended, such an intent will be explicitly recited in the claim, and in the absence of such recitation no such intent is present. For example, as an aid to understanding, the following appended claims may contain usage of the introductory phrases “at least one” and “one or more” to introduce claim recitations. However, the use of such phrases should not be construed to imply that the introduction of a claim recitation by the indefinite articles “a” or “an” limits any particular claim containing such introduced claim recitation to embodiments containing only one such recitation, even when the same claim includes the introductory phrases “one or more” or “at least one” and indefinite articles such as “a” or “an” (for example, “a” and/or “an” should be interpreted to mean “at least one” or “one or more”); the same holds true for the use of definite articles used to introduce claim recitations. In addition, even if a

specific number of an introduced claim recitation is explicitly recited, those skilled in the art will recognize that such recitation should be interpreted to mean at least the recited number (for example, the bare recitation of "two recitations," without other modifiers, means at least two recitations, or two or more recitations). Furthermore, in those instances where a convention analogous to "at least one of A, B, and C, et cetera" is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (for example, "a system having at least one of A, B, and C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, et cetera). In those instances where a convention analogous to "at least one of A, B, or C, et cetera" is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (for example, "a system having at least one of A, B, or C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, et cetera). It will be further understood by those within the art that virtually any disjunctive word and/or phrase presenting two or more alternative terms, whether in the description, claims, or drawings, should be understood to contemplate the possibilities of including one of the terms, either of the terms, or both terms. For example, the phrase "A or B" will be understood to include the possibilities of "A" or "B" or "A and B."

[0100] In addition, where features or aspects of the disclosure are described in terms of Markush groups, those skilled in the art will recognize that the disclosure is also thereby described in terms of any individual member or subgroup of members of the Markush group.

[0101] As will be understood by one skilled in the art, for any and all purposes, such as in terms of providing a written description, all ranges disclosed herein also encompass any and all possible subranges and combinations of subranges thereof. Any listed range can be easily recognized as sufficiently describing and enabling the same range being broken down into at least equal halves, thirds, quarters, fifths, tenths, et cetera. As a non-limiting example, each range discussed herein can be readily broken down into a lower third, middle third and upper third, et cetera. As will also be understood by one skilled in the art all language such as “up to,” “at least,” and the like include the number recited and refer to ranges which can be subsequently broken down into subranges as discussed above. Finally, as will be understood by one skilled in the art, a range includes each individual member. Thus, for example, a group having 1-3 cells refers to groups having 1, 2, or 3 cells. Similarly, a group having 1-5 cells refers to groups having 1, 2, 3, 4, or 5 cells, and so forth.

[0102] Various of the above-disclosed and other features and functions, or alternatives thereof, may be combined into many other different systems or applications. Various presently unforeseen or unanticipated alternatives, modifications, variations or improvements therein may be subsequently made by those skilled in the art, each of which is also intended to be encompassed by the disclosed embodiments.

Claims:

1. A fiber optic connector comprising:

at least first and second optical ferrules;

a connector housing having a longitudinal axis and comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;

a latch coupling positioned on each of the first and second exterior walls of the connector housing;

a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling;

wherein each latch coupling comprises a groove extending along the axis and having an open axial end; and

wherein the removable latch comprises a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis.

2. The fiber optic connector of claim 1, wherein the protrusion is movable along the longitudinal axis in each groove with respect to the connector housing.

3. The fiber optic connector of claim 1, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion.

4. The fiber optic connector of claim 3, wherein the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion.

5. The fiber optic connector of claim 4, wherein the free end portion of the depressible latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the reversible polarity fiber optic connector from the receptacle.

6. The fiber optic connector of claim 5, wherein the free rear end portion of the depressible latch arm is raised relative to the front end portion and wherein the removable latch is bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the reversible polarity fiber optic connector from the receptacle.

7. The fiber optic connector of claim 6, further comprising a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing.

8. The fiber optic connector of claim 7, wherein the elongate front section comprises an opening configured to receive the depressible latch arm.

9. The fiber optic connector of claim 8, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface

of the depressible latch arm when the depressible latch arm is received in the opening.

10. The fiber optic connector of claim 9, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening.

11. The fiber optic connector of claim 10, wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface of the depressible latch arm when the elongate front section moves rearward to depress the depressible latch arm.

12. The fiber optic connector as set forth in claim 1, wherein the connector housing comprises a single front body and a single back body.

13. The fiber optic connector as set forth in claim 12, further comprising first and second ferrule springs received on the first and second optical ferrules, respectively.

14. The fiber optic connector as set forth in claim 13, wherein each of the first and second optical ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges.

15. The fiber optic connector as set forth in claim 14, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall.

16. The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 6.25 mm.

17. The reversible polarity fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 5.25 mm

18. The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less.

19. A reversible polarity fiber optic connector comprising:

at least first and second optical ferrules, each of the first and second ferrules comprising a ferrule flange;

first and second ferrule springs received on the first and second optical ferrules, respectively;

a connector housing comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall, the connector housing comprising a single front body and a single back body, the single front body comprising a transverse wall configured to simultaneously engage the ferrule flanges of the first and second optical ferrules, the single back body being configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engageable with the transverse wall;

a latch coupling positioned on each of the first and second exterior walls of the housing;

a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing;

wherein positioning the removable latch on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable latch on the second exterior wall of the housing yields a fiber optic connector with a second polarity, the second polarity being opposite to the first polarity.

20. A fiber optic connector comprising:

at least first and second optical ferrules;

a connector housing comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;

a removable latch configured to selectively and releasably couple to each of the first and second exterior walls of the housing, the removable latch comprising a base portion and a depressible latch arm connected to the base portion, the depressible latch arm having a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion, the free rear end portion of the latch arm being configured to be received in an opening of a receptacle and comprising a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the reversible polarity fiber optic connector from the receptacle, the free rear end portion of the depressible latch arm being raised relative to the front end portion, the removable latch being bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the reversible polarity fiber optic connector from the receptacle; and

a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing, the elongate front section comprising an opening configured to receive the depressible latch arm, the elongate front section comprising a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening;

wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening.

wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface when the elongate front section moves rearward to depress the depressible latch arm.

Abstract:

Reversible polarity fiber optic connectors are provided having housings at least partially surrounding first and second optical ferrules with walls above and beneath the ferrules. Positioning removable elements such as latches, removable arms, or push-pull tabs on the first wall above the ferrules yields fiber optic connectors with a first polarity type, and positioning the removable elements on the second wall beneath the ferrules yields fiber optic connectors with a second, opposite polarity type. Various engagement mechanisms are provided on either the connector housing walls or on the removable elements, or both, to assist in affixing the removable element to the connector housing.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Kim Man		WONG			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Kowloon		Country of Residence ⁱ	HK		
Mailing Address of Inventor:						
Address 1		7F, Prosperity Centre, 25 Chong Yip Street				
Address 2		Kwin Tong				
City	Kowloon		State/Province			
Postal Code		Country ⁱ	HK			
Inventor	2				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Jeffrey		GNIADEK			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Oxford	State/Province	ME	Country of Residence ⁱ	US	
Mailing Address of Inventor:						
Address 1		P.O. Box 578				
Address 2						
City	Oxford		State/Province	ME		
Postal Code	04270	Country ⁱ	US			
Inventor	3				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Kazuyoshi		TAKANO			

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		

Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service			
City	Tokyo	Country of Residence ⁱ	JP

Mailing Address of Inventor:

Address 1	3F Konko Building, 1-1-16 Kanda, Izumi-cho		
Address 2	Chiyoda-ku		
City	Tokyo	State/Province	
Postal Code	101-0024	Country ⁱ	JP
Inventor	4	Remove	

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Siu Kei		MA	

Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service			
City	Kowloon	Country of Residence ⁱ	HK

Mailing Address of Inventor:

Address 1	7F, Prosperity Centre, 25 Chong Yip Street		
Address 2	Kwun Tong		
City	Kowloon	State/Province	
Postal Code		Country ⁱ	HK

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button.

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ An Address is being provided for the correspondence Information of this application.

Customer Number	152878		
Email Address	patents@senko.com	Add Email	Remove Email
Email Address	stl.uspatents@stinson.com	Add Email	Remove Email

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		

Application Information:

Title of the Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		
Attorney Docket Number	S09300US04	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	22	Suggested Figure for Publication (if any)	11

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.			
Please Select One:			
	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	152878		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Continuation of	16297607	2019-03-09
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
16297607	Continuation of	PCT/US2018/016049	2018-01-30
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2018/016049	Claims benefit of provisional	62581961	2017-11-06
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2018/016049	Claims benefit of provisional	62546920	2017-08-17
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2018/016049	Claims benefit of provisional	62485042	2017-04-13
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2018/016049	Claims benefit of provisional	62463901	2017-02-27
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2018/016049	Claims benefit of provisional	62463898	2017-02-27
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2018/016049	Claims benefit of provisional	62457150	2017-02-09

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
PCT/US2018/016049	Claims benefit of provisional	62452147	2017-01-30
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1	Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear		
☒ Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		
Name of the Deceased or Legally Incapacitated Inventor:		
If the Applicant is an Organization check here. ☒		
Organization Name	Senko Advanced Components, Inc.	
Mailing Address Information For Applicant:		
Address 1	450 Donald Lynch Blvd, Unit D	
Address 2	Edward S. Jarmolowicz	
City	Marlborough	State/Province MA
Country	US	Postal Code 01752
Phone Number	978-493-7107	Fax Number 508-481-7676
Email Address	patents@senko.com	
Additional Applicant Data may be generated within this form by selecting the Add button. Add		

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		

Assignee	1		
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.			
Remove			
If the Assignee or Non-Applicant Assignee is an Organization check here. ☒			
Organization Name	Senko Advanced Components, Inc.		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1	450 Donald Lynch Blvd, Unit D		
Address 2	Edward S. Jarmolowicz		
City	Marlborough	State/Province	MA
Country i	US	Postal Code	01752
Phone Number	978-493-7107	Fax Number	508-481-7676
Email Address			
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add			

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is **not** checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Jonathan Pollmann/		Date (YYYY-MM-DD)	2021-03-12	
First Name	Jonathan	Last Name	Pollmann	Registration Number	71,702
Additional Signature may be generated within this form by selecting the Add button. Add					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	S09300US04
		Application Number	
Title of Invention	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

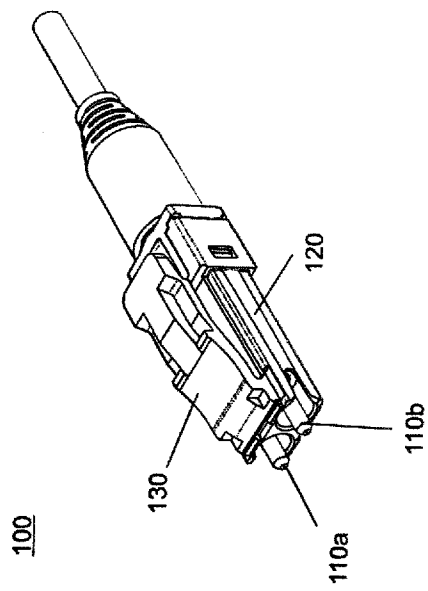


FIG. 1A

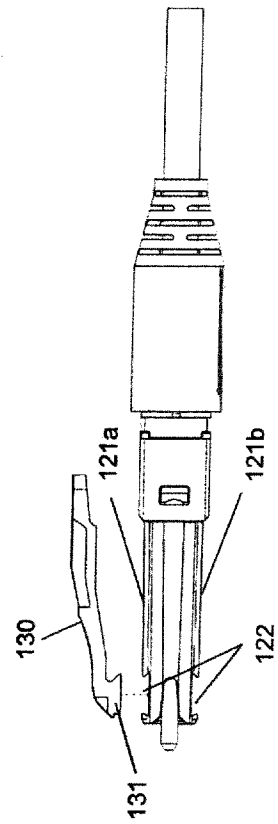
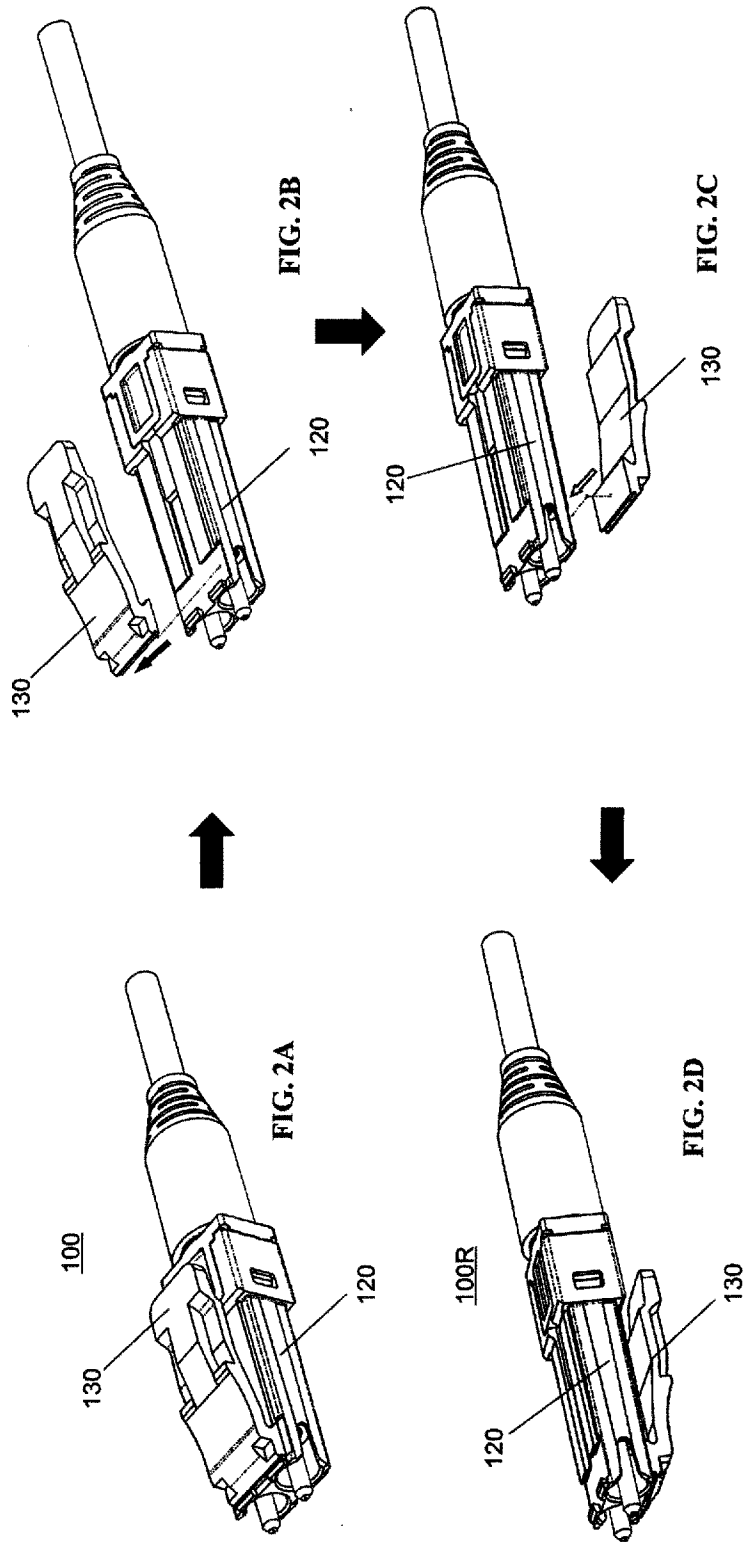


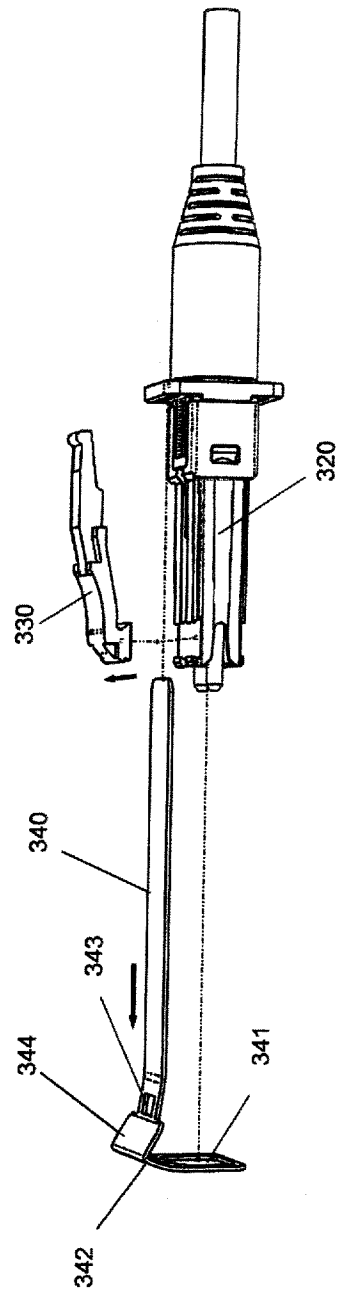
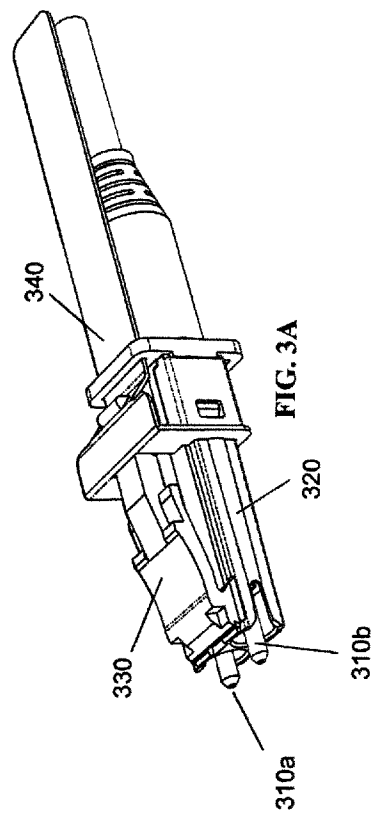
FIG. 1B

2/22

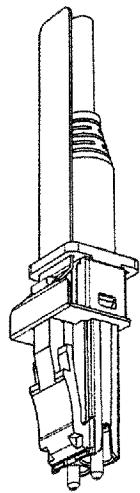


3/22

300



4/22



300 FIG. 4A

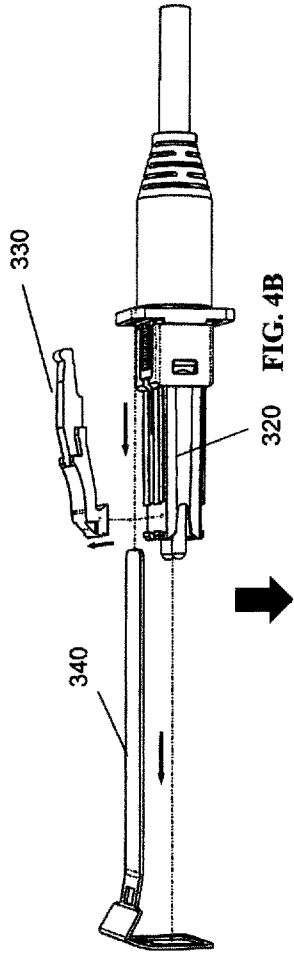


FIG. 4B

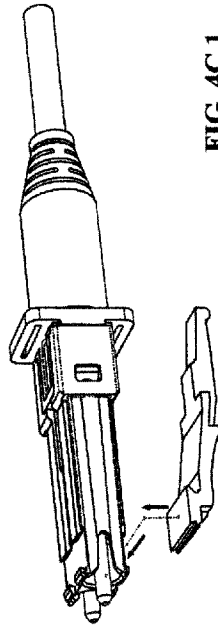


FIG. 4C.1

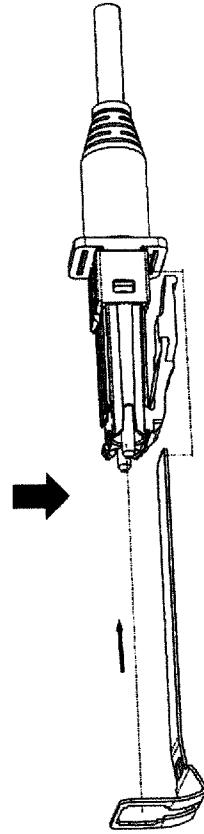


FIG. 4C.2

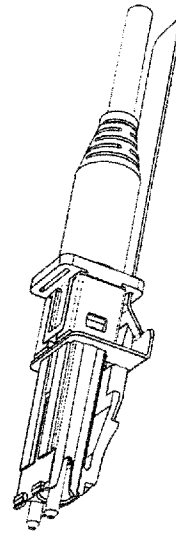


FIG. 4D

5/22

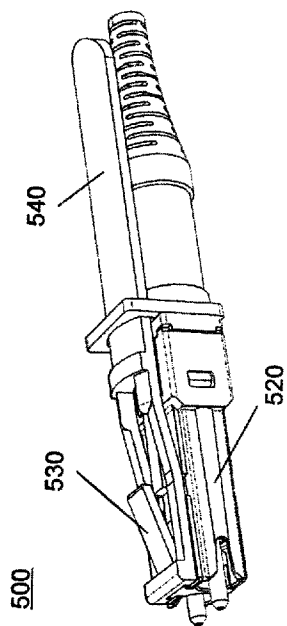


FIG. 5A

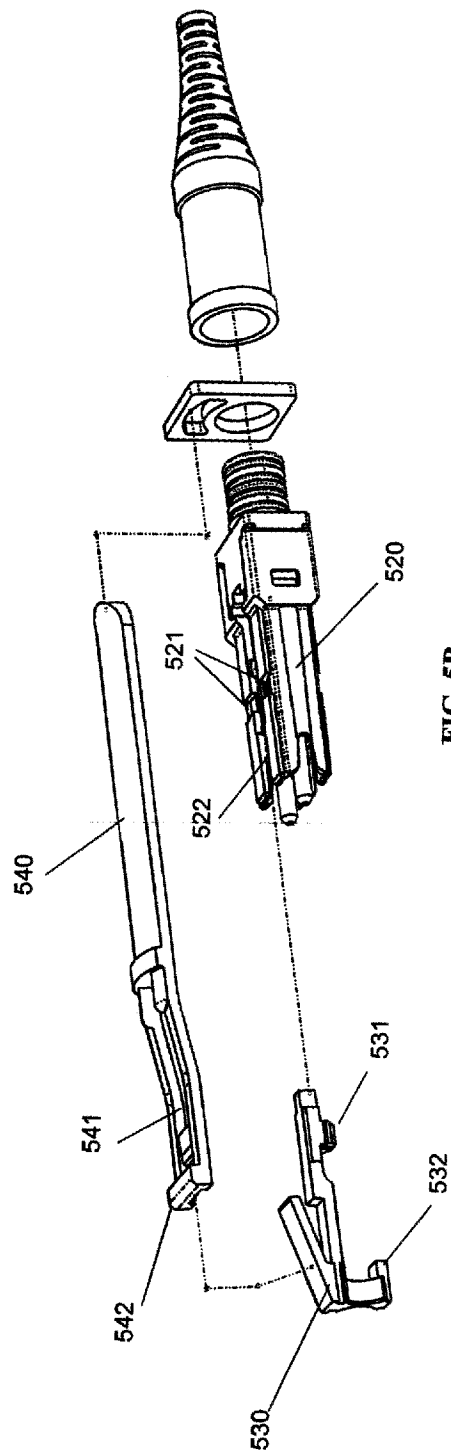
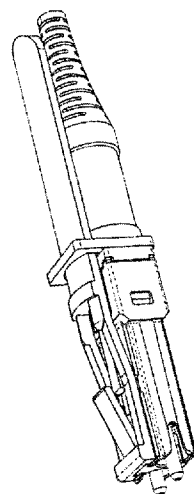


FIG. 5B

6/22



500 FIG. 6A

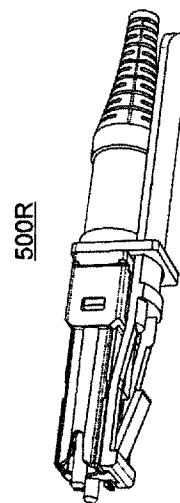


FIG. 6D

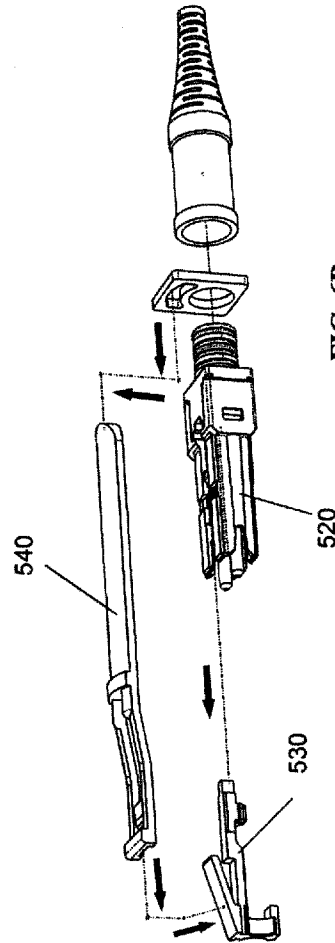


FIG. 6B

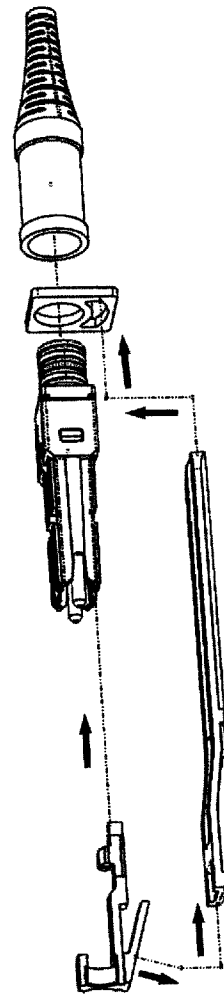


FIG. 6C

7/22

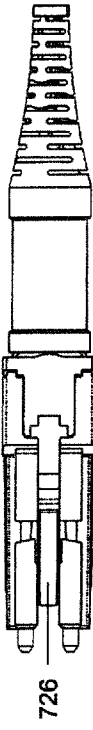
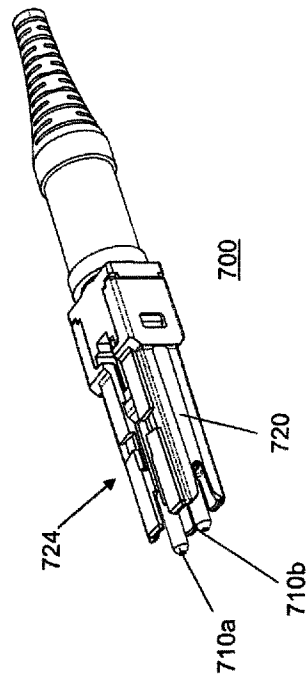


FIG. 7C

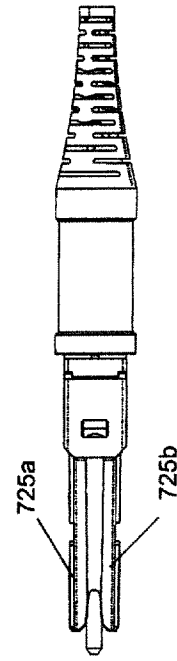
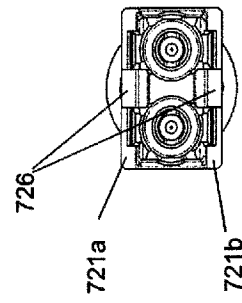


FIG. 7D

8/22

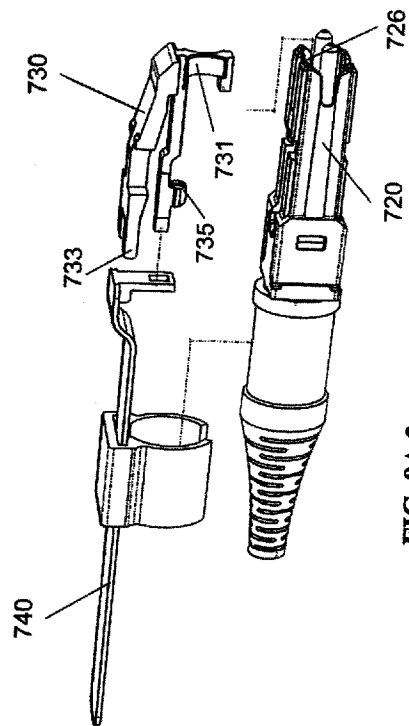


FIG. 8A.2

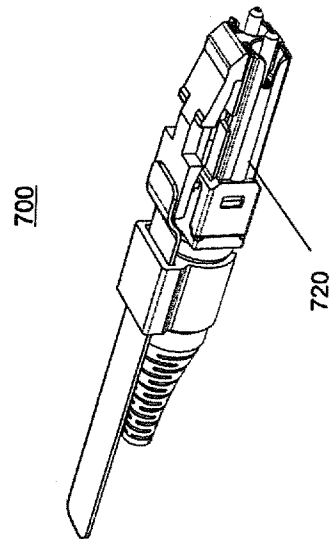


FIG. 8A.1

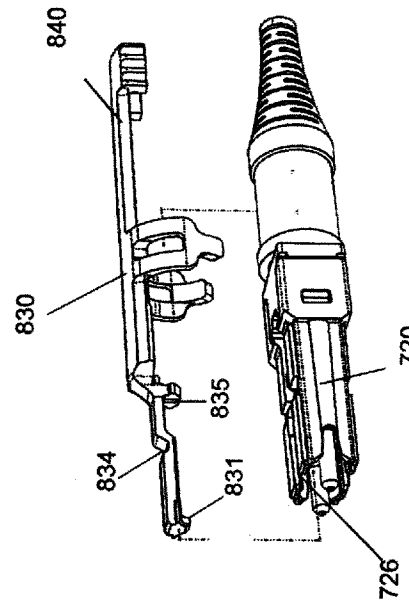


FIG. 8B.2

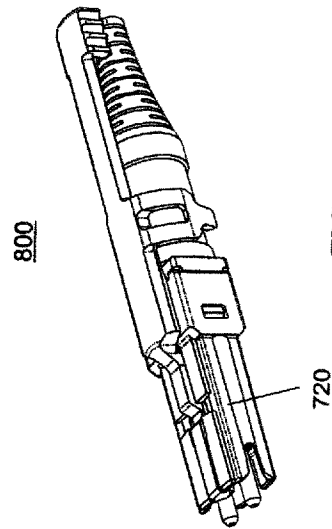
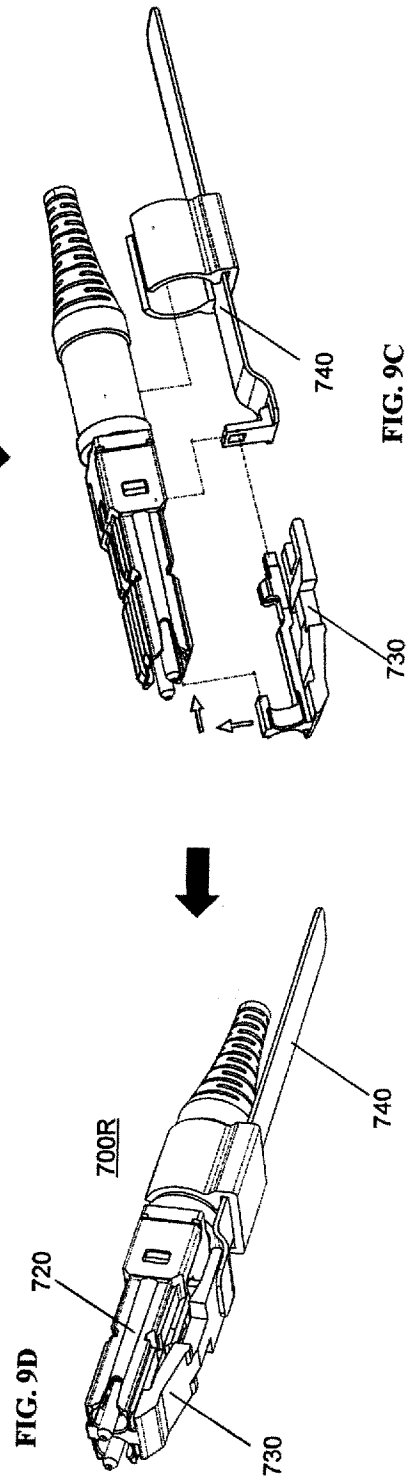
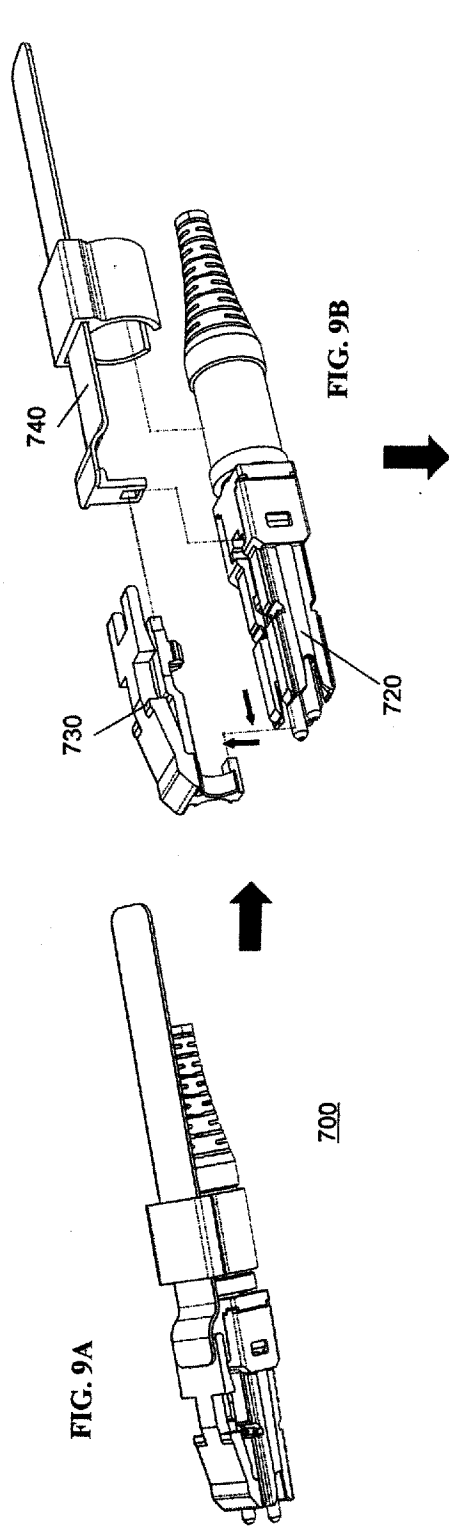
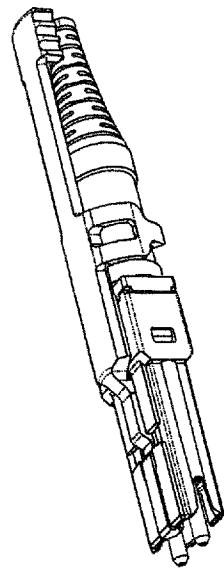


FIG. 8B.1

9/22



10/22



800
FIG. 10A

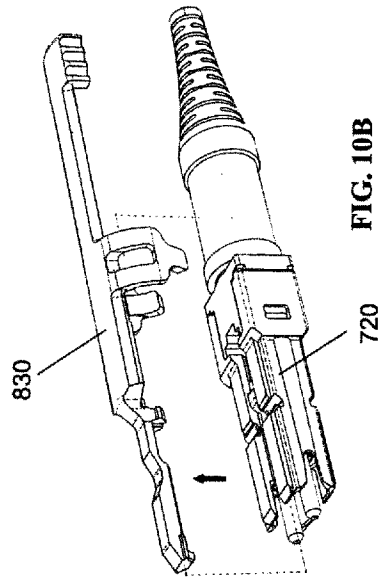


FIG. 10B

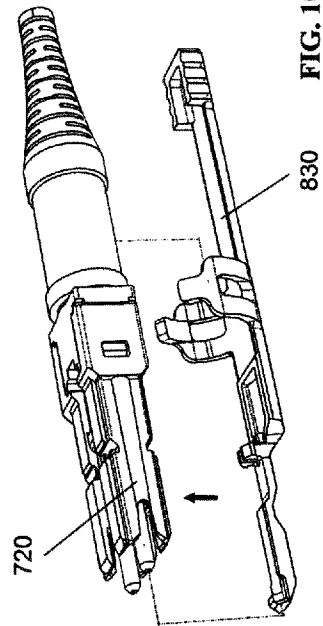


FIG. 10C

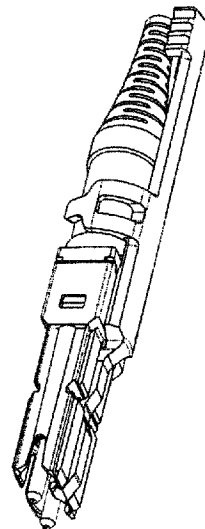


FIG. 10D

11/22

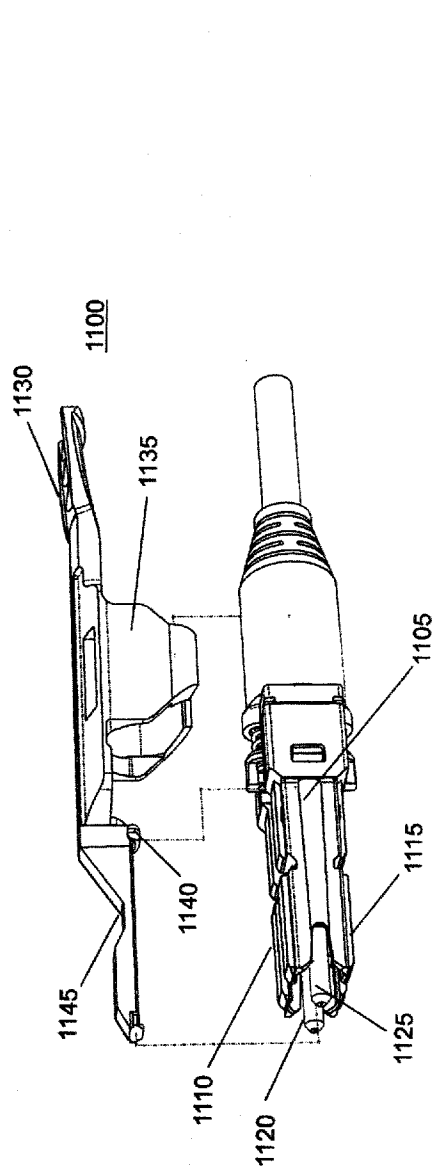


FIG. 11A

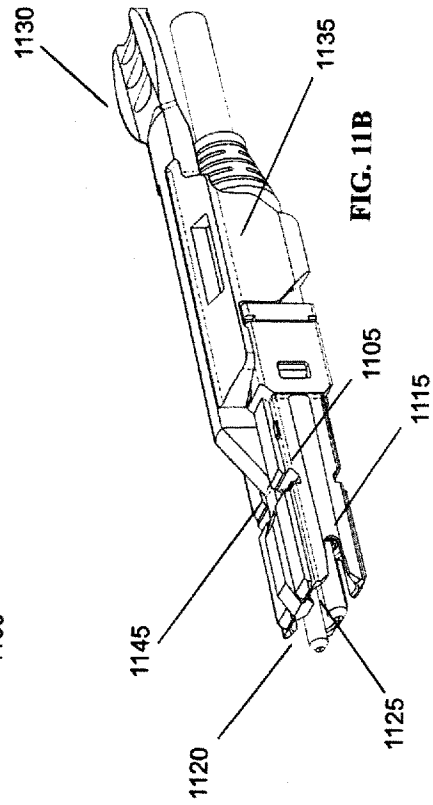


FIG. 11B

12/22

FIG. 12A

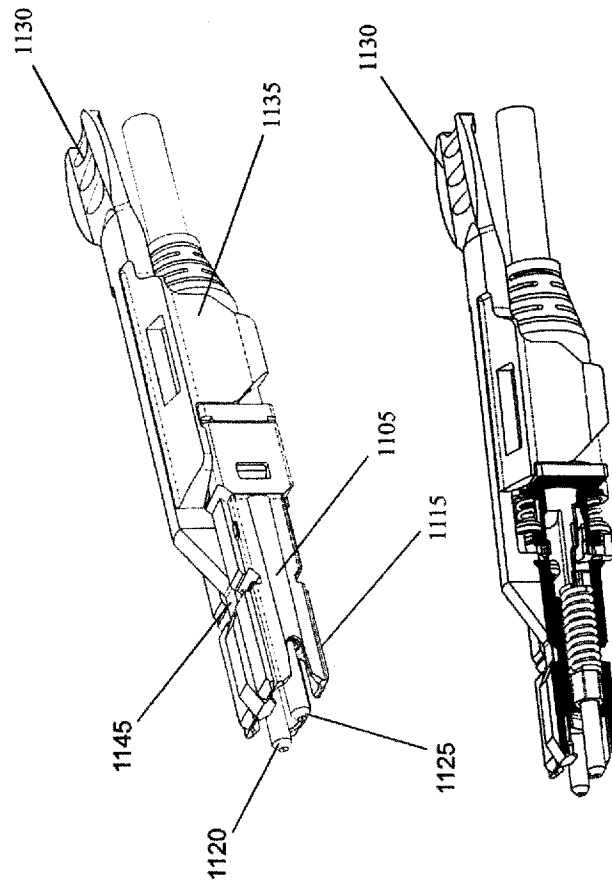


FIG. 12B

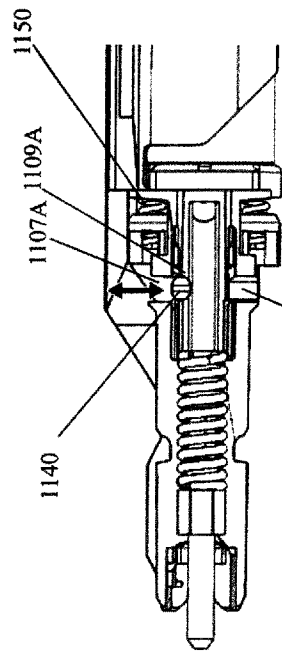


FIG. 12C

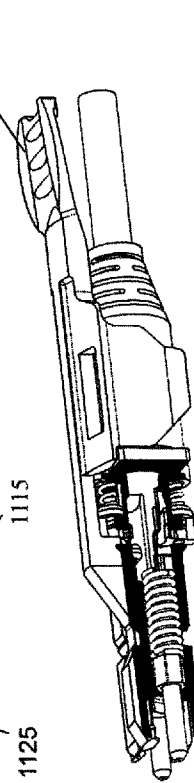
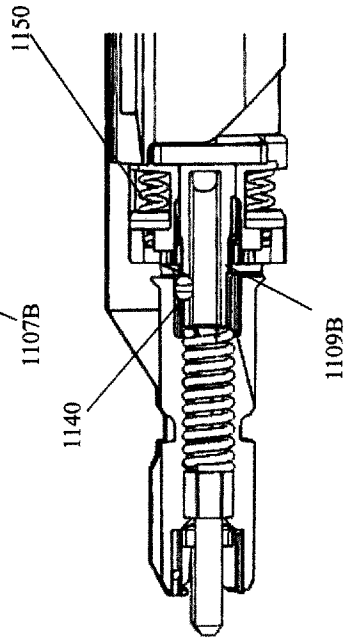


FIG. 12D



13/22

FIG. 13A

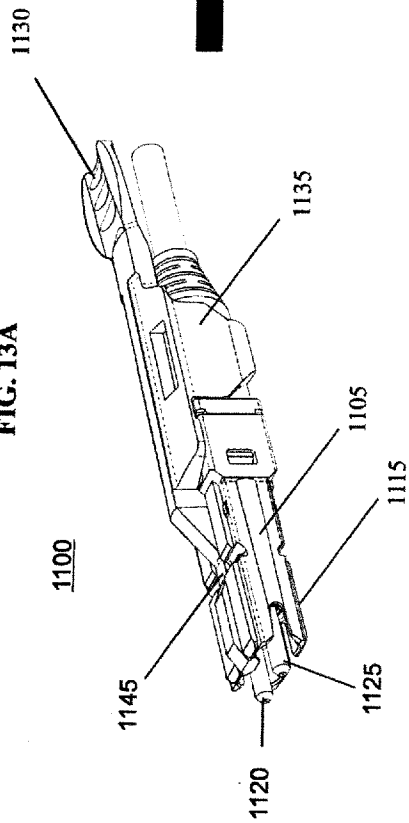


FIG. 13D

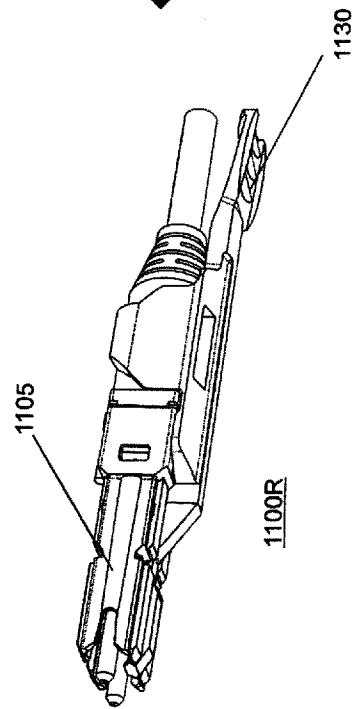


FIG. 13B

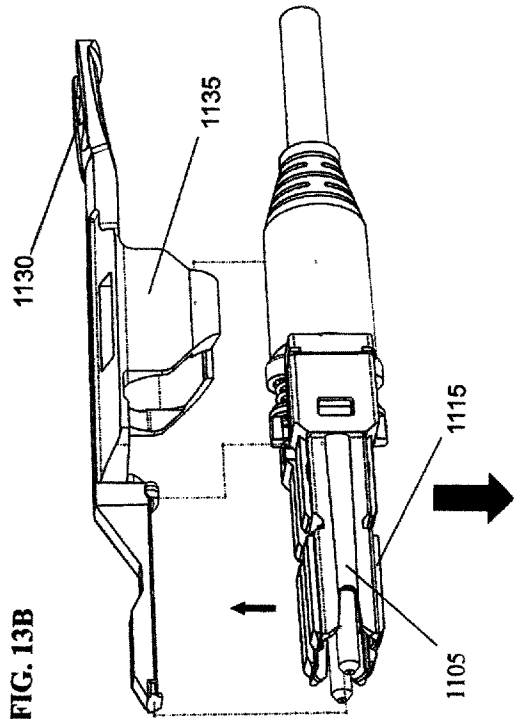
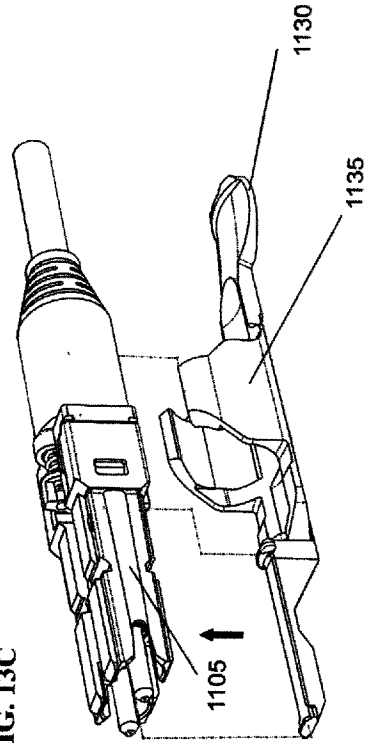


FIG. 13C



14/22

FIG. 14A

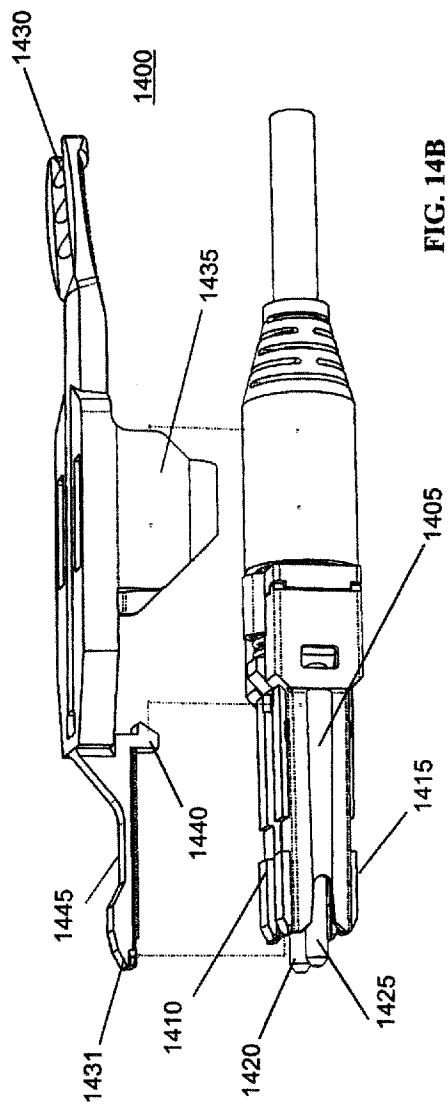
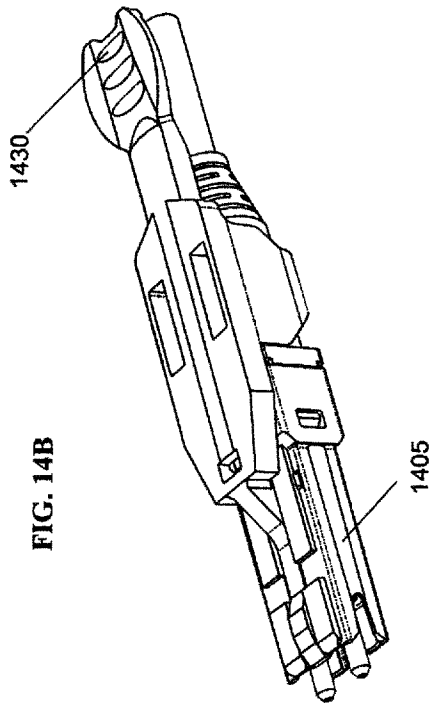


FIG. 14B



15/22

FIG. 15A

1430

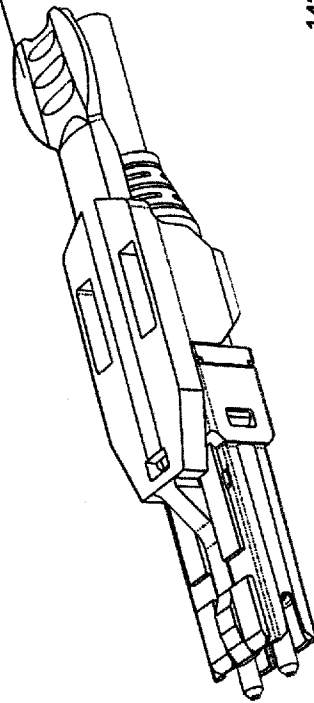


FIG. 15B

1460

1465

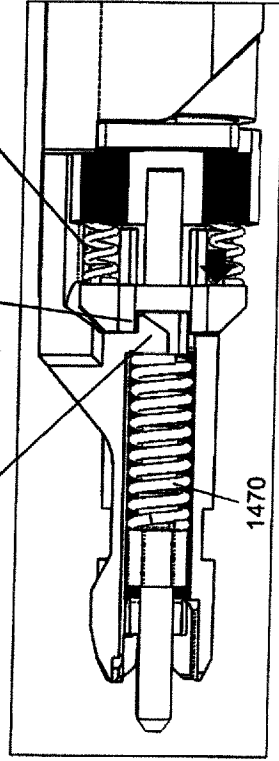


FIG. 15C

1460

1465

1430

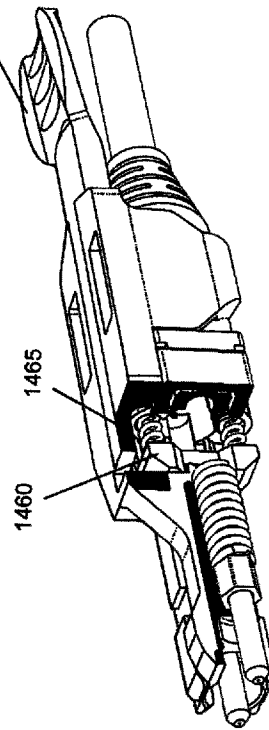
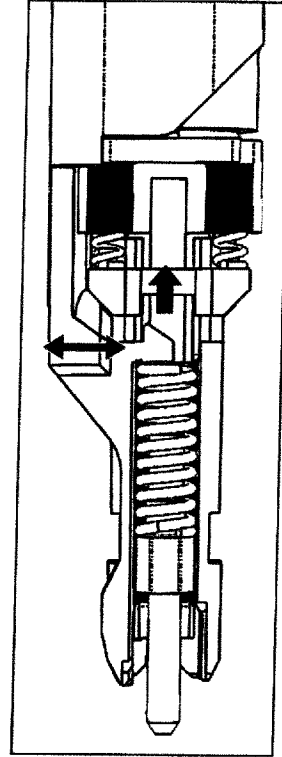


FIG. 15D



16/22

FIG. 16A

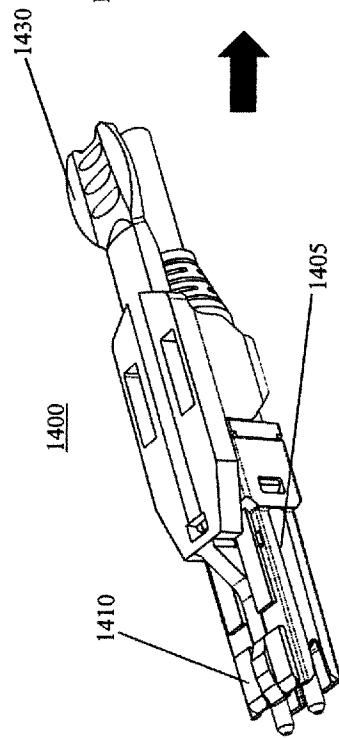


FIG. 16B

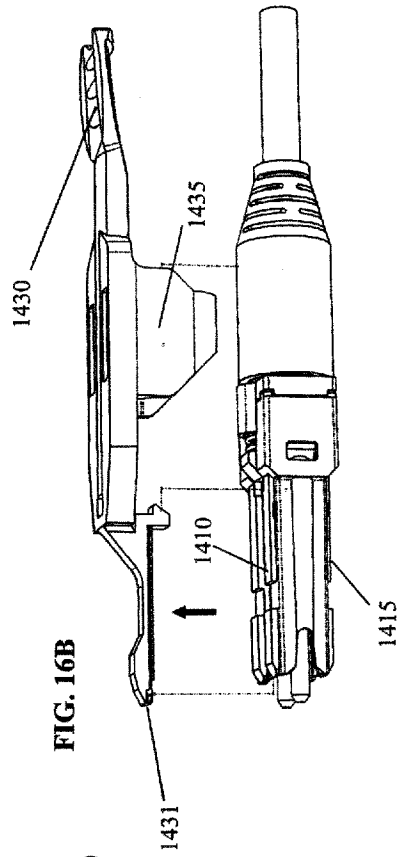


FIG. 16D

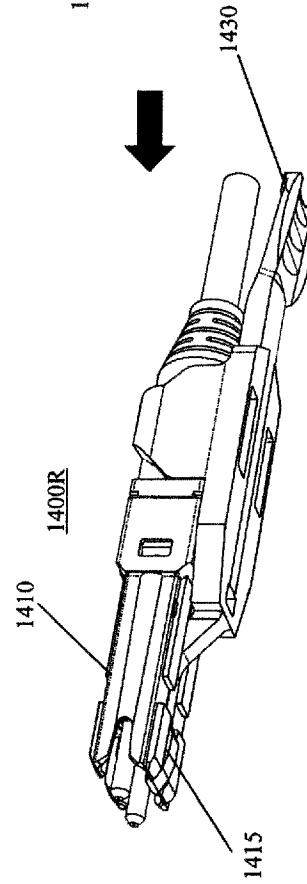
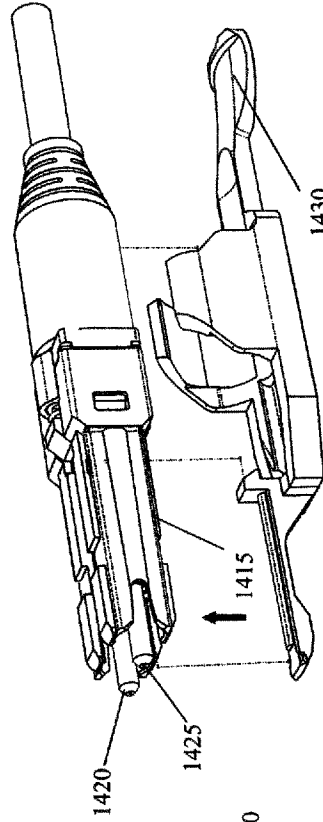


FIG. 16C



17/22

FIG 17A

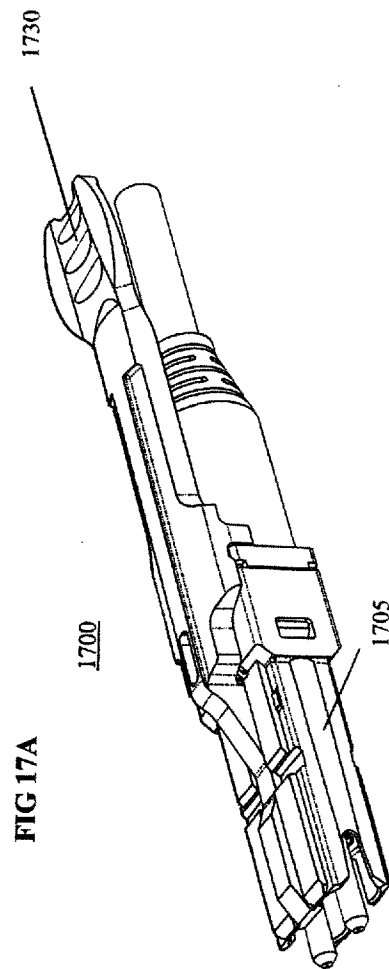


FIG 17B

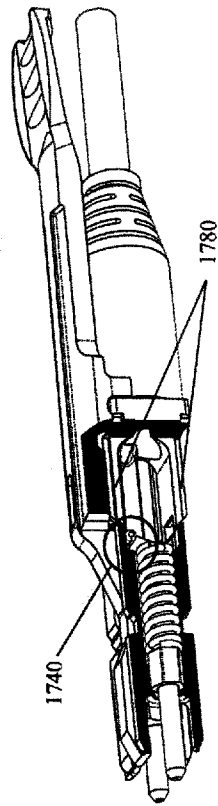
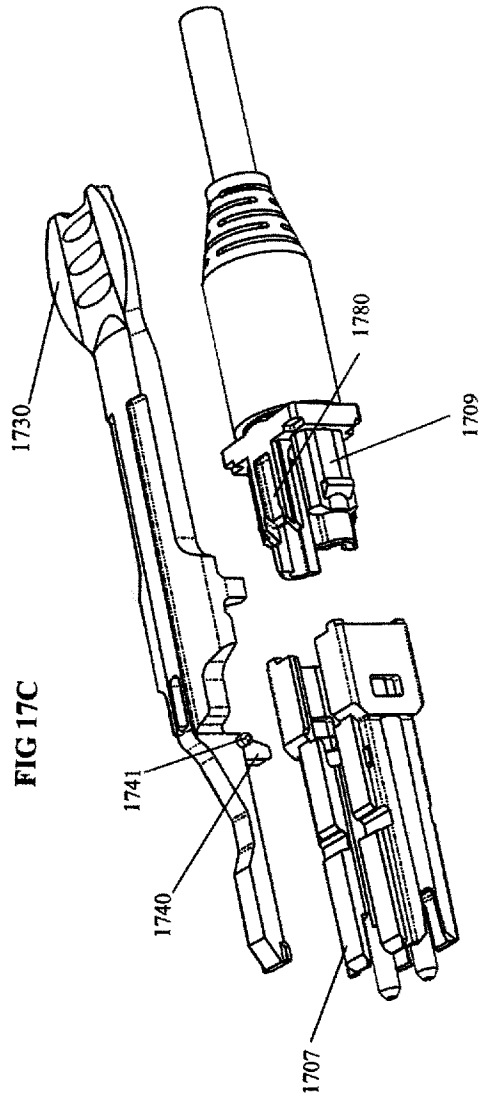


FIG 17C



18/22

FIG. 18A

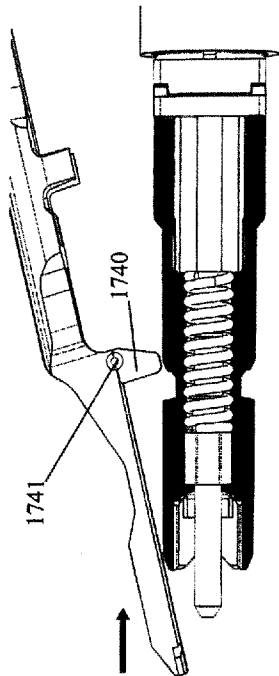


FIG. 18B

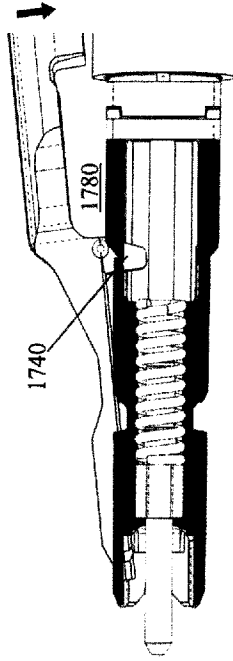


FIG. 18C

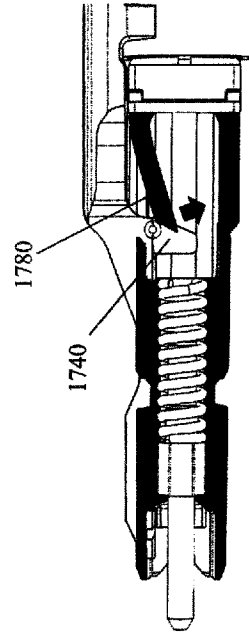
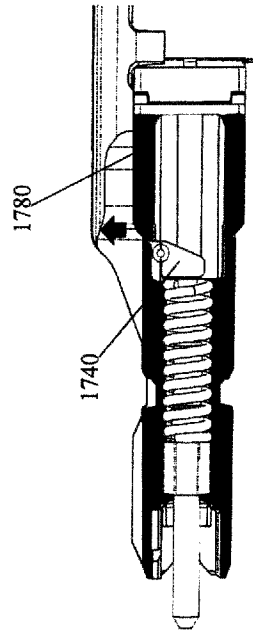


FIG. 18D



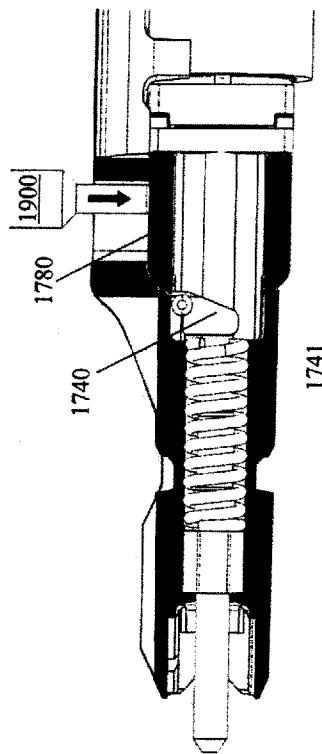


FIG. 19A

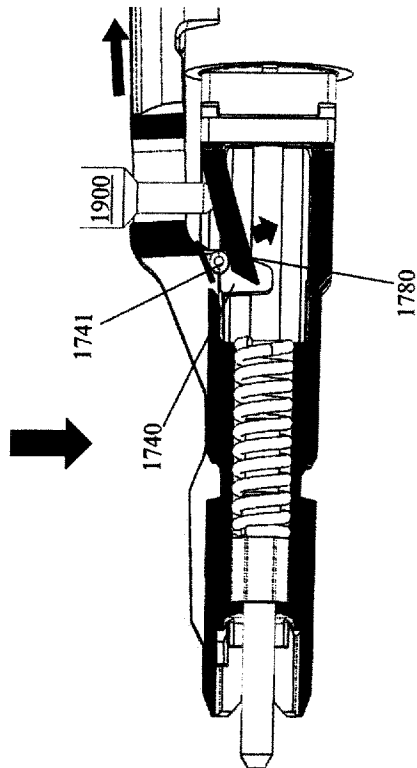


FIG. 19B

20/22

FIG. 20A

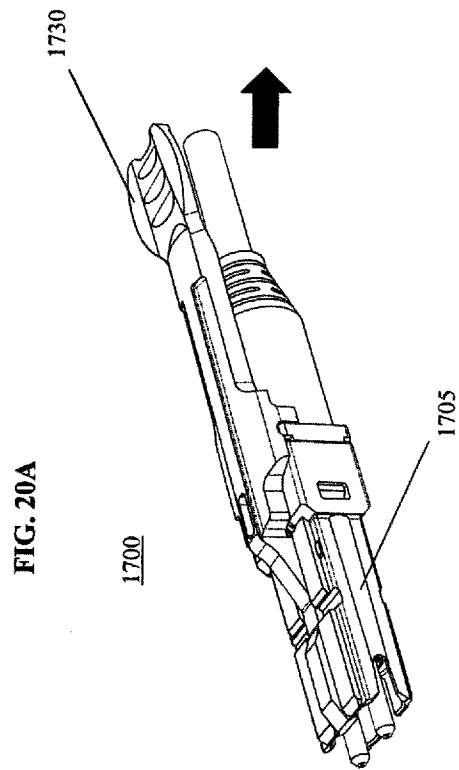


FIG. 20B

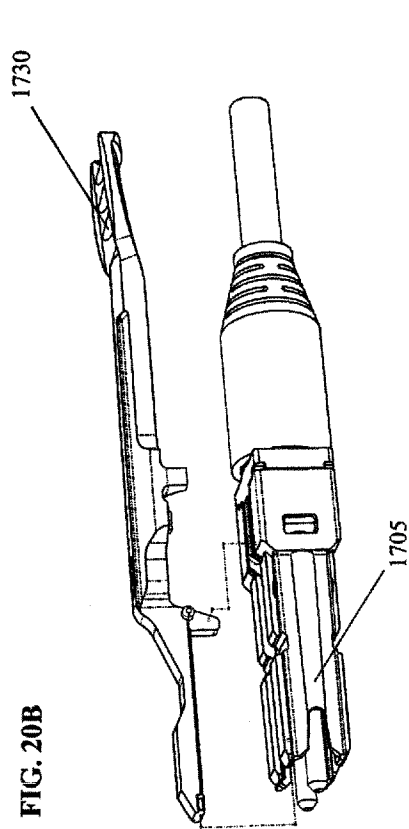


FIG. 20D

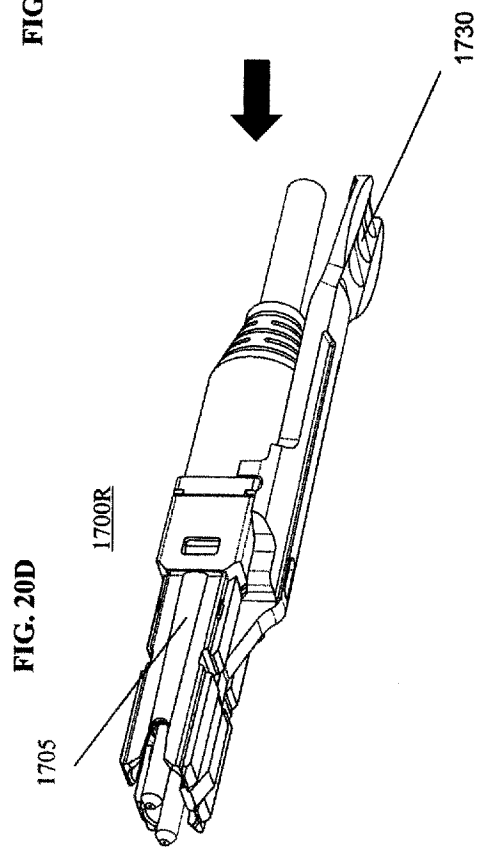
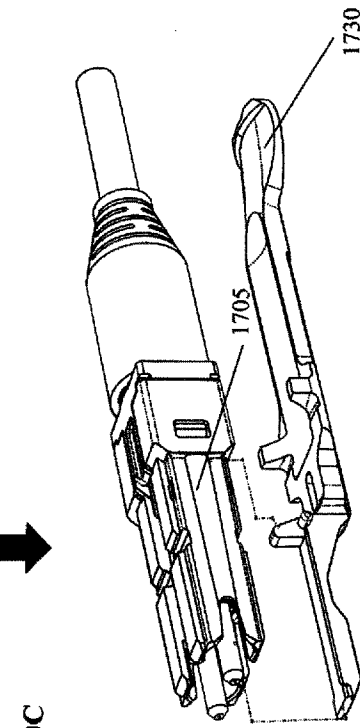


FIG. 20C



21/22

2100

FIG. 21A

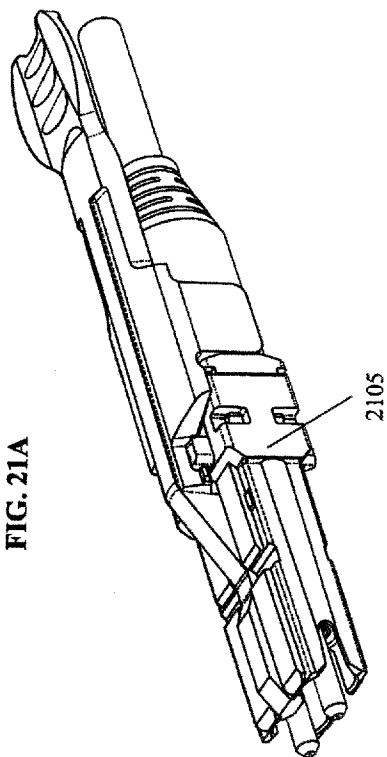


FIG. 21B

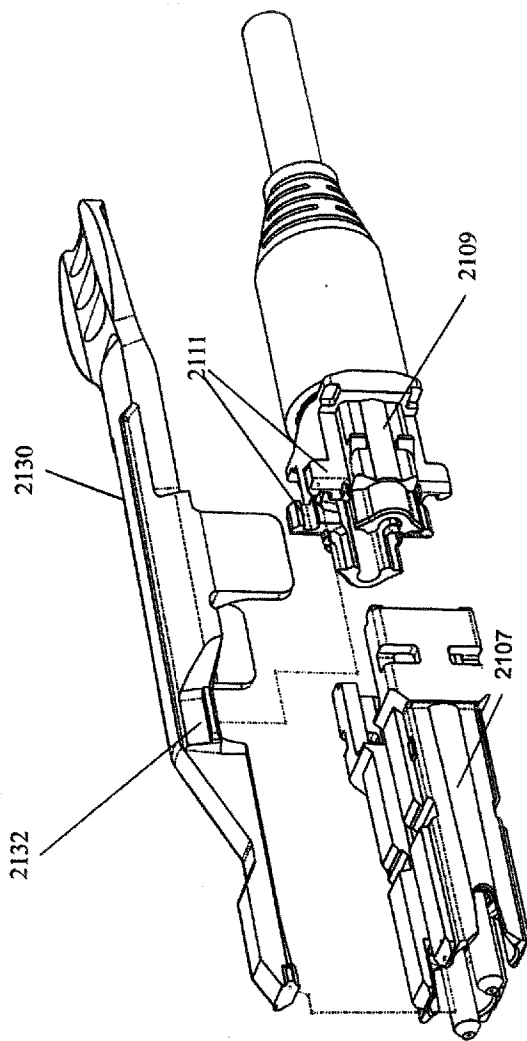


FIG. 21D

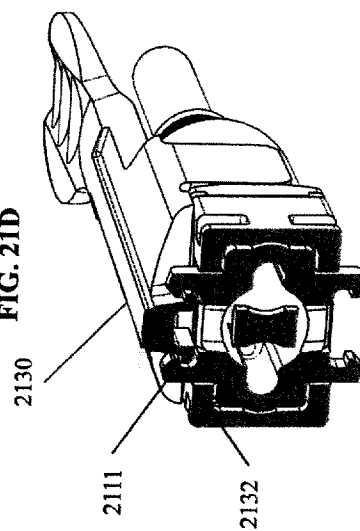
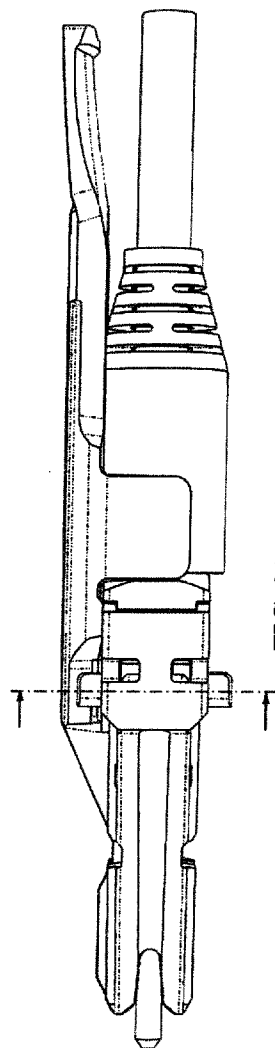
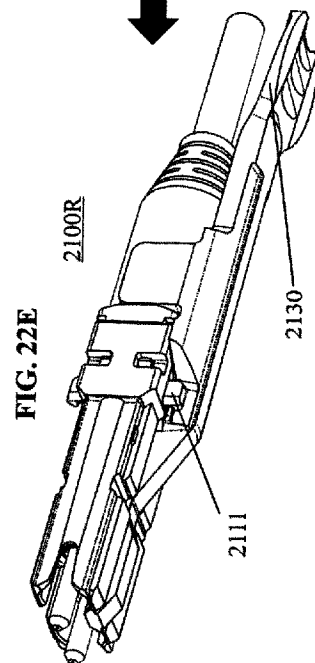
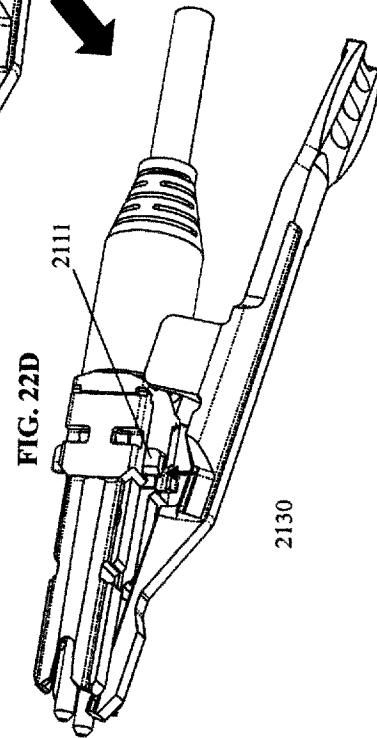
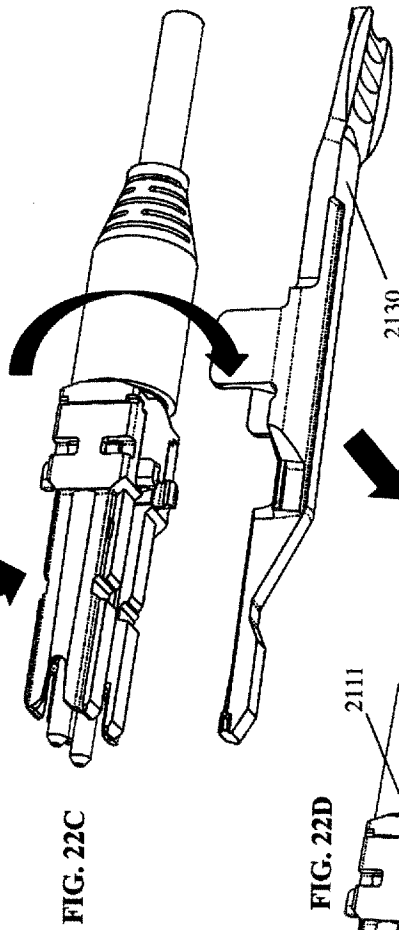
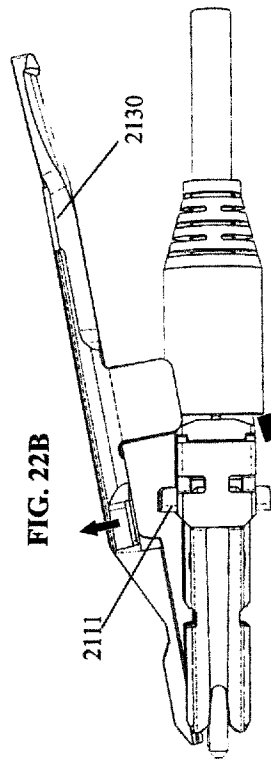
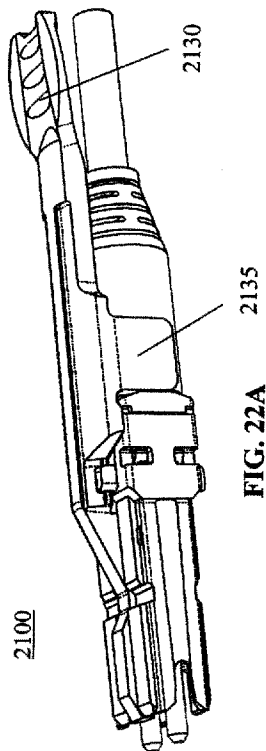


FIG. 21C



22/22



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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of
Invention

OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE

As the below named inventor, I hereby declare that:

This declaration
is directed to:



The attached application, or



United States application or PCT international application number _____

filed on _____.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

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LEGAL NAME OF INVENTOR

Inventor: Jeffrey GNIADEK

Date (Optional): _____

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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LEGAL NAME OF INVENTOR

Inventor: Siu Kei Ma

Date (Optional): _____

Signature: _____

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is directed to:



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LEGAL NAME OF INVENTOR

Inventor: Kazuyoshi Takano

Date (Optional): _____

Signature: _____

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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Title of
Invention

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United States application or PCT international application number _____

filed on _____

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I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

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LEGAL NAME OF INVENTOR

Inventor: Kim Man WONG

Signature: _____

Date (Optional): _____

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		17200134
	Filing Date		2021-03-12
	First Named Inventor	Kim Man WONG	
	Art Unit	2883	
	Examiner Name		
	Attorney Docket Number	S09300US04	

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	17200134
Filing Date	2021-03-12
First Named Inventor	Kim Man WONG
Art Unit	2883
Examiner Name	
Attorney Docket Number	S09300US04

1	
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Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	17200134
Filing Date	2021-03-12
First Named Inventor	Kim Man WONG
Art Unit	2883
Examiner Name	
Attorney Docket Number	S09300US04

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Edward S. Jarmolowicz/	Date (YYYY-MM-DD)	2021-03-17
Name/Print	Edward S. Jarmolowicz	Registration Number	47238

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	42203653
Application Number:	17200134
International Application Number:	
Confirmation Number:	1767
Title of Invention:	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE
First Named Inventor/Applicant Name:	Kim Man WONG
Customer Number:	152878
Filer:	Edward Jarmolowicz/Kristin Corbett
Filer Authorized By:	Edward Jarmolowicz
Attorney Docket Number:	S09300US04
Receipt Date:	17-MAR-2021
Filing Date:	
Time Stamp:	11:54:07
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	S09300US04_IDS.pdf	1034308	no	4
			6dd5b7908d6f780bdb7422bef5de9080506 1735a		

Warnings:

Information:	
Total Files Size (in bytes):	1034308
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 17/200,134	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)	OR	RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	80		N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	350		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(j))	20 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 240 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
			TOTAL	830		TOTAL	
* If the difference in column 1 is less than zero, enter "0" in column 2.							
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	OR	RATE(\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	x =	OR	x =
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =	OR	x =
	Application Size Fee (37 CFR 1.16(s))					OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR	
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)	OR	RATE(\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	x =	OR	x =
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =	OR	x =
	Application Size Fee (37 CFR 1.16(s))					OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR	
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
17/200,134	03/12/2021	2883	830	S09300US04	20	3

CONFIRMATION NO. 1767

FILING RECEIPT



0000000124271210

152878
Senko Advanced Components, Inc.
450 Donald Lynch Blvd
Unit D
Marlborough, MA 01752

Date Mailed: 03/24/2021

Receipt is acknowledged of this non-provisional utility patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF FIRST INVENTOR, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection.

Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections provided that the request is grantable.

Inventor(s)

Kim Man WONG, Kowloon, HONG KONG;
Jeffrey GNIADK, Oxford, ME;
Kazuyoshi TAKANO, Tokyo, JAPAN;
Siu Kei MA, Kowloon, HONG KONG;

Applicant(s)

Senko Advanced Components, Inc., Marlborough, MA;

Assignment For Published Patent Application

Senko Advanced Components, Inc., Marlborough, MA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 16/297,607 03/09/2019
which is a CON of PCT/US2018/016049 01/30/2018
which claims benefit of 62/581,961 11/06/2017
and claims benefit of 62/546,920 08/17/2017
and claims benefit of 62/485,042 04/13/2017
and claims benefit of 62/463,901 02/27/2017
and claims benefit of 62/463,898 02/27/2017
and claims benefit of 62/457,150 02/09/2017
and claims benefit of 62/452,147 01/30/2017

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 03/22/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/200,134**

Projected Publication Date: 07/01/2021

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE

Preliminary Class

385

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

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Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

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NOT GRANTED

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/200,134	03/12/2021	Kim Man WONG	S09300US04	1767
152878	7590	04/28/2021	EXAMINER	
Senko Advanced Components, Inc. 450 Donald Lynch Blvd Unit D Marlborough, MA 01752			ART UNIT	PAPER NUMBER
			2883	
			NOTIFICATION DATE	DELIVERY MODE
			04/28/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eofficeaction@appcoll.com
patents@senko.com
stl.uspatents@stinson.com

<i>Decision Granting Request for Prioritized Examination (Track I)</i>	Application No. 17/200,134	Applicant(s) WONG et al.	
	Examiner MICHELLE R EASON	Art Unit OPET	AIA (FITF) Status Yes

1. THE REQUEST FILED 12 March 2021 IS **GRANTED** .

The above-identified application has met the requirements for prioritized examination

A. ☒ for an original nonprovisional application (Track I).

B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination.** The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims**, or a multiple dependent claim;

C. filing a **request for continued examination** ;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to MICHELLE EASON at (571) 272-4231. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/Michelle R. Eason/	
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/200,134	03/12/2021	Kim Man WONG	S09300US04	1767
152878	7590	06/09/2021	EXAMINER	
Senko Advanced Components, Inc.			BLEVINS, JERRY M	
450 Donald Lynch Blvd			ART UNIT	
Unit D			PAPER NUMBER	
Marlborough, MA 01752			2883	
			NOTIFICATION DATE	
			DELIVERY MODE	
			06/09/2021	
			ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eofficeaction@appcoll.com
patents@senko.com
stl.uspatents@stinson.com

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 112

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

Claims 5-11, 17, and 20 are rejected under 35 U.S.C. 112(b) as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor regards as the invention.

Claims 5, 17, and 20 recite the limitation "the reversible polarity fiber optic connector" in the respective lines 4, 1, and 16. There is insufficient antecedent basis for this limitation in the claims. While sufficient antecedent basis does exist for "a fiber optic connector," the recitation of "the reversible polarity fiber optic connector" creates ambiguity in that it is not clear as to whether or not the claimed "a fiber optic connector" is required to exhibit "reversible polarity." Claims 6-11 are rejected due to their dependence from claim 5. Appropriate correction is required.

Allowable Subject Matter

Claims 1-4, 12-16, 18, and 19 are allowed.

Claims 5-11 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112(b) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claim 20 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. 112(b) set forth in this Office action.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claims 1-18, the prior art of record, as best exemplified by **US 2013/0322825 to Cooke et al.**, teaches a fiber optic connector (20) comprising: at least first and second optical ferrules (30); a connector housing (40) having a longitudinal axis and comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall (66T) and a second exterior wall (66B) on an opposite side of the space from the first exterior wall; a latch coupling (74T, 74B) positioned on each of the first and second exterior walls of the connector housing; a removable latch (100) for engaging either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling (Fig. 2).

However, the prior art of record, whether taken individually or in combination, when considered in light of the claimed subject matter as a whole, fails to disclose or render obvious that each latch coupling comprises a groove extending along the axis and having an open axial end; and wherein the removable latch comprises a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis.

Regarding claim 19, the prior art of record, teaches the similar limitations as set forth above. However, the prior art of record, whether taken individually or in combination, when considered in light of the claimed subject matter as a whole, fails to disclose or render obvious a latch coupling positioned on each of the first and second exterior walls of the housing; a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing; wherein positioning the removable latch on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable latch on the second exterior wall of the housing yields a fiber optic connector with a second polarity, the second polarity being opposite to the first polarity.

Regarding claim 20, the prior art of record, teaches the similar limitations as set forth above. However, the prior art of record, whether taken individually or in combination, when considered in light of the claimed subject matter as a whole, fails to disclose or render obvious a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing, the elongate front section comprising an opening configured to receive the depressible latch arm, the elongate front section comprising a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY M BLEVINS whose telephone number is (571)272-8581. The examiner can normally be reached on Monday - Friday.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Hollweg can be reached on 571-270-1739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <https://ppair-my.uspto.gov/pair/PrivatePair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JERRY M BLEVINS/
Primary Examiner, Art Unit 2883

<i>Notice of References Cited</i>	Application/Control No. 17/200,134		Applicant(s)/Patent Under Reexamination WONG et al.	
	Examiner JERRY M BLEVINS		Art Unit 2883	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20130322825-A1	12-2013	Cooke; Terry L.	G02B6/3831	385/59
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Search Notes</i> 	Application/Control No. 17/200,134	Applicant(s)/Patent Under Reexamination WONG et al.
	Examiner JERRY M BLEVINS	Art Unit 2883

CPC - Searched*		
Symbol	Date	Examiner
G02B6/3893,3821,3879	06/04/2021	JMB

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner
385	78	06/04/2021	JMB

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
"SEARCH" searched	06/04/2021	JMB
Inventor name searched	06/04/2021	JMB
Related files searched	06/04/2021	JMB

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

/JERRY M BLEVINS/ Primary Examiner, Art Unit 2883	
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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	2	"20130322825".pn.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:08 PM
L2	16530	385/78.ccls. g02b6/3893,3821,3879. cpc.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:12 PM
L3	15	L2 and pull adj tab with latch with ferrule	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:12 PM
L4	4	L2 and pull adj tab with latch with ferrule with depress\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:15 PM
L5	4	(385/\$.ccls. g02b6/\$.cpc.) and pull adj tab with latch with ferrule with depress\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:17 PM
L6	4	(385/\$.ccls. g02b6/\$.cpc.) and pull\$3 with tab with latch\$3 with ferrule with \$2press\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:21 PM
L7	3	"20160116685".pn.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:33 PM
L8	28	L2 and latch\$3 with housing with wall near5 angl\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:52 PM
L9	6	2 AND pull\$3 WITH tab WITH latch\$3 WITH ferrule WITH depress\$3	(US-PGPUB; USPAT; USOCR; FIT (CN, FR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/12/05 03:25 PM
L10	6	(385/\$.ccls. g02b6/\$.cpc.) AND pull\$3 WITH tab WITH latch\$3 WITH ferrule WITH depress\$3	(US-PGPUB; USPAT; USOCR; FIT (CN, FR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/12/05 03:26 PM
L11	6	(385/\$.ccls. g02b6/\$.cpc.) AND pull\$3 WITH (tab flap strap) WITH (latch\$3 fasten\$3 catch clasp\$3 hook\$3 clip\$4) WITH ferrule WITH depress\$3	(US-PGPUB; USPAT; USOCR; FIT (CN, FR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/12/05 03:28 PM

L12	2	"20130322825".pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:13 AM
L13	7206	2 AND latch\$	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:24 AM
L14	215	2 AND latch\$3 WITH groove WITH protu\$6	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:25 AM
L15	42	2 AND latch\$3 WITH coupl\$3 WITH groove WITH protu\$6	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:25 AM
L16	26	15 AND @pd<"20170130"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:26 AM
L17	6	15 AND @pd<"20170130"	(US-PGPUB; USPAT)	OR	ON	ON	2021/06/04 09:26 AM
L18	4	2 AND latch\$3 WITH coupl\$3 WITH groove WITH protu\$6 WITH mov\$6	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:28 AM
L19	4	"20040062487".pn.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO;	OR	ON	ON	2021/06/04 09:29 AM

L20	25	2 AND latch\$3 WITH groove WITH protru\$6 WITH mov\$6	JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:29 AM
L21	2	20 AND @pd<"20170130"	(US-PGPUB; USPAT)	OR	ON	ON	2021/06/04 09:29 AM
L22	19	2 AND latch\$3 WITH first adj2 polarity WITH second adj2 polarity near5 opposite	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:32 AM
L23	4	22 AND @pd<"20170130"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:33 AM
L24	4	22 AND @ad<"20170130"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:33 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	5630	385/78.ccls. g02b6/3893,3821,3879. cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2020/12/05 03:33 PM

Doc code: IDS

Doc description: Information Disclosure Statement (IDS) Filed

PTO/SB/08a (02-18)

Approved for use through 11/30/2020. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)

Application Number	17200134
Filing Date	2021-03-12
First Named Inventor	Kim Man WONG
Art Unit	2883
Examiner Name	
Attorney Docket Number	S09300US04

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	17200134	
Filing Date	2021-03-12	
First Named Inventor	Kim Man WONG	
Art Unit	2883	
Examiner Name		
Attorney Docket Number	S09300US04	

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Examiner Signature	/JERRY M BLEVINS/	Date Considered	06/04/2021
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	17200134
Filing Date	2021-03-12
First Named Inventor	Kim Man WONG
Art Unit	2883
Examiner Name	
Attorney Docket Number	S09300US04

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Edward S. Jarmolowicz/	Date (YYYY-MM-DD)	2021-03-17
Name/Print	Edward S. Jarmolowicz	Registration Number	47238

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7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/200,134	Filing Date 03/12/2021	☐ To be Mailed
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ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE (\$)	FEE (\$)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 = *		x \$50 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 = *		x \$240 =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED - PART II

	(Column 1)		(Column 2)	(Column 3)	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	06/23/2021		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total (37 CFR 1.16(i))	*	53	Minus	** 20	= 33
	Independent (37 CFR 1.16(h))	*	3	Minus	*** 3	= 0
	☐ Application Size Fee (37 CFR 1.16(s))					
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
					TOTAL ADD'L FEE	1650
AMENDMENT			CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	
	Total (37 CFR 1.16(i))	*		Minus	**	=
	Independent (37 CFR 1.16(h))	*		Minus	***	=
	☐ Application Size Fee (37 CFR 1.16(s))					
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					
					TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.					LIE	
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".					/ANITA JOHNSON/	
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Electronic Patent Application Fee Transmittal

Application Number:	17200134			
Filing Date:	12-Mar-2021			
Title of Invention:	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE			
First Named Inventor/Applicant Name:	Kim Man WONG			
Filer:	Jonathan G. Pollmann/Meagan Fitzpatrick			
Attorney Docket Number:	S09300US04			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	33	50	1650
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1650

Electronic Acknowledgement Receipt

EFS ID:	43063081
Application Number:	17200134
International Application Number:	
Confirmation Number:	1767
Title of Invention:	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE
First Named Inventor/Applicant Name:	Kim Man WONG
Customer Number:	152878
Filer:	Jonathan G. Pollmann/Meagan Fitzpatrick
Filer Authorized By:	Jonathan G. Pollmann
Attorney Docket Number:	S09300US04
Receipt Date:	23-JUN-2021
Filing Date:	12-MAR-2021
Time Stamp:	10:53:18
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 1650
RAM confirmation Number	E20216MA53350987
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	Amendment.pdf	133166	no	12
			b1a530c752f09c3e036cb17c354384e3f5e1 9682		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30861	no	2
			fc7509ff13b0d9dc836fd6876d43a50ee694 6040		
Warnings:					
Information:					
Total Files Size (in bytes):			164027		
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First Named Inventor: Kim Man WONG
Serial No: 17/200,134
Filed: March 12, 2021
Confirmation No: 1767
For: Optical connectors with reversible polarity and method of use
Examiner: Jerry M Blevins

Art Unit: 2883

Amendment A

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
COMMISSIONER:

In response to the Office action dated Jun 9, 2021, please enter the following amendments and consider the following remarks.

Amendments to the claims begin on page 2.

Applicant's Remarks begin on page 12 of this paper.

Amendments to the Claims

This listing of claims will replace all prior versions of claims in the application:

Listing of Claims:

1. (Original) A fiber optic connector comprising:
 - at least first and second optical ferrules;
 - a connector housing having a longitudinal axis and comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;
 - a latch coupling positioned on each of the first and second exterior walls of the connector housing;
 - a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing, whereby the removable latch couples to the respective latch coupling;
 - wherein each latch coupling comprises a groove extending along the axis and having an open axial end; and
 - wherein the removable latch comprises a protrusion for being inserted into the open axial end of the groove by movement relative to the housing along the axis.
2. (Original) The fiber optic connector of claim 1, wherein the protrusion is movable along the longitudinal axis in each groove with respect to the connector housing.
3. (Original) The fiber optic connector of claim 1, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion.
4. (Original) The fiber optic connector of claim 3, wherein the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the

front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion.

5. (Currently amended) The fiber optic connector of claim 4, wherein the free end portion of the depressible latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the ~~reversible polarity~~ fiber optic connector from the receptacle.

6. (Currently amended) The fiber optic connector of claim 5, wherein the free rear end portion of the depressible latch arm is raised relative to the front end portion and wherein the removable latch is bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the ~~reversible polarity~~ fiber optic connector from the receptacle.

7. (Original) The fiber optic connector of claim 6, further comprising a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing.

8. (Original) The fiber optic connector of claim 7, wherein the elongate front section comprises an opening configured to receive the depressible latch arm.

9. (Original) The fiber optic connector of claim 8, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening.

10. (Original) The fiber optic connector of claim 9, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening.

11. (Original) The fiber optic connector of claim 10, wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface of the depressible latch arm when the elongate front section moves rearward to depress the depressible latch arm.

12. (Original) The fiber optic connector as set forth in claim 1, wherein the connector housing comprises a single front body and a single back body.

13. (Original) The fiber optic connector as set forth in claim 12, further comprising first and second ferrule springs received on the first and second optical ferrules, respectively.

14. (Original) The fiber optic connector as set forth in claim 13, wherein each of the first and second optical ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges.

15. (Original) The fiber optic connector as set forth in claim 14, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall.

16. (Original) The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 6.25 mm.

17. (Currently amended) The ~~reversible polarity~~ fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch less than 5.25 mm

18. (Original) The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less.

19. (Original) A reversible polarity fiber optic connector comprising:
 at least first and second optical ferrules, each of the first and second ferrules comprising a ferrule flange;
 first and second ferrule springs received on the first and second optical ferrules, respectively;

a connector housing comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall, the connector housing comprising a single front body and a single back body, the single front body comprising a transverse wall configured to simultaneously engage the ferrule flanges of the first and second optical ferrules, the single back body being configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engageable with the transverse wall;

a latch coupling positioned on each of the first and second exterior walls of the housing;

a removable latch for engaging either of the first and second exterior wall latch couplings on the connector housing;

wherein positioning the removable latch on the first exterior wall of the connector housing yields a fiber optic connector with a first polarity and positioning the removable latch on the second exterior wall of the housing yields a fiber optic connector with a second polarity, the second polarity being opposite to the first polarity.

20. (Currently amended) A fiber optic connector comprising:

at least first and second optical ferrules;

a connector housing comprising an exterior portion at least partially surrounding the first and second optical ferrules such that the exterior portion circumscribes a space in which each of the first and second optical ferrules are received, the exterior portion comprising a first exterior wall and a second exterior wall on an opposite side of the space from the first exterior wall;

a removable latch configured to selectively and releasably couple to each of the first and second exterior walls of the housing, the removable latch comprising a base portion and a depressible latch arm connected to the base portion, the depressible latch arm having a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion, the free rear end portion of the latch arm being configured to be received in an opening of a receptacle and comprising a rearward facing surface

that is configured to engage the receptacle when received in the opening to inhibit removal of the ~~reversible polarity~~ fiber optic connector from the receptacle, the free rear end portion of the depressible latch arm being raised relative to the front end portion, the removable latch being bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the ~~reversible polarity~~ fiber optic connector from the receptacle; and

a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing, the elongate front section comprising an opening configured to receive the depressible latch arm, the elongate front section comprising a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening;

wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening.

wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface when the elongate front section moves rearward to depress the depressible latch arm.

21. (New) The reversible polarity fiber optic connector as set forth in claim 19, wherein each latch coupling comprises a groove extending along the axis and having an open axial end.

22. (New) The reversible polarity fiber optic connector as set forth in claim 21, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis.

23. (New) The reversible polarity fiber optic connector of claim 19, wherein the removable latch comprises a base portion and a depressible latch arm connected to the base portion.

24. (New) The reversible polarity fiber optic connector of claim 23, wherein the depressible latch arm has a front end portion connected to the base portion, a free rear end portion spaced apart from the front end portion along the axis, and an outward facing longitudinal surface extending along the axis from the front end portion to the free rear end portion.

25. (New) The reversible polarity fiber optic connector of claim 24, wherein the free end portion of the latch arm is configured to be received in an opening of a receptacle and comprises a rearward facing surface that is configured to engage the receptacle when received in the opening to inhibit removal of the reversible polarity fiber optic connector from the receptacle.

26. (New) The reversible polarity fiber optic connector of claim 25, wherein the free rear end portion of the depressible latch arm is raised relative to the front end portion and wherein the removable latch is bendable such that the free rear end portion can be depressed toward the base portion to remove the free rear end portion from the opening and unlatch the reversible polarity fiber optic connector from the receptacle.

27. (New) The reversible polarity fiber optic connector of claim 26, further comprising a remote release including an elongate front section configured to extend longitudinally along the connector housing and engage the depressible latch arm and an elongate rear section extending rearward from the elongate front section, the elongate front section of the remote release being slidably connected to the removable latch and the connector housing such that the elongate front section can move rearward relative to removable latch and the connector housing.

28. (New) The reversible polarity fiber optic connector of claim 27, wherein the elongate front section comprises an opening configured to receive the depressible latch arm.

29. (New) The reversible polarity fiber optic connector of claim 28, wherein the elongate front section comprises a front end portion having a rearward facing surface defining a front end of the opening, the rearward facing surface being configured to oppose the outward facing surface of the depressible latch arm when the depressible latch arm is received in the opening.

30. (New) The reversible polarity fiber optic connector of claim 29, wherein the free rear end portion of the depressible latch arm is configured to be raised in relation to the front end portion of the elongate front section when the depressible latch arm is received in the opening.

31. (New) The reversible polarity fiber optic connector of claim 30, wherein the front end portion of the elongate front section is configured to slide rearward along the outward facing surface when the elongate front section moves rearward to depress the depressible latch arm.

32. (New) The reversible polarity fiber optic connector as set forth in claim 19, wherein the first and second optical ferrules have a pitch less than 6.25 mm.

33. (New) The reversible polarity fiber optic connector as set forth in claim 19, wherein the first and second optical ferrules have a pitch less than 5.25 mm

34. (New) The fiber optic connector as set forth in claim 19, wherein the first and second optical ferrules have a pitch of about 4.8 mm or less.

35. (New) The fiber optic connector as set forth in claim 19, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules.

36. (New) The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch less than 6.25 mm.

37. (New) The fiber optic connector as set forth in claim 36, wherein the connector housing comprises a single front body and a single back body.

38. (New) The fiber optic connector as set forth in claim 37, further comprising first and second ferrule springs received on the first and second ferrules, respectively.

39. (New) The fiber optic connector as set forth in claim 38, wherein each of the first and second ferrules comprises a ferrule flange having a forward facing surface and the single front body comprises a transverse wall configured to simultaneously engage the forward facing surfaces of the first and second optical ferrule flanges.

40. (New) The fiber optic connector as set forth in claim 39, wherein the single back body is configured to attach to the single front body such that the back body simultaneously compresses each of the first and second ferrule springs between the back body and the first and second ferrule flanges engaged with the transverse wall.

41. (New) The fiber optic connector as set forth in claim 40, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end.

42. (New) The fiber optic connector as set forth in claim 41, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis.

43. (New) The fiber optic connector as set forth in claim 42, wherein the pitch is less than 5.25 mm

44. (New) The fiber optic connector as set forth in claim 43, wherein the pitch is 4.8 mm or less.

45. (New) The fiber optic connector as set forth in claim 20, wherein each of the first and second exterior walls of the connector housing includes a groove extending along the axis and having an open axial end.

46. (New) The reversible polarity fiber optic connector as set forth in claim 45, wherein the removable latch is configured for being inserted into the open axial end of each groove by movement relative to the housing along the axis.

47. (New) The fiber optic connector as set forth in claim 46, wherein the first and second optical ferrules have a pitch less than 6.25 mm.

48. (New) The fiber optic connector as set forth in claim 47, wherein the pitch is less than 5.25 mm

49. (New) The fiber optic connector as set forth in claim 48, wherein the pitch is 4.8 mm or less.

50. (New) The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules have a pitch less than 5.25 mm.

51. (New) fiber optic connector as set forth in claim 50, wherein the first and second optical ferrules have a pitch of 4.8 mm or less.

52. (New) The fiber optic connector as set forth in claim 20, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules.

53. (New) The fiber optic connector as set forth in claim 1, wherein the first and second optical ferrules are configured to receive first and second optical fibers, wherein the fiber optic

connector further comprises a single cable boot through which the first and second optical fibers are passable to the first and second optical ferrules.

Remarks

By this amendment, claims 5, 6, 17, and 20 are amended and claims 21-53 are newly added. No new matter is added by the amendment. Claims 1-53 are pending in the application.

35 U.S.C. § 112

In response to the rejection under 35 U.S.C. § 112, Applicant hereby amends claims 5, 17, and 20 to replace "the reversible polarity fiber optic connector" with "the fiber optic connector," which has antecedent basis support.

Allowable Subject Matter

Applicant gratefully acknowledges the indication that claims 1-20 recite allowable subject matter.

New Claims

New claims 21-35 depend from claim 19; new claims 36-52 depend from claim 20; and new claim 53 depends from claim 1. Each of claims 21-53 is submitted to be patentable for at least the same reasons as the respective independent claim from which it depends. Accordingly, favorable consideration and allowance of new claims 21-53 are respectfully requested.

Conclusion

A fee for 33 excess claims is submitted herewith. Should any other fee be required, the Commissioner is hereby authorized to charge the necessary fee to Deposit Account No. 19-4409.

Respectfully submitted,

/Jonathan Pollmann/

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/200,134	03/12/2021	Kim Man WONG	S09300US04

CONFIRMATION NO. 1767

PUBLICATION NOTICE



OC000000126699713

152878
Senko Advanced Components, Inc.
450 Donald Lynch Blvd
Unit D
Marlborough, MA 01752

Title:OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE

Publication No.US-2021-0199901-A1

Publication Date:07/01/2021

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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NOTICE OF ALLOWANCE AND FEE(S) DUE

152878 7590 07/23/2021
Senko Advanced Components, Inc.
450 Donald Lynch Blvd
Unit D
Marlborough, MA 01752

EXAMINER

BLEVINS, JERRY M

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 07/23/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/200,134	03/12/2021	Kim Man WONG	S09300US04	1767

TITLE OF INVENTION: OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	10/25/2021

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THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

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For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/200,134	03/12/2021	Kim Man WONG	S09300US04	1767

TITLE OF INVENTION: OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	10/25/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
BLEVINS, JERRY M	2883	385-078000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

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Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

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5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

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NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

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Authorized Signature _____

Date _____

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/200,134	03/12/2021	Kim Man WONG	S09300US04	1767
152878	7590	07/23/2021	EXAMINER	
Senko Advanced Components, Inc. 450 Donald Lynch Blvd Unit D Marlborough, MA 01752			BLEVINS, JERRY M	
			ART UNIT	PAPER NUMBER
			2883	
DATE MAILED: 07/23/2021				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 17/200,134	Applicant(s) WONG et al.	
	Examiner JERRY M BLEVINS	Art Unit 2883	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed June 23, 2021.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-53. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____. 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date. _____.	5. ☒ Examiner's Amendment/Comment 6. ☐ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
--	--

/JERRY M BLEVINS/
Primary Examiner, Art Unit 2883

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Response to Arguments

Applicant's arguments filed June 23, 2021, have been fully considered and are persuasive. The rejection of claims 5-11, 17, and 20 has been withdrawn.

Allowable Subject Matter

Claims 1-53 are allowed.

Examiner's Amendment

The application has been amended as follows: at the end of each of claims 17, 33, 43, and 48, add a period (“.”).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY M BLEVINS whose telephone number is (571)272-8581. The examiner can normally be reached on Monday - Friday.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Hollweg can be reached on 571-270-1739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <https://ppair-my.uspto.gov/pair/PrivatePair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JERRY M BLEVINS/
Primary Examiner, Art Unit 2883

<i>Search Notes</i> 	Application/Control No. 17/200,134	Applicant(s)/Patent Under Reexamination WONG et al.
	Examiner JERRY M BLEVINS	Art Unit 2883

CPC - Searched*		
Symbol	Date	Examiner
G02B6/3893,3821,3879	07/03/2021	JMB

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

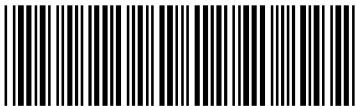
US Classification - Searched*			
Class	Subclass	Date	Examiner
385	78	07/03/2021	JMB

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
"SEARCH" searched	07/03/2021	JMB
Inventor name searched	07/03/2021	JMB
Related files searched	07/03/2021	JMB

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
G02B6	3893,3821,3879	07/03/2021	JMB
385	78	07/03/2021	JMB

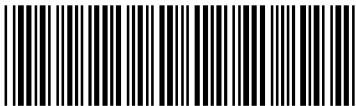
/JERRY M BLEVINS/ Primary Examiner, Art Unit 2883	
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Issue Classification 	Application/Control No. 17/200,134	Applicant(s)/Patent Under Reexamination WONG et al.
	Examiner JERRY M BLEVINS	Art Unit 2883

CPC						
Symbol					Type	Version
G02B	/	6	/	3893	F	2013-01-01
G02B	/	6	/	3879	I	2013-01-01
G02B	/	6	/	3821	I	2013-01-01

CPC Combination Sets					
Symbol				Type	Set
	/		/		

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 53	
/JERRY M BLEVINS/ Primary Examiner, Art Unit 2883 (Primary Examiner) _____ (Date) _____		03 July 2021 (Date)	O.G. Print Claim(s) 1 O.G. Print Figure 1A

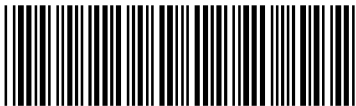
<i>Issue Classification</i> 	Application/Control No. 17/200,134	Applicant(s)/Patent Under Reexamination WONG et al.
	Examiner JERRY M BLEVINS	Art Unit 2883

INTERNATIONAL CLASSIFICATION			
CLAIMED			
G02B	/	6	/ 38
NON-CLAIMED			
/	/		

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS
385	78

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	53	
/JERRY M BLEVINS/ Primary Examiner, Art Unit 2883	03 July 2021	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1A

Issue Classification 	Application/Control No. 17/200,134	Applicant(s)/Patent Under Reexamination WONG et al.
	Examiner JERRY M BLEVINS	Art Unit 2883

☐ Claims renumbered in the same order as presented by applicant
 ☐ CPA
 ☐ T.D.
 ☐ R.1.47

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	10	20	19	28	28	38	37	47	46				
2	2	11	11	36	20	29	29	39	38	48	47				
3	3	12	12	21	21	30	30	40	39	49	48				
4	4	13	13	22	22	31	31	41	40	50	49				
5	5	14	14	23	23	32	32	42	41	51	50				
6	6	15	15	24	24	33	33	43	42	52	51				
7	7	16	16	25	25	34	34	44	43	53	52				
8	8	17	17	26	26	35	35	45	44	19	53				
9	9	18	18	27	27	37	36	46	45						

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 53	
/JERRY M BLEVINS/ Primary Examiner, Art Unit 2883 (Primary Examiner) _____ (Date) 03 July 2021		O.G. Print Claim(s) 1	O.G. Print Figure 1A

Bibliographic Data

Application No: 17/200,134

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /JERRY M BLEVINS/

Examiner's Signature

Initials

Title:

OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
03/12/2021	385	2883	S09300US04
RULE			

APPLICANTS

Senko Advanced Components, Inc., Marlborough, MA,

INVENTORS

Kim Man WONG, Kowloon, HONG KONG

Jeffrey GNIADEK, Oxford, ME, UNITED STATES

Kazuyoshi TAKANO, Tokyo, JAPAN

Siu Kei MA, Kowloon, HONG KONG

CONTINUING DATA

This application is a CON of 16297607 03/09/2019 PAT 10976505

16297607 is a CON of PCT/US2018/016049 01/30/2018

PCT/US2018/016049 has PRO of 62581961 11/06/2017

PCT/US2018/016049 has PRO of 62546920 08/17/2017

PCT/US2018/016049 has PRO of 62485042 04/13/2017

PCT/US2018/016049 has PRO of 62463898 02/27/2017

PCT/US2018/016049 has PRO of 62463901 02/27/2017

PCT/US2018/016049 has PRO of 62457150 02/09/2017

PCT/US2018/016049 has PRO of 62452147 01/30/2017

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

03/22/2021

**** SMALL ENTITY ****

STATE OR COUNTRY

HONG KONG

ADDRESS

Senko Advanced Components, Inc.
450 Donald Lynch Blvd
Unit D
Marlborough, MA 01752
UNITED STATES

FILING FEE RECEIVED

\$3,000

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	2	"20130322825".pn.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:08 PM
L2	16530	385/78.ccls. g02b6/3893,3821,3879. cpc.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:12 PM
L3	15	L2 and pull adj tab with latch with ferrule	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:12 PM
L4	4	L2 and pull adj tab with latch with ferrule with depress\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:15 PM
L5	4	(385/\$.ccls. g02b6/\$.cpc.) and pull adj tab with latch with ferrule with depress\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:17 PM
L6	4	(385/\$.ccls. g02b6/\$.cpc.) and pull\$3 with tab with latch\$3 with ferrule with \$2press\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:21 PM
L7	3	"20160116685".pn.	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:33 PM
L8	28	L2 and latch\$3 with housing with wall near5 angl\$3	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2019/12/09 12:52 PM
L9	6	2 AND pull\$3 WITH tab WITH latch\$3 WITH ferrule WITH depress\$3	(US-PGPUB; USPAT; USOCR; FIT (CN, FR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/12/05 03:25 PM
L10	6	(385/\$.ccls. g02b6/\$.cpc.) AND pull\$3 WITH tab WITH latch\$3 WITH ferrule WITH depress\$3	(US-PGPUB; USPAT; USOCR; FIT (CN, FR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/12/05 03:26 PM
L11	6	(385/\$.ccls. g02b6/\$.cpc.) AND pull\$3 WITH (tab flap strap) WITH (latch\$3 fasten\$3 catch clasp\$3 hook\$3 clip\$4) WITH ferrule WITH depress\$3	(US-PGPUB; USPAT; USOCR; FIT (CN, FR, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2020/12/05 03:28 PM

L12	2	"20130322825".pn.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:13 AM
L13	7206	2 AND latch\$	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:24 AM
L14	215	2 AND latch\$3 WITH groove WITH protu\$6	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:25 AM
L15	42	2 AND latch\$3 WITH coupl\$3 WITH groove WITH protu\$6	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:25 AM
L16	26	15 AND @pd<"20170130"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:26 AM
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L18	4	2 AND latch\$3 WITH coupl\$3 WITH groove WITH protu\$6 WITH mov\$6	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:28 AM
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L20	25	2 AND latch\$3 WITH groove WITH protr\$6 WITH mov\$6	JPO; DERWENT; IBM_TDB) (US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, CA, CH, CN, DD, DE, EA, EP, ES, FR, GB, JP, KR, OA, RU, SU, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:29 AM
L21	2	20 AND @pd<"20170130"	(US-PGPUB; USPAT)	OR	ON	ON	2021/06/04 09:29 AM
L22	19	2 AND latch\$3 WITH first adj2 polarity WITH second adj2 polarity near5 opposite	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:32 AM
L23	4	22 AND @pd<"20170130"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:33 AM
L24	4	22 AND @ad<"20170130"	(US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/06/04 09:33 AM
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PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	5630	385/78.ccls. g02b6/3893,3821,3879. cpc.	(US-PGPUB; USPAT)	OR	ON	ON	2020/12/05 03:33 PM



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/200,134	03/12/2021	Kim Man WONG	S09300US04	1767
152878	7590	08/11/2021	EXAMINER	
Senko Advanced Components, Inc.			BLEVINS, JERRY M	
450 Donald Lynch Blvd			ART UNIT	PAPER NUMBER
Unit D			2883	
Marlborough, MA 01752			NOTIFICATION DATE	DELIVERY MODE
			08/11/2021	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eofficeaction@appcoll.com
patents@senko.com
stl.uspatents@stinson.com

Corrected Notice of Allowability	Application No. 17/200,134	Applicant(s) WONG et al.	
	Examiner JERRY M BLEVINS	Art Unit 2883	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to internal printer query filed August 4, 2021.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-53. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some* c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892) 2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____. 3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material ____. 4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.	5. ☒ Examiner's Amendment/Comment 6. ☐ Examiner's Statement of Reasons for Allowance 7. ☐ Other _____.
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/JERRY M BLEVINS/ Primary Examiner, Art Unit 2883	
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EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

The application has been amended as follows: in claim 51, line 1, before the word "fiber," insert the word --The.--

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY M BLEVINS whose telephone number is (571)272-8581. The examiner can normally be reached on Monday - Friday.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Hollweg can be reached on 571-270-1739. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <https://ppair-my.uspto.gov/pair/PrivatePair>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JERRY M BLEVINS/
Primary Examiner, Art Unit 2883

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

152878 7590 07/23/2021
Senko Advanced Components, Inc.
450 Donald Lynch Blvd
Unit D
Marlborough, MA 01752

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/200,134	03/12/2021	Kim Man WONG	S09300US04	1767

TITLE OF INVENTION: OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$600	\$0.00	\$0.00	\$600	10/25/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
BLEVINS, JERRY M	2883	385-078000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Senko Advanced Components, Inc.

450 Donald Lynch Blvd, Marlborough, MA 01752

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 603512

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Qi Zhang/

Date 10/23/2021

Typed or printed name Qi Zhang

Registration No. L1394

Electronic Patent Application Fee Transmittal				
Application Number:		17200134		
Filing Date:		12-Mar-2021		
Title of Invention:		OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE		
First Named Inventor/Applicant Name:		Kim Man WONG		
Filer:		Qi Zhang /Yoko Tanaka		
Attorney Docket Number:		S09300US04		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	600	600

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				600

Electronic Acknowledgement Receipt

EFS ID:	44106526
Application Number:	17200134
International Application Number:	
Confirmation Number:	1767
Title of Invention:	OPTICAL CONNECTORS WITH REVERSIBLE POLARITY AND METHOD OF USE
First Named Inventor/Applicant Name:	Kim Man WONG
Customer Number:	152878
Filer:	Qi Zhang /Yoko Tanaka
Filer Authorized By:	Qi Zhang
Attorney Docket Number:	S09300US04
Receipt Date:	23-OCT-2021
Filing Date:	12-MAR-2021
Time Stamp:	08:49:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$ 600
RAM confirmation Number	E20210M949564004
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	17200134Part_B.pdf	110118	no	1
			1c9654b00109bbebde8783fc87fc978d65f36d		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	38127	no	2
			2b908da91d0673f100207166dc8963ac8b9f499e		
Warnings:					
Information:					
Total Files Size (in bytes):			148245		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					



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www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/200,134	11/23/2021	11181701	S09300US04	1767

152878 7590 11/03/2021
Senko Advanced Components, Inc.
450 Donald Lynch Blvd
Unit D
Marlborough, MA 01752

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Senko Advanced Components, Inc., Marlborough, MA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.